

Char Development and Settlement Project (CDSP B)

Annual Outcome Survey 2021

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Implementing Government Agencies:

- Bangladesh Water Development Board (BWDB)
- Ministry of Land (MoL)
- Local Government Engineering Department (LGED)
- Department of Public Health Engineering (DPHE)
- 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 several output indicators. These surveys cover CDSP I, II, III, and IV areas and incorporate indicators that have been covered in past CDSP B (AF) 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 normally 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 six AOS (2012, 2013, 2015, 2016, 2017, and 2019), as well as this round in 2021-22¹) cover all four CDSP areas. AOS surveys are continuing during CDSP B/AF on a biannual basis to 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 the key purpose and goal level log frame indicators, to show, on an annual basis, progress towards these indicators.
2. Measurement of outcomes to collect evidence for a “results chain” with changes in the 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 8th round of annual outcome surveys (the project ends in mid-2024). Data collection took place in December 2021 to January 2022.

Additional information on food security and nutrition was obtained via a small survey in the CDSP IV area. Results of this survey are in Annex III.

2. Methodology

2.1 Sampling procedure

The sample design for AOS 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 in each survey round, which minimizes sample errors caused by changes in the sample composition in each survey round. However, if a sample household from the previous round cannot be contacted (usually because they have moved away due to their land being lost to erosion), then a replacement sample household is selected from a nearby location with a similar socio-economic profile.

In this round of AOS there were 86 replacement samples due to river erosion and considering set back distances. The 86 missing sample households have been replaced in the sample with others living close to the same locations and with similar income profiles. The distribution of 86 was 49 in Boyer Char, 19 in Char Nangulia, 15 in Noler Char, and 3 in Urir Char. In addition, 42 sample households of Caring Char have been dropped and not replaced due to the complete erosion of this char. Three other sample households could not be surveyed because the households left for somewhere else after selling their homes or possessions. These three, which were not replaced, were in Nabagram CBT, Madhya Bagga CBD, and

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

Shibpur, Boyer Char. Another set of 10 households was found to be absent, keeping their doors under lock and key since the COVID 19 attack. Their current locations could not be known, and even neighbours do not know anything about them. These households were also not replaced. Taking account of these missing sample households, the overall sample size for the 2021 AOS is 545 households (see Table 1).

Table 1: Sample distribution

Area	Union/ Char	Village/ Somaj	2019 AOS		2021 AOS		
			No. of Sample HH	Sub-total	No. of Sample HH	Sub-total	
CDSP I&II	Char Bata	Char Majid	22		22		
		Purbo Char Bata	24		24		
		Poshchim Char Bata	20		19		
	Char Jabbar	Char Jabbar	14		13		
	Char Jublee	Modhya Char Bagga	18		17		
		Char Mohiuddin	20		20		
	Char Elahi	Gangchil	20		20		
		Char Kalmi	20		20		
	Char Clark	Baisakhai	20		20		
	Shudolpur	Nobogram	22	200	21	196	
CDSP III	Horni Union	Poshchim Gabtoli Adorsho Gram	9		9		
		Shahab Uddin Somaj	20		19		
		Mirajpur	21		18		
		Mohammadpur	10		10		
		Molla Gram	20		19		
		Adorsho Gram	20		19		
		East 10 Number	20		20		
		Forest Center	20		19		
		Ali Bazar	32		32		
		Chatlakhali	18		0		
		Islampur	10		0		
		Al-Amin	0	200	28	193	
CDSP-IV	Char Nangulia	AlaminSomaj	14		14		
		4 no. ward	14		14		
		Haji Gram	7		7		
		Nasirpur	14		14		
		Rani Gram	7		7		
		Sohag Chowdhury Gram	14		0		
		Rasel Gram	0		14		
		Ismail Bazar	14		14		
	Noler Char	Al Amin Somaj	7		6		
		Dokshin Azim Nagar	14		13		
		Dokshin Mojlishpur Killer Bazar	14		0		
		Parchim Adarshaw Gram	0		14		
		North Musapue	7		7		
	Caring Char	Adarsha Gram Somaj	14		0		
		Mohammed Somaj	14		0		
		Jagannathpur	14		0		
	Char Ziauddin	Ziauddin Bazar	8		8		
		SofiNetaSomaj	8		8		
	Urir Char	Coloni Bazar MoshjidSomaj	8		8		
		Janata Bazar MoshjidSomaj	8	200	8	156	
	total			600	600	545	545

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. Some additional indicators were introduced to gather information on changes related to the impact of land titling and dietary diversity. The

dietary diversity part has been made compatible based on the RIMS baseline 2009 and the mid-term round of 2014. So, this survey will be the second measurement over the baseline of 2009. The updated questionnaire is attached as Annex I.

2.3 Field data collection and data analysis

Between December 2021 and January 2022, data was collected from the field by five (three men and two women) hired enumerators seconded by Socioconsult Limited. The two M&E Officers of CDSP B(AF) who have acted as supervisors for field data collection and a hired Data Entry/Validator and Analyst were responsible for data entry and analysis. The enumerators were trained for three days 16-18 November 2021 for filling up the survey questionnaire and on the interview techniques to be followed during field data collection. The data collection process took 40 days including three days for training. 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 is shown in Table 2. This shows that the average household size is well over seven persons – larger than the house size recorded in 2017 as 6.41 and 6.51 recorded in 2019, and larger than 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. It is also worth noting that 30% of children aged under 5 years are also going to school in the CDSP IV area, maybe as the result of a pre-primary education programme. The table also shows that around 14 to 21% of women are not earning (or are elderly or in education). In the CDSP III and IC areas this is less than in 2021 with more women working in CDSP III and in education in CDSP IB.

Table 2: Household Composition

	No. of people per household	Percentage of household members				Total
		Earning	Elderly or disabled	In education	Other	
CDSP I&II						
Men 16+	2.17	81%	10%	6%	3%	100%
Women 16+	1.89	68%	6%	5%	21%	100%
Child 5-16	2.03	0	0	98%	2%	100%
Child under 5	1.6	0	0	2%	98%	100%
Total member	7.69					
CDSP III						
Men 16+	2.16	84%	7%	6%	0	100%
Women 16+	1.87	74%	11%	1%	15%	100%
Child 5-16	2.14	0	1%	98%	1%	100%
Child under 5	1.4	0	0	0	100%	100%
Total member	7.81					
CDSP IV						
Men 16+	2.29	81%	8%	7%	3%	100%
Women 16+	1.87	68%	8%	5%	19%	100%
Child 5-16	1.93	0	0	94%	1%	100%
Child under 5	1.55	0	0	30%	70%	100%
Total member	7.64					

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 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 23% 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 join micro-credit groups formed by CDSP partner NGOs (PNGOs). PNGOs also gave these groups support for livelihoods, legal rights, and disaster management, along with health services. Households were also members of the Tubewell User Groups (TUG) based around DTW installed by CDSP to provide domestic water. Labour Contracting Societies (LCS) were formed to undertake small construction contracts.

Table 3 shows the proportion of households reporting membership of these six types of FLI. This shows membership at the current time and membership at any time (both current and in the past). Relatively few of these FLIs were formed during CDSP I and II, but other programmes will have formed groups in these areas, and NGO microcredit groups are found throughout the area. It would be expected that there would be some fall off in group membership as project activities come to an end and the immediate benefits of group membership are reduced. It is surprising that only around half of all CDSP IV households report membership of TUG when almost all will have used project DTW - and will have been enlisted into TUG at the time of installation of these DTW. It seems that many people do not realize that they were members of TUG. In general, in all CDSP areas, fewer households are reporting participation in FLI compared to the previous round of AOS in 2019 – although more CDSP IV households are members of NGO groups.

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	10%	10%	13%	26%	15%	22%
FF	11%	15%	10%	26%	21%	28%
SFG	12%	15%	30%	34%	24%	28%
NGO	61%	76%	59%	83%	79%	88%
TUG	16%	19%	26%	38%	51%	53%
LCS	2%	2%	2%	4%	1%	1%

3.3 Settlement status

In the CDSP-IV area, 67% of households now have khatian land titles (Table 4), compared to 71% in the 2017 AOS and 76.5% in 2019. There is now a settlement program on Urir Char so the land settlement programme now covers all CDSP IV households. In all CDSP areas most people have received land titles via CDSP, but an increasing proportion of households have purchased or inherited land. As the 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	59	74	67
Occupying <i>khas</i> land	91	19	8	2
Purchased land	8	42	36	18
Inherited land		10	6	31
Sample size (n)	1400	196	193	156

Although 67% of CDSP IV households have khatian land titles, Table 5 shows many also occupy other land informally, and almost one-third of land (29.5%) is occupied informally and another 19% 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 (177 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 2019 AOS in the CDSP IV area, the proportion of land occupied via khatian settlement has decreased from 51% to 41%, the area occupied informally and leased in has slightly increased, but much more land has been purchased (up from 3% to 11%), with this becoming more like the older CDSP areas.

Table 5: Area of land acquired through different means

	CDSP I&II		CDSP II		CDSP IV	
	decimals per HH	percent of area	decimals per HH	percent of area	decimals per HH	percent of area
The area occupied Land acquired by	194	100%	162	100%	208	100%
Khatian settlement	88	51%	102	63%	84	41%
Inherited	8	26%	4	3%	1	0%
Purchased	44	13%	28	17%	22	11%
Occupy informally	18	7%	8	5%	61	29%
Lease in	36	3%	20	13%	40	19%
sub-total	194	100%	162	100%	208	100%
Lease out	46	24%	35	22%	31	15%
Net area operated	148	76%	127	78%	177	85%
Sample size (n)	196		193		156	

3.4 Investment in land and the social impact of land titling

This is a new section and has been included in response to the recommendations of the IFAD Supervision Mission of 2021. The key variables considered are: (i) the type of land owned and occupied, (ii) the status of investments on these lands, and (iii) the social impacts to somaj/community due to development through investments.

According to the Government land settlement policy, landless poor char dwellers should be given a land title for a maximum of 150 decimals of land. In reality, it is found that a char dwelling family gets an average of 1.3 acres (130 decimals) of land. It is found that, after getting a land title they use the land for homestead development, dig ponds/ditches, develop cultivable land, and keep some fallow land for grazing. To increase cultivable area they sometimes lease land in.

(a) Status of investments in the land holding

It has been observed that when they first occupy newly accreted land, coastal char dwellers generally do not invest their financial capital in building good quality living houses and in developing their land, due to fear of eviction by the Ministry of Land, the owner of the land. As soon as they receive permanent land titles, they start to invest in land by building nice houses and developing land, both for field crops and vegetables. In low lying areas like Char Nangulia they develop 'sorjon' systems of fish-cum-vegetable cultivation.



A renovated living house built in settled land in Char Mojid, CDSP



A piece of low-lying land developed as sorjon system (fish cum vegetable) in Char Nangulia, CDSP IV

The study data reveal that sample households from the CDSP I&II area invested an average of Tk 3,88,293 in their land, while those in CDSP III spend on average Tk 8,40,519, with less (Tk 1,09,375) being spent so far in the CDSP IV area. At least half of all households report investing in houses, and around a third or more in both ponds and land for crops. Some (7%-12%) households have reported that they have sold some land, although selling land acquired through the land settlement process is illegal.

Table 6: Status of investment on land after receiving land title

Investment in land	CDSP-I, II 2021		CDSP-III 2021		CDSP-IV 2021	
	% HH	taka /HH	% HH	taka/HH	% HH	taka/HH
Living house	54%	2,28,219	68%	3,51,740	50%	1,30,282
Pond	36%	31,515	44%	37,506	47%	27,878
'Sorjon' plot	1%	3,500	3%	24,400	7%	37,182
Land for field crop	31%	29,653	33%	20,175	37%	22,143
Land for vegetable	21%	9,974	23%	12,198	33%	12,275
Land leased in	7%	85,458	13%	3,94,500	2%	10,024
Total amount invested		3,88,293		8,40,519		2,39,784
Sale of land						
Land sold	8%	1,48,600	12%	1,92,500	7%	1,09,375
Sample size (n)	196		193		156	

Average value per household is the average for all households, not just those making investments or sales

(b) Social impacts on somaj/community due to development through investments

To assess the social impact due to the acquisition of land through land titling and investment in the land, the sample households from all three domains of changes (CDSP I&II, CDSP III, and CDSP IV) have been requested to respond to seven open-ended questions. These are:

- Having a land title, are you more secure than before?
- Has your status in society changed?
- Has your mobility changed?
- Are you leading a better family life?
- Do you have a more harmonious married life?

The responses to the above seven questions have been processed and presented in Tables 7 to 11.

Status in regard to security: The study reveals that the land received by poor char dwellers through permanent land titles/*khatians* has a great impact on them. Land titles allow them to have permanent ownership rights which can be inherited. They are more secure than before and free from the torture of so-called 'bahinis' (armed gangs). They are now renovating their homes and living very peacefully, with less fear of thefts etc.

Table 7: Having a land title, are you more secure than before?

	In what way did you become more secure?
CDSP I&II (Responded 37%)	√ (15%) Become a permanent owner of land by receiving a land title (Khatian). √ (9%) Living peacefully, no robbery, no fear of missing goods. √ (6%) Renovated living houses. √ (5%) Char dwellers are now free from tortures of 'bahinis'/armed gangs
CDSP III (Responded 51%)	√ (21%) Become a permanent owner of the land by receiving a land title (Khatian). √ (8%) Living peacefully, no robbery, no fear of missing household goods. √ (3%) Renovated living houses. √ (16%) Char dwellers are now free from tortures of 'bahinis'/armed gangs
CDSP IV (Responded 47%)	√ (25%) Become a permanent owner of land by receiving a land title (Khatian). √ (12%) Living peacefully, no robbery, no fear of missing household goods. √ (3%) Renovated living houses. √ (4%) Char dwellers are now free from tortures of 'bahinis'/armed gangs

Changes in the status of household members in the somaj/community: At the beginning of CDSP, both men and women in poor households living in chars were socially deprived, with society dominated by elite people. Women, especially, had less access to positions such as membership of local government bodies, committees of schools, religious institutions, markets etc. The study reveals that currently, between 21% and 59% of char dwellers have been invited to participate in social programmes. Some households (20% to 28%) report that they are very often invited to participate in religious events.

Table 8: Has your status in society changed?

	In what way has your position in society changed?
CDSP I&II (Responded 33%)	(42%) We are offered to participate in social programmes (25%) Somaj leaders and neighbours respect us and invite us to participate in religious events. (9%) We are sending our kids to schools in the cyclone shelter built by CDSP.
CDSP III (Responded 47%)	(59%) We are offered to participate in social programmes (28%) Somaj leaders and neighbours respect us and invite us to participate in religious events (8%) We are invited to take memberships of school/madrasha committees
CDSP IV (Responded 38%)	(21%) We are offered to participate in social programmes (20%) Somaj leaders and neighbours respect us and invite us to participate in religious events (10%) We are invited to take memberships in school/madrasha committees

Changes in the mobility of women and men: At the beginning of CDSP it was observed that women were allowed to market and social gatherings. But now women have much easier access to markets and social gatherings. They can go to the market for shopping and even go to markets to sell poultry birds. Besides this, between one third and half of all of households reported that they are invited to take up membership of the committees for schools or religious institutions.

Some households (4%) say that their mobility has increased to the extent of sending household members to jobs in Middle Eastern countries.

Table 9: Changes in the mobility of men and women

	In what way has your mobility changed?
CDSP I&II (Responded 33%)	(37%) We are invited to take memberships in school/madrasha committees (11%) Somaj leaders and neighbours respect us and invite us to participate in religious events (20%) Due to the construction of the cyclone centre by CDSP
CDSP III (Responded 44%)	(29%) Somaj leaders and neighbours respect us and invite us to participate in religious events. (52%) We are invited to take memberships in school/madrasha committees (4%) Income increased and more able to send family members to Middle-East countries
CDSP IV (Responded 34%)	(53%) We are invited to take memberships in school/madrasha committees (23%) We are offered to participate in social programs (11%) Somaj leaders and neighbours respect us and invite us to participate in religious events.

Changes in family life: Before CDSP living conditions in the coastal chars were harsh - the services of Government agencies were absent. People used to live on newly accreted land where there were no roads, no markets, no safe drinking water, and a lack of sanitation. There was no school for the children. Families had hard times. CDSP has provided families with land and DTWs for safe drinking water, and also built roads and bridges, markets, and multi-purpose cyclone shelters-cum-schools. The study finds that many (30-47%) coastal char families are sending their children to schools established in the cyclone shelters. Some families reported that they could now afford to send family members abroad (to Middle East countries) for a job and are now regularly receiving remittances from these migrants.

Table 10: Improvements in family life

	What improvements have there been to family life?
CDSP I&II (Responded 34%)	(47%) We are sending our children to schools in cyclone shelter built by CDSP (24%) Happy married life. Happy family better than before (18%) Income increased and able to send family members to Middle East countries
CDSP III (Responded 47%)	(30%) We are sending our children to schools in cyclone shelters built by CDSP (31%) Happy married life. Happy family better than before (23%) Income increased and able to send family members to the Middle East countries
CDSP IV (Responded 36%)	(46%) We are sending our kids to schools in cyclone shelters built by CDSP (29%) Happy married life. Happy family better than before (14%) Income increased and able to send family members to Middle East countries

Enjoying better married life: The study finds that char families are better off than before. They can grow more crops and vegetables and sell these in local markets. In the past their family was problematic, and there were frequent divorces. At present, char dwellers are maintaining a happy family life. Households (60%-67%) have reported that they are leading a happy married life.

Table 11: Enjoying better married life

5. Better harmony in conjugal life?	
CDSP I&II (Responded 28%)	(67%) Happy married life. Happy family better than before (24%) Become the permanent owner of the land by receiving a land title (Khatian) (4%) Income increased and able to send family members to Middle East countries
CDSP III (Responded 42%)	(62%) Happy married life. Happy family better than before (29%) Become the permanent owner of the land by receiving a land title (Khatian) (2%) Income increased and able to send family members to Middle East countries
CDSP IV (Responded 33%)	(60%) Happy married life. Happy family better than before (37%) Become the permanent owner of the land by receiving a land title (Khatian) (4%) Women empowerment increased. Poverty reduced

3.4 Occupational profile

A comparison of principal and secondary occupations of household heads between CDSP-IV baseline and the present status of CDSP phases is shown in Table 12. The most widely reported principal occupation in the CDSP I&II area is agriculture followed by day labour. In CDSP III the major principal occupation is day labour followed by small trade, while in CDSP IV it is agriculture followed by small trade. In terms of secondary occupations, agriculture dominates in all three areas. Compared with the 2011 baseline, what has increased significantly for CDSP IV households is petty trade, which has increased from 9% at baseline and is now 21%. The increase in petty/small trading has occurred across all CDSP areas, but, in particular in CDSP IV, where this seems to be due to improved communications and markets. Occupations in jobs (services), along with driving (especially CNG), are also an increasing trend across all CDSP areas.

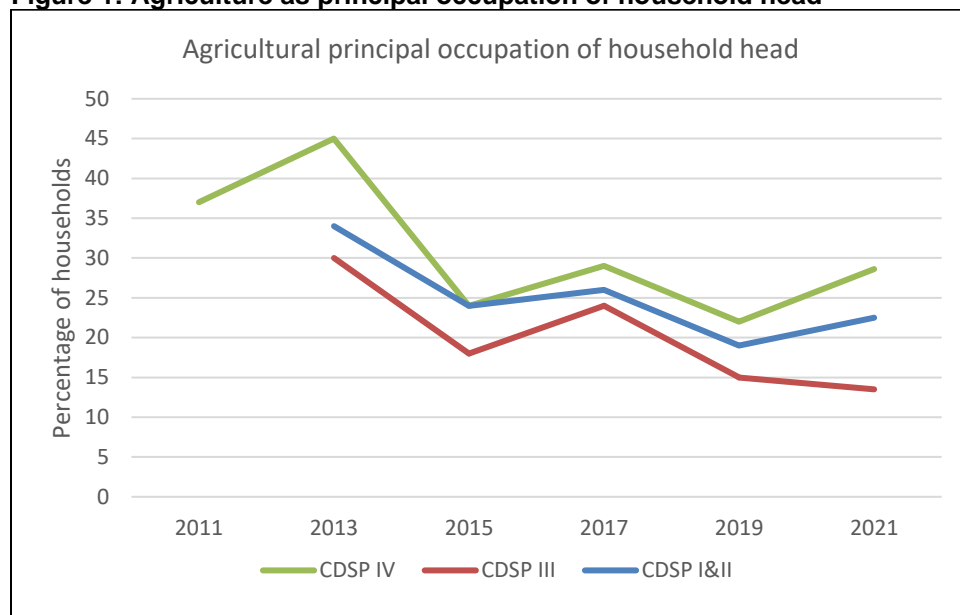
Table 12: Occupation of household head (percentage of households)

Occupation	Baseline 2011	CDSP I & II 2021		CDSP III 2021		CDSP IV 2021	
		primary	second	primary	second	primary	second
Agric/crop farming	37	22	24.5	13.5	37.5	28	35
Livestock		0.5	11	0	1.5	0.6	13.3
Day labour	31	17.5	5.5	24	4.5	18	7.6
Housekeeping	3	5	1	1.5	0.5	4.4	3.2
Fish/PL catch/dry	3	1.5	0.5	1.5	1	2	1.3
Salaried job	3	11	1.5	11.5	0	6.3	0.6
Small trade	9	15	3	20.5	2.5	21	1.9
Rickshaw / boat	4	3.5	0	2.5	0	2.5	0
Handicraft	0	1.5	0	1.5	0	0	0
Driver	0	3	0.5	3.5	0.5	1.9	0
Other	5	17	2.5	16.5	1	13.3	2.5
Total sample size (n)		196		193		156	

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

Figure 1 shows trends in the percentage of household heads reporting agriculture (including livestock) 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 – although there has been a revival over the last two years.

Figure 1: Agriculture as principal occupation of household head



The occupation of the spouse (almost always the wife) of the household head is shown in Table 13. In all areas the primary occupation is overwhelming that of housewife, with livestock as a secondary occupation.

Table 13: Occupation of the spouse of household head (percentage of households)

Occupation	CDSP I & II - 2021		CDSP III - 2021		CDSP IV - 2021	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
Agric/crop farming	0%	1%	0%	0%	0%	3.8%
Livestock	17%	62%	18.5%	70.5%	15.2%	70.3%
Day labour	0%	0.5%	0%	0%	2%	0%
Housekeeping	70.5%	18.5%	74%	20.5%	75.9%	12.7%
Fish/PL catch/dry	0.5%	1.5%	0%	0%	0%	0.6%
Salaried job	4%	0%	1.5%	0%	0.6%	0%
Small trade	0%	0%	0%	0%	1.3%	0%
Rickshaw / boat	0%	0	0%	0%	0%	0%
Handicraft	1.5%	1.5%	0.5%	0%	1%	0.6%
Driver	0%	0%	0.5%	0%	0%	0%
Others	0%	0.5%	0.5%	0%	0.6%	1.9%
Total samples (n)	196		193		156	

3.6 Housing

The average size of the main houses observed in the CDSP areas is shown in Table 14 below. At the start of CDSP IV houses in CDSP I&II were 60% larger than in CDSP IV. Since then there has been a 77% increase in the average size of CDSP IV houses, and the gap has now closed to a difference of only 2%. The progress in closing this gap is shown in Figure 2. In all CDSP areas, floors are predominantly mud, but brick and cement are starting to be used. Around 90% of all CDSP households now report tin (and sometimes brick/cement) walls, compared to only 13% of walls and 16% of roofs at CDSP IV baseline.

Table 14: Housing

	CDSP IV Baseline	CDSPI&II- 2021	CDSP III - 2021	CDSP IV - 2021
Average size of main house (sq. ft)	253	460	451	448
Type of floor (% of HH)				
Mud	99%	79%	81%	74%
Bricks	1%	1%	0%	0%
Pacca	0%	18%	17%	3%
Type of Wall (% of HH)				
Leaf	4%	0%	0%	0.5%
Straw	34%	0%	0%	1%
Mud	0%	1%	1%	0%
Bamboo	50%	6%	2%	1%
Tin	13%	82%	82%	89%
Pacca/brick	0%	11%	15%	4%
Type of Roof (% of HH)				
Leaf	2%	1%	2%	1%
Straw	82%	0%	1%	2%
Tin	16%	93%	86%	93%
Pacca	0%	4%	7%	3%
sample size (n)	1400	193	196	156

Figure 2: Size of main house

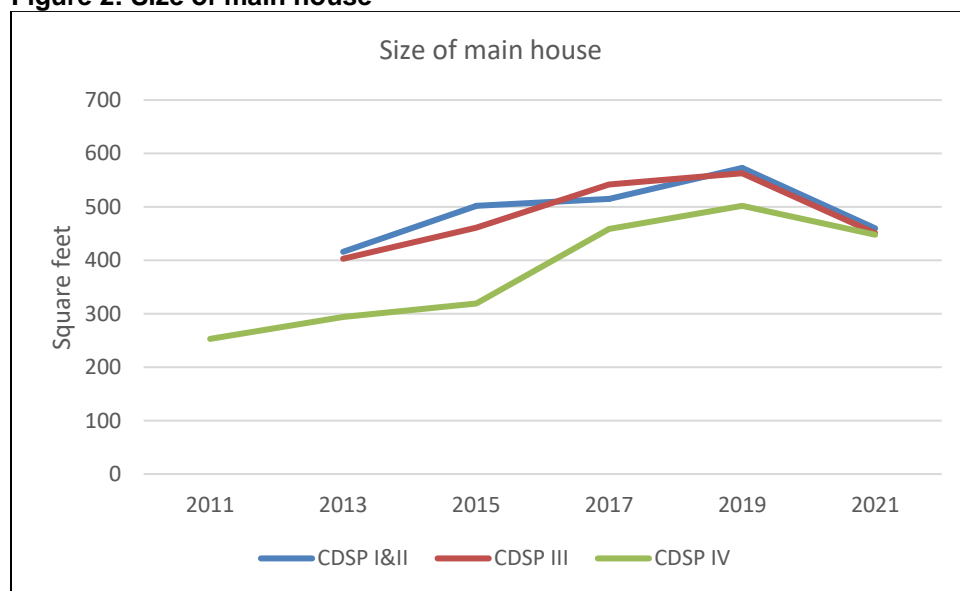


Figure 3: Straw roofing material

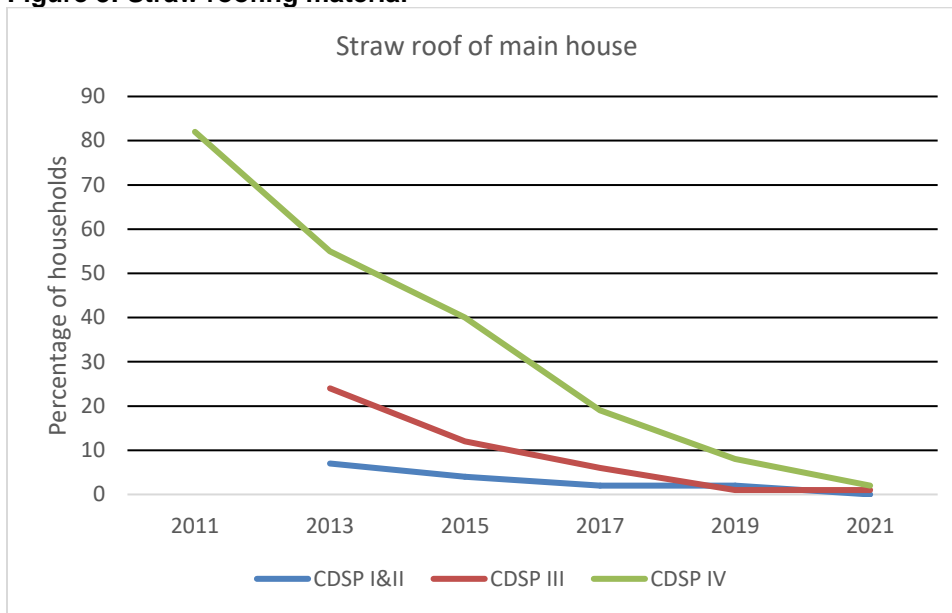
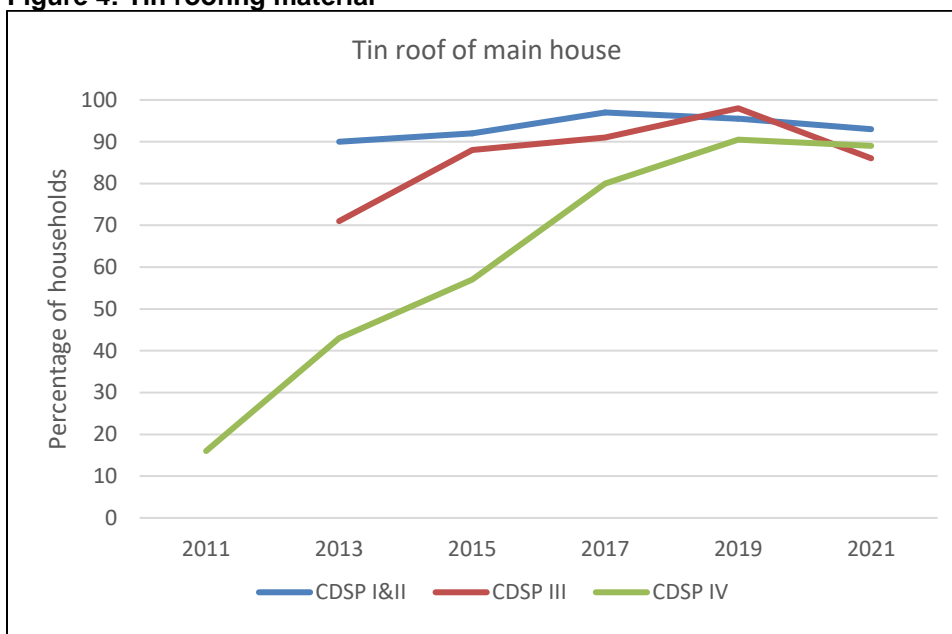


Figure 4: Tin roofing material



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, with CDSP IV catching up with CDSP I&II and III. The recent slight decline in the use of tin roofing can be attributed to a small proportion of households upgrading further to pucca roofs.

3.7 Water supply and sanitation

Data in Table 15 shows how access to drinking has changed in CDSP IV compared to the baseline situation. Although almost all households have been getting water from tube wells, the access to water has greatly improved in the CDSP IV area, with sources now being around 90-100 metres from the home as against 345 metres in the baseline situation (and over 418 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.

Table 15: Water and sanitation

	Baseline CDSP IV 2011	CDSP-I,II. 2021	CDSP-III. 2021	CDSP-IV. 2021
Source of drinking water (% of HH)				
Shallow Tube well	3	50	37	11
Deep Tube well	96	49	62	88
Untreated pond water	2	1	1	1
Ownership of tubewell (% of HH)				
Owned by HH	5	38	35	9
Jointly owned	5	4	1	1
Neighbors	27	30	16	10
Govt./Community	63	6	6	10
From CDSP	-	22	42	70
Distance from water source				
Dry Season (metre)	345	72	50	89
Rainy Season (metre)	418	81	58	100
Type of latrine used (% of HH)				
No latrine	5	0	0	0
Hanging/open	77	0	1	1
Ring slab (unhygienic)	14	39	30	41
Ring slab (water sealed)	6	49	60	56
Hygienic	0	12	10	3
Source of latrine (% of HH)				
Purchased from market	61	92	85	24
Purchased from NGO/other organisation	8	0	1	0
Donated by GO/NGO/other organisation	31	0	0	0
Installed by CDSP	0	8	15	76

Figure 5: Distance to potable water in dry season

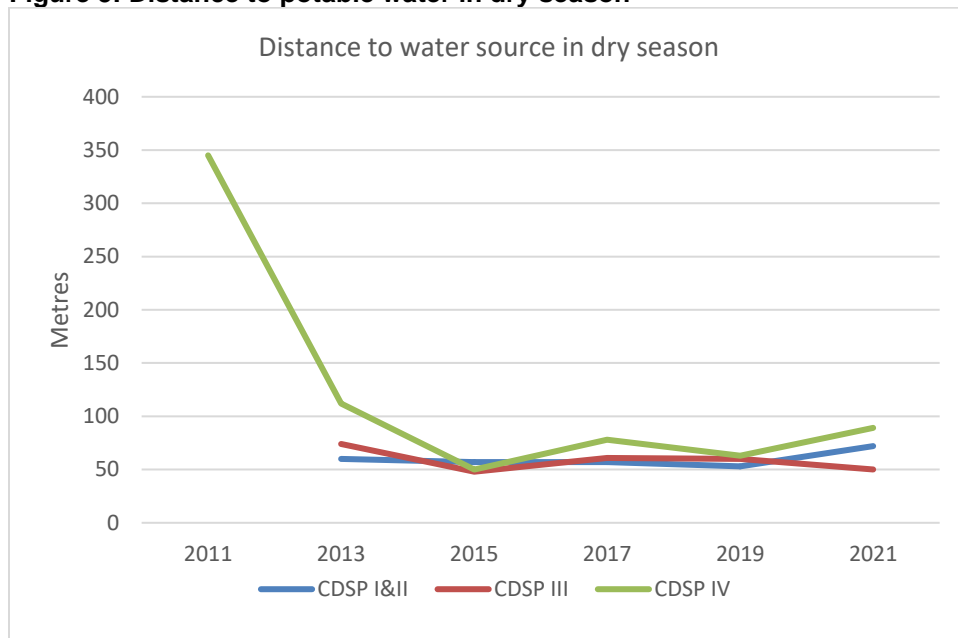


Figure 6: Distance to potable water in wet season

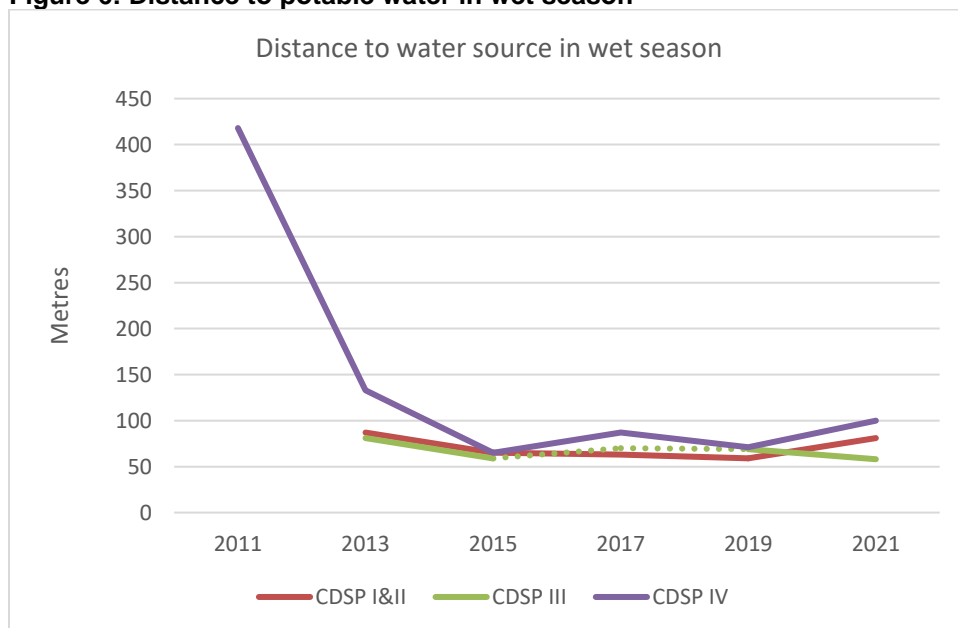


Table 15 shows that the use of water sealed ring slab and hygienic latrines in CDSP IV have hugely increased compared to the baseline situation (from 6% to 60%). However 41% of CDSP IV report unhygienic slab latrines – in the 2017 AOS 98% had been hygienic. Maybe some latrines installed by CDSP are no longer hygienic. The same applies in the older CDSP areas. It is also worrying that some 1% 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 six percent of the CDSP IV households report receiving sanitary latrines from this project (a higher proportion than now have hygienic latrines).

3.8 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 the latrine, immunization of children, visits of Community Health Workers, and use of family planning methods (see Table 16 below).

Table 16: Washing hands before taking food and after return from latrine (% of HH)

	CDSP IV baseline	CDSP I&II 2021	CDSP III 2021	CDSP IV 2021
<u>Washing hands before taking food</u>				
Do wash hands		100	100	100
Wash with plain water	96	64	70	57
Wash with soap	4	36	30	43
<u>Washing hands after return from latrine</u>				
Do wash hands		100	100	100
Wash with plain water	94	16	20	15
Wash with soap	0	81	72	78
Wash with ash	6	3	8	6
Sample size (n)	1400	196	193	156

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 some improvement - from around 18% to about 33%, but the improvement in CDSP IV is larger - from only 4% to 43%. 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 84%. In CDSP III it is 80%. For CDSP IV use of soap or ash is 84% against 6% recorded in 2012. However in all areas there has also been a significant increase all (of around 50%) in the use of soap since 2019

Table 17 shows that households across all CDSP areas have improved immunization of their children. Almost all (over 95%) 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 81%), obviously because of the project, but also in the older CDSP areas the situation has improved since 2012 (from around 30% to 76%).

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 56% (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 CDSP IV

Table 17: Health and family planning

% of hh	CDSP-IV Baseline	CDSP-I,II 2021	CDSP-III 2021	CDSP-IV 2021
Immunization of the children	52	96	97	95
how vaccinated:				
Upazila health centre		21	14	32
Special government program		79	86	68
Regular visit of Govt./NGO health worker	6	76	76	81
Use of family planning (% of eligible couples)	34	52	56	56
Users of: Temporary method	94	51	58	58
Permanent method	6	1	0	1
Sample size (n)	1400	196	193	156

3.9 Household and productive assets

A long list of family assets is examined in each AOS, see Table 18. The average total asset value in CDSP IV is over eight times the average asset value recorded during 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 will also have increased in value considerably.

Table 18: Household assets (households in percent and value in Taka)

Household Asset		CDSP I & II 2021		CDSP III 2021		CDSP IV 2021	
		% of hh	Avg Tk	% of hh	Avg Tk	% of hh	Avg Tk
1	Cot/ Khaat	100%	11597	100%	11236	100%	8281
2	Almira	54%	7365	63%	6297	49%	5099
3	Showcase	64%	6796	63%	6601	59%	5216
4	Chair/table	86%	3428	88%	4091	92%	2356
5	Shinduk (Wooden box/Trunk-Tin)	41%	3183	53%	3572	58%	3458
6	Alna (clothes rack/wardrobe)	45%	1297	53%	1082	49%	772
7	Ceiling/Table Fan	93%	3023	87%	2978	50%	2808
8	Radio/Cassette Player	1%	1200	0%	0	0%	
9	B&W TV	2%	5250	1%	4000	1%	1000
10	Colour TV	12%	10000	8%	10750	4%	7167
11	Mobile Phone	98%	7421	95%	8834	96%	6782
12	Sewing machine	17%	4424	19%	9797	15%	5065
13	Ornaments	95%	41098	93%	43803	96%	34799
14	Bicycle	30%	4441	23%	3841	21%	3806
15	Rickshaw/Van	1%	6000	3%	39167	1%	15000
16	Motor cycle	15%	68931	16%	74267	12%	76316
17	Auto rickshaw battery operated	4%	68750	2%	46667	2%	60000
18	Sprayer	13%	1250	16%	1061	26%	939
19	Laptop	3%	44167	1%	30000	1%	10000
20	Bullock cart	1%	5500	0%	0	1%	2000
21	Solar	76%	7135	79%	6833	78%	8447
22	Shop with land ownership	15%	1164655	22%	583558	27%	321286
23	Tractor for cultivation	2%	56667	1%	37500	4%	81429
24	Boat	0%	0	1%	150000	1%	80000
25	Mechanized boat	1%	175000	1%	75000	1%	75000
26	Thresher	3%	18000	6%	3900	1%	3500
27	Water pump	9%	25444	8%	9567	14%	23818
28	Fishing net	58%	4469	60%	2837	76%	7374
29	Fruit/timber trees	94%	23409	98%	26857	97%	27959
30	Cow	46%	93900	43%	97666	56%	91648
31	Buffalos	0%	0	0%	0	0%	0
32	Goat	16%	10063	27%	9179	39%	8762
33	Sheep	2%	11133	0%		1%	6000
34	Chicken	86%	2402	90%	2951	92%	3414
35	Duck / goose	85%	3483	82%	3871	90%	4633
36	Pigeon	18%	2219	21%	4380	19%	3032
37	Rice husking machine	1%	80000	2%	26000	3%	40000
38	Trolley motorized	1%	40000	1%	9400	0%	0
39	CNG Auto	2%	393333	2%	483333	1%	350000
40	Cylinder Gas	38%	3648	33%	4098	24%	3776
41	Others	19%	161750	18%	245146	7%	149445
	Average total asset value		389368		373384		296391

** 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 tractor/power tiller (0.2% to 4%), water pump for irrigation (3% to 14%), mobile phone (46% to 98%), and ornaments/jewellery (54% to 96%). In 2011 no households reported ownership of solar systems, tractors, water pumps, and CNG auto, but now these are owned by households in all three domains i.e. CDSP I&II, CDSP III, and CDSP IV.

Figure 7: Value of assets

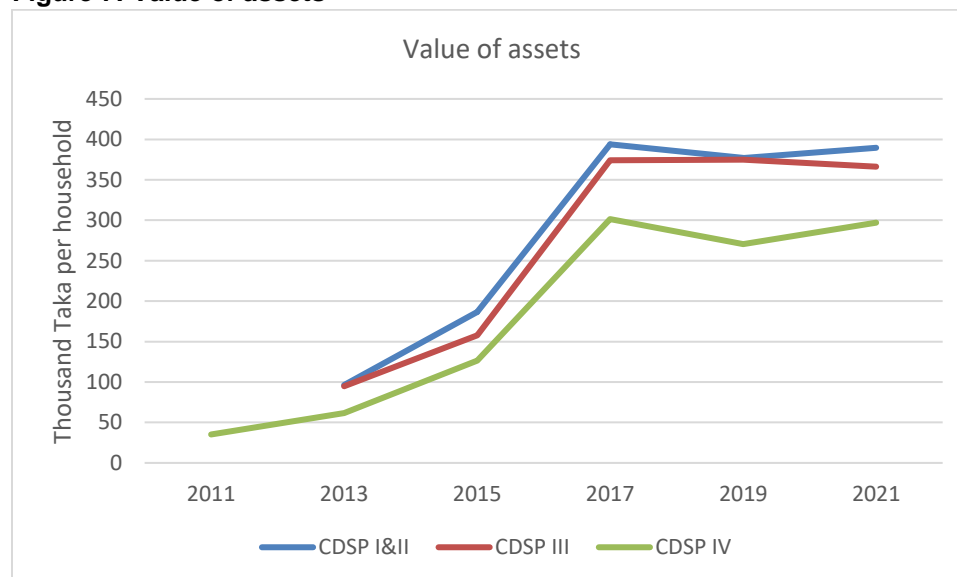


Table 19 compares the shares of different categories of assets in total asset value. For CDSP IV households, at the time of baseline in 2011, livestock was the main asset, accounting for 62% of total asset value. Now the value of assets is more evenly divided between the four categories of (i) household 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 enterprise assets with farm and livestock assets being a lower proportion.

Table 19: Share of different asset categories in total asset value

Category of assets	Baseline CDSP IV 2011	CDSP I & II 2021	CDSP III 2021	CDSP IV 2021	Change for CDSP IV 2011 to 2021
Household assets	21	30	36	27	978%
Non-farm enterprises	7	50	42	35	4104%
Farm assets	10	7	8	14	1064%
Livestock	62	13	14	24	233%
Total	100	100	100	100	743%
Total value per household Taka '000	35.2	389.5	366.3	296.9	

Table 20 shows the principal items (in terms of value) in each category of assets. Ornaments and jewellery are the most valuable household assets, accounting for around 30 to 40% of the total value of household assets.

Table 20: Principal assets in each category

Category of assets	Principal items	Value of principal item as percent of category total		
		CDSP I & II 2021	CDSP III 2021	CDSP IV 2021
Household assets	Ornaments/jewellery	33%	31%	42%
Non-farm enterprises	Shop with land	89%	85%	84%
Farm assets	Trees	76%	87%	66%
Livestock	Cows	86%	82%	71%

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 27% of households (this proportion, although small, is increasing). The farm productive asset category is dominated by timber and fruit trees², which account for over two-thirds of asset value in this category and are now owned by 96% of households compared to 24% at CDSP IV baseline. In the livestock category, cows account for around three-quarters of asset value and are owned by 56% of CDSP IV households and 43% of households in the CDSP I&II, and 46% in the CDSP 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 account for 7% of the total value of assets owned by all CDSP households. However, the value of trees has fallen considerably since 2017³, resulting in a fall in the overall value of farm assets (Table 21). This decline could be due to households being more realistic in their valuation of trees and a fall in the number of trees per household – linked to the fall in the average size of land holding.

Table 21: Change in value of assets since 2019

Category of assets	Change in value 2019 to 2021		
	I&II	III	IV
Household assets	39%	71%	12%
Non-farm enterprise	28%	108%	41%
Farm assets	-56%	-61%	-13%
Livestock	-5%	-14%	-2%
total	3%	-2%	10%

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

³ The value of trees has fallen sharply in both the 2019 and 2021 AOS. In 2021 the value of trees in the CDSP I&II and III areas is only 16% of that in 2017, and 31% in the CDSP IV area. The proportion of households reporting trees as an asset has only declined slightly, from around 100% across all three areas to around 96%.

3.10 Annual household income

More households report income from a range of farm sources than from non-farm sources, underlining the importance of this sector (Table 22). 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 22: Sources of income

Sector	Source of income	Percentage of households reporting income source		
		CDSP I & II 2021	CDSP III 2021	CDSP IV-B(AF) 2021
Agriculture related	Field crops	63%	62%	77%
	Homestead veg.	71%	63%	77%
	Aquaculture	39%	35%	58%
	Forestry/trees	2%	5%	8%
	Livestock	40%	38%	56%
	Selling straw	54%	54%	67%
	Poultry	79%	85%	90%
	Date juice	18%	40%	21%
Non-farm sectors	Daily labour	36%	42%	42%
	Jobs	30%	32%	20%
	Skilled work	11%	8%	8%
	Petty trade	8%	17%	19%
	Business	14%	16%	12%
	Rickshaw etc	5%	8%	7%
	Fishing	20%	23%	29%
	Remittance	8%	9%	7%
	Handicrafts	29%	44%	35%
	Pension & social	11%	9%	9%
	Begging	1%	1%	2%
	Other	19%	19%	28%

Since 2017 there has been a fall in the number of sources of income reported by households. The average number of sources per household has fallen from between 6.1 to 7.1 to 4.4 and 5.3 (with the higher number of sources being reported in the CDSP IV area). Table 23 shows how the number of households reporting most sources of income has fallen since 2017. This applies to all farm sources other than tapping of date juice. Fewer households also report many non-farm sources of income especially daily labour and handicrafts (which tend to be less remunerative). There have been small increases in numbers of households receiving income from business, transport (rickshaws etc.) and pensions and social payments. The number of households with salaried jobs and remittances has risen in the CDSP III area.

Table 23: Change in sources of income reported between 2017 and 2021.

Sector	Source of income	Change* in percentage of households reporting income source		
		CDSP I & II	CDSP III	CDSP IV
Agriculture related	Field crops	-7%	-16%	-10%
	Homestead veg.	-17%	-31%	-21%
	Aquaculture	-35%	-22%	-17%
	Forestry/trees	1%	-9%	-8%
	Livestock	-11%	-14%	-19%
	Poultry	-16%	-13%	-7%
	Date juice	-12%	10%	1%
Non-farm sectors	Daily labour	-16%	-10%	-21%
	Jobs	1%	10%	-8%
	Skilled work	-3%	3%	1%
	Petty trade	-7%	-4%	-3%
	Business	4%	6%	6%
	Rickshaw etc	2%	2%	5%
	Fishing	-8%	-3%	-16%
	Remittance	1%	3%	-3%
	Handicrafts	-13%	2%	-31%
	Pension & social	6%	6%	3%
	Begging	-3%	-1%	-2%
Average number of income sources per household	2017	6.11	6.08	7.08
	2019	5.24	5.59	6.13
	2021	4.41	4.94	5.28

* change in percentage points between 2017 and 2021. Excludes straw sales – which form part of crop production.

This fall in the number of sources of income suggests that livelihoods are becoming more specialised. Although a greater number of sources mean incomes are more diversified (and so less vulnerable to risk), specialisation allows resources and labour to be focused where returns are greatest.

Table 24 shows the average annual income of all households from different sources. The total average annual income of the sampled households in CDSP IV is 10% less than households in CDSP I&II and is virtually the same as in CDSP III.

The farm sector contributes between one quarter and one-third of total income, making the larger contribution in the CDSP IV area. Although in CDSP IV, agricultural income has increased by over four times since the baseline in 2011, non-farm income has increased by five times. The fastest-growing agricultural source has been livestock and the fastest-growing non-farm source is remittances. Average income from agriculture is highest in the CDSP IV area, but this is more than offset by lower non-farm income.

Table 24: Annual household income from different sources

Income source	Annual income Taka				Share of annual income				Increase
	CDSP IV baseline	CDSP I & II 2021	CDSP III 2021	CDSP IV 2021	CDSP IV baseline	CDSP I & II 2021	CDSP III 2021	CDSP IV 2021	CDSP IV 2011 to 2021
Agriculture-related									
Field crops	15,617	48,488	32,460	52,378	60.1%	41.0%	34.6%	39.8%	235%
Homestead veg.	3,115	19,626	14,251	19,328	12.0%	16.6%	15.2%	14.7%	520%
Aquaculture	2,713	12,144	5,240	16,203	10.4%	10.3%	5.6%	12.3%	497%
Forestry/trees		372	2,687	488		0.3%	2.9%	0.4%	
Livestock	2,666	24,235	22,135	28,496	10.3%	20.5%	23.6%	21.6%	969%
Selling straw		5,395	5,023	5,659		4.6%	5.4%	4.3%	
Poultry	1,887	7,206	8,637	8,406	7.3%	6.1%	9.2%	6.4%	345%
Date juice		839	3,356	742		0.7%	3.6%	0.6%	
sub-total-Agri Farm	25,998	118,304	93,790	131,701	100.0%	100.0%	100.0%	100.0%	407%
Non-farm									
Daily labour	33,378	56,543	68,591	56,724	72.6%	16.9%	21.5%	20.4%	243%
Jobs		67,199	59,508	28,333		20.1%	18.7%	10.2%	
Skilled work		20,000	12,280	29,346		6.0%	3.9%	10.5%	
Petty trade	6,879	10,184	28,891	34,942	15.0%	3.0%	9.1%	12.6%	1049%
Business		58,520	61,026	44,131		17.5%	19.1%	15.9%	
Rickshaw etc	2,749	7,653	8,793	10,955	6.0%	2.3%	2.8%	3.9%	299%
Fishing	2,093	33,103	20,029	29,087	4.6%	9.9%	6.3%	10.4%	1290%
Remittance	601	32,653	36,301	19,987	1.3%	9.8%	11.4%	7.2%	3226%
Handicrafts	252	5,972	4,834	6,031	0.5%	1.8%	1.5%	2.2%	2293%
Pension & social		934	917	558		0.3%	0.3%	0.2%	
Begging		765	23	974		0.2%	0.0%	0.4%	
Other		41,190	17,717	17,295		12.3%	5.6%	6.2%	
sub-total (Non-farm)	45,952	334,717	318,909	278,365	100.0%	100.0%	100.0%	100.0%	506%
Total farm	25,998	118,304	93,790	131,701	36.1%	26.1%	22.7%	32.1%	407%
Total non-farm	45,952	334,717	318,909	278,365	63.9%	73.9%	77.3%	67.9%	506%
Total	71,950	453,021	412,698	410,065	100.0%	100.0%	100.0%	100.0%	470%

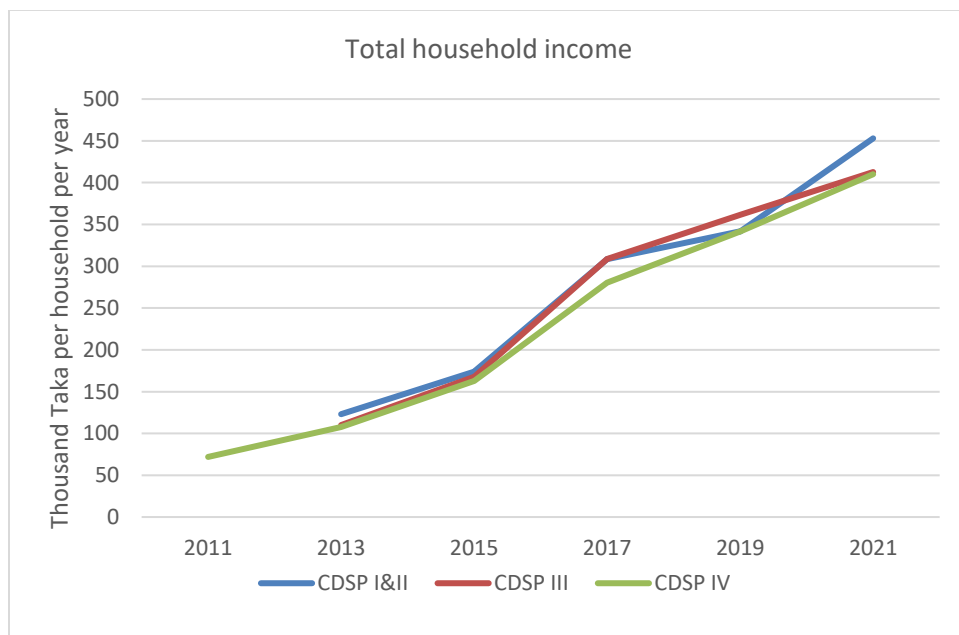
Income from farm and non-farm enterprises is estimated as being net of enterprise operating costs.

Average income in Taka is average for all sample households, not just the households with that income source

Compared with the previous AOS in 2019, both farm and non-farm income has increased by 20% for CDSP IV households, while farm income has slightly declined in the CDSP III area but was offset by increased non-farm income so total income increased by 14%. However, increases for both farm and

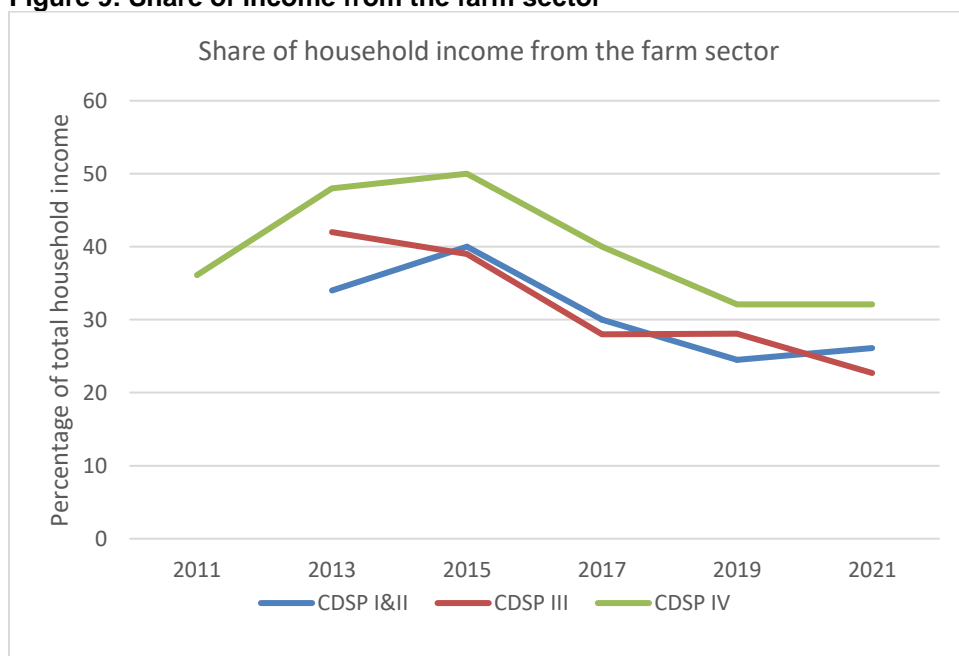
non-farm income have been highest in the CDSP I&II area, where overall income has gone up by 33%. Inflation needs to be taken into account in assessing increase in monetary income – it amounted to 11.5% between 2019 and 2021, so real income increased in all three areas.

Figure 8: Average household income



It is worth noting that much non-farm income is also related to the agricultural sector. Daily labour includes paid work on farms, petty trade and business can involve supplying agricultural inputs or marketing of farm products. Transport business moves farm inputs and outputs. The other source of income category includes renting out of agricultural machinery.

Figure 9: Share of income from the farm sector



Survey respondents were asked to place their own households in one of four wealth ranks – at the present time and five years ago. Table 25 shows that, in all three areas, five years ago most (over three-quarters) of households were in the poor and very poor categories. Now, there has been a general move up wealth ranks, with almost no households saying that they are still very poor, and over 80% placing themselves in the rich or medium categories. Given that these are self-assessments, caution should be used in drawing conclusions from this data.

Table 25: Wealth ranking

	CDSP I&II		CDSP III		CDSP IV	
	now	5 years ago	Now	5 years ago	now	5 years ago
Rich	17%	0%	8%	0%	10%	1%
Medium	67%	22%	77%	19%	78%	24%
Poor	16%	55%	15%	56%	12%	46%
Very poor	0%	23%	1%	25%	1%	29%
Total	100%	100%	100%	100%	100%	100%

Compared with the 2019 AOS, fewer households now say they are rich, with more in the medium wealth category in the CDSP III and IV areas, and more in the poor wealth category in the CDSP I&II and IV areas. In the CDSP I&II area there are fewer households in the rich category and more in the poor category. In all three areas there are (and were in 2019) very few very poor households. This suggests that, over the last two years, there has not been much movement up wealth categories (maybe partly due to the COVID pandemic). However, this is at variance with the reported increase in monetary income.

3.11 Crop production

3.11.1 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 26 shows that most (over three quarters) farmers in CDSP I&II and III areas report no damage from salinity, flooding, waterlogging and drought to aman paddy, rabi crops, homestead vegetables and trees, although more damage tends to be reported in CDSP III than in I&II. More farmers in CDSP IV report damage, with over half of farmers reporting aman paddy is damaged by salinity and flooding, and significant numbers (30% to 40%) saying that waterlogging damages aman and that salinity, flooding and waterlogging damage other crops. However most (84% to 90%) CDSP IV farmers say drought does not cause damage.

Table 26: 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	83%	76%	41%
		slight damage	15%	13%	37%
		moderate/heavy	2%	11%	23%
	Rabi crops	no damage	59%	79%	39%
		slight damage	35%	19%	45%
		moderate/heavy	5%	2%	16%
	Homestead vegetable	no damage	93%	80%	51%
		slight damage	7%	10%	39%
		moderate/heavy	0%	10%	10%
	Trees	no damage	95%	78%	60%
Slight		5%	11%	32%	
moderate/heavy		0%	11%	8%	
Flooding	Aman	no damage	97%	82%	43%
		Slight	2%	5%	33%
		moderate/heavy	1%	13%	25%
	Rabi crops	no damage	100%	98%	59%
		Slight	0%	0%	21%
		moderate/heavy	0%	2%	21%
	Homestead vegetable	no damage	99%	86%	55%
		slight damage	0%	3%	29%
		moderate/heavy	1%	10%	16%
	Trees	no damage	100%	84%	64%
Slight		0%	5%	24%	
moderate/heavy		0%	11%	12%	
Waterlogging	Aman	no damage	96%	80%	64%
		Slight	2%	13%	24%
		moderate/heavy	2%	7%	12%
	Rabi crops	no damage	94%	92%	70%
		Slight	6%	8%	23%
		moderate/heavy	0%	0%	7%
	Homestead vegetable	no damage	99%	89%	66%
		slight damage	1%	9%	26%
		moderate/heavy	0%	1%	7%
	Trees	no damage	98%	87%	72%
Slight		2%	10%	24%	
moderate/heavy		0%	3%	4%	
Drought	Aman	no damage	98%	95%	84%
		slight damage	0%	4%	10%
		moderate/heavy	2%	1%	6%
	Rabi crops	no damage	100%	100%	90%
		slight damage	0%	0%	7%
		moderate/heavy	0%	0%	3%
	Homestead vegetable	no damage	100%	98%	86%
		slight damage	0%	2%	9%
		moderate/heavy	0%	0%	5%
	Trees	no damage	100%	96%	88%
Slight		0%	4%	10%	
moderate/heavy		0%	1%	2%	

Compared with data in Table 26 from the previous AOS round (Table 27) it can be seen that, in general, more farmers are reporting damage to crops (but not trees) from salinity and flooding, and, to a lesser extent, from waterlogging. This is more pronounced in the CDSP IV area and is in contrast to the change between 2017 to 2019, when less damage was reported. The increase in damage may be attributed to the loss of a significant amount of water management infrastructure to river erosion.

Table 27: Damage to crops during period of 7th round (AOS 2019)

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%

As in the 2019 AOS, most (typically 90% or more) respondents say the situation has improved in the last year but has worsened since the start of CDSP. CDSP IV households are slightly less inclined to say there have been Improvements in the last one year, but they are also slightly less inclined to say conditions have got worse since the start of the project.

3.11.2 Cultivated area

Data in Table 28 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 (57% CDSP I&II, 57% CDSP III, and 74% CDSP IV) have cultivated land for field crop production, although this proportion has fallen slightly since 2019 in the CSP I&II and III areas. The average area of cultivated land per household is higher in the CDSP IV sample – as is the area of the fishpond 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.

Compared with the 2019 AOS, there has been a fall in the proportion of households with cultivated land in the CDSP I&II and III areas. In the CDSP III and IV areas there has been a decline in the area cultivated per household, with the total average area of all types of land per household also falling in the CDSP III area.

Table 28: Land utilisation

	Land type	CDSP I&II	CDSP III	CDSP IV
Percentage of households who operate	homestead	100%	100%	100%
	pond	99%	100%	100%
	cultivated	57%	57%	74%
	fallow	6%	6%	8%
Average area per household in decimal	homestead	37	36	39
	pond	24	25	34
	cultivated	85	64	101
	fallow	2	2	3
	total	148	127	177
	Total sample (n)	196	193	156

Average area is average for all households, not just those operating the type of land

3.11.3 Crop area and cropping intensity

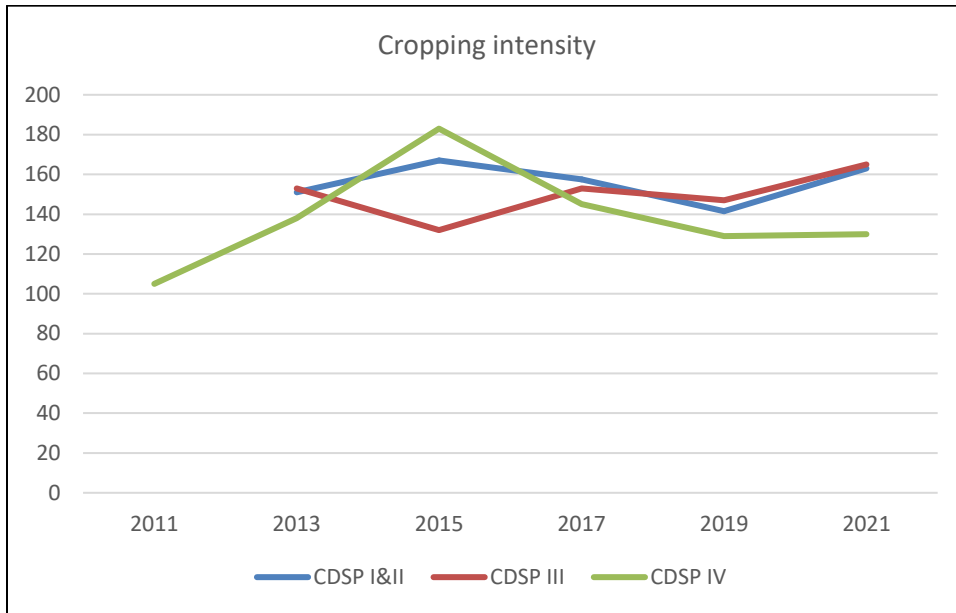
Calculations of cropping intensity in Table 29 uses two methods. Method 1 is the total area of all crops grown divided by the total area of land cultivated. Method 2 is the area of land single, double and triple cropped. Cropping intensities calculated by these two methods give similar results (within the expected margin of error) for each of the three survey areas. Cropping intensity for CDSP I&II is 160% (method 1) or 166% (method 2), for CDSP III the result is 165% for both methods, and for CDSP IV it is 130% for method 1 and 131% for method 2. As might be expected cropping intensity is lower in the CDSP IV area compared with the older areas, but the overall increase in cropping intensity is modest – and much less than the overall increase in crop production due to higher yields and a switch to more valuable crops. There has been a significant increase in cropping intensity in the CDSP I&II and III areas compared with the 2019 AOS, which recorded intensities in the range 140% to 148%; there is no change for CDSP IV.

Table 29: 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*	149	112	137
	Total area cultivated	decimal/hh*	239	185	178
	Cropping intensity (CI)		160%	165%	130%
	Sample size (n)		110	108	116
Method 2	Area cropped once	decimal/hh*	53	44	97
	Area cropped twice	decimal/hh*	98	68	35
	Area cropped thrice	decimal/hh*	1	4	3
	Total area cropped	decimal/hh*	153	115	135
	Total area of field crops	decimal/hh*	253	190	177
	Cropping intensity		166%	165%	131%
	Sample size (n)		110	108	116

* average for number of cultivating households

Figure 10: Cropping intensity



Cropping in all CDSP areas is dominated by paddy, which is cultivated by over 95% of farmers (Table 30) and accounts for around 84% of the crop area in CDSP I&II, 72% in CDSP III and 88% in CDSP IV. Paddy is mainly 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, and it now accounts for 42% of the total area of paddy in CDSP I&II and 28% in CDSP IV. In areas where the deep aquifer is 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 partly offset by a decline in the aman area, so the overall increase in paddy area is between 15% to 34% since 2017. However boro, grown using hybrid seeds, is very much more productive than aman (50% to 100% higher yields are obtained), so total rice production should have increased by a larger amount.

Table 30: 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	1%	9%	3%	1%	7%	2%
	Aman	84%	89%	70%	76%	90%	81%
	Boro	64%	26%	53%	56%	19%	33%
	Maize	1%	2%	3%	0%	1%	1%
	Total	100%	97%	95%	134%	117%	116%
Pulses	Keshari¹	16%	4%	4%	10%	2%	1%
	Mung²	7%	5%	2%	2%	1%	0%
	Felon³	13%	6%	5%	2%	2%	1%
	Moshuri⁴	0%	0%	0%	0%	0%	0%
	mash kolai⁵	0%	0%	0%	0%	0%	0%
	Total	25%	12%	8%	14%	5%	2%
Oilseeds	soybean	9%	25%	3%	4%	24%	1%
	mustard	1%	2%	0%	0%	1%	0%
	groundnut	12%	12%	3%	2%	2%	0%
	sesame	0%	1%	3%	0%	0%	0%
	Total	19%	31%	7%	6%	27%	2%
Spices	Chilli	20%	28%	18%	2%	3%	1%
	Onion	1%	1%	0%	0%	0%	0%
	Garlic	1%	2%	5%	0%	0%	0%
	coriander	2%	4%	2%	0%	0%	0%
	turmeric	5%	4%	3%	0%	0%	0%
	Total	21%	29%	18%	2%	4%	1%
Roots and tubers	Sweet pot	6%	8%	6%	1%	1%	0%
	Cassava	1%	1%	0%	0%	0%	0%
	Total	7%	9%	6%	1%	2%	0%
Vegetables	Total	12%	16%	26%	1%	6%	9%
Melon & Other	Water melon	1%	1%	0%	1%	0%	0%
	Other	0%	0%	0%	0%	0%	0%
	Total	1%	1%	0%	1%	0%	0%
Total	Grand total	100%	100%	100%	160%	161%	130%
	N	110	108	116	26251	19952	20643

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

Since 2017 there has been a general decline in the area of most non-rice crops. In CDSP IV the area under pulses has fallen to under 10% of the cultivated area, largely due to the continuing decline in keshari – a low-value crop. The area under oilseeds, the main being soybean, has also fallen, although they still cover 27% of cultivated land in CDSP III (see Table 31). The area of spices has declined, but the area of vegetables has increased in the CDSP III and IV areas. Most of these non-rice crops are grown in the rabi season and their decline in the area has, to some extent, been offset by an increase in boro paddy.

Table 31: Change in cropping pattern since 2017

		CDSP I&II	CDSP III	CDSP IV
2017	cereals	107%	99%	103%
	pulses	16%	13%	22%
	oilseeds	22%	30%	7%
	spices	5%	7%	4%
	vegetables	3%	2%	7%
	melons	2%	0%	1%
	other	2%	1%	1%
	total	157%	152%	145%
2019	cereals	113%	105%	101%
	pulses	10%	9%	5%
	oilseeds	10%	25%	8%
	spices	3%	4%	3%
	vegetables	2%	4%	5%
	melons	2%	1%	5%
	other	1%	1%	1%
	total	140%	148%	127%
2021	cereals	134%	117%	116%
	pulses	14%	5%	2%
	oilseeds	6%	27%	2%
	spices	2%	4%	1%
	vegetables	1%	6%	9%
	melons	1%	0%	0%
	other	1%	2%	0%
	total	160%	161%	130%
change 2017 to 2021 in percentage points	cereals	27%	18%	14%
	pulses	-2%	-8%	-20%
	oilseeds	-16%	-3%	-5%
	spices	-3%	-3%	-3%
	vegetables	-2%	4%	2%
	melons	-1%	0%	-1%
	other	-1%	1%	-1%
	total	3%	10%	-15%

Crop area as percentage of total cultivated area

In CDSP IV, 2.8% 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 9.1% of cultivated land. Sorjon is an intensive system, with multiple cropping, and so is likely to account for much of the field vegetable cultivation in CDSP IV. However, the area under sorjon has slightly declined – in 2017 it covered 3.2% of cultivated land – but there has been a recovery from the 1.9% of cultivated land in 2019.

3.11.4 Production, consumption and sale of field crops

Details of paddy production are in Table 32. The predominant type of paddy now grown in all three areas is HYV aman (44.5% in CDSP I&II, 48.2.5% in CDSP III, and 47% in CDSP IV). But 3% to 7% of farmers in still grow a local aman variety, Razashahil – this being more popular in the CDSP IV area. Only a few farmers grow aus, but boro has become an important crop with as many farmers now using hybrid seed as conventional HYV.

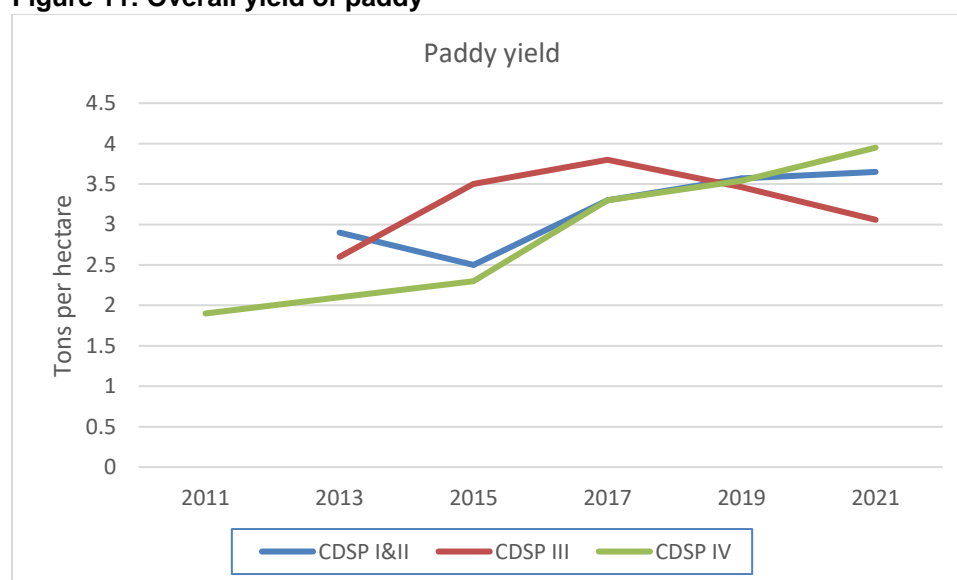
Table 32: Paddy production

Type of Paddy	CDSP I&II				CDSP III				CDSP IV			
	no. of HH	% of HH ¹	Area	dec./HH ²	no. of HH	% of HH ¹	Area	dec./HH ²	no. of HH	% of HH ¹	Area	dec./HH ²
Aus - local	1	0.9%	48	48	3	2.9%	220	73	0	0.0%	0	0
Aus HYV	3	2.7%	383	128	10	9.5%	946	95	2	1.8%	160	80
Aman Raza hail	6	5.5%	933	156	3	2.9%	660	220	8	7.3%	6171	771
Aman HYV	86	78.2%	11671	136	93	88.6%	10638	114	73	47%	6532	90
Aman - other	0	0.0%	0	0	2	1.9%	170	85	1	0.9%	180	180
Boro - HYV	38	34.5%	5126	135	16	15.2%	1046	65	25	22.7%	1752	70
Boro -hybrid	33	30.0%	4186	127	9	8.70%	692	77	37	33.6%	3406	92
All types paddy	110	100%	22347	203.2	105	100%	14372	136.9	110	100%	18233	165.8

¹ Percentage of all paddy producers. ² Average area per farmer for those farmers who grow the crop. Area in decimals (=0.004 ha)

Figure 11 shows trends for the overall yield of all types of paddy. This shows a moderate upward trend in yields in the CDSP I&II area, and a stronger upward trend in CDSP IV, where yields now exceed those in the older areas.

Figure 11: Overall yield of paddy



Based on data on the area grown and total production, the yield of HYV aman has been calculated (Table 33). The yield of this crop has fallen over the last two years and is low by the standards of Bangladesh. Too few farmers grow other types of paddy to give an adequate sample.

Table 33: Yield of HYV Aman paddy

Survey Domains	2019 AOS		2021 AOS	
	Kg per ha	sample n	Kg per ha	sample n
CDSP I&II	3243	97	2657	86
CDSP III	3818	121	2628	93
CDSP IV	3630	106	3491	75

Table 34 has data on paddy production and utilization from all three CDSP areas. Sixty percent of all households grow paddy – with growers producing on average 2.44 tons per year. Including households who receive paddy in return for leasing land for sharecropping, 65% of households utilise an average of 2.36 tons of paddy. Of this 1.08 tons are consumed and 1.26 tons are sold. Paddy is sold by 36% of all households. Overall 53% of total paddy production is sold. Compared with the 2019 AOS, 7% fewer households produce paddy and 8% fewer consume paddy at home. Production per household is 5% higher, less is consumed at home, so 1.25 tons is sold - 53% of all paddy utilised. In 2019 44% of paddy was sold and in 2017 36% was sold, so over time paddy has become more of a commercial crop. Compared with 2019 total paddy sales have increased by 10%, which followed a 60% increase between 2017 and 2019.

Table 34: Utilisation of paddy

	no.of hh	% of hh ¹	tons	ton/hh
Total paddy produced	328	60%	800.3	2.440 ²
Consumed at home	346	63%	383.5	1.086 ³
Kept for seed	43	8%	4.5	0.0013 ³
Sold	196	36%	444.0	1.258 ³
Total paddy utilised	353	65%	833.7	2.362 ³
N	545	100%		
Percent of paddy sold	53%			

¹ Percentage of all households. ² Average for households producing paddy ³ Average for all households utilising paddy. The number of households utilising paddy exceeds the number of producers as some non-producing households receive paddy as crop-share.

Production and sales of other field crops are shown in Table 35. Although a larger area is devoted to pulses and oilseeds, in terms of the value of sales field vegetables are by far the most important of these crops, with the value of sales exceeding those of all other non-rice crops combined.

Table 35: Pulses, oilseeds and field vegetables

	% of hh grow ¹	Avg area decimal/hh ²	% of hh who sel ²	Avg sales Taka/year ³	Avg all HH Taka/year	Avg % of crop sold
CDSP I and II						
Wheat maize & millet	0.9%	8	100%	500	3	90%
Pulse crops	24.5%	83	85%	10413	1222	69%
Oilseeds	20.0%	49	100%	8177	918	84%
Root crops	6.4%	13	57%	3075	63	48%
Spices	20.0%	13	59%	3423	227	41%
Field vegetable	11.8%	22	85%	28091	1577	75%
All crop producers (n)	110					
CDSP III						
Wheat maize & millet	0.9%	50	100	4000	21	40%
Pulse crops	11.1%	47	92%	12091	689	67%
Oilseeds	33.3%	98	100%	19211	3782	86%
Root crops	9.3%	22	70%	15714	570	71%
Spices	28.7%	16	87%	5589	810	55%
Field vegetable	15.7%	37	100%	37444	3492	74%
All crop producers (n)	108					
CDSP IV						
Wheat maize & millet	0.0	0.00	0	0.00	0.0	0.0
Pulse crops	7.8%	35	67%	15667	603	74%
Oilseeds	6.9%	43	88%	16749	752	94%
Root crops	5.2%	6	33%	7000	90	55%
Spices	16.4%	8	58%	4818	340	61%
Field vegetable	26.7%	29	94%	42414	7885	79%
All crop producers (n)	116					

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

Compared with 2019 there has been an fall of 9% in the value of sales of non-rice field crops. This compares with a fall of 21% between 2017 and 2019. Although sales of vegetables, spices and oilseeds all fell there were increases in pulse and root crop sales. Vegetables sales decreased in all three CDSP areas.

3.11.5 Homestead vegetable production

Data in Table 36 shows that about 90% of CDSP IV households, and over 70% in the other areas, cultivate vegetables, root crops, and spices around their homesteads. Compared with the 2019 AOS, there has been a decrease of around 10 to 15 percentage points in the proportion of households who are homestead growers in all three CDSP 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 39).

Table 36: Types of homestead crops grown by farmers

Homestead crops		Percent of homestead farmers who grow		
		CDSP I & II	CDSP III	CDSP IV
Spices	Chili	6.6%	2.6%	5.8%
	Onion	0.0%	0.5%	0%
	Garlic	2.0%	0.0%	2.6%
	Coriander	5.1%	0.5%	4.5%
	Turmeric	7.1%	2.6%	9.0%
Roots & Tuber	Sweet potato	0.50%	0.5%	1.0%
	Sugarcane	0.40%	0.5%	0.0%
Vegetables	country bean	68.9%	76.2%	81.4%
	long bean	41.8%	34.7%	49.4%
	Other bean	7.7%	14.5%	9.0%
	ridge gourd	8.2%	16.6%	10.3%
	bottle gourd	36.7%	45.6%	51.3%
	sweet gourd	24.0%	29.0%	34.0%
	bitter gourd	13.3%	19.7%	30.1%
	ribbed gourd	25.0%	24.4%	34.0%
	sponge gourd	29.6%	15.5%	31.4%
	Okra	5.6%	4.7%	6.4%
	Cucumber	7.1%	6.2%	26.3%
	Radish	12.2%	8.8%	9.6%
	Carrot	0.5%	1.0%	0.6%
	Cauliflower	0.0%	2.6%	1.3%
	Cabbage	0.0%	3.9%	0.0%
	Spinach	4.6%	9.8%	9.0%
	lal shak	18.9%	27.5%	29.5%
	Puishak	12.2%	21.8%	25.0%
Tomato	29.6%	40.9%	40.4%	
Brinjal	28.6%	46.1%	44.2%	
Total number of growers		135	147	127
Total growers as % of all HH		70%	78%	89%
All HH (n)		196	193	156

About 40% of homestead vegetable growers sell some of their production (Table 37) – with more sellers in the CDSP IV area – where 57% of growers make sales and average sales are Tk12,943 per grower per year. 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 almost double that of CDSP III and almost three times that of CDSP I&II.

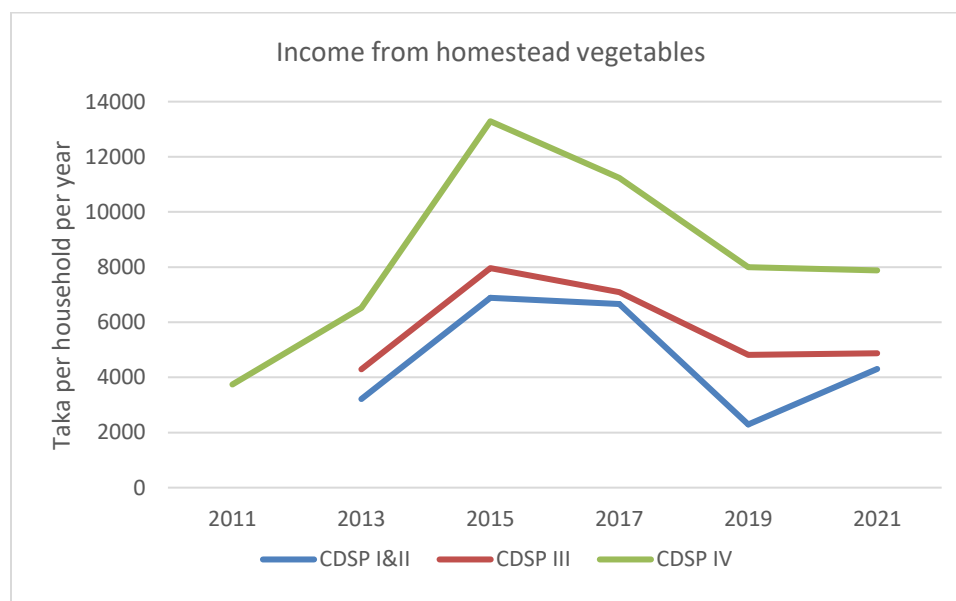
Table 37: Sales of homestead vegetables

	CDSP I&II	CDSP III	CDSP IV
Households growing homestead vegetables as a percent of all households	70.4%	78.2%	88.5%
Households selling homestead vegetables as a percent of all homestead growers	29%	40%	57%
Average sales per grower per year – Taka	15063	12047	12943
The average percentage of homestead production that is sold	52%	52%	60%
Average sales of homestead vegetables- average for all sample household Taka	4304	4872	7384
Average sales of field vegetables – average for all sample household Taka	1577	3492	7885
Average total sales of vegetables – average for all sample household Taka	5881	8364	15269
Homestead sales as percentage of total sales	73%	58%	48%

Compared with the 2019 AOS, a smaller percentage of homestead growers sell vegetables but sales per grower are considerably higher. The overall value of sales of homestead vegetables have increased significantly in CDSP I&II, are much the same in CDSP III and have declined by 8% in CDSP IV.

Figure 12 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 either the value of sales or the value of total production – which may account for some of the sharp year-to-year fluctuations.

Figure 12: Income from homestead vegetables



3.11.6 Fruit and trees

Virtually all sample households have fruit trees (Table 38). CDSP IV households report, on average, 53 fruit trees. Although these are mostly banana (37 per HH in CDSP IV, and 23 per HH in CDSP III and CDSP I&II), almost all households report mango and guava trees. CDSP III households have 39 fruit trees with CDSP I&II having on average 43. Almost all households report owning palm trees – mainly betel 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 40 per HH in CDSP I&II and 24 per HH CDSP IV, and 43 per HH in CDSP III. Taking all trees together, households in the three areas have much the same number of trees.

Table 38: Fruit and trees

Fruit trees	CDSP I&II		CDSP III		CDSP IV	
	% of hh	avg trees/hh	% of hh	avg trees/hh	% of hh	avg trees/hh
Guava	55%	1.54	60%	1.58	63%	2.28
Lemon	38%	0.71	48%	1.11	51%	1.00
Banana	52%	23.07	64%	23.24	72%	36.72
Papaya	40%	3.62	50%	1.80	62%	2.02
Kul	42%	0.93	67%	1.39	71%	1.55
Jamrul	30%	0.49	32%	0.65	28%	0.47
Starfruit	35%	0.50	40%	0.53	30%	0.44
Mango	91%	10.46	84%	6.78	86%	6.79
jackfruit	52%	1.96	47%	1.97	44%	1.88
total fruit	97%	43.30	97%	39.06	99%	53.06
Palm trees						
Beetle	87%	24.97	89%	22.15	81%	11.91
Coconut	94%	13.30	93%	155.47	90%	9.00
Dates	32%	1.93	57%	0.35	44%	0.53
Plam	17%	0.53	14%	0.35	15%	0.53
total palm	96%	40.73	97%	43.09	95%	24.17
Timber trees						
Raintree	98%	18.03	95%	16.44	96%	24.89
Casuarina	41%	5.40	58%	8.49	56%	6.89
Mahogany	75%	11.11	67%	16.18	64%	9.26
Lombu	43%	2.55	42%	3.93	58%	5.17
Other	21%	1.68	32%	4.90	34%	3.13
total timber	46%	6.07	37%	8.56	34%	6.23
Total all trees	99%	41.56	97%	53.13	99%	51.46
Sales of fruit	62%	9906	58%	7507	65%	6419
% consumed	97%	72	99%	69	98%	67
Total hh (n)		196		193		156

Compared with the 2019 AOS, there has been a fall in the number of fruit, palm and timber trees in all three areas. Average sales of fruit per household has also decreased, although fruit sales are worth more than sales of homestead vegetables in the CDSP I&II and III areas, and almost as much in CDSP IV. 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.

3.12 Poultry, livestock and aquaculture

3.12.1 Poultry

Table 39 shows that over 90% 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 (19%) also keep pigeons, with 20% in CDSP III and 18% in CDSP I&II. Compared to the 2019 AOS, there has been very little change in the number of households keeping chickens and ducks, but more now have pigeons. There has also been very little change in the average number of birds per household, but production and consumption of eggs and birds has decreased in all three areas – although less so in CDSP IV. Income from sale of eggs and birds has also decreased. The reason might be due to COVID 19 pandemic situation.

Table 39: Poultry rearing

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
HH rear poultry (% of all HH)	89%	93%	93%	99%
Average nos. of chicken per HH that own	6	7.4	7.8	8.9
Average nos. of ducks per HH that own	7	10.5	10.4	7.9
Average nos. of pigeons per HH that own		16.0	18.6	18.0
Annual production of eggs (Nos./ HH)*	156	514	530	559
HH consumption of eggs (Nos./ HH per year)*	47	268	283	302
Income from eggs (Tk/ HH per year)*	817	2316	2745	2608
No of chickens & ducks consumed HH /year*		13	12	14
No of chickens & ducks sold / HH /year*		9.4	9.1	12.5
Income from sales of chickens, ducks and pigeons (Tk/ HH per year)*		4650	4100	5368

* average for all sample HH (196 of CDSP I&II, 193 of CDSP III and 156 of CDSP IV)

3.12.2 Livestock

Table 40 shows that around half of households rear bovines (primarily cattle), with 57% in CDSP IV, 42% for CDSP III and 46% for CDSP I&II. This proportion has declined since 2019, especially in CDSP III and IV. However the number of animals per household has increased, with increasing demand for milk and meat, though mechanized of cultivation (tractors replacing draught animals) is a disincentive to keep cattle. Compared to the baseline, production, consumption, and sales of milk have greatly increased in CDSP IV. However income from milk sales are higher in CDSP I&II. Since the 2019 AOS there has been a decline in milk sales.

Table 40: Cattle and buffalo

	CDSP-IV Baseline	CDSP-I & II	CDSP-III	CDSP-IV
Number of HH rearing cattle/buffalo (% of all HH)	75%	46%	42%	57%
Number of cattle/buffalo (average for all HH)		2.7	2.7	3.7
Number of HH with milking cows (% of all HH)		32%	25%	35%
Number of HH producing milk (% of dairy cow HH)		100%	100%	100%
Avg. milk production (Lt per year)	114	281	267	283
Avg. milk consumption (Lt per year)	64	129	123	122
Number of HH selling milk (% of dairy cow HH)		87	96	98
Avg. income from milk (avg for dairy cow HH) Tk	2,850	14387	7941	8936
Number of HH selling cattle (% of cattle HH)		52%	51%	52%
Number of animals sold (avg for cattle HH)		0.9	1.0	1.3
Income from animal sales (avg for cattle HH) Tk.		43351	40802	48376

Beef fattening has become an important activity and just over half of bovine rearing households in all three areas report sales in the last year. Although the value of these sales appears to be much larger than the value of milk sales, households spend a significant amount on purchasing animals to fatten and the value added by this activity will be lower. Since 2019 the number of cattle selling households has fallen, along with the number of animals sold and their value per household.

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 41 shows that around 20% to 40% of the CDSP households that own cattle/buffalo do so via share-ownership arrangements and that around 20% of animals are share-owned. Share ownership is more widespread in the CDSP IV area, where it has increased since the 2019 AOS.

Table 41: Share-ownership of cattle and buffalo

		owned	shared	Total*	n
CDSP I&II	% of households	84%	19%	100%	91
	% of animals	87%	13%	100%	243
CDSP III	% of households	80%	20%	100%	81
	% of animals	84%	16%	100%	217
CDSP IV	% of households	67%	43%	100%	89
	% of animals	67%	33%	100%	330

* 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 28% in CDSP III and 16% in CDSP I&II. The proportion of households with goats in CDSP IV has increased – it was only 17% at baseline but ownership in any of the CDSP areas has changed very little since the 2019 AOS, although slightly fewer are owned per household and fewer are sold, with a significant decline in the value of sales.

Table 42: 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	16%	196	2.7	30	1%	196	3.5	2
	Consume	1%	196	3	1	0%	196	0	0
	Sold	4%	196	2.14	7	0%	196	0	0
	Sales Tk	15%	196	4430	30	1%	196	4000	2
CDSP III	Owned	28%	193	2.7	54	0%	193	0	0
	Consume	5%	193	1	10	0%	193	0	0
	Sold	9%	193	2.06	18	0%	193	0	0
	Sales Tk	27%	193	4754	53	0%	193	0	0
CDSP IV	Owned	35%	156	2.39	54	0%	156	0	0
	Consume	2%	156	1.67	3	0%	156	0	0
	Sold	12%	156	1.88	24	0%	156	0	0
	Sales Tk	33%	156	4203	52	0%	156	0	0

3.12.3 Aquaculture

Almost all households have ponds and these are now nearly all cultivated – compared with little more than half at baseline (Table 43). Total fish production for households with ponds in CDSP IV has increased by six times and now exceeds that in the other CDSP areas. The increase is due to support from CDSP in regard to fish culture, pond management, and fingerlings production. In the CDSP IV area, 7% of households also report cultivating fish in sorjon plots – in the other areas this is only 1% or less. Only a very small proportion of fish comes from sorjorn, but the output of these plots has been included in data in Table 46 on production, consumption, sales and income. Since the 2019 AOS, average pond size, cultivated area and production have all increased, but the amount sold has fallen significantly in the CDSP III and IV areas. Fish prices have also fallen resulting in a sharp fall in income from fish sales in CDSP III and IV. This might be related to the COVID pandemic.

Table 43: Aquaculture

		CDSP IV Baseline	CDSP I&II	CDSP III	CDSP IV
Owning a fish pond	% of all HH	99%	99%	100%	100%
Cultivating fish	% of pond HH	51%	99%	100%	100%
Consuming fish	% of pond HH		99%	97%	97%
Selling fish	% of pond HH		41%	37%	58%
Area of pond	Decimal/pond HH		30.6	27.3	34.7
Area cultivated	Decimal/pond HH		26.1	26.2	29.1
Total production	Kg/pond HH	43	228	180	260
Yield	kg/decimal	1.7	8.71	6.81	8.45
Amount consumed	Kg/pond HH	29	89	90	92
Amount sold	Kg/pond HH	14	77	34	64
Average price	Tk/kg	105	133	124	123
Sales value	Tk/year	1,470	12122	4928	8834

3.13 Food security

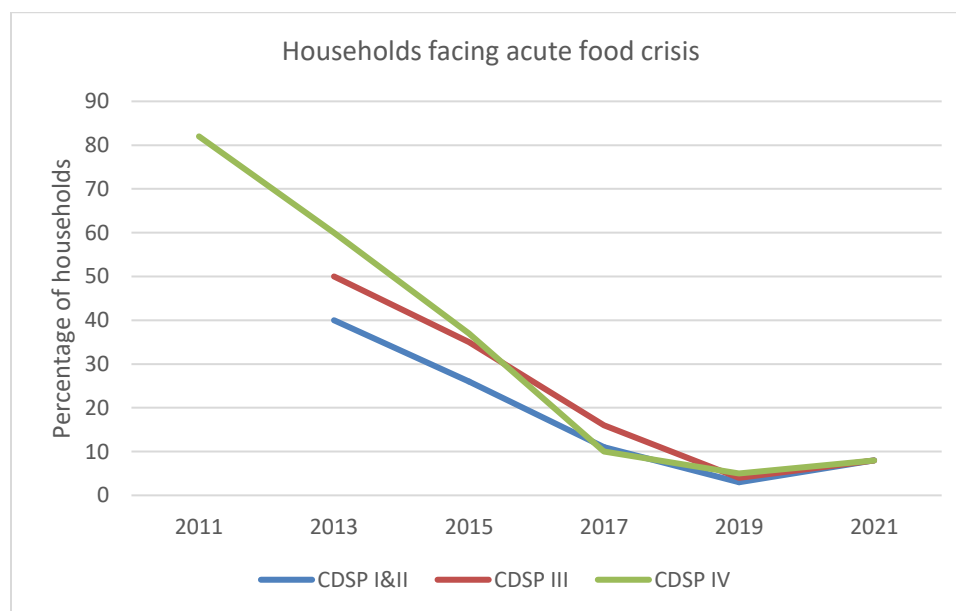
Survey respondents were asked how many months of a year they can meet their basic food (i.e. rice) needs from their production. Table 44 shows that, on average, CDSP IV households can meet household basic food needs from their own production for 11 months, 4 months more than in the baseline situation. In the older CDSP areas the average period is much the same – maybe a little worse than CDSP IV. This had not changed since the 2019 AOS.

The respondents were also asked whether they faced any acute food crisis during the last 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 8% of CDSP IV households said that they faced such a crisis, a significant improvement compared with 82% in the baseline situation, and similar to that in CDSP I&II and CDSP III. However, the numbers of households reporting a food crisis has increased over the last two years – it was 3% to 5% in the 2019 AOS. Further data on food security and nutrition is in Annex III.

Table 44: Food security

	CDSP IV Baseline	CDSP I & II	CDSP III	CDSP IV
Average months in a year HH is able to meet the basic food needs from its own production	7	10	10	11
HH faced acute crisis in the last year (% of HH)	82%	8%	8%	8%
Sample size (n)	1400	196	193	156

Figure 13: Households facing an acute food crisis



3.14 Shocks and crises

Respondents were asked (with some probing) whether household members had faced any kind of accident, loss, or problem (called ‘disaster’) during last 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 were obtained through appropriate questions. It should be noted that during the baseline survey the respondents were asked to respond for the last five years, rather than just for the last one year as in the AOS.

Table 45 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: (i) loss of crops – which has now been reduced significantly (to 19.9%) but is still a source of loss – and (ii) displacement due to cyclonic flood – which has been reduced to a low level (0.6% of CDSP IV households report). Serious illness of household members remains a major shock – with 29% 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 (reduced from 15% to 0.6%), and dacoity and theft in house/ business (reduced from 15% to 1.3%). But over the last few years the number of CDSP IV households reporting losses from river erosion has increased – in 2017 it was 8%, in 2019 3%, and in 2021 17.9%, and is now considerably more than in the older CDSP areas. It should be remembered that the survey could not cover those households (128 out of 600) who moved away in the last year having lost their land to the river due to severe erosion, including 42 from Caring Char which has totally disappeared. This number of displaced households is much higher than in 2017 (30) or 2019 (40). Data in section 3.3

Table 45: 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	5.6	3.6	5.8
Serious disease of any member	20	19.9	29	23.7
Displacement due to flood/ cyclone/ tornado	42	0	1	0.6
River erosion	8	0	2.1	17.9
Loss of crop due to flood/ drought	47	13.3	16.1	19.9
Loss/ death/ theft of livestock/ poultry	15	0	0	0.6
Damage to house from flood or storm		2	2.1	2.6
Dacoity/theft/ mastans in house or business	15	1.5	1	1.3
Loss of business/ investment	1	1	1.6	2.6
Divorce/ separation	1	0.5	0.5	1.3
Dowry	3	0	0	0
Socio-political harassment, including bribes and tolls	1	5.6	13.5	7.7
Women harassment (Violence)	0	5.6	3.6	5.8
House destroyed by fire or other reason	2	0	1	0.6
Others	--	2.6	0.5	6.4
Total responses (n)		84	107	94
Sample size (n)		196	193	156

Respondents were asked to rank the impact of shocks as severe, moderate, or low (Table 46). Relatively few were rated as low impact, with most falling into the moderate category. River erosion in CDSP IV is a severe shock as it means loss of land as well other establishments like living houses, cow sheds, and trees.

Table 46: 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	8.7%	1.5%	0.5%	2.0%	1.0%	0.5%	3.8%	1.9%	0%
2	Serious disease of any member	5.6%	13.8%	0.6%	6.7%	20.7%	1.6%	4.5%	17.9%	1.3%
3	Displaced by flood, cyclone	0%	0%	0%	0%	1%	0%	0.6%	0%	0%
4	River erosion	0%	0%	0%	2.1%	0%	0%	17.9%	0%	0%
5	Crop loss from flood/drought	1%	1%	0.6%	0.5%	0%	0%	3.2%	1.9%	1.3%
6	Loss of livestock/poultry	3.1%	9.7%	0.5%	4.7%	10.9%	0.5%	5.8%	12.8%	1.3%
7	House damaged by flood/storm	0%	0%	0%	0%	0%	0%	0.6%	0%	0%
8	Dacoity/ Theft/ Mastanias	1%	0.5%	0.6%	0%	2.1%	0%	1.3%	0.6%	0.6%
9	Loss of business/investment	0.5%	0%	0%	2.1%	2.1%	0%	0.6%	3.2%	0%
10	Divorce/separation	1.0%	0.5%	0%	0.5%	0.5%	0%	1.0%	0%	0%
11	Dowry	0.5%	0%	0%	0%	2.1%	0%	1.3%	1.3%	0%
12	Socio-political harassment	0%	1%	0%	0.5%	1.0%	0%	0%	0%	0%
13	Women harassment (Violence)	0.5%	0%	0%	0%	0.5%	0%	1.3%	0%	0%
14	House destroyed by fire etc	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	Others	1.5%	4.1%	0.0%	6.7%	6.7%	0%	0.6%	7.1%	0%
	Sample size (n)	196			193			156		

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 47. 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.

Compared with the 2019 AOS, there is greater use of savings and help from relatives, but fewer people take loans, and more are inclined to do nothing.

Table 47: Actions to recover from shocks

	CDSP I&II	CDSP III	CDSP IV
Sell land	2%	2%	2%
Sell livestock	4%	6%	4%
Sell trees	4%	0%	0%
Use savings	74%	71%	75%
Mortgage land	6%	1%	4%
Mortgage other property	0%	0%	0%
Help from relatives	12%	9%	13%
Take loan	19%	16%	18%
Take materials on credit	7%	21%	12%
Aid or relief	1%	1%	0%
Complain to authorities /Mobilise community groups / NGO	0%	1%	0%
Do nothing	26%	60%	57%
Other	2%	1%	4%
Total**	157%	189%	189%
Total responses (n)	84	107	91

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

Status of erosion along river banks: In recent years (since 2016) there has been serious erosion along the bank of the River Meghna. Between 2017 and 2019 Caring Char was completely eroded. Some parts of river bank areas Char Nangulia, Noler Char, and Boyer Char were seriously damaged and eroded. In this study most (86%) char dwellers of CDSP I&II have reported that the river is far away, so they are safe and they have no risk of erosion. Over half of the households of Boyer Char (CDSP III) reported that the river bank is eroding and approaching their homesteads, but 40% say they are still safe because the river is far away from their homes. On the CDSP IV chars, 88% of households say that the river bank is eroding and approaching their homesteads.

Table 48: Status of erosion along river banks

	Risk from river erosion
CDSP I&II (Responded 11%)	(86%) The river is far away, we are safe. No risk of erosion (5%) Living peacefully, no robbery, no fear of missing household goods. (5%) Severe erosion, Need to fell blocks on the river to stop erosion
CDSP III (Responded 35%)	(53%) The river bank comes to the homestead due to erosion and chatlakhali canal eroded (40%) The river is far away, we are safe. No risk of erosion (6%) Broken of parts of embankment in coastal chars
CDSP IV (Responded 37%)	(88%) The river bank comes to the homestead due to erosion and chatlakhali canal eroded (9%) The river is far away, we are safe. No risk of erosion

Strategies for mitigating and preventing with natural disasters: Coastal regions have always been disaster-prone and affected by tidal surges, storms and cyclones. Before CDSP, char dwellers were often affected by natural disasters. Since the inception of CDSP, huge climate-resilient and climate-protection infrastructure have been built. These include 103 cyclone shelters, 105 km of water control embankments,

7 rural markets, 689 km of rural roads, 244 bridges & culverts, 2075 DTWs, and 41,518 hygienic latrines for individual households. The study reveals that char dwellers now have an enhanced coping strategy for disasters. Over half of households in all three domains (CDSP I&II, CDSP III, and CDSP IV) have reported planting trees as a means of protection, and over one third (37% to 43%) have renovated their living houses using CI sheet and bricks.

Table 49: Strategy to cope with natural disasters

Enhanced capabilities to cope with misery/disaster? How?	
CDSP I&II (Responded 35%)	(57%) Planting trees on the homestead (43%) Renovated living houses (25%) Due to the construction of the cyclone centre by CDSP
CDSP III (Responded 51%)	(55%) Planting trees on the homestead (29%) CI sheet tin shed, brick wall house quite strong (28%) Due to the construction of the cyclone centre by CDSP
CDSP IV (Responded 38%)	(57%) Planting trees on the homestead (37%) Renovated living houses (27%) Due to the construction of the cyclone centre by CDSP

4. Summary and conclusion

4.1 Comparison of some selected indicators across rounds of AOS

Table 50 shows values and indications of increase or decrease for respective selected indicators for CDSP IV households across the baseline and 1st to 8th rounds of annual outcome surveys.

Table 50: Comparison of some progress indicators for CDSP IV

Indicators	Base-line 2011	Annual Outcome Surveys								Change 2019 to 2021
		2012	2013	2014	2015	2016	2017	2019	2021	
Agriculture* as principal occupation of household head (%)	37	45	45	48	24	22	29	22	29	32%
Day labour as principal occupation of household head (%)	31	29	29	20	36	30	29	31	18	-42%
Straw made roof of main house (%)	82	66	55	33	42	28	19	8	2	-75%
Tin made roof of main house (%)	16	34	43	67	58	70	80	90.5	89	-2%
Average distance (in meters) of drinking water source in dry season and wet season	345	154	112	120	50	44	78	63	89	41%
	418	183	133	135	65	56	87	71	100	41%
Average value of HH Assets (BDT)	35162	43797	61485	99204	126451	212010	301418	270448	296391	10%
Annual HH Income (BDT)	71951	89800	107771	109207	163009	189627	280243	341502	410065	20%
Rice Production (MT/Ha)	1.9	2	2.1	2.2	2.3	2.9	3.3	3.54	3.95	12%
Income from Homestead gardening (BDT/HH)	3742	6155	6.526	4866	13288	10115	11234	7997	7885	-1%
HH facing acute food crisis (%)	82	66	60	53	37	35	10	5	8	60%

* including livestock

4.2 Summary

The 2021 AOS shows that the average household size is over seven persons – CDSP households continue to be larger than is usual in rural Bangladesh. The vast majority of children (99% of those aged 5 to 16 years) are **going to school**, slightly more than in 2019. Participation in **field-level institutions** has generally decreased in all CDSP areas since 2019 as more time passes since active support for these institutions ceased, although membership of NGO groups is being maintained at a high level in the CDSP IV area. In the CDSP IV area, 67% of HHs have **legal titles for their land**, although 29% of the area of land occupied is still occupied through informal arrangements.

Households have made substantial **investments in their land**, mainly in building houses, but also in developing land, digging fish ponds and leasing in more land. The average investment per household in the CDSP I&II area is Tk 388,293, in CDSP III Tk 840,519 and in CDSP IV Tk 239,784. Obtaining land titles and investing in their land has resulted in families feeling more secure, improved their social status, increased mobility and participation in social events and organisations. Life within families has also improved.

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 the baseline to 28% now, while petty/small trade increased from 9% to 21%. Day labour is also a widespread occupation, being the principal occupation of 18% of CDSP IV household heads, less than 31% at baseline. In all areas the primary occupation of the spouse of the household head is overwhelming that of housekeeping, with livestock rearing 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 conditions and having permanent settlement through receiving 'khatians'. The better availability of building materials 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 90 metres. This saves both labour and time for the women of the households. **Sanitation** has also been greatly improved, with almost all CDSP IV households now using ring slap or hygienic latrines, most households washing hands with soap before meals, and over 70% after using the latrine.

Households across CDSP show improvement regarding **immunization of children**, and over 95% are now vaccinated. The visits of Health Workers to the community have increased in all CDSP areas, both 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 since the start of CDSP IV.

Although there has been a large increase in the value of **household and productive assets** since the start of CDSP IV, the total value of all assets has stabilised over the last four years – mainly due to the lower value estimated for trees.

Overall **average household income** in CDSP IV has increased by over four times since 2011 and has largely caught up with income in the older CDSP areas, being 10% less than households in CDSP I&II and virtually the same as in CDSP III. Compared with the previous AOS in 2019, both farm and non-farm income has increased by 20% for CDSP IV households, while farm income has slightly declined in the CDSP III area but was offset by increased non-farm income so total income here increased by 14%. However, increases for both farm and non-farm income have been highest in the CDSP I&II area, where overall income has gone up by 33%. Agriculture contributes almost one third of total household income in the CDSP IV area and around one quarter in the older CDSP areas – although farming activities also contribute to non-farm income.

Over the last four years in all three areas livelihoods are becoming more specialised, with the average number of livelihood sources per households falling. However, households still have multiple sources –

with the average being 4.4 in CDSP I&II, 4.9 in CDSP III and 5.3 in CDSP IV. Although multiple sources spread risk, specialisation allows resources and labour to be focused where returns are greatest.

In the older CDSP areas most (usually over 80%) farmers report no **damage** to aman paddy and rabi crops from salinity, flooding and waterlogging. In the CDSP IV area typically half of all farmers report damage – a significant increase since 2017.

All sample households have homestead **land**, and virtually all have a pond – so interventions in homestead agriculture and aquaculture have the potential to reach all households. Over half (57%) of CDSP I&II and III households have cultivated land as do almost three-quarters (74%) in CDSP IV. The average area per household of cultivated land is higher in the CDSP IV sample – as is the area of fishponds.

Cropping intensity is about 163% in CDSP I&II, 165% in CDSP III and 130% in CDSP IV. Since 2019 cropping intensity has increased in the older CDSP areas but is little changed in CDSP IV.

Paddy is by far the most important crop, grown by almost all farmers. Over the last five years boro has become a significant crop in CDSP I&II and CDSP IV. 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 partly offset by a decline in the aman area in the older CDSP areas, but overall there has been an increase in paddy area in all the CDSP areas.

Average **paddy yield** is around 3.5 tons/hectare, and has risen since 2017, except in CDSP III. In all CDSP areas 53% of all paddy produced is sold, with just over one third of all households (and half of paddy producers) selling paddy. Compared with the 2019 AOS, 7% fewer households produce paddy, but about 10% more paddy is sold.

Other crops are grown largely for sale. Overall field vegetables are the most important of these crops in terms of the value of sales, although the value of oilseeds (mainly soybean) slightly exceed that of field vegetables in CDSP III. Compared with 2019 there has been a fall of about 10% in the value of sales of non-rice field crops. Declines in sales of vegetables, spices and oilseeds have more than offset an increase in sales of pulses and root crops.

Homestead production: almost 90% of CDSP IV households cultivate vegetables and spices around their homesteads, as do over 70% in the older areas. Over 30% of homestead vegetable growers sell some of their production, this being 57% in the in the CDSP IV area. Compared with the 2019 AOS, fewer households grow vegetables, a smaller percentage of homestead growers sell vegetables but sales per grower are considerably higher. The overall value of sales of homestead vegetables have increased significantly in CDSP I&II, are much the same in CDSP III, and have declined by 8% in CDSP IV.

Almost all households have **fruit and timber trees**. The average number of trees per household has fallen since 2017. Compared to 2019 the value of fruit sales has decreased, but fruit sales are worth more than sales of homestead vegetables in the CDSP I&II and III areas, and almost as much in CDSP IV.

Poultry are reared by over 90% of households. The average number of birds per household has increased since the start of CDSP IV, as has egg and meat production. Compared to the 2019 AOS, there has been very little change in the number of households keeping poultry, or in the average number of birds, but production and consumption of eggs and birds has decreased – although less so in CDSP IV. Income from sales has also decreased - maybe be due to the COVID 19 pandemic.

Less than half of all households **rear 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. Compared to the baseline, production consumption and sales have greatly increased. Since 2019, fewer households rear cattle, but numbers of animals per rearing household have increased, although sales have declined. Relatively few households keep sheep and goats.

Almost all households have **fishponds** and these are now nearly all cultivated – compared with little more than half in 2011. Since the 2019 AOS, average pond size, cultivated area and production have all

increased, but the amount sold has fallen significantly in the CDSP III and IV areas. Fish prices have also fallen resulting in a sharp fall in income from sales. This might be related to the COVID pandemic.

In the CDSP IV area the proportion of households facing acute **food crisis** has reduced from 82% to 8% since 2011 and is now the same as in the older CDSP areas. However the numbers of households reporting a food crisis has increased over the last two years – it was 3% to 5% in the 2019 AOS.

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. But over the last few years the number of CDSP IV households reporting losses from river erosion has increased – in 2017 it was 8%, in 2019 3%, and in 2021 18% - considerably more than in the older CDSP areas. Moreover the survey could not cover those households (128 out of 600) who moved away in the last year having lost their land due to river erosion.

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 2019 when the previous AOS was carried out?

4.3 Changes in CDSP IV 2019 to 2021

Data from the 2019 and 2021 AOS shows that a number of positive gains have been made in CDSP IV over the last two years. These include:

- There has been an increase the area of paddy, with a further increase in the proportion of more productive boro. The overall average yield of paddy has also risen. There has been an increase in the volume and proportion of paddy sold.
- The area of field vegetables, the most important non-rice crop, has increased
- The average pond size has increased, as has the volume of fish produced.
- Average household income has increased from both farm and non-farm sources. Income from crops has increased, although less is earned from livestock and poultry.
- The value of productive and household assets has increased – especially assets for non-farm enterprises.
- Fewer household live in houses with straw or leaf roofs
- More households are washing their hands with soap before meals or after using the latrine.
- More children are being vaccinated
- More children, especially those under the age of 5 years, are going to school

On the other hand, the AOS data also shows a number of indicators which have worsened for CDSP IV:

- Fewer households now have land titles, although more have purchased land
- There has been a fall in the average area of cultivated land per household, largely offset by a larger area of homestead and pond. But the proportion of households cultivating land is unchanged.
- Fewer households are members of CDSP Field Level Institutions – although more do belong to NGO groups
- More farmers report damage to crops from salinity and flooding, but not from waterlogging
- More households report being severely affected by river erosion
- The area of non-rice crops (other than vegetables), including pulses, spices and oilseeds, has reduced.
- Sales of non-rice crops (including field vegetables) are lower.
- Fewer households report producing homestead vegetables, and a smaller percentage of these growers sell vegetables, and the overall value of sales has declined.
- The average number of timber and fruit trees owned by households has fallen, as has the value of sales of fruit.

- Poultry production, consumption and sales have decreased – but there is little change in poultry ownership.
- Fewer households are rearing cattle, although the number of animals has increased. Consumption and sales of milk are lower, as are sales of live animals. Goat sales are also lower.
- The volume of fish sold, sales price and income from fish sales have significantly reduced.
- Wealth ranking shows a decline in number of rich households, with more in the poor category.
- The average distance to a source of drinking water has increased.
- Fewer households are using sanitary types of latrine.
- There has been a small decline in regular visits to households by health workers.
- Fewer couples are adopting family planning.
- More households report an acute crisis in the supply of food for their families

Conclusions for recent trends in CDSP IV:

Livelihoods and living standards have been transformed for the inhabitants of the CDSP IV chars since this phase of the project started over 10 years ago, and in many ways these chars are now equal with those in the older established areas of CDSP I, II and III. The acquisition of formal land title has encouraged considerable investment in land and improved the social status and security of the households receiving these titles.

In the CDSP IV area over the last two years, average household income from both farming and non-farm occupations has increased, and the value of household and productive assets has risen. More paddy is being grown, offsetting a decline in some non-rice crops. The overall yield of paddy has increased and paddy sales have risen (reflected in increased income from crop production). Farmers will have benefited from an increase in crop prices compared with two or three years ago.

Despite this progress, a number of events have had an adverse impact on the CDSP area. First, continuing river erosion is displacing households and damaging (i.e. removing) water management infrastructure, leaving the area more vulnerable to saline intrusion and flooding. In this AOS more households report being severely affected by river erosion, and more farmers report crop damage from salinity and flooding. Compared with previous rounds of the AOS, a larger number of panel sample households could not be contacted as they had been displaced due to land loss from erosion.

Second, the COVID-19 pandemic has affected markets, making it more difficult to sell fresh produce and to procure some crop inputs. It may also have affected non-farm enterprises and employment, although it is noted that income from both farm and non-farm sources has risen. Compared with the 2019 AOS, sales of fresh produce - vegetables, fruit, poultry, milk and live animals - have all fallen. Contact with local government agencies and service providers may have weakened, leading to less contact with health services and possible problems of maintenance of drinking water tubewells.

Third, a longer period has also elapsed since the end of the intensive activities of CDSP IV and membership of the Field Level Institutions established by CDSP has declined.

There has been a small increase (from 5% to 8%) in the percentage of households saying they have faced an acute crisis in the supply of food for their families. Although the area under paddy production has increased as has yield per hectare, higher paddy prices and the disruptions from the COVID pandemic will have made things harder for the minority of households who are not paddy producers. A similar proportion of households in the older CDSP areas also report an acute food crisis – these areas are better off, but a higher proportion of households do not cultivate any land at all, and so are more reliant on purchased food.

5. Case studies on best practices and lessons learned from CDSP

5.1 Case Study on Environmental Friendly Rope Made from Naturally Grown Hogla (Daripata)

Abstract: Hogla also known as 'daripata' in the coastal region of Noakhali, is an aquatic tall grass growing in a cluster. Its scientific name is *Typha elephantiana* of the family *Typhaceae*. Hogla (*daripata*) is a perennial plant that grows in low-lying land and ditches/ponds. The Daripata plant is an economic crop. Mat, fence and roof thatch are made of it. In Boyer Char, baskets, ropes, and different kinds of handicrafts are also made out of dried materials. A couple of families of Boyer Char, Hatiya are making traditional rope from Daripata. We have found that those ropes are exported to Middle-East countries by some vendors due to their environmentally friendly behaviour- easily decomposable to soil and improve soil health, it is used as a replacement for plastics or nylon ropes which are not decomposable and deteriorate soil health.

5.2 Case study on the formation and strengthening of TUG-an effective way to maintain DTWs established by CDSP

Abstract: DPHE is one of five GoB agencies of CDSP. DPHE is the national lead agency for the provision of safe drinking water. As an implementing agency of CDSP, till 2018, a total of 3,229 DTWs including test tube wells have been installed (Ref: DPHE DPP p. 4). During CDSP B(AF) period, 1965 DTWs will be installed across all chars of CDSP I, II, III, and IV phases. Installation of DTWs and keeping them operational requires continuous maintenance for a sustainable supply of safe drinking water. Formation and strengthening tube well user groups (TUG) has been found a very fruitful approach to keep DTWs operational. Aleya and Josna have mentioned that they have heard CDSP and partner NGOs have been working for more than 15 years, to change char dwellers' socio-economic conditions. Upon hearing of the resumption of CDSP activities after a long hiatus, however, they have heard that the group will receive training in health awareness and tube well repair. Josna said if one DTW well is installed for every 10-12 HHs in all the awakened chars; their families will then be able to use safe water.

5.3 A case study on women's empowerment with the participation of the social forestry group (SFG)

Abstract: To complement the protection provided by the embankments and other infrastructure, CDSP in cooperation with the Forest Department (FD), established coastal protective plantations of trees on mudflats, foreshores, and embankments using a social forestry approach. Coastal plantations as a protective "green belt" can significantly reduce the damage from cyclones – both to the embankment itself and to the surrounding area. A total of 792 social forestry groups (SFGs) having 19,800 members (40% women) have actively participated in the plantation works after signing a legal registered tripartite agreement having a 21-code of conduct by which SFGs have the right of 55% of the share of final harvests from matured plantations. The others' rights are Forest Department (10%), Landowner (20%), Replanting fund (10%), and local Union Parishad (5%). Besides, by Section 3/21 of the agreement, SFG members have grown papaya, okra, pigeon peas, etc., and also get the forest twigs and branches, obtained from pruning, thinning, and other maintenances of plantations. All SFG families are now using forest twigs and branches as firewood. As a result, cooking by the use of kerosene oil has almost disappeared.

**Char Development and Settlement Project (CDSP-B(AF)
Annual Outcome Survey (Round 8) Questionnaire 2021**

CDSP Phase:

I	II	III	IV	B
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Sample ID:

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BL Sample ID:

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1. Profile Information:

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

Sex: M/F: Male/Female

Address:

Vill/Somaj:.....,

Char:.....Union:.....

Upazila:..... District: Noakhali / Chittagong

Mobile number :.....

National ID Card/birth certificate No,

Land mark: Nearby-Mosque/school/House of Elite person):

Write here:

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 7 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?

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	

7b. What type of land is it?

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

<< **CHECK THIS**

7.c Investment on Land for development after getting with Khatian/Land titling

Newly built/established	Y/N	Approximate cost in Tk.	Remark if any
Living house?			
Ponds(s)?			
Sorjon plot?			
Land used for crop?			
Land used for vegetable?			
Given Cod/rented?			
Did you sell land?			
If yes, how much land sold?			
Why have you sold land?			

7.d Social impact

Impacted areas of social status	Y/N	Explain how/reason	Remark if any
Are you secured than before?			
Have your status changed?			
Mobility changed?			
Better family life?			
Better bondage in conjugal life?			
Your somaj at risk of river erosion?			
Enhanced capabilities to cope up with misery/disaster?			
How?			

8. Housing:

Type of House	Size (Length X Width) Feet*	Type of Floor	Type of Wall	Type of Roof
Main House				
<p>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</p> <ul style="list-style-type: none"> 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/ <i>Khaat</i>			
2	Almira			
3	Showcase			
4	Chair/table			
5	<i>Shinduk</i> (Wooden box/Trunk-Tin)			
6	<i>Alna</i>			
7	Ceiling/Table Fan			
8	Radio/Cassette Player			
9	B&W TV			
10	Color TV			
11	Mobile Phone			
12	Sewing machine			
13	Ornaments			
14	Bicycle			
15	<i>Rickshaw</i> /Van			
16	<i>Motor cycle</i>			
17	Auto rickshaw battery operated			
18	Sprayer			
19	Laptop			
20	Bullock cart			
21	Solar			
22	Shop with land ownership			
23	Tractor for cultivation			
24	Boat			

Sl	Type of Assets	Own[Tick]	Quantity	Present Value (Taka)
25	Mechanized boat			
26	Thresher			
27	Water pump			
28	Fishing net (Type:.....)			
29	Fruit/timber trees			
30	Cow			
31	Buffalos			
32	Goat			
33	Sheep			
34	Chicken			
35	Duck / goose			
36	Pigeon			
37	Rice husking machine			
38	Trolley motorized			
39	CNG Auto			
40	Others (specify			

12. Crops grown

	Area Cultivated			Area Cultivated	
	In field (decimal)	In homestead (tick if grown)		In field (decimal)	In homestead (tick if grown)
<u>Cereals</u>			<u>Vegetables</u>		
Aus			Country Bean		
Amon			Long Bean		
Boro			Other type of bean		
Maize			<i>JaliKumra</i> (ridge gourd)		
<i>Cheena</i> (millet)			Bottle Gourd		
<u>Pulses</u>			Sweet Gourd		
<i>Keshari</i>			<i>Korola</i> (Bitter gourd)		
<i>Mung</i>			<i>Jinga</i> (Ribbed gourd)		
<i>Felon</i>			Dhundul (Sponge gourd)		
<i>Moshuri</i>			Okra (ladies finger - <i>bhindi</i>)		
<i>Mash Kolai</i>			Cucumber		
<u>Oilseeds</u>			Radish		n
Soybean			Carrot		
Mustard			Cauliflower		
Groundnut			Cabbage		
Sesame (<i>til</i>)			Spinach		
<u>Spices</u>			<i>Lal Shak</i> (Red amaranth)		
Chilli			<i>Puishak</i>		
Onion			Tomato		
Garlic			Brinjal		

Coriander				Melons		
Turmeric				Water melon		
Roots and tuber				Musk melon		
Sweet potato						
Cassava				Total area of <i>sojon</i>		
Fodder crops				Total area of field 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 6 years ago		maunds
Aus – local			yes / no	Use of paddy of all types	
Aus – HYV			yes / no	Consumed at home	
Aman – Razashail			yes / no	Kept for seed	
Aman – HYV/IRRI			yes / no	Sold	
Aman – other			yes / no	total (= total production)	
				Total income Tk. *	
Boro – HYV, hybrid /Hudinnya IRRI			yes / no	Income from paddy grass/ Khar	
total production				Total production 6 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 prod. consumed	Approx % of production sold*	Did you grow these crops 6 years ago?
Wheat, maize and millet (<i>cheena</i>)					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 months including 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	
	Lemon	
	Banana	
	Papaya	
	Mamgo	
	Jamrul	
	Starfruit	
	Kul	
	Total	
Palm/Date/Coconut etc. trees	Beetle	
	Coconut	
	Juice	
	Total	
Timber and fuel wood	Koroi	
	Jhau	
	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 since start of CDSP
Salinity	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead veg			
	Trees			
Flooding (Excess)	Aus			
	Aman			

rainfall)/ ingress from river / sea	Boro			
	Rabi field crops			
	Homestead vegetable			
	Trees			
Drainage (lack of/damage of sluices, khals, bridge, culverts)	Aus			
	Aman			
	Boro			
	Rabi field crops			
	Homestead vegetable			
Drought (lack of rainfall)		- Aus		
		- Aman		
		- Boro		
		- Rabi field crops		
		- Homestead vegetable		
		- Trees		

Damage in last 12 months: 1=no damage, 2=slight damage, 3=moderate damage, 4=heavy damage, 5=total loss

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

16. Poultry

	Chickens	Ducks & Geese	Pegion
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/Kandi crop
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	
Quantity of present stock (approx.) in the pond		

20. Household Annual Income: in last 12 months

Sources of Income	Amount (Taka)	Sources of Income	Amount (Taka)
Wage from daily labour		Income from sale of Khar	
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		Date Juice	
Livestock Rearing		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
 Since CDSP: rich / medium / poor / very poor

23. 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)		
<p>*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, <i>Salish</i> with the UP, By mobilization of community groups/CBO/ NGOs, 12- Did nothing, 13. Others (specify).....</p>			

24. 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). (ATTENTION: Applicable for CDSP IV sample HHs)
 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 site		
2	Sluice DS I over caring khal near Shantipur		
3	Sluice DS II over South Katakhal khal at Nangulia site		
3	Sluice DS III over Hoar khal-I at Noler Char site		
4.			
5.			
<p>*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, <i>Salish</i> with the UP, By mobilization of community groups/CBO/ NGOs, 12- Did nothing, 13. Others (specify).....</p>			

25. 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

Describe:

Thank you for your kind cooperation

Comments: -----

Annex II

List of missing sample and replacement sample households List of new samples taken against migrated sample households

ID	Old IDs	Phase	Name	Fathers Name	H/Wife Name	Bari	Location: Samaj /Upazila /Near by
42020038	42020028	4	Abu Taher	Azi Ullha	Rasheda Khatun	Abu Taher bari	Faridpur , Char Nangulia
42020039	42020029	4	Jamsed Uddin	Mojibul Haque	Julia Begum	Bash bapari jamsed bari	Faridpur , Char Nangulia
42014027	42014010	4	Momotaj Begum		Late Mojibur Rahman	Rupshar mar bari	Rani Gram , Char Nangulia
42082033	42082020	4	Md Nizam Uddin	Shohid Ullha	Aleya Begum	Nizam Uddin bari	Ismail Bazar , Char Nangulia
42082034	42082024	4	Jaynal Abidin	Serajul Hoque	Hosneara	Jaynal Abidin bari	Ismail Bazar , Char Nangulia
43019026	43019021	4	Altaf Hossain		Refola Begum	Altaf Hossain bari	Uttar Musa Pur , Noler Char
45014014	45014010	4	Md sahab Uddin	Mojaffor Islam	Taslina Begum	Sahab Uddin sodagor bari	Bangla Bazar , Urir Char
45001020	45001002	4	Md Ali Ahammad	Omor Ahammad	Fatema Begum	Ali Ahamad bari	Colloni Bazar , Urir Char
45001021	45001010	4	Md luyb Khan	Late Md Ismial	Johura Begum	luyb Khan bari	Colloni Bazar , Urir Char
42019001	42028011	4	Md Nur Nobi			Nur Nobi bari	Rasel Gram , Char Nangulia
42019002	42028012	4	Sahed Sodagor		Sahena Begum	Sahed Sodagor bari	Rasel Gram , Char Nangulia
42019003	42028013	4	Md Akter Hossain	Late Dalil Uddin		Akter mestirir bari	Rasel Gram , Char Nangulia
42019004	42028024	4	Md Sohid Ullha			Khalek/ Sohid bari	Rasel Gram , Char Nangulia
42019005	42028025	4			Shafa Begum	Belel dubi bari	Rasel Gram , Char Nangulia
42019006	42028026	4	Md Sana Ullah			Sana Ullah Hujur bari	Rasel Gram , Char Nangulia
42019007	42028030	4	Md Jamal Uddin			Jamal Uddin bari	Rasel Gram , Char Nangulia
42019008	42028031	4	Shamsun Nahar	Late Abdul Mannan	Late Abu Sayed	Mojid bari	Rasel Gram , Char Nangulia
42019009	42028032	4	Md Rofiq Ullah	Lt.Mofajol Hossain	Fahima Khatun	Dhakia Rofiq bari	Rasel Gram , Char Nangulia
42019010	42028033	4	Md Ibrahim	Lt.Molana Abul Kashem	Romena Begum	Khalek hujur bari	Rasel Gram , Char Nangulia
42019011	42028034	4	Ayesha Khatun	Ataur Rahaman		01825247371	Rasel Gram , Char Nangulia

ID	Old IDs	Phase	Name	Fathers Name	H/Wife Name	Bari	Location: Samaj /Upazila /Near by
42019012	42028035	4	Amir Hossan	Late Boshir Ullah	Nur Nahar	Amir Hossan dubiolar bari	Rasel Gram , Char Nangulia
420190013	42028036	4	Sahed	Mojammel	Jasmen Akter	Sahed majir bari	Rasel Gram , Char Nangulia
420190014	42028041	4	Md Jamal Uddin	Late Sofi Ullah	Roksana	01876696371	Rasel Gram , Char Nangulia
43012001	43025003	4	Md Salim Uddin	Lt. Monsur Ahammd	Monowara Begum	Salim mamber bari	Poshchim Adorsho Gram, Noler Char
43012002	43025004	4	Md Hanif	Late Ozi Ullah	Hasna Begum	Siddiqs bari 01834984403	Poshchim Adorsho Gram, Noler Char
43012003	43025005	4	Md Jaker Hossain	Mahfujul Haque	Sobura Begum	Jaker bari	Poshchim Adorsho Gram, Noler Char
43012004	43025006	4	Tulsi Rani Mujumdar	Late Joy Kumer Mujumdar	LateUpondro Chandro Mujumdar	017988251191	Poshchim Adorsho Gram, Noler Char
43012005	43025007	4	Riaj Uddin	Jamal Uddin	Taslima Begum	Robiul dokaner uttar pasha	Poshchim Adorsho Gram, Noler Char
43012006	43025008	4	Sarwoare		Saluka Begum	Sarwoare bari 01634856079	Poshchim Adorsho Gram, Noler Char
43012007	43025011	4	Afsar Ahammad		Rupjahan BEGUM	Mamber bari	Poshchim Adorsho Gram, Noler Char
43012008	43025013	4	Abul Khayer			Abul Khayer bari	Poshchim Adorsho Gram, Noler Char
43012009	43025014	4	Abdul Mannan			Robiul bari	Poshchim Adorsho Gram, Noler Char
43012010	43025022	4	Md Abul Bashar	Late Dalwoar Hossain	Safia Begum	Abul Bashar bari	Poshchim Adorsho Gram, Noler Char
43012011	43025023	4	Saiful Islam	Late Md Mostofa	Sufia Khatun	Saiful bari	Poshchim Adorsho Gram, Noler Char
43012012	43025024	4	Abul Hasem	Late Monsur Ahammad	Rokeya Begum	Hasem sarang bari	Poshchim Adorsho Gram, Noler Char
43012013	43025025	4	Md Sofi Alam	Asiyal Haque	Hasna Begum	Rashedar bari	Poshchim Adorsho Gram, Noler Char
43012014	43025026	4	Abdul Mannan	Joynal Abadin	Rojina	Mannaner bari	Poshchim Adorsho Gram, Noler Char
31012001	31008001	3	Sakhayat Hossain	Md Anajol Haque	Rubi Akter	Nijam Dubiolar bari	Uttar Jokhali, Boyer Char
31012002	31008002	3	Nijam Uddin	Late Sofiul Alam	Rohima Begum	Nijam Dubiolar bari	Uttar Jokhali, Boyer Char
31012003	31008003	3	Idris Hossain	Jamal Uddin	Ruma Akter	Idris Dubi bari	Uttar Jokhali, Boyer Char
31012004	31008004	3	Md Sohel	Md Abul Kalam	Marjana Begum	Sohel Miar bari	Uttar Jokhali, Boyer Char

ID	Old IDs	Phase	Name	Fathers Name	H/Wife Name	Bari	Location: Samaj /Upazila /Near by
31012005	31008005	3	Zihad Uddin	Bahar Uddin	Sonia Akter	Bahar Miar bari	Uttar Jokhali, Boyer Char
31012006	31008006	3	Ahammad Ullah	Sarajol Haque	Rabeya Khatun	Ahammad Ullaheer bari	Uttar Jokhali, Boyer Char
31012007	31008007	3	Abdul Malek	Ali Hossain	Sajna Begum	Malek sierer bari	Uttar Jokhali, Boyer Char
31012008	31008008	3	Md Abul Kashem	Md Mannan	Aleya Begum	Kashem Hujurer bari	Uttar Jokhali, Boyer Char
31012009	31008009	3	Md Rajo	Roksana Khatun	Nur Islam	Siraj Majir bari/ Rajo	Uttar Jokhali, Boyer Char
31012010	31008010	3	Nasir Uddin	Abdul Alim	Monowara	Nsir Masterer bari	Uttar Jokhali, Boyer Char
31012011	31008011	3	Lokman Hossain	Late Amir Ali	Anowara Begum	Lokmaner bari	Uttar Jokhali, Boyer Char
31012012	31008012	3	Mosaddk Hossain	Saidul Haque	Jahanara Begum	Sahab Uddiner bari	Uttar Jokhali, Boyer Char
31012013	31008013	3	Md Taslim	Late Fayaj Ullah	Bibi Khadija	Taslimer bari	Uttar Jokhali, Boyer Char
31012014	31008014	3	Md Yousuf	Abdul Kader	Surma Khatun	Yousufer bari	Uttar Jokhali, Boyer Char
31012015	31008015	3	Ansar Ali	Jabal Haque	Sajeda Begum	Ansar Alier bari	Uttar Jokhali, Boyer Char
31012016	31008016	3	Md Anowar Hossain	Abu Taher	Roksana Begum	Nurul Haquer bari [Hanif] 01885672736	Uttar Jokhali, Boyer Char

1. Introduction

Alongside the 2021 AOS an additional survey was carried out to collect information on food security and nutrition to enable a comparison of indicators with RIMS⁴ surveys carried out at CDSP IV baseline in 2009 and at CDSP IV mid-term in 2014. This only applies to the CDSP IV area.

2. Methodology

2.1 Sample design and selection

The baseline RIMS survey was conducted in 2009 before initiation of CDSP IV. A total sample of 900 households was selected covering the three main chars of CDSP IV – Char Nangulia, Caring Char, and Noler Char. In each of these chars 10 sample villages or somaj were randomly selected, and in each village, 30 households were randomly selected, giving a total Of 900 sample households.

Table 1: Distribution of sample households in RIMS Baseline Survey 2009

	Estimated population		Sample	
	No. of somaj /cluster villages	Number of households	Sample villages	Sample households
Char Nangulia	25	6,932	10	300
Caring Char	18	5,340	10	300
Noler Char	27	9,355	10	300
Total	70	21,627	30	900

The MTR RIMS survey of 2014 was conducted with 1080 sample households drawn from all five chars of CDSP IV. The three chars of RIMS baseline study plus two more chars of CDSP IV - Char Ziauddin and Urir Char. To accommodate these additional chars the number of sample villages was increased to 36, with 30 sample households selected in each village - as in RIMS baseline survey 2009.

Table 2: Distribution of sample households of MTR RIMS survey 2014

CDSP IV Chars	Area (ha)	Population	Households	No. of Somaj	Sample Somaj	Sample HH	Percent of Total HH
Char Nangulia	8990	67000	12000	82	18	540	4.50
Noler Char	2690	33000	6000	32	8	240	4.00
Caring Char	3000	16800	3249	15	4	120	3.69
Char Ziauddin	1943	11000	2000	12	3	90	4.50
Urir char	10300	11000	2000	20	3	90	4.50
Total	26923	138800	25249	161	36	1080	4.28

⁴ Results and Impact Management System – a standard IFAD methodology for impact evaluation, now superseded by Core Outcome Indicator Surveys.

The present study of food security and nutrition uses a similar sample design (30 households per somaj) but has been adjusted to number of sample somaj to reflect the population of different chars and the total loss of Caring Char due to river erosion. So the size of the sample becomes 920 instead of 1080.

Table 3: Distribution of samples of food security and nutrition survey 2021

CDSP IV Chars	Area (ha)	Population	Households	No. of Somaj	Sample Somaj	Sample HH	Percent of Total HH
Char Nangulia	8530	93701	15113	82	14	618	4.09
Noler Char	2560	40480	6152	32	5	144	2.34
Char Ziauddin	1943	15280	2380	12	3	108	4.54
Urir char	1230	18557	2725	20	4	50	1.83
Total	14263	168018	26370	146	26	920	3.49

2.2 Questionnaire

The respondents have been asked some questions on food security – whether they grow enough rice and whether they have a shortage of food.

Nutrition has been assessed in terms of dietary diversity. The foods necessary for our body generally are grouped into: (i) carbohydrates, (ii) proteins, and (iii) vitamins and minerals.

- Carbohydrates and fats (energy-producing Food) provide our bodies with energy. Most of the carbohydrates in the foods we eat are digested and broken down into glucose before entering the bloodstream.
- Proteins that help repair and build our body's tissues, allow metabolic reactions to take place, and coordinate bodily functions. Proteins also maintain proper pH and fluid balance in our bodies.
- Vitamins and minerals perform hundreds of roles in the body. They help shore up bones, heal wounds, and bolster your immune system. They also convert food into energy and repair cellular damage

In this study, diet diversity is considered an important measure of its quality. Thus the number of different food groups consumed in a household is used as an indicator of the quality of the household diet. In the context of coastal chars, a total of 11 food was selected for the baseline study in 2009. These food groups were:

- Energy producing Food/ Carbohydrate & fats: Cereals, Roots/tubers, Sugar/Molasses, Oil/Fat/Butter.
- Protein: Meat, Fish, Egg, Milk/Milk products, Legumes/Pulse
- Vitamins: Vegetables and fruit

The questionnaire has been included in Appendix 2 of this Annex.

3. Results

3.1 Food security

Data in Table 4 shows that at baseline very few (2.4%) households grew enough rice, but at present 34% of households can meet their requirement from their own production. At baseline 80% of households grew some rice, but not enough to meet household needs. This has now fallen to 36%. Present survey data reveals that 30% of the households are now not growing rice at all, compared with only 18% at baseline. A significant number of households have ceased to grow rice: some have do not cultivate any agricultural land and rely on non-farm income sources, while others have converted their land to 'sorjorn' (fish-cum-vegetables) or to fish ponds. These are more profitable than paddy production and adapted to the year-

round water logging that exists in some areas of Char Nangulia and Urir Char. If we exclude non-rice producing households, then the proportion of households that grow enough rice was only 3% at baseline, 23% at MTR and 49% now.

Table 4: Distribution of households by whether they grew enough rice for a year

	Baseline RIMS 2009		Mid-term RIMS 2014		2021	
	Number	Percentage	Number	Percentage	Number	Percentage
Grew enough rice	22	2.4	178	16.5	321	34
Did not grow enough rice	718	80	596	55	324	36
Did not grow rice at all	160	18	306	28	273	30

Currently 29% of households report a food shortage at sometime during the year (Table 5). This has declined from 87% at baseline and 73% at mid-term, but is considerably more than the 8% now reporting an acute food crisis in the 2021 AOS. Data for the main baseline survey in 2011 showed 82% of households reporting an acute food crisis, while the impact survey of 2017-18 shows this has now reduced to only 4%. This suggests that in the pre-project and start of project situation the vast majority of households (over 80%) experienced a food shortage – and this was a serious problem (acute crisis) for almost all of them. By the time of the mid-term RIMS in 2014, almost three quarters (73%) of households were still reporting a food shortage, but the 2014 AOS shows there was an acute food crisis for just over half (53%). So although food shortages were still widespread, this was not such a great problem (crisis) for many households. Moving on to 2021, this trend has continued, with a significant number of households (29%) reporting a food shortage, but only a much smaller number (8%) reporting an acute food crisis. Overall the food security situation is improving but food supplies are not yet assured for all households.

Table 5: Distribution of households experiencing food shortage

	Baseline 2009		Mid-term RIMS 2014		2021	
	Number	Percentage	Number	Percentage	Number	Percentage
Experienced food shortage sometime in a year						
No	119	13	291	27	654	71
Yes	781	87	789	73	266	29

3.2 Dietary diversity

The extent of diversity in a household's diet was assessed by asking a respondent about how frequently the food groups consumed by the members of the household (Table 6). Cereals (almost all rice) and oils / fats were consumed by almost all households every day. Threequarters (74%) of households consume sugar every day, and half consume fish. Most households consume most other food groups on at least half the days of the week, exceptions being meat/poultry and milk. Almost half of all households seem not to consume meat or poultry at all (except maybe at festivals). Milk is consumed regularly by 28% of households (who seem to produce their own), but infrequently, if at all, by other households. Considering that almost all households own poultry, egg consumption is surprisingly limited – daily by only 10% of households and on most days of the week by another 35%.

Almost all households (93%) consume fish from their own ponds, and over 80% consume their own vegetables and eggs. The area used to grow legumes and pulses has fallen as the area of paddy has increased, and most households now buy these foods in the market rather than grow their own.

Table 6: Diversity of diet

Food group	Frequency of consumption			Source of food	
	Regular: 7 days/week	Occasional: 4-6 days/week	Rarely: 3 & under days/week	own produce	buy in market
Cereals	99.8%	0.0%	0.1%	69.7%	68.0%
Roots & tuber	10.1%	48.5%	39.2%	22.6%	94.2%
Legume & pulse	21.5%	33.9%	43.0%	31.3%	96.8%
Vegetables	33.5%	50.4%	15.2%	87.2%	70.1%
Eggs	10.2%	35.2%	42.7%	82.9%	44.5%
Milk	28.0%	5.4%	7.4%	28.9%	17.5%
Fish	50.0%	33.9%	14.8%	93.4%	85.2%
Meat & poultry	1.3%	17.4%	32.7%	46.1%	37.2%
Oil/fat	99.5%	0.4%	0.5%	1.6%	98.7%
Sugar/honey	74.0%	7.4%	11.0%	1.2%	90.8%
Fruit	14.6%	26.5%	34.8%	62.5%	71.7%

4. Conclusion

This brief survey shows that food shortages have been greatly reduced, but still effect a significant number of households. Most households consume a range of food groups, including foods high in protein, minerals and vitamins, but there is scope to increase consumption, particularly of fruit, vegetables and eggs.

Appendix 1: Food security and nutrition survey – list of sample villages

Name of Char	Shomaj Code	Name of Village (Somaj)	Nos of HH
Char Ziauddin	0101	Manna/Shahabuddin Shomaj	63
	0104	Safi Neta Somaj	25
	0110	Zia Uddin Somaj	20
Total Sample of Char Ziauddin			108

D & N Survey Sample Distribution of Char Nanguliar

Name of Char	Shomaj Code	Name of Village	Nos of HH
Char Nangulia	0207	4 No. Word (Nangulia)	33
	0214	Rany Gram	35
	0208	24 Dag (Purba Char Majid)	90
	0202	Nasirpur/Faridpur	31
	0211	Haji Para (Chmber Plot)	25
	0203	Haji Gram	41
	0216	Molla Gram	3
	0282	Ismail Bazar	38
	0219	Rasel Gram	31
	0259	Al-Amin Samaj	34
	0225	Mohammadpur	41
	0239	Beker Bazar	78
	0256	Haji Iddris Bazar	98
	0261	Chan Khola	40
Total Sample for Char Nangulia			618

D & N Survey Sample distribution of Nolar Char

Name of Char	Shomaj Code	Name of Village	Nos of HH
Nolar Char	0302	Mannan Nagor	7
	0316	South Azim Nagor	39
	0312	Poshchim Adorsho Gram	33
	0319	Uttar Musapur	20
	0307	Al-Amin Samaj	45
Total Sample of Nolar Char			144

D & N Survey Sample Distribution of Urir Char

Name of Char	Shomaj Code	Name of Village/Shomaj	Nos of HH
	0514	Bangla Bazar	9
	0513	Janata Bazar Mosjid Shomaj	10
	0501	Colony Bazar	7
	0515	Miarbazar Mosjid shomaj	24
Total Sample of Urir Char			50
Grand Total			920

Appendix 2: Food security and nutrition survey – questionnaire

**Char Development and Settlement Project (CDSP-B(AF)
Annual Outcome Survey (Round 8) Questionnaire 2021
(Including Modules on Dietary Survey and Impact on Land Titling)**

CDSP Phase:

I	II	III	IV	B
---	----	-----	----	---

BL Sample ID:

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

Sample ID:

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

1. Profile Information:

Name of Respondent:..... **Relation with HH Head:**
Sex: M/F: Male/Female
Address:
Vill/Somaj:.....
Char:.....**Union:**.....
Upazila:..... **District:** Noakhali / Chittagong
Mobile number :.....
National ID Card/birth certificate No,

Land mark: Nearby-Mosque/school/House of Elite person):

Write here:

Self-evaluation of Dietary/Eating Behaviours Reported by Project Beneficiary					
Eating Behaviour in regard to food items	Frequency of Eating-Put (Tick mark ✓)			Source (Tick ✓)	
	Regular (7 days/week)	Occasionally (More than 3 days/week)	Rarely (less than 4 days/ week)	Own Prod.	Market
1. Cereals					
2. Roots/Tubers					
3. Legumes/Pulse					
4. Vegetables					
5. Eggs					
6. Milk/Milk products					
7. Meat					
8. Fish					
9. Oil/Fat/Butter					
10. Sugar/Molasses					
11. Fruits					
Scores:					
Total score out of 11	Regular + Occasional + Rarely=				

1. Cereals-> Rice/Ata/Bread, 2. Roots/tubers ->Kachu, Salgum, Potato, Sweet potato
 3. Legumes/Pulses/Dal/Seeds of Beans, 4. Vegetables-Palog/lal shak/pui shak, 5. Eggs
 6. Milk/milk products, 7. Meat ->(Beef, Mutton, Poultry birds, 8. Fish -> Local fish, Sea fish
 9. Oil-> Mustard, Soya bean, Til-tishi, 10. Sugar-> Sugar, Molasses, Date juice, Fruits->Local & imported
 Please Note: We have RIMS Baseline in 2009 and Mid-term RIMS survey

Evaluation Criteria:

Evaluation Criteria	9-11	5-7	1-4
	Good	Moderate	Low
Result (Put $\sqrt{\quad}$ mark)			

Thank you for your kind cooperation

Comments: -----

Field Investigator's Signature & Name:

Verifier's Signature &Name:

Date:

Date: