



# Livelihood Dynamics in the Haor Region of Bangladesh

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# Introduction

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- Haors are categorized as large bowl-shaped wetland ecosystems which receive surface runoff water, forming large regions of extensive water.
- The haor region, located in the northeast, form vast stretches of water bodies during monsoon, and often dry up in the post-monsoon season.
- The livelihood dynamics in this region are separately assessed due to its wetland bio-diversity and the nature of the basin affecting employment opportunities, resource allocation, household consumption, food security, poverty and growth opportunities, credit access, migration channels and vulnerability to natural disasters.
- Livelihood dynamics is compared and contrasted between groups of households with and without round the year road connectivity with the rest of the country.

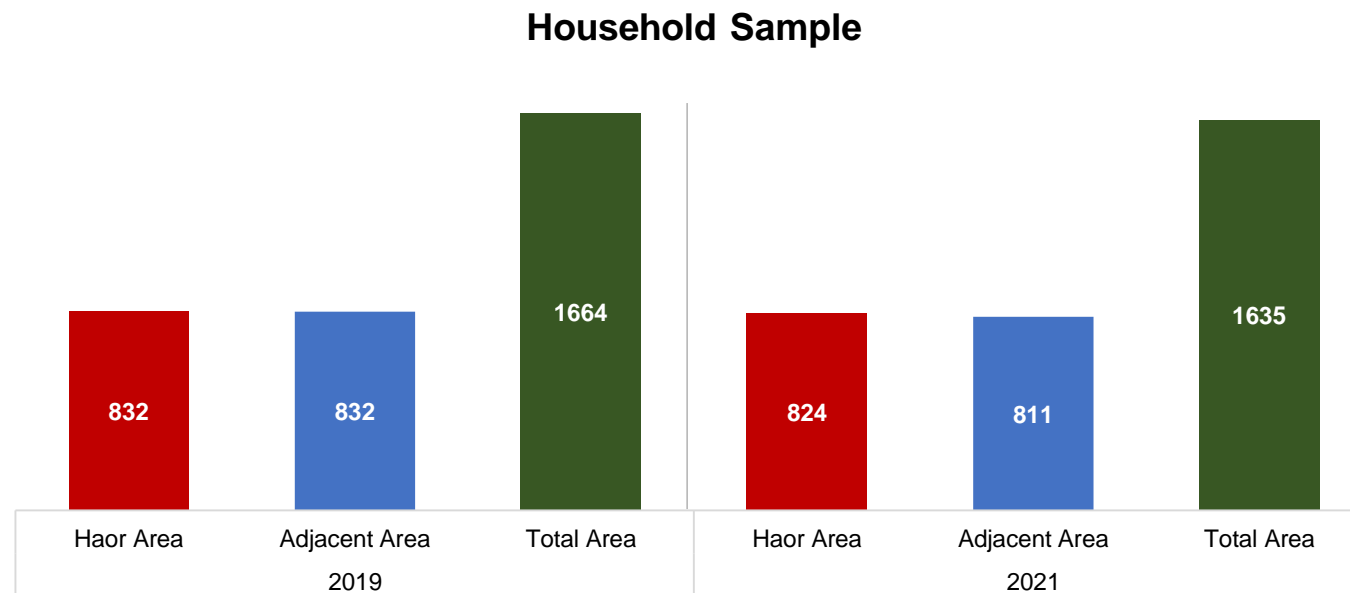
## A Few Characteristics of the Haor Districts

Districts	Area (ha)	Haor (Number)	Haor Area (ha)	Population
Brahmanbaria	192,700	29,616	7	2,953,207
Habiganj	263,700	109,514	14	2,171,064
Kishoreganj	273,100	133,943	97	3,028,706
Moulvibazar	279,900	47,602	3	1,994,250
Netrakona	274,400	79,345	52	2,317,189
Sunamganj	367,000	268,531	95	2,564,540
Sylhet	349,000	189,909	105	3,567,138
<b>Total</b>	<b>1,999,800</b>	<b>373</b>	<b>858,460</b>	<b>18,596,094</b>

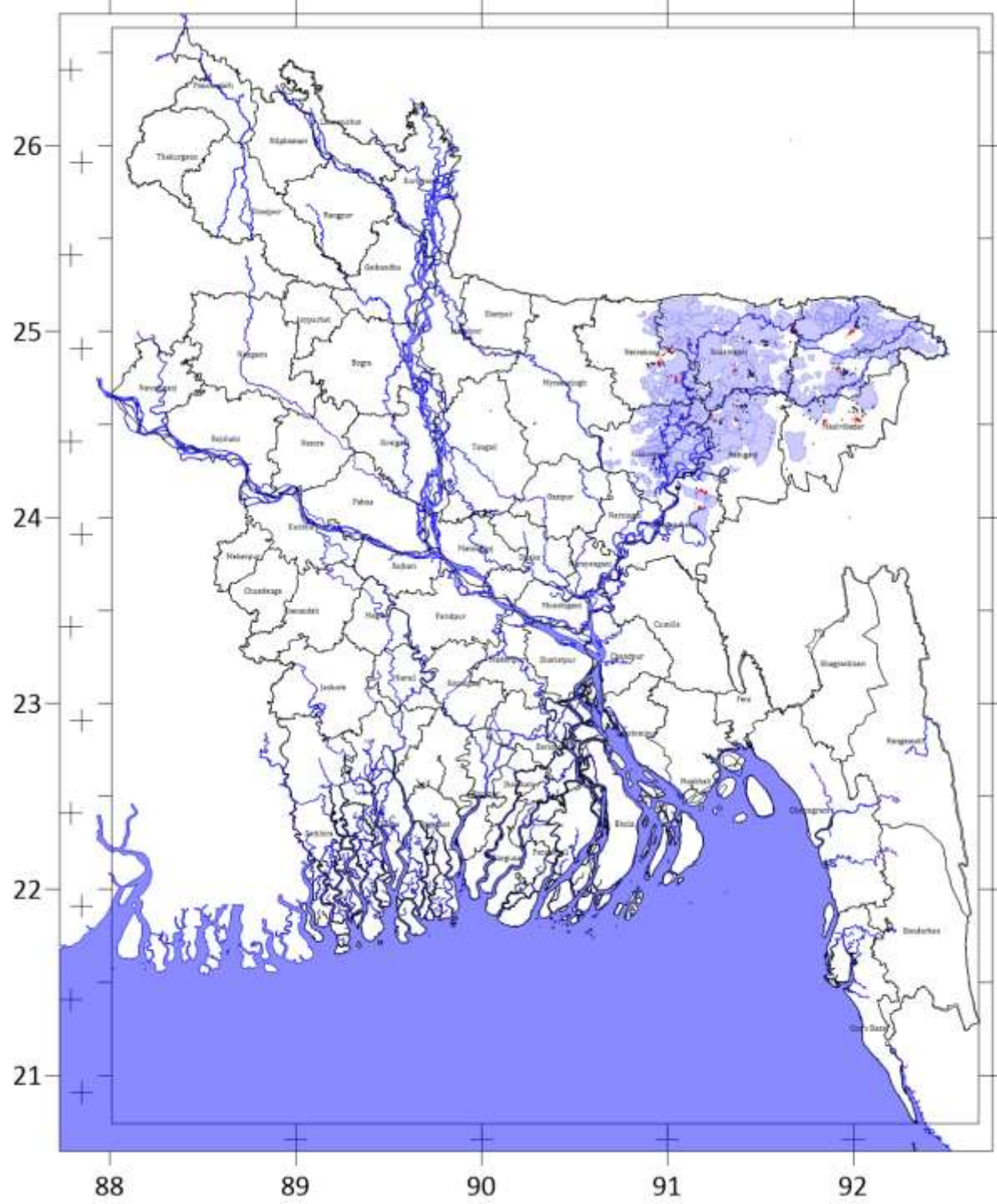
- As many as 47 are major haors but only Hakaluki and Tanguar haors are under Ramsar sites
- Haors accounts for about 43 percent of the area in the region.
- Population density without haor almost doubles.

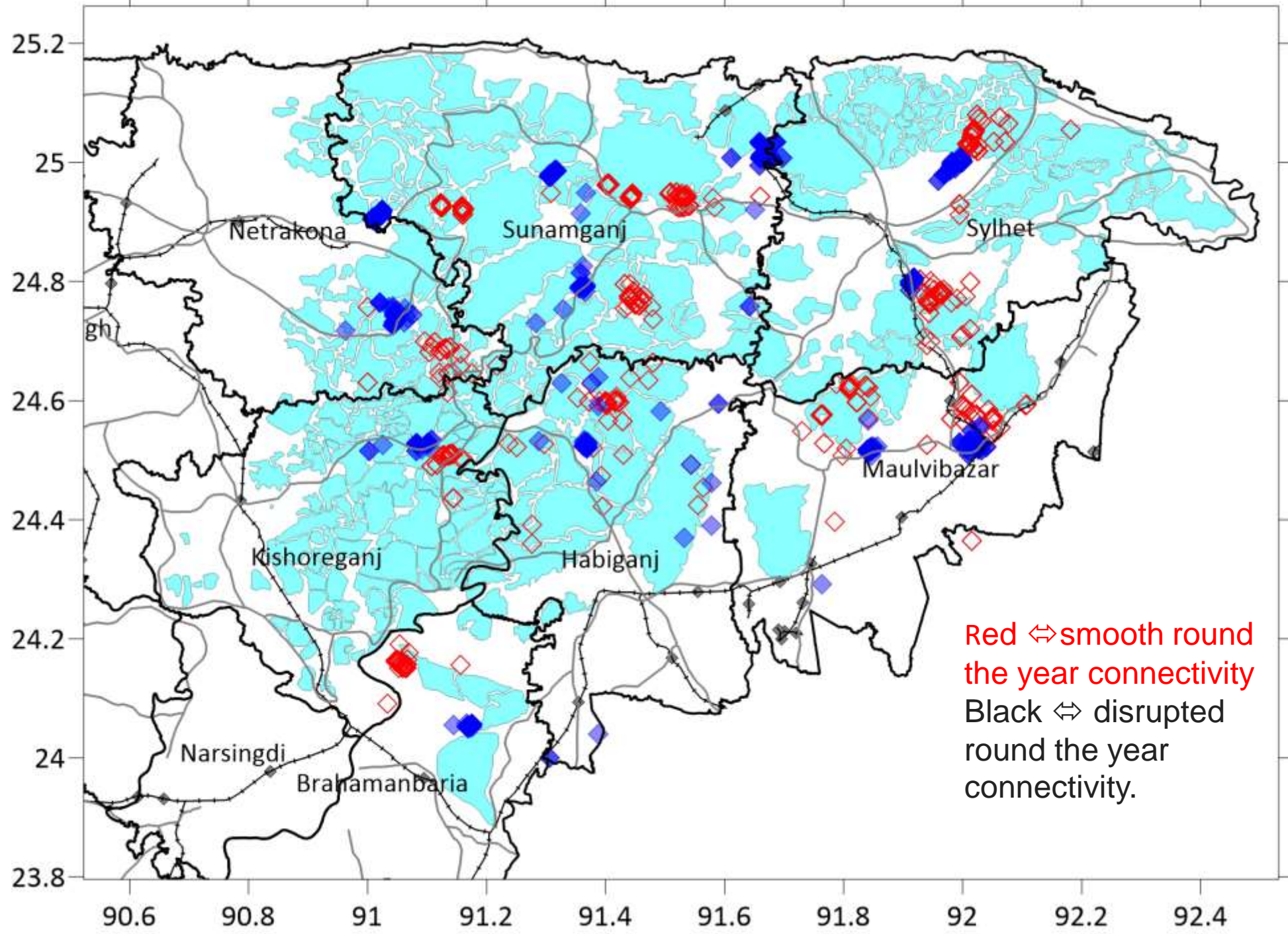
# Methodology and Survey Design

- Followed stratified random sampling method.
- The panel data consists were generated from 16 haors spanning the 7 districts of Brahmanbaria, Habiganj, Kishoreganj, Moulvibazar, Netrakona, Sunamganj, and Sylhet.
- 1 'big haor' and 1 'small haor'.
- 2 upazilas from each of the 6 districts except Sunamganj + 4 upazilas from Sunamganj => 16 upazila
- 2 villages (one village with round-the-year smooth connectivity and another village with disrupted connectivity).
- 26 randomly chosen households from each village (assuming uniform distribution).



The light purple shaded region is the haor region





# Employment and Income

## Labor force participation and employment

Indicator/Variable	2019			2021			
		Haor Area	Adjacent Area	Diff.	Haor Area	Adjacent Area	Diff.
Mean working age population (counts)	Household	3.53	3.37	0.16**	4.07	3.83	0.24**
	Male	1.86	1.73	0.13**	1.94	1.78	0.16***
	Female	1.68	1.64	0.04	2.12	2.05	0.07
Labor force participation rate	Household	0.48	0.47	0.02	0.42	0.43	-0.01
	Male	0.86	0.86	0.00	0.81	0.84	-0.03**
	Female	0.08	0.06	0.01	0.08	0.07	0.01
Employment to population ratio	Household	0.46	0.44	0.02**	0.39	0.41	-0.01
	Male	0.85	0.83	0.01	0.78	0.82	-0.03**
	Female	0.06	0.05	0.01	0.05	0.05	0.00
Unemployment rate	Household	0.04	0.04	-0.01	0.06	0.04	0.02**
	Male	0.02	0.03	-0.01**	0.04	0.03	0.01
	Female	0.37	0.32	0.05	0.46	0.28	0.18***
Eligible but not working (rate)	Household	0.52	0.54	-0.02*	0.58	0.57	0.01
	Male	0.14	0.14	0.00	0.19	0.16	0.03**
	Female	0.92	0.94	-0.01	0.93	0.93	-0.01

- Labor force participation for males is high but extremely low among the working-age female population
- Among the eligible-to-work population, approximately, 16-19% of the males and more than 90% of the females remain unutilized.
- Approximately half of the female labor force in the haor areas are unemployed, which is 18 percentage points more than that in the adjacent areas.

## Labor Supply, Underemployment, and Labor Productivity

Indicators	2019			2021		
	Haor Area	Adjacent Area	Diff.	Haor Area	Adjacent Area	Diff.
<b>Labor Supply (Days and Hours Worked per Year)</b>						
Days Worked per year	204.0	232.5	-28.5***	193.3	221.7	-28.4***
Hours Worked per year	1624.8	1860.5	-235.6***	1534.6	1854.0	-319.4***
<b>Underemployment, Deviation from Full Employment (in Hours)</b>						
Underemployment (Hours in year)	455.2	219.5	235.6***	545.4	226.0	319.4***
Proportion of Potential Hours Utilized	0.78	0.89	-0.11***	0.74	0.89	-0.15***
<b>Productivity of Labor, Remuneration</b>						
Earning Per Hour	51.60	52.60	-1.10	57.10	54.50	2.51*
Yearly Income Per Employed Member	78608	93379	-14770***	82731	96275	-13544***

- On average, the duration of labor supply in haor areas is only 87% of that in adjacent areas, which dropped to a level of 83% in 2021 when measured by hours/year.
- Hours-per-day worked by the employed population in the haor area shrank in 2021.
- Significant underemployment in the region, and the extent of underemployment is notably larger in haor areas compared to non-haor areas.



## Level of Income by Sources

Income Sources	2019			2021		
	Haor Area	Adjacent Area	Diff.	Haor Area	Adjacent Area	Diff.
Crop Income	16939	13042	3896**	24375	15982	8393***
Non-Crop Income	15028	12015	3013**	10282	10140	142
Agricultural Income	31967	25058	6909***	34657	26122	8535***
Labor Income	127911	136287	-8376*	112929	129826	-16897***
Enterprise Income	16259	21610	-5350**	18448	27172	-8724***
Remittance Income	52171	35669	16503***	51551	31727	19824***
Transfer Income	1749	1834	-84	3101	2454	647*
Miscellaneous (Rents from Assets, etc.)	6100	9557	-3457**	5123	7167	-2044*
Yearly Household Income	236157	230013	6144	225809	224467	1342
Per Capita Household Income	42426	44453	-2027	39534	41876	-2342

- Levels of income from crop agriculture, remittances, and transfers are significantly higher in haor areas while income from labor, enterprises, and miscellaneous sources are higher in the adjacent areas.
- Remittances seem to be the driving force to reduce the gap in total per capita income between households in the haor and adjacent areas.
- Average per capita income fell between the period for both the groups.

# Household Consumption and Food Security

- No significant difference is evident in terms of HDDS between haor and adjacent areas. The only exception is that adjacent area households are slightly better in terms of the DDS of mothers (of children under 2).

## Household Expenditures in Haor and Adjacent Areas

		Haor Area	Adjacent Area	Diff.
2019	Food expenditure per capita	1503.5	1534.2	-30.6***
	Non-food expenditure per capita	1020.8	1099.7	-78.9***
	Total expenditure per capita	2524.4	2633.9	-109.5***
2021	Food expenditure per capita	1781.2	1851.2	-70.0***
	Non-food expenditure per capita	937.7	989.3	-51.6***
	Total expenditure per capita	2718.9	2840.5	-121.6***

- Households in the haor areas have lower consumption expenditure than those in the adjacent areas.
- Food expenditure has increased but non-food expenditure has decreased in 2021 as compared to 2019 in both the haor and adjacent areas.

## Distribution (%) of Household Food Insecurity Access Scale (HFIAS) Status in 2021

	Haor Area	Adjacent Area	Change
Food secure	93.87	91.78	2.09
Moderately food insecure	5.01	7.84	-2.83
Severely food insecure	1.13	0.38	<b>0.75</b>
Pearson $\chi^2(2) = 8.0953$ , $p = 0.017^{***}$			

- The HFIAS is collected in the second round of the survey (2021) only.
- Three categories of food insecurity (access) status: 0–2 (food secure), 3-5 (moderately food insecure), and 6:8 (severely food insecure).
- Over 90% of households in both haor and adjacent areas reported better food security (access) situations.
- The condition in the haor area is marginally better than haor adjacent areas only when the focus is on the moderately food insecure situation.
- Comparatively more households in haor areas face severe food insecurity than adjacent area households.
- A statistically significant difference exists between the areas in the overall three categories of HFIAS status.

# Poverty Rates and Inequality in Income and Consumption

## Gini Coefficient

FGT Poverty Rates (CBN expenditure)					Area	Year	Income	Expenditure
		Upper Poverty Line						
		Head Count	Poverty Gap	Squared Poverty Gap				
2019	All	0.306	0.068	0.025	Adjacent Area		0.329	0.236
	Haor Area	0.313	0.064	0.021			Haor Area	2021
	Adjacent Area	0.300	0.072	0.029	0.382	0.232		
2021	ALL	0.284	0.051	0.014				
	Haor Area	0.331	0.065	0.020				
	Adjacent Area	0.240	0.039	0.009				

- The poverty situation has improved! This needs to be explored further.
- While consumption inequality appears sticky, income inequality worsened.
- All of the broad sources of income appear to contribute to worsening income inequality.

## Structure of Haor Credit Market

	2019			2021		
	Haor Area	Adjacent Area	Diff.	Haor Area	Adjacent Area	Diff.
Informal	28.80	13.60	15.30***	17.50	13.30	4.20**
Formal	22.50	31.60	-9.10***	25.30	29.00	-3.70*
Both	7.20	11.20	-4.00***	9.00	9.10	-0.20
Non-Participant	41.50	43.70	-2.20	48.30	48.60	-0.30

- More than 50% of households in the haor region have been involved in the credit market.
- Households in the haor areas borrowed more from formal sources compared to those in the adjacent areas.
- The incidence of borrowing appears to decline over time.

# Credit Market Participation and Poverty

- Participation in microcredit reduces the probability of being extreme poor by 4 percentage points but cannot make any dent in moderate poverty.
- Foreign (domestic) remittance reduces the probability of being extreme poor by 25 (13) percentage points and moderate poverty by 34 (13) percentage points.
- Even though microcredit programs are more prevalent than all other credit sources in the haor region, it does not necessarily help them significantly to graduate from poverty as compared with remittances.

Marginal Effects of Microcredit and Remittance on the probability of being poor and extreme poor

	Extreme poor	Poor
<b>Participation in microcredit</b>	-3.67***	-1.38
<b>Access to Foreign remittance</b>	-24.47***	-33.45***
<b>Access to domestic remittance</b>	-12.50***	-13.14***
<b>Haor Area (dummy)</b>	4.44***	5.64***

# Incidence of Migration among Households

Migration Type	2019			2021		
	Haor Area	Adjacent Area	Diff.	Haor Area	Adjacent Area	Diff.
Households with in-country migrants (%)	27.16	18.75	8.41***	28.76	19.24	9.52***
Households with international migrants (%)	14.78	10.58	4.21***	16.75	11.22	5.53***
Households without migrants (%)	59.62	71.27	-11.65***	56.55	70.65	-14.10***
Households with both international and in-country migrants in households (%)	1.56	0.6	0.96**	2.06	1.1	0.9
Households with regular migrants (%)	28.85	20.43	8.41***	30.58	21.45	9.13***
Households with transient migrants (%)	12.98	9.01	3.97***	15.41	9.49	5.92***

- Both domestic and international migration is higher in haor areas in both years compared to the adjacent areas.
- → Migration can act as a coping mechanism in the face of adversity. Money and goods sent by migrated members may assist in building resilience in order to sustain risks in the long run.

## Distribution of migrants by destination

Destination	2019			2021		
	Haor Area	Adjacent Area	Diff.	Haor Area	Adjacent Area	Diff.
Within district	8.65	7.37	1.28	10.57	8.03	2.54
Another district	57.65	54.74	2.91	52.03	55.18	-3.15
Abroad	37.40	36.79	0.61	33.70	37.89	-4.19

- Most of the migration in both rounds occurred in other districts.
- While migration seems sticky in the haor areas, it increases in the adjacent areas.
- While more transient migrants in the adjacent areas have shifted from the agricultural sector to the industry sector in the destination from 2019 to 2022, the composition in haor areas is approximately the same.



# Adverse Effects of Natural Disasters

Adverse Effects in the last 10 years	Haor Area	Adjacent Area	Difference
Damages to houses	65.90	46.73	19.17***
Disruption of non-agricultural activities	45.87	37.48	8.39***
Disruption of agricultural activities	57.40	38.72	18.69***
Household experience of unemployment	46.48	32.06	14.42***

- In all these broad categories, the incidence of disasters on households in the haor areas appears to be more pronounced than those in the adjacent areas.

# Livelihood Vulnerability

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- Assessing the livelihoods of people in the haor region demands a primary emphasis on vulnerability to natural disasters. The major characteristics of vulnerability are dynamic and influence people's social and biophysical processes and systems.
- Vulnerability =  $f$  (exposure, sensitivity, adaptive capacity)
- It is captured using the Livelihood Vulnerability Index (LVI), which comprises the unweighted average of 13 major sub-components:
  - i) Exposure: Land (L), Natural Disasters (ND), and Climate Variability (CV)
  - ii) Sensitivity: Health (H), Food (F), and Water (WR)
  - iii) Adaptive Capacity: Knowledge and Skills (KS), Livelihood Strategies (LS), Social Networks (SN), Housing and Production Means (HP), Agricultural Assets (AA), Non-agricultural Assets (NAA), and Finance and Incomes (FI)
- LVI is decomposed to reveal individual indices for exposure, sensitivity, and adaptive capacity.

<b>Major Components</b>	<b>Haor Area</b>	<b>Adjacent Area</b>
Exposure	0.378	0.364
Sensitivity	0.343	0.345
Adaptive Capacity	0.442	0.423
<b>Livelihood Vulnerability Index (LVI)</b>	<b>0.404</b>	<b>0.392</b>
<b>Climate Vulnerability Index</b>	<b>0.428</b>	<b>0.457</b>
<b>LVI-IPCC</b>	<b>-0.022</b>	<b>-0.021</b>

- Haor households, despite being more exposed to natural calamities, are relatively more habituated (less sensitive) to facing crises over time. As a result, more households in haor areas have developed adaptive strategies to mitigate risks and bring some form of normalcy into their lives.
- Overall, households in the haor areas are found to be more vulnerable to natural disasters compared to those in the adjacent areas when the focus is LVI. The conclusion flips when the focus shifts to CVI or LVI-IPCC.

## Research Team

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***Thank you!***