



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF ROAD TRANSPORT & BRIDGES
BRIDGE DIVISION
BANGLADESH BRIDGE AUTHORITY (BBA)
SETU BHABAN, BANANAI, DHAKA



Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Final Report

Research conducted by-
**Institute of Social Welfare and Research
University of Dhaka**

September 2020



Final Report

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People

Report Submitted to

Government of the People's Republic of Bangladesh

Ministry of Road Transport & Bridges

Bridge Division

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Preface

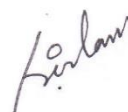
I am very happy to know that the 'Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People' has been completed by the Institute of Social Welfare and Research (ISWR), University of Dhaka, Bangladesh. We offered this assignment to the Institute of Social Welfare and Research (ISWR), University of Dhaka. The team collected data from 11 Unions of Louhajong and Shireenagor Upazilas in the Munshiganj District, Janjira Upazila in the Shariatpur District and Shibchar Upazila in the Madaripur District.

I am glad to see that the study team provided detail data on the demographic, socioeconomic, and psychological conditions of the affected population; the impacts of education, health, training, and income generation activities (IGA programs); changing livelihood patterns and livelihood options; psychosocial and natural vulnerabilities, migration and displacement, recovery processes; gaps of services (demand and supply delivery system); and further directions towards their future betterment.

The study team included all of the national and international policy documents and then suggested several short-term, medium-term, and long-term recommendations. I would believe that the overall findings, comparisons, and recommendations will be very useful to the Bangladesh Bridge Authority as well as the Bangladesh Government to complete this project successfully and take further initiatives for the betterment of the affected people.

I offer my sincere appreciation to the members of the ISWR research team for their efforts throughout the various stages of this study. I hope the findings of the study will be helpful for our policymakers and program managers. I am deeply indebted to all of my staff members of the Padma Multipurpose Bridge Project (PMBP).

September 2020



Md. Shafiqul Islam
Project Director
Padma Multipurpose Bridge Project
Bangladesh Bridge Authority

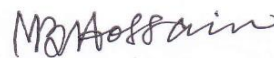
Foreword

I am very delighted to know that the study 'Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People' has been completed successfully by the Institute of Social Welfare and Research (ISWR), University of Dhaka, Bangladesh. The overall objective of this study is to explore and understand the lives and livelihoods of the people who are affected by PMPBP. I found that this study includes the demographic conditions of the affected households; their economic status; physical infrastructure, residence, water source, latrine and sanitation conditions; education and health conditions; damages, service received and service demands due to Padma Multipurpose Bridge; food security; social service and social security based management; psychosocial vulnerability, social status, and dignity; migration and social mobility; livelihood choices and competencies; strategies to face environment, climatic change, and vulnerabilities; positive impacts resulted by the implementation of Padma Multipurpose Bridge Project.

I strongly believe that this study is very important in this country as this project would be good learning for initiating further projects in this country. The findings of this study will surely help to consider us for supportive projects towards the betterment of the lives and livelihoods of the affected people. The recommendations and suggestions of this report will be valuable policy guidelines for us to take further initiatives for the affected people as well as to the overall development of the country. This is a valuable document for future maga projects.

I extend my earnest appreciation to ISWR, University of Dhaka, and its research team for their inexorable attempt in materializing the research a success. I extremely believe that the findings and suggestions of this study will encourage the policymakers to revisit the relevant policies and researchers to do further studies in the relevant field. My special thanks go to those stakeholders who extended enormous cooperation giving their precious time for this study.

September 2020



Mohammed Belayet Hossain
Secretary
Bridges Division
Ministry of Road Transport and Bridges
Government of Bangladesh

Foreword

I am very delighted that the study entitled 'Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People' has been completed successfully by the Institute of Social Welfare and Research (ISWR), University of Dhaka, Bangladesh. This is a great opportunity for ISWR to be a part of this colossal national infrastructure development project in Bangladesh that is fully financed by the Bangladesh Government. The objective of this study is to understand the current lives and livelihood status of the affected people of the Padma Multipurpose Bridge area that covers the demographic, socioeconomic, and psychological conditions. This study explores finding on a wide range of aspects that include the impacts of the project on current social, education, health and sanitation, training, income-generating activities, kinship development, psychosocial and natural vulnerabilities, migration and displacement, coping strategies, social adaptation, community resilience, and recovery process.

I would believe that the study finding has great policy implications in many cross-cutting issues for the overall development of the country. The study team suggests 21 (short, medium and long term) recommendations e.g., family and kinship-based rehabilitation system, holistic and integrated management-based model, resilience and alternative livelihood opportunities, employment facilities for the occupational displacement people, tourism and hospitality management system, community-based post-rehabilitation and recovery interventions etc. would be essential to bring positive changes in the lives and livelihood of the affected people of PMBP. I sturdily believe that the findings and recommendations will be valuable guidelines to the policymakers, development practitioners, community workers, local governments, and researchers on the relevant field. This valuable document will surely inspire to initiate further mega infrastructure development projects in Bangladesh.

I am indebted to all of the officials of the Padma Multipurpose Bridge Project (PMBP), Bangladesh Bridge Division, and faculty and staff members of ISWR, University of Dhaka. My special thanks go to my all chief investigators, recruited research assistants, research supervisors, and field-level assistants for their cooperation to complete this study successfully. My earnest acknowledgement is to all of the stakeholders and participants of the study to provide essential support and information for conducting this research project.

September 2020

Professor Tahmina Akhtar
Director
Institute of Social Welfare and Research
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&
Team Leader
Padma Multipurpose Bridge Research Project

Acknowledgments

The ‘Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People’ is one of the significant research projects in Bangladesh. This research has been completed with the technical and financial supports of the Bangladesh Bridge Authority, Bridges Division, Ministry of Road Transport and Bridges, People’s Republic of Bangladesh, and conducted by the Institute of Social Welfare and Research, University of Dhaka. This research pack would not have been possible without the supports of many individuals. From the original conceptualizing and initiating this research, the study team is momentarily grateful to **Mr. Khandker Anwarul Islam**, Cabinet Secretary and former **Senior Secretary of Bridge Division**, Ministry of Road Transport and Bridges, People’s Republic of Bangladesh. The study team gives an unstintingly acknowledge to **Mr. Mohammed Belayet Hossain**, Secretary, Bangladesh Bridge Authority, **Bridge Division**, Ministry of Road Transport and Bridges, People’s Republic of Bangladesh. This is our immense pleasure that the University of Dhaka gives permission to conduct this study. We also express our immense acknowledgement to the University of Dhaka.

The research team demonstrates profound acknowledgements to five eminent and conversant leaders of the Padma Multipurpose Bridge Project (PMBP) of the Bangladesh Bridge Authority. They are **Mr. Md. Shafiqul Islam**, Project Director; **Mr. Dewan Sayeedul Hassan**, Deputy Project Director (Admin); **Mr. Mohd. Faridul Alam**, Superintending Engineer (Resettlement); **Mr. Md. Bhikharuddoula Chowdhury**, Deputy Director (Resettlement); and **Mr. Khandakar Nazibul Hassan**, Asst. Director (Resettlement). We would appreciate their overall advice, guidance and critical inputs. We are indebted to the Deputy Commissioners (DCs) and all officials of Munchiganj, Madaripur, and Shariatpur Districts; Upazila Nirbahi Officers (UNOs) and all Departments’ officials of Lohagonj, Srenagar, Shibchar, and Zajira Upazillas; Chairmen and members of Union Parashads of all 11 unions of the study areas; all recruited Research Assistants, Research Supervisors, and field-level assistants of this study. Our special thanks and greetings will go to the NGO bodies particularly, the Eco-Social Development Organization (ESDO), and all of the participants in the study, whose voices are highlighted throughout the study findings. Finally, we would admit immense contributions of all faculty and staff members of the Institute of Social Welfare and Research, University of Dhaka particularly to the Chief Investigators **Prof. ASM Atiqur Rahman**, **Prof. Md. Nurul Islam**, **Prof. Mahbuba Sultana**, **Prof. Golam Rabbani**, and **Prof. M. Rezaul Islam**. We thank all of the authors, editors, and consultants whose studies’ findings are used in our literature review and discussion.

On behalf of study Team

September 2020

Professor Tahmina Akhtar

Team Leader of the study

&

Director, Institute of Social Welfare and Research
University of Dhaka

Abbreviation

ADB	Asian Development Bank
BBA	Bangladesh Bridge Authority
CBO	Community-based organization
DC	Deputy Commissioner
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GOs	Governmental organizations
GOB	Government of Bangladesh
GRP	Gross Regional Product
IDB	Islamic Development Bank
IEE	Initial Environmental Examination
IFAD	International Fund for Agricultural Development
IGAs	Income-generating activities
JICA	Japan International Cooperation Agency
JSC	Junior School Certificate
KIIs	Key Informants Interviews
LAP	Land Acquisition Plan (LAP)
NGOs	Non-governmental organizations
PMBDP	Padma Multipurpose Bridge Design Project
PMBP	Padma Multipurpose Bridge Project
RAP	Resettlement Action Plan
RF	Resettlement framework
RTW	River Training Works
SLF	Sustainable Livelihoods Framework
SW	South West
Tk.	Taka (Bangladeshi currency)
UNO	Upazila Nirbahi Officer
UP	Union Parishad
WB	World Bank

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Executive Summary

The Padma Multipurpose Bridge Project (PMBP) is one of the significant development projects in Bangladesh. This bridge will provide direct connectivity between the central and southwestern parts of the country through a fixed link on the Padma River at Mawa-Zanjira points. The bridge will contribute significantly towards facilitating the social, economic, and industrial development of this relatively underdeveloped region with a total population of over 30 million. The project is viewed as a very important infrastructure towards improving the transportation network and regional economic development of the country. This bridge gives special attention to the developments during construction and post-construction period and outlines the objectives, policy, principles, and procedures for acquisition and requisition of land and involuntary resettlement, compensation and other assistance measures, and procedures for the preparation of additional safeguard for issues identified during project implementation. The bridge has provisions for rail, gas, electric line, and fiber optic cable for future expansion. The project has been fully financed by the Government of Bangladesh (GoB).

Objective

- The objective of this research was to know the current lives and livelihoods status on the demographic, socioeconomic, and psychological conditions of the affected people of the Padma Multipurpose Bridge; understand the impacts of current education, health, training, and income generation activities (IGA programs); know the kinship development among the migrated people to other places; know the changing livelihood patterns and livelihood options and compare with baseline findings; explore their psychosocial and natural vulnerabilities, migration and displacement, their coping strategies, social adaptation, community resilience and the impacts of recovery processes taken by PMB project; determine/measure the gaps of the services (demand and supply delivery system); and provide further directions for their future betterment.

Methodology

- This study employed a mixed-method approach to collect both quantitative and qualitative data, where a social survey method for quantitative and a case study for qualitative approached were used. Data were collected from 11 Unions from four Upazilas in three districts of the Padma Multipurpose Bridge Project affected households (settlement and non-settlement). These are Louhajong and Shireenagor Upazilas in the Munshiganj District; Zajira Upazila in the Shariatpur District and Shibchar Upazila in the Madaripur District. A total of 5,076 households (1,596 households from settlement and 3,480 households from non-settlement) were selected from the total 7,638 households. On average, it is nearly 66% of the total households in those four Upazilas. A total of 100 households were also chosen as a control group from the outside of the project area who are considered as non-affected areas. A well-structured face-to-face interview schedule was used to collect quantitative data from the selected household heads. The focus group discussions (FGDs), in-depth case interview (ICIs), and key informants' interviews (KIIs) were conducted with relevant stakeholders such as community leaders, project teams, relevant non-governmental organizations

(NGOs), government officials and line departments, etc. The study team developed 11 community mappings from 11 selected Unions of the study areas.

Demographic conditions of the households

- Data were collected from 85% male (86% settlement and 84% non-settlements) and 15% female respondents.
- The highest number (26%) of the respondents' age group is found from 41 to 50 years and 22% are 51 to 60 years.
- The 33% of the respondents (40% settlement and 29% non-settlement) are able to sign and the illiterate respondents are 17% (20% settlement and 16% non-settlement); primary school pass respondents are 17% and 18% and Junior School Certificate (JSC) 11% and 13% among the settlement and non-settlement respectively.
- Out of 5,076 households, 178 households have physically challenged people among their family members, which are nearly three fourth physical, and the rest of them are mental.
- Households' primary occupation is 12% farmer (which is only seven percent among settlement), 11% business, 10% each household works and skilled laborers, and eight percent service.
- The skilled works are found the highest (37%) as secondary occupation followed by 17% farmer (20% among non-settlement areas), nine percent each agricultural day laborers and small business, and seven percent non-agricultural day laborers and seven percent fishermen.

Economic Status of Households

- The average monthly household family income is Tk. 23,493, which is Tk. 20,396 in settlement and Tk. 24,054 in non-settlement areas. The outsiders' income shows low Tk. 17,696.
- The highest sources of monthly income are found from the non-agricultural works in all three categories of the respondents, which are average Tk. 12,026, non-settlement Tk. 12,67, settlement Tk. 10,794 and outside Tk. 8,474 followed by agriculture Tk. 8,134, non-settlement Tk. 8,073, settlement Tk. 6,630 and outside Tk. 7,292 respectively. Income from services shows average Tk. 3,333, non-settlement Tk. 3,315, settlement Tk. 2,972 and outside Tk. 1,930.
- The monthly average total expenditure is found Tk. 24,486, highest Tk. 26,918 among non-settlement followed by Tk. 25,378 in settlement and Tk. 21,160 outside area.
- Households had to spend a significant amount of money on dowry and transport purposes and the amounts are Tk. 28,576 and Tk. 3,534.
- The average cash value of the total assets of the household is Tk. 3,017,231, which is Tk. 3,780,272 among non-settlement, Tk. 3,121,735 settlement and Tk. 2,149,685 outsiders.
- The amount of overall loan is Tk. 1,228,507, which is Tk. 1,237,956 among the non-settlement and Tk. 1,217,675 among the settlement, and nearly a half Tk. 677,501 among outside households.
- Households' took the highest amount of loan from the bank and NGOs, which are Tk. 322,338 and Tk. 195,899, and Tk. 120,408 and Tk. 127,600 respectively among non-settlement and settlement households.
- The amount of the annual savings is found high among the non-settlement households. All three categories of the households are saving their money at Bank, which is an

average Tk. 368,920 (Tk. 394,786 among non-settlement and Tk. 300,872 among settlement).

- Ninety-one percent of the households (98% in settlement and 89% in non-settlement) have their own land.
- The amount of land is found very unequal among the three categories of households. For example, the own land is found lowest, only 6.4 decimals among settlements, 29.8 decimals among non-settlement households and the highest 55 decimals among outsiders.
- The highest number of residents in all three types of households are using their land, mortgage, kashland, and sharing/bogra land for housing purposes. Their land is used by 98% among settlement and 89% among non-settlement; mortgage land is used by 29% and 38%, kashland 17%, and 52%, and sharing/bogra land 51% and 68% respectively among the settlement and non-settlement households.
- The highest 71% of the settlement households and 57% of non-settlement households are using their cultivable land for mortgage purpose.
- Eighty-seven percent of the households' dwelling house was massively affected by disasters. which is the highest 93% in the settlement and 86% non-settlement followed by 51% cultivable land (53% in settlement and 49% non-settlement).
- Seasonal flood, river erosion, and cyclone massively affected among all three categories of households' dwelling, cultivable land, pond, and non-cultivable land. Average 55% of the households' (65% settlement and 53% non-settlement) of their non-cultivable land was affected by river erosion, which is 53% pond (58% settlement and 47% non-settlement), 40% cultivable land (43% settlement and 38% non-settlement), and 21% dwelling (22% settlement and 20% non-settlement).

Physical Infrastructures

- The available data on all indicators of infrastructural facilities demonstrate that Shibchar Upazila is much better than the other two Upazilas, second Sreenagar and third is Louhajanag Upazila.
- The community road condition is found very well in the settlement area. Seventy percent of this households have the concrete roads to move in their community which only 15% in non-settlement followed by brick road 26% in settlement and 18% in non-settlement areas.
- Seventy-four percent of the settlement households used concrete roads to go to the main road which is only 22% in the non-settlement area followed by 24% and 16% used brick road in these two areas. The highest 83% of the households in outside and 63% of the non-settlement households used soil road.
- More than 49% of the settlement and 47% of the non-settlement households' distance is below one kilometer from the main road, which is 23% and 14% respectively within 1 kilometer.
- The highest 96% of the households have available primary school (93% in settlement and 96% in non-settlement) surrounding their households followed by 83% madrasa (84% settlement and 83% non-settlement), 70% secondary school (63% settlement and 75% non-settlement) and 64% moktob (73% settlement and 60% non-settlement), and 56% kindergarten (55% settlement and 58% non-settlement).

- The total number of primary, secondary, madrasah, and college institutions found higher in Shibchar Upazila followed by Zajira, Sreenagar, and lowest in Louhajang in terms of the number of education institutions, teachers, and students.
- All kinds of health care institutions are not available in the local communities. The condition is worse in the non-settlement area, where some kinds of health institutions are found very poor. Only 10% of them have NGO clinics, 19% Family Welfare Centre, and 37% community clinic.
- The Padma Bridge Health Care Centre covers 83% of the settlement households.
- The training institutions in the community in all three locations are found very poor. Nearly 76% of the households did not have any training institutions in their locality, which is 77% in the settlement and 75% in the non-settlement areas.
- The highest 19% (18% settlement and 19% non-settlement) of the households have animal husbandry training followed by 13% (11% settlement and 14% non-settlement) computer training institution.
- More than 70% of the households have daily bazar (73% settlement and 69% non-settlement) followed by 64% retail raw market (70% settlement and 62% non-settlement), 59% weekly hat (53% settlement and 62% non-settlement).
- More than 47% of the households have permanent markets which are 60% settlement and 42% non-settlement areas. More than 43% of the households have community shops in their locality, which is 52% in settlement and 40% in non-settlement locations.
- Only 17% of the households' market is within walking distance, 26% within half km, 33% within 1 km, and the rest of 24% within 2 km.

Residence, Water Source, Latrine and Sanitation Conditions

- Nearly, 92% of the households live in their own houses which are 100% in the settlement, 89% in non-settlement, and 77% outside.
- According to the last meeting (meeting number 133) of the Eco-Social Development Organization (ESDO), 754 landless people got new plot under the ILRPIRP Project. This plot was allocated in the light of the Bangladesh Gazette (22 June 2017) of the Resettlement Action Plan I, II, III, IV, V.
- Only 14% of the households live in brick houses (17% settlement and 12% non-settlement) followed by a 28% partially brick house.
- The highest 53% of the peoples' house is tin/wood/bamboo (50% settlement, 53% non-settlement and 89% outside). A very low number of people (four percent) live in kacha house.
- Nearly 80% of the households built their houses by their own earning, which is 82% among the settlement and 79% non-settlement and highest 91% outside.
- Only 13% of the households live government-provided houses in the settlement area which is six percent in non-settlement areas. Nearly nine percent have inheritance houses.
- The highest 48% of the households' houses quality is average (42% settlement and 49% non-settlement), 35% good (42% settlement and 33% non-settlement).
- Forty-one percent of the households were damaged by natural disasters which are 63% outside followed by 46% in non-settlement and 29% settlement areas.

- Fifty-three percent of houses had a slight damage by natural disasters, which are 58% in settlement and 52% in non-settlement areas; followed by 38% roughly loss and nine percent significant loss (six percent settlement and 10% non-settlement area).
- More than 83% of the non-settlement households have a drainage system in their community whereas 68% of the non-settlement households do not have this drainage system.
- A very small number of households' drainage system is very good which is only nine percent in settlement and six percent in the non-settlement area. The highest number of households' (43%) have an average (74% in outside) and 40% good (47% settlement and 33% non-settlement).
- The toilet system is found better in all three locations though it is much better in the settlement area. Nearly 100 are using sanitary latrine (73% personal sanitary latrine and 27% private slab ring) which is 90% in the non-settlement area (63% personal sanitary latrine and 27% private slab ring).
- The higher number of both settlement and non-settlement households are using deep tube-well water for their drinking and cooking purposes. The numbers are 57% each for drinking and 35% and 43% for cooking. The numbers of using shallow tube-well water increased for bath water, cloth washing water, and toilet using waters among both types of households. Recently, the Bridge Authority provided 48 arsenic-free deep-tube-well to the settlement areas.
- The non-settlement and outsider households have a higher number of the fully own water sources and in many cases, these are more than double among those two locations than the settlement area, whereas the higher number of the settlement households are using government ownership water in all five types of purposes and these numbers are 48% to 54% which are found very low among the non-settlement households.
- Ninety-five percent to 100% of the households in all three categories have adequacy of their demand for all kinds of water purposes.
- Ninety-seven percent to 100% of all three categories of households have fully women security to collect water from all of the sources in all of their five purposes.
- Sixty-one percent to 77% of the households' (except 49% of the settlement for bath and 50% cloth washing water) quality of all types of water purposes are well followed by a significant number of households have to average.
- The distance is longest 63.14 meters for cooking water and lowest 39.82 meters in settlement and 72.74 meters in non-settlement areas followed by 19.26 meters for drinking water which is 22.45 meters in settlement and 18.22 meters in non-settlement.
- Bath and cloth washing waters are available within 6.37 meters and 6.10 meters in the settlement area, which is a bit far 20.62 meters and 18.08 meters in the non-settlement area.
- The highest 68% of the household members (74% in settlement and 66% non-settlement and only 41% in outside) are drinking arsenic-free water, still seven percent (which is four percent in the settlement, eight percent in non-settlement, and 22% outside) households are drinking arsenic water.
- More than 25% of the households do not know whether their drinking water is arsenic-free, which is 22% in settlement and 26% in non-settlement areas.

- The highest 50% of the households' area's cleanness is average which is 30% in settlement and 58% in non-settlement followed by 38% good.

Education and Health Conditions

- Nearly 98% of the households have schools near to their residence.
- More than 68% (which is 72% in settlement and 66% in non-settlement) households have school-going children.
- The highest 94% (90% settlement and 96% non-settlement) of the households have available government primary school in their close distance followed by 83% non-government madrasa, and 71% secondary school which is found a small number of households to other institutions such as university (0.4%), government madrasa (six percent), higher secondary school (8%), and NGO/charity school (10%).
- More than 58% of the households have project maintained school in the settlement area.
- There was a downward trend in the number of students from Class I to Class V and a similar trend also look from Class VI to X. The class size (number of students per class) is bigger in the non-settlement area than the settlement area.
- The average number of students per class in pre-primary is found 56 in non-settlement and 58 in non-settlement which increased 56 and 65 in grade I respectively and then gradually decreased and found 35 and 44 respectively.
- Data showed that 159 in settlement and 162 in the non-settlement area enrolled in grade VI and showed gradually decreased till grade X and found 102 and 106 students per class.
- The percentage of presence is found better (ranged lowest 81% and highest 95%) in the settlement area than the non-settlement (ranged lower 76% and highest 84%).
- The absence rate varied in different grades at both settlement and non-settlement areas which is ranged 10% (in grade 1) to 22% (in grade IX) which is 7% (in both grade IV) to 19% (in grade IX. However, the highest percentages of absence in both locations are found in grade IX.
- The drop-out rate is gradually increased over the grades, girls drop-out is found lower in both types of households until grade IV, then their drop-out rate increased than the boys. If we calculate the drop-out at the primary level it is found 3.53% of boys and 3% girls in the settlement area, and 4.34% boys and 3.62 girls in the non-settlement area respectively.
- The drop-out rate in secondary school is 10.61% boys and 12.27% girls in settlement school, and that are 12.41% and 13.40% in non-settlement schools with the highest 17.64% and 23.12% in grade X respectively.
- Eleven major causes are found behind the drop-out and absence of the students. The highest numbers 79% are for poverty followed by 70% sickness, 68% natural disasters, 53% financial problem/cost of education, 52% distance from home/transport problem, and 50% child labors, 42% lack of awareness among parents, 38% child marriage, 23% visit relatives house and 23% due to migration.
- The number of activities/events in the schools are found higher in the settlement area.
- Nearly three percent of the students in settlement schools got the scholarship for their academic excellence which is a bit more two percent in non-settlement schools.

- The number of Primary Education Certificate/Junior School Certificate (PEC/JSC) successful students in 2019 is found 83% in the settlement which is 76% in non-settlement in 2019.
- The number of mother assembly was 2.25 and 2.10, numbers of CAB program 2.50 and 1.50, parents meeting 8.20 and 7.25, School Management Committee (SMC) meeting 9.98 and 7.85 and cultural program 1 each respectively in settlement and non-settlement schools in 2019.
- The highest 77% (73% in settlement and 77% in non-settlement) mentioned 'long-distance' as one of the main problem followed by 15% lack of quality education (12% settlements and 11% non-settlement), six percent lack of information, five percent lack of interest among children and three percent due to child labor.
- Nearly 97% of the household mentioned that the educational institutions are damaged by river erosions and waterlogging. 48% mentioned the educational institutions were fully damaged which found the highest 74% in the outside and 36% in non-settlement, 75% medium damaged (50% non-settlement area).
- Due to river erosion and waterlogging, average 2.70 months, the children could not go to school which is 2.58 months in settlement and 2.92 months non-settlement and the lowest 1.81 months in the outside area.
- The family members are suffering from different types of diseases, among those, the highest 78% of the family members suffer from cold (which is 81% in settlement and 77% non-settlement) followed by 72% fever (74% settlement and 71 non-settlement), 47% headache, 33% high blood pressure, 33% high blood pressure, 32% cough, 31% back pain, 22% diabetics and 25% low blood pressure.
- The households do not have sufficient scientific treatment facilities at their community or nearby locations. 72% of the households are taking general treatment from pharmacy followed by 56% from village doctors. Fifty-four percent of households take treatment from private clinics and another 41% from the Govt. Upazila or District hospitals.
- The highest 74% of the settlement households (which is only 16% in non-settlement) are taking treatment from the settlement areas' health center. Another 12% each take treatment from community clinics and Union Parishad Health Centre.
- A significant number of households did not comment on the quality of health services against the sources of health facilities which is 88% in settlement and 85% in non-settlement about NGOs and 93% in settlement and 94% in non-settlement about CBO maintained health services. This was also 32% and 40% of the services of government health centers respectively in both areas.
- Nearly 35% of the households mentioned that the health center under the settlement area is good which is 21% about government health services. Nearly 40% of each of the settlement households further mentioned that the quality of these two services is average. Nearly 35% of the settlement households and 30% non-settlement households mentioned 'good' about the service of the private clinic which is found 18% and 19% average respectively in both households.
- The number of doctors and nurses are found very low in all four Upazilas. The highest number of doctors (95) are found in Sreenagar Upazila followed by 67 Shibchar, 53 Zajira, and the lowest 24 in Louhajang. The number of nurses against doctors is also very low, low 19 in Louhangag, 53 Sreenagar, 56 Shibchar, and 61 Zajira
- 3 out of 4 Medical Officers were not happy about the health services and their quality of services under the Padma Multipurpose Bridge Project in four Upazilla except

primary health services where they mentioned very good. In this case, they did not find any gap between demand and supply of health services.

- The quality of health services such as emergency services, health tests, specialized services, and even in general health services are bad and many cases very bad. However, the doctors found a high gap between demand and supply of health services.

Damages, Service Received, and Service Demands due to Padma Multipurpose Bridge

- The highest 71% (93% in settlement and 62% non-settlement) of the households' homestead land was damaged due to PMBP, which is 52% cultivable land (29% settlement and 62% non-settlement) followed by 28% valuable trees.
- More than 85% of the non-settlement and 63% settlement households mentioned that they lost their land followed by 35% and 12% respectively lost their tenant land under this project.
- More than 79% of the households mentioned that their infrastructure was damaged by the PMBP.
- The highest 75% (99% in settlement area and 64% non-settlement area) of the households' residential area was damaged which is 68% of their cooking place (93% settlement and 56% non-settlement), 61% of their toilet (88% settlement and 49% non-settlement), and 46% of their tube-well (66% settlement and 37% non-settlement).
- The highest 97% (which is 100% in outside) got financial compensation, 95% of the settlement hoses got new plots; among those 40% planned residential facility, 38% house building support.
- Except financial compensation, the non-settlement and outsiders did not get other kinds of supports as much as the settlement households got. For example, only 13% of the non-settlement received new-plot and 12% house building support which is found 14% and 29% respectively among outsiders.
- The settlement households received more additional services than the non-settlement and outsiders. The highest 78% of them (68% in non-settlement) got gas supply, 75% (61% non-settlement) road light, 67% (65% non-settlement) sewerage system, 62% (61% non-settlement) pure water supply, 59% home-related cost, 47% transport facility, 41% playground, 37% graveyard, and 35% each recreation center and reduce waterlogging.
- Seventy-four percent of the households faced some administrative barriers to receiving compensation. Nearly 56% claimed that they received a low amount of financial facility followed by 50% long time, 39% harassment, 28% harassment from brokers, and 29% non-cooperation. The non-settlement households have suffered these kinds of administrative barriers higher than the settlement area.
- Due to PMBP and their displacement, the households are facing a wide range of occupational losses such as 69% loss of their fish cultivation, 51% cultivable agricultural land, 18% old business, and nearly 5% each traditional fishing and old business.
- Against the occupational losses, the households received some occupational benefits though 59% of them mentioned that they did not get any kind of such benefits. Only 15% of the household training facilities, 11% working opportunities, 10% investment opportunity, nine percent business opportunity, and seven percent small loan facility.

- More than 84% of the households received government financial facilities against the economic losses, 70% income generation training, and 64% job facilities.
- Due to PMBP and their displacement, the households faced several social losses such as 78% (82% settlement and 75% non-settlement) decreased social relation, 65% (74% settlement and 60% non-settlement) could not meet with their former neighbors, 62% breakdown relationship with their relatives and 46% breakdown of old traditions.
- The households received some benefits against their social losses such as 62% (which is 83% settlement and 51% non-settlement) got new relation, 57% (76% settlement and 46% non-settlement) benefits of modernization, 43% (62% settlement and 32% non-settlement) educational services, and 33% got NGOs social awareness services.
- The households also received some additional benefits against these social losses such as 94% received sustain health services, 48% establish government primary school, 37% cultural organizations, and 29% government-supported sports.
- The households received several health services due to PMBP such as 98% extended immunization (100% in settlement area), 59% family planning services, 45% maternity services, 41% child health and maternity services, 35% health services for the older people, 34% child (primary health services).
- The highest 66% of the health workers visited after one-month time which is 17% after three months and five percent after six months. More than 11% mentioned that they never visit them for health purposes.
- The Initiatives of the field health workers due to PMBP have increased where the highest 98% (100% in settlement) received immunization, 49% (59% in settlement) maternity services, 39% reproductive health, 35% primary health care awareness, 18% for general health problems and 13% for HIV/AIDS/STDs issue.
- The highest 54% of the households mentioned the quality of health service quality is 'average' and 25% good. Nearly, 13% 'not good' and six percent 'not good at all', and only two percent mentioned 'very good'.
- The enormity of losses against types of losses showed that the highest 78% of the households in the settlement, 65% in non-settlement, and 75% in the outsiders reported extreme losses of their infrastructures followed by financial losses and then social losses, which are 75%, 82%, and 75%; and 58%, 55%, and 63% respectively in all three locations.
- The big portions of the three categories of the households did not receive adequate services which are infrastructural 62%, 78%, and 75%; financial loss 69%, 87%, and 75%; and social loss 65%, 79%, and 63% respectively among three categories of households.
- 38%, 31%, and 35% of the three categories of the households reported that the services against three types of losses were adequate.
- The study found a big gap between the enormity of losses and services received by the households such as 62% settlement, 78% non-settlement, and 75% outsiders had more loss but get fewer services on infrastructural loss; these differences are mentioned by 69%, 88% and 75% on financial loss and 64%, 78% and 66% on social loss in three locations. The rest of the households mentioned that these were equal.

Food Security

- The month-wise data against the number of meals showed that 99% and above have three meals in both settlement and non-settlement households. The number of households who consume two meals is found below one percent and one meal is very low, and in many months the numbers are found almost zero.
- The households had different items of foods at their breakfast, lunch, and dinner. The list of the foods looks varieties at breakfast and lowest at dinner which is quite similar food practice in Bangladesh. Nearly 85% of the households eat rice and 84% eat vegetables at the breakfast. Nearly 51% pulse, 45% eat ruti (hand-made bread), 41% tea, 33% biscuit, 28% fish, 14% pantha rice, and 12% meat.
- During lunch, 99% of the household members eat rice, 94% fish, 85% pulse, 78% vegetables, and 63% meat.
- During dinner, again the highest 98% of the households eat rice, 85% fish, 84% pulse, 80% vegetables, 53% meat, and only 8% eat ruti.

Social Service and Social Security

- The study asked to the respondents to have opinions of the quality of 17 types of local services available in the communities. The service of mosques is found 'very good' where 35% of the settlement households and 19% non-settlement households responded to this kind of opinion. This response is found 10% and 7% respectively on clinic; eight percent each on hat-bazar and school/college/madrassa; 8% and 5% on pharmacy.
- The opinions were found moderate on the services of the local Union Parishad, social security, and police satiation where the rates are 37% to 43% in settlement and non-settlement areas. This moderate opinion is also found 36% to 51% on hat-bazar, Govt. hospital, pharmacy, clinic, school/college/madrassa, family planning, and NGO services in the settlement area; and 31% to 50% in non-settlement.
- Nobody gave any opinions about the quality of services such as local club, women club, local park, and CBO services which are ranged from 74% to 92%.
- The study asked to the respondents about the opinions of the quality of 15 types of local social issues of the local community. There is only issue such as 'sufficient road available' where the highest 41% in settlement area mentioned 'very high' about the issue.
- A higher number of households (ranged 24% to 57%) in both settlement and non-settlement mentioned 'high' on freedom of movement (57% each), freedom of expression (45% settlement and 48% non-settlement), social security (45% settlement and 43% non-settlement), adolescents' girls' freedom of movement (46% settlement and 44% non-settlement), women's freedom of expression (35% settlement and 34% non-settlement), women have security (47% settlement and 45% non-settlement), sufficient roads 36% settlement and 24% non-settlement), religious institutions (39% settlement and 34% non-settlement).
- The higher number of both households had 'average' comments on freedom of expression (34% settlement and 35% non-settlement), social security (33% settlement and 36% non-settlement), adolescents girls' freedom of movement (32% settlement and 39% non-settlement), women's freedom of expression (40% settlement and 44% non-settlement), women have security (31% settlement and 39% non-settlement), sufficient school/college/madrassa (45% settlement and 46% non-settlement), sufficient

health services (39% settlement and 32% non-settlement), religious institutions (30% settlement and 40% non-settlement), local government system (54% settlement and 50% non-settlement), local administrative staff communicate regularly (45% settlement and 36% non-settlement) and role of law enforcement agencies (56% settlement and 49% non-settlement).

- The highest number of settlement and non-settlement households think women have equal rights like men at the house which are ranged 30% to 40%. The highest 43% have equal power in marriage among settlement households, 40% social benefits that are highest 39% in education among non-settlement households, and 38% medicine/health services for the family.
- Women have moderate power is stated by 19% to 36% of households. Among these, 34% are found on participation in social activities and 33% on trading livestock in settlement households which is highest 36% on advancement arrangement in agriculture and 34% on house building among non-settlement households.

Psychosocial Vulnerability, Social Status, and Dignity

- The households faced various types of losses due to river erosion in the last five years such as the highest 59% loss of land (34% settlement and nearly double 61% non-settlement), 45% crop land (24% settlement and nearly double 47% non-settlement), 32% loss of homestead infrastructure (53% settlement and nearly a half 30% non-settlement), 31% (22% settlement and 31% non-settlement), 26% (17% settlement and nearly double 26% non-settlement), and 12% food security.
- More than 31% of the households had some kinds of losses by other types of disasters in the last five years which were 21% among settlement, 34% non-settlement, and the highest 82% among outsiders.
- The monetary value of the losses was the highest Tk. 432,497 among the non-settlement households which are nearly 10 times higher than settlement households (Tk. 46,617).
- The study captured the psychosocial vulnerabilities on 24 items. The study explored a mixed opinion on different issues. The higher number of households were disagreed on the issues of the psychosocial vulnerabilities such as suffering family members (57% settlement and 43% non-settlement were disagreed), gender based violence (65% & 48%), challenges of needy people (42% & 31%), increase child marriage (68% & 56%), feel insecurity (52% & 36%), illegal practices (53% & 43%), job problem (42% & 31%), increased poverty (44% & 33%), lack of loan facility (56% & 41%), damage school and social institutions (53% & 40%), forced displacement 54% & 45%) and recovery process is controlled by political and local power structure (54% & 37%).
- Approximately, 21% to 33% of the households were agreed on some issues such as social and cultural bondage broken, individual and social networking broken, household occupation changed, increased social inequality, created the human problem, movement of community people, and lack of association, and increase psychological stress; which were strongly agreed broken social and cultural bondage (11% settlement and & 13% non-settlement) followed by people moved other places (18% & 17%), lack of association (13% & 15%).
- The study calculated the social status and dignity related vulnerability on ten different aspects. A higher number of households (41% to 62% in settlement and non-settlement) disagreed except one on those aspects followed by somewhat disagreed

(13% to 15%) except one and somewhat agree (10% to 21%). The highest 62% each of the settlement households was disagreed on 'lost all the ways to establish me' and 'path of the establishment has closed' followed by 61% each 'being disrespectful to the society', 'become inferior to the society', and 'do not get much more respect and dignity'. More than 21% in settlement and 26% in non-settlement households were agreed that society becomes financially unstable due to Padma Bridge which was 13% 'lost social identity' in both households and 12% and 16% on society become dependable on others respectively. The highest 12% in the settlement households were strongly agreed that 'people become financially unstable'.

Migration and Social Mobility

- Seventy percent of the households (which is 97% in settlement and 58% non-settlement) had to displace due to Padma Bridge and the rest of 30% (which is only 3% in settlement and 42% non-settlement) did not displace.
- Fifty-one percent of the households' had 'average' satisfaction with their current occupation, 26% satisfied (29% in settlement), 12% dissatisfied (9% in settlement and 13% non-settlement), seven percent 'not satisfied at all' and only five percent (which is six percent in settlement and four percent in non-settlement) mentioned 'highly satisfied'.
- Forty-five percent of the households were involved in agricultural work before coming in the project area in non-settlement and 39% in the settlement, 20% woodworker in non-settlement, 19% small business in the settlement, seven percent each formal job in non-settlement (five percent in settlement) and non-agricultural laborer in the settlement.
- Sixty-two percent of the households have been living in the project years for the last 3 to 10 years in settlement and 40% in non-settlement, 21% from the starting day of the project, and six percent in the non-settlement area.
- Comparatively, the non-settlement area households are living a longer period as 34% of them since father generation and 11% are 20-25 years which are three percent and 10% respectively in the settlement area.
- There are two major reasons that the households in both settlement and non-settlement households were displaced such as 69% settlement households (59% in non-settlement) displaced for land acquisition, 68% in non-settlement (which is 57% in settlement) displaced due to river erosion.
- People are well with their current place of residence which is much true among the settlement households as 95% of these do not have any plan to migrate other places in the settlement, which is 81% in the non-settlement. Still, 19% of the non-settlement households have a plan for such migration.
- The households' heads mentioned many reasons for their migration such as 79% for a better life, 44% better facilities, 42% each for health and education, 30% avoid waterlogging, 25% avoid disasters, and 16% lack of employment among non-settlement households. Among settlement households, the highest 68% lack of employment followed by 53% better life, 44% better facilities, 39% avoid waterlogging, 25% health, and 22% education.
- Only 20% of the household members migrated to other places for livelihood purposes and the rest 80% did not. Among those, 96% (98% in settlement area) male family members were migrated for this purpose. The finding showed that the highest 59%

migrated outside the country followed by 35% (41% in settlement) in Dhaka and four percent in other areas.

- More than 80% (71% settlement and 81% non-settlement) migrated inside the country and the rest 20% outside the country (29% settlement and 19% non-settlement).
- More than 73% (67% in settlement and 73% non-settlement) come to the village during any festival and only 27% come. This is significant that nearly 61% of the households (53% in settlement and 64% in non-settlement) are not satisfied with their present life.
- Thirty-nine percent of the households who are satisfied, mentioned several reasons such as 69% for better resettlement (only 11 in non-settlement), 64% better accommodation (only 17% among non-settlement), 59% more facilities for income, and 45% for better social opportunities among settlement households. On the other hand, 53% for more facilities for income and 36% for better social opportunities among non-settlement households.
- Eighty-three percent of the households pointed out that their family members or people from other villages have come or migrated to project areas which are the highest 91% in settlement and 79% non-settlement.
- The households had to change livelihood patterns last five years due to PMBP. The highest 43% changed partially followed by 31%, not at all, 14% full, and 12% moderate.
- The households migrated to project or nearby areas for different reasons such as 62% for labour in PMB project, 54% (37% in settlement and 62% non-settlement) river erosions, 50% employment facilities, 36% better environment (56% settlement and lower a half 27% in non-settlement), 31% infrastructural development (49% settlement and 21% non-settlement), 27% security services (38% settlement), and 17% educational facilities (27% settlement).

Livelihood Choices and Competencies

- The highest 60% of the affected households' one member was engaged in income-generating activities that are 26% two members, and 10% three members.
- The training facilities in the affected areas are found poor; only 15% received training which is lower 13% in settlement and 16% non-settlement, and only three percent found in the outside residence. Recently, the Bridge Authority initiated training on 37 trades that will cover more than 5,000 people.
- Households only received income-generating training which is 97%, whereas some other training such as disaster training, leadership training, health-related training, and community awareness training are found very poor.
- Fifty-nine percent of the household members received training from NGOs followed by 22% from the Padma Multipurpose Bridge project.
- Households were asked about their opinions on 11 types of income generation livelihood skills that their family members have. In reply, the study found that the highest number of all three categories of households (47% to 98%) mentioned 'not good at all' and in many cases, these numbers are more than 80%. Even the numbers of households on this opinion are found significantly high among the settlement households.

Strategies to face environment, climatic change, and vulnerabilities

- Eighty-one percent among the settlement and 73% non-settlement received disaster-related precaution messages from their 'neighbors'. The television is found second highest (77%) and 75% followed by mobile phone 61% and 63% and then friends 49% and 39% and social medias 32% and 27% respectively. The role of radio in this regard is found very low, only 10% and 13% and then newspaper 23% and 28% among both households respectively.
- Nearly 86% of the households (76% in settlement and 90% non-settlement and 100% outside) have an environmental impact due to Padma Bridge. These impacts include the highest 75% heavy dust which is 71% settlement and 78% non-settlement followed by 20% 'no public toilet' and a very few five percent (seven percent in settlement) mentioned 'increase of diseases'.
- About the magnitude of nine types of disasters, the overall findings showed that the impacts of deep fog, heavy rainfall, wild winding, and thunderstorm are higher than other types of disasters. Findings showed that the highest number of households' magnitude is moderate, second-highest low, and then high and very low.
- The study premeditated the number of households who were affected by nine types of natural disasters in the last five years. Most of the affected households lost their trees and they faced environmental damage, and then their houses were damaged. They were also injured/wounded by some kinds of disasters. The numbers of households who lost their trees are ranged from 33% to 83% and in many cases, the percentages were more than 50%. The highest numbers of the settlement households were found in this category are 82% storm, 76% cyclone, 49% heavy rainfall, and 38% drought. Among the non-settlement, these numbers are found highest 83% storm, 65% flood, 54% river erosion, 53% thunderstorm, 43% seasonal flood, and 42% cyclone.
- The study investigated some other impacts of natural disasters such as the death of livestock, crop damage, collapse of living sources, diseases/health problems, and death of the human. From the death of livestock, it is found that the highest number 13% of the settlement households are affected by river erosion which is the highest 11% by thunderstorms.
- Large numbers of households' crops were heavily damaged which are ranged 29% to 64% between settlement and non-settlement households and 100% in outside residence.
- The highest 64% settlement households had crops damaged, 52% river erosion, 40% droughts, 39% cyclone, and 37% seasonal flood which are 64% flood, 62% river erosion, 53% seasonal flood, 49% each heavy rainfall and drought in the non-settlement area.
- The study reconnoitered the government, non-government and local initiatives towards taking steps to face calamities. In all three types of initiatives, the study found the highest numbers of households who mentioned 'no initiatives' to face the calamities, and then a significant number of respondents also mentioned the initiatives were not adequate.
- The households followed several coping strategies to face climate change and disasters were the highest 64% of the households mentioned 'reducing family cost', followed by 64% 'debt', 26% (21% settlement and 28% non-settlement) sale of poultry, 20% food consumption reduction and 12% change occupation.

Positive Impacts Resulted from Implementation of Padma Multipurpose Bridge Project

- The households were asked 21 positive aspects of the Padma Multipurpose Bridge Project on their livelihoods. The highest numbers of households at both settlement and non-settlement 'supported' these positive aspects followed by the second highest 'somewhat supported'.
- The households who supported these positive impacts are ranged 11% to 47% (in most of the cases this is more than 20%) among the settlement and non-settlement households, where the highest 47% are found progress in education, 45% amenities have increased, 43% the scope of planed households, and 38% each health services reached to the grassroots level, security of women's movement has increased, and positive attitude of the government has increased. Among non-settlement, this is found 38% road communication has increased, 35% progress in education, 30% each positive attitude of the government has increased and security of women's movement has increased, 29% social mobility has increased.
- The second highest households were 'somewhat agreed' about the positive impacts which are ranged 13% to 37% (in many cases these are more than 30%) where the highest three positive impacts are 34% each increased child and maternity services and loan facilities are increased, and 33% freedom of expression has increased among settlement households and 37% freedom of expression has increased, 34% each amenities have increased and security of women's movement has increased among non-settlement households. A good number of households highly supported on some positive impacts such as 48% road communication has increased, 31% created the scope of planned change, and 28% housing plot allotment has been increased without interference among settlement.
- A significant number of households did not support that there are positive impacts of PMBP. In some cases, for example, 27% and 31% on income have increased, 26% and 31% on occupational training increased, 24% and 32% on the reduction of poverty, 22% and 49% satisfactory allowances received, 20% and 30% on increased good opportunities by cooperatives, 20% and 27% loan facilities have increased, 17% and 19% decreased child marriage, 16% and 29% on increased child and maternity services, 15% and 28% on social bonding has tightened, and 15% and 17% on social dignity have increased respectively among the settlement and non-settlement households.
- Regarding sustainability, the issue emerged by Padma Multipurpose Bridge on three main issues such as whether it is bearable, viable, and feasible. Around 90% of the households gave positive responses to these three issues of sustainability.
- The settlement households were asked how their next generation will enjoy the benefits/facilities that emerged by PMBP. More than 90% and even in some cases higher number households gave positive opinions on different benefits and facilities that their next-generation such as 52% food and nutrition will be enjoyable, 51% health facilities, 49% education, 43% financial opportunity, 44% pure drinking water, and 41% drinking water.

Recommendations of the study

This study suggests three types of recommendations namely short-term, medium-term and long-term.

- Immediate/short term: These include to provide credit and IGA training, create job facilities, medical treatment, counseling service, recreational facilities, and improve sewerage and waste management system.
- Medium-Term: These include the expansion of settlement areas; set-up education institutions; vocational training center; export processing zone; safety-security; playground, youth clubs, and community centers; increase community engagement.
- Long-Term: This include to set-up community based organizations (CBOs), women empowerment, health complex, establish a University, tourism, sustainable income, sustainable human and natural environment.

Chapter 1: Introduction

Research Background

The Padma Multipurpose Bridge Project (PMBP) aims to remove the last major physical barrier in the road connection between Dhaka and the Southwest and South Central regions of Bangladesh, home to about one-quarter of the Bangladesh population. Currently, there is a rather unreliable ferry connection over the Padma River with limited capacity and long waiting times. Ferry services are sometimes interrupted for days during fog and high floods. A number of the ferryboats are obsolete; they are often overloaded and there are frequent accidents, some resulting in considerable loss of life. The construction of the Padma Bridge (PB) will replace the unreliable and unsafe ferry connection with a reliable and safe fixed river crossing. The bridge will shorten the distance from the Southwest to Dhaka by 100 km and traveling time will be considerably reduced. When completed a reliable highway connection will be established¹ between Dhaka and the land port of Benapole, the seaport of Mongla, and the district capitals of Khulna and Barisal. The provisions for a railway line on the Padma Bridge will make it possible to construct a new railway connection between Dhaka and the Southwest within the framework of the Trans Asian Railway network. Padma Bridge will also include options for major utility connections to the Southwest including gas, power transmission, and communication lines.

The new bridge, which will be over 6 km long, will form an integral part of the realization of the Transnational Asian Highway network (Asian Highway no 1), which construction program was ratified by the Government of Bangladesh (GOB) in 2004. The Road Master plan for Bangladesh prepared in 2007, earmarks the development of this highway (also called National Highway no 8), the Padma Bridge, and the two missing links as high-priority projects. The highway is of national importance since it will link Dhaka to the Southwest of the country as well as to two major ports of the country. The Government of Bangladesh (GOB) has approved this plan and earmarked the project as a national priority project for early implementation. The completion of this project opens the way for accelerated socio-economic development of the Southwest region, which is currently a relatively isolated and underdeveloped area. The incidence of poverty in the Southwest region is higher than in the rest of the country. The Gross Regional Product (GRP) of the South West (SW) region (Khulna and Barisal divisions) is only 17.4 % of the Gross Domestic Product (GDP) compared to 38 % in the Dhaka division. The Padma Bridge will help to stimulate economic activity in the SW region by providing a reliable and rapid transport connection.

The proposed Padma Multipurpose Bridge Design Project (PMBDP) is a very important large scale infrastructure project in the communication sector. Implementation of the project will significantly benefit various sectors of the economy of Bangladesh. The Padma River isolates the southwest zone of Bangladesh from other parts of the country. There have been substantial improvements and development in the road network of the southwest zone of Bangladesh, yet this zone remains beyond the advantages of an integrated road network due to the lack of a bridge over the Padma River. Currently, the link between the southwest zone and the rest of the country across the Padma River is only by ferry. The capacity of ferry services is very limited, and waiting time at ferry ghats is more than 2 hours

for buses and light vehicles and more than 10 hours for trucks. Besides, the Riverbanks of the Padma are very unstable, especially in the south side (Janjira), and the River width changes frequently, leaving approach ghats seasonally inoperative. The expansion of existing ferry terminals is made difficult by these conditions.

The proposed bridge will provide direct links between two major seaports of the country and connects missing links for the Tamabil-Sylhet-Sorail-Kanchpur-Dhaka-Mawa-Bhatiapara-Norail-Jessore-Benapole highway and will be an integral part of the Asian Highway No 1 and Trans-Asian railway network systems. The distance from Dhaka to nearly all major destinations in the southwest region will be reduced by 100 kilometers (km) or more, that will bring considerable savings in passenger and commodity movement time and costs, as well as vehicle operation and maintenance costs while lengthening the useful life of vehicles, savings in fuel consumption, and reducing the air emission. Riverbank protection will reduce bank erosion and the incidence of worsened vulnerability and poverty among people affected by bank erosion. By constructing the bridge, the economic development of the southwest will promote industrial and commercial activity and improve economic and employment opportunities for local people. There will also be better access to healthcare facilities available at Dhaka. Easier communication will help expand education and training facilities, and the resulting skills development will ensure the availability of high-skilled workers. The construction of the bridge over the Padma River is a top priority development agenda for the Government of Bangladesh (GOB) that will not only benefit the southwest region but the country as a whole. There is an urgent need to replace the unsafe ferry and launch operations between Dhaka and the southwest region by safer and more reliable surface transport. Overloaded vessels frequently sink in this waterway when passing through the turbulent confluence of the Padma and Meghna Rivers. The social, economic, and industrial underdevelopment of the southwest zone, which encompasses Bangladesh's second major port, Mongla; its third main city, Khulna; and the inland port at Benapole, is due in part to difficult access across the Padma River to the rest of the country. A bridge across the Padma River will certainly strengthen links between the southwest and north-central zones. A multipurpose bridge will enhance freight, passenger, railway transportation, and utility crossings (high-pressure gas transmission, high voltage power transmission, and optical fiber telecommunication cable) between Dhaka and major points in the southwest zone and contribute substantially to the development of the southwest zone as well as to the national and regional economic growth.

The project covers the following settlement areas:

Mawa	Name of settlement site and number	Upazila	District
	RS-2, Jasaldia		
	RS-3, Kumarvog		
	RS-7, Medinimondal	Louhajang	Munshiganj
	RS-8, Kumarvog		
	[RS-3-Extension]		
	RS-4, West Nawdoba	Zajira	Shariatpur
	RS-6, Nawdoba		
	RS-5, Bakhrekandi	Shibchar	Madaripur

Source: Bangladesh Bridge Authority (2020)

Rationale/importance of the study

The proposed Padma Multipurpose Bridge Project will provide direct connectivity between the central and southwestern parts of the country through a fixed link on the Padma River at Mawa-Janjira points. The bridge will contribute significantly towards facilitating the social, economic, and industrial development of this relatively underdeveloped region with a total population of over 30 million. The area of influence of the direct benefit of the project is about 44,000 sq km, or 29% of the total area of Bangladesh. Therefore, the project is viewed as a very important infrastructure towards improving the transportation network and regional economic development of the country. The bridge has provisions for rail, gas, electric line, and fiber optic cable for future expansion. The project will be co-financed by the Government of Bangladesh (GOB), the World Bank (WB), the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), and the Islamic Development Bank (IDB). Bangladesh Bridge Authority (BBA) is the executing agency (EA) of the Project.

The Padma Bridge is a large, complex, and challenging Project. Three RAPS have been prepared in phases for (i) Resettlement Site Development; (ii) Main Bridge and Approach Roads; and (iii) River Training Works (RTW). The primary objective of the Resettlement Framework (RF) is to guide resettlement planning against any unanticipated impacts particularly related to bridge construction and RTW involving char land both upstream and downstream, as well as any adverse impacts caused by project construction. It sets out the policy and procedures to be adopted by the Bangladesh Bridge Authority (BBA) for revising and updating any RAPs during project implementation. The revised RAPs, if any, will be submitted to co-financiers for review and approval. The Framework is based on harmonization carried out through a gap analysis involving the 1982 Ordinance II and the co-financiers safeguard policies and gap-filling measures. The harmonization has also benefited from the Jamuna “best practices” in resettlement. The Framework gives special attention to the developments during construction and post-construction period and outlines the objectives, policy, principles, and procedures for acquisition and requisition of land and involuntary resettlement, compensation and other assistance measures, and procedures for the preparation of additional safeguard for issues identified during project implementation.

The Char-Janajati is situated within the territory of 4 districts (Madaripur, Faridpur, Munshiganj, and Shariatpur). Moreover, this char-land is a very unstable land where approximately 200,000 people are trying to survive and fighting against floods and erosion and secure livelihoods. The economy of the char lands is largely based on agriculture, fishing, and livestock-rearing. The participatory approach and the PRA method has been used for data collection. The proposed Padma Bridge on the Char-Janajati area is a new challenge and opportunities for the local communities to improve their socio-economy and that can ensure livelihood sustainability in the char-lands of the Ganges-Padma River basin. This proposed research will identify the lives and livelihoods of the communities of those four districts due to PMBP in general and the impacts of the projects taken by the government such as education, health, training, and income generation activities (IGAs programs) in particular. We would believe that this proposed study will identify the gaps in services (demand and supply delivery system) and then will help to get policy directions towards their future betterment.

Specific objectives of the study

- To know the current lives and livelihoods status on demographic, socioeconomic, and psychological conditions of the affected population of the Padma Multipurpose Bridge,
- To understand the impacts of current education, health, training, and income generation activities (IGA programs),
- To know the kinship development among the migrated people to other places,
- To know the changing livelihood patterns and livelihood options and compare with baseline findings,
- To explore their psychosocial and natural vulnerabilities, migration and displacement, their coping strategies, social adaptation, community resilience, and the impacts of recovery processes taken by the PMB project,
- To determine/measure the gaps of services (demand and supply delivery system)
- To know the further directions towards their future betterment.

Key research questions

- What are the current lives and livelihoods status on demographic, socioeconomic, and psychological conditions of the affected population of the Padma Multipurpose Bridge?
- What are the impacts of current education, health, training, and income generation activities (IGA programs) and why?
- How is the kinship development among the migrated people to other places?
- What are the changing livelihood patterns and livelihood options compared with baseline findings and what are the factors behind these changes?
- What are their psychosocial and natural vulnerabilities, migration and displacement, their coping strategies, social adaptation, community resilience, and the impacts of recovery processes taken by the PMB project?
- What are the gaps in services (Demand and Supply delivery system) and why?
- What are the further directions towards their future betterments?

List of indicators for the study

Table 1: Indicators of the study

SI	Indicators	List of elements
	Demographic profile	age, sex, marital status, religion, household size, family members, disability
1	Socio-economic profiles	Literacy and educational attainments Occupational status (main and seasonal) Living condition (structures, living units, and facilities) Productive and livelihood assets (land, dwellings units, own/rented, tangible assets) Job opportunities, Non-productive assets, Income, and its sources Investment, Social enterprise, Income generation activities (IGA) Expenditure, Savings
2	Physical infrastructure	Road and highway, Education institution, the Training institution Hat-Bazar, and others
3	Health, water, sanitation & hygiene	Access to safe water, sanitation, energy/fuel, sanitary latrine, access to health services, health facilities
4	Mental/psychological conditions	Mental stress, Depression, Anxiety, Isolation, Association Social distance, Group formation, Social insecurity

		Self-harm, Communication skills, Adjustment, Adaptation Coping strategies, Community resilience
5	Social services, safety, and security	Local governance, Local administration Major social services i.e. social safety net programs Police station, Social safety, and security issues Freedom of social movement, Freedom of expression NGOs and CBOs activities, Gender development and empowerment
6	Livelihood options	Settlement and housing Natural resources, Cultivation Social resources including social institutions Economic resources, Cultural, Animal husbandry Food security
7	Environment and climate issue	Status of the social and natural environment, Environment problems Climate change issues, Disasters, Coping strategies, adaptation and resilience
8	Migration and social mobility	Internal migration rate, External migration rate Social mobility such as occupational shifting
9	Socioeconomic vulnerability	Vulnerability mapping, Natural vulnerability, Economic vulnerability Social vulnerability, social inequality
10	Specific social and economic changes	<ul style="list-style-type: none"> - Social networking, Neighborhood, Social capital, Cultural bondage - Relatives, Change of motivation, Conflicts of interest, - Involvement of politics, Membership of the political party Loose of commitment
11	Social dignity	Sense of dignity, Moral status, Decision-making capacity Participation, Social justice, Social responsibility Humanity and kindness, Holiness and piousness Involvement and membership of moral agent

Scope/major tasks of the study

- Review the relevant study reports, documents, articles, books, etc.;
- Design conceptual framework, qualitative and quantitative data collection tools, sampling methods, field survey schedule, and other relevant things required for the study;
- Conduct discussions/meetings/interviews with relevant people - political leaders, government officials, academicians, policymakers, NGO activists;
- Collect data and information from different levels and stakeholders including project beneficiaries, self-help group leaders, community people, project team, PMB staff, relevant governmental organizations and non-governmental organizations (GOs/NGOs), and line departments, etc.;
- Process and analysis field data with suitable software;
- Finalize the study report incorporating all feedback and submitting to PMB;
- Arrange a national/regional sharing session on study findings and recommendations;
- Submitting both hard and soft copy (CD) of the final report, presentation, and database to the Ministry

Expected outcomes of the study

- To identify the present socio-economic condition, educational status, social dignity & status, livelihood condition and options, water, sanitation, health, hygiene, and healthcare-seeking behavior of the people who have been affected by PMB;
- To identify an effective and appropriate way forward/solutions for improving the overall situation of the river erosion-affected people and to make a sustainable impact towards their lives, livelihood options, social dignity, and socio-economic conditions;
- To understand the involvement of local power politics with the people affected by PMB;
- To assess the socio-economic changes brought by PMB with special emphasis on involuntary/forced migration;
- To understand the impacts of current education, health, training, and income generation activities (IGAs programs),
- To arrange a national/ regional sharing session on the findings and recommendations of the study where policymakers/decision-makers from relevant ministries, MPs, political leaders, government officials, departments and research institutions, representatives from governmental organizations and non-governmental organizations (GOs/NGOs), participants from the study and other stakeholders.
- To determine/measure the gaps of services (Demand and Supply delivery system)
- To know the further directions towards their future betterment.

Chapter 2: Literature Review: Conceptual and Theoretical Framework

Introduction

This literature review elucidates the core concepts and relevant theories of the study. To consider the research titles, objectives, and scope of the study, we find two concepts such as the Padma Multipurpose Bridge Project (PMBP) and lives and livelihoods. This chapter reviews the relevant literature then showed the possible impacts of PMBP on the lives and livelihoods of the affected people. Secondly, this study looks at the possible theories and approaches that cover the whole thrust of the research outcomes. Through consulting different theories, models, and approaches, this study found that two approaches such as the Sustainable Livelihood Approach (SLA) and social capital are pertinent to this study. This chapter provided a brief discussion on these approaches that help to link-up the possible policy implications and recommendations.

Conceptual analysis

Padma Multipurpose Bridge Project (PMBP)

Background of the Padma Multipurpose Bridge

The Padma Multipurpose Bridge Project (PMBP) is a priority project of the Government of Bangladesh (GOB). The project is co-financed by GOB, the World Bank (WB), the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), and the Islamic Development Bank (IDB) (BBA, 2010). The Bangladesh Bridge Authority (BBA) is the executing agency. The bridge will direct connect between the Southwest and the North Central regions of the country. The bridge lies on the Dhaka-Kolkata (India) route and will also be an integral part of the Asian Highway and Euro-Asian railway network systems.

A pre-feasibility study (FS) was carried out for the proposed bridge construction in 1999. A pre-feasibility study for the Padma Multipurpose Bridge Project (PMBP) was carried out in 2000. It investigated several potential alignments for the proposed bridge. The Japan International Cooperation Agency (JICA) at the request of GOB carried out a feasibility study (FS) in 2002-2004. This study concluded that the most feasible bridge site is at Mawa Janjira point. The selection of this site was subsequently approved by GOB. The FS included, among others, a preliminary technical design, economic and financial evaluation, a framework for land acquisition and a Resettlement Action Plan (RAP), Initial Environmental Examination (IEE), and an Environmental Impact Assessment (EIA). The FS concluded that Padma Bridge is economically viable. Based on this prediction, the Government of Bangladesh (GoB) moved forward for implementation and accordingly the Bangladesh Bridge Authority (BBA) conducted a study to update the previous EIA and to prepare an Environmental Management Plan (EMP), a Land Acquisition Plan (LAP) and a Resettlement Action Plan (RAP) in 2006. The Asian Development Bank (ADB) also conducted an FS including an EIA and resettlement plan in 2007. The above studies formed the basis for the decision of GOB to proceed with Phase 2, which includes the detailed engineering design and implementation of the project funded by an ADB TA Loan. In 2009 a Safeguard team on environmental and social issues, and part of the design consultants' team, started the detailed EIA study following the relevant laws and regulations in Bangladesh and EIA guidelines of all the co-financiers (BBA, 2010).

The construction of the bridge over the Padma River is a top priority on the development agenda of the Government of Bangladesh (GoB) that will benefit the southwest region and, more importantly, the country as a whole. One of the election manifestations of the present government (Awami League) is to implement the Padma Bridge. The Project objective is to connect the southwestern region to the rest of the country to stimulate economic growth by facilitating inter-regional, cross-river transport of passengers and freight, and transmission of natural gas, telecommunication, and electricity in a cost-effective manner. The project covers parts of three districts in the Dhaka division: Munshiganj, Madaripur, and Shariatpur. Together they have an estimated population of 4.2 million. These districts are predominantly rural with an average urban population of only 11% (BBA, 2010). The project is spread over 31 *Mouzas* belonging to 4 *Upazilas* namely: Lohajang and Srinagar (Munshiganj District), Janjira (Shariatpur District), and Shibchar (Madaripur District). The bridge is designed to be an approximately 6.15 km long fixed crossing double-deck composite steel truss bridge over the Padma river with provisions for a four-lane highway on the upper deck, and a rail line, gas pipeline, optic fiber cable (WB, 2011). So far five major bridges (Meghna Bridge, Meghna-Gumti Bridge, Bhairab Bridge, Jamuna Multipurpose Bridge, and Paksey Bridge) have been built providing good connections between Dhaka and the Northwest, North, and East regions. The Southwest still depends on ferries, which are often unsafe and unreliable with long waiting times (up to 10 hours for trucks) (BBA, 2010). The PMBP will replace the existing ferry connection between Mawa and Janjira with a modern highway/railway river crossing, and end the relative isolation of the Southwest.

Location

The bridge site is located 35 km southwest of Dhaka, near the village of Mawa, lying north of the Padma River and Janjira on the south side. Components of the Project such as approach roads and bridge end facilities will affect an area of 6 km inland on the Mawa side and 4 km inland on the Janjira side; bridge and river training works may even affect a corridor 15 km upstream and 7 km downstream in the river (Fig. 2.1). The 250 km² project area comprises areas located in 3 separate administrative districts: Munshiganj district on the Mawa side (north bank) and Shariatpur and Madaripur districts on the south side. Lauhajang and Sreenagarupazilla (sub-district) lie on the north bank and Janjira and Shibcharupazilla lie along the south bank (BBA, 2010). The Projected area is located in the south-central part (Munshiganj, Shariatpur, and Madaripur Districts) of Bangladesh. The left bank (north bank) on the Mawa side is located in Lauhajangupazila of Munshiganj District whereas the right bank (south bank) on the Janjira side located in the Janjiraupazila of Shariatpur District and Shibcharupazila of Madaripur District.

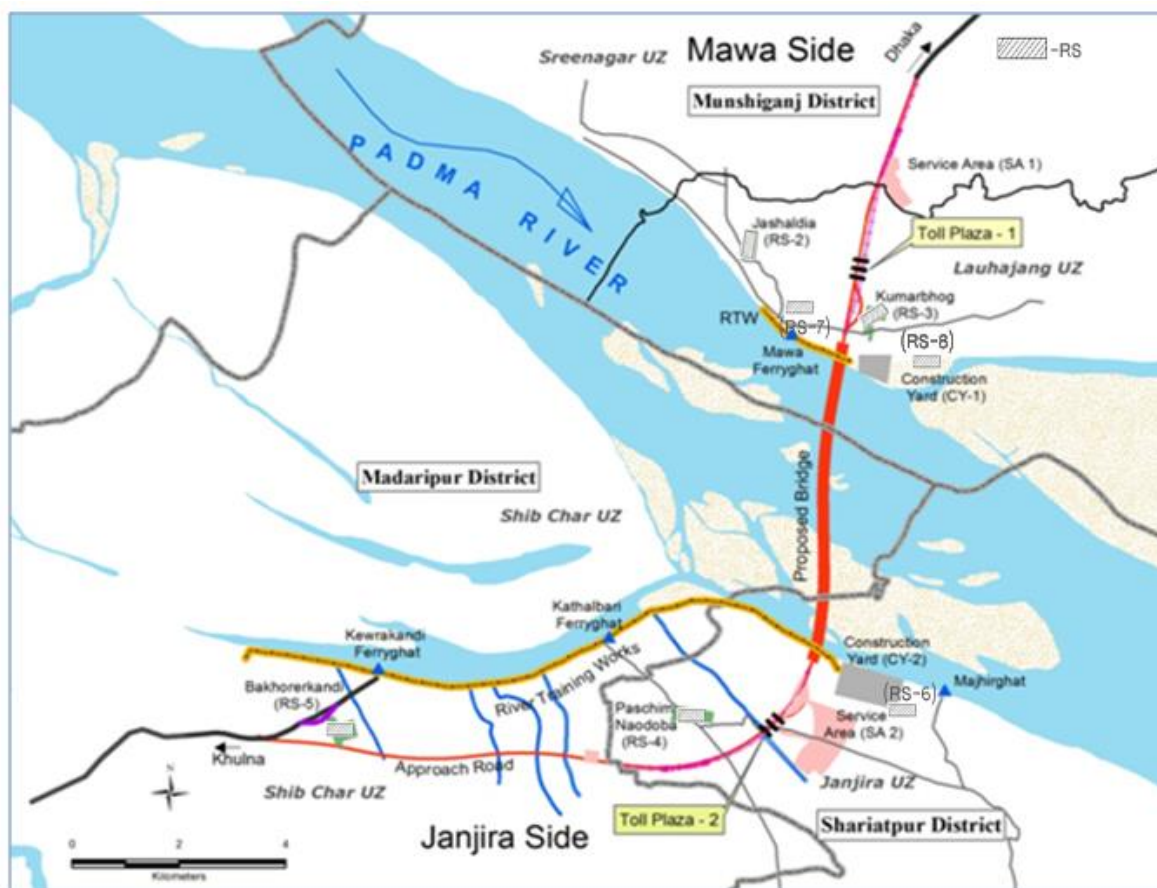


Fig. 2.1: Padma Multipurpose Bridge location, Source: Bangladesh Bridge Authority (2020)

Impacts

A considerable amount of work had been undertaken on this project, primarily since completion of the construction of the Bangabandhu Bridge (Jamuna Bridge) in June 1998. There were several feasibility studies (FSs) between 2000 and 2005 reviewed for their accuracy, completeness, and relevance to the Detailed Design Phase of the Project. The Prefeasibility Study and Feasibility Study were the most relevant documents (Wheeler, 2011). An Environmental Impact Assessment (2010) was carried out during project preparation to ensure that the environmental impacts are identified, prioritized, and appropriately managed during all stages of the project. While the assessment recognizes many benefits from the project—including new employment and business opportunities, improved connectivity, reduced air, and noise pollution, and less traffic congestion—the assessment also identifies the key environmental impacts from large-scale construction in the project area.

The Social Action Plan conducted by the Bangladesh Bridge Authority provided the socioeconomic status of the three districts around the PMBP (Wheeler et al., 2010). The report mentions that the three districts of the project were predominantly rural with an average urban population of 11%. The average household size in the district was estimated at 5.1 members on average. Single-person households account for a mere 0.55 %. During the last decades, the urban population in the districts of Shariatpur and Madaripur has increased drastically by respectively 66% and 65% respectively, which is almost double the national rate of 37%. The urban population of Munshiganj district on the north side of the bridge has increased by 35%, which is more in line with the national rate. An estimated 30% of the

households in Mawa and Janjira live under the absolute poverty line as per the 2006 data, which is only marginally lower than the average of the district at 32%. Large parts of the districts are rural with 60 to 75% of land used for agriculture. About 60% of the residents in the three districts own agricultural land. Only 19% of the land is irrigated. Poverty incidence on the Janjira side is almost double than that on the Mawa side. An estimated 7.5% of all households in Mawa live under the hardcore poverty line against 12% on the Janjira side (BBA, 2010).

Mawa on the mainland to the north is a small town with a high population density (4900 per km²). It consists of more or less compact, mostly commercial settlements along the existing highway and linear, fairly compact village settlements along the riverbank. The residential areas include many households that were displaced by erosion, living on lands provided by relatives either on a rental basis or as “free-users” – locally known as *nodibashior uthuli* (BBA, 2010). The villages affected on the mainland on the Janjira side are relatively new settlements developed on chars (river islands formed by accretion) formed 70-80 years ago. The population density is much lower than in Mawa with an average of 1319 per km. The village settlements, locally called *kandi*, are mostly linear along the riverbank and are typically named after the “pioneer” settler or influential *matabbar* (village leader), which shows the kinship and/or patronage character of village settlements in the floodplain. There are also village settlements and commercial establishments along the bank of the south channel giving easy access to two ferry *ghats*, landing sites for ferries coming from Mawa (BBA, 2010).

Based on the above socioeconomic scenarios, it is expected that the bridge will contribute significantly to the social, economic, and industrial development of this relatively underdeveloped region with a population of more than 30 million. 29% of the total area of Bangladesh will be a direct benefit for this bridge. Therefore, the project is viewed as a very important infrastructure towards improving the transportation network and regional economic development of the country. The construction of Padma Bridge is expected to generate welfare to the people of Bangladeshi general and the people of South West in particular. The benefits are expected to arise from the greater integration of regional markets within the Bangladeshi national economy. It will directly impact the national 17 GDP (1.2%) of our country (BRAC, 2016).

Lives and livelihoods

Definition

It is very difficult to define lives and livelihoods with some words, sentences, or even with some paragraphs. Furthermore, these two words are not well documented in the literature. In general, a person's livelihood (derived from *life-lode*, ‘way of life’) refers to their ‘means of securing the necessities -food, water, shelter, and clothing- of life’. Livelihoods have been defined in several kinds of literature in different ways. According to the Cambridge Dictionary (2017), livelihoods means, “the way someone earns; the money people need to pay for food; a place to live, clothing, etc.” The English Oxford Living Dictionaries (2017) defined livelihoods as, a means of securing the necessities of life. Chambers and Conway (1992) stated that a livelihood comprises the capabilities (including both material and social resources) and activities for a required means of living. However, livelihood is defined as a set of activities performed to live for a given life span, involving securing water, food, fodder, medicine, shelter, clothing, and the capacity to acquire above necessities working either individually or

as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain and enhance its capabilities and assets both now and in the future, while not undermining the natural resource base". Livelihoods are the ability to full fill basic needs or basic rights of the household which secure adequate food, health, shelter, basic education, a minimal level of income, and participation in the community (Rahman & Akter, 2010). Analyzing livelihood, it is revealed that livelihood can ensure to use the material and social resources which can help to eliminate or control poverty. In this regard, assurance of access to assets is very important, as diversification and volume of assets and balanced usage of assets play a key role to ensure livelihoods.

Much definition has been concentrated on the livelihoods or sustainable livelihoods. In general, the lives and livelihoods have been comprised of the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living: A livelihood is sustainable than can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers and Conway, 1992; Sophie, Acharya, and Biswas, 2015). Sustainable livelihood focuses on the livelihoods of poor people, the complexity of those livelihoods, and the associated opportunities and constraints. Analysis and intervention in the SL approach are holistic and cuts across individual sectors, reflecting diversity in the livelihoods of poor people.

'A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Ashley and Carney, 1999:4).

In sustainable livelihood, support from different capitals is essential. Four types of capital are identified in the IDS (Institute for Development Studies) framework (which does not pretend to be an exhaustive list) which supports and sustains livelihood, such as Natural Capital, Economic or Financial Capital, Human Capital, and Social Capital. Household livelihood security is defined as adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation, and social integration) (Sophie, Acharya, and Biswas, 2015). The sustainable livelihoods approach is a way of thinking about the objectives, scope, and priorities for development activities. It is based on evolving thinking about the way the poor and vulnerable live, their lives, and the importance of policies and institutions (Serrat, 2017). It helps formulate development activities that are.

- People-centered
- Responsive and participatory
- Multilevel
- Conducted in partnership with the public and private sectors
- Dynamic
- Sustainable

The sustainable livelihoods approach facilitates the identification of practical priorities for actions that are based on the views and interests of those concerned but they are not a panacea. It does not replace other tools, such as participatory development, sector-wide approaches, or integrated rural development. However, it makes the connection between people and the overall enabling environment that influences the outcomes of livelihood strategies. It brings attention to bear on the inherent potential of people in terms of their skills, social networks, and access to physical and financial resources, and the ability to influence core institutions.

The lives and livelihoods are an important and appropriate way of poverty reduction as well as improving the welfare of rural people. In development research, it deals with how people can earn promising income and improve the standard of living. It is well recognized that farm households' engagement in non-farm activities is a pathway out of poverty in rural areas of developing countries (IFAD, 2011). In general, empirical studies points to a significant relationship between rural household's welfare and a diverse set of income-generating activities. All of these activities may not have the same impact on the household's welfare indicators (Salam, Bauer, and Palash, 2019). The volume of food intake by an individual every day is an indicator for assessing sustainable livelihood. The rapid decrease in food availability per capita has been a serious concern towards attaining sustainable livelihood. Food and nutritional security are subsets of livelihood security; food needs are not necessarily more important than other basic needs or aspects of subsistence and survival within households.

How will we improve and measure our lives and livelihoods?

The literature on lives and livelihoods is overwhelmed. Most of the studies indicate the lives and livelihoods in the poverty reduction literature. Many studies find this concept as the wellbeing, household welfare, or standard of living. In general, poverty alleviation is mostly used as economic wellbeing indicator towards lives and livelihoods (Reardon et al., 1992; Block & Webb, 2001; Ravallion & Datt, 2002; Holden et al., 2004). Some studies use food consumption or calorie intake as a welfare indicator (Musyoka et al., 2014; Seng, 2015) in the livelihood framework. However, only food consumption cannot fully indicate the whole standard of living in a household. Access of the rural people to basic services such as electricity, water, sewage facilities along with fundamental needs (food intake, consumption of cloth, housing, medicine, and education services) are viewed as a reflection of the household's welfare standing (Jesko & Lanjouw, 2006). Though savings is another part of the income provides household security, expected to expense in the future for improving living standard. Therefore, it is generally assumed that more expenditure on the daily necessities indicates a more welfare situation. Household's per capita total expenditure comprising of expense on food, clothing, education, health, transport, fuel, and the festival is used as a household-level indicator of the welfare of a community. Household's total consumption expenditure is considered here instead of household income, as many empirical works stated that it can be measured with more accuracy than using income. It is generally assumed that poor people expense less on the consumption of food and other non-food goods and services comparing to rich people.

Initiatives to increase lives and livelihoods in Bangladesh

The global literature on increased lives and livelihood is lots. Even many studies focus on the techniques and strategies to improve lives and livelihoods. Most of the literature and studies documented these as reducing poverty, increase employment and involvement of the people in nonfarm sectors, increase per capita income through income generation activates, are women's involvement in income are found common. In the process of gradually decreasing labor employment in agriculture, income diversification outside agriculture can play a crucial role in the development of the rural economy. In general, involvements in various non-income activities in combination with agricultural production contribute to the income level of the farm household. This type of strategy adoption may stabilize household incomes through its expanding self-insurance mechanism (Seng, 2015).

The existing literature identified income expansion, wealth accumulation, and risk reduction as major reasons for participation in a distinct set of income-generating activities (Davis et al., 2010; Nielsen et al., 2013). Moreover, a set of additional empirical works focused on the economic impacts of engagement in nonfarm employment on farm households by analyzing the impacts on farming practices, household incomes, or household food consumption (Scharf & Rahut, 2014; Seng, 2015). The results confirmed the crucial role of non-farm activities on farm household's income through increasing farming income, production efficiency, and farming practices. Participation in nonfarm activities improves per capita food consumption in Cambodia (Seng, 2015). However, engagement in all types of non-farm employment does not represent the same level of welfare improvement. Although the relationship between engagement in nonfarm employment and economic wellbeing predominantly shows its impact on reducing poverty in Bangladesh, small households cannot get rid of education poverty still now (Nargis & Hossain, 2006; Malek, 2011). Besides, food consumption, non-food expenditures like expenditure for education, health, clothing, etc. also could be a welfare indicator for the household. Thus, it is important to pay attention to different income diversification strategies, which are differentially accessible to rural households. They examined the impact of income diversification on the welfare of rural households in Bangladesh. Salam, Bauer, and Palash (2019) argued that emphasized on household's specific livelihood strategies include farm and combinations of farm and non-farm income-earning opportunities can be powerful strategies to improve livelihoods. Besides, the form of structural equations was used in their study for better understanding the causal linkages between components of different strategies and household welfare

The importance of agriculture in rural livelihoods is declining, while the importance of non-agricultural sources, such as business, services, remittance, and the non-farm laborer is increasing (Hossain and Bayes, 2010). The contribution of agriculture to rural household income dropped from 60% in 1988 to 45% in 2013. Land owned per household has declined from 0.60 ha in 1988 to only 0.30 ha in 2013 (Hossain and Bayes, 2014). On the other hand, agriculture is a risky investment due to the volatility in price and weather. The impact of "Risk" and "Seasonality" in agriculture triggered the diversification process in rural occupations and income. On the other hand, non-farm occupations reduce the risk by combining activities that have different risk profiles, while they can also ameliorate labor and consumption smoothing problems associated with seasonality (Ahmed et al., 2018).

Rural livelihood diversification may help to increase rural people's lives and livelihoods. It can be defined as the process by which rural households construct an increasingly diverse portfolio of activities and assets to survive and to improve their standard of living (Ellis, 2000). It also refers to a continuous adaptive process whereby households add new activities, maintains existing ones, or drop others, thereby maintaining diverse and changing livelihood portfolios. People diversify their livelihoods by adopting a range of activities and income sources. Thus, income sources may include 'farm income', 'non-farm income' (non-agricultural income sources, such as non-farm wages and business income), and 'off-farm income' (wages of exchange labor on other farms, i.e. within agriculture, including payment in kind) (Ellis, 2000). Due to limited land per capita and scarcity of resources, people are now shifting their livelihoods from agriculture to non-agricultural sectors. Large numbers of people are migrating from rural areas to urban areas and also abroad as overseas foreign workers (OFW). Moreover, climate change has made agriculture more vulnerable and risky. The youth are more interested in non-agricultural jobs as it gives higher income compare to the job in the agricultural sector. It has been seen that significant changes are happening in terms of earning income from different sources as well as livelihood patterns of the people living in rural areas of Bangladesh (Hossain and Bayes, 2010). But the process and extent of rural livelihood diversification are not the same throughout all the regions of Bangladesh. The ramifications of livelihood diversification on rural development are colossal. But, the kinds of literature on rural livelihood diversification in Bangladesh are fragmented and scanty. Some studies deal with the income variation and determinants of nonfarm and off-farm income diversification in Bangladesh (Malek and Usami, 2009; Rahman, 2013). However, no literature is available on the level of livelihood diversification and its determinants. Therefore, it is very essential and useful to measure the extent of livelihood diversification in rural areas of Bangladesh and determine the factors affecting the extent of livelihood diversification.

Literature: Lives and livelihoods of the PMBP affected people

Through searching possible literature on the lives and livelihoods of the PMBR, the study team found several important pieces of literature. These are primarily research reports, reports, articles published by magazines, daily news, and journals though the research articles from high indexed journals are quite a few. These studies and articles reported various aspects of the socioeconomic conditions and the impacts of the PMBP. The Bangladesh Bridge Authority (2010) conducted a study in the affected area and found that income on the Mawa side is mainly generated through retail trade, services at the ferry ghat, industries like brick kilns, transport, production of firewood, etc. Mawa has a fish market, but not much land available for livestock holding, poultry, or kitchen gardening. The south side of the river has a strong agricultural character and most people earn their living by growing a wide variety of agricultural and horticultural crops. Farms are small and usually consist of several plots totaling no more than 1 acre. Cropping intensity on the south side is high. Possession of entertainment and life-easing home appliances is an indicator of the quality of life and the economic status of people in Bangladesh. Regarding agriculture, Bayes (2007) showed that project areas, cropping intensity for farms increased by about 9 percent. However, during the same time, the cropping intensity in control areas decreased by about 5 percent. In other words, land in project areas has been used more economically and intensively than those in control areas. It was noted that Project villages took the lead over the control villages in the post-Jamuna phase, although they were lagging, in terms of cropping intensity, in the pre-Jamuna period. Though the Bangladesh Bridge Authority (2010) reported that about 61% of

the population in the project area sleeps in good quality beds, 35% of the households possess steel almirahs and about 12% have a TV. People on the Mawa site enjoy higher standards than those on the Janjira site.

The Bangladesh Bridge Authority (2010) further reported that at the Mawa site most farmlands were only single cropped, with a minority of land used for double cropping. Crops grown during Kharif are often affected by early floods or insect attacks and suffer considerable losses. At the Janjira site, there was a different type of agriculture with much higher cropping intensity. A wide variety of crops is grown during winter including onion, pulses, spices, wheat, and mustard. Rice and jute are also major crops, especially in the lower-lying areas. At the Mawa site, most people worked in trade, business, or services (70%) with only a minority (5%) working in agriculture. At the Janjira site, the picture was different. About 50% of the population was dependent on agriculture, whereas only 25% worked in trade, business, or services. Poverty rates in the area were high and estimated at 30% of the households, with most of the hardcore poor living on the Janjira side of the river. The population of the main char Janajat (about 60 km²) is estimated at 200,000 people. Most of them are very poor and live mainly on agriculture and fishing. Farm sizes were small (below 1 ha and often smaller than 1 acre) and despite good soil productivity, farm incomes were low. Only a small part of the farms (19%) in the project area was irrigated by tube-wells. Rice was by far the most important crop (83%) grown in Mawa. Other crops grown in winter were potato, onion, and mustard. Less than 2% of the households indicated that they were dependent on fishing, but most people in the area were part-time fishermen. Fishing was probably an additional source of income for many people. A substantial part of the catching fish was made by the char people and comes from the waters of Char Janajat and some of the other chars upstream to be marketed at the Mawa wholesale fish market. About 9,000 people were directly dependent on the fish market and trade. About 20,000 people were directly or indirectly dependent on the various economic activities in and around the ferry ghats.

The Bangladesh Bridge Authority (2010) reported that all three districts have a district hospital and in the Upazilas, there are health clinics with a capacity of 50 to 100 beds. Each union has a health and family center and a rural health sub-center. NGOs also arrange temporary health care facilities in these areas. Common diseases are diarrhea, anemia, skin diseases, deficiency diseases, eye diseases, ear diseases, and waterborne diseases due to malnutrition and lack of hygiene. The quality of the health services in the project is poor. A sample survey of 390 households in the project districts indicated that about 10% male and 7% female population of schooling age were never attended school; 32% male and 20% female population of schooling age dropped out during secondary level of school on various grounds, poverty being the main factor.

According to the BIDS (2009), 31% of the female population in the project area is illiterate compared to 24% of males. Government incentives in recent years on female education increased enrolment of girls. The RAP study among the affected households in 2005/06 showed that girls' enrolment (52%) was higher than that of boys (48%). In Mawa relatively more girls attend school while on Janjira side more boys attend schools. The gap in education among males and females is more or less close at the primary and secondary school level, but it persists at higher secondary and tertiary level. At all secondary levels girls' drop-out rates are higher than boys'. Gender inequalities in all areas continue and are usually greater among

the poor. The report mentions that most people have to travel long distances to reach medical care in emergencies (Shibchar (30 min), Madaripur (2 hrs), or Dhaka (4 hrs). Since men are more mobile, they have better access to health care. Char inhabitants have to travel by boat to either Kathalbari to buy medicine or to Mawa to visit a health facility. In Mawa town, about 85% have access to a health facility, and 80% visit a physician. In Janjira, about 70% seek assistance from a facility or a physician and 60% go to health services provided by NGOs. Most other people in the project area go to quacks and medicine shops for minor medical treatment. An analysis by the World Bank (2008) concluded that the key determinant of women utilizing reproductive health services was not so much physical access, as education level, exposure to media, and household income.

According to the last National Population Census (BBS, 2011), it was found that tube wells are the major source of drinking water being used by about 87% of the population, 37% of the population used sanitary latrines, 55% of the households in Munshiganj district have electricity, against 32% in Madaripur and only 14% in Shariatpur district. The BIDS (2009) showed few gender differences between the two sides of the river. Despite Mawa's greater proximity to services and Dhaka, men were noted to be much more mobile than women in both areas. Women on the Janjira side lead a village-based existence with mobility restricted to visiting relatives or medical facilities in times of emergency. Husbands or sons do the buying and selling at markets on behalf of the village women. Many women in Mawa have husbands or sons living and working in Dhaka. As a result, women around Mawa predominantly live in rented houses or leased land much closer to each other. Women on the Janjira side enjoy more space mostly on their land. Women are traditionally involved in home-based reproductive and unpaid domestic production work. The participation of women in agriculture is mostly in the form of rice husking and processing of crops at the household level. Women have access to NGO-based micro-credit, but often they borrow money for investments made by their sons, husbands, or fathers. Very few women have been able to invest directly in commercial operations like small shops, cattle raising, beef fattening, etc. In Mawa women and girls are often involved in sewing designs for garments, resale of fabric, home-based tailoring, or as cooks in local restaurants or migrant workers' messes. Poor widows and divorcees normally work as domestic help in local households. The poor women have little control over family resources unless the household is female-headed or has access to micro-credit. The gap between men and women is visible concerning health care, food intake, financial position, education, ownership of property, and participation in decision-making. Gradually, women are obtaining access to small business concerns such as poultry, duck farming, grocery, storing of seasonal goods, etc. Women are increasingly attaining access to ownership of the land, business, and they are struggling to establish their rights and ensuring their role in family lives and communities as well.

There are several chars within the project area of influence. The largest is Char Janajat, which lies between 2-15 km upstream from the bridge, along the south bank stretching from the confluence of the Arial Khan with Padma River and Janjira. It is a complex of char lands developed over the last 20 years and attached to the mainland in recent years. Char Janajat is moderately populated with numerous small villages locally called Kandi. An estimated 43% of the area is used for agriculture the rest consists of grass and reed lands and open water. Another major complex of chars (Char Teutia- Louhajong/Korhati) lies 1 km downstream of the bridge stretching from Mawa along the north bank with little or no settlement. The other

chars are often small, usually not vegetated nor inhabited. The char lands within the project boundary cover 47 Mouzas belonging to 16 unions in 4 Upazilas of 4 districts where according to the 2001 Census, about 93,000 people live on the chars upstream and almost 66,000 people on the chars downstream of the bridge. The chars in the study area undergo erosion due to the heavy flow of the river along the southwest side. Almost eight times more land was eroded along the bank lines than was accreted in the River Padma between 1984 and 1993. In the project area, there has been erosion on both banks, although the erosion rate was less. The char land communities live without or with only limited modern civic amenities like a good road network, health centers, cyclone shelter, schools, electricity supply, or other social institutions. The main occupation of char land dwellers is agriculture with relatively much livestock husbandry. The current livelihood sources of the char people include agriculture (80%), fishery (10%), trading (5%), and services (5%). Job opportunities in the char land are much more limited than on the mainland. A sizable proportion of char people migrate to the mainland seeking wage employment. The char lands are characterized by the near absence of roads and other infrastructure. Most transport is by boat. The high floods of 1998, 2004, and 2007 inundated most of the chars by 1.5 m of water and people became homeless and had to evacuate to safer places. Most char land-dwellers have been subjected to previous evacuations due to erosion or damage by high floods. People on the chars are socially and economically very vulnerable.

Social dynamics and migration patterns of the study areas varied. Landownership is constantly changing because of erosion and accretion. Migration may be permanent or temporary. People move permanently when their homesteads are eroded to accommodate themselves on newly accreted land or to find work in other areas. Temporary movements are made to take advantage of seasonal economic opportunities, which may be outside the chars (out-migration to work in urban areas, for example), or within when people use land that is only available in the dry season (in-migration).

The Bangladesh Bridge Authority for the Asian Development Bank (2011) conducted a survey and found that the affected households and communities were seen to have very positive attitudes to the Project. Aside from being proud of having a project of national importance in their area, the communities recognized the benefits of the bridge in terms of improved transportation and access to the southwest region, the increased value of residual land, protection against erosion, multimodal transport facilities, opportunities for new businesses, employment and local development, resettlement in properly designed sites with civic amenities, and marketing and tourism development. The affected households were of the view that they would have an improved living environment at the resettlement sites with the availability of civic amenities and social infrastructure. Notably, poor and highly vulnerable households who had earlier no secured tenure would, for the first time, be provided with titled land (housing plots), economic stability, and improved quality of life at the resettlement sites. The study reported that the displacement of some village women was noted to be anxious about having to move to a new location (resettlement areas). This anxiety was very much correlated to age, with older women particularly upset and worried about the changes the project would induce in their lives vis-à-vis the younger women who were found to be more accepting and pragmatic towards the same. Women voiced that it would take them some years to re-establish their lives and re-create relationships and social ties with their neighbors, re-establishing shade and fruit trees, gardens, etc.

Islam et al., (2011) argued that the proposed Padma Bridge on the Char-Janajat area is a new challenge and opportunities for the local communities to improve their socio-economy and that can ensure livelihood sustainability in the char-lands of the Ganges-Padma River basin and that can ensure livelihood sustainability in the char-lands of the Ganges-Padma River basin. The objective of this study is to understand the char-lands stability and development scenarios for Char-Janajat due to Padma Bridge construction in the region. The bridge will make a connection with the east and west part of the country. The erosion and vulnerability of the Char-lands in the Padma River channel will be reduced due to Padma bridge construction. The char dwellers' livelihoods and socio-economic improvement will be ensured. The findings of this study could be an important guideline to make the char-land management and livelihood sustainability plan for the Ganges active delta in Bangladesh.

The Environmental Assessment Report (Wheeler, 2010) mentioned that positive impacts would be higher than the negative impacts as economic activities along the southern end of the bridge (Janjira side) will bring about considerable benefit to the local communities in respect of setting up of small and medium and, even, hopefully of large industrial establishments. Trans-boundary positive impacts will be significant as the bridge will facilitate road and rail movement along the routes to the neighboring countries. Major environmental impacts are changes in land use patterns and landscape, the impact of economic activities, and drainage and sanitation. The Project involves land acquisition and resettlement including the impacts on economic activities of the inmates and other direct and indirect Project Affected Persons (PAPs). As, hawkers at ferry ghats, fishermen, ferryboat, speed boat, country boat, and lunch operators and owners, etc. will lose their livelihood due to the closure of the River crossing services and the passengers using the bridge to cross the River. In a report named Project Appraisal Documents prepared by the World Bank (2011) showed that the major impact under the project was land acquisition and household relocation. The total area of land to be acquired is expected to be 1039 ha of largely agricultural areas. The project will affect a total of 76,211 people in about 13,578 households. The population affected through agricultural land acquisition is 46,637 in 8,526 households. The project would also require the relocation of 20,972 people in 3,886 households, including 60 households who have lost their family business along with their residences. There were about 960 households of 5,179 people whose businesses were affected, and about 2,882 whose jobs as wage earners were likely to be affected due to the construction of the project. It should be noted that, among the affected population, the landless and squatting population (including affected households displaced by river erosion in past years), was over 30% of the total affected households. The project was expected the influx of construction workers over the project implementation period by about 5,000 during the peak period.

The World Bank (Sabet, 2011) reported that the influx of population will increase public health risks, HIV, and STD diseases in particular, to both the construction workers and the local population. The relocating households would also be vulnerable to health impacts during the relocation process. Construction activities could interfere in fishing activities for local communities. There is a gender dimension in all the impacts identified. Women, particularly poor and female-headed households, would be more vulnerable under these project impacts. These have been identified and assessed through the consultative planning process. Social vulnerabilities in the context of this project may include domestic violence against women,

public sexual harassment, vulnerability to sexually transmitted infections (STI) including HIV/AIDS, human trafficking. An information campaign will be conducted to disseminate materials on STI and HIV/AIDS, raising awareness about public health services in the area and against human trafficking.

In a project of this magnitude and complexity, there are many impacts and risks, which potentially could affect air, soil, and water quality, and which, could cause hindrance (noise, dust, traffic) or pose safety hazards (health and safety). Most of these impacts are less significant and could be avoided, prevented, or mitigated by adopting good operational practices and environmental management guidelines and by permanent monitoring and inspection (Sabet, 2011). The main impact in the floodplain will be a decline of seasonal wetlands, which are the agricultural lands flooded during the monsoon periods. Their ecological significance is more or less comparable to that of the submerged areas around the chars; a decrease of these temporary wetlands will result in a loss of feeding and nursing biotope of all fish and crustacean species. Dredging of *char lands* and submerged embankments will result in loss of wildlife habitat and aquatic fauna will be forced out of their preferred habitat. It is estimated that about 500 ha of vegetated char and about 500 ha of submerged embankments will be permanently lost; deep dredging in the main gully during will stop Hilsa migration; disposal of dredge material on *char lands* will severely impact flora and fauna on the *chars*, whereas disposal of dredge material in the river in the dry season will create negative impacts on aquatic life. Islam and Rashid (2011) noted that the losses for displacement riverbank erosion are such an environmental catastrophe that cannot be compared to other environmental disasters. In every disaster, other than an earthquake, people lose their household structure at best but due to riverbank erosion, people lose their land and become homeless. There are few losses, which can never be converted to money. Besides the loss of land, they lose other house-hold things too. Being homeless, they lost their asset too. People of the study area have lost their agricultural and homestead land on one hand and the other hand they became rootless, ousted from their community, detached from their family ties and social bondage. The effect was enormous and the loss was quite impossible to regain.

Theoretical perspective

Sustainable Livelihoods Framework (SLF)

The sustainable livelihoods framework (SLF) is an effort to conceptualize livelihoods holistically, capturing the many complexities of livelihoods, and the constraints and opportunities that they are subjected to. These constraints and opportunities are shaped by numerous factors, ranging from global or national level trends and structures over which individuals have no control, and may not even be aware of, to more local norms and institutions and, finally, the assets to which the households or individual has direct access. Taking a holistic perspective of people's lives, the SLF acknowledges the multi-sectoral character of real life, particularly common in rural communities. Bringing together the notions of wellbeing, security and capability, vulnerability and resilience, and natural resource sustainability, the SLF has proven to be a useful aid in the assessment of the impacts of development initiatives with an emphasis on local lives and perspectives. It can be used to analyze the complex livelihoods of a community and to identify potential strategies to make livelihoods more productive and sustainable. It permits the merging of different approaches

to understanding how varied factors, such as land tenure and different types of organization, can shape the livelihoods of rural communities.

The Sustainable Livelihoods (SL) Approach was formally conceptualized by the Department for International Development (DFID). Notions of sustainable livelihoods emerged following the 1997 UK Government White Paper on International Development and have since influenced how research and development projects are undertaken, with particular emphasis on the policies and actions which promote sustainable livelihoods. Oxfam, CARE, and UNDP advocate their own sustainable livelihoods approach and customized framework. The Livelihoods Framework was developed to help understand and analyze the livelihoods of the poor. It is not intended to provide an exact representation of reality, but to stimulate thinking about what exactly constitutes a livelihood, and how the interactions between stakeholders represented in the framework can be examined, and how these interactions can foster livelihood improvements and poverty reduction (Fig. 2.2). The SL Approach provides a philosophy for the application of tools for which there is a plethora of reference material. The application of the SL Approach is continually evolving and it is difficult to do justice to its flexibility in a few pages.

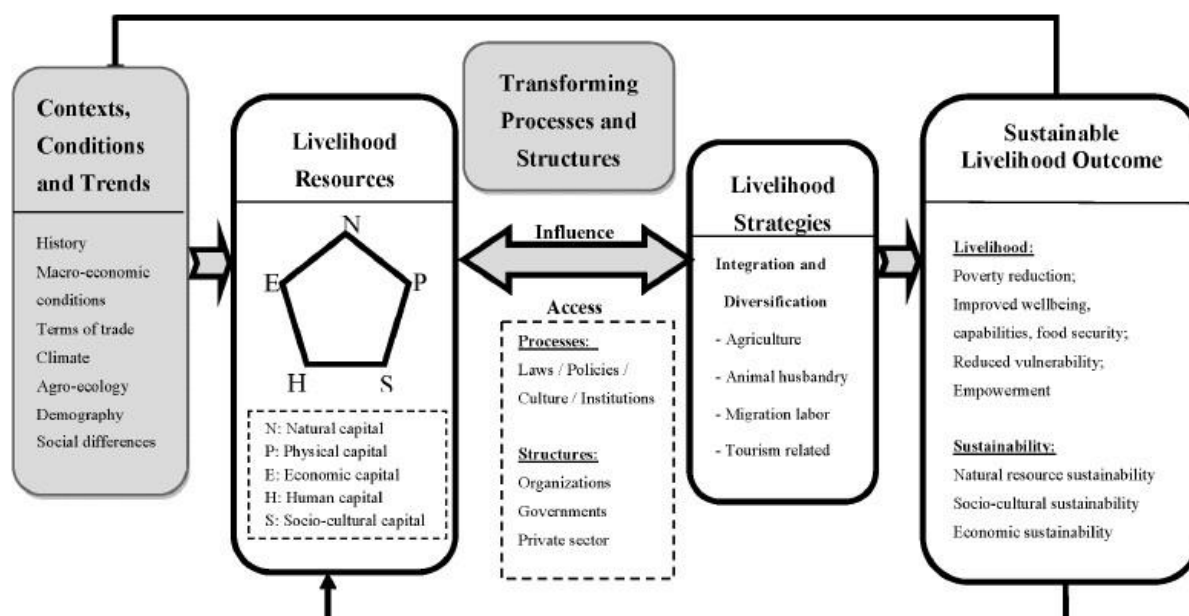


Fig. 2.2 Sustainable Livelihood Framework. Source: Developed by Research Team based on Scoones (1998) and Tao and Wall (2011)

Principles of Sustainable Livelihood Framework (SLF)

Poverty-focused development activity should be:

- People-centered: sustainable poverty elimination will be achieved only if external support focuses on what matters to people, understands the differences between groups of people, and works with them in a way that is congruent with their current livelihood strategies, social environment, and ability to adapt.
- Responsive and participatory: poor people themselves must be key actors in identifying and addressing livelihood priorities. Outsiders need processes that enable them to listen and respond to the poor.
- Multi-level: poverty elimination is an enormous challenge that will only be overcome by working at multiple levels, ensuring that micro-level activity informs the

development of policy and an effective enabling environment and that macro-level structures and processes support people to build upon their strengths.

- Conducted in partnership: with both the public and the private sector.
- Sustainable: there are four key dimensions of sustainability - economic, institutional, social, and environmental. All are important - a balance must be found between them.
- Dynamic: external support must recognize the dynamic nature of livelihood strategies, respond flexibly to changes in people's situations, and develop longer-term commitments.

The community is a key stakeholder in the lives and livelihoods. Recent applications of SLF in measuring lives and livelihoods particularly to the vulnerable communities have been proven its suitability to evaluate the impacts from a community perspective and to identify suitable strategies to enhance community engagement and improve community livelihood sustainability, particularly in a rural context. Being a people-centered concept, the SL approach emphasizes community involvement in the development and their freedom, albeit with constraints, of livelihood choices (Su et al., 2018).

Key elements of SLF

A. Livelihood Assets: A breakdown of the five capital assets used in the framework is listed below:

- **Natural Capital:** The natural resource stocks from which resource flows useful for livelihoods are derived (including land, water, wildlife, biodiversity, environmental resources)
- **Social Capital:** The social resources upon which people draw in pursuit of livelihoods (i.e. networks, membership of groups, relationships of trust, access to wider institutions of society).
- **Human Capital:** The skills, knowledge, ability to labor, and good health important to the ability to pursue different livelihood strategies.
- **Physical Capital:** The basic infrastructure (transport, shelter, water, energy, and communications) and the production equipment and means which enable people to pursue their livelihoods.
- **Financial Capital:** The financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihood options.

B. The Vulnerability Context: The vulnerability context frames the external environment in which people live. Factors that make people vulnerable are important because they have a direct impact on options that are open to people in their pursuit of livelihood outcomes. The key factors of vulnerability are:

- **Trends:** The current and changing status of resource stocks, population density, technology, politics, and economics.
- **Shocks:** A large infrequent, unpredictable disturbance which has an immediate impact, for example, how climate and conflict affects people's livelihoods by altering the balance of capital assets available to them. Assets may be prematurely abandoned as part of a coping strategy.
- **Seasonality:** Seasonal shifts in prices, employment opportunities, and food availability are some of the most enduring sources of hardship for poor people.
- **Culture:** The effect of cultural practices on the way people manage their assets and the livelihood choices they make.

C. Policies, Institutions, and Processes (PIPs):

The institutions, organizations, policies, and legislation that shape livelihoods from national to village level interactions. These structures and processes are critical in determining who gains access to various assets and influencing the effective value of each asset. Markets and legal restrictions also impact on the value and use of an asset, as well as the convertibility of an asset into one that increases choices available to the poor. An enabling environment of effective institutions and policy will support and strengthen existing assets of the poor and limit the adverse impacts of vulnerability. In this context, it is useful to consider the roles and responsibilities of different organizations, and the rights and relations between different stakeholder groups. PIPs describe the governance environment in which livelihoods are constructed. They constitute the macro-meso-micro linkages and relationships between the state, private sector, civil society, and citizens. Unsupportive legal and regulatory frameworks are a key constraint to the creation of a supportive institutional environment for sustainable livelihoods. Good governance requires democracy, transparency, and accountability in decision-making, removal of corruption, responsiveness, and to be participatory.

D. Livelihood Strategies and Outcomes: Livelihood strategies indicate the choices and associated activities that households undertake to maximize the use of existing capital stocks. They are measures employed by rural households to increase their livelihood options by reacting to constraints and vulnerabilities. Strategies adopted by communities sometimes extend beyond that of income generation; in fact, many strategies have direct links to transport and value of time. Transport is integral to agrarian livelihoods in rural areas, particularly to agricultural marketing. How agricultural inputs are transported to the farms and produce evacuated to the markets is critical to the profitability of small-hold farms. Rural communities are extremely adept at managing their assets and creating safety nets in the event of adversity, by adopting both natural and non-natural resource-based strategies (including rural-urban migration for formal/informal employment). Scoones (1998) stated that five key indicators are important for assessing the achievement of sustainable livelihoods (i) poverty reduction, (ii) well-being and capabilities, (iii) Livelihood adaptation, (iv) Vulnerability and resilience, and (v) Natural resource base sustainability. Figure 6 shows the network of char-land livelihoods sustainability where 8 potential elements are interlinked and interrelated. All the elements of the livelihood framework are playing an important role in setup the livelihood framework. Islam (2011) developed a livelihood framework with eight livelihood assets based on a study conducted at the Char-Janajatin the Padma Multipurpose Bridge project area. They mentioned that the basic needs could be fulfilled in the char-lands when the dwellers would be able to use eight livelihoods assets properly (Fig. 2.3) which are interlinked and interrelated. All the elements of the livelihood framework are playing an important role in set-up the livelihood framework. The basic needs could be fulfilled in the char-lands when the dwellers would be able to use 8 livelihoods assets properly.

Social Capital Approach

Our study has many implications for the social capital approach. It is particularly true that one of the objectives of this Padma Multipurpose Bridge is to improve human relationships, social networking, bonding, and bridging among the communities to share common and collective norms and values where the elements of social capital can be effective. Social capital helps to enable some firm actions by the people within the structure. Characteristically, social capital is beneficial, and it can be realized by the practice and behavior of both people and institutions (Coleman, 1988). Putnam (1993, 2001) stated that “social capital is the features

of social life networks, norms, and trust that enable participants to act together more effectively to pursue shared objectives.” Collective action is an outcome of the combination of norms and mutual networks, with social trust and solidarity being its main pillars. Kilpatrick et al., (2007) defined social capital into two core groups. One of those is ‘collective benefit’ and the other is ‘individual benefit’. They separated the definitions by Putnam (2000), and Narayan and Woolcock (2000) as collective benefit groups and Coleman’s (1988) and Bourdieu’s (1986) as individual benefit groups. On the other hand, the concept of social capital has been summarized into two significant approaches by Matějů and Vitásková (2006) in which the keystone of social capital is mainly conceptualized as an essential representative of the social environment created by those people who have cooperation and coordination of strong interpersonal and institutional trust among themselves. Ostrom and Ahn (2009) provide a figure (Fig. 2.4) where they mention three elements such as trustworthiness, networks, and institutions that create trust as a contextual variable which is input to collection action.

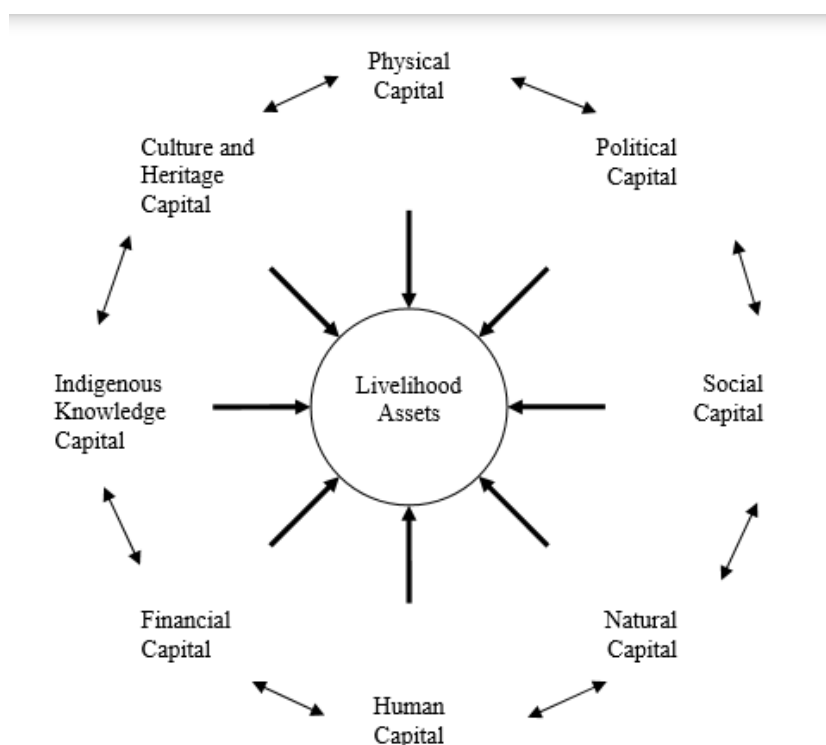


Fig. 2.3 Eight elements of livelihoods. Source: Islam (2011)

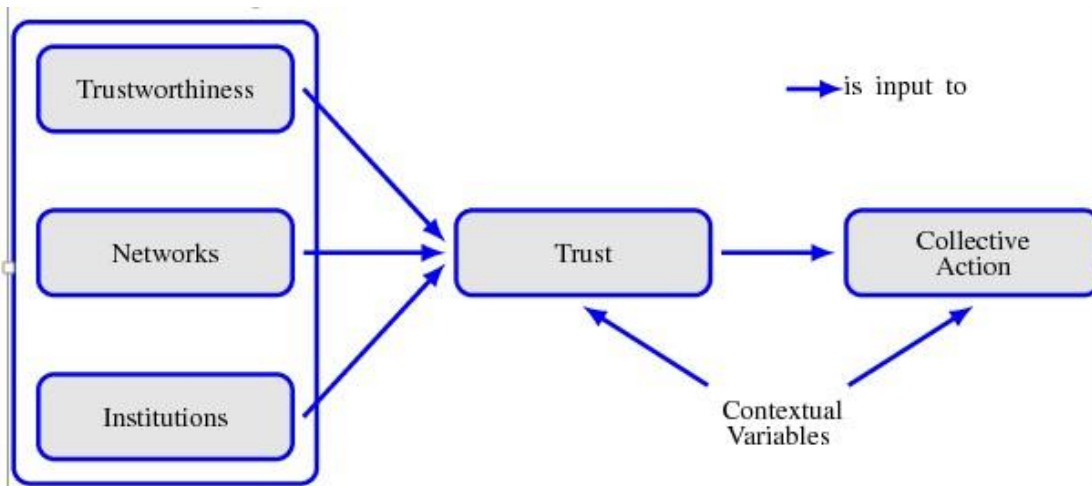


Fig. 2.4 Forms of social capital. Source: Ostrom and Ahn (2009)

The World Bank (2000) explained social capital from three different dimensions which imply that there are three basic aspects of social capital: bonding social capital, bridging social capital, and linking social capital and their definition of social capital. Bonding social capital is strongly related to those people who are from the same families, areas, friends, and neighbors who can help each other by using this element of social capital. Bridging social capital is the element that has a three-way application like between government and the migrant workers, employers, and the migrant workers, policymakers, and the migrant workers. Linking social capital can change society through the mutual help of the people of higher level and lower level. The framework is built around two key dimensions of social capital: its scope (micro, meso, and macro) and its forms (cognitive and structural) (Figure). The framework treats social capital as a genuine asset that requires investment to accumulate and that generates a stream of benefits.

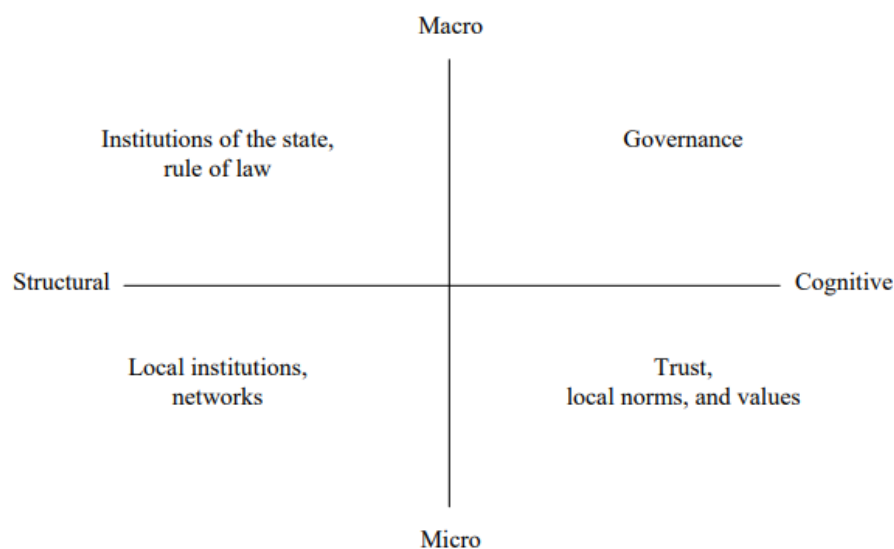


Fig. 2.5 Dimensions of Social Capital. Source: World Bank (2000)

Social capital describes the pattern and intensity of networks among people and the shared values which arise from those networks. The main stance of social capital used in this paper is to build a greater interaction between people generating a greater sense of community spirit. Social capital has been defined as a variety of different entities consisting of some

aspects of social structures and facilitates certain actions of actors within the structure. Social capital is inherently functional, and it is whatever allows people or institutions to act (Coleman 1988). Putnam (1993, 2001) stated that social capital is the features of social life networks, norms, and trust that enable participants to act together more effectively to pursue shared objectives. The norms and reciprocal networks make collective action, which is contingent on an existing foundation of social trust and solidarity (Islam, 2014). Matějů and Vitásková (2006) summed up two significantly different approaches to the conceptualization of social capital. The most dominant stream defined social capital primarily as an attribute of societies and as an inherent characteristic of a social environment based on the high degree of interpersonal and institutional trust facilitating people's cooperation. The other stream defined social capital in terms of mutually beneficial exchanges based on social connections and informal networks allowing individuals to achieve their own particular goals. This study considered both of these streams. Here, social capital has been used as an organized function that is regarded as a body of activities designed to enable individuals, families, groups, and communities to cope with the social problems of changing conditions (Islam, 2014).

The application of social capital depends on which particular context and in which particular perspective it is going to apply. It has a wide implication at the community level. Fig. 3.5 shows some general elements that social capital can produce such as a sense of belonging, networks, feelings of trust and safety, reciprocity, participation, citizen power/pro-activity, values, and norms outlook in life and diversity (Fig.2.6).

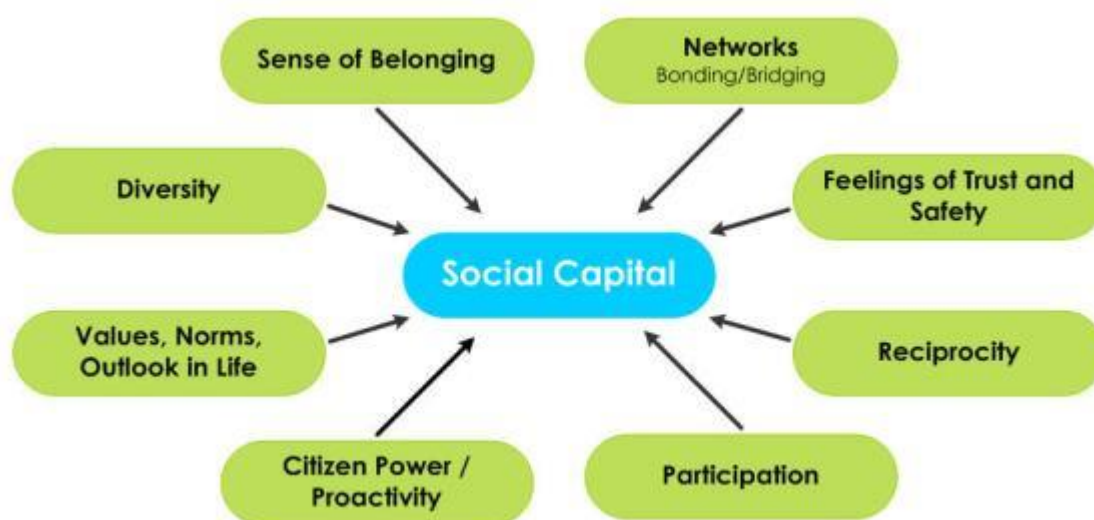


Fig. 2.6 General elements of social capital. Source: Developed by Study Team

Chapter 3: Research Methodology

Introduction

This chapter briefly highlights the different aspects of the methods and data of the study. First, the chapter sketches-out the major steps of the working framework and then discusses the step-by-step research methodology with the justification and the sample size with the procedures. This chapter also includes a Gantt chart and research limitations and challenges that the study team faced considering its contextual perspective such as socioeconomic and cultural conditions.

Major steps of the working framework

The study comprised of having five steps (Fig. 3.1).

Step one was a desk review consisting of available information from secondary sources. This included the review of relevant project documents, designing of the study, indicator selection, data source identification, study area selection, and development of study instruments.

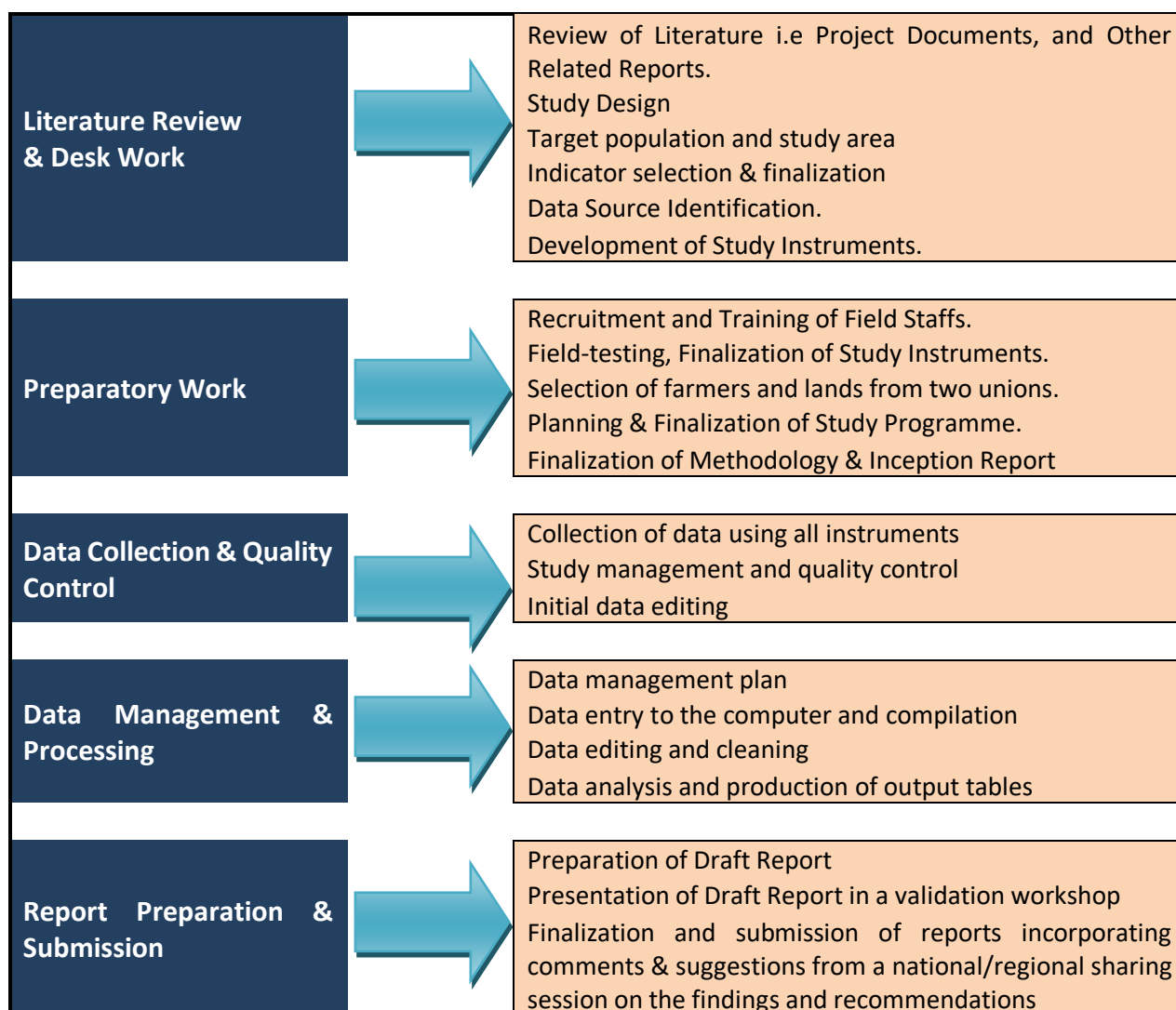


Fig. 3.1: A working framework

The second step was the preparatory work for the study. This included recruitment and training of field staff, pretest of instruments, field testing, and finalization of instruments after incorporation of comments obtained from the client and feedbacks from field tests and printing of instruments in the required number. At this stage, the team also finalized study locations and selected the respondents through consultations of the local partner NGOs.

The third step involved data collection and its quality control. The study collected the information to validate the project objectives, indicators, and targets with assessing the current socio-economic situation, and mental and psychological conditions and changes of the affected people affected by PMB; the scenario of migration and power politics happen due to this bridge; the various livelihood options of the people, the social dignity; and finally thoughts the effective and appropriate ways forward/solutions for improving the overall socio-economic situations to maximize efficiency, effectiveness, and impact of the project.

The fourth Step is data management, which included registration of filled-in instruments, office editing of the questionnaire, coding of open-ended questions, data entry, and data analysis. In the data analysis, a versatile computer database ACCESS and analysis software in SPSS used to bring out tables designed to get comparative outputs sector and area wise.

The fifth step is the preparation of the draft report and its submission to the Bridge Authority. After submission of the draft report, a national/regional Sharing Session on the Findings and Recommendations will be arranged. Comments from the workshop, the draft report will be finalized incorporating the comments and then submitted to the Bridge Authority.

Study methodologies

Identification of data source

For the successful completion of the study, two sources of data - primary and secondary were required. The main source of primary data was collected from the settlement and non-settlement households, and households from the non-affected households. The FGDs, in-depth case study, KIIs, and community mapping were conducted with relevant stakeholders such as community leaders, project teams, relevant NGOs, government officials, and line departments, etc. The secondary data sources such as BBS, Project office both for PMB and partners, different government ministries/departments, newspapers, internet were reviewed.

Research approach, research method(s), and use of a mixed-method for the study

This study employed a mixed-method approach to collect both quantitative and qualitative data (Fig. 3.2). The objective of this study is to identify and assess the socioeconomic and psychological conditions of the affected people due to established PMB. These included the causes of their shifting, changes in the lives and livelihoods, their current resources and their utilization, their services including health, hygiene and sanitation, their vulnerabilities, and social safety net. However, the study collected the quantitative data from the affected areas both settlement and non-settlement areas under the PMB project. The qualitative data from the mentioned stakeholders were very useful to compare with the two theories and approaches such as the Sustainable Livelihood Approach (SLA) and social capital. The study team thinks that many aspects of this study such as people's suffering and vulnerabilities and effective and appropriate way forward/solutions for improving the overall situation of the PMB affected people and to make a sustainable impact towards their lives, livelihood options, social dignity, and socio-economic conditions need qualitative data and also suggestions from

the expertise levels. To consider the nature and objectives of data, the study employed both social survey and case study methods in this mixed-method process.

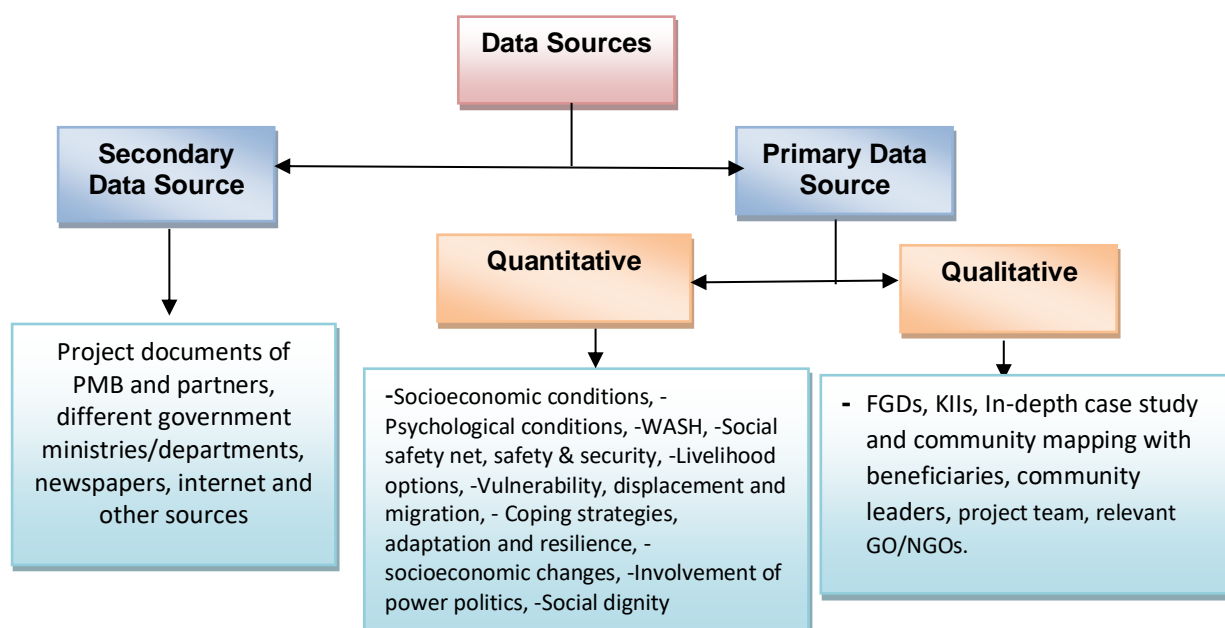


Fig. 3.2: Data Source

Table 3.1: Sample size for quantitative study

District	Upazila	Union	Settlement	Non-settlement	Outside	Total
Munshiganj	Louhajanj	Medinimondal	24.5 (390)	20.7 (720)	4 (4)	21.5 (1114)
		Kumarbhog	37.1 (591)	13.6 (475)	2 (2)	20.6 (1068)
		Haludia	0.3 (5)	1.3 (44)	0 (0)	0.9 (49)
	Sreenagar	Kalapara	0.2 (2)	1.7 (60)	0 (0)	1.9 (62)
		Rarikhal	0 (0)	0.1 (5)	0 (0)	0.1 (5)
		Vaggokul	0.1 (1)	1.7 (59)	0 (0)	1.8 (60)
Madaripur	Shibchar	Kathalbari	0.1 (1)	27.7 (963)	91 (91)	20.4 (1055)
		Madborerchar	11.7 (186)	20.8 (724)	1 (1)	17.6 (911)
		Kutubpur	0 (0)	1.8 (61)	1 (1)	1.2 (62)
Shariatpur	Zajira	Naodoba	26.2 (418)	10.4 (361)	1 (1)	15.1 (780)
		East-Naodoba	0.1 (1)	0.2 (7)	0 (0)	0.2 (8)
Total			100 (1596)	100 (3480)	100 (100)	100 (5176)

Sampling, sample size, data collection methods, and instruments

For quantitative

A total of 5,076 households (1,596 households from settlement and 3,480 households from non-settlement) from the total 7,638 households were selected from 11 Unions and four Upazalia and three districts. On average, it is nearly 66% of the total households in those four Upazilas. It is noted that the number of households from settlement areas is smaller than the number of non-settlement areas it is because the research team found that many of the households were rented and they could not select them as respondents in the settlement

areas. This sampled size was chosen to produce a comprehensive profile about the lives and livelihoods of the households under the Padma Multipurpose Bridge Project. This is noted that there are four Upazilas that are mostly affected by this PMB project. These are Louhajong and Shireenagar Upazilas from the Munshiganj District; Zajira Upazila from Shariatpur District and Shibchar Upazila from the Madaripur District. A total of 100 households were also chosen from outside of the project area as a control group who were considered as non-affected areas. The detailed distribution of the sampled households is given in Table 3.1 according to the District, Upazila, Unions, and types of households. Data were collected from the head of the households through a well-structured face-to-face Interview schedule with a numerical value.

Table 3.2: Sample size for the qualitative study

District	Upazila	Union	Settlement		Non-settlement		All
			FGD	ICIs	FGD	ICIs	KIIs
Munshiganj	Lohajong	Medinimondal	1	4	1	3	
		Kumarbhog	2	4	1	3	
		Haludia	0	1	0	0	
	Sreenagar	Kalapara	0	1	0	0	
		Rarikhal	0	1	0	0	
		Vaggokul	0	1	0	0	
Madaripur	Shibchar	Kathalbari	1	3	1	2	
		Madborerchar	1	3	1	2	
		Kutubpur	0	1	0	1	
Shariatpur	Zajira	Naodoba	2	4	1	2	
		East-Naodoba	0	4	0	3	
Total			7	27	5	16	51

For qualitative

For qualitative data, 12 FGDs (1 in each Union), 48 in-depth case study (4 in each union), 51 KIIs, and 11 community mapping (1 in each union) were conducted for the study. Table 3.2 presents the details of the qualitative data collection methods and stakeholders of the data collection procedure.

Focus Group Discussions (FGDs): A total of 12 (including one control group) focus group discussions (FGDs) were conducted to collect information on the ground level information on the different components of the lives and livelihoods of the people living under PMBP and then look the effective and appropriate way forward/solutions for improving the overall situation of those people. This is significant to make a sustainable impact on their socioeconomic conditions, lives and livelihood options, social dignity, and also suggestions from the expertise levels. Each FGD considered 10 to 15 members and took one and-a-half-hours time. One Facilitator and one Note Taker conducted each FGD session. The facilitator asked the areas of discussions to the participants, and, the Note Taker recorded (written and in some cases voice record) the information.

Key informants' interviews (KIIs): The study considered a total of 51 KIIs from different key persons from the study area (three districts and four Upazillas) who know about the projects and who could provide data about the impacts of the project. A detailed list of these KIIs is provided in Table 3.3. All KIIs were organized in a quiet environment maintaining the privacy of the respondents.

Table 3.3 The list of the KIIs according to their positions

List of KIIs	Number
Upazila Health Officer	2
Project Health Officer	2
Upazila Civil Engineer	2
Project Civil Engineer	2
Upazila Education Officer (Primary)	4
Upazila Education Officer (Secondary)	4
Head Teacher (Primary)	6
Head Teacher (Secondary)	6
Upazila Social Service Officer	4
Union Parishad Chairman	11
NGO Executive	4
Upazila Women Affairs Officer	4
Total	51

In-depth case interviews (ICIs): The study considered a total of 48 (44 from affected and four from non-affected areas) in-depth case interviews from the study areas. The numbers were varied according to the total number of affected people in both settlement, non-settlement, and outside of the affected areas. According to our record, it shows that we selected 27 such cases from the settlement, 16 from the non-settlement, and five from the outsides (see table 3.2) to know in-depth data on a different perspective from the beneficiaries. This helped us to get detail data from their life experiences such as their socioeconomic suffering, vulnerabilities, livelihood options and social dignity, and impacts of the education, health, training, and income generation activities (IGAs programs)

Community mapping: The study team prepared 11 community mappings by a GIS expert that provided the locations of the assets, resources, and institutions distributed in the communities. All of these 11 maps are inserted in the Appendix.

Study management and quality control

Quality Control

- The Team Leader and chief Investigators lead the study. The consultant team conducted training for capacity building of the study team. Four Research Associate and four Field assistants monitored and supervised the field level data collectors throughout the data collection period. All collected data were edited and checked immediately at the field level. The Chief Investigators also supervised the activities of the field staff and verified the consistency of the collected data and compared those with the secondary data. The PMBP authority undertook the field visits and had also monitored the field level data collection. These measures were found to very effective for ensuring the quality of the survey.

Field Editing of Questionnaire

- Editing was checking the filled-in questionnaire for detecting any error or inconsistency if any. There are two types of editing: field edit and office edit. A field edit was done by the enumerator administering the questionnaire. Verification of information and office edit was conducted by research team members. Each filled-in questionnaire was checked for error and inconsistency in the office. For serious error, if detected, the questionnaire was re-administered.

Quality Control in Data Management

- The primarily collected data were analyzed through a computerized program. Some of the indicators were also adopted for the ensuing quality outputs of the baseline information. The following were the stages in computerization and processing of the collected data:
- Five (5%) percent of the filled-in questionnaires were checked against entered data to measure the error level in entry
- Checked data by sorting those in ascending or descending order
- The study adopted the standard procedure in preparing and analyzing the database. The collected data were entered into the computer by using the customized MS Access data input software. SPSS for Windows and MS Excel was used to analyze the data.

Data processing and analysis

After data collection, all data were edited and cleaned by checking and rechecking for omissions, inconsistencies, and improbabilities missing values, and values out of range. All completed questionnaires were kept ready for data entry. The answer from the fully completed questionnaire was entered according to appropriate coding. Data entry was conducted using a standard data entry package (SPSS version 27). Both digitalized data (soft copies) and hard copies of completed questionnaires are preserved securely. Data were analyzed using relevant and required statistical tools such as central tendency (mean, mode & median), Chi-Square, standard deviation, ANOVA Test, and correlation.

The analysis was started immediately after producing the necessary tables and figures. Data analysis was planned according to the objective of the study to get the answer to the research question and list of issues/indicators addressed as proposed in the terms of reference. Data analysis involved transforming data to extract useful information and facilitate conclusions. Outputs from SPSS were organized into Excel spreadsheets. To ensure correct results, the analysis was crosschecked to discover possible errors and inconsistencies. The outcome of the analysis was closely monitored and discussed. The study used several statistical data analysis techniques such as mean, mode, median, correlation, regression, standard deviation, chi-square test, and other tools as required. The result was examined with cross-sectional data analysis tools with different variables to examine the variation and correlation of the variables. The first draft including tables, figures, literature review has been shared with the Bridge Authority before preparing the final draft.

Triangulation

The main important issue was to triangulate the collected information from different sources for its correctness and synchronization. The triangulation process is given in Fig.3.3.

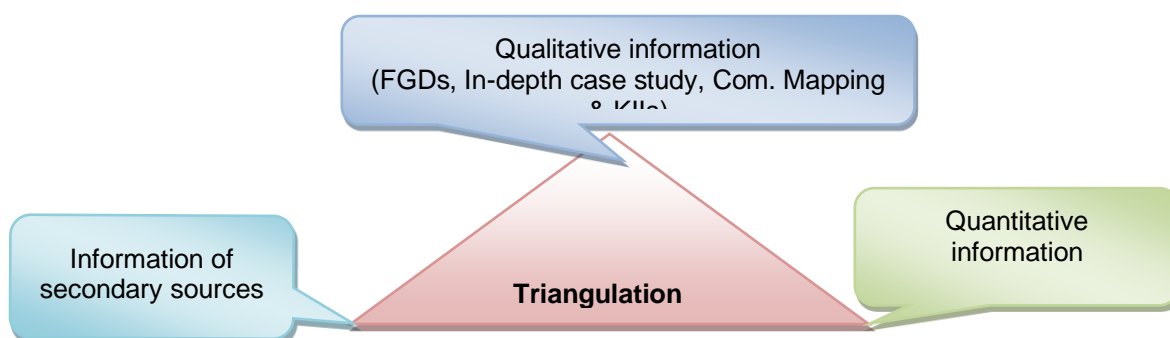


Fig. 3.3 Triangulation

The triangulation process has validated the relevancies of the collected data differently. The study used a concurrent technique for mixed-method data analysis procedures.

Ethical Issues

The study team followed the ethical guideline as per required for the study. The team took written permission from the administrative authorities of the Districts, Upazilas, and Unions. Before data collection, the Enumerators and Field Supervisors explained the study objectives and benefits of this study. A verbal consent was taken from each interviewee and participant. The study team used the pseudonym of all participants in the study to protect their privacy and confidentiality.

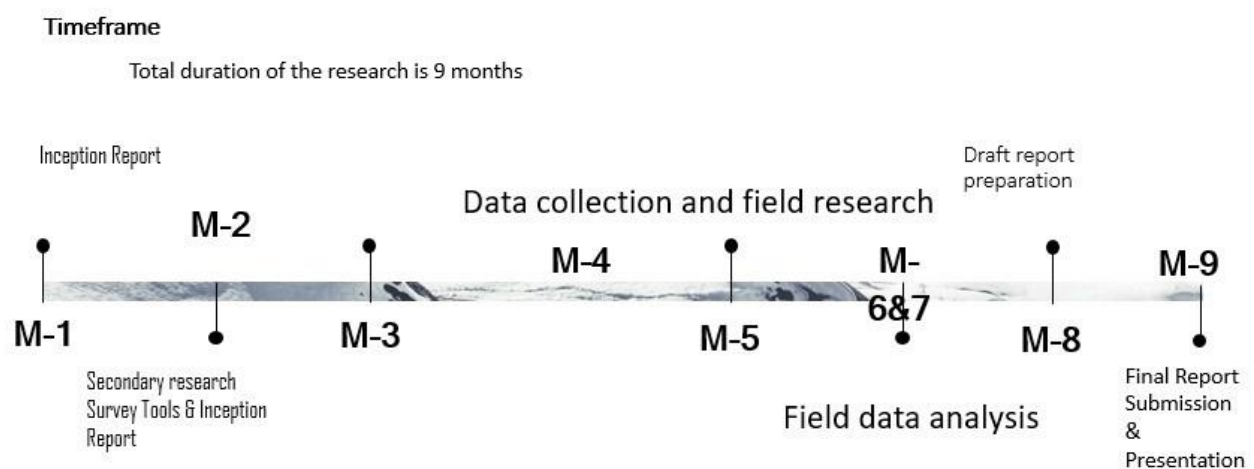


Fig. 3.4 Timeframe of the study

Chapter 4: Results/Findings

4.1 Demographic Information of Households

Table 4.1 provides the basic demographic data such as gender, marital status, age, education, religion, and disability of the respondents. Data showed that the respondents are male-dominated which is around 85% male (86% settlement and 84% non-settlements) and 15% female and there is no significant difference among the three categories of the respondent.

Table 4.1: Demographic conditions of households

Demographic Indicators	Settlement	Non-Settlement	Outside	Average Total
Gender				
Male	85.9	84	87	84.6
Female	14.1	16	13	15.4
Marital Status				
Unmarried	2.3	2.5	1	2.4
Married	86.7	87.2	84	87
Divorce	0.9	0.6	2	0.7
Widow	10	9.7	13	9.8
Others	0.1	0.1	0	0.1
Age				
<30 years	6.9	5.2	16	5.9
31-40 years	21.7	22	29	22
41-50 years	26.5	25.3	23	25.6
51-60 years	22.9	22.4	14	22.4
61-70 years	14.4	17.8	13	16.6
>70 years	7.5	7.4	5	7.4
Education Status				
Illiterate	20.2	15.7	17	17.1
Able to sign	40.4	29	47	32.9
Can read	4.6	5	6	4.9
Primary level	16.5	17.8	23	17.5
JSC	10.5	13.3	4	12.3
SSC	4.9	11.3	2	9.2
HSC	1.7	4.3	0	3.4
Graduate and above	1.2	3.5	1	2.8
Religious status				
Muslim	97.9	98.9	100	98.6
Hindu	2.1	1.1	0	1.4
Special child (n=178)				
Physical	78	72.5	100	74.1
Psychological	22	27.5	0	25.9

The married respondents are found highest (in both settlement and non-settlements areas). The number of widow respondents is found around 10% at both settlement and non-settlements areas, which are a bit high 13% among the outside households. Very low percentages are unmarried and divorced. The highest number (26%) of the respondents' age

group is found from 41 to 50 years and 22% are 51 to 60 years. The less than 30 years age group is six percent and 70 years and above is seven percent. The 33% of the respondents (which is 40% in settlement and 29% among the non-settlement) can sign and the illiterate respondents are 17% (20% among settlement and 16% among non-settlement); primary level respondents are 17% and 18% and JSC 11% and 13% among the settlement and non-settlement respectively. The numbers are found lower while they are counted among the SSC to Graduation which is ranged from four percent to 11% though it looks better among non-settlement areas. Nearly 99% of the respondents are the Muslims and the rest are Hindus. Out of 5,076 households, 178 households have disability among their family members which is nearly three fourth physical, and the rest of them are mental disability.

From the Chi-square test (Table 4.2), the study found an association between gender and livelihood options, since the p-value is greater than our chosen significance level ($\alpha = 0.05$). Analyzing the Pearson chi-square and p-value, we can conclude that marital status and livelihood options are uncorrelated, that is both variables are independent of each other. On the other hand, the age category is significantly different in the settlement, non-settlement, and outsider households which also means that age and livelihood options are significantly associated. Observing the test statistic and p-value (<0.001), it can be said that the education status of different categories of households is highly significant; there exists a strong association between education status and livelihood options.

Table 4.2: Chi-Square test results of the association between different socioeconomic variables and livelihood options

Association between gender and livelihood options	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.501	2	.174
Likelihood Ratio	3.553	2	.169
Linear-by-Linear Association	1.923	1	.166
N of Valid Cases	5176		
Association between marital status and livelihood			
Pearson Chi-Square	6.991	8	.538
Likelihood Ratio	6.408	8	.602
Linear-by-Linear Association	.016	1	.898
N of Valid Cases	5176		
Association between age category and livelihood options			
Pearson Chi-Square	38.517	10	.000
Likelihood Ratio	33.623	10	.000
Linear-by-Linear Association	.453	1	.501
N of Valid Cases	5176		
Association between education status and livelihood options			
Pearson Chi-Square	181.542	16	.000
Likelihood Ratio	199.458	16	.000
Linear-by-Linear Association	94.747	1	.000
N of Valid Cases	5176		

4.2. Economic Status of Households

This study calculated the number of respondents (Table 4.3) according to their primary as well as a secondary occupation. According to the data from primary occupation, it showed that the highest 13% (in all three categories) are involved in small business followed by 12 are farmer (which is only seven percent among settlement), 11% business, 10% household works 10% skilled laborers and eight percent service. Another more than eight percent are not able to work now due to their overage or other types of incapability. This is significant that more than six percent are unemployed. Nearly five percent are rickshaw pullers and van drivers and three percent are migrated, workers. On the other hand, the skilled works are found the highest (37%) as secondary occupation followed by 17% farmer (20% among non-settlement areas), nine percent each agricultural day laborers and small business, and seven percent non-agricultural day laborers and seven percent fishermen.

Table 4.3: Occupations of the households

Types of occupations	Settlement	Non-Settlement	Outside	Average Total
Primary Occupations				
Farmer	7.1	13.9	11	11.8
Household works	9.5	10.7	9	10.3
Agricultural day labour	4.9	3.6	21	4.3
Non-agricultural day Labour	9.1	5.1	9	6.5
Business	9.1	12.4	3	11.2
Small business	13	12.7	9	12.8
Skilled labour	11.9	8.8	14	9.8
Service	8.1	8.3	8	8.2
Not able to work	7.3	8.8	9	8.3
Rickshaw/Van driver	8.5	3	3	4.7
Migrated (Overseas & inland) labour	2.3	3.6	1	3.2
Unemployed	5.8	6.7	1	6.3
Others	3.3	2.4	2	2.7
Secondary Occupations				
Skilled labour	36.5	37.6	6.7	36.7
Farmer	9.8	19.8	46.7	17.2
Household	5.3	5.8	6.7	5.7
Agricultural day labour	11.7	7.7	0	8.8
Non-agriculture day labour	10.9	5.5	6.7	7.2
Services	2.6	1.9	0	2.1
Fishermen	7.9	5.1	33.3	6.5
Rickshaw/Van driver	3.8	3.2	0	3.3
Business	2.6	3.9	0	3.5
Small business	9	9.4	0	9.1

Table 4.4: Sources and the total amount of annual/monthly family Income (in Tk.) of households

Sources of Income	Name of Business/Farm/Job (Monthly income in tk.)	Settlement	Non-Settlement	Outside	Overall
Agricultural Works	Crop production	9,137	10,631	6,756	10,204
	Fisheries	11,250	13,360	0	13,136
	Dairy	12,937	5,696	30,000	8,741
	Fishing	18,709	15,605	4,442	16,194
	Cow rearing	13,127	8,523	5,750	9,260
	Goat rearing	4,521	4,092	14,200	4,989
	Wood collection	--	15,160	--	15,160
	Poultry rearing	1,918	3,506	1,466	3,111
	Other farming	7,960	20,276	24,872	16,811
	Subtotal	79,560	96,865	87,486	97,606
	Monthly	6,630	8,073	7,292	8,134
Non-Agricultural Works	Ready-made garments	10,652	14,651	11,500	13,627
	Service (Govt.+ Private)	16,517	21,315	13,475	19,623
	Daily Labor	14,460	15,016	9,523	14,651
	Driving	19,578	19,243	16,583	19,354
	House/Shop rent	8,600	11,994	1,000	10,750
	Small business	25,132	29,469	18,428	27,990
	Begging	12,884	14,113	15,000	13,661
	Others	21,706	26,203	16,181	24,657
	Subtotal	129,529	152,004	101,690	144,313
	Monthly	10,794	12,667	8,474	12,026
Social Supports	Govt. Pension	9,171	8,437	--	8,499
	Jakat & Fitra	500	1,517	--	1,450
	Old age allowance	737	617	500	669
	Freedom fighter honorarium	10,883	7,978	10,000	10,627
	Widow allowance	584	575	500	577
	Education stipend	148	197	157	175
	Relief program	638	703	--	664
	Cash money for work/training	2,070	8,630	--	6,334
	disable allowance	788	673	--	710
	Farmer's card	250	600	--	425
	VGD/VGF	1,300	1,195		1,221
	Others	8,589	8,653	12,000	8,650
	Sub-total	35,658	39,775	23157	40,001
	Monthly	2,972	3,315	1,930	3,333
	Total annual income (in Tk.)	244,766	288,656	212,357	281,920
	Total monthly average income (in Tk.)	20,396	24,054	17,696	23,493

Table 4.4 and Fig. 4.1 present the sources of income of the households of the study areas. Data showed that the overall average household annual income is Tk. 281,920 (monthly Tk,

23,493) which is the highest among the non-settlement Tk. 288,656 (monthly Tk. 24,054) followed by settlement Tk. 244,766 (monthly Tk. 20,397) and the lowest Tk. 212,357 (monthly 17,692) among outsiders, where the highest sources of income were found from non-agricultural works in all three categories of the respondents which are overall Tk. 144,313, non-settlement Tk. 152,004, settlement Tk. 129,529 and Tk. 101,690 among the outsiders (Fig 4.1); the second-highest income was found from the agricultural works, which are overall Tk. 97,606, non-settlement Tk. 96,877, settlement Tk. 79,579 and Tk. 87,510 among the outsiders. The lowest income was found from the social support group which is overall Tk. 40,001, non-settlement Tk. 39,775, settlement Tk. 35,658 and Tk. 23157 among the outsiders. Remarkably, some social supports such as government pension, old age allowance, freedom fighter honorarium, widow allowance, disabled allowance, VGD/VGF show a bit higher in settled areas than the non-settlement, but cash for work/training, farmers' card, education stipend, and relief program showed lower.

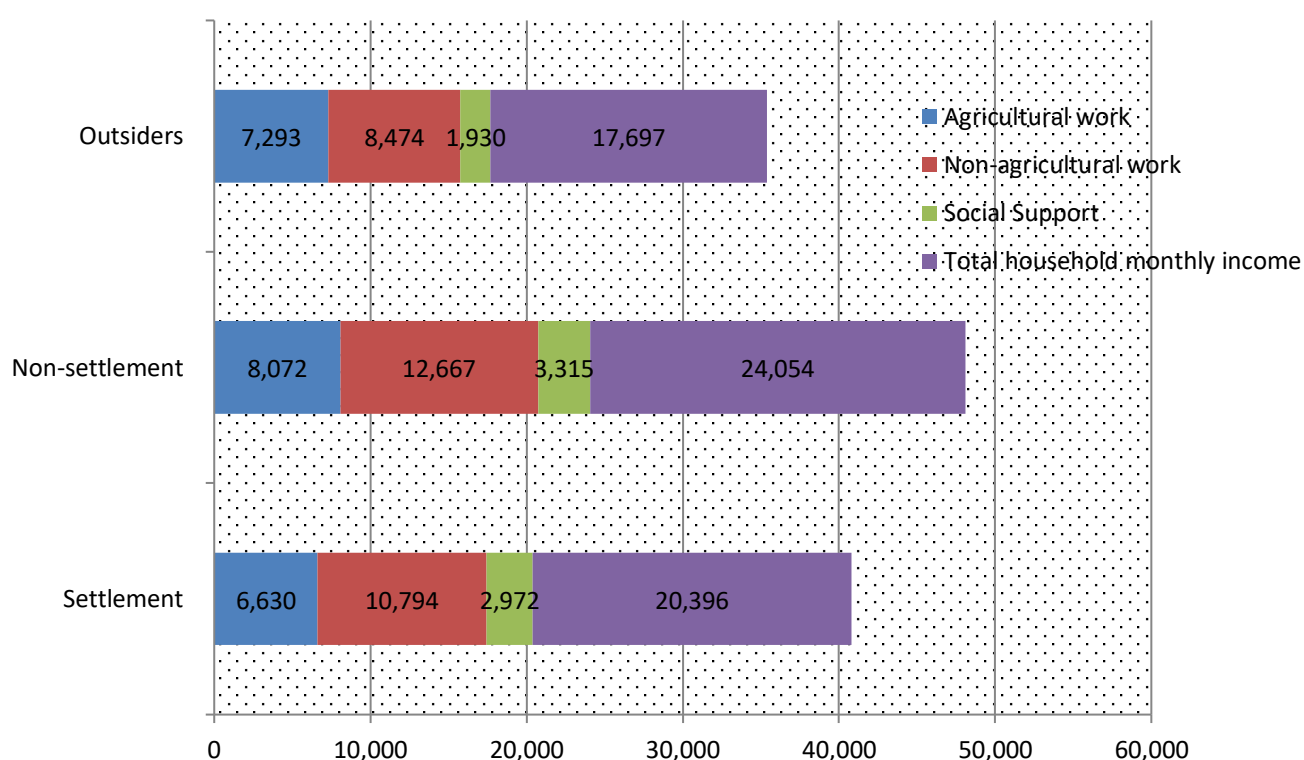


Fig. 4.1 Sources and the total amount of family Income (in Tk.) of households

From the descriptive analysis (Table 4.5, 4.6 & 4.7), the results showed that the average monthly income among the settlement, non-settlement, and outsider households are equal, but the group means are not equal. On the other hand, the average monthly family income among the settlement, non-settlement, and outsider households' average monthly income is equal, but the group means are not equal. From the ANOVA test, the result showed that the F statistic value is 8.642 and the p-value is less than 0.001, which means that the respondents' average differences of monthly income among all three categories of respondents are highly significant. On the other hand, in the case of family income, the F statistic value is 2.84 and as such p-value is 0.059, which implies that respondents' average family incomes are not significantly different at 5% level of significance, but at a 10% level, these differences are slightly significant. On the other hand, when we identified that the different groups' average is not the same, then the next question is which groups mean are different and which are not.

The study calculated the result using the Post Hoc test (Least Significant Difference). Here, we found that all possible pairwise comparisons like settlement versus non-settlement, settlement versus outsiders, etc. In the case of households' monthly income, all pairwise groups are statistically significantly different at a 5% level of significance. However, in the case of average family income, only non-settlement and outsider settlements are significantly dissimilar at a 5% level of significance. No significant difference exists between settlement versus non-settlement and settlement versus outsider households on average family income at a 5% level of significance.

The study acquired mixed information about the income sources from the qualitative investigation. To consider the overall analysis, nearly half of all types of respondents reported that the income sources are increased due to Padma Multipurpose Bridge and the rest half of the respondents mentioned their income decreased. This is also equally true among settlement and non-settlement areas. For example, in the FGD session, one worker in the settlement area of the Shibchar Upazila in the Madaripur District reported us:

Due to PMB we have not many works at this local community, we do not have any cultivable land, so we are earning our livelihoods through day laborer.

On the other hand, one inhabitant in in-depth case interviews of this community mentioned:

We would agree there is development but many people lost their inherited land, property, housing, pond and trees. I lost my bamboo garden. The price of livelihood commodities has increased but employment opportunities have decreased and our sufferings have increased.

One resident in this area mentioned:

There was a lot of commitment before PMB, no person will live in this community without work. But nobody is getting work now, some works are available in this community but the authorities are not engaging us to those employment opportunities.

From an FGD session of the non-settlement area at Mathbor Char Union of the Shibchar Upazila of the Madaripur District, one small businessman told:

I cannot earn Tk. 200 before this starting this bridge, but now I can earn more than Tk. 500 daily. The land price was Tk. 2,000 decimal, now it is Tk. 40,000 decimal. This is a great matter.

One farmer in this area reported us:

I was shocked not to see my name as an affected person, but I can realize now, it was better for me not to include my name there. It is because, the Government purchased our land by double price, but it is now 20 times more.

We have got a different opinion from this FGD, one Madrasa teacher told:

Our income has increased but people are squandering their money just like bay-leaf.

From an FGD session at the non-settlement area of the Mathbor Char Union of the Shibchar Upazila of the Madaripur District, one farmer told us:

Big change happens on occupational transformation. We do not find sufficient numbers of farmers here and we are bringing farmers from other districts, because, people are now much interested to do business and this is most profitable.

Table 4.5: Descriptive statistics on the average monthly income of household heads and monthly total family income of the households

		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Average Monthly income	S	1279	20939	22453	627	19707	22171	400	500000
	NS	2716	23354	26889	515	22342	24365	200	500000
	Out	79	13765	7599	855	12063	15468	1000	40000
	Total	4074	22410	25376	397	21630	23189	200	500000
Total monthly income	S	1563	29657	22042	557	28563	30750	0	330000
	NS	3353	31808	37083	640	30553	33064	0	900000
	Out	98	23615	22883	2311	19027	28203	1000	206000
	Total	5014	30977	32910	464	30066	31889	0	900000

Table 4.6: ANOVA test on the households' monthly income and total income between settlement, non-settlement, and outsider

		Sum of Squares	df	Mean Square	F	Sig.
Average Monthly income	Between Groups	11088652394	2	5544326197	8.642	0.000
	Within Groups	2611860839674	4071	641577214		
	Total	2622949492069	4073			
Total monthly income	Between Groups	10352492042	2	5176246021	4.786	0.008
	Within Groups	5419297199315	5011	1081480183		
	Total	5429649691357	5013			

Table 4.7: Pairwise Comparisons between settlement, non-settlement, and outsiders

Dependent Variable	(I) Nature of respondent	(J) Nature of respondent	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Average Monthly income	Settlement	Non Settlement	-2414*	858	.005	-4098	-730
		Outside	7173*	2936	.015	1416	12930
	Non-Settlement	Settlement	2414*	858	.005	730	4098
		Outside	9588*	2890	.001	3920	15256
	Outside	Settlement	-7173*	2936	.015	-12930	-1416
		Non Settlement	-9588*	2890	.001	-15256	-3920
Total monthly income	Settlement	Non Settlement	-2151*	1007	.033	-4125	-176
		Outside	6042	3424	.078	-671	12755
	Non Settlement	Settlement	2151*	1007	.033	176	4125
		Outside	8193*	3370	.015	1586	14800

	Outside	Settlement	-6042	3424	.078	- 12755	671
		Non Settlement	-8193*	3370	.015	- 14800	-1586
*. The mean difference is significant at the 0.05 level.							

The total average cash value of the asset is Tk. 3,017,231 (Table 4.8), the highest is found in the non-settlement area Tk. 3,780,272, settlement Tk. 3,121,735, and outside Tk. 2,149,685. The highest amount of land price is counted in Tk. 1,783,362, which is Tk. 2,254,602 in non-settlement area, Tk. 1,750,319 in settlement area and Tk. Tk. 1,345,166. The second highest asset value is household asset Tk. 713,614 which are Tk. 916,174 in non-settlement, Tk. 890,141 in settlement and Tk. 334,527 outsider. The households also have good cash value on furniture, investment money, ornaments, and transport. Comparatively the asset value in business, animal, and shop looks low.

Table 4.8: Household assets (in Tk.)

Types of Asset (in Tk.)	Settlement	Non-Settlement	Outside	Average
Cash Money	21,159	26,540	9,257	18,985
Investment (Cash Capital)	72,024	88,330	43,863	68,072
Land (in decimal)	1,750,319	2,254,602	1,345,166	1,783,362
Ornaments (Gold/Silver)	34,410	68,580	66,261	56,417
Animal (Goat/Hen/Duck/cow)	15,743	17,085	16,513	16,447
Household Asset	890,141	916,174	334,527	713,614
Boat	15,577	22,011	17,062	18,217
Transport	86,554	95,471	57,005	79,677
Trees	35,728	44,424	68,878	49,677
Fishing Net	6,975	8,104	7,950	7,676
Shop	7,426	14,942	16,666	13,011
Business	21,695	26,813	25,000	24,503
Furniture	108,001	119,362	77,042	101,468
Agricultural Instruments	11,585	25,172	21,939	19,565
Others	44,398	52,662	42,556	46,539
Total average asset value (in Tk.)	3,121,735	3,780,272	2,149,685	3,017,231

Findings (Table 4.9 & Fig. 4.2) showed that the household's average annual family expenditure is Tk. 293,826 (monthly Tk. 24,486) which is Tk. 323,018 (monthly Tk. 26,918) in non-settlement, Tk. 304,540 (monthly Tk. 25,378) in settlement and Tk. 253,920 (monthly Tk. 21,160) in outside. All households' highest cost is on food where the total average is Tk. 64,171 followed by vehicle Tk. 33,534, dowry Tk. 28,534, land purchase 25,486, and dress Tk. 22,05. The cost of education is only Tk. 2,773 and health/medicine Tk. 3,739.

Table 4.9: Annual family expenditure (in Tk.) of households

Sources of annual expenditure (in Tk.)	Settlement	Non-Settlement	Outside	Overall
Agriculture and agriculture related items purchase	2,074	2,616	3,650	2,780
Food	62,793	68,510	61,209	64,171
Dress	22,275	25,602	18,287	22,055
Land purchase	27,934	31,474	17,050	25,486
Cash in hand	1,450	1,912	1,789	1,717
House build/repair	18,078	22,524	11,984	17,529
House furniture purchase	18,870	19,414	15,584	17,956
Education	2,775	3,456	2,087	2,773
Medical	8,448	13,006	10,654	10,703
Cosmetics	7,241	8,814	6,829	7,628
Transport/Travel	4,360	6,367	6,972	5,900
Health/Medicine	3,869	4,136	3,212	3,739
Electricity/Water/Fuel	4,345	5,249	4,785	4,793
Festival (Religious/Social/Cultural)	4,655	6,621	1,282	4,186
Recreation	10,730	12,898	10,685	11,438
Vehicle	41,963	29,772	28,867	33,534
Loan repay	9,936	9,340	9,605	9,627
Dowry	33,414	25,614	26,700	28,576
Mobile Phone	6,088	8,720	6,449	7,086
Land rent	3,008	1,716	1,340	2,021
Others	10,234	15,257	4,900	10,130
Total annual expenditure (In Tk.)	304,540	323,018	253,920	293,826
Total monthly expenditure (In Tk.)	25,378	26,918	21,160	24,486

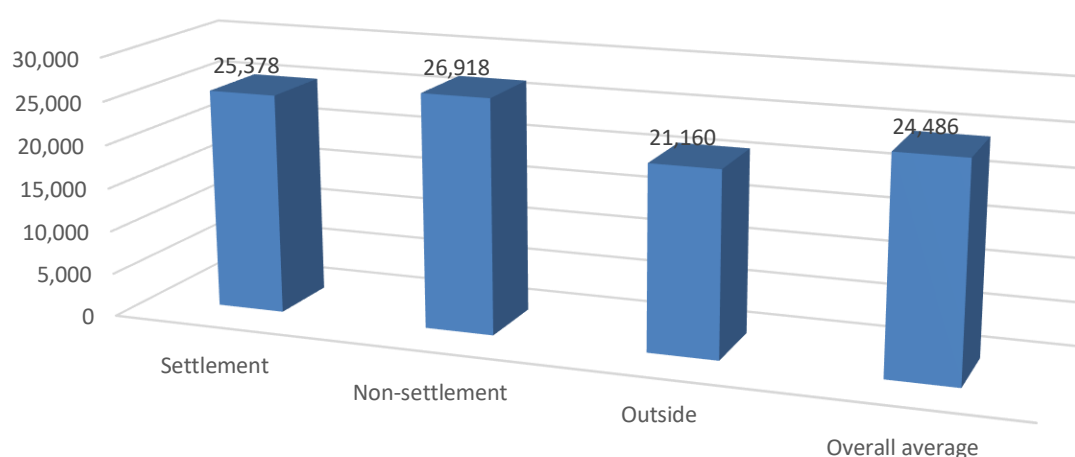


Fig. 4.2 Total monthly family expenditure (in Tk.) of households

Findings (Table 4.10 & Fig. 4.3) showed that the affected households (both settlement and non-settlements) have a significant amount of non-institutional loans such as Mahajan loan, relative loan, co-operative loan, Arotdar loan, Dadondar loan, and shopkeepers' loan. They took the highest amount of loans from banks and NGOs, which are Tk. 322,338 and Tk. 195,899, and Tk. 120,408 and Tk. 127,600 respectively among non-settlement and settlement households. The amount of overall loan is Tk. 1,228,507, which is higher than Tk. 1,237,956 among the non-settlement and Tk. 1,217,675 among the settlement, and nearly a half Tk. 677,501 among outside households.

Table 4.10: Amount of family loan (in Tk.) of the households from different sources

Sources of the family loan (tk.)	Settlement	Non-Settlement	Outside	Average total
Bank Loan	195,899	322,338	162,500	286,641
NGO Loan	127,600	120,408	66,026	122,164
Mahajon Loan	166,013	173,784	210,000	171,315
Relative Loan	191,080	210,285	147,308	203,773
Co-operative	70,547	69,599	91,667	70,560
Arotdar Loan	39,167	65,283	--	58,662
Dadondar Loan	61,677	87,470	--	80,633
Shopkeeper Loan	22,297	32,020	--	29,417
Others	343,395	156,769	--	205,342
Total family loan (in Tk.)	1,217,675	1,237,956	677,501	1,228,507

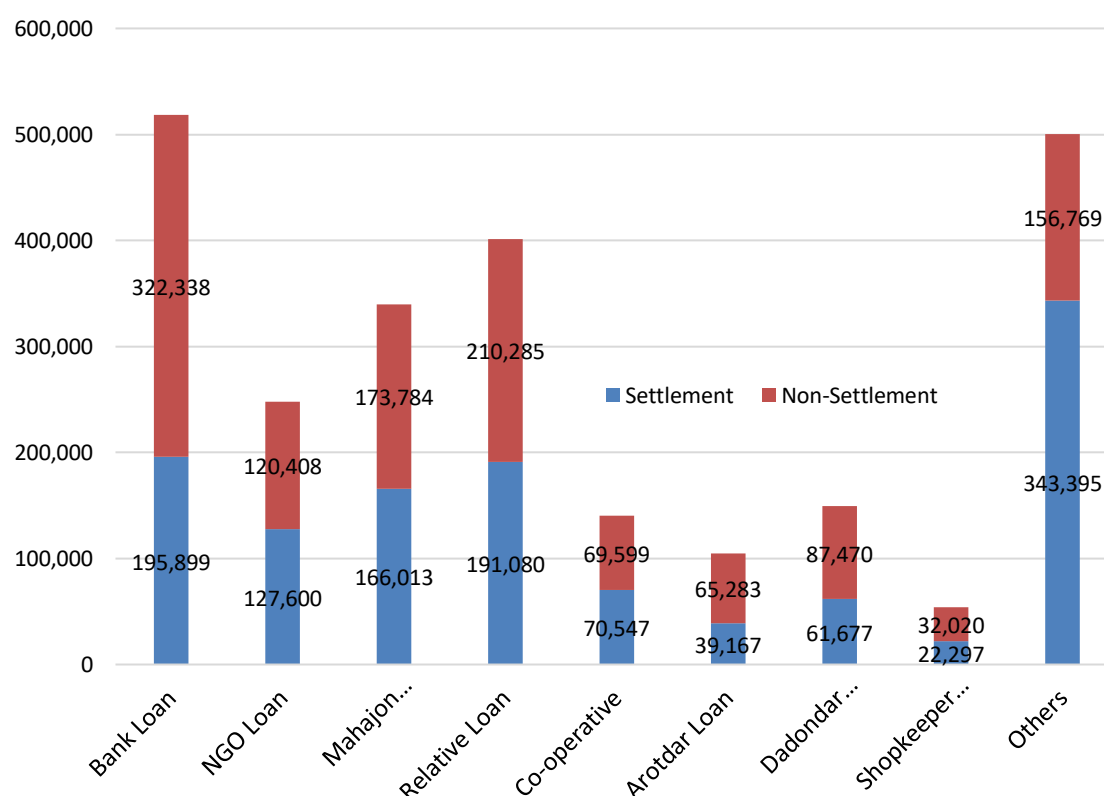


Fig. 4.3 Amount of family loan (in Tk.) of households from different sources

Table 4. 11: Amount (in Tk.) of family loans used in different sectors

Name of sectors	Amount of family loan used (in Tk.) against household types			
	Settlement	Non-Settlement	Outside	Average total
Land purchase	165,242	150,935	50,000	151,462
Seed purchase	12,500	11,666	16,571	12,662
Agriculture	45,083	45,638	27,000	44,159
Livestock purchase	76,957	62,035	26,750	63,458
Food purpose	37,771	36,253	14,500	36,440
Education	47,971	53,888	--	52,269
Health	86,602	73,483	20,000	76,804
Loan repay	75,289	74,565	30,000	74,380
Business	238,222	375,420	211,429	329,900
Social program/Gift for marriage	105,342	101,525	300,000	104,110
Migrate to Foreign country	229,797	203,372	525,000	214,485
Agricultural Instrument	99,273	71,762	45,714	76,261
House building	154,078	164,722	58,438	158,107
Purchase of fancy materials	44,556	25,913	--	32,366
Unused of loan	47,059	21,800	--	27,682
Others	167,365	198,031	78,333	183,641

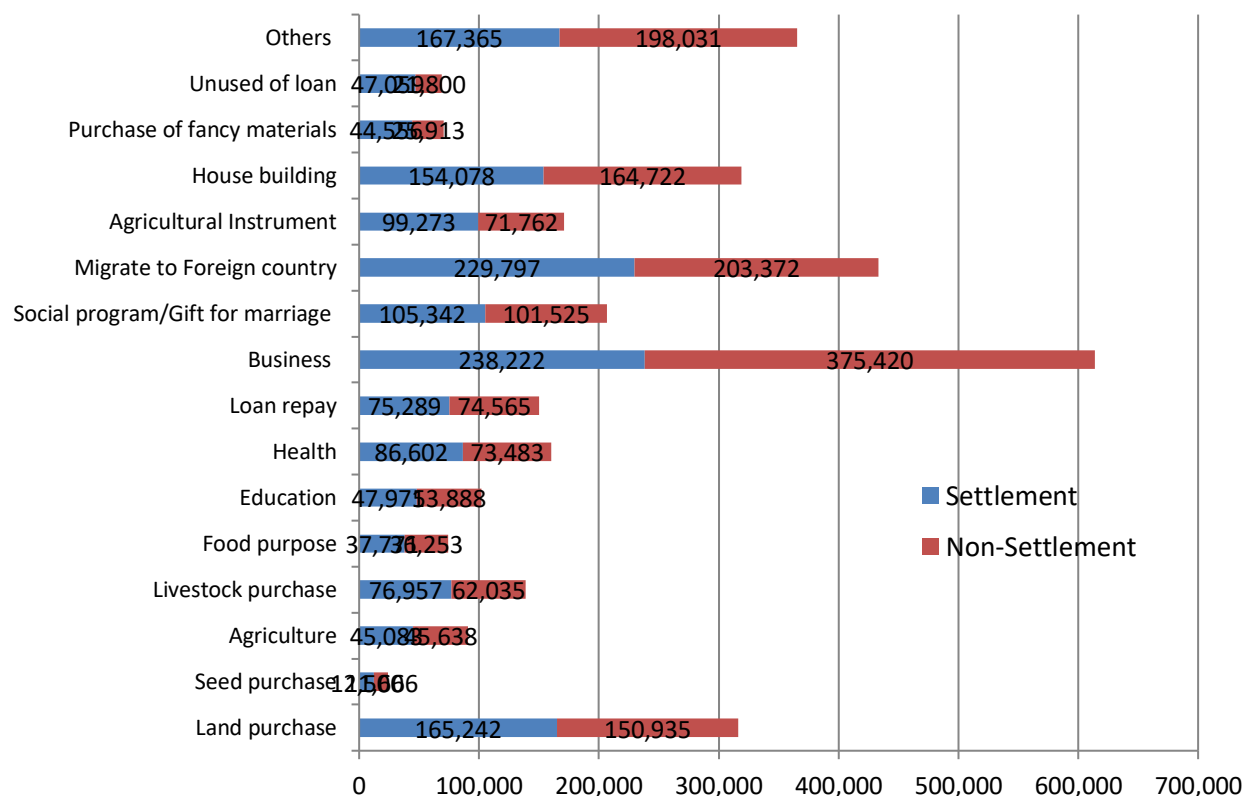


Fig. 4.4 Amount (in Tk.) of family loans used in different sectors

The households are using loans in different livelihood sectors (Table 4.11 & Fig. 4.4). According to the data, the highest five average totals are a business (Tk. 329,900),

international migration (Tk. 214,485), house building (Tk.158,107), land purchase (Tk. 151,462), and social programs/gift for marriage (Tk. 104,110). These amounts are close across the locations with some differences though this difference is a bit higher among the outsiders except on international migration where the amount is found highest (Tk. 525,000). This amount of loan is used in some other essential sectors such as health (Tk. 76,804), agricultural instruments (Tk. 76,261), loan repay (Tk. 74,380), livestock purchase (Tk. 63,458), education (Tk. 52,269), agriculture (Tk. 44,159), food purchase (Tk. 36,440) and fancy materials (Tk. 32,366). The usages of loan for land purchase, livestock purchase, health, food, loan repay, social program/gift for marriage, agricultural instrument, and purchase of fancy materials are found higher among the settlement households than the non-settlement households. The unused loan is found higher Tk. 47,059 among settlement households.

Table 4.12: Households' savings (in Tk.) last one year

The sector of savings (tk.)	Settlement	Non-Settlement	Outside	Overall Average
Cash in Hand	21,279	24,394	9,575	18,416
Savings at Bank	27,872	48,786	27,917	34,858
Savings at NGO	16,198	19,140	10,333	15,223
Savings with Relative	12,738	16,354	14,718	14,603
Give loan to others on interest	25,556	17,537	15,492	19,528
Others	26,425	24,286	25,229	17,756
Total annual saving	130,068	150,497	103,264	120,384

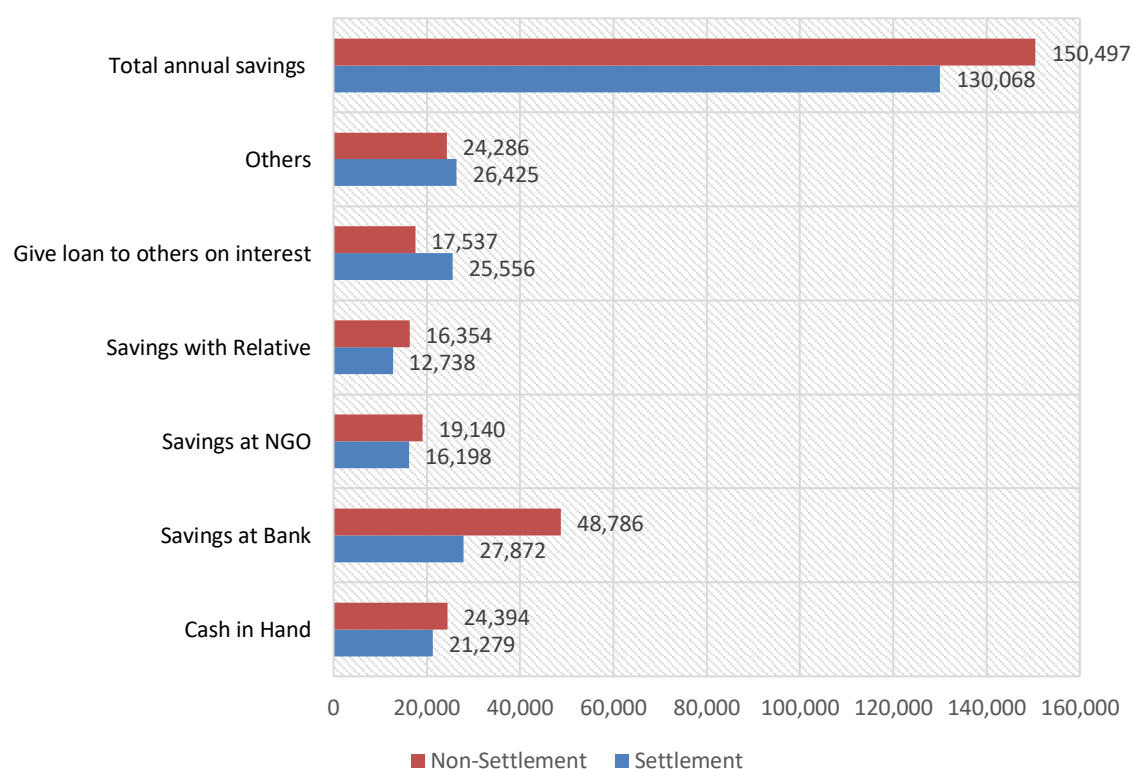


Fig. 4.5 Savings (in Tk.) last one year

The household of the affected people's family total average saving is found in Tk. 120,384 which are the highest Tk 150,497 non-settlement, Tk. 130,068 settlement and Tk. 103,264 outsiders. The households are saving the highest amount of Tk. 34,858 in Bank (Tk. 48,786 non-settlement and Tk. 27,872 settlement) followed by Tk. 19,528 give loan to others for interest, Tk. 18,416 cash in hand, Tk. 15,223 savings at NGO and Tk. 14,603 savings with relatives. However, from this finding, it is clinched that the affected households saved a big portion in informal sources such as relative and invest in saving to others (Table 4.12 & Fig. 4.5).

Table 4.13: Land ownership among the households

Status of land ownership	Settlement	Non-settlement	Outside	Average total
Yes	98	88.6	68	91.1
No	2	11.4	32	8.9

Table 4.14: Chi-Square Tests: Association between ownership of land and livelihood options

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	186.020 ^a	2	.000
Likelihood Ratio	199.394	2	.000
Linear-by-Linear Association	172.722	1	.000
N of Valid Cases	5176		

Data (Table 4.13) showed that 91% of the households (which is 98% in settlement and 89% in non-settlement) have their land. The Chi-square test showed that the p-value is less than 0.001 which means the ownership of land (decimal) among three households is not the same. Therefore, we conclude that a very significant association exists between these two variables (Table 4.14).

In an FGD session in the settlement area in Kumarbhog, one UP woman member told:

Land ownership and agricultural lands have been reduced due to the project.

Business opportunities have also been quizzed because of changing old ferry ghat.

The amount of land is found very unequal among the three categories of households (Table 4.15 & Fig. 4.6). For example, the own land is found lowest only 6.4 decimals among settlements which are 29.8 decimals among non-settlement households and the highest 55 decimals among outsiders. The amount of mortgage is 29.4 decimals among settlement, which is 45.1 decimal among non-settlement; kashland is 31 decimals among the settlement which is 19.4 decimal among the non-settlement; and the amount of sharing/bogra land is 33.9 decimals among non-settlement, which is 29.2 decimal among settlement households and the lowest 6.9 decimals among the outsiders. Analyzing the chi-square test, results showed that all items except khasland are significantly associated with livelihood options though own land, mortgage, and sharing land are not the same for different dwelling status of respondents (Table 4.16)

Table 4.15: Types of land (in decimal) of households

Types of land	Settlement	Non-Settlement	Outside	Overall Average
Own Land	6.4	29.8	55	22.1
Mortgage	29.4	45.1	8.5	39
Khash land	31	19.4	--	23.8
Sharing/Borga	29.2	33.9	6.9	32.5

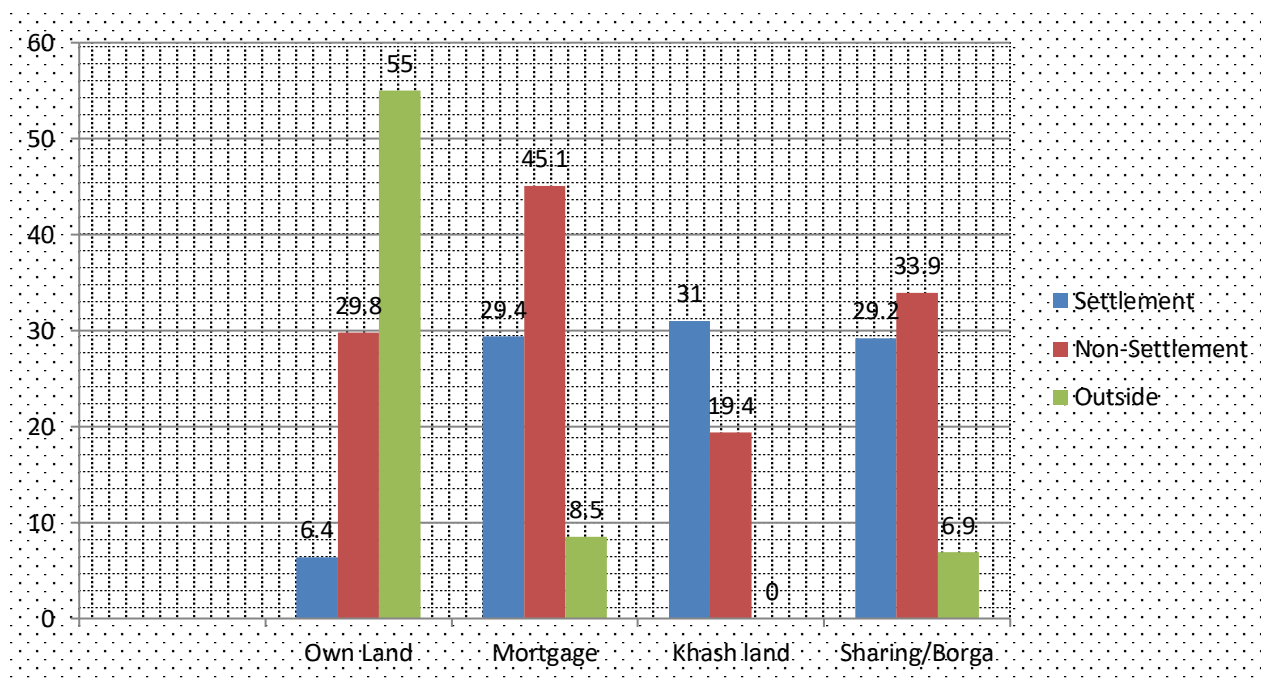


Fig. 4.6 Types of land (in decimal) of households

Table 4.16: Chi-square test to find the association between the type of land and livelihood options

	Value	Df	Asymp. Sig. (2-sided)
Own Land			
Pearson Chi-Square	157.516	8	.000
Likelihood Ratio	168.960	8	.000
Linear-by-Linear Association	87.820	1	.000
N of Valid Cases	4417		
Mortgage			
Pearson Chi-Square	11.881	6	.065
Likelihood Ratio	14.609	6	.024
Linear-by-Linear Association	2.326	1	.127
N of Valid Cases	104		
Khash Land			
Pearson Chi-Square	7.279	4	.122
Likelihood Ratio	6.594	4	.159
Linear-by-Linear Association	1.856	1	.173
N of Valid Cases	35		
Sharing/Borga			
Pearson Chi-Square	16.755	6	.010
Likelihood Ratio	14.163	6	.028
Linear-by-Linear Association	14.436	1	.000
N of Valid Cases	423		

Table 4.17: Types of land use (in %) of households

Types of land use	Own Land			Mortgage			Khash land			Sharing/Borga		
	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Housing	98	89.1	80.3	28.6	37.7	100	16.7	51.7	45.7	51	67.6	87.5
Cultivable land	1.3	4.5	19.7	71.4	57.1	0	66.7	41.4	45.7	40	30.9	12.5
Pond	0.1	0.3	0	0	1.3	0	0	3.4	2.9	3	0.6	0
Non-Cultivable land	0.3	4	0	0	3.9	0	16.7	0	2.9	6	0.9	0
Others	0.3	2.1	0	0	0	0	0	3.4	2.9	0	0	0

Findings (Table 4.17) showed that the highest numbers of households in all three categories are using their land, mortgage, kashland, and sharing/bogra land for housing purposes. Their land is using by 98% among settlement and 89% among non-settlement; mortgage land is used by 29% and 38%, kashland 17% and 52%, and sharing/bogra land 51% and 68% respectively among the settlement and non-settlement households. The highest 71% of the settlement households and 57% of non-settlement households are using their cultivable land for mortgage purposes, which are 67% and 41% for kashland, and 40% and 31% for sharing/borga respectively among these two households. All other types of land such as pond and non-cultivable land are using a very low number of households except 17% of the settlement households are using non-cultivable land for kashland purposes.

Table 4.18: Disaster affected lands of households

Type of land	Settlement	Non-Settlement	Outside	Overall Average
Dwelling house	93.4	85.6	79.7	87.2
Cultivable	52.8	49	73.4	50.7
Pond	14.6	9.7	24.1	11.3
Non-cultivable land	6.2	8.5	2.5	7.8
Others	2.9	10.5	3.8	8.6

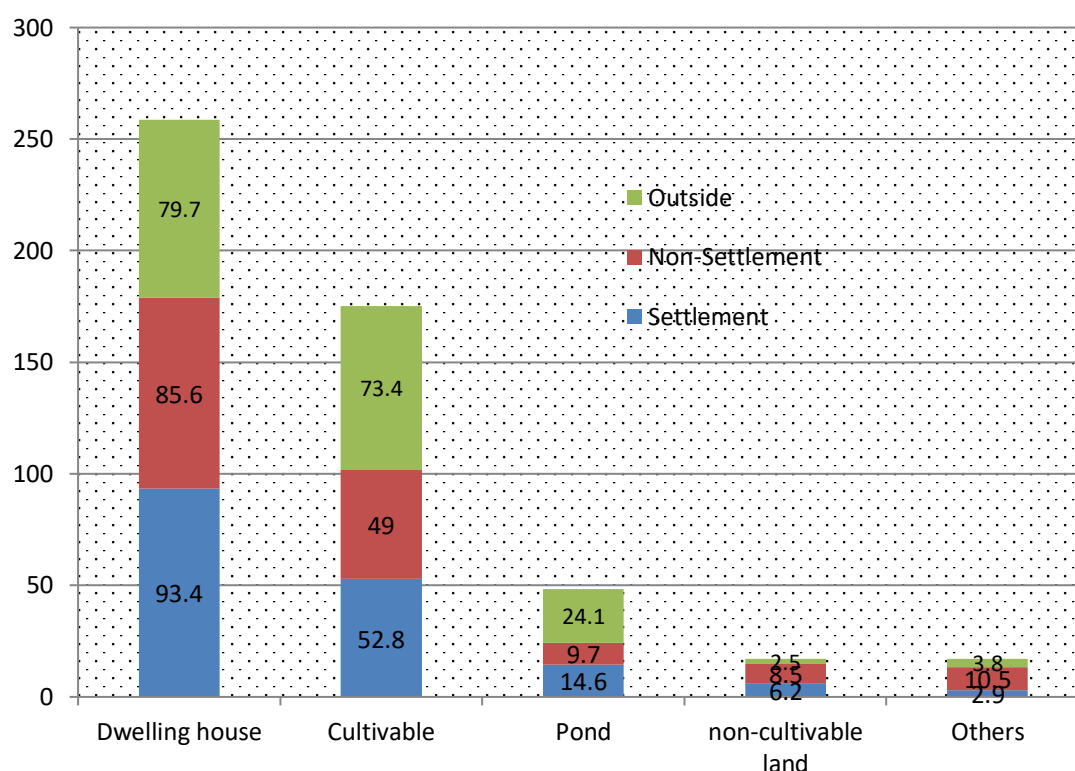


Fig. 4.7 Disaster affected lands of households

The finding showed that most of the households' dwelling house was massively affected by disasters (Table 4.18 & Fig. 4.7). More than 87% of the households reported about this effect, which is the highest 93% in the settlement area followed by 86% in non-settlement. Then, 51% of people told about their cultivable land (53% in settlement and 49% non-settlement) followed by 11% pond and eight percent non-cultivable land. Seasonal flood and river erosion are two disasters that massively affected all three categories of households in all of their dwelling, cultivable land, pond, and non-cultivable land. Cyclone is another disaster that massively affected mainly on their dwelling and cultivable land. According to the number wise distribution, average 55% of the households' (which is 65% among settlement and 53% non-settlement) of their non-cultivable land is affected by river erosion, which is 53% pond (58% settlement and 47% non-settlement), 40% cultivable land (43% settlement and 38% non-settlement), 21% dwelling (22% settlement and 20% non-settlement). The seasonal flood was affected on 24% of the households of their cultivable land (21% settlement and 24% non-settlement), 21% of the households are affected by their pond (33% settlement and 17% non-settlement), 19% of their dwelling land (21% settlement and 18% non-settlement), and 16% of their non-cultivable land (35% settlement and 11% non-settlement). The cyclone was mentioned as one of the affected disasters among the households, which was massively affected at both of their dwelling as well as and cultivable lands. The affected households are 41% (38% among settlement and 43% non-settlements) and 13% (16% among settlement and 12% non-settlements). A small number of households were also affected by other three types

of disasters such as flash floods, dam breakdowns, and waterlogging of their lands (Table 4.19).

Table 4.19: Households lands affected by different disasters

Disaster affected lands	Disaster type	Settlement	Non-Settlement	Outside	Average Total
Dwelling	Seasonal Flood	21	18.4	23.8	19.2
	Flash Flood	2.7	1.4	4.8	1.8
	Drought	8.9	2.7	12.7	4.5
	Cyclone	38.3	42.8	17.5	40.9
	Tidal Wave	0.9	0.7	0	0.7
	Dam Breakdown	0.7	6	1.6	4.6
	River erosion	21.9	19.6	39.7	20.8
	Water logging	0.8	6.4	0	4.8
	Others	4.9	2.1	0	2.7
Cultivable land	Seasonal Flood	21	24.3	24.1	23.5
	Flash Flood	8.9	6.7	3.4	7.1
	Drought	8.9	3.7	3.4	5
	Cyclone	15.5	12.4	6.9	12.8
	Tidal Wave	1.4	0.8	0	1.1
	Dam Breakdown	0.6	9.2	1.7	6.7
	River erosion	43.3	37.5	58.6	39.9
	Water logging	0.3	3.1	1.7	2.4
	Others	0	2.2	0	1.6
Pond	Seasonal Flood	32.5	17.2	5.3	20.9
	Flash Flood	7.5	4.7	0	5.2
	Cyclone	1.3	2.9	0	2.2
	Dam Breakdown	0	19.6	5.3	12.7
	River erosion	57.5	47.3	89.4	53.4
	Water logging	1.3	2.4	0	1.9
	Others	0	5.9	0	3.7
Non-cultivable land	Seasonal Flood	35.3	11.3	0	15.5
	Flash Flood	0	4	0	3.2
	Drought	0	1.3	0	1.1
	Cyclone	0	2.6	50	2.7
	Dam Breakdown	0	17.9	50	15
	River erosion	64.7	53	0	54.5
	Water logging	0	4.6	0	3.7
	Others	0	4.3	0	4.3

4.3. Physical Infrastructure of Households

Table 4.20 presents the number of physical infrastructures collected from Civil Engineers from three Upazilas such as Louhajang, Sreenagar, and Shibchar through KIIs. This is a note that the study team could not find data from Zajira Upazila. In some cases, data on different indicators are also unavailable in three Upazilas. The available data on all indicators of infrastructural facilities demonstrate that Shibchar Upazila is much better than the other two Upazilas, second Sreenagar and third is Louhajanag Upazila.

Table 4.20: Physical infrastructure in the Padma Multipurpose Bridge Project affected four Upazilas*

Physical infrastructure	Upazila			
	Louhajang	Sreenagar	Shibchar	Zajira
Road	Pacca 85 km Semi pacca 28 km Katcha road 213 km	Pacca 66.32 km Semi pacca 35.94 km Katcha 36.63 km	Pacca 167 km Semi pacca 124 km Katcha 497 km	Pacca 116.90 km Semi pacca 9.70 km Katcha 238.40 km
Bridge/culvert	-	152	468	-
Amount of land	13,011 hectare	17,024 hectare	23,834 hectare	15617 Hectare
Net of land	6109 hectare	12,876 hectare	16,500 hectare	15159 Hectare
Khash land	-	-	1056 hectare	-
Deep Tube well	-	-	123	144
Swallow tube well	-	-	2423	427
Hospital	UFC 1, UHFWC 10 CC 10	UHC 1, UHFWC 10	UHC 1, UHFWC 15	UHC 1, UHFWC 3 CC 24
Family planning centers	-	22	17	2
Mosque	259	247	483	-
Eidgha	16	-	-	-
Mazar	5	-	-	-
Mandir	7	53	29	-
Pond	837	915	-	-
Cattle farm	-	480	22	-
Poultry farm	-	168	96	-
Sports origination	127	-	-	-
Education institutions	College 1, SS 12, PS 72	College 4, SS 24, PS 99 Madrasha 4	College 6, SS 48, PS 172, Madrasha 17	College 3, SS 16, PS 166, Madrasha 10
Orphanage	-	01	18	-
Bank	12	16	12	-
Insurance	14	-	-	-
Cooperative (all types)	-	541	323	-
Sports Association	127	-	-	-
Cultural organization	4	-	-	-
Post Office	10	-	22	10
Telephone exchange	-	01	02	-
Hat-bazar	10	26	39	20
Small & Cottage industries	-	28	802	-
Big industries	-	-	1	-
Rehabilitation centre	3	-	-	-
Growth Centre	3	-	-	-
Pond	837	-	7454	-
Fish farm	-	-	07	-

* Table is developed with the help of the Upazila Civil Engineer Offices of the respective Upzilas and relevant websites. UHC= Upazila Health Complex, UHFWC= Union Health and Family Welfare Centre, CC= Community Clinic, SC= Secondary School, PS= Primary School

The community road condition is found very well in the settlement area (Fig. 4.8). Seventy percent of the settlement households have a concrete road to move in their community which only 15% in non-settlement followed by brick road 26% in settlement and 18% in non-settlement areas. Whereas, 69% of the households use soil road in their community which is 95% in the outsider area. This kind of quantitative finding is also supported by qualitative findings. In an in-depth case interview, Mrs. Roshmala, a woman of 63 years from a non-settlement area told:

Due to the PMBP, there has been taking place a dramatic change in roads and highways. Once we need to walk through water to get into highways, but we can reach to main roads now using the newly constructed sub-roads...

From an FGD session of Naodoba of Shariatpur District, one NGO worker said:

The roads and highways were not as developed as these are today. There is a dramatic change in roads and highways, especially at the communication system.

From another FGD at Kumarbhog Union under Louhajong Upazila of Munshigonj District, the participants reported:

Earlier there was no road but now we got many roads. At the same time, we are worried about the road

accident. Earlier we had a temp toilet, now a brick-built toilet. Earlier we used to move by boat, now we can walk through the road. If we become sick we can go to the hospital very easily now.



Image: Improved road condition, Source: BBA



Image: Improved road condition, Source: BBA

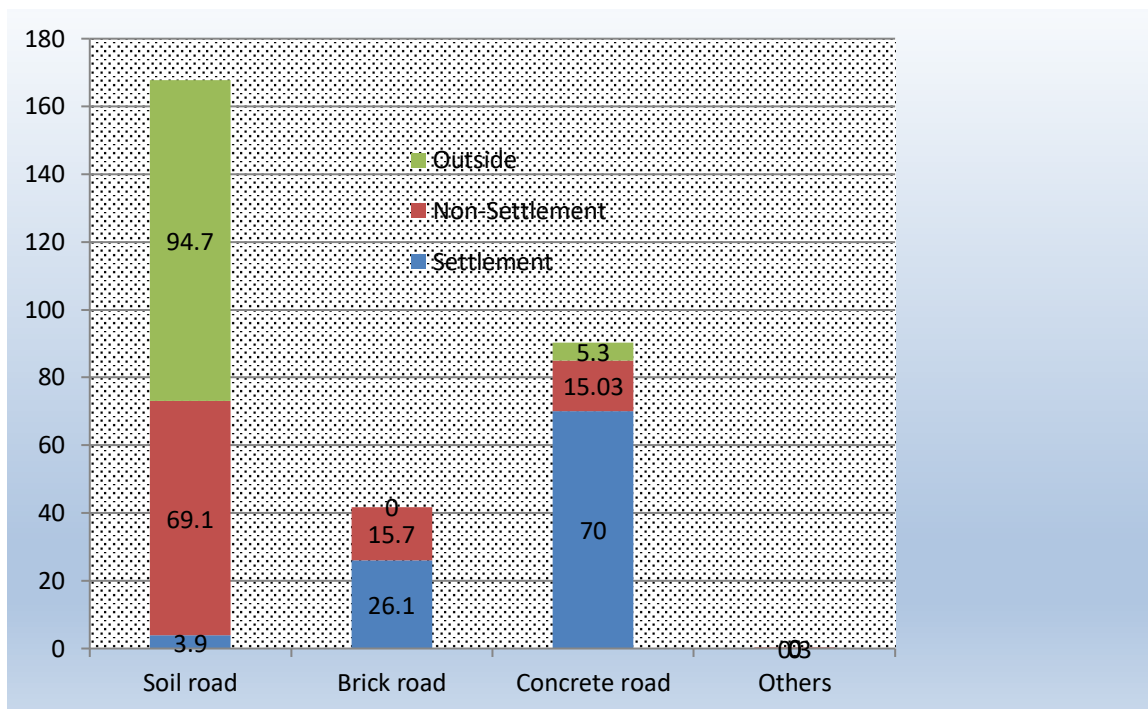


Fig. 4.8 Nature of roads for the community movement

The road condition from their residence to the main road is also found well in the settlement areas, where 74% used concrete road which is only 22% in the non-settlement area followed by 24% and 16% used brick road of these two areas (Fig. 4.9). The highest 83% of the households in outside and 63% of the non-settlement households use soil road. On the other hand, according to the distance of the highway from the residence, more than 49% of the settlement and 47% of the non-settlement households' distance is below one kilometer, which is 23% and 14% respectively within 1 kilometer. The number of households decreased over the long-distance except 3 kilometers 11% in the settlement areas (Fig. 4.10).

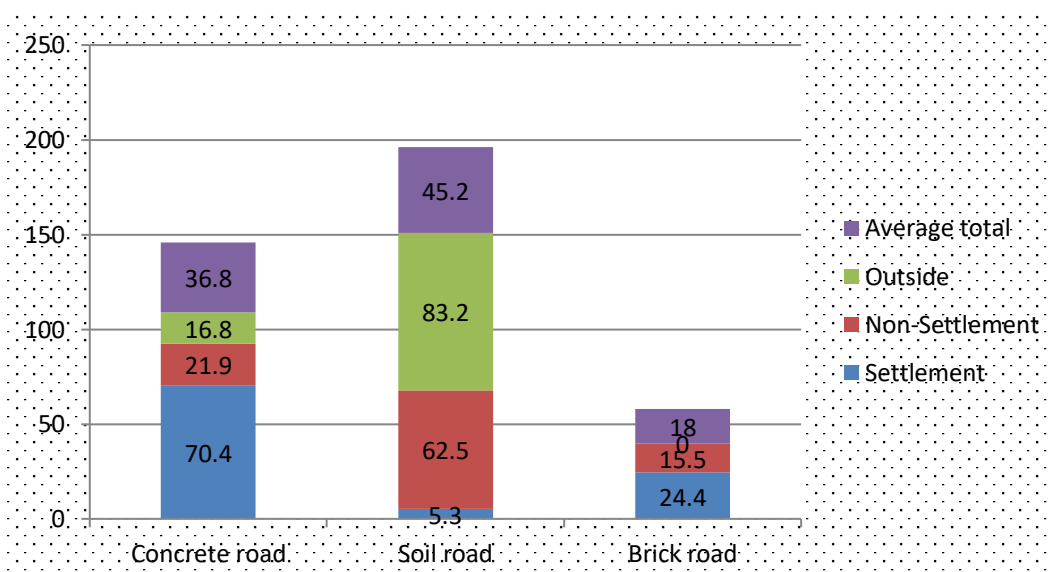


Fig. 4.9 Households' main road connection from residence

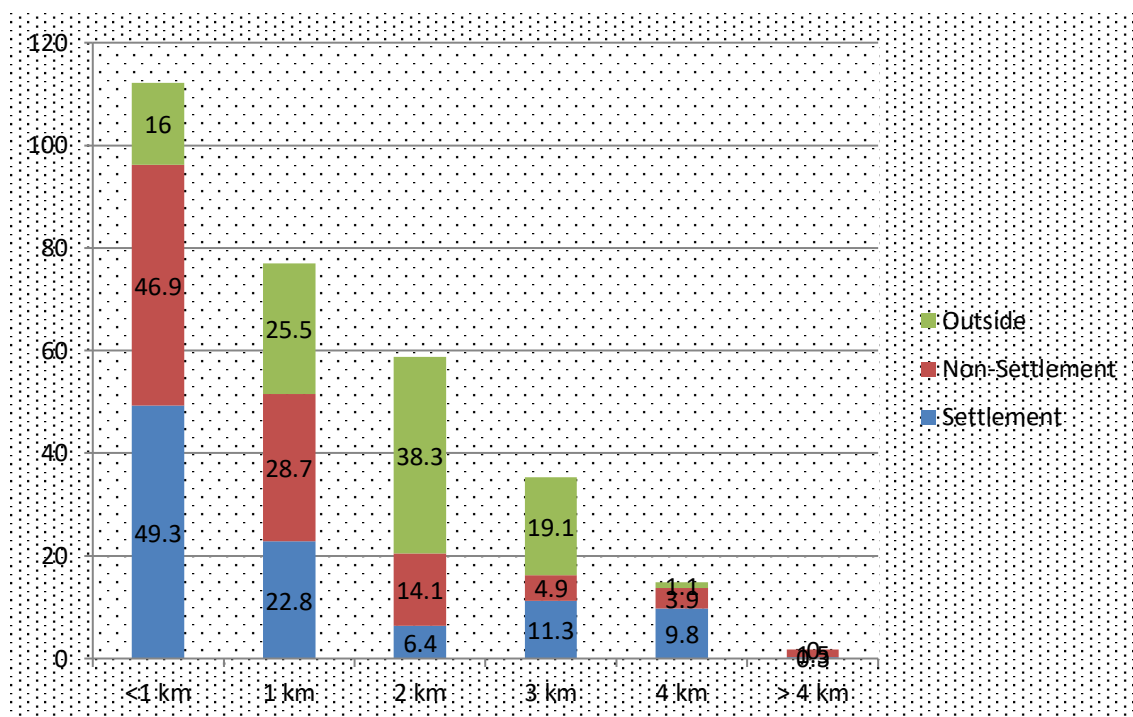


Fig. 4.10 Distance the highway from residence

The educational institutions particularly primary school, secondary school, moktob, madrasa, and kindergarten are available surrounding in both settlement and non-settlement areas (Fig. 4.11). The highest 96% of the households have primary school (93% in settlement and 96% in non-settlement) followed by 83% madrasa (84% settlement and 83% non-settlement), 70% secondary school (63% settlement and 75% non-settlement) and 64% moktob (73% settlement and 60% non-settlement), and 56% kindergarten (55% settlement and 58% non-settlement). More than 58% of the households have project maintained school in the settlement area. The higher secondary school (10%) and NGO School (seven percent) are found low in all three locations. In some cases, the qualitative data support the quantitative data. From an FGD at No. 10 Naodoba Union under Jajirapazila of Shariatpurdistrict, the participants gave an impression of significant achievements in communication and infrastructure development in the project area such as construction of road and highway, school and health center. They are enjoying the education, healthcare, and modern transport facilities. They expressed that they are getting the opportunity to send their children to school. The trend to go to high school and college has been increased in the study area.

Educational information of four Upazilas at Padma Multipurpose Bridge Project affected areas showed that the total number of primary, secondary, madrasah, and college institutions found higher in Shibchar Upazila followed by Zajira, Sreenagar and lowest in Louhajang in terms of the number of education institutions, teachers and students (Table 4.21).

Table 4.21: Educational information of four Upazilas at Padma Multipurpose Bridge Project affected area (in numbers) *

Education information	Upazila											
	Louhajang			Sreenagar			Shibchar			Zajira		
	No. of educational institutions	No. of Teachers	No. of Students	No. of educational institutions	No. of Teachers	No. of Students	No. of educational institutions	No. of Teachers	No. of Students	No. of educational institutions	No. of Teachers	No. of Students
Primary	76	512	17530	112	645	35120	180	990	35.000	123	641	22,107
Secondary	12	320	13,002	23	550	20,500	44	132	5,362	20	300	20,122
Madrasha	06	127	2835	5	65	1277	17	221	5,112	10	150	2,000
College	2	60	3,507	3	80	8,008	6	72	4319	3	65	4,102

*Sources of data: Education Officer (Primary), Louhajang Upazila

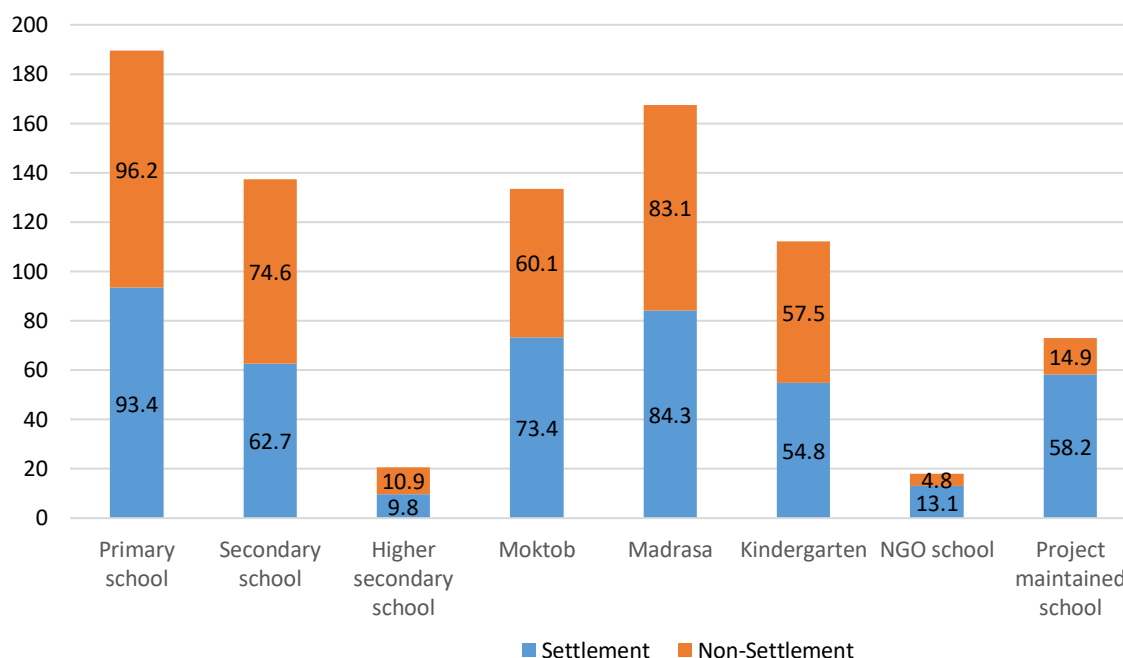


Fig. 4.11 Types of educational institutions surrounding of respondents' residence

According to the finding of the health care institutions (Table 4.22) in three locations, it indicates that all kinds of health care institutions are not available in the residence. The condition is worse in the non-settlement area, where some kinds of health institutions are found very pitiable. For example, only 10% of the non-settlement households have NGO clinics, 19% Family Welfare Centre, and 37% community clinic. This is worst in the outside residence where the highest 75% depends on only Union Health and Family Welfare health service, the rest of the institutional services are found very poor. The highest 83% of the settlement households mentioned that they have Padma Bridge Health Care Centre followed by 52% community clinic. The rest of the health institutions are very poor in this residence.

Like health care institutions, the training institutions (table 4.23) in the affected community in all three locations are also found very poor. Nearly 76% of the households reported that they did not have any training institutions in their locality, which is 77% in the settlement and 75% in the non-settlement areas. The highest 19% (18% settlement and 19% non-settlement) of the households have animal husbandry training followed by 13% (11% settlement and 14% non-settlement) computer training institution. The other training institutions such as technical training, handicrafts, and foreign labor training are found very poor (ranged is two percent to eight percent).

There is a highly significant association between types of health care institutions surrounding of respondent's residence and respondents' settlement status. The Chi-square tests show that this association is significant at a 1% level of significance having a p-value <0.001. On the other hand, the types of training institutions surrounding respondent's residence are significantly associated with respondents' settlement status. The obtained p-value from the Chi-square test is <0.001 which is significant at a 1% level of significance (Table 4.24).

Table 4.22: Types of health care institutions surrounding of respondent's residence

Health care institutions	Settlement	Non-Settlement	Outside	Average Total
Community clinic	52.4	36.9	10	41.7
Padma bridge health care center	83	27.6	8.3	45.8
Union health and family welfare center	48.3	53.2	75	51.9
NGO clinic	7.6	9.7	0	8.9
Family welfare center	16	18.6	3.3	17.5
Homeopathy	21.4	28.7	8.3	26
Others	6.8	18.2	23.3	14.5

Table 4.23: Types of training institutions surrounding respondent's residence

Training institutions	Settlement	Non-Settlement	Outside	Average Total
Technical training	4.3	4.2	0	4.1
Computer training	10.7	14.1	4.2	12.9
Foreign labor training	1.4	2.3	3.1	2.1
Handicrafts training	10.8	6.5	1	7.7
Animal husbandry training	18.3	19	4.2	18.5
No training center	77.3	74.5	92.7	75.7
Others	4.4	2.3	0	2.9

Table 4.24: Pearson Chi-Square Tests on health and training institutions

Health institutions		Nature of respondent
\$q3.5	Chi-square	1613.637
	df	14
	Sig.	.000*
Training institutions		
\$q3.6	Chi-square	106.813
	Df	14
	Sig.	.000*

*. The Chi-square statistic is significant at the .05 level.

The availability of the hat-bazar (local market) is much better than education and training institutions (Fig. 4.12). More than 70% of the households have daily bazar (73% settlement and 69% non-settlement) followed by 64% retail raw market (70% settlement and 62% non-settlement), 59% weekly hat (53% settlement and 62% non-settlement). More than 47% of the households have permanent markets which are 60% settlement and 42% non-settlement areas. More than 43% of the households have community shops in their locality, which is 52% in settlement and 40% in non-settlement locations. But these hat-bazars are bit far from their residence, only 17% of the households mentioned that these are within walking distance, 26% within half km, 33% within 1 km, and the rest of 24% within 2 km. The number of households of these three categories does not differ significantly except walking distance among outside residences where only 10% of residence have this opportunity (Fig. 4.13).



Images: Fish markets, Source: BBA

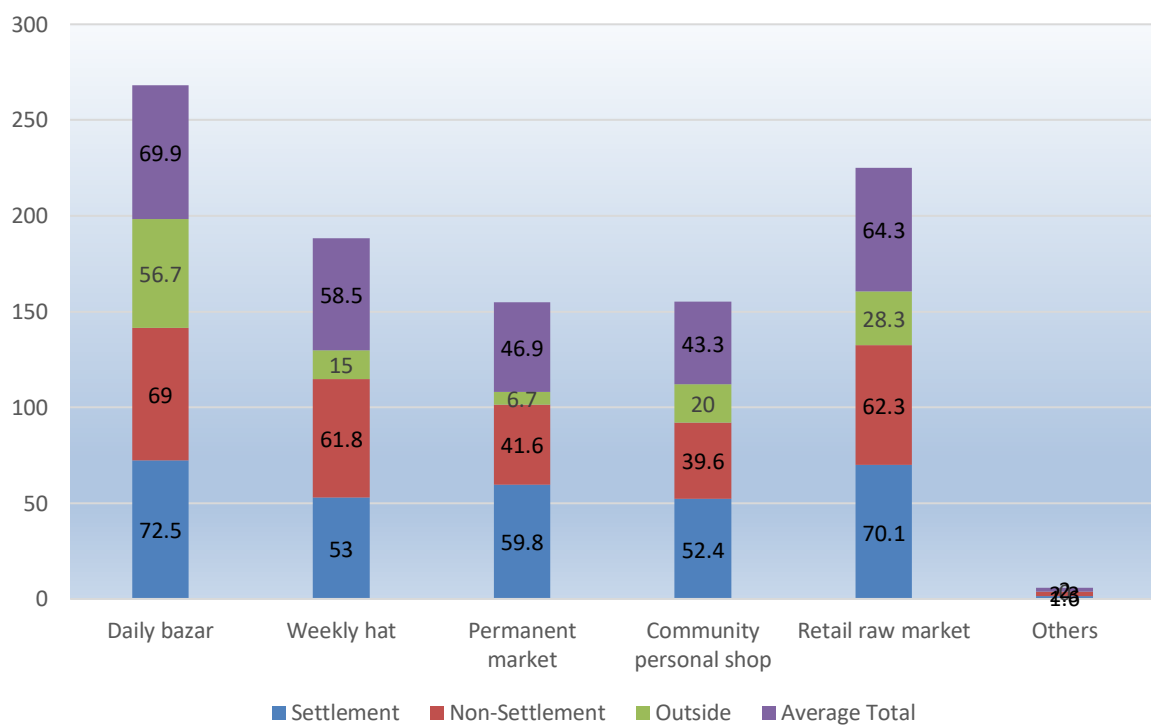


Fig. 4.12 Types of hat-bazar surrounding respondent's residence

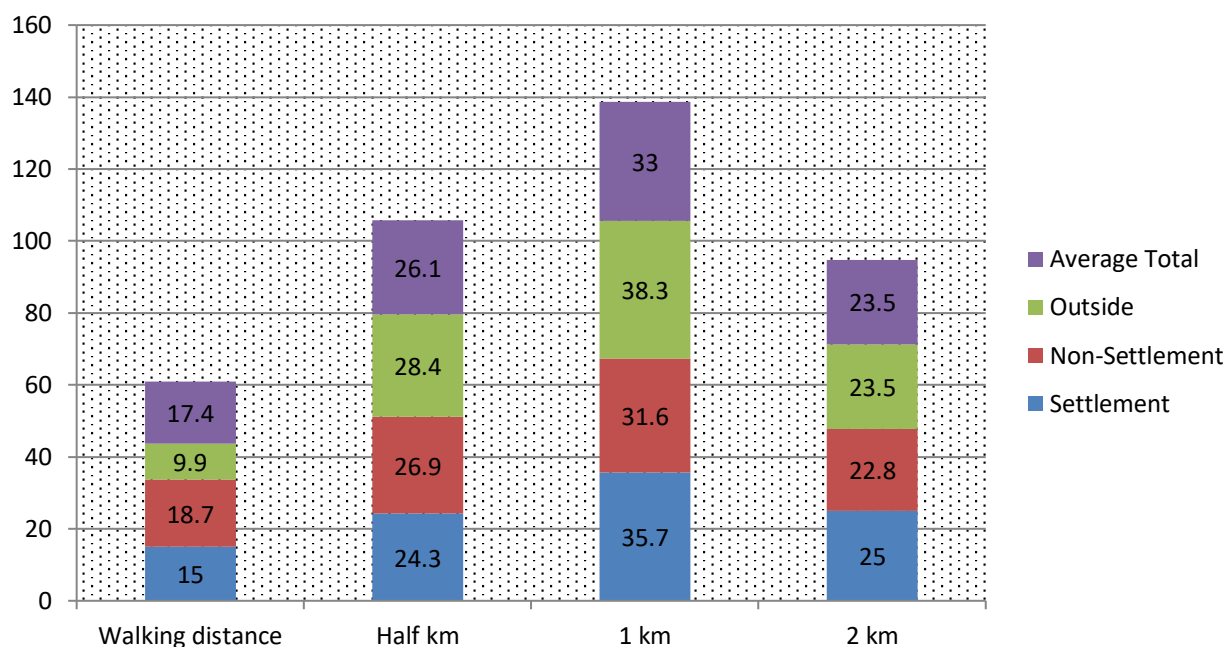


Fig. 4.13 Distance of the closest hat-bazar from respondents' residence

4.4. Residence, Water source, Latrine, and Sanitation conditions

Findings show Fig. 4.14) that nearly 92% of the household live in their own houses which are higher 98% in the settlement, 89% in non-settlement, and 77% outside. The rest of the households live in rental houses. According to the last meeting (meeting number 133) of the

Eco-Social Development Organization (ESDO), 754 landless people got new plot under the ILRP & IRP Project. This plot was allocated in the light of the Bangladesh Gazette (22 June 2017) of the Resettlement Action Plan I, II, III, IV, V. The Chi-square test shows that respondents' homeownership status is significantly associated with settlement status. The obtained p-value is <0.001 which is significant at a 1% level of



Image: Housing at settlement area, Source: BBA

significance (Table 4.25 & Fig. 4.15). But the house condition is not found well in all three categories households where only 14% of the households live in the brick house (17% settlement and 12% non-settlement) followed by 28% partially brick house. The highest 53% of the peoples' house is tin/wood/bamboo (50% settlement, 53% non-settlement and 89% outside). A very low number of people (four percent) live in kacha house. From the Chi-square test, a significant association is found between the condition of residence and respondents' living status. The Chi-square test gives p-value <0.001 which is significant at a 1% level of significance (Table 4.26).

Nearly 80% of the households built their houses by their own earning which 82% among settlement and 79% non-settlement and highest 91% outside (Table 4.27 & Fig. 4.16). Only 13% of the households are living government-provided houses in the settlement area which is six percent in non-settlement areas. Nearly nine percent have inheritance houses and NGO and personal/relative donation houses are found very low (range is below one percent to one percent respectively). According to the five-point rating scale, the highest 48% of the households mentioned their houses as average (42% settlement and 49% non-settlement), 35% good (42% settlement and 33% non-settlement), and only eight percent mentioned these as both very good and very bad.



Image: Housing at settlement area, Source: BBA

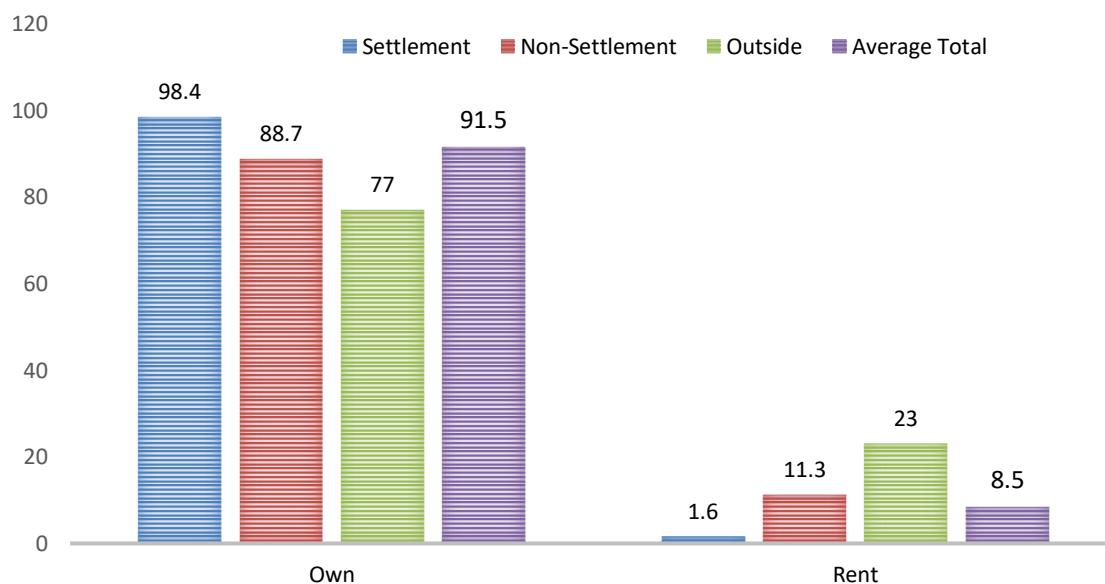


Fig. 4.14 Status of households' homeownership

Table 4.25: Chi-square test on households' homeownership

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	159.865	2	.000
Likelihood Ratio	195.451	2	.000
Linear-by-Linear Association	159.381	1	.000
N of Valid Cases	5176		

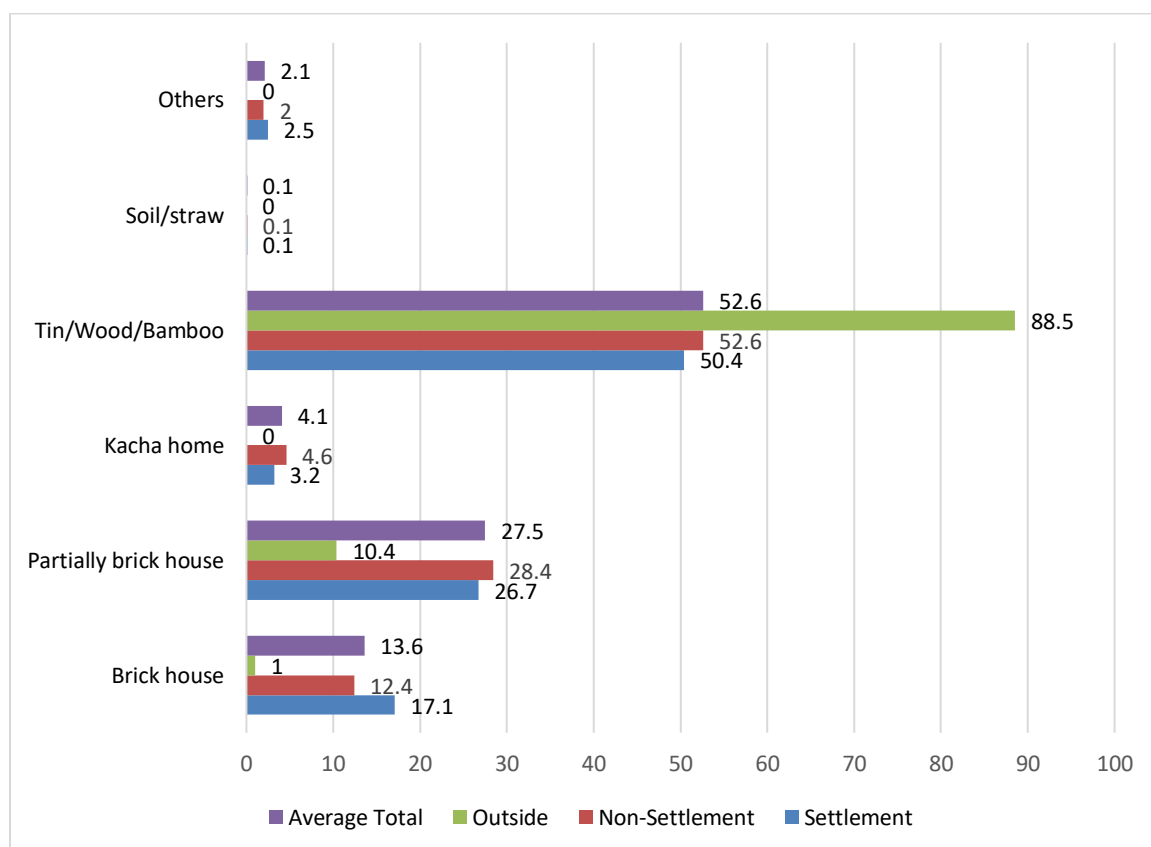


Fig. 4.15 Residence types of households

Table 4.26: Chi-square test of housing conditions of households

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	103.518	8	.000
Likelihood Ratio	111.369	8	.000
Linear-by-Linear Association	64.200	1	.000
N of Valid Cases	4816		

Table 4.27: Person(s) who helped in building the residence of households

Persons helped	Settlement	Non-Settlement	Outside	Average Total
Inheritance	3.9	10.8	6.3	8.5
Own earning	81.5	78.5	90.6	79.7
Provided by government	13.4	6.4	2.1	8.5
Provided by NGO	0.4	0.4	0	0.4
Personal/relative donation	0.4	1.8	1	1.4
Others	0.4	2.1	0	1.5

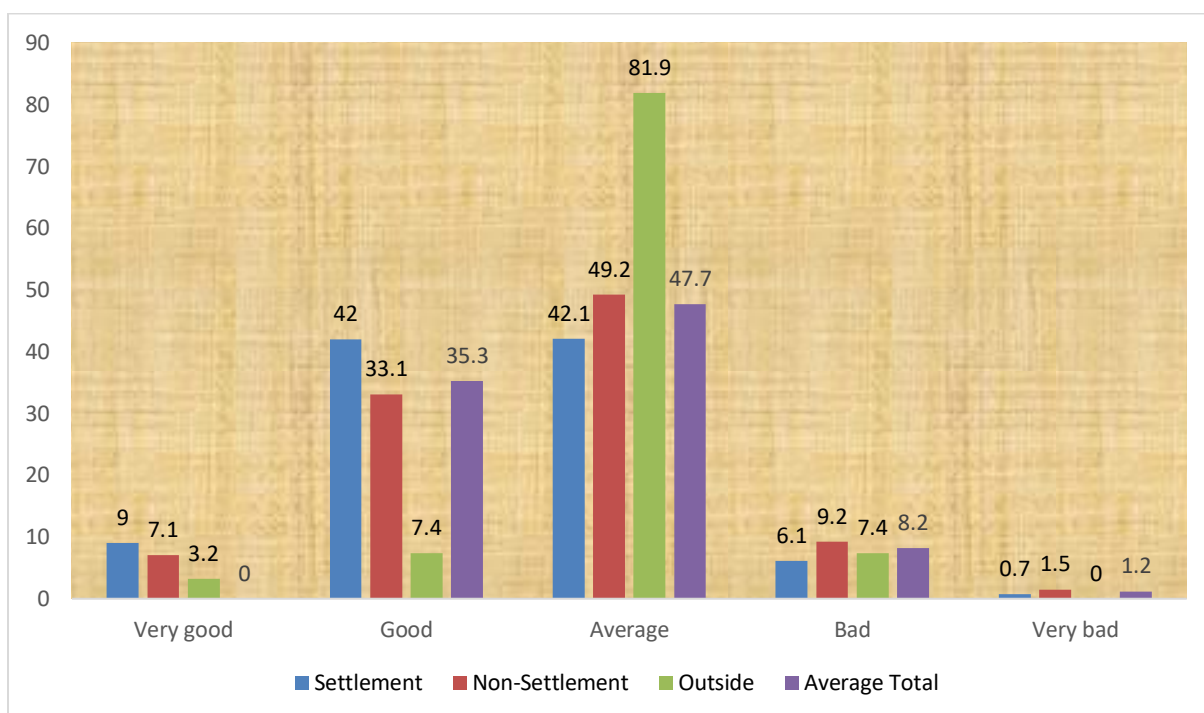


Fig. 4.16 Residence conditions of households

Findings showed that 41% of the households are damaged by natural disasters, which is the highest 63% in outside followed by 46% in non-settlement and 29% settlement (Table 4.28 & Fig. 4.17). The rest of the households are natural disasters free. The households were also asked whether their households about their residence generally damaged by natural disasters (storm winds, heavy rains, river erosion, or floods), in reply, 53% said slight damage which is found 58% in settlement and 52% in non-settlement areas; followed by 38% roughly damage and nine percent significantly damage (six percent settlement and 10% non-settlement area). The Chi-square test shows whether residence generally damaged by storm winds, heavy rains, river breaks, or floods is significantly associated with respondents' settlement status. The obtained p-value is <0.001 which is significant at a 1% level of significance (Table 4.29).

Table 4.28: Households' residence generally damaged by natural disasters

Status of damage	Settlement	Non-Settlement	Outside	Average Total
Yes	29.1	46.4	62.5	41.1
No	70.9	53.6	37.5	58.9
Nature of damage				
Slight damage	57.6	51.7	35	52.9
Roughly damage	36.5	38.1	65	38
Significant damage	5.8	10.2	0	9

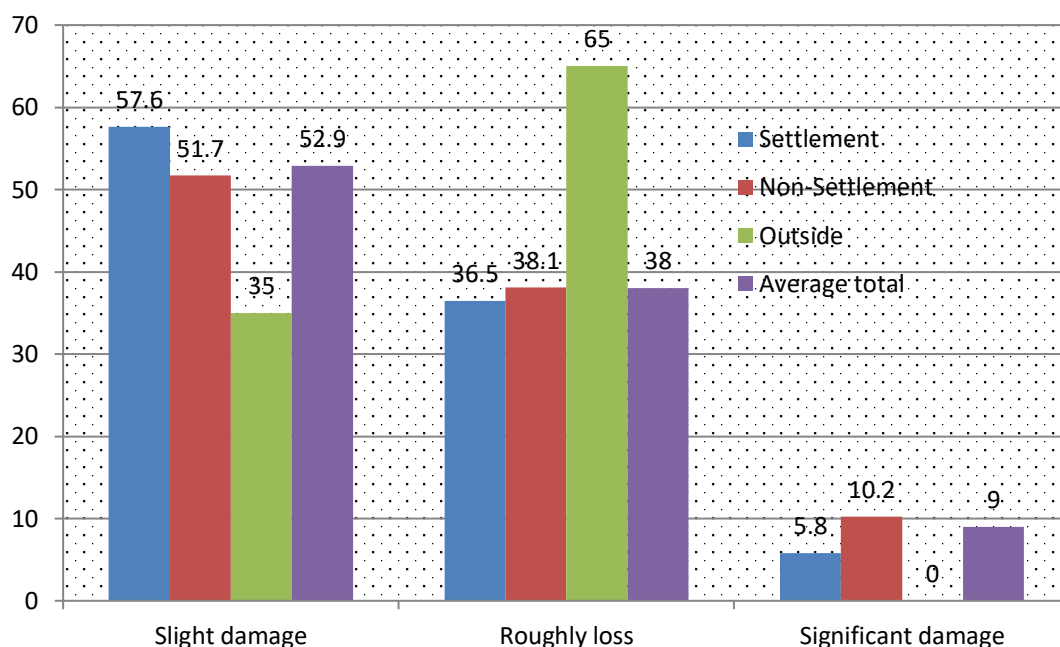


Fig. 4.17 Households' residence nature of loss by natural disasters

Table 4.29: Chi-square test residence generally damaged by natural disasters

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	141.935	2	.000
Likelihood Ratio	145.394	2	.000
Linear-by-Linear Association	141.888	1	.000
N of Valid Cases	5108		

More than 83% of the non-settlement households have drainage systems in their community whereas 68% of the non-settlement households do not have this (Table 4.30 & Fig. 4.18). Findings showed that a very small number of households' drainage system is very good which is only nine percent in settlement and six percent in the non-settlement area. The highest number of households' (43%) are average (74% in outside) and 40% good which is 47% in settlement and 33% in non-settlement areas. The overall drainage system is found better in settlement areas compared to the other two locations. The qualitative data is also in line with the quantitative data. In an in-depth case interview of the settlement area, Saiful mentioned:

We used to live in a waterlogged area and therefore, our soiled leg led us to feel a painful experience over the years. Now, we got relief for designing a fine drainage system.

The toilet system is found much better in all three locations though it is much better in the settlement area (Fig. 4.19), where 100% of the people use sanitary latrine (73% personal and 27% slab ring). This is 90% in the non-settlement area (63% personal and 27% slab ring). The community toilet, open place, and hanging toilet are found quite low in these locations.

Table 4.30: Drainage system of households

Status of the drainage system	Settlement	Non-Settlement	Outside	Average Total
Yes	83.1	32.3	23	47.8
No	16.9	67.7	77	52.2
Condition of the drainage system				
Very good	9.1	6.4	8.7	7.9
Good	46.6	32.5	17.4	40
Average	38.3	48.5	73.9	43.2
Bad	5.3	8.4	0	6.6
Very bad	0.7	4.3	0	2.3

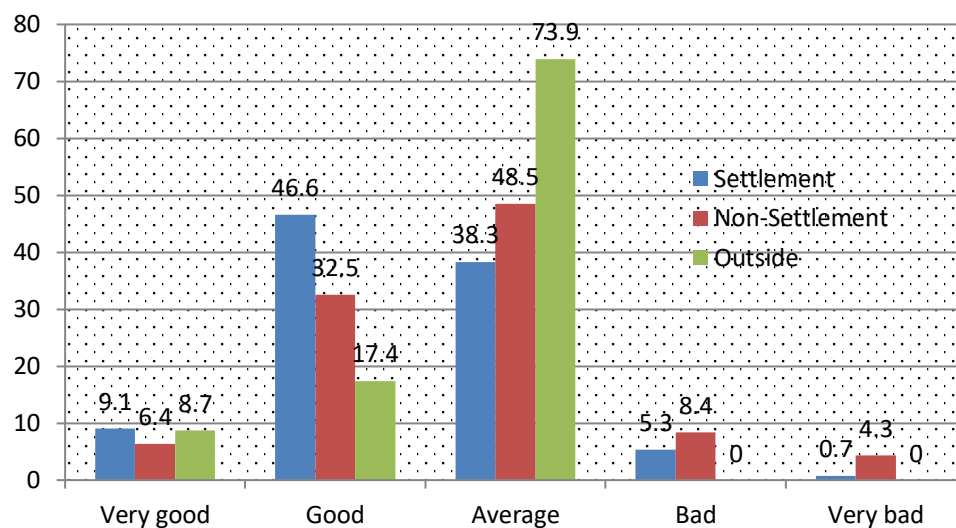


Fig. 4.18 Condition of the drainage system of households

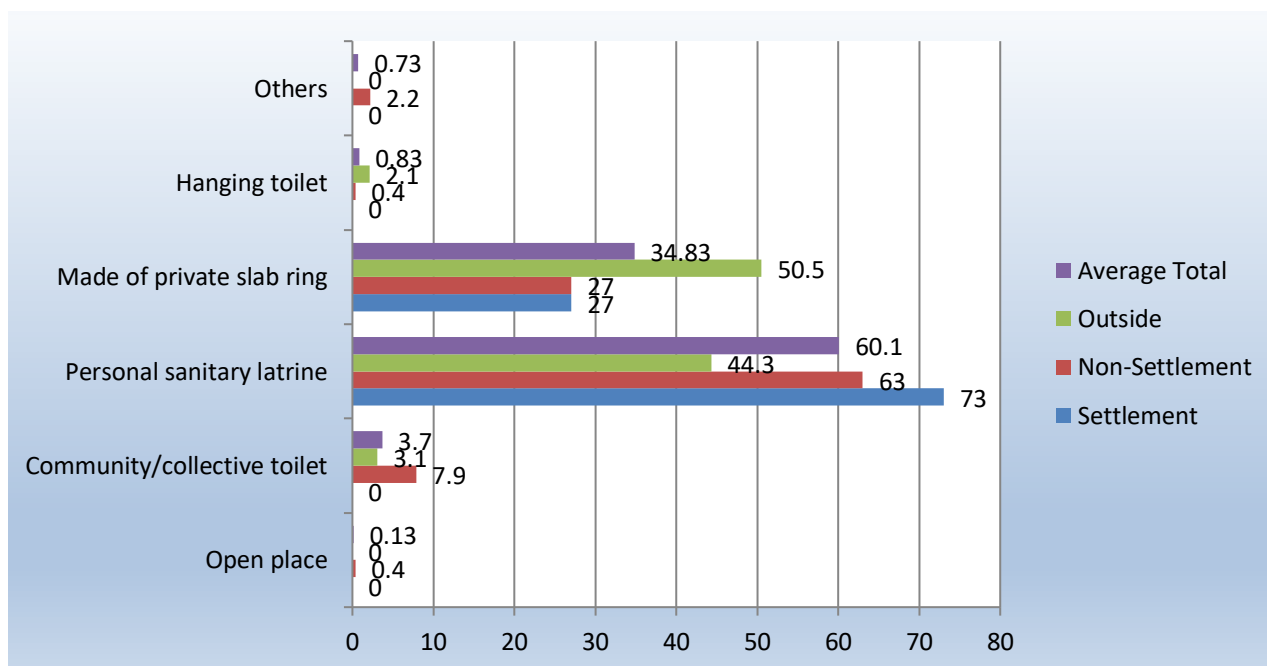


Fig. 4.19 Type of toilet of households

The finding from Table 4.31, water sources, and ownership of water for drinking, cooking, bathing, washing cloth, and using toilet showed that the higher number of both settlement and non-settlement households are using deep tube-well water for their drinking and cooking purposes. The numbers are 57% each for drinking and 35% and 43% for cooking. The numbers of using shallow tube-well water increased for bath water, cloth washing water, and toilet using waters among both types of households. In this case, the numbers are found 42% in all three purposes among the settlement areas. Other water sources are found very low among the three locations except for two cases such as 22% of the non-settlement and 44% settlement households reported that they are using river water for cooking purposes.

Regarding the ownership of all kinds of using waters showed that the non-settlement and outsider households have a higher number of the fully own water sources and in many cases, these are more than double among those two locations than the settlement area, whereas the higher number of the settlement households are using government ownership water in all five types of purposes and these numbers are 48% to 54% which are found very low among the non-settlement households. The numbers of households are found very low among all other types of ownership such as partnership, relatives, community, and neighbors.

The notable finding was that 95% to 100% of the households in all three categories have adequacy of their demand for all kinds of water purposes. Similarly, 97% to 100% of all three categories of households mentioned that there was fully women security to collect water from all of the sources in all of their five purposes (Table 4.33). Besides, 61% to 77% of the households (except 49% of the settlement for bath and 50% cloth washing water) reported that the qualities of all types of water purposes are well followed by a significant number of households mentioned as average. The numbers who told 'not good' was found very low in all cases except 16% of the household each bathwater and toilet using water.

The average distance (Fig. 4.20) from the household residence showed that the distance is longest 63.14 meters for cooking water which is the lowest 39.82 meters in settlement and 72.74 meters in non-settlement areas followed by 19.26 meters for drinking water which is 22.45 meters in settlement and 18.22 meters in non-settlement. Bath and cloth washing waters are available within 6.37 meters and 6.10 meters in the settlement area, which is a bit far 20.62 meters and 18.08 meters in the non-settlement area. All of the water sources (drinking water, cooking water, cloth washing water, and toilet using water) and their ownership status have a highly significant association with respondents' living status. The corresponding Chi-square tests show that all the p-values are <0.001 which indicates significant association at a 1% level of significance. That is, whether a respondent in the settlement area or not significantly determines the availability of water source and its ownership (Table 4.32).

Table 4.31: Households' water sources and ownership

		Drinking water			Cooking water			Bath Water			Cloth washing water			Toilet using water		
		S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Water sources	Deep tube- well	56.7	57	7.2	34.9	43.4	6.2	16.3	38.5	7.2	16	38.4	7.2	15.3	39	10.3
	Shallow tube-well	24.8	40.6	90.7	24.5	24.3	42.3	35.9	51.6	85.6	36.3	52.6	89.7	37.1	55.1	86.6
	Supplies	14.3	1.3	2.1	24	1.8	2.1	41.3	2.2	2.1	41.5	2.2	2.1	41.5	2.2	2.1
	Ponds	0.2	0	0	0.6	1.5	5.2	0.4	2.4	0	0.3	2.6	0	0.3	1.7	0
	Canal	0.1	0.1	0	0.3	0.3	0	0.3	0.3	0	0.2	0.2	0	0.2	0.2	0
	River	0.2	0.4	0	5.5	21.6	44.3	0.4	4.2	5.2	0.3	3.2	1	0.3	1	1
	Others	3.7	0.5	0	10.3	7	0	5.4	0.8	0	5.4	0.7	0	5.3	0.8	0
Ownership	Fully own	36	70.6	95.9	37.2	52.4	47.4	44.5	80.3	90.7	44.9	81.6	90.7	45.8	83.9	91.8
	Partnership	2.7	5.2	1	3.1	4.6	1	2.3	5.5	1	2.2	5.5	1	2.2	5.5	1
	Relatives	1.1	2.5	0	0.8	1.9	0	1	2	0	1	1.8	0	1.1	1.9	3.1
	Community	2.7	1.7	0	4.2	17.4	3.1	2.6	3.6	4.1	2.5	3	4.1	2.4	1	0
	Government	54.4	12.7	2.1	52.5	18	43.3	49.1	6.2	3.1	48.7	5.6	3.1	48	5.2	3.1
	Neighbors	3	7.2	1	2.3	5.6	5.2	0.5	2.4	1	0.6	2.5	1	0.5	2.4	1

Table 4.32: Chi-Square on households' water sources and ownership

	Value	df	Asymp. Sig. (2-sided)
Drinking-Water sources			
Pearson Chi-Square	626.252	12	.000
Likelihood Ratio	599.414	12	.000
Linear-by-Linear Association	65.884	1	.000
N of Valid Cases	5155		
Cooking water sources			
Pearson Chi-Square	933.685	12	.000
Likelihood Ratio	929.610	12	.000
Linear-by-Linear Association	20.177	1	.000
N of Valid Cases	5149		
Bathwater sources			
Pearson Chi-Square	1638.990	12	.000
Likelihood Ratio	1604.489	12	.000
Linear-by-Linear Association	253.149	1	.000
N of Valid Cases	5154		
Cloth washing water sources			
Pearson Chi-Square	1658.584	12	.000
Likelihood Ratio	1623.186	12	.000
Linear-by-Linear Association	319.399	1	.000
N of Valid Cases	5155		
Toilet using water sources			
Pearson Chi-Square	1622.343	12	.000
Likelihood Ratio	1573.591	12	.000
Linear-by-Linear Association	519.786	1	.000
N of Valid Cases	5149		
Drinking water ownership			
Pearson Chi-Square	1079.881	10	.000
Likelihood Ratio	1045.581	10	.000
Linear-by-Linear Association	643.284	1	.000
N of Valid Cases	5139		
Cooking water ownership			
Pearson Chi-Square	660.722	10	.000
Likelihood Ratio	665.208	10	.000
Linear-by-Linear Association	135.097	1	.000
N of Valid Cases	4925		
Bathwater ownership			
Pearson Chi-Square	1307.115	10	.000
Likelihood Ratio	1239.467	10	.000
Linear-by-Linear Association	861.273	1	.000
N of Valid Cases	5122		
Cloth washing water ownership			
Pearson Chi-Square	1349.344	10	.000
Likelihood Ratio	1279.209	10	.000
Linear-by-Linear Association	902.899	1	.000
N of Valid Cases	5122		
Toilet using water ownership			
Pearson Chi-Square	1389.546	10	.000

	Value	df	Asymp. Sig. (2-sided)
Likelihood Ratio	1320.979	10	.000
Linear-by-Linear Association	981.505	1	.000
N of Valid Cases	5126		

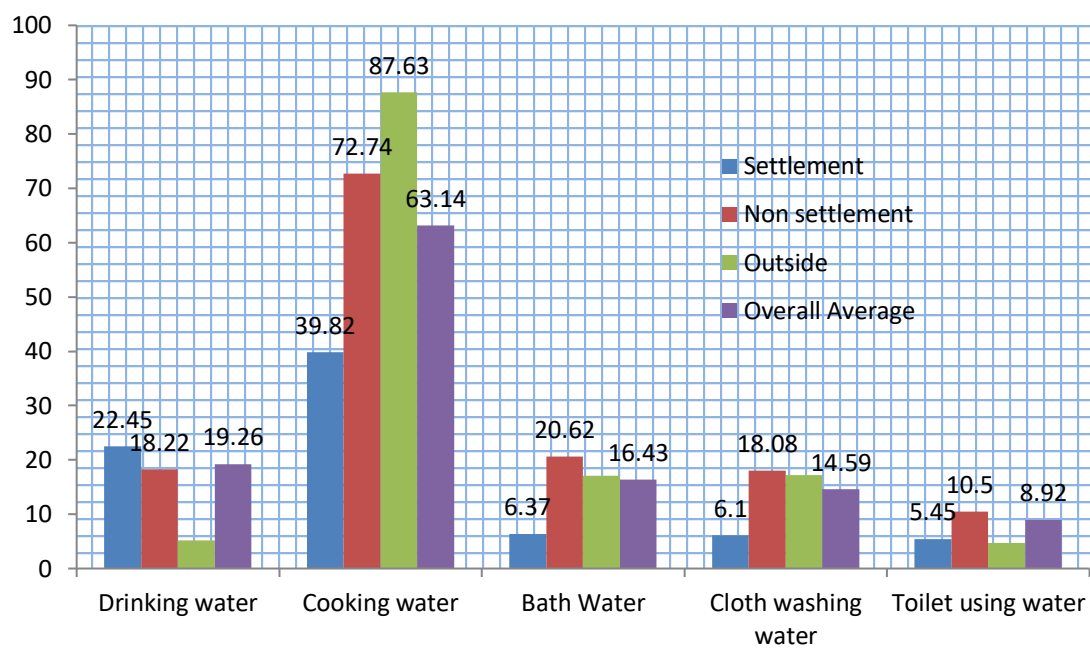


Fig. 4.20 Average distance of different sources of water from residence (in meter)

Table 4.33: Adequacy for demand, women security to collect water from sources, and quality of water of the households

		Drinking water			Cooking water			Bath Water			Cloth washing water			Toilet using water		
		S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Adequacy for demand	Yes	96.7	94.7	97	96.2	93.2	97	98.2	97.8	99	98.2	97.9	100	98.4	98	100
	No	3.3	5.3	3	3.8	6.8	3	1.8	2.2	1	1.8	2.1	0	1.6	2	0
Women security to collect water	Yes	98.2	96.6	97	97.3	92.1	97	98.7	98	100	99.1	98.3	100	99.1	98.7	100
	No	1.8	3.4	3	2.7	7.9	3	1.3	2	0	0.9	1.7	0	0.9	1.3	0
Quality of water of the households	Good	76.8	69.7	75.3	66.4	69.2	75.3	49.4	60.6	69.1	49.9	61.1	73	50.1	62.4	76
	Average	21.1	25.1	24.7	27.4	26.6	24.7	34.8	29	30.9	34.5	28.4	27	33.6	27	24
	Not Good	2.1	5.2	0	6.1	4.2	0	15.8	10.3	0	15.6	10.5	0	16.3	10.6	0

Finding gives an irresolute picture about the arsenic-free water at the households of three locations though the highest 68% of the households (74% in settlement and 66% non-settlement and only 41% in outside) are drinking arsenic-free water (Fig. 4.21), but still seven percent (which is four percent in the settlement, eight percent in non-settlement and 22% outside) households are drinking arsenic water. More than 25% of the households do not know whether their drinking water is arsenic-free, which is 22% in settlement and 26% in non-settlement areas. From an in-depth case interview, Razzaque reported us:

I am highly affected by the Padma Multipurpose Bridge. The old ferry ghat was adjacent to their house and they were living on the bank of Padma River. They were shifted from the riverbank to the present location due to this bridge. The present living location is unhygienic and tube well water is arsenic contaminated. So, they have to collect drinking water from a far distance.

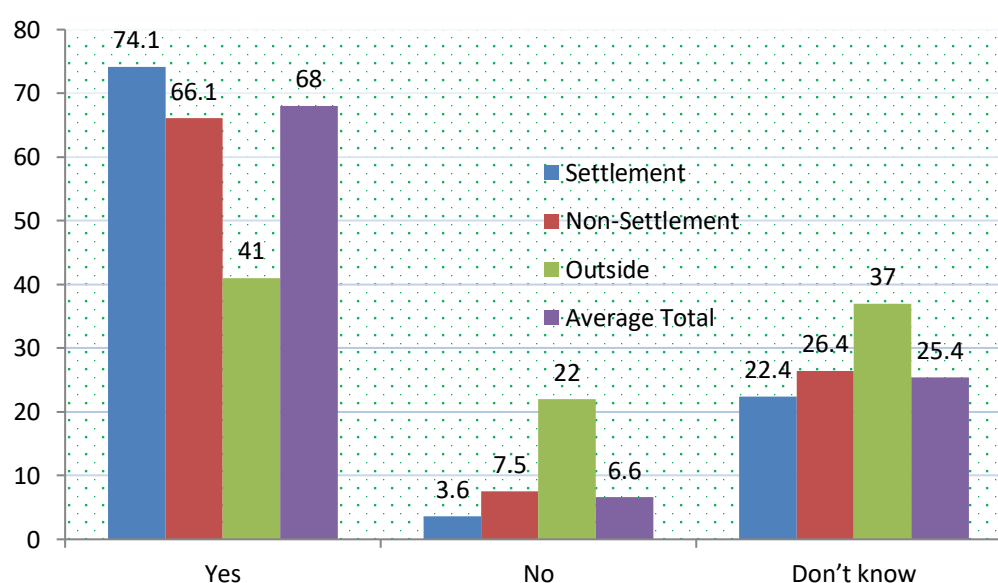


Fig. 4.21 Arsenic-free drinking water of households

The highest 50% of the households mentioned that their area's cleanness is average which is 30% in settlement and 58% in non-settlement followed by 38% good which is 61% in settlement and (less than half) 29% in non-settlement areas (Fig. 4.22). Only three percent of the households mentioned that their areas cleanness are 'very good' and seven percent bad. The cleanness of the area is significantly associated with respondents' living status. The obtained p-value from the Chi-square test is <0.001 which is significant at a 1% level of significance (Table 4.34).

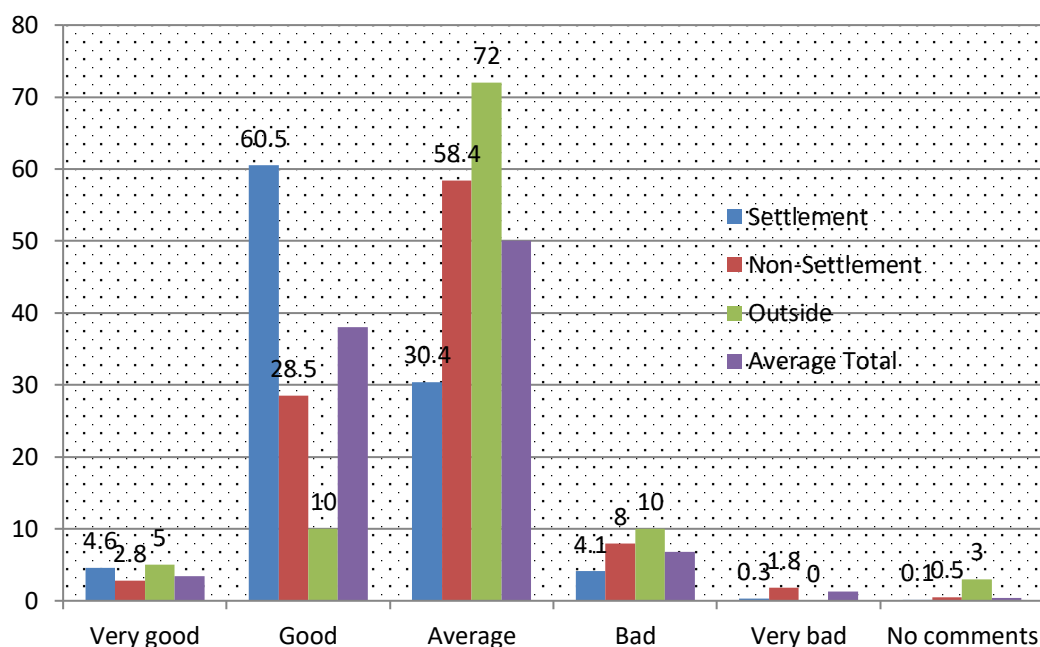


Fig. 4.22 Cleanness of area

Table 4.34: Chi-square test on cleanliness area

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	96.469	4	.000
Likelihood Ratio	87.853	4	.000
Linear-by-Linear Association	35.155	1	.000
N of Valid Cases	5176		

4. 5. Education and Health Conditions

Nearly 98% of the households have schools near to their residence (Table 4.35 & Fig. 4.23). More than 68% (which is 72% in settlement and 66% in non-settlement) households have school-going children. The highest 94% (90% settlement and 96% non-settlement) of the household mentioned the government primary school is available in their close distance followed by 83% non-government madrasa, and 71% secondary school which is found a small number of households to other institutions such as university (0.4%),



Image: School at settlement area, Source: BBA

government madrasa (six percent), higher secondary school (8%), and NGO/charity school (10%). There is a highly significant association between having any school in the respondents' area and settlement status. The Chi-square test shows that this association is significant at a

1% level of significance having a p-value <0. 001 (Table 4.36). But most of the households' nearby educational institutions are good (average 64%, 68% settlement and 64% non-settlement) followed by an average of 27%. Only 8% (11% in settlement area) mentioned these as good and 'not good' is mentioned by only one percent (below one percent in both settlement and non-settlement areas).



Image: PMBP team in a school visit, Source: BBA

Most of the respondents in the qualitative investigation were agreed that the education including building new schools and facilities improved a lot after starting the Padma Multipurpose Bridge project: Like Monwar from the Josodia settlement area, the other five respondents in the in-depth case interview informed us:

We are getting project sponsored primary school, health center, free educational materials, and training facilities for skill development. The educational quality of schools is also good. Our children are getting motivated towards going to school.



Image: Classroom teaching at settlement area, Source: BBA

On the other hand, from an FGD session of the non-settlement area of the Mathbor Char Union of the Shibchar Upazila of the Madaripur District, two teachers reported:

People in this area have developed socially in terms of increasing their education; school infrastructures, number of teachers, and staff members. Many school-going children are returning to the schools in this area because of available schools at their nearby house.

An in-depth case interview with Riaz at the settlement area and other eight respondents of both areas argued about the availability of educational opportunity at the local community:



Image: Students at settlement school ground, Source: BBA

School for the boys and girls are available in the local community. It is much in the settlement areas. A lot of new schools have been established with all facilities. The quality of education has improved and better than before and it is a dramatic change in education. The attitude and behaviors of teachers are also worthy and appreciable. Many times teachers visit our houses if our children do not go to schools. This is good!

Nizam, a settlement area of Shibchar area mentioned:

Educational in this area is getting better. The education stationaries are now very easy and available here. The relationships among the students, teachers, and guardians are very well. Because of transport facilities and frequent monitoring at schools, the quality of education has developed and the teachers perform their responsibilities very well.

Haris in non-settlement area said:

The quality of education has been improved here and people's awareness regarding their sibling's education has increased compared to previous years. The behavior of teachers is worthy and appreciable. Infrastructural The educational infrastructural development is also noteworthy.



Image: Students participating in a parade, Source: BBA



Image: Students attending an assembly, Source: BBA



Image: Students attending a festival, Source: BBA

Table 4.35: Education and health condition

	Settlement	Non-Settlement	Outside	Overall Average
Any school in the community				
Yes	98.4	97.6	92	97.7
No	1.6	2.4	8	2.3
Any child in schooling				
Yes	72.1	66.4	66.7	68.2
No	27.9	33.6	33.3	31.8
Kind of school near home				
Settlement area primary school	77.3	21.9	7.3	38.8
Government primary	90.1	96.1	95.8	94.2
Secondary school	60.5	76.7	34.4	70.8
Higher secondary	6.4	8.9	0	8
University college	0.3	0.3	4.2	0.4
Government Madrasah	2.1	8.1	10.4	6.3
Non-government Madrasah	83.2	84.3	41.7	83.1
NGO/Charity school	15.1	7.5	5.2	9.8
Others	23.8	18.9	24	20.5
Quality of education system				
Very good	10.6	6.3	2.2	7.6
Good	67.9	63.7	44.9	64.6
Average	21.3	29.2	28.1	26.6
Not good	0.2	0.8	24.7	1.1
Not good at all	0	0.1	0	0

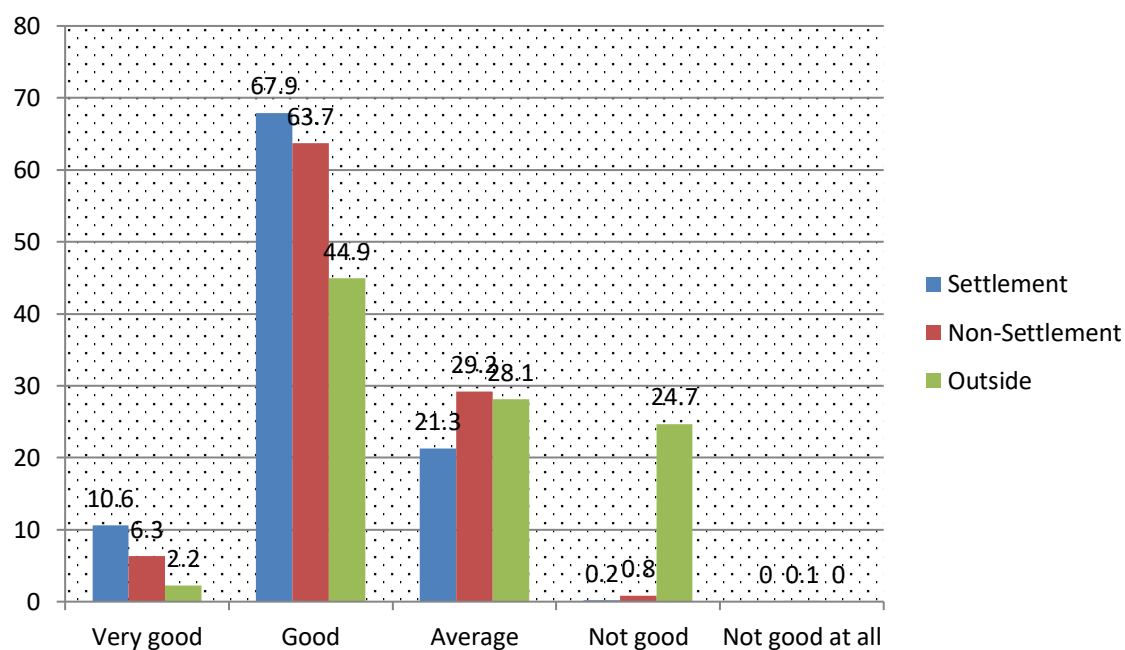


Fig. 4.23 Opinions of the education system

Table 4.36: Chi-square test to find an association between location and having any school in your area

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.957	2	.000
Likelihood Ratio	12.369	2	.002
Linear-by-Linear Association	8.725	1	.003
N of Valid Cases	5148		

According to the data presented in Table 4.37 on per school average number of teachers, students, and percentage of attendance in four Upazila, mostly there is a downward trend in the number of students from Class I to Class V and a similar trend also look from Class VI to X. It is also true on the percentage of drop-out rate though the percentage of presence and absence looks ups and downs. This research found that the class size (number of students per class) is bigger in the non-settlement area than the settlement area. The average number of students per class in pre-primary is found 56 in non-settlement and 58 in non-settlement which increased 56 and 65 in grade I respectively and then gradually decreased and found 35 and 44 respectively. Data showed that 159 in settlement and 162 in the non-settlement area enrolled in grade VI and showed gradually decreased till grade X and found 102 and 106 students due to possible cause of drop-out in both levels. The percentage of presence is found better (ranged lowest 81% and highest 95%) in the settlement area than the non-settlement (ranged lower 76% and highest 84%). On the other hand, the absence rate varied in different grades at both settlement and non-settlement areas which is ranged 10% (in grade 1) to 22% (in grade IX) which is 7% (in both grade IV) to 19% (in grade IX. However, the highest percentages of absence in both locations are found in grade IX. The drop-out rate showed that the is gradually increased over the grades, girls drop-out is found lower in both types of households until grade IV then their drop-out rate increased than the boys (Fig.4.24). If we calculate the drop-out at the primary level it is found 3.53% of boys and 3% in the settlement area, and 4.34% boys and 3.62 girls. The drop-out rate in secondary school is 10.61% boys and 12.27% girls in settlement school, and 12.41% and 13.40% girls in non-settlement schools with the highest 17.64% and 23.12% in grade X respectively. The findings of the above table are consistent with the national data and in some cases better.

Table 4.37: Per school average number of students, percentage of attendance/presence, absence, and drop-out rate in four Upazilas*

Grade	No. of students		% of Presence (last year)		% of Absence (last year)		% of drop-out (last year)			
	S	NS	S	NS	S	NS	S		NS	
							Boys	Girls	Boys	Girls
Pre-primary	56	58	85	76	10	15	-	-	-	-
I	57	65	86	78	8	10	02	0.90	03	1.11
II	55	64	86	77	8	11	2.5	1.80	3.11	2.21
III	54	61	95	82	12	14	3.25	2.50	4.32	3.23
IV	48	54	86	84	7	10	4.52	4.62	5.21	5.02
V	35	44	88	83	12	15	5.40	5.20	6.06	6.54
VI	159	162	84	84	18	20	7.42	6.22	8.55	7.65

VII	142	143	83	79	10	14	8.65	7.49	10.21	9.60
VIII	135	136	86	77	13	16	10.23	14.54	12.43	13.32
IX	122	124	81	79	19	22	12.85	15.46	13.24	13.33
X	102	106	86	80	14	16	13.90	17.64	17.63	23.12

*Table is developed based on the field data on selected all types of schools' Head Teachers/Teachers and then averaged.

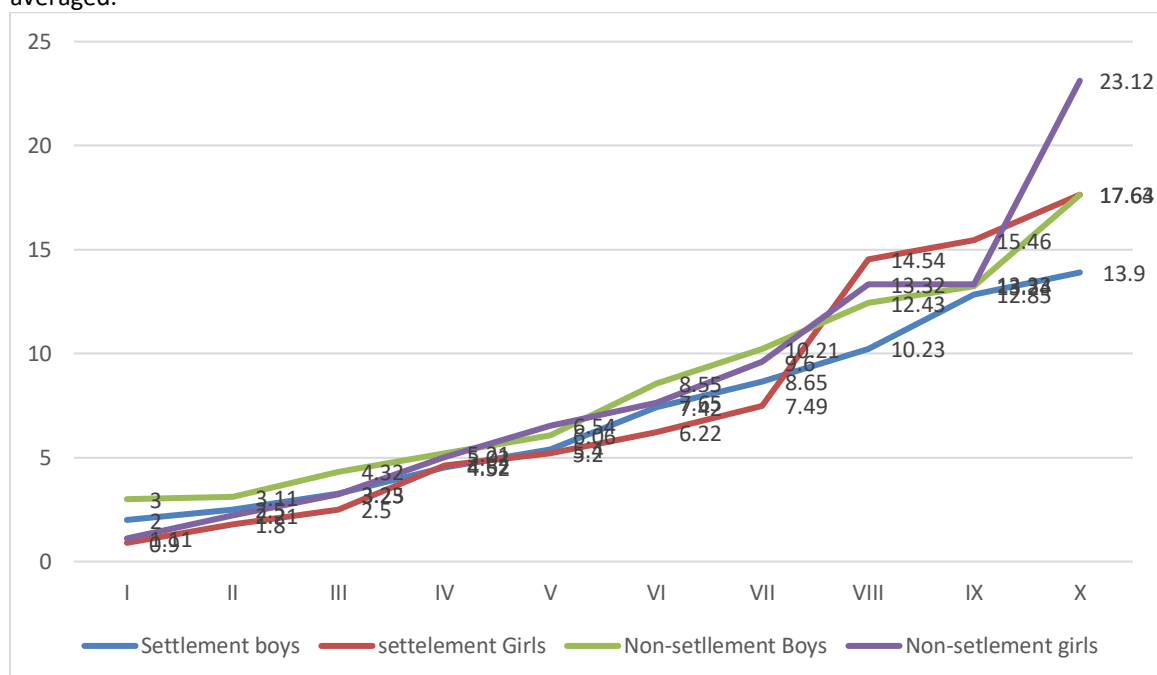


Fig. 4.24 Per school average number of students, percentage of attendance/presence, absence, and drop-out rate in four Upazilas

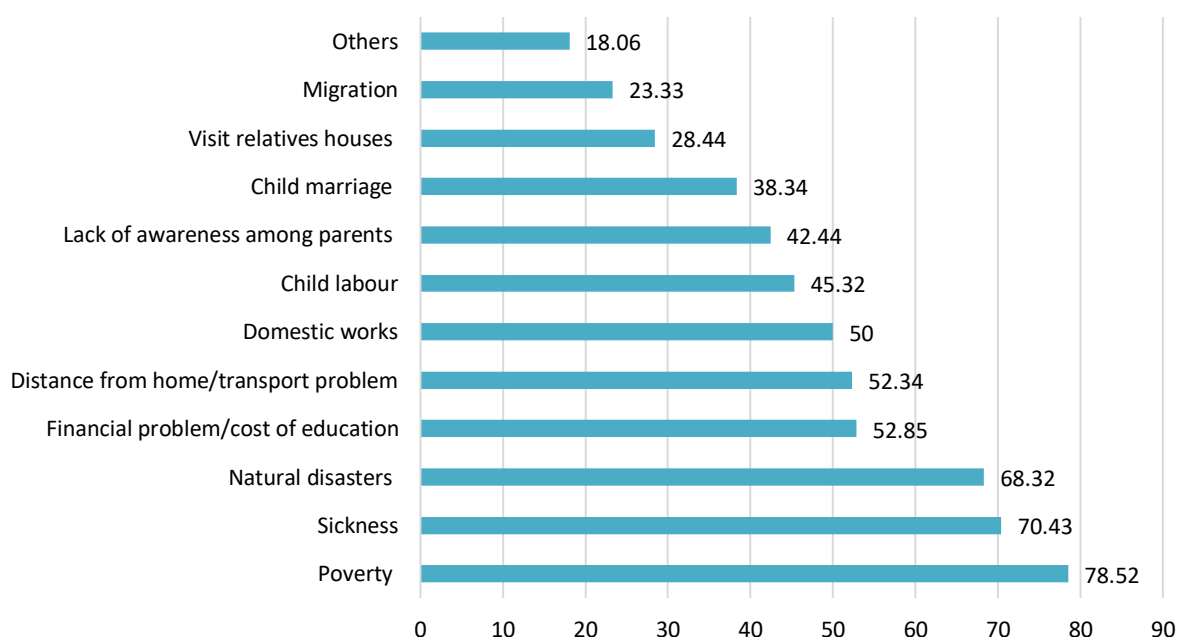


Fig. 4.25 Causes of drop out and absence of students in school*

*Table is developed based on the field data on selected all types of schools' Head Teachers/Teachers and then averaged

The head teachers/teachers mentioned 11 major causes (Fig. 4.25) of drop-out and the absence of the students. The highest numbers 79% are found poverty followed by 70% sickness, 68% natural disasters, 53% financial problem/cost of education, 52% distance from home/transport problem, and 50% child labors, 42% lack of awareness among parents, 38% child marriage, 23% visit relatives house and 23% due to migration.

Table 4.38: Per school activities/events (in number) of the school in four Upazilas in 2019

Activities/events	Number	
	Settlement	Non-settlement
No. of students received the scholarship in this year	2.50	2.25
No. of PEC/JSC successful students in this year	83%	76%
No. of mother's assembly in the school in this year	2.25	2.10
No. of CAB program in this year	2.50	1.50
No. of parents' meetings in this year	8.20	7.25
No. of SMC meetings in this year	9.58	7.85
No. of cultural program in this year	1	1

*Table is developed based on the field data on selected all types of schools' Head Teachers/Teachers and then averaged

According to the data collected from the Head Teachers/Teachers, there are some activities/events in the schools. The numbers per school are found higher in all events in the settlement area than the non-settlement (Table 4.38). Nearly three percent of the students in settlement schools got the scholarships for their academic excellency which are a bit more two percent in non-settlement schools. The number of PEC/JSC successful students in 2019 is shown 83% in the settlement which is 76% in non-settlement. The number of mother assembly was 2.25 and 2.10. number of CAB program 2.50 and 1.50, number of parents meeting 8.20 and 7.25, number SMC meeting 9.98 and 7.85, and cultural program 1 each respectively in settlement and non-settlement schools.

Table 4.39: Problems in the admission of children

Problems in the admission of the child	Settlement	Non-Settlement	Outside	Average Total
Lack of information	6.2	6.7	1.9	6.1
Long distance	73.1	76.6	94.4	77.4
Not teacher friendly	3.8	2.6	0	2.7
No time due to child labor	3.1	3.3	0	3
Physically challenged child	0	0.5	0	0.3
Child not interested	4.6	5.3	5.6	5.1
Lack of quality education	11.5	10.5	57.4	14.9
Bad behavior of the teachers	3.8	1.2	0	1.7
Others	16.2	21.7	0	18.6

Table 4.40: Chi-square test on feeling any problem to take admission of the child

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	195.246	2	.000
Likelihood Ratio	127.753	2	.000
Linear-by-Linear Association	73.892	1	.000
N of Valid Cases	5171		

Table 4.41: Pearson Chi-Square Tests on Problem in the admission of the child

		Nature of respondent
\$q5.7	Chi-square	124.850
	df	18
	Sig.	.000*
*. The Chi-square statistic is significant at the .05 level.		

Regarding the problems in the admission of the children in the school, the study found a bit different picture that contradicts with the kinds of nearby schools (Table 4.39). For example, the highest 77% (73% in settlement and 77% in non-settlement) mentioned 'long-distance' as one of the main problem followed by 15% lack of quality education (12% settlements and 11% non-settlement), six percent lack of information, five percent lack of interest among children and three percent due to child labor. Other problems such as lack of teachers' friendly, physically challenge child, bad behavior of the teachers are mentioned a low number of households. Whether any problem is felt to take admission of a child is significantly determined by respondents' living status. The obtained p-value from the Chi-square test is <0.001 which is significant at a 1% level of significance (Table 4.40). On the other hand, the problem in the admission of a child is significantly associated with respondents' living status. The obtained p-value from the Chi-square test is <0.001 which is significant at a 1% level of significance (Table 4.41).

Nearly 97% of the households' educational institutions are damaged by river erosions and waterlogging (Table 4.42 & Fig. 4.26). According to the nature of damage institution by river erosion and waterlogging showed that 48% of the households mentioned that the educational institutions were fully damaged which are the highest 74% in the outside and 36% in non-settlement. None of the educational institutions was fully damaged in the settlement area, but 75% were medium damaged which was 50% in the non-settlement area and 14% and 25 partially damaged in those areas respectively. Due to river erosion and waterlogging, average 2.70 months, the children could not go to school which is 2.58 months in settlement and 2.92 months non-settlement and the lowest 1.81 months in the outside areas (Table 4.43).

Table 4.42: Damaging educational institution by river erosion and waterlogging

	Settlement	Non-Settlement	Outside	Average Total
Damage of educational institutions by river erosion and waterlogging last five years				
Yes	0.4	3.4	57.6	3.5
No	99.6	96.6	42.4	96.5
Nature of damage				
Fully damaged	0	36.4	73.6	47.6
Medium damaged	75	49.5	26.4	42.7
Partially damaged	25	14	0	9.8

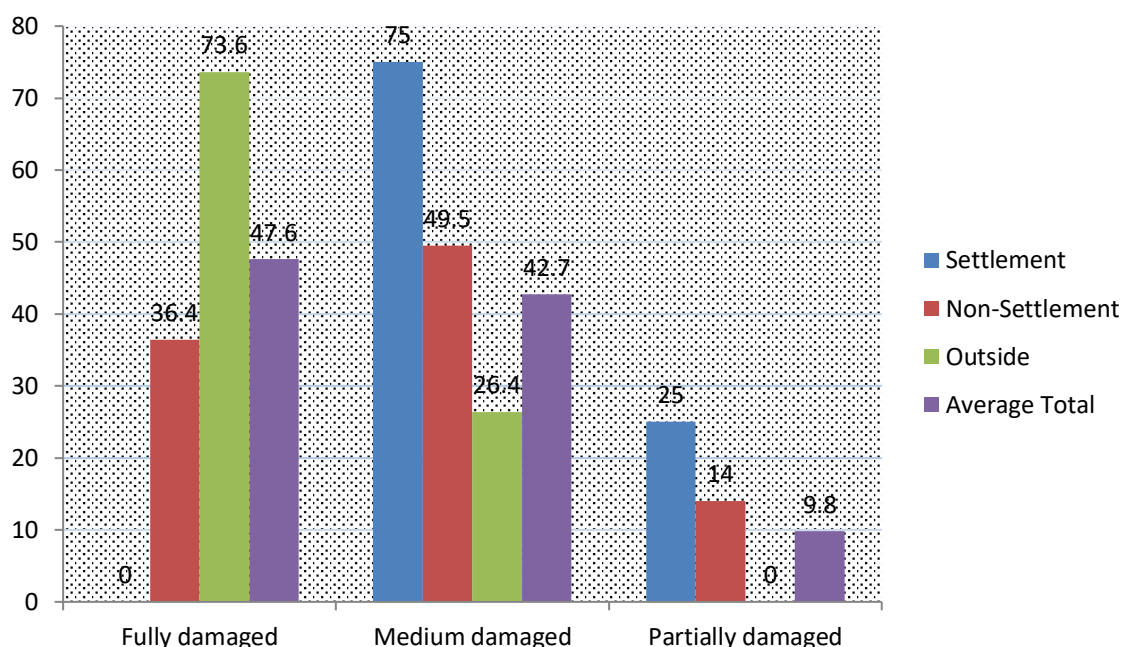


Fig. 4.26 Nature of damage of educational institutions by river erosion and waterlogging

Table 4.43: Children stop attending school and time of the stop

Children stop attending school	Settlement	Non-Settlement	Outside	Overall Average
Yes	0.6	4.3	49.5	4.1
No	99.4	95.7	50.5	95.9
How long (months) your child did not go to school?	2.58	2.92	1.81	2.70

The family members are suffering from different types of diseases, among these, the highest 78% of the family members are suffering from cold (which is 81% in settlement and 77% non-settlement) followed by 72% fever (74% settlement and 71 non-settlement), 47% headache, 33% high blood pressure, 33% high blood pressure, 32% cough, 31% back pain, 22% diabetics and 25% low blood pressure. The numbers are bit varied across the locations though the differences are not very significant. The lowest numbers are suffering from malaria, asthma, giggle, diarrhea, etc.

In an FGD session in the settlement area in Kumarbhog, one school teacher told:

The diseases in this area are related to the environmental hazards and it becomes a serious problem and huge dust is mixed with the air. So, the respiratory problem is now a serious health problem in the project area.

Many participants in the FGD sessions told:

Huge amount of sands has been daggered from the river which ultimately affects us adversely. The dust has been created by transporting sands by vehicles.

Around ten respondents in in-depth case interviews reported us about these health problems and diseases:

People are suffering from different types of health problems in this area. They are living with these. The most common diseases are fever, cold, allergy, cough, and

asthma. Because of huge construction (bridge and highway), we are living with massive dust and air pollutions.

The finding showed that the households do not have sufficient scientific treatment facilities at their community or nearby locations. The highest number of households (72%) is taking general treatment from pharmacy followed by 56% from village doctors (Table 4.44 & Fig, 4.27). Fifty-four percent of households take treatment from private clinics and another 41% from the Govt. Upazila or District hospitals. The highest 74% of the settlement households (which is only 16% in non-settlement) are taking treatment from the settlement areas' health center (Table 4.46). Another 12% each take treatment from a community clinic and Union Parishad Health Centre. A small number of households also take treatment from the family health centers, religious broomstick, traditional and government house to house service providers. There is a significant association between general diseases of family members and respondents' dwelling status. The Chi-square test shows that this association is significant at a 1% level of significance having p-value <0.001 (Table 4.47).

The qualitative finding presented mixed opinions about these treatment



Image: PMBP health complex at settlement area, Source: BBA



Image: Health treatment at PMBP health complex, Source: BBA



Image: Health treatment at PMBP health complex, Source: BBA

facilities. Nearly 18 respondents in in-depth case interviews from both settlement and non-settlement areas reported us:

Sir, there is no proper arrangement of medical diagnosis and treatment here. We have to go to Faridpur or Dhaka, which are far away from our residence. Many who do not have support and money, cannot go there, and they die without treatment. This is most vulnerable for pregnant women and aged people.

On the other hand, like Azim an inhabitant of a non-settlement area, nearly 25 respondents in in-depth case interviews mentioned:

The quality of health services has improved in this area. New health complexes/centers are established privately. The existing health services of the government sector have improved too. The supply of common medicines is available here. Family planning services, services for pregnant/lactating mothers, and children are being improved. But, there is a lack of specialized medical services in this area. People have to go to Dhaka to get such specialized health services.

In FGD (nearly five sessions) in the settlement area the participants expressed their opinions such a way:

Health facilities in the settlement are comparatively better in terms of doctors, their regular visits, and medicines. But this is also true that the health facilities are not up to the mark. We do not have sufficient women doctors here; specialized health services are very poor. Women do not get their reproductive health services. We also know that health services are worse in non-settlement areas.

Table 4.44: General diseases among family members

General diseases of family members	Settlement	Non-Settlement	Outside	Average Total
Cold	80.5	77	85.6	78.2
Giggle	7.4	9.1	5.2	8.5
Diarrhea	5.6	11.3	3.1	9.4
Skin disease	10.6	16.5	14.4	14.6
Fever	74.1	70.5	70.1	71.6
Asthma	9.8	12.1	16.5	11.5
Cough	39.9	28.2	48.5	32.2
Malaria	1.9	2.2	1	2
Diabetes	21.3	22.5	15.5	22
Back pain	34.8	28.2	56.7	30.7
Headache	48.6	45.9	66	47.1
High blood pressure	32.6	33.1	10.3	32.5
Low blood pressure	23.4	26.1	7.2	24.9
Others	23.9	19.1	16.5	20.5

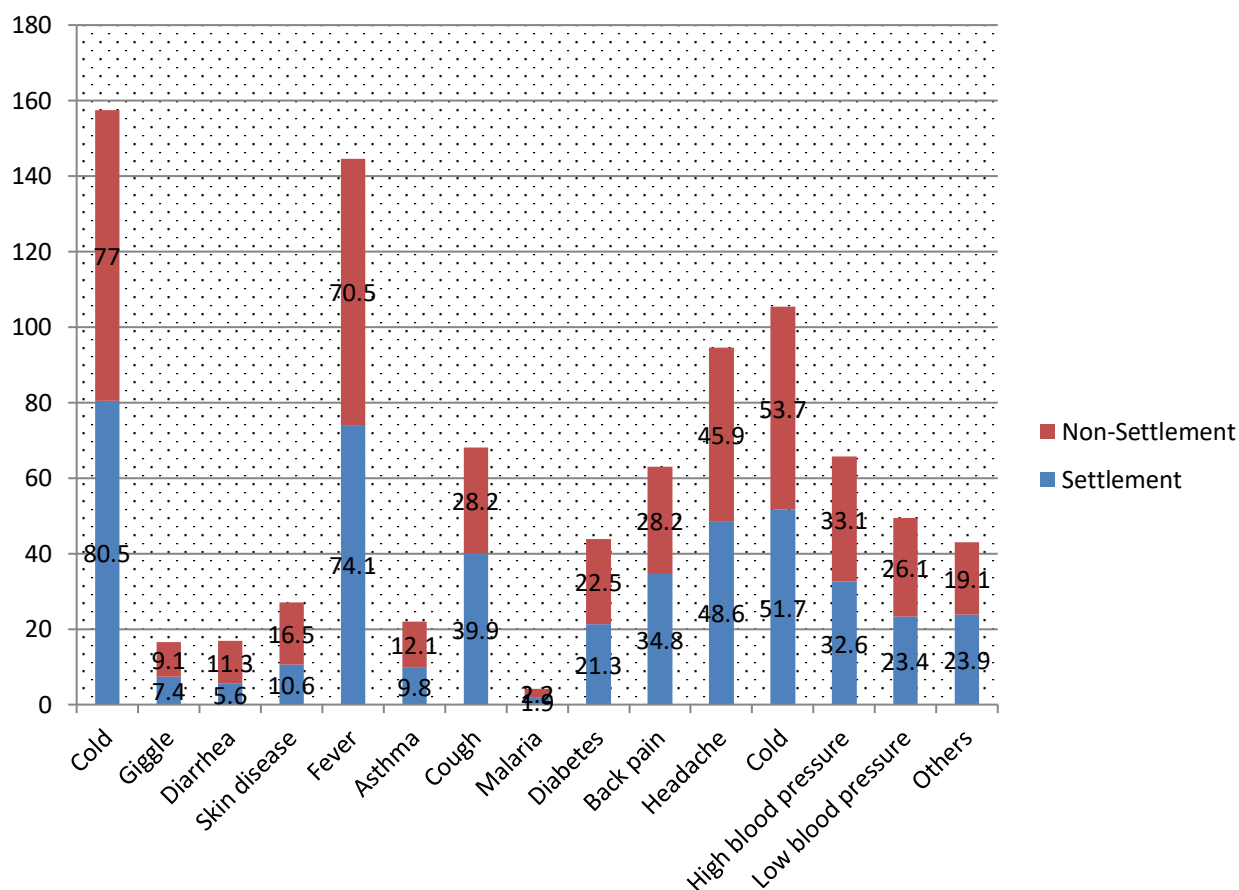


Fig. 4.27 General diseases among family members

Table 4.45: Pearson Chi-Square Tests on general diseases among family members

		Nature of respondent
\$q5.11	Chi-square	327.243
	df	30
	Sig.	.000*

*. The Chi-square statistic is significant at the .05 level.

The study finding showed that a significant number of households did not comment on the quality of health services against the sources of health facilities (Table 4.49). This is 88% in settlement and 85% in non-settlement about NGO and 93% in settlement and 94% in non-settlement CBO maintained health services. This was also 32% and 40% of the services of government health centers respectively in both areas. The Chi-square test shows that where respondents' go for general treatment is significantly associated with their dwelling status. The obtained p-value is <0.001 which is significant at a 1% level of significance.

Nearly 35% of the households mentioned that the health center under the settlement area is good which is 21% about government health services. Nearly 40% of each of the settlement households further mentioned that the quality of these two services is average. Nearly 35% of the settlement households and 30% non-settlement households mentioned 'good' about the service of the private clinic which is found 18% and 19% average respectively in both households. Besides, 12% of the non-settlement households mentioned 'bad' about the health services provided by government health services.

The qualitative data support the above finding partially. Like Monowar of a settlement area of Shibchar, two dozens of in-depth case interviewees mentioned that health care institutions or clinics or hospitals the doctors are available in the first period of the working hour but they don't present later. The service quality is not good not bad for general diseases, but there is no health service for critical diseases. Habib, a non-settlement inhabitant in Medinimondal said that the medical facilities are harsh. He pointed out:

We have no Governmental or non-governmental hospitals. We have only a health center, we have no emergency system/medication...if we want to get minimum medication then we have to go a minimum 12 K.M from here to Shologhar private hospital.

Table 4.46: Sources of the general treatment of households

Sources	Settlement	Non-Settlement	Outside	Average Total
Settlement area health Center	74.3	16.4	5.4	34.3
Village doctor	51.7	57.4	58.1	55.6
Govt. house to the house service provider	1.7	1.4	1.1	1.5
Community clinic	15.9	10.9	2.2	12.3
Family health center	5	4.9	3.2	4.9
Govt. union health center Govt. union health center	14.3	11.3	20.4	12.4
Govt. upazila/district hospital	31.2	45.6	54.8	41.3
Pharmacy	74	71.7	69.9	72.4
Religious broomstick	3.9	5.2	0	4.7
Traditional	1.5	1.9	4.3	1.8
Private clinic	56.7	52.8	33.3	53.7

Table 4.47: Pearson Chi-Square Tests on taking general treatment

		Nature of respondent
\$q5.12	Chi-square	1822.808
	Df	22
	Sig.	.000*
*. The Chi-square statistic is significant at the .05 level.		

The manpower of the health sector in Padma Multipurpose Bridge Project affected four Upazill showed that the number of doctors and nurses is found very low in terms of the total number of population (Table 4.48 & Fig. 4.28). The number of government hospital doctors are also found very low in all four Upazilas. The highest number of doctors (95) are found in Sreenagar Upazila followed by 67 Shibchar, 53 Zajira, and the lowest 24 in Louhajang. The number of nurses against doctors is also very low, low 19 in Louhangag, 53 Sreenagar, 56 Shibchar, and 61 zajira. Other staffs are high 164 in Sreenagar followed by 126 Louhajang, 118 Zajira, and lowest 101 in Shibchar.

Table 4.48: Manpower of the health sector in Padma Multipurpose Bridge Project affected four Upazilla (in number) *

Health sectors	Number of manpower											
	Louhajang			Sreenagar			Shibchar			Zajira		
	Doctors	Nurse	Other staffs	Doctors	Nurse	Other staffs	Doctors	Nurse	Other staffs	Doctors	Nurse	Other staffs
Government hospitals	11	10	60	34	22	62	23	16	39	13	14	43
Non-government hospitals	20	04	16	30	18	45	28	22	39	22	29	34
Clinics	10	03	10	20	15	43	13	13	17	16	15	32
Others	02	02	40	05	04	14	03	05	06	02	03	09
Total	24	19	126	95	59	164	67	56	101	53	61	118

*Data are collected from the Medical Officers of four Upazilas

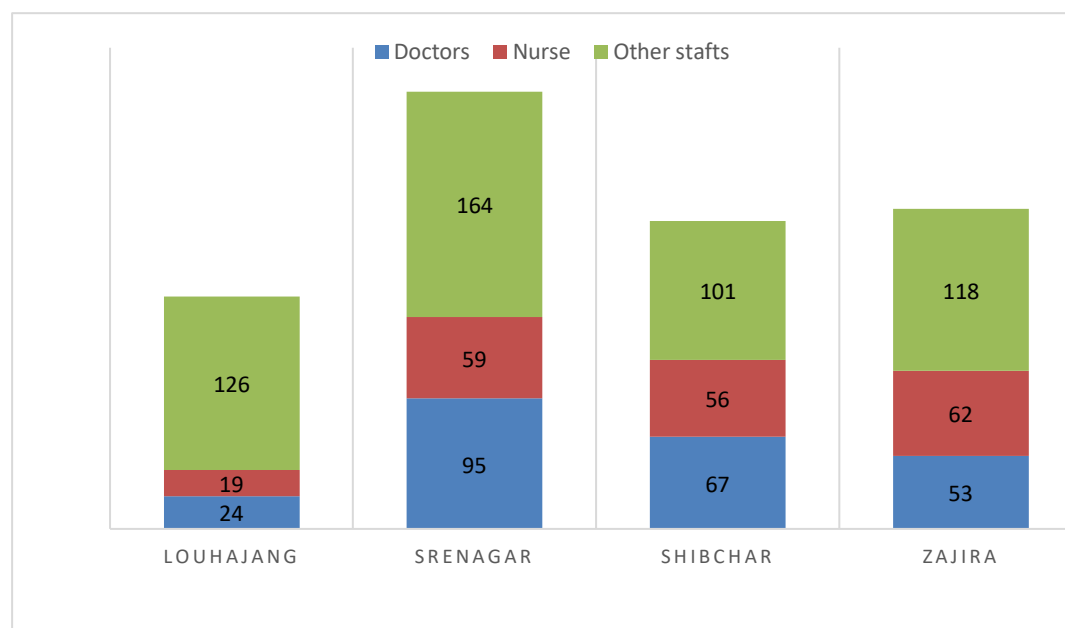


Fig. 4.28 Total numbers of doctors, nurses, and support staffs of four Upazilas

Table 4.49: Sources and quality of services of community health facilities

	Quality of Service																	
	Very good			Good			Average			Bad			Very bad			No comment		
Sources of health facilities	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Health center under settlement area	2.2	1	71.1	34.9	9.4	0	39.7	12.9	3.1	5	2.7	0	3.1	0.8	0	15.1	73.2	25.8
Government health center	1.5	0.9	0	21.1	11.2	0	40.2	30.7	59.8	4.8	11.8	0	0.6	5.3	8.2	31.7	40.1	32
NGO maintained	0.3	0.2	0	3.3	2.3	0	7.2	9.3	5.2	0.8	1.8	0	0.2	1.1	8.2	88.3	85.3	86.6
CBO maintained	0	0.1	0	2.2	1.4	0	4.3	3.4	0	0.5	0.9	2.1	0.1	0.7	0	92.8	93.6	97.9
Private clinic	9.9	8.3	1	34.9	30	17.5	17.5	18.8	30.9	0.4	1.9	0	0.2	1	8.2	37	40	42.3
Others	1.8	2.4	0	15.4	18.3	4	6.8	6.8	4	0.5	0.6	0	0.3	0.3	0	75.2	71.6	92

The Medical Officers were not happy about the health services and their quality of services under the Padma Multipurpose Bridge Project in four Upazilla except primary health services where 3 out of 4 mentioned very good (Table 4.50). In this case, they did not find any gap between demand and supply of health services. The rest of the services such as emergency services, health tests, specialized services, and even in general health services are bad and many cases very bad. However, the doctors found a high gap between the demand and supply of health services (Table 4.51).

Table 4.50: Health services and its quality of services under Padma Multipurpose Bridge Project in four Upazilla (in number) *

Health services	Quality of services				
	Very good	Good	Moderate	Bad	Very bad
Primary health service	3	1	0	0	0
General health service	0	1	1	1	1
Health test	0	0	1	2	1
Specialized services	0	0	1	2	2
Emergency services	0	0	1	2	1

*Data are collected from the Medical Officers of four Upazilas

Table 4.51: Gap between demand and supply of health services under the Padma Multipurpose Bridge Project affected people (in number) *

Health services	The gap between demand and supply of health services			
	No gap	Slight gap	Equality between demand and supply	Highly gap
Primary health service	4	0	0	0
General health service	0	1	0	3
Health test	0	0	0	4
Specialized services	0	0	0	4
Emergency services	0	0	0	4

*Data are collected from the Medical Officers of four Upazilas

4.6. Damages, service received, and service demands due to Padma Multipurpose Bridge

The highest 71% (93% in settlement and 62% non-settlement) of the households' homestead land was damaged due to Padma Multipurpose Bridge Project (PMBP) which is 52% cultivable land (29% settlement and 62% non-settlement) followed by 28% valuable trees (Table 4.52). Another 12% each mentioned garden and pond were damaged. A small portion of households mentioned their fallen land and commercial land. More than 85% of the non-settlement and 63% settlement households mentioned that they lost their land followed by 35% and 12% respectively lost their tenant land under this project (Table 4.53). More than 79% of the households mentioned that their infrastructure was damaged by the PMBP. In-depth case interview in the settlement area, in Naodoba Union, SirajChenga, He informed that his living standard becomes lower after acquiring his land for PMB. Before settled in the project area, he had 5 bighas (150 decimals) arable land. His homestead was constructed on 16 decimals

land. He grumbled with disappointment that the PMB project reduced his income, resources on one hand, and increased expenditure on the contrary. Thus he stressed mostly on the economic challenges. He carped, “I had 16 decimals of the homestead but now I have only 5 decimals. Even I used to earn from both business and agriculture. At present, only small business is my only income source.” He had a cattle farm. He also had a boat that was used for selling mud and used to earn Tk. 30,000 per month. Even he had a vegetable garden from which he earned a small amount of money after meeting the daily needs of his family. But at present in the resettlement area, he has a poor amount of arable land, but no cattle farm, no boat. He has only a house on 5 decimals of land and small business as an income source.

Alam from Holodia Union, Louhojonj Thana:

“Our land is in char place that is why we have given very minimum compensation for our land. After getting the money we have distributed among our family members and I have got a very little amount of it.”

Table 4.52: Type of land damaged by PMBP

Type of land damaged by PMBP	Settlement	Non-settlement	Outside	Overall Average
Homestead land	92.9	61.5	71.4	71.2
Cultivable land	29	62.1	57.1	51.8
Garden	11.9	11.4	14.3	11.5
Pond	15.2	10.3	42.9	11.8
Fallen land	2.2	4.5	14.3	3.8
Commercial land	2.7	3.4	0	3.2
Valuable trees	35.4	24	57.1	27.5
Others	6.1	4.3	0	4.9

Table 4.53: Land loss types by PMBP

Land loss types	Settlement	Non-settlement	Outside	Overall Average
Own land	63	85.4	71.4	78.3
Lease	1	1.6	0	1.4
Government	0.4	0.9	14.3	0.8
Mortgage	0.3	0.4	0	0.3
Tenant	34.9	12.1	0	19.3
Plan land	1.9	1.1	0	1.4
Others	1.5	2.5	14.3	2.2

The highest 75% (99% in settlement area and 64% non-settlement area) mentioned their residential area was damaged which is 68% of their cooking place (93% settlement and 56% non-settlement), 61% of their toilet (88% settlement and 49% non-settlement), and 46% of their tube-well (66% settlement and 37% non-settlement) (Table 4.54). However, the size of damages by PMBP was massive in the settlement areas compared with non-settlement. Another 12% each are of their border wall and cultivable ponds. Against their infrastructural damages, the households got different types of compensations (Table 4.55). The highest 97% (which is 100% in outside) mentioned that they got financial compensation, 95% of the settlement hoses got a new plot; among those 40% planned residential facility, 38% house building support. Except for financial compensation, the non-settlement and outsiders did not

get other kinds of supports as much the settlement households got. For example, only 13% of the non-settlement mentioned that they have received new-plot and 12% house building support which is found 14% and 29% respectively of the outsiders.

The qualitative data showed mixed opinions about these supports. For example, in different FGD sessions, a good number of participants reported:

We all get the proper price of land including diminishing their houses. The land distribution was fair and equal.

On the other hand, again a handful of participants in those FGDs reported:

We have seen that there is no fairness of the distribution of the cost of diminishing houses. We got a lower amount than the amount Government acquired from us. But We did not get any suspension or disturbance about this.

The household received a wide range of additional services due to infrastructural losses. Data showed that the settlement households got more these additional services than non-settlement and outsiders (Table 4.56 & Fig. 4.29). The highest 78% of them (68% in non-settlement) got gas supply, 75% (61% non-settlement) road light, 67% (65% non-settlement)

sewerage system, 62% (61% non-settlement) pure water supply, 59% home-related cost, 47% transport facility, 41% playground, 37% graveyard, and 35% each recreation center and



Image: Needs assessment of the affected people, Source: BBA



Image: Providing additional support to affected people, Source: BBA



Image: Providing additional support to affected people, Source: BBA

reduce waterlogging. The households mentioned that they had to face some administrative barriers to receive these facilities (Table 4.57 & Fig. 4.30). Seventy-four percent of the households mentioned that they faced some administrative barriers to receive these compensations. Nearly 56% claimed that they received a low amount of financial facility followed by 50% long time, 39% harassment, 28% harassment from brokers, and 29% non-cooperation. The non-settlement households have suffered these kinds of administrative barriers higher than the settlement area.

There were a lot of questions about the legal perspective of land distribution. Like, Aziz, many of our in-depth case interviewees reported us:

I received a total of BDT 8.1 million from the government as a part of compensation. I also got a plot of 5 Katha land to construct new houses. From the total compensated money, I had to pay 10% to the officials to get the compensation, and the rest of the money 4 million, I spent for building a new house, invested 2 million in my business, and the rest was used for personal expenses... I had to go from here and there and spent a bit longer time to get the compensation.

Like Wadud, 53 years old person from a non-settlement area, a good number of in-depth case interviewees mentioned:

I got a handsome amount of compensation, but I had to pay 36% bribe to the DC office officials... A good portion of the compensated money, however, was used for buying land, the rest was invested in my business and in constructing this (current) houses.

Regarding the compensation package, Nannu from a non-settlement area said:

I think the amount of compensation is far good and standard that was given by the government but I had to face a colossal of problems to get my compensation at hand. I had to pay 36% bribe to the government officials! I have every document but they (govt. officials) instigated my surrounding people (ancestors) from whom I bought the land to file a case. Hence, I have been deprived of getting the compensation of 132 decimals lands. I have agglomerated every document again and will file a case further to get my legal compensation back.

Again, in-depth case interview in the settlement area in Naodoba Union, Showkat said that he is not satisfied with the land acquiring process as the money was not given according to the market price. He has lost most of the sources of income on one hand and got less amount of money as compensation on the other. Therefore, he felt the project affected him economically very unpleasantly. He also complained about the process of land acquisition and compensation. He said:

My land has been acquired by the government in 2007 but I got the compensation in 2011. Thus the value of money has been lessened." Regarding the corruption by the staff the DC Office he mentioned, "The government officials wanted a bribe. They harassed people to give a plot number or document. I had to give 10 percent money to the DC office to get the ownership of land in the project area and all documents.

Efat, a non-settlement area woman informed:

The land is gone, the house, the relatives and the neighbor are lost. If I got the compensation of land properly, I could comfort my mind. After selling the land worth Tk 2 crore, but I got an average of Tk 26 lac only. What do I do with this money? I bought 2 shops in Dhaka city for thinking about the near future. But in an earlier, I

could say with confidence I own 88 decimal of agriculture land. The government officials have taken 40 lac taka bribe for giving the compensation amounts. That was a harassed situation to take compensation. Now she is self-reliant, there is no loan complexity.

Table 4.54: Types of infrastructural damage of households

Types of Infrastructural damage	Settlement	Non-settlement	Outside	Overall Average
Residential area	98.7	64.4	71.4	75.4
Meeting place	28.8	22	14.3	24.2
Cooking place	92.5	56.4	57.1	68
Cow house	29.4	21.5	0	24
Store room	11.8	7.5	0	8.9
Toilet	87.8	48.7	57.1	61.2
Tube-well	65.9	36.5	57.1	45.9
Border wall	12.5	12	28.6	12.2
Cultivable ponds	11.3	11.8	14.3	11.7
Ponds not cultivated	12.7	5.6	57.1	7.9
No infrastructural loss	0.8	29.9	28.6	20.6
Others	2.5	4.4	0	3.7

Table 4.55: Infrastructural compensation received by households

Infrastructural compensation received	Settlement	Non-settlement	Outside	Overall Average
Financial compensation	97	96.5	100	96.7
New plot	94.5	12.6	14.3	39
House building support	37.9	12	28.6	20.3
Planned residential facility	39.3	2.3	0	14.2
Training facility	7.4	6.3	0	6.7
Compensation due to heirloom	3.8	10.5	14.3	8.3
Others	5.4	2.9	14.3	3.7

Table 4.56: Additional services households get benefits due to infrastructural loss

Households get benefits due to infrastructural loss	Settlement	Non-settlement	Outside	Overall Average
Home prevention cost	59.3	55.6	28.6	56.7
Social security	54.2	41	28.6	45.3
Society cooperative club	40.6	31.4	14.3	34.3
Pure water supply	62.4	61.3	42.9	61.7
Gas supply	77.6	68.2	85.7	71.3
Transport facility	46.6	47.2	42.9	47.0
Reduce water logging	35	52.2	14.3	46.6
Sewerage system	67.2	64.5	28.6	65.3
Play ground	40.9	49.5	28.6	46.7
Recreation center	35.4	36.1	42.9	35.9
Road light	75.3	60.9	42.9	65.5
Graveyard/cremation	36.4	38.2	14.3	37.6
Others	8.6	10.7	14.3	10.0

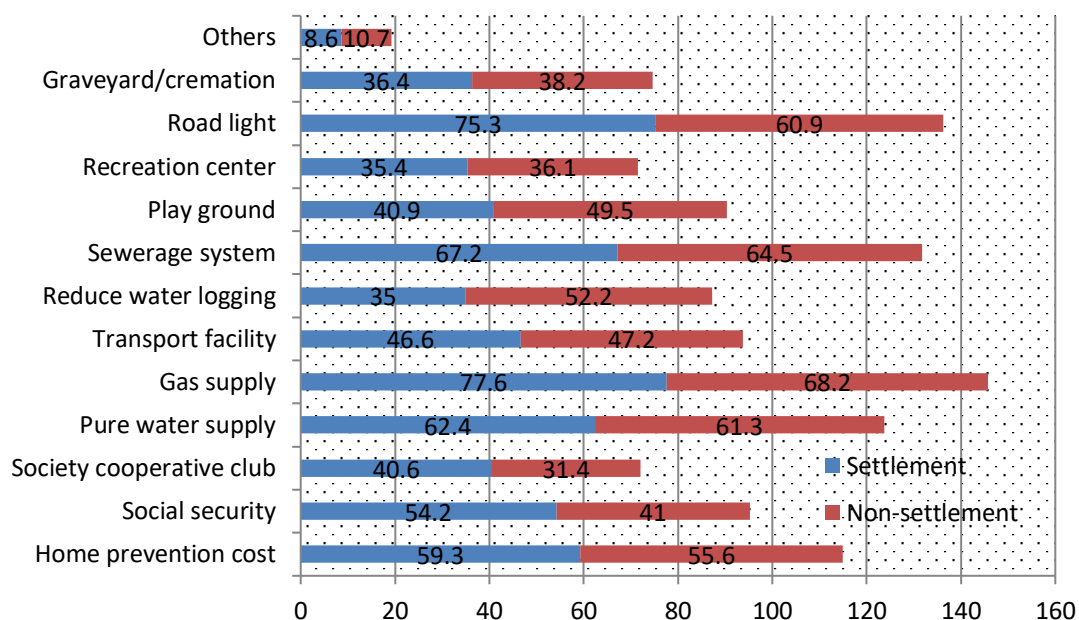


Fig. 4.29 Additional services households get benefits due to infrastructural loss

Table 4.57: Administrative barriers to get compensation

Administrative barriers	Settlement	Non-settlement	Outside	Overall Average
Long time	47.1	52	66.7	50.4
Non-cooperation	15.4	25.5	16.7	22.3
Harassment	34.2	40.6	50	38.6
Harassment of broker	20.3	31.3	16.7	27.8
Provide financial facility	54.7	56	83.3	55.6
Problem of heirloom	1.5	3.3	0	2.7
No problem	32.1	23.3	0	26
Because of lawsuit	1.3	2.1	0	1.9
Others	0.5	1	0	0.9

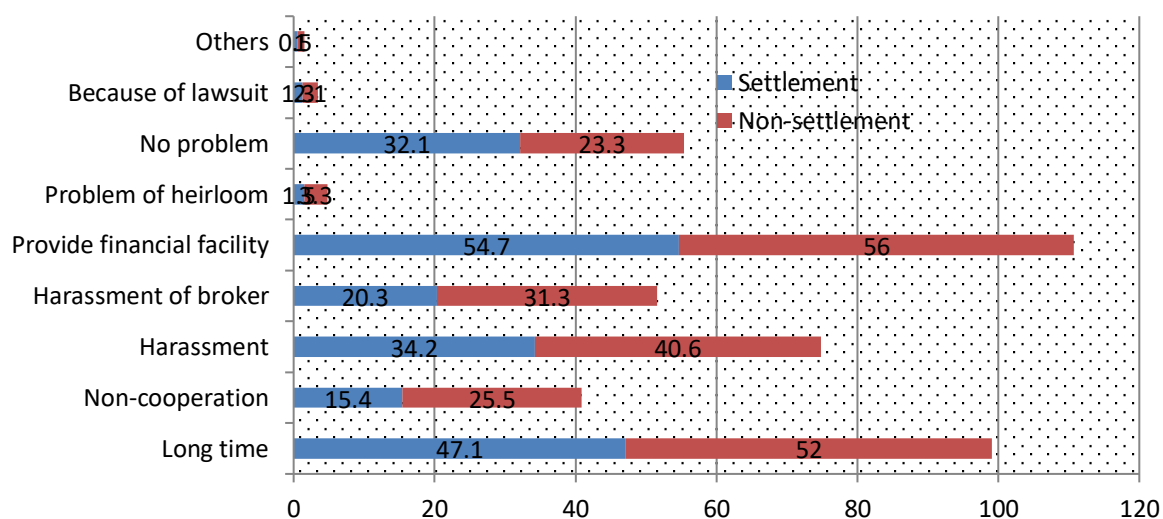


Fig. 4.30 Administrative barriers to getting compensation

Due to PMBP and their displacement, the households are facing a wide range of occupational losses (Fig. 4.31). These include, for example, a 69% loss of their fish cultivation followed by 51% cultivable agricultural land, 18% old business, and nearly 5% each traditional fishing and old business. Against these occupational losses, they received some occupational benefits though 59% of them mentioned that they did not get any kind of such benefits. Only 15% of the household training facilities, 11% working opportunities, 10% investment opportunity, nine percent business opportunity, and seven percent small loan facility (Fig. 4.32). The study found many households faced massive economic losses. Against these economic losses, they receive some additional benefits. More than 84% of the households got government financial facilities followed by 70% income generation training, and 64% job facilities (Fig. 4.33).



Image: Occupational loss assessment of affected people, Source: BBA

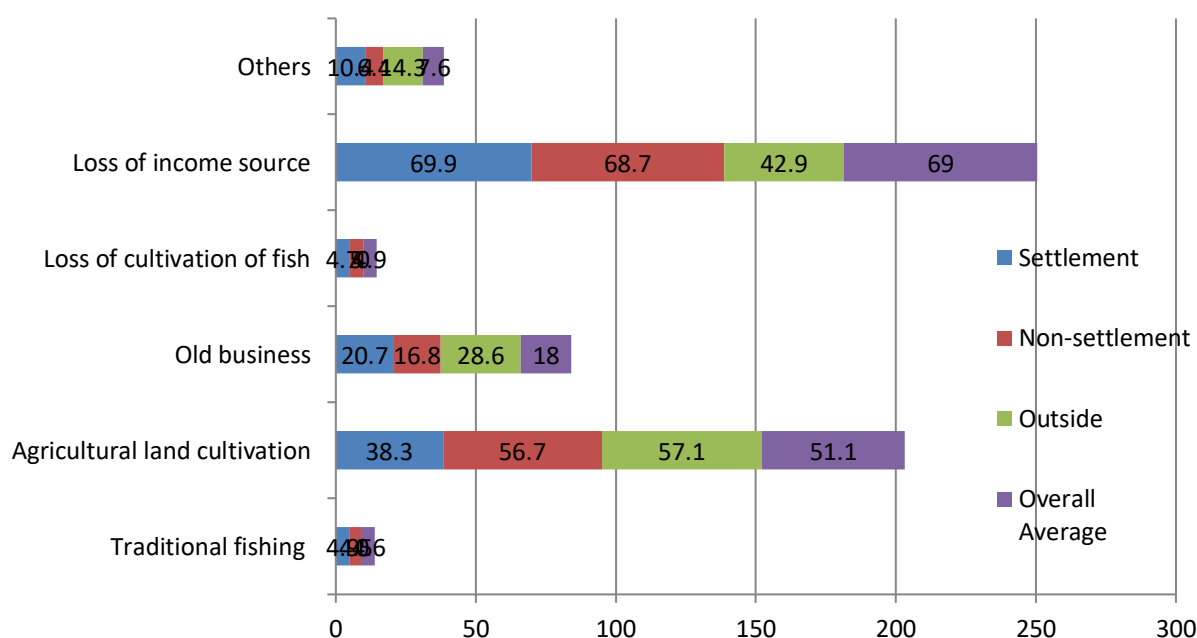


Fig. 4.31 Types of occupational loss of households

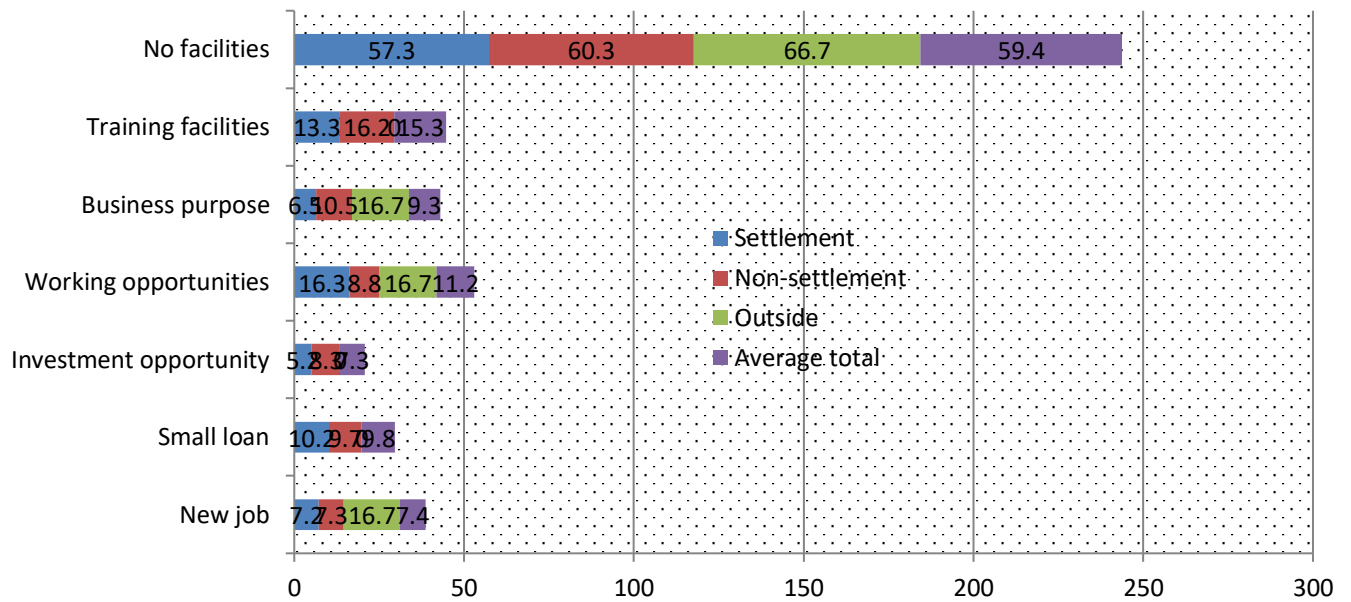


Fig. 4.32 Occupational benefits households received

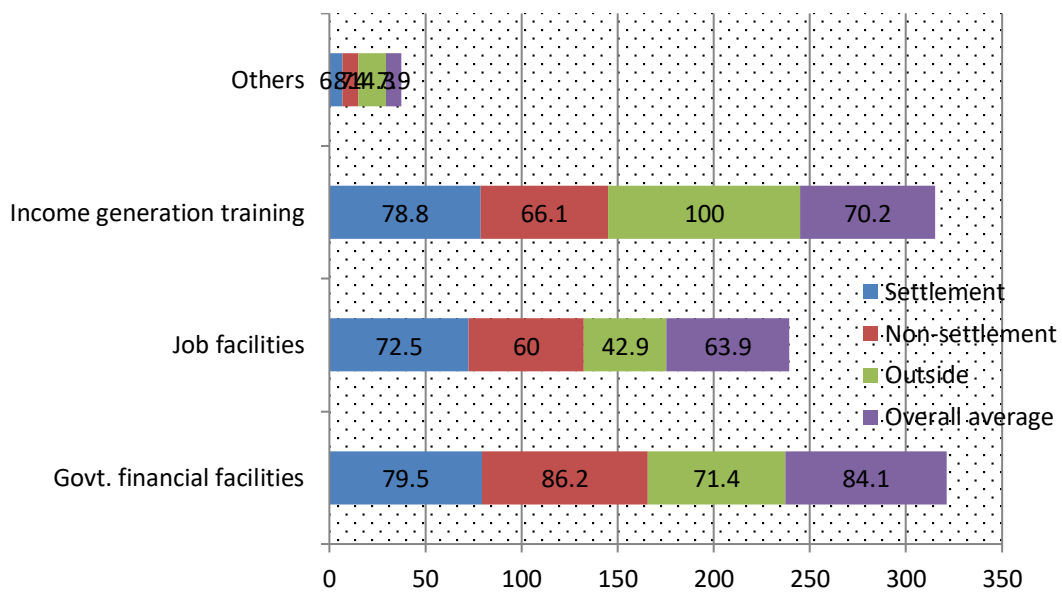


Fig. 4.33 Additional occupational benefits households got

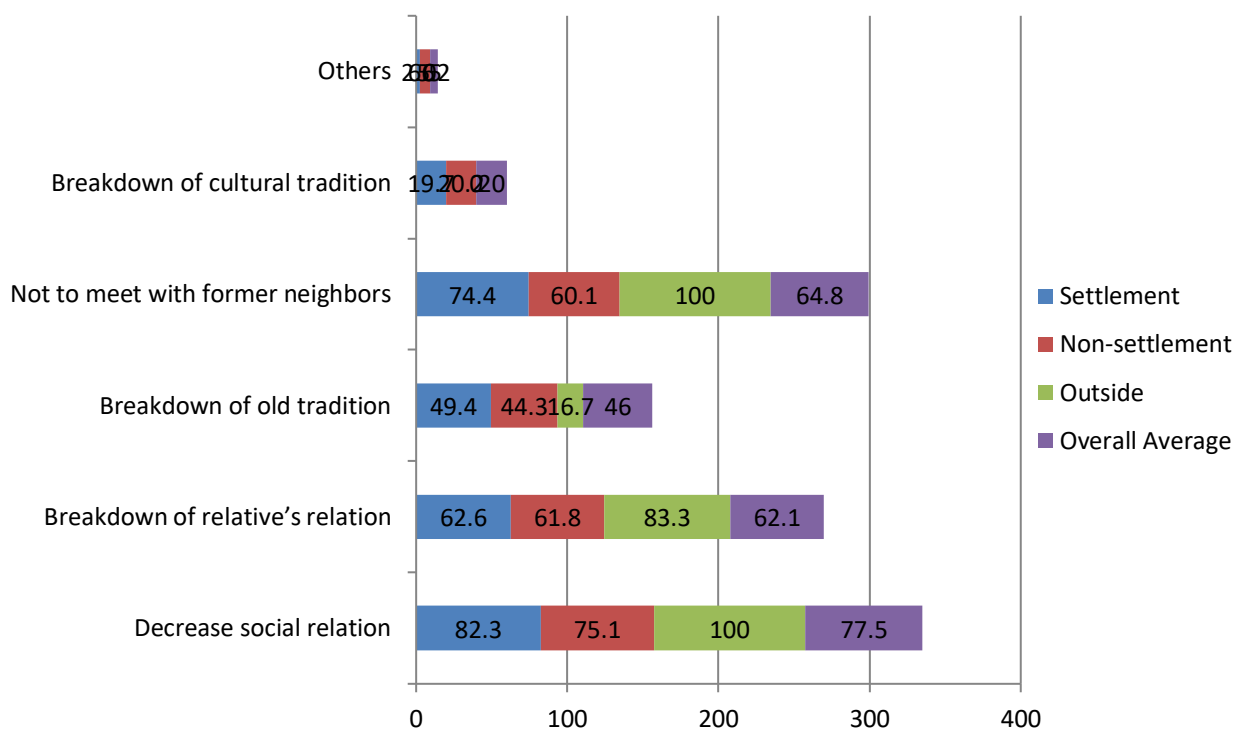


Fig. 4.34 Types of social loss by PMBP

Due to PMBP and displacement, the households faced some social losses (Fig. 4.34). Data showed that the highest 78% (82% settlement and 75% non-settlement) decreased social relation followed by 65% (74% settlement and 60% non-settlement) could not meet with their former neighbor, 62% breakdown relationship with their relatives, and 46% breakdown of old traditions. Against these social losses, they mentioned some social benefits that they are enjoying, for example, 62% (which is 83% settlement and 51% non-settlement) got new relation, 57% (76% settlement and 46% non-settlement) benefits of modernization, 43% (62% settlement and 32% non-settlement) educational services, and 33% got NGOs social awareness services (Table 4.58 & Fig. 4.35) However, it is seen that comparatively higher numbers of settlement households are enjoying these social benefits than the non-settlement households. The households also got some additional benefits against these social losses. More than 94% of the households mentioned received sustain health services followed by 48% establish government primary school, 37% cultural organizations, and 29% government-supported sports (Table 4.59 & Fig. 4.36).

The qualitative findings explored some inside facts about the above findings. For example, in an FGD session in the settlement area in Kumarbhog, the participants reported that some NGOs are working for the socio-economic development of the affected people. The ESDO, RIC, BRAC, ASA, Bureau Bangladesh, Sajeda Foundation, Proshika, and Caritas are working for their betterment. These NGOs are working in the fields of health, education, training, microcredit, rehabilitation program. From another FGD at Kumarbhog union under Louhajong Upazila of Munshigonj district, the participants expressed that the government is contributing to community development by providing an old-age allowance, freedom fighters allowance,

disable allowance, education stipend, medicine free of cost. The NGOs are providing training, micro-credit, and creating awareness-raising programs for immigration, health and education, school sanitation. The local government is providing solar bulbs and help to the mitigation of conflict in the locality.

Table 4.58: Benefits households received due to social loss

Benefits due to social loss	Settlement	Non-settlement	Outside	Overall Average
Educational service	61.6	32.3	20	42.6
Health service	58.2	25.8	20	37.2
New social relation	82.6	51.3	60	62.4
Benefits of modernization	77.5	45.9	40	57.1
NGOs awareness services	39.4	29	40	32.7
Connection with high profile officers	14.1	10.7	0	11.9
Others	1.2	7.7	20	5.4

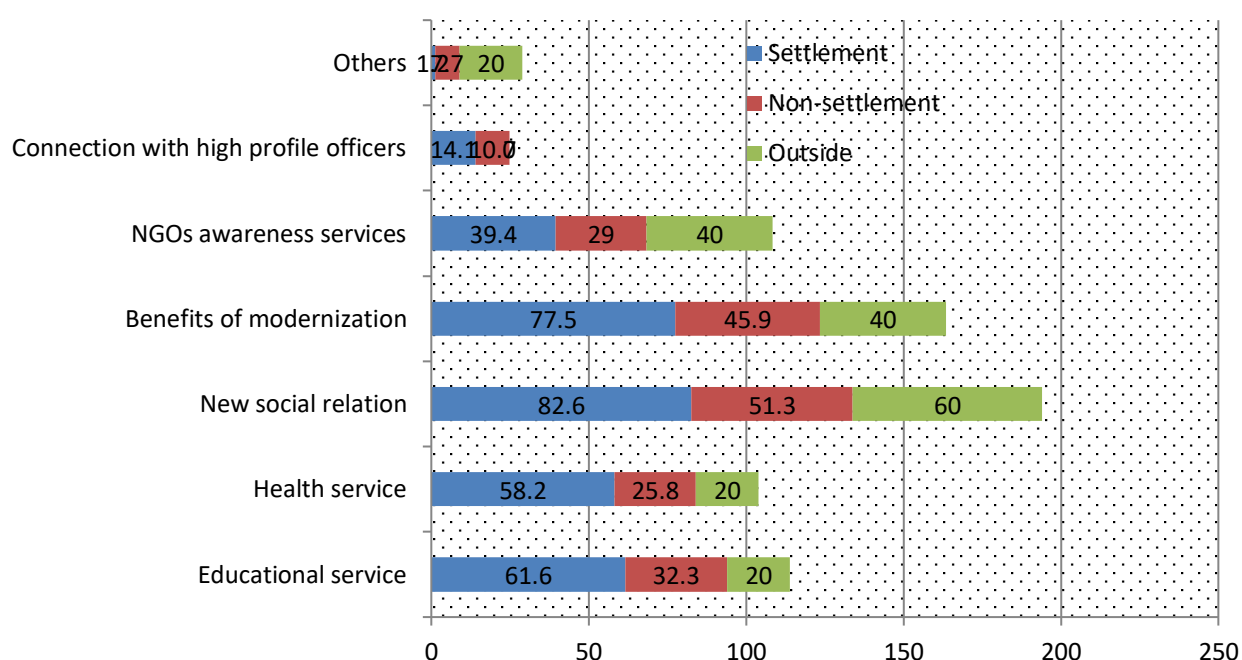


Fig. 4.35 Benefits households received due to social loss

Table 4.59: Additional services households get benefits due to social loss

Households get benefits due to infrastructural loss	Settlement	Non-settlement	Outside	Overall Average
Sustain health service	92.9	94.7	100	94.1
Establish Govt. primary school	51	47.2	28.6	48.3
Cultural organization	42.7	33.9	14.3	36.6
Govt. support for sports	30.3	28.3	0	28.9
Others	8.9	8.8	14.3	8.8

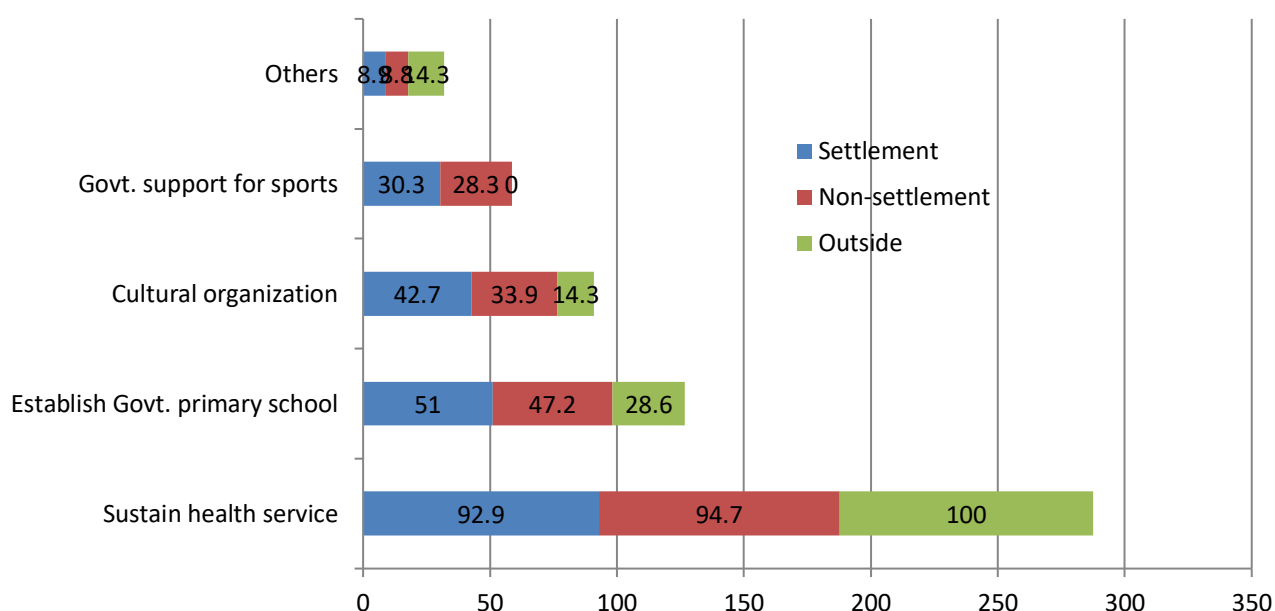


Fig. 4.36 Additional services households get benefits due to social loss

It is evident from the data that there is a significant association between location status and land damage. The proportion of settlement and non-settlement vary widely mainly for homestead land damage and cultivable land damage. For other types of home damage, the percentage of settlement and non-settlement are quite similar. Land loss type has a significant impact on settlement categories. The peoples who have their land are less likely to get the settlement. On the other hand, the affected are more likely to get a settlement (Table 4.50).

There is also a significant association between infrastructural damage and location status. The larger percentage changes between settlement and non-settlement were observed for residential area damage, cooking place damage, toilet damage, and no infrastructural loss. Observing the test statistic and p-value we can say that there is a significant association between dwelling status and occupational loss. The farmers who lost their occupation are less likely to get the settlement. The occupational benefits are significantly associated with dwelling status. The main differences in dwelling status are observed for working opportunities and business purpose occupational benefits.

There is again a significant association between infrastructural compensation and location status. The higher differences between livelihood status are observed mainly for a new plot, house building support, and planned residential facility. The proportion of different administrative barriers to getting compensation varies between two types of dwelling status. More than 10% of dwellers who got non-cooperation from the administration do not get any settlement compared to those who get the settlement. A similar picture is observed for the dwellers whose houses are broken by the authority. The social loss is significantly associated with location status. The proportion of dwellers observing different types of social loss vary highly between dwelling status for the dwellers who respond that they cannot meet their former neighbors.

The benefits due to social loss are significantly associated with location status. In most types of social losses, the percentage varies highly between different types of location status. The additional benefits due to economic loss are significantly associated with settlement status. The proportion of households get different additional benefits due to economic loss varies highly between categories of the settlement status. It is depicted from the table that additional service benefits due to infrastructural loss and location status are significantly associated. In some categories of the service benefits due to infrastructural loss, the proportion varies more than 15% between settlement and non-settlement, e.g., reduce waterlogging. It is revealed that there is a significant relationship between health service provided and dwelling status. The peoples who get maternity service are more likely to get settlement than their non-settlement counterparts.

Table 4.60: Pearson Chi-Square Tests on types of damage, losses, and benefits received

Type of land damaged		Nature of respondent
\$q6.1	Chi-square	1074.876
	Df	16
	Sig.	.000*
Land Loss type		
\$q6.2	Chi-square	711.127
	Df	14
	Sig.	.000*
Types of Infrastructural damage		
\$q6.3	Chi-square	3148.000
	Df	24
	Sig.	.000*
Type of occupational loss		
\$q6.4	Chi-square	155.634
	Df	12
	Sig.	.000*
Occupational benefits got		
\$q6.5	Chi-square	79.997
	Df	14
	Sig.	.000*
Infrastructural compensation received		
\$q6.6	Chi-square	4764.468
	Df	14
	Sig.	.000*
Administrative barriers to getting compensation		
\$q6.7	Chi-square	227.227
	Df	18
	Sig.	.000*,b,c
Type of social loss		
\$q6.8	Chi-square	168.336
	Df	12
	Sig.	.000*
Benefits due to social loss		Nature of respondent
\$q6.9	Chi-square	1757.356
	Df	14

	Sig.	.000*
Additional services that respondents get benefits due to economic loss		
\$q6.10	Chi-square	200.770
	Df	8
	Sig.	.000*
Additional services that respondents get benefits due to infrastructural loss		
\$q6.11	Chi-square	452.150
	Df	26
	Sig.	.000*
Additional services that respondents get benefits due to infrastructural loss		
\$q6.12	Chi-square	55.702
	Df	10
	Sig.	.000*

*. The Chi-square statistic is significant at the .05 level.

The households received some health services after opening PMBP (Table 4.61 & Fig. 4.37). Nearly 98% had extended immunization (100% in settlement area) followed by 59% family planning services, 45% maternity services, 41% child health and maternity services, 35% health services for the older people, 34% child (primary health services). Finding from the attendance of health workers showed that the highest 66% of the health workers visited after one-month time which is 17% after three months and five percent after six months. More than 11% mentioned that they never visit them for health purposes (Table 4.62).

Data clearly showed that the health workers' initiatives increased a lot due to Padma Multipurpose Bridge. The highest 98% (100% in settlement) provided immunization followed by 49% (59% in settlement) maternity services, 39% reproductive health, 35% primary health care awareness, 18% for a general health problem, and 13% for HIV/AIDS/STDs issue (Table 4.63 & Fig. 4.38). The households provided their opinions about the quality of the health workers' services. The highest 54% of the households mentioned their quality is 'average' and 25% good. Nearly 13% mentioned that their service was 'not good' and six percent 'not good' at all, and only two percent mentioned as 'very good' (Fig. 4.39). The analysis reveals that the attendance of health workers is significantly determined by respondents' settlement status. The p-value from the Chi-square test is <0.001 which is significant at a 1% level of significance (Table 4.64). Opinion about health service is significantly determined by respondents' settlement status. The obtained p-value from the Chi-square test is <0.001 which is significant at a 1% level of significance.

Table 4.61: Types of health service provided

Types of health service provided	Settlement	Non-settlement	Outside	Overall Average
Family planning service	62.4	55	71.4	59
Extended immunization	100	95	98.9	98
Maternity service	50	40.6	39.7	45.2
Child (primary health service)	40.2	28.3	33.3	34.3

Child health and maternity services	43.5	38.6	38.1	41
Health services for older people	39.8	30.5	31.7	35.1
Others	3.6	2.9	0	3.2

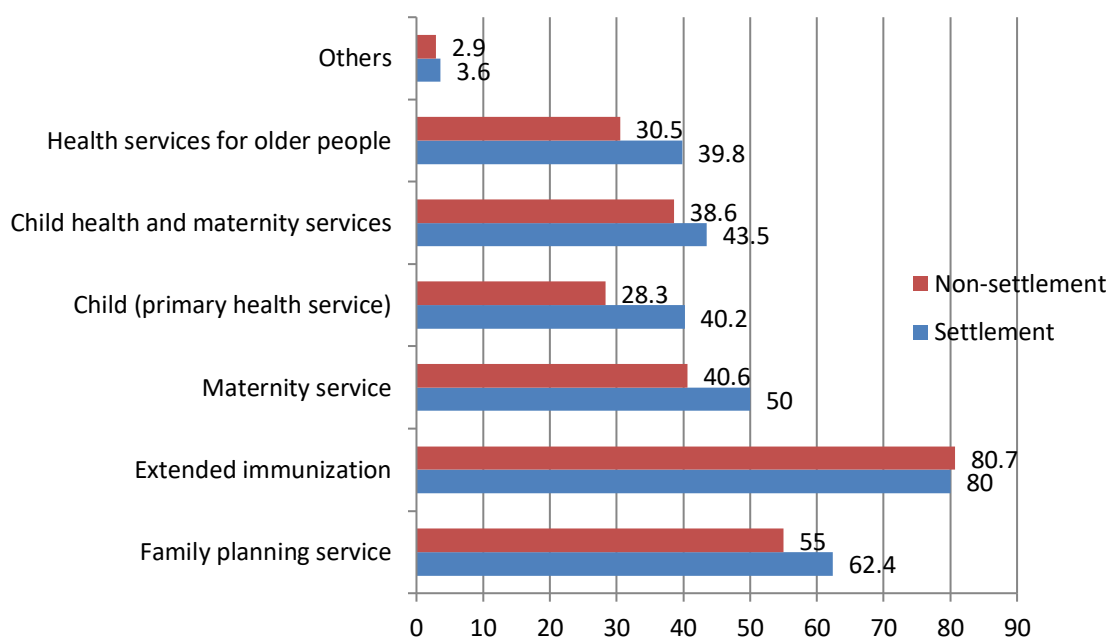


Fig. 4.37 Types of health service provided

Table 4.62: Attendance of health workers

Attendance of health workers	Settlement	Non-settlement	Outside	Overall Average
After 1 month	68.0	65.2	79.6	66.3
After 3 months	18.4	16.2	12.9	16.8
After 6 months	3.6	5.7	1.1	4.9
After 1 year	0.3	0.8	0.0	0.6
Never come	9.7	12.2	6.5	11.3

Table 4.63: Initiatives taken by field health workers due to PMBP

Initiatives are taken by field health workers	Settlement	Non-settlement	Outside	Overall Average
Immunization	100	95	98.9	98
Maternity services	59.2	44.1	46.2	48.8
Reproductive health	47.8	34.8	39.6	39
HIV/AIDS/STDs issue	12.6	13	19.8	13
Primary health care awareness	31.3	36.3	30.8	34.6
General health problem	18.3	17.3	19.8	17.7
Others	1.1	2.5	0	2

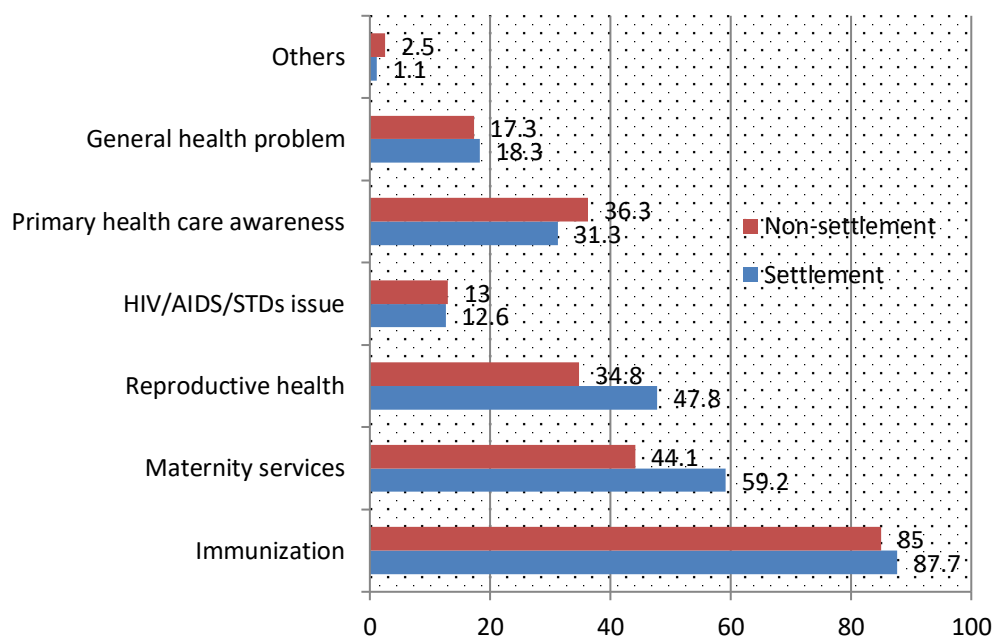


Fig. 4.38 Initiatives taken by field health worker due to PMBP

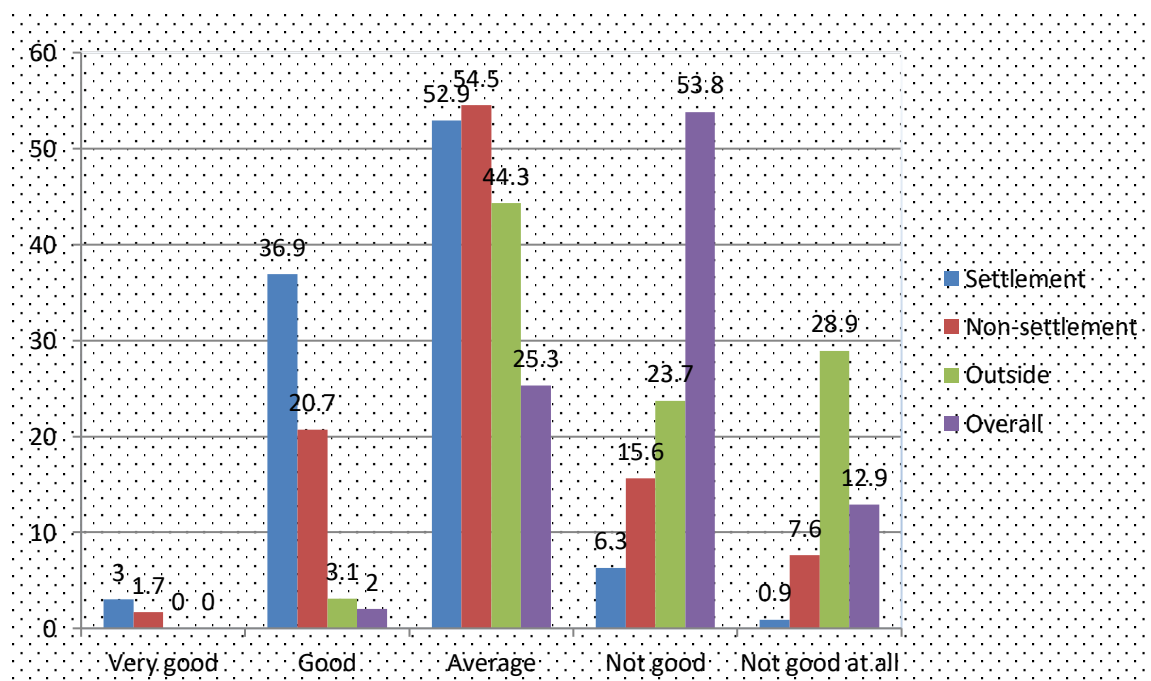


Fig. 4.39 Opinions about health services

Table 4.64: Pearson Chi-Square Tests on the attendance of health workers and health services

	Value	df	Asymp. Sig. (2-sided)
Attendance of health workers			
Pearson Chi-Square	30.470 ^a	8	.000
Likelihood Ratio	33.427	8	.000
Linear-by-Linear Association	4.622	1	.032
N of Valid Cases	4916		
Opinions about health service			
Pearson Chi-Square	385.837 ^a	8	.000
Likelihood Ratio	394.151	8	.000
Linear-by-Linear Association	344.877	1	.000
N of Valid Cases	4944		

Table 4.65: Damaged by Padma Multipurpose Bridge, services received, and the difference between damages and received services

Type of loss	Enormity of loss									Service getting						Difference between loss and service getting					
	Extreme			Medium			No loss			Adequate			Not adequate			Equal			More loss and less service		
	S	NS	O	S	NS	O	S	NS	O	S	NS	O	S	NS	O	S	NS	O	S	NS	O
Infrastructural loss	78.2	64.9	75.0	19.0	10.8	12.5	2.8	24.3	12.5	37.6	22.2	25.0	62.4	77.8	75.0	37.6	22.3	25.0	62.4	77.7	75.0
Financial loss	75.6	81.5	75.0	21.1	15.9	12.5	3.3	2.5	12.5	31.0	13.2	25.0	69.0	86.8	75.0	30.8	12.4	25.0	69.2	87.6	75.0
Social loss	58.8	55.4	62.5	32.9	28.4	12.5	8.3	16.2	25.0	35.2	21.4	37.5	64.8	78.6	62.5	36.0	21.7	37.5	64.0	78.3	62.5

Table 4.66: Chi-square tests on damaged by Padma Multipurpose Bridge, services received, and the difference between damages and received services

	Value	df	Asymp. Sig. (2-sided)
Infrastructural loss- Enormity of the loss			
Pearson Chi-Square	365.030	4	.000
Likelihood Ratio	457.105	4	.000
Linear-by-Linear Association	213.822	1	.000
N of Valid Cases	4898		
Infrastructural loss- Service Getting			
Pearson Chi-Square	119.256	2	.000
Likelihood Ratio	116.626	2	.000
Linear-by-Linear Association	117.915	1	.000
N of Valid Cases	4364		
Infrastructural loss- Loss and service getting the difference			
Pearson Chi-Square	117.502	2	.000
Likelihood Ratio	114.888	2	.000
Linear-by-Linear Association	116.202	1	.000
N of Valid Cases	4408		
Financial loss- Enormity of the loss			
Pearson Chi-Square	25.949	4	.000
Likelihood Ratio	24.158	4	.000
Linear-by-Linear Association	19.051	1	.000
N of Valid Cases	5008		
Financial loss- Service Getting			
Pearson Chi-Square	215.153	2	.000
Likelihood Ratio	202.737	2	.000
Linear-by-Linear Association	210.608	1	.000
N of Valid Cases	4876		
Financial loss- Loss and service getting the difference			
Pearson Chi-Square	240.958	2	.000
Likelihood Ratio	226.179	2	.000
Linear-by-Linear Association	235.782	1	.000
N of Valid Cases	4925		
Social loss- Enormity of the loss			
Pearson Chi-Square	60.108	4	.000
Likelihood Ratio	64.774	4	.000
Linear-by-Linear Association	26.165	1	.000
N of Valid Cases	4984		
Social loss- Service Getting			
Pearson Chi-Square	98.675	2	.000
Likelihood Ratio	95.707	2	.000
Linear-by-Linear Association	94.971	1	.000
N of Valid Cases	4508		
Social loss- Loss and service getting the difference			
Pearson Chi-Square	107.372	2	.000
Likelihood Ratio	104.126	2	.000
Linear-by-Linear Association	103.639	1	.000
N of Valid Cases	4600		

The study calculated the rate of losses; service received and then showed the differences between these losses and services (Table 4.65). Finding on the enormity of losses against types of losses showed that the highest 78% of the households in the settlement, 65% in non-settlement, and 75% in the outsiders reported extreme losses of their infrastructures followed by financial losses and then social losses, which are 75%, 82%, and 75%; and 58%, 55%, and 63% respectively in all three locations. Then they had medium losses which are 19% and 11% of infrastructural, 21%, and 16% financial and 33% and 28% of social loss respective of the settlement and non-settlement areas. The rest of the households do not have any kind of loss.

According to the receiving services, the big portions of three categories of the households did not receive adequate services which are infrastructural 62%, 78%, and 75%; financial loss 69%, 87%, and 75%; and social loss 65%, 79%, and 63% respectively among three categories of households. 38%, 31%, and 35% of the three categories of the households reported that the services against three types of losses were adequate. However, the study finds a big gap between the enormity of losses and services received by the households. As a result, the study reported that the highest numbers of households, for example, 62% settlement, 78% non-settlement, and 75% outsiders mentioned that they had more loss but get fewer services on infrastructural loss; these differences are mentioned by 69%, 88% and 75% on financial loss and 64%, 78% and 66% on social loss in three locations. The rest of the households mentioned that these were equal. Examining all of the items from the table, we can say that all of the items are highly significantly associated with livelihood status (Table 4.66). That is settlement, non-settlement, and outsider respondents gave their opinions very differently.

This research explored many untold and inside consequences of their losses and gains. From an FGD in the Char Chandrai village of the Kathabari Union of ShibcharUpazila of the Madaripur District, the participants reported that due to the requisition of landed property by the Government, many landowners have incurred financial losses. Because they were paid a low price of land through the price of the same land is considered now to be higher than they received while the official payment was made by the concerned authority. Besides, many of the residents who lost their house and cultivable land are now out of agro-based occupations. They are found to live their livelihoods getting involved in multiple occupations, but these are very limited. A few participants reported that their income from different sources was not adequate to maintain their families by satisfying the maximum needs of family members. From an FGD of Naodoba of Shariatpur district, one community leader told us:

I have lost 04 bighas (132 decimal) land first, but I could not buy a single bigha (33 decimal) utilizing the amount that I received.

Around 15 of the in-depth case interviewees reported us that they had ownership of 7.5 decimal lands but got a plot each of only 5 decimal lands in the resettlement area as the compensation. The Government had taken enough initiative to minimize the loss of affected people, unfortunately, they did not get a proper account. Authority enlisted his land as lower

land although it was upper land. Therefore, they got lower price and deprived acutely. He remarked without concealing his distress:

After they included our land without accurate information, we went to the office. we filed complaints but these were unrewarding.

4.7. Food Security

The study composed the number of meal wise data on the households' daily meal chart that they consumed (Table 4.67). The month-wise data against the number of meals showed that both the settlement and non-settlement households have three meals which are 99% and above. The number of households who consume two meals is found below one percent and one meal is very low, and in many months the numbers are found almost zero. The households had different types of foods at their breakfast, lunch, and dinner times. The list of the foods looks varieties at breakfast and lowest at dinner which is quite similar food practice in Bangladesh. There is little difference in the statistics on three categories of households, but this is not significant. Data showed that nearly 85% of the households eat rice and 84% eat vegetables in breakfast (Table 4.68). Nearly 51% pulse, 45% eat ruti (hand-made bread), 41% tea, 33% biscuit, 28% fish, 14% pantha rice, and 12% meat. On the other hand, during lunch, 99% of the household members eat rice, 94% fish, 85% pulse, 78% vegetables, and 63% meat. During dinner, again the highest 98% of the households eat rice, 85% fish, 84% pulse, 80% vegetables, 53% meat, and only 8% eat ruti. However, in general, it does not look a big difference between the three times of meals except for some items during breakfast. But it looks at some differences between the types of foods in three categories of the households consumed. The Chi-square tests showed a highly significant association between different types of foods that the respondents usually take in the morning, noon, and night and their settlement status (Table 4.69). All the obtained p-values are <0.001 which indicates significant association at a 1% level of significance. That means food taking behavior at different times of the day is significantly associated with the type of living status.

Table 4.67: Households' monthly consumed meals (average)

Month	Type of meals	Settlement	Non- settlement	Outside	Average Total
January	1 meal	0.1	0.3	0	0.3
	2 meals	0.1	0.5	0	0.4
	3 meals	99.8	99.2	100	99.3
February	1 meal	0	0.1	0	0.1
	2 meals	0.1	0.7	0	0.5
	3 meals	99.9	99.2	100	99.4
March	1 meal	0.1	0.3	0	0.3
	2 meals	0.3	1.2	0	0.9
	3 meals	99.7	98.5	100	98.8
April	1 meal	0.1	0.1	0	0.1
	2 meals	0.1	1.4	0	0.9
	3 meals	99.8	98.6	100	99
May	1 meal	0.1	0	0	0.1
	2 meals	0.1	1	0	0.7
	3 meals	99.2	99	100	99.2
June	1 meal	0	0.1	0	0.1
	2 meals	0	1	0	0.7
	3 meals	100	98.9	100	99.6

July	1 meal	0	0.1	0	0.1
	2 meals	0.1	0.4	0	0.3
	3 meals	99.9	99.5	100	99.6
August	1 meal	0	0	0	0
	2 meals	0.1	0.3	0	0.3
	3 meals	99.9	99.7	100	99.7
September	1 meal	0	0	0	0
	2 meals	0	0.3	0	0.2
	3 meals	100	99.7	100	99.8
October	1 meal	0.1	0.2	0	0.2
	2 meals	0.1	0.3	0	0.2
	3 meals	99.8	99.5	100	99.6
November	1 meal	0.1	0.1	0	0.1
	2 meals	0.1	0.3	0	0.3
	3 meals	99.8	99.6	100	99.7
December	1 meal	0	0	0	0
	2 meals	0.2	0.6	0	0.5
	3 meals	99.8	99.4	100	99.5

Table 4.68: Different type of foods households usually take in the morning, noon, and night

Time	Items of food	Settlement	Non-settlement	Outside	Overall Average
Breakfast	Rice	86.5	83.8	95.9	84.9
	Ruti	44.4	45.3	35.1	44.8
	Vegetable	83.8	84.2	92.8	84.2
	Biscuit	38.9	30.7	15.5	32.9
	Tea	50.6	38.5	23.7	41.9
	Fish	26.9	27.9	44.3	27.9
	Panta rice	12.3	14.7	20.6	14.1
	Bread	2.1	4.4	5.2	3.7
	Meat	10.7	11.9	16.5	11.6
	Pulse	46	54.2	40.2	51.4
	Others	14.8	14.5	18.6	14.7
Lunch	Rice	99.2	98.2	100	98.5
	Ruti	1	2	2.1	1.7
	Vegetable	80.4	76.9	82.5	78.1
	Biscuit	0.9	3	0	2.3
	Tea	1.5	3.3	1	2.7
	Fish	94.8	93.2	84.5	93.5
	Pantarice+salt	0.6	0.7	0	0.7
	Bread	0.6	0.7	3.1	0.7
	Meat	64.9	62.8	44.3	63.1
	Pulse	89.7	83	75.3	84.9
	Others	8.7	5.5	8.2	6.5
	Rice	98.5	97.5	94.8	97.8

Dinner	Ruti	6.2	8.7	3.1	7.8
	Vegetable	83.8	77.8	88.7	79.8
	Biscuit	6.4	4	0	4.7
	Tea	8.1	5.9	1	6.5
	Fish	86.4	84.9	71.1	85.1
	Pantarice+salt	0.3	0.8	0	0.6
	Bread	0.6	0.6	0	0.6
	Meat	52.9	54.2	35.1	53.4
	Pulse	86.2	82.7	80.4	83.7
	Others	9.3	5.7	8.2	6.8

Table 4.69: Pearson Chi-square tests on the different type of foods households usually take in the morning, noon, and night

Pearson Chi-Square Tests of morning food		
		Nature of respondent
§q7.2.1	Chi-square	230.827
	Df	22
	Sig.	.000*
Pearson Chi-Square Tests of noon food		
§q7.2.2	Chi-square	173.932
	Df	22
	Sig.	.000*
Pearson Chi-Square Tests of dinner food		
§q7.2.3	Chi-square	151.260
	Df	22
	Sig.	.000*
*. The Chi-square statistic is significant at the .05 level.		

4.8. Social Service and Social Security based Management

The study took opinions about the quality of 17 types of local services available in the communities of the selected settlement, non-settlement, and outside households based on 7 points Likert scale. Findings give diverse responses (Table 4.70). The service of mosques is found 'very good' where 35% of the settlement households and 19% non-settlement households responded to this kind of opinion. This response is found 10% and 7% respectively on clinic; eight percent each on hat-bazar and school/college/madrassa; 8% and 5% on pharmacy. The opinions were found moderate on the services of the local Union Parishad, social security, and police satiation where the rates are 37% to 43% in settlement and non-settlement areas. This moderate opinion is also found 36% to 51% on hat-bazar, Govt. hospital, [pharmacy, clinic, school/college/madrassa, family planning, and NGO services in the settlement area. These rates are a bit lower among the non-settlement area, which are ranged from 31% to 50%. The percentages on 'not good', 'bad', and 'very bad' are found low except 20% among non-settlement households on government hospitals who said 'not good' of this service. This is remarkable that there are four services where a big portion of the settlement and in some cases non-settlement household did not give any opinions about the

quality of services such as local club, women club, local park and CBO services which are ranged 74% to 92%.

The qualitative study provided a wide range of esoteric feelings on the above issues. In many cases, the qualitative data sustenance these kinds of opinions with some supplementary explanation, and in some cases these were reverse. For example, in an in-depth case interview, Faruk, a seventy years old man living in a settlement area of the Mathborer Char village of the Shibchar union under Madaripur District argues:

Local government is now more empowered and doing more works including roads and highway, even local roads are now pacca (concrete). The Chairman and Members are very busy now. They are also busy with social activities such as local justice, mitigation of local conflict. They are now a presence in the community and they are available all time to us.

In another in-depth case interview of the settlement area, Hossain told:

My relatives come to visit me and they can return back on the same day. I find it similar to the culture of Dhaka, where relatives have abandoned before night'. He observed people have no problem to enjoy religious freedom. The indigenous judicial system remains stable and ensures justice for everyone. Everyone can speech and there is no limitation of freedom to speak. We live together and the incidence of violence happens rarely.

The study asked the opinions of the quality of 15 types of local social issues of the local community of the selected settlement, non-settlement, and outside households based on 5 points Likert scale (Table 4.71). Significantly, there is only issue such as 'sufficient road available' where the highest 41% in settlement area mentioned 'very high' about the issue. Rather a higher number of households (ranged 24% to 57%) in both settlement and non-settlement mentioned 'high' that are freedom of movement (57% each), freedom of expression (45% settlement and 48% non-settlement), social security (45% settlement and 43% non-settlement), adolescents' girls' freedom of movement (46% settlement and 44% non-settlement), women's freedom of expression (35% settlement and 34% non-settlement), women have security (47% settlement and 45% non-settlement), sufficient roads 36% settlement and 24% non-settlement), religious institutions (39% settlement and 34% non-settlement). Again the higher number of both households had 'average' comments on freedom of expression (34% settlement and 35% non-settlement), social security (33% settlement and 36% non-settlement), adolescents girls' freedom of movement (32% settlement and 39% non-settlement), women's freedom of expression (40% settlement and 44% non-settlement), women have security (31% settlement and 39% non-settlement), sufficient school/college/madrassa (45% settlement and 46% non-settlement), sufficient health services (39% settlement and 32% non-settlement), religious institutions(30% settlement and 40% non-settlement), local government system (54% settlement and 50% non-settlement), local administrative staff communicate regularly (45% settlement and 36% non-settlement) and role of law enforcement agencies (56% settlement and 49% non-settlement). Nearly 27% to 38% had a low rate of opinions on some local social issues such as good training facilities, sufficient health services, recreational arrangements, and local administrative officers communicate regularly in both locations. In some cases, they have 'very low' opinions on good training facilities (31% settlement and 53% non-settlement) and recreational arrangement (31% settlement and 46% non-settlement).

This research explored a more incisive picture of positive and negative social issues through qualitative investigation. In an FGD session of the settlement area at Shibchar Upazila in Madaripur District, nearly half of the participants mentioned:

Social security has been increased a lot. Everybody has the right to have access to everywhere. The incident of 'gang robbery' has been aloof from this community with some exceptions.

One school teacher and UP Member in this FGD session mentioned:

Most of the unlawful claims are now resolved by the Union Parishad and people are getting their rights accordingly. People are happy with this local justice system. People are now more conscious of their rights and dignity.

From an FGD session of the settlement area in Shibchar Upazila of Madaripur District, we have recorded an opposite opinion from a Head Teacher:

Due to PMB, there increases a lot of negative changes and social inequality. Before, life was easy and normal though their income was low. People felt comfort and security. Now the number of yaba addicts has increased a lot because of easy access to communication. Women become very smart. We know that one girl went to Chandpur and brought her husband to this village. We are seeing such kind of social unrest now a day. The family conflict increased a lot. The divorce rate is very high now. Many women are unemployed and there is a lack of government attention in this regard. Every household has LP gas and completion has increased in the whole community.

On the other hand, in the FGD session held in the settlement area in Kumarbhog, the participants reported that their mutual relationship is good. But, new people are socializing with the local people. We are not much happy with this new relationship, and sometimes it goes wrong. Insecurity along with stealing has increased. They also add that the local government bodies such as Union Parishad along with local political leaders are working together to solve the local conflicts.

From an FGD in the Char Chandrai village of the Kathabari Union of Shibchar Upazila of the Madaripur District, from participants' discussion, we understand that security in terms of female's movement, law and order situation, and role of community leaders, law enforcing forces working in the locality are found to be good, active and much effective for the wellbeing of the people living in the project area. No family or community level violence is found, they reported. In the case of controlling crime and criminal offenses in the project area, required arrangements are appeared to be adequate with which the residents are, to a large extent, pleased to have. But some make the opinion that local representatives in local government are to some extent found to be indifferent in the case of taking prompt actions while undesirable incidents such as discord upon divorce, land, and other resources/ things are among the neighbors or residents. From another FGD held at No. 10 Naodoba Union under Zajira upazila of the Shariatpur District, participants expressed a positive opinion. Law and order situation is quite good and the role of a law enforcement agency is praiseworthy. They specially mention the presence of the army in controlling crime and ensuring security.

There is no evidence of social violence except few. The role of chairman and members of Union Parishad (UP) is also reported as satisfactory.

From an FGD at Kumarbhog union under Louhajong Upazila, the participants reported:

After the sunset, bad peoples enter into this settlement area and thus it is a threat to our security and sometimes difficult to control their criminal behaviors. They come and have alcohol and seductive items. Police and other agencies do not control them. Here one student and one child were killed, but we did not get any justice of these two incidences. In this settlement boundary, there are still many pockets and open spaces where these people are using for such criminal activities.

In an in-depth case interview, Faruk, a seventy years old man living in a settlement area of the Mathborer Char village of the Shibchar Union reasoned:

Social dignity and status have not increased at all, but increased corruption and this rate have increased over time. I have given an amount of money to get the bank cheque of my land and the amount is Tk. 15 thousand per lac. We are underdogs but the clever people were conquerors.

The FGD from the non-settlement area of Char Chandrai village of the Kathabari Union of Shibchar Upazila discovered more circumstantial and insightful picture: Most of the participants described that security in terms of female's movement, law and order situation, and role of community leaders, law enforcing forces working in the locality are found to be good, active and much effective for the wellbeing of the people living in the project area. No family or community level violence is found in this locality. They add that in case of controlling crime and criminal offenses in the project area, required arrangements are appeared to be adequate with which the residents are, to a large extent, pleased. But some participants make opinions that local representatives in local government are to some extent found to be indifferent in the case of taking prompt actions while undesirable incidents such as discord upon divorce, land, and other resources/ things take place among the neighbors or residents.

The study collected 16 types of women empowerment relation information (Table 4.72). Data showed that the highest households in settlement and non-settlement households think women have equal rights like men at the house which ranged 30% to 40% where the highest 43% have equal power in marriage among settlement households followed by 40% social benefits that are highest 39% in education among non-settlement households followed by 38% medicine/health services for the family. The second-highest number of respondents found women have moderate power which is ranged from 19% to 36% households among these locations. Among these, 34% are found on participation in social activities followed by 33% on trading livestock in settlement households which are highest 36% on advancement arrangement in agriculture followed by 34% on house building among non-settlement households. The third highest 16% to 28% of the households mentioned that women have sufficient power where the highest 28% have this sufficient power on medical care/health services for the family followed by 26% house-building among settlement households which are highest 28% each on participation in different functions, reproductive health/family planning/taking child, family values and entertainment and trading livestock. The fourth highest 4% to 27% of the households mentioned that women do not have any power where a significant number of households such as 26% settlement and 27% non-settlement gave this opinion on political decision making and 22% settlement and 24% non-settlement households

on participation in the social network. The least four percent to 6% of households mentioned that women have more power like men at the house.

The qualitative data explored rather more contextual shreds of evidence with some interrelated issues and they sometimes compared women empowerment issues with their previous experience. In an FGD session of the settlement area in Shibchar Upazila, half of the participants reported:

Women's and girls' social security has been improved. Whatever happens that happens through the mobile phone.

The participants from the FGD session in the settlement area in Kumarbhog reported that the majority of women are housewives. Most of the marriages have taken place alongside dowry money. One participant reacted:

Family conflict has been increased due to having cash in the hands of the affected people. The divorce rate has been increased among local people and early marriage is comparatively high in the community.

It is also revealed from this discussion that male harassment by the female is also increased. Positive attitude towards education for girl children is also increased. But, boys are interested to go abroad to reach adult age. The majority of people go to Saudi Arab, Dubai, and Malaysia. Girl children have to continue their education until getting married. There is less discrimination between boys and girls. In an in-depth case interview, Faruk in a settlement area of the Mathborer Char village of the Shibchar union under Madaripur District contended:

I think women empowerment has increased. I am seeing women are moving more outside than the households and they can bargain, they are now in hat-bazar, roads, school, and everywhere. They are very fast.

Some female FGD participants at No. 10 Naodoba Union under Zajira Upazila of the Shariatpur District reported that most of them are housewives. Their decision-making capacities are limited and do not have any training and access to credit or loan. They are not skilled enough. Very few are engaged in self-employment. But they have the freedom of expression and mobility. A few of them are taking training from the Department of Youth and Sports and ESDO. Widow, disabled and elderly women are getting allowances. Dowry system and child marriage are reported by the participants as very frequent in the project area. From another FGD at Kumarbhog union under Louhajong Upazila, the participants reported that the socio-economic condition of women in the project area has advanced due to continuously improving their living conditions as well as growing various training facilities. Women participate in family-related decision making processes and activities. They add, the outsiders sometimes disturb to the women. As a result, they cannot go outside of their home after the evening. We recapped the voices of other FGD participants at the non-settlement area of the Mathbor Char Union of the Shibchar Upazila of the Madaripur District:

Social security has been increased a lot in this area. The Chairman and Members of the Union Parishad are responsible and accountable to the inhabitants of this area. People are also much conscious. Gradually, women's and girls' status is increasing. They can safely move from their houses to schools, offices, and markets. Currently, 99% of the girls pass the Secondary School Certificate (SSC). They are not only doing household works rather they are involving in different income generation activities. Maidservant is very rare here. Many of them are moving to colleges and Dhaka city for higher education. The numbers of child marriage have decreased and dowry is

not a problem in this locality. Women are politically conscious and they have full freedom to cast their votes.

Around ten in-depth case interviewees mentioned that women's and girls' discrimination has decreased a lot. Drug addiction is near absent in this community as they are now involving in education and income generation activities. People are more dynamic and they have to go through a competitive market in their livelihoods. The number of community police has increased.

This research captured a different type of explanation of women empowerment from an FGD held at a non-settlement area of the Char Chandrai village of the Kathabari Union of Shibchar Upazila of the Madaripur District. The participants described that a large number of females are not educated, but they are used to maintain family norms and practices. Females comply with and respect their husbands and older persons in their families. Usually, females do not care about their participation in the family decision. According to a few participants, females are found to be more active and participative in many activities in their family because of changes in community and family values. In case of using financial assets (i.e. selling or purchasing things necessary for household and wedding ceremonies of family members), most of the male participants reported that they used to consult the matter with their wives and other adult family members. In the case of child marriage, participants reported that the incident of child marriage has substantially reduced as opposed to the incident of child marriage that happened before. Recently, female education, their freedom



Image: Workshop on gender discrimination and women rights,
Source: BBA



Image: Workshop on gender discrimination and women rights,
Source: BBA



Image: Workshop on gender discrimination and women rights,
Source: BBA

of expression, and a bit of liberty to movement have increased. But female's participation in income-generating activities was not found as we expected in the project area. On the other hand, Hasan, a non-settlement inhabitant at Mathborer Char union of Shibchar Upazila area mentioned:

There is no woman discrimination and deprivation rather the males are dominating by females.

Kamrul Islam, a non-settlement inhabitant's voice was a bit different. He mentioned:

Women's empowerment is increasing than earlier.

Women are getting involved in income-generating activities, they are participating in family functions and social activities. They also decide family matters which decrease family violence and discrimination. But outside of family life violence against women is increase due to new people are involving to commit crimes in these PMB project areas.



Image: Community level discussion on women rights, Source: BBA

Table 4.70: Quality of local services

Quality of local services	Very Good			Good			Moderate			Not Good			Bad			Very Bad			No comment		
	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Local UP	1.7	2.6	0	43.7	34	14	37.3	41.2	63	7.6	8.9	13	2.8	3.6	02	01	3.5	01	06	6.1	07
Social security	03	2.3	0	29.7	21.3	06	43	40.3	46	8.4	10.5	33	2.7	5.3	03	01	4.3	01	12.2	16	11
Police station	0.9	0.7	0	19.3	12.8	05	38	37.6	67	7.9	11.1	11	3.3	6.6	0	4.4	4.9	09	26.3	26.3	08
Local club	0.1	0.1	0	5.8	4.1	0	9.1	8.7	08	4.1	6.5	07	1.7	2.2	05	2.1	4.1	15	77.1	74.3	65
Women club	0	0	0	0.3	0.9	0	2.3	2.6	01	2.1	3.1	05	1.7	1.8	08	1.5	2.8	17	92.2	88.7	69
local park	0.4	0.4	0	5.5	2.4	0	8.4	3.7	03	04	4.5	24	3.1	5.2	05	4.3	7.7	22	74.4	76.2	46
Mosque	34.8	19.4	01	48.5	51	35	12.6	24.1	57	0.3	2.2	03	0.1	0.4	0	0.1	0.3	0	3.6	2.6	04
Hat-Bazar	8.1	8.1	01	52.1	50.5	21	35.7	34.8	47	2.3	4.3	12	0.4	0.6	0	0.2	0.5	16	1.1	1.1	3
Govt. Hospital	1.7	0.6	0	17.4	9.9	01	50.4	33.7	06	9.5	19.8	43	2.6	8.2	16	0.5	5.2	29	18	22.7	05
Pharmacy	8.1	4.7	0	45.7	38.9	03	40.9	42.7	42	2.2	7.7	37	0.2	2.2	14	0.2	01	01	2.8	2.8	03
Clinic	9.9	6.9	01	27.9	24.3	0	33.3	29.4	31	5.1	10.9	23	0.6	3.6	22	0.1	0.9	19	23	24.1	04
School/college/madrasah	08	7.5	01	37.7	35.8	08	47.4	45.2	34	2.9	5.6	51	1.1	1.9	03	0.4	0.9	0	2.6	3.2	3
Family Planning	2.8	1.1	0	17.5	10.3	02	47.5	37.8	29	10	15.9	42	3.3	5.5	08	2.9	05	15	16.1	24.5	04
NGO service	05	1.7	0	24.6	14.9	09	40.7	31.1	36	3.9	11.3	18	0.7	2.2	0	0.6	3.5	01	24.5	35.4	36
CBO service	0.3	0.2	0	1.2	02	01	8.6	07	01	02	3.3	09	0.8	0.7	0	0.7	02	15	86.4	84.9	74

Table 4.71: Opinions on social issues on the local community

	Very high			High			Average			Low			Very low		
Opinion on social issues on local community	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Freedom of movement	17.8	15.7	10	56.6	56.7	38	22.9	25.7	52	2.1	1.4	0	0.6	0.5	0
Freedom of expression	12.1	7.7	10	44.7	48.4	37	34.3	35.5	53	7.1	6.4	0	1.9	2.1	0
Social security	17.2	12.5	10	45.1	42.8	35	33	35.5	52	4.3	8.2	03	0.3	1	0
Adolescent girls freedom of movement	17.5	10.5	5	45.6	43.9	32	31.6	38.6	62	4.8	6.1	1	0.4	0.8	0
Women have freedom of expression	12.8	8.6	4	34.8	33.8	33	39.5	44.1	62	10.7	10.1	1	2.2	3.4	0
Women have security	18	10.7	4	47.4	45.4	29	30.6	39	62	3.6	4.1	1	0.4	0.8	4
Sufficient rods available	41	11.5	1	36.1	24.2	3	17.2	32.4	19	4.4	22.7	52	1.3	9.3	25
Sufficient schools, colleges, Madrasah	9.6	5.1	0	32	27	10	45.1	45.5	20	9.8	17.2	37	3.5	5.1	33
Good training facilities	1.7	1.7	0	6.5	5.6	0	22.9	18.2	6	38.4	31.5	27	30.5	43	67
Sufficient health services	4.1	1.6	0	18.3	9.7	1	39.2	32.2	16	27.9	34.2	29	10.5	22.4	54
Religious institutions	12.3	8.8	0	39.3	34.2	13	30.3	39.9	57	10.6	10.5	13	7.5	6.5	17
Recreational Arrangement (Park/Play/Ground/Club/ Library)	2.7	0.9	0	10.9	6.2	0	22.9	17.5	10	32.2	29.3	54	31.3	46	36
Local government system	2.7	1.5	0	15.5	14.1	1	54.1	49.6	73	16.8	22.7	22	10.9	12	4
Local administrative officer communicate regularly	1.3	0.9	0	9.8	7.2	0	44.9	35.7	63	27	36.2	31	17	20	6
Role of law enforcement group	2.2	1.3	0	15.4	11.4	5	55.7	48.6	56	13.5	26.2	33	13.2	12.4	6

Table 4.72: Women Empowerment Related Information

	Don't have any power			Have moderate power			Have sufficient power			Have equal power like men at the house			Have more power like men at the house		
Women Empowerment areas	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Advanced arrangement in agriculture	16	18.1	1.1	30	36.3	7.4	17	20	21.1	30.7	21.9	70.5	6.3	3.8	0
Trading in livestock's	7.3	11.2	1.1	32.8	32.9	5.3	23.5	27.1	20	31.5	25.2	73.7	4.8	3.6	0
Medicare/health services for family	4	6	0	23.1	23	4.1	27.6	27.6	45.4	39.2	37.6	50.5	6	5.8	0
Education	4.1	6.2	0	24.1	22.1	0	25.2	25.7	45.4	38.8	39.1	54.6	7.8	6.9	7
Marriage	6.2	11.3	1	24.5	27.2	4.1	21.6	23.2	25.8	43.3	34.7	69.1	4.5	3.7	0
Big kind of household shopping	9	8.7	0	24.6	27.3	1	26.3	27.1	44.3	33.6	30.8	54.6	6.5	6.1	0
Contact with social service providers	14.3	14.9	1	26.2	28.4	1	21.8	23	23.7	32.4	29.3	73.2	5.2	4.4	1
Land purchasing	12	17.6	2.1	28.6	31.2	3.1	18.6	21	22.7	36.4	26.2	72.2	4.4	3.9	0
Participation to social activities	10.5	14.3	0	34.1	32.1	27.8	24.2	24.9	17.5	26.9	25.1	54.6	4.3	3.6	0
Political decision making	26.1	27.2	2.1	19.7	24.6	5.2	18.8	18.2	17.5	30.8	26.7	75.3	4.6	3.3	0
Participation in associations/social network	22.1	24.2	1	30.5	30.6	3.1	19.1	20.2	20.8	23.9	21.7	75	4.4	3.2	0
House building	6.2	9.5	1	29.2	33.8	4.2	22.2	25.5	22.9	37.9	28	70.8	4.6	3.2	1
Participation in different functions	5.5	8.6	0	26.8	28.4	15.6	26.1	27.8	27.1	35.8	30.6	57.3	5.8	4.5	0
Family values and entertainment	5.3	9.2	0	28.6	25.7	3.1	24.9	27.7	45.8	35	33.1	51	6.3	4.3	0
Reproductive health/ family planning/no. children in the family	6.4	10.1	0	26.7	19.5	0	23.6	27.9	42.7	39.5	38.4	57.3	3.9	4.1	0
Social benefits	14.7	21.5	1.1	23.7	22.7	0	16.2	17.4	23.2	39.8	34.5	74.7	5.6	3.9	1.1

4.9. Psychosocial vulnerability, social status, and dignity

The households faced numerous types of losses due to river erosion in the last five years (Table 4.73). The highest 59% of the households mentioned the loss of land which is 34% settlement and nearly double 61% in non-settlement households followed by 45% cropland (24% settlement and nearly double 47% non-settlement), 32% loss of homestead infrastructure (53% settlement and nearly a half 30% non-settlement), 31% (22% settlement and 31% non-settlement), 26% (17% settlement and nearly double 26% no-settlement), and 12% food security (Table 4.74 & Fig. 4.40). More than 31% of the households had some kinds of losses by other types of disasters in the last five years which were 21% among settlement, 34% non-settlement, and the highest 82% among outsiders. The monetary value of these losses was the highest Tk. 432,497 among non-settlement households which are nearly 10 times higher than settlement households (Tk. 46,617) (Table 4.75).

Table 4.73: Types of losses households experienced due to other natural disasters last five years

Losses experienced	Settlement	Non-Settlement	Outside	Overall Average
Yes	21.8	34	82	31.2
No	78.2	65.9	18	68.8

Table 4.74: Sort of losses households had to face due to riverbank erosions last five years

Sort of losses	Settlement	Non-settlement	Outside	Average Total
Loss of homestead infrastructure	52.5	29.5	47.6	32
Loss of land	33.9	60.6	95.2	59.4
Income loss	16.9	26.4	42.9	26.1
Loss of homestead land	22	30.6	66.7	31
Scarcity of pure drinking water	3.4	6.9	19	7
Crops loss	23.7	46.8	61.9	45.3
Livestock loss	5.1	7.6	14.3	7.6
Morbidity/increasing intensity of disease	1.7	2.1	0	2
Loss of employment	6.8	9.7	38.1	10.3
Injury	0	2.8	0	2.5
Food scarcity	15.3	11.4	19	11.9
Other	20.3	22.6	0	21.7

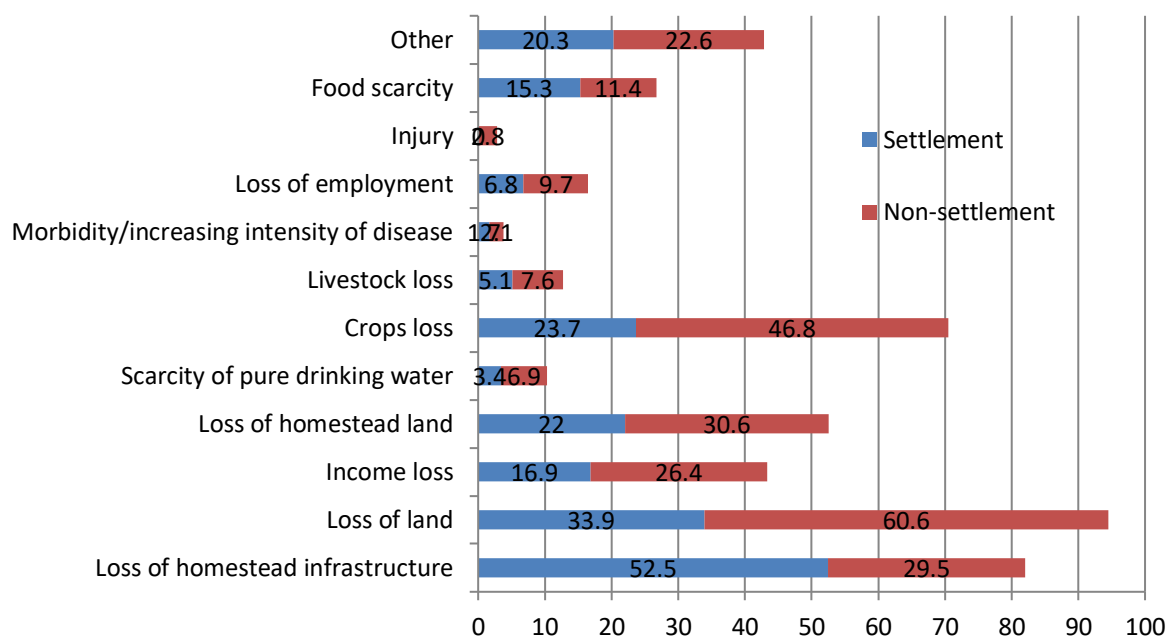


Fig. 4.40 Sorts of losses households had to face due to these riverbank erosions last five years

Table 4.75: Monetary value (in taka) of losses due to other natural disasters

The monetary value of losses due to other natural disasters	Settlement	Non-Settlement	Outside	Overall Average
	46,617	432,497	78,878	331,518

The study apprehended the psychosocial vulnerabilities from 24 items using the Likert 7 points scale (Table 4.76). The study acquired a mixed opinion on different issues. If we consider all of these opinions into two broad categories i.e. who were agreed and who were disagreed on these psychosocial vulnerabilities, the findings showed that a higher number of households disagreed on different psychosocial vulnerabilities at their current livelihoods though there are some issues they were agreed. The higher number of households were disagreed on the issues of the psychosocial vulnerabilities such as suffering family members (57% settlement and 43% non-settlement were disagreed), gender-based violence (65% & 48%), challenges of needy people (42% & 31%), increase child marriage (68% & 56%), feel insecurity (52% & 36%), illegal practices (53% & 43%), job problem (42% & 31%), increased poverty (44% & 33%), lack of loan facility (56% & 41%), damage school and social institutions (53% & 40%), forced displacement 54% & 45%) and recovery process is controlled by political and local power structure (54% & 37%). On the other hand, approximately 21% to 33% of the households were agreed on several issues such as social and cultural bondage broken, individual and social networking broken, household occupation changed, increased social inequality, created the human problem, movement of community people, and lack of association, and increase psychological stress; which were strongly agreed broken social and cultural bondage (11% settlement and & 13% non-settlement) followed by people moved other places (18% & 17%), lack of association (13% & 15%).

The qualitative investigation captured many insightful and contextual stories about psychosocial vulnerabilities. This analysis helps to understand the real scenario with many

examples. In an FGD session of the settlement area in Shibchar Upazila in Madarpur District, like a school teacher, many participants at both settlement and non-settlement argued:

Due to PMB the cultivable land has decreased, tress and ponds also have decreased. People become landless and vulnerable.

A dozen of in-depth case interviews in both areas stated:

Depression has increased strenuously. It is because some people's income has increased a lot. People's expectation has also augmented but there are lacks to fill-up these expectations in our community. People are going to be concentrated in the business sector. Many indigenous occupations are already lost from this community.

The study also calculated the social status and dignity related vulnerability on ten different aspects used Likert 6 scale points (Table 4.77). Results showed that a higher number of households (41% to 62% in settlement and non-settlement) disagreed except one on those aspects followed by somewhat disagreed (13% to 15%) except one and somewhat agree (10% to 21%). The highest 62% each of the settlement households was disagreed on 'lost all the ways to establish me' and 'path of the establishment has closed' followed by 61% each 'being disrespectful to the society', 'become inferior to the society', and 'do not get much more respect and dignity'. More than 21% in settlement and 26% in non-settlement households were agreed that society becomes financially unstable due to Padma Bridge which was 13% 'lost social identity' in both households and 12% and 16% on society become dependable on others respectively. The highest 12% in the settlement households were strongly agreed that 'people become financially unstable'.

This research recorded a wide range of contextual and local voices through qualitative investigation on social status and dignity related vulnerabilities due to PMBP. From the whole of the participants' discussion, we understand that the level of dissatisfaction particularly on social status and dignity, the majority of the participants (nearly 70%) in both settlement and non-settlement areas gave negative expression due to PMBP. For example, in an FGD session in the settlement area in Kumarbhog, some participants expressed:

Our community culture has been muddled with modern and Dhaka culture. The younger generation is not respecting their elders in the family as well as the community. Traditional cultural heritage has been ruined. But, cultural diversity has increased.

From this FGD, it was also revealed that drug trafficking and abuse has been increased because of coming new people in the community. Eve teasing and prostitution has been increased remarkably. A huge number of construction workers are working in the project areas from the outside, and they are living without a family. So, in some cases, they are involved in illegal sexual behaviors. A good number of participants told:

Local legal command position is very bad, and violence and deprivation have occurred in the grip of political shelter. Now it is out of the local administration.

Dabir, a non-settlement at Mathborer Char union of Shibchar Upazila area gave an unlike view:

Due to social and infrastructural changes, people are facing distress to adjust with new procedures and systems. But we need to accept this problem for the sake of the development of the country. There no shocks or stress in this community due to PMB. People may get loan facility.

From an FGD in the Char Chandrai village of the Kathabari Union of Shibchar Upazila of the Madaripur District, the participants reported that because of infrastructural, socio-economic, and cultural development, we see changes in our lifestyles along with the pattern of relational ties, sound communication among nearest and dearest ones or kin. Even some people who lived in a joint family were found to be poor communication and bonding due to their separate living in the scattered areas. Though there were no significant signs of discords among the residents, many social gatherings, cultural and religious occasions, or festivals were arranged by the residents together. Social closeness and bonding are supposed to be positive and productive. According to the opinions of a few participants, family disorganizations or break-ups were not found to be serious in the project area. In terms of the state of mind, especially the level of satisfaction in lives impacted by the Padma Bridge project was supposed to be negative and disappointing. Just because, a good number of people who lived on agricultural lands and crop production activities, now many of them are leading their lives in a variety of hardships that have led to mental agonies. Because, straight economic conditions resulting from land acquisition, loss of cultivable lands where they produced a wide range of crops to maintain livelihoods. Many of them were found to be anxious about the present and future conditions of life. Some of the FGD participants reported disappointment because they sometimes feel loneliness, cannot find anybody readily available to provide help during the crisis. Two participants reported that their life in the future will get in uncertain. One of the important reasons, as they reported, is that upon completion of the Padma Bridge Project, a huge number of people in the locality will have to lose their present occupations by which they have been still managing their livelihoods.

In an in-depth case interview in the settlement area in Naodoba Union, Noman admitted that the relationship with the neighbor is good but expressed his dissatisfaction regarding the social status in the project area. He textures that he lost respect, self-identity, and decision-making capacity, social responsibility in comparison with the previous area. Social bondage and cohesion are still weak as many people are unknown to him here. Enfeebled kinship has also been reported by him. People outside the project area humiliate us as slum dwellers or landless. But he is satisfied in enjoying different rights such as freedom of movement and expressing an opinion, observing religious festivals, and not facing any violence. From an in-depth case interview in the settlement area: Hafiza (74 years old woman) is a marginal woman who has only a homestead and house to live in the project area. She has no alternative option to work for her to survive. Lack of blood relation relatives, shattered economic conditions, deprivation of social relationships, and push factors of migration have been explicated by her as an adverse impact of the PMB project in the settlement area. But her statement reflects that the infrastructure and communication system has been developed in the project area that brings a positive impact on their lives. The urge for generating work opportunities also has been mirrored the antagonistic impact of this project.

Hasan, a non-settlement at Mathborer Char union of Shibchar Upazila area pronounces a negative aspect:

The number of landowners has decreased. The rich people are buying all lands, even the price is very high, and the real farmers cannot buy any land due to the high price.

In many cases, due to social change such as poverty sometimes crashed-out the social relations, as Humaira, a non-settlement inhabitant mentioned:

I have no relations with my sons. I had a position at my family when I had land, but now, I am not valued, nobody is provided me any care, not even my sons and husband because I do not have any property now. My relation with my sons and husband has almost been cut-off but retained the same with my daughters... However, I have good relations with my neighbors. I am suffering from mental stress, loneliness, and frustration due to degraded relations with my sons and husband. I do not know the pace of empowerment at PMBP rehabilitation project areas.

Rahman, an inhabitant of a non-settlement area, stated:

The kith and kin relationship is gradually slacking in this area. A joint family is gradually turned into a nuclear family. In many cases, women, children, the person with disabilities, and older persons face trouble. Social conflict is being increased centered on the land. The market value of land has increased from about ten to twelve times more than before. Everybody wants to construct houses without leaving space. The demand for house rent has increased due to PMBP. People are being migrated from different areas and they are living in this area due to employment opportunities. It is also big trouble in this area.

In an in-depth case interview, Hasan in a settlement area of the Mathborer Char village of the Shibchar union under Madaripur District argued:

The overall social peace and social justice have increased over time but this has no link with PMB. But this is true we lost many of our relatives and neighbors, they are isolated and moved from our community even I am now living alone in a new community. I lost almost all my relatives and neighbor whom I know last fifty years. One of the problems is that we cannot give marry our grandsons and granddaughter in this community. I am very frustrated; this is all that I have got from PMB. My mental health is bad, my heart gives me pain, massive pain.

We found from FGD sessions, sometimes economic hardships hearten social and psychological vulnerability. We found that some are running short of income, available sources of income and income-generating activities, some assets necessary to maintain a satisfactory level of life. Compared to the state of life they enjoyed before the Padma Bridge Project implemented, the present economic and social situation of the resident is supposed to be poor in quality. Meanwhile, some families failed the desired amount of savings after spending their income on foods and other necessities. In fact, in terms of self-contents in life, social dignity, political and economic empowerment, sound bonding, and communication among the people are reported unexpected outcomes of the project that already have affected lives and livelihoods.

From the FGD at No. 10 Naodoba Union under Zajira Upazila of the Shariatpur District, the key finding of the discussion reflects that people had to be settled in new areas from their previous known areas with new neighbors which deteriorated the relation of kinship, increased the social distance, and created a narrow mind set up. The discussion also focused that in many cases; people in the project area did not obey the verdict of *shellfish* like before due to having cash. They confirmed that the weakening of their socio-economic conditions created moral degradation among the young group. Incidents of stealing, taking yaba,

gambling, are very frequent in the community. Besides, psychological impacts such as anxiety, fear of uncertainty, and loneliness have been created among the people of non-settlement although communication among the community people has been increased now a day. However, attention-grabbing findings were that many people did not take positively to live in the project area as they thought it degrades their social position in society and is being considered as slum dwellers or landless. A community leader in an FGD session in Medinimondal mentioned:

We have everything here, but some people said us rental Rohingya, we feel very bad. Now I am the president of R.S 2 but I think previously my position was good, land, pharmacy, business, agriculture, but now I have nothing; though get plot, money, position but lost my prestige.....

The study has recorded some positive impacts of Padma PMBP. Almost in all FGDs, some participants mentioned that there is a certain level of positive social change on different indicators of their social life and community well-being. From an FGD of a non-settlement area of the Mathbor Char Union of the Shibchar Upazila of the Madaripur District, one businessman alleged:

The dignity of people has increased after the PMBP because of the diversity of occupations and occupational change. Even a farmer is now getting good status because they are a good amount of money for their lives and livelihoods.

In an In-depth case interview in a settlement area, Cahyon stated:

My prestige has increased after having a shelter at the settlement area. Now I am the secretary of the settlement mosques. People respect me and I also show respect to others.

Table 4.76: Psycho-social vulnerability among the households

	Strongly Agree			Agree			Somewhat Agree			Neither agree nor disagree			Disagree			Strongly disagree		
Psycho-social Vulnerability	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Family members are suffering from physical problems	3.7	7.4	0	7.5	12.6	3	13.8	18.3	10	13.8	14	13	57.3	43.2	02	3.9	4.4	72
Social and cultural bondage have been broken	11.4	13.2	8	27.5	31.9	5	33.4	26.6	29	13.1	10.6	8	13.3	15.2	47	1.3	2.6	3
Individual and Social networking have been broken	10	11.2	10	29.4	30.1	1	32.3	28.2	30	13.7	12	8	12.8	13.6	47	1.8	4.9	4
My household occupation has changed	6.2	6.8	10	20.7	21.3	1	23.3	22.9	6	9.1	10.5	8	32.6	29.9	4	8	8.6	71
social inequality has increased	0.8	2.9	2	11.5	16.3	2	23.2	29	11	11.8	11.6	7	39.7	26.1	6	13	14.2	72
Human problem created	1.9	4.9	2	17.7	19.5	4	27.3	28.6	27	11.5	11.3	18	31.9	20.9	45	9.7	14.7	4
Feel helpless	5.6	10.2	0	15.8	20.9	2	24.1	26.7	14	11.9	10.7	9	39.5	24.5	4	3.1	7	71
Face tremendous challenges with our older, pregnant women, specially needy people, widow and children	4.5	7.7	1	11.4	14.6	2	21.7	24.1	2	10.7	11.7	11	42.2	30.9	13	9.5	11	71
Relatives, neighbors and community people moved to another place	18	17.3	10	36.2	35.4	16	28.6	24.9	31	5.2	6.9	3	10.8	12	37	1.1	3.6	3
Lack of association	12.7	15	0	25.4	27.6	3	32.9	30.2	20	10	9.3	15	17.6	13.3	37	1.4	4.5	25
Mental stress, depression and anxiety	9.4	14.1	0	16.7	18.3	1	24.6	31.1	3	8.2	8.2	0	38.7	21.3	2	2.4	7	94
Gender based violence	0.4	1.4	0	2.3	4.2	0	5.6	10.5	0	16.8	18.4	0	64.8	48.4	5	10.2	17.1	95
Child marriage has increased	0.5	1	0	1.3	3.8	0	5.8	10	2	18.1	19	0	68.4	56.1	5	6	10	93

	Strongly Agree			Agree			Somewhat Agree			Neither agree nor disagree			Disagree			Strongly disagree		
	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Psycho-social Vulnerability																		
feel social distance	7.3	9.2	0	19	24	1	35.8	34.8	19	13.7	10.1	18	22.1	17.1	37	2	4.7	25
Feel insecurity	3.4	6.1	0	7.2	12.8	2	18.5	25.2	0	15.4	13.9	1	51.6	35.6	3	3.9	6.4	94
Many people were involved in illegal practices	0.9	1.8	0	7.1	8.4	0	12.4	22	21	17.9	13.5	18	53	42.8	34	8.6	11.5	27
Did not find any job/work	6.3	6.5	0	17.5	19.3	1	14	16	1	6	9.7	1	42.1	30.5	3	14.1	17.9	94
Increased poverty	1.2	3.1	0	12.3	11	0	22.1	28	1	13.6	15.6	1	44.1	32.5	2	6.6	9.8	96
Do not get any loan facilities from NGOs	0.6	2.1	0	13.8	12.8	0	11.4	16.6	17	12.4	17	19	55.5	40.6	31	6.3	10.9	33
Many schools and social institutions damaged	0.7	1.9	0	10.6	10.5	0	13.8	22.4	3	16.7	17.5	18	52.9	40.4	51	5.3	7.2	28
Created food insecurity	1	2.8	0	8.6	8.1	1	20.4	25.3	0	16	16.3	0	46.6	37	4	7.5	10.6	95
Forcefully displaced households	7.5	4.5	0	10.5	12.3	0	13.4	13.7	1	12.2	16	0	53.6	45.1	6	2.7	8.5	93
Recovery process has controlled by the political institutions and local power politics	3.8	7.4	0	6.9	11	0	15.8	19.1	4	10.7	12.6	0	53.9	37.4	3	9	12.6	93

Table 4.77: Social status and social dignity related to vulnerability

	Strongly Agree			Agree			Somewhat Agree			Somewhat Disagree			Disagree			Strongly disagree		
Social Status Related Vulnerability	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Being disrespectful to the society	1.6	5.1	0	7.3	10.9	0	14.1	19.4	16.7	13.6	14.1	16.7	61.2	47.2	50	2.3	3.2	16.7
Become dependent on other	2.2	4	14.3	12.1	15.7	14.3	11.5	20.2	0	13.6	14.5	28.6	59.1	43.2	42.9	1.4	2.4	0
Lost social identity	1.8	4.3	0	12.8	13	28.6	13.5	19.9	0	13.2	15.3	14.3	56.9	45.1	57.1	1.8	2.4	0
Leading a low life	2.2	3.5	0	8	14.1	28.6	13.3	21.2	14.3	14.2	14.5	14.3	60.3	44.2	42.9	2	2.5	0
Lost all the ways to establish myself	2	4.2	0	8.1	12.8	14.3	10.2	19.1	0	14.1	17.1	14.3	61.9	42	71.4	3.7	4.8	0
Become inferior to the society	2.3	4	0	6.8	11.9	28.6	13.4	21.3	14.3	14.8	14.8	14.3	60.6	44.6	42.9	2	3.4	0
Become financially unstable	4.8	12.1	0	21.4	26.2	14.3	22.7	25.8	14.3	8.7	8.2	14.3	41	25.8	57.1	1.5	1.9	0
Do not get the much more respect and dignity	2.2	3.1	0	6.1	11.7	28.6	13.1	17.7	14.3	14.4	16.6	14.3	60.7	45.8	42.9	3.5	5.1	0
Path of establishment has closed	1.6	3.9	0	6.4	11.3	14.3	9.5	17.1	28.6	15.1	17.9	14.3	61.8	42.7	42.9	5.6	7.2	0
Feel absence of leadership	4	4.7	0	6.7	12	28.6	11.5	19.2	14.3	13.6	11.5	14.3	53.4	39.5	42.9	10.7	13.1	0

4.10. Migration and social mobility

The study found that 70% of the households (which is 97% in settlement and 58% non-settlement) had to displace due to Padma Bridge and the rest of 30% (which is only 3% in settlement and 42% non-settlement) did not displace (Fig. 4.41). The Pearson's Chi-Square test shows that chi-square = 777.742, $p = .000$. *P-value (<0.001) is very small compared to a =0.05 value which renders us to reject the null hypothesis. In other words, we can conclude that there is a statistically significant association between displacement and location variables; that is, displacement and non-displacement have different effects across the location categories. The qualitative data also supported this evidence (Table 4.78). In an FGD session in the settlement area in Kumarbhog, participants reported us that people are migrated because of acquired their land for the project. Those who cannot get any plot in the settlement area, they are migrated from the old place to urban areas. In the past, many people have been migrated due to river erosion. It is also mentioned that living cost is now higher in the project area. So, poor people are going to another place for maintaining their normal livelihood. From another FGD at Naodoba of the Shariatpur District, the participants reasoned:*

Once we had agricultural land. People would plow crops and lead their lives through agricultural work. A maximum number of people do not have that kind of land to plow crops and hence, the mobility of people, especially internal migration ratio has been increased a bit in comparison to past to search for livelihood.

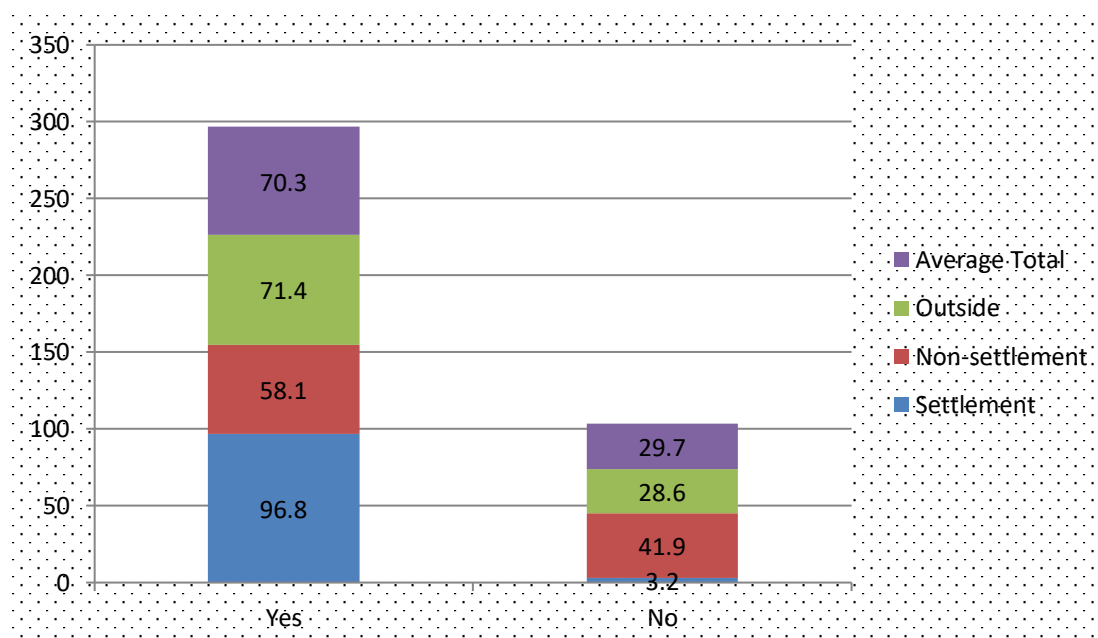


Fig. 4.41. Migration and social mobility

Table 4.78: Chi-square test on displacement due to Padma Bridge

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	777.742	2	.000
Likelihood Ratio	984.664	2	.000
Linear-by-Linear Association	768.644	1	.000
N of Valid Cases	5044		

The households were asked whether they have satisfied with their current occupation (Fig. 4.42). In reply, the highest 51% of the households mentioned as ‘average’ followed by 26% satisfied (29% in settlement), 12% dissatisfied (9% in settlement and 13% non-settlement), seven percent ‘not satisfied at all’ and only five percent (which is six percent in settlement and four percent in non-settlement) mentioned ‘highly satisfied’. The Pearson Chi-Square row is used here to decide whether there is a relationship between current job satisfaction and location variables (Table 4.79). We can see here that Chi-square = 12.939, $p = .024$. *P-value (.012) is small compared to a =0.05 value which renders us to reject the null hypothesis. In other words, we can conclude that there is a statistically significant association between current job satisfaction and location variables; that is, current job satisfaction has different effects across the location categories. However, considering a =0.01 leads to the opposite conclusion in this case.*

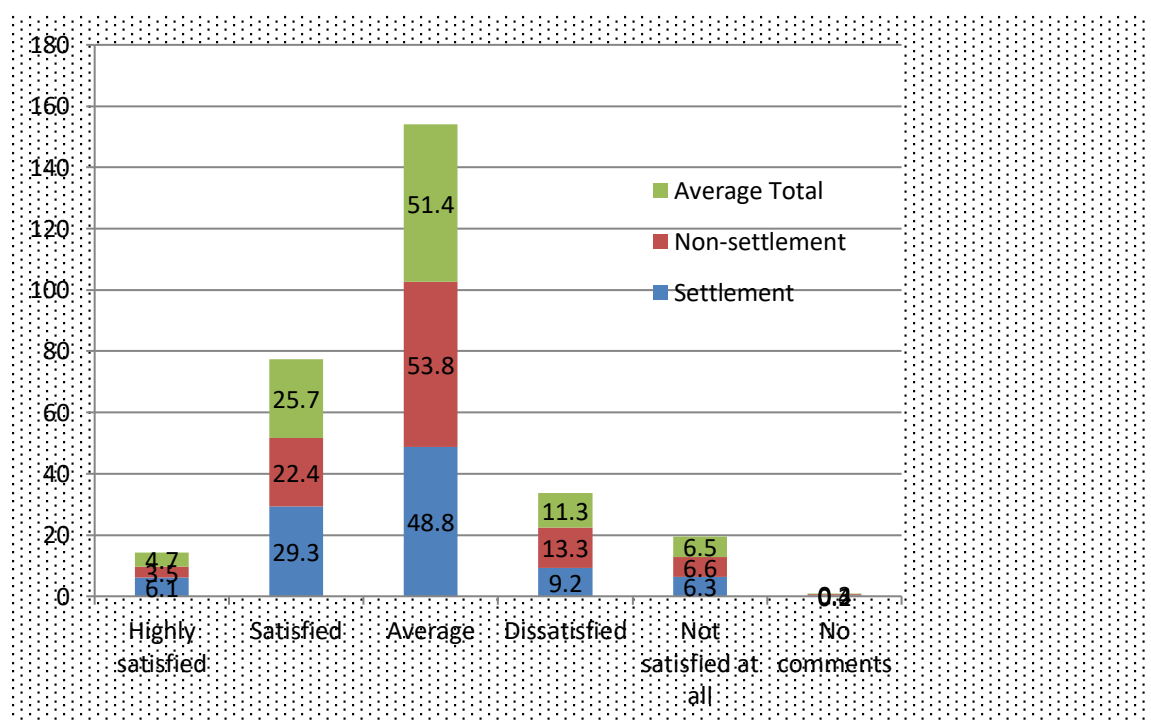


Fig. 4.42 Level of satisfaction with current occupation

Table 4.79: Chi-square test on the level of satisfaction with current occupation

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.939 ^a	5	.024
Likelihood Ratio	12.989	5	.023
Linear-by-Linear Association	8.610	1	.003
N of Valid Cases	970		

The study found a wide range of occupations that the household was involved before coming in the Padma Bridge Project though in most of the occupations the number of households is found low (Table 4.80). The highest number of households were involved in agricultural work before coming in the project area which is 45% in non-settlement and 39% in settlement followed by 20% woodworker in non-settlement, 19% small business in the settlement, seven percent each formal job in non-settlement (five percent in settlement) and non-agricultural laborer in the settlement.

Data showed that the highest 62% have been living in the project years last 3 to 10 years in the settlement which is 40% in non-settlement followed by 21% from the starting day of the project which is six percent in the non-settlement area (Fig. 4.43). Comparatively, the non-settlement area households are living a longer period as 34% of them since father generation and 11% are 20-25 years which are three percent and 10% respectively in the settlement area.

Table 4.80: Occupations before coming to PMBP

Occupations before coming	Settlement	Non-settlement	Overall Average
Agriculture	38.9	44.5	42.6
House work	2.4	3.8	3.3
Agricultural laborer	4.5	3.1	3.6
Non-agricultural laborer	6.8	3.5	4.7
Formal job	5.1	7.0	6.4
Bamboo/crane work	0.1	0.2	0.2
Contraction	0.2	0.6	0.4
Fishermen	3.0	1.0	1.7
Boatman	0.3	0.5	0.4
Blacksmith	0.1	0.3	0.0
Kuli	0.2	0.3	0.3
Rickshaw puller	1.8	0.2	0.8
Wood maker	1.0	19.5	0.5
Small business	19.2	0.8	19.4
Unemployment	0.2	0.1	0.6
Retirement	0.1	0.3	0.1
Unable to work	0.1	0.0	0.2
Barber	--	0.0	0.0
Leather business	--	0.0	0.0
Tailoring	0.9	0.8	0.8
Others	15.1	13.3	13.9

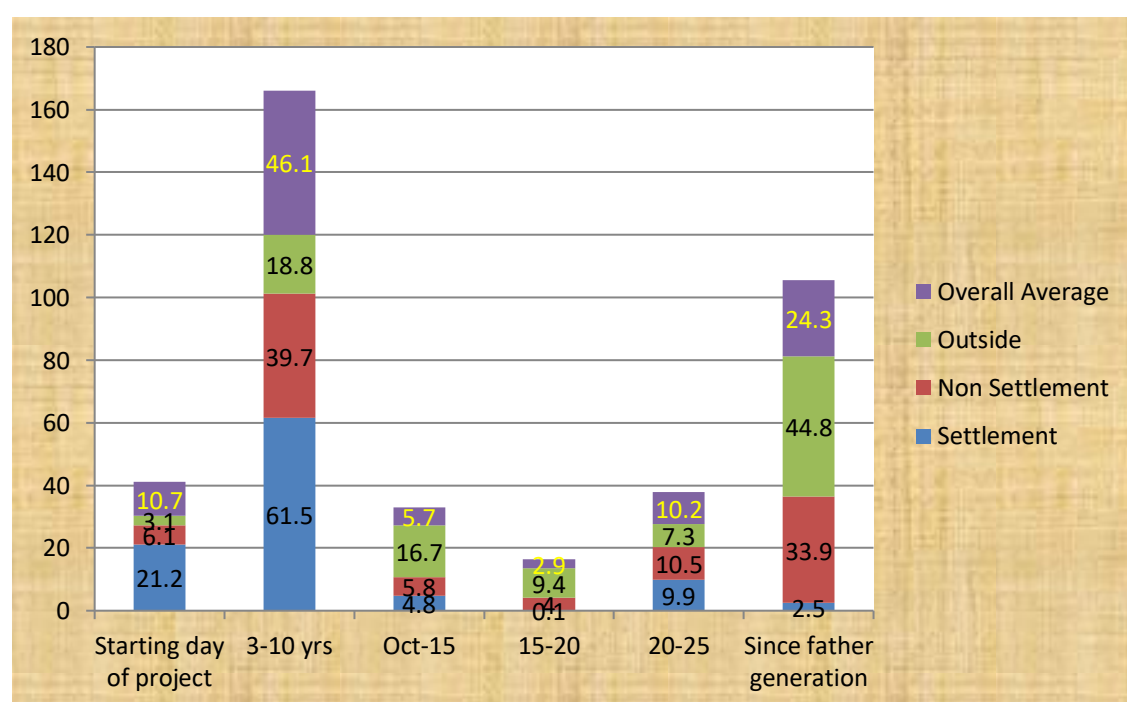


Fig. 4.43 Duration of living with family

There are two major reasons that the households in both settlement and non-settlement households were displaced (Table 4.81). The highest 69% of the settlement households (59% in no-settlement) displaced because of land acquisition where the highest 68% in non-settlement (which is 57% in settlement) displaced due to river erosion. The rest of the causes are for better life 10%, lack of employment nine percent, and cyclone four percent in the settlement area. The Pearson Chi-Square row is used here to decide whether there is a relationship between reasons for displacement and location variables. We can see that Chi-square = 243.226, $p = .000$. *P-value (.000) is very small compared to a =0.05 value which renders us to reject the null hypothesis. In other words, we can conclude that there is a statistically significant association between reasons for displacement and location variables; that is, reasons for displacement have different effects across the location categories (Table 4.82).*

Table 4.81: Reasons for displacement

Reasons for displacement	Settlement	Non-settlement	Outside	Overall Average
Land acquisition	68.6	59.2	5.7	61.7
River erosion	56.9	67.6	94.3	58.9
Flood	3.4	2.2	0	2.6
Water logging	1	1.1	0	1
Salinity	0	0.2	0	0.1
Storms	1	0.5	0	0.7
Cyclone	3.7	1.2	0	2.1
Lack of employment	8.9	1.8	0	4.4
Loss of homestead	6.1	2.7	0	3.9
Better life style	10.4	4	0	6.3
Extend of mortgager	1.5	0.5	0	0.9
Change of occupation	1.2	0.4	0	0.7

Table 4.82: Chi-square on reasons of displacement

Pearson Chi-Square Tests		
		Nature of respondent
§q10.7	Chi-square	243.226
	df	30
	Sig.	.000*
*. The Chi-square statistic is significant at the .05 level.		

Data showed that the people are fine with this current place which is much true among the settlement households as 95% of these do not have any plan to migrate other places in the settlement, which is 81% in the non-settlement (Table 4.83). Still, 19% of the non-settlement households have a plan for such migration. They have many reasons for this migration such as 79% for a better life, 44% better facilities, 42% each for health and education, 30% avoid waterlogging, 25% avoid disasters, and 16% lack of employment among non-settlement households. Among settlement households, the highest 68% lack of employment followed by 53% better life, 44% better facilities, 39% avoid waterlogging, 25% health, and 22% education (Fig. 4.44).

Table 4.83: Households have any plan to migrate this place and reasons for migration

Any plan to migrate to this place?	Settlement	Non-settlement	Overall Average
Yes	5.5	19	14.7
No	94.5	81	85.3
Reasons for migration			
Avoid waterlogging	39.4	29.9	31.1
Degeneration	1.1	3.6	3.2
Avoid disaster, flood, cyclone, storms	5.3	25.4	22.7
Influence of local leaders	3.2	2.6	2.7
Lack of employment	68.1	15.5	22.4
Better life	53.2	79.2	75.7
Health	24.5	42.2	39.8
Education	22.3	42.3	39.7
Better facilities	43.6	43.5	43.5
Others	10.6	10.7	10.7

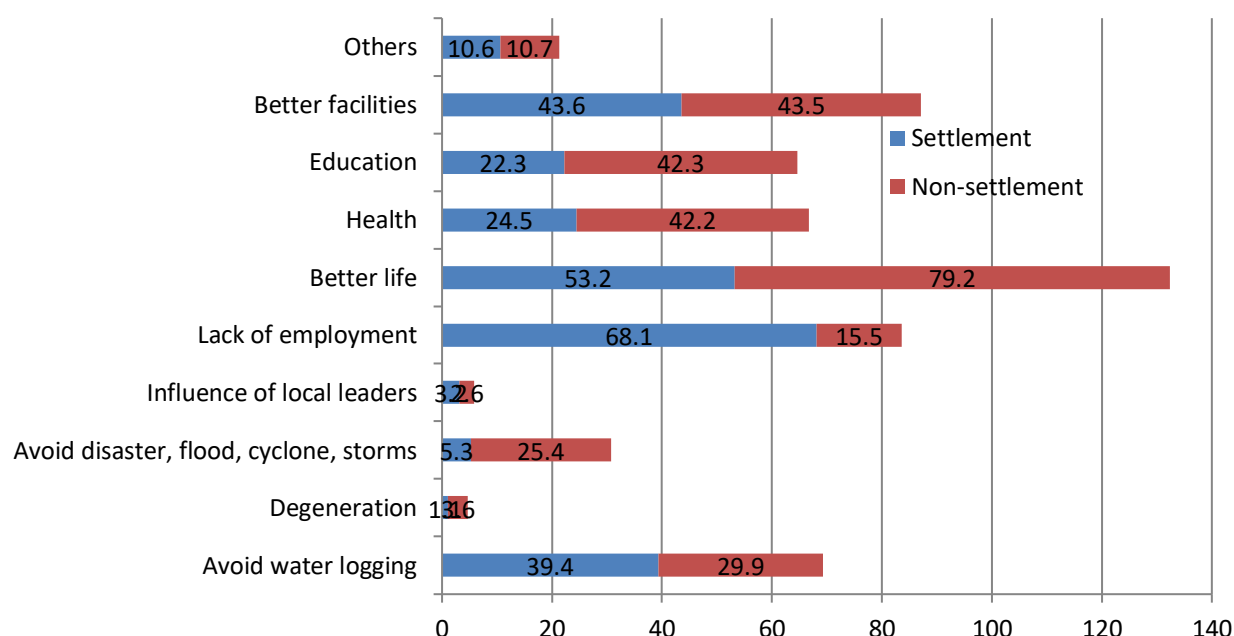


Fig. 4.44 Households' reasons for migration if they have a plan

Data showed that only 20% of the household members migrated to other places for livelihood purposes and the rest 80% did not (Table 4.84). Among those, 96% (98% in settlement area) male family members were migrated for this purpose. The finding showed that the highest

59% migrated outside the country followed by 35% (41% in settlement) in Dhaka and four percent in other areas. Only two percent migrated to neighboring places. The family members who migrated were involved in different occupations. Only nine percent of the family migrated to other places for livelihood permanently which is four percent in settlement and 10% non-settlement areas. More than 80% (71% settlement and 81% non-settlement) migrated inside the country and the rest 20% outside the country (29% settlement and 19% non-settlement) (Table 4.85 & Fig. 4.45). In support of the above finding, the qualitative data from an in-depth case interviewee Nurul (a non-settlement inhabitant in Shibchar) mentioned that social mobility has increased a lot, fewer people are migrated, who are migrated are very temporary but they are coming back when they are going to be older. With social mobility, social security has improved here, even the women can come back at night time without any scare.

Table 4.84: Households' family members migrate to other places for livelihoods

Migration status	Settlement	Non-settlement	Outside	Overall Average
Yes	19.4	20.2	11.5	19.8
No	80.6	79.8	88.5	80.2
Gender wise migration				
Male	97.7	96	72.7	96.3
Female	2.3	4	27.3	3.7
Migrated Place				
Neighbor place	1.3	2.2	0	1.9
In Dhaka	40.8	33	0	35
Other Area	4.6	3.6	0	3.9
Outside Country	53.3	61.2	100	59.2
Work/occupation				
Day labor	17.6	15.7	63.6	16.8
Hawker	1	1.5	0	1.3
Rickshaw puller	4.3	1.9	0	2.7
Bus Driver/Helper	2.7	2.8	0	2.8
Garments Worker	5.3	6.1	0	5.8
Other	69.1	71.9	36.4	70.6

Table 4.85: Households' family migrate to other places for livelihood permanently

	Settlement	Non-settlement	Outside	Overall Average
Member migrated permanently				
Yes	4.3	10	82.8	8.6
No	95.7	90	17.2	91.4
Migrate to other places for livelihood permanently				
Outside the country	29.2	19.3		19.8
Inside the country	70.8	80.7	100	80.2

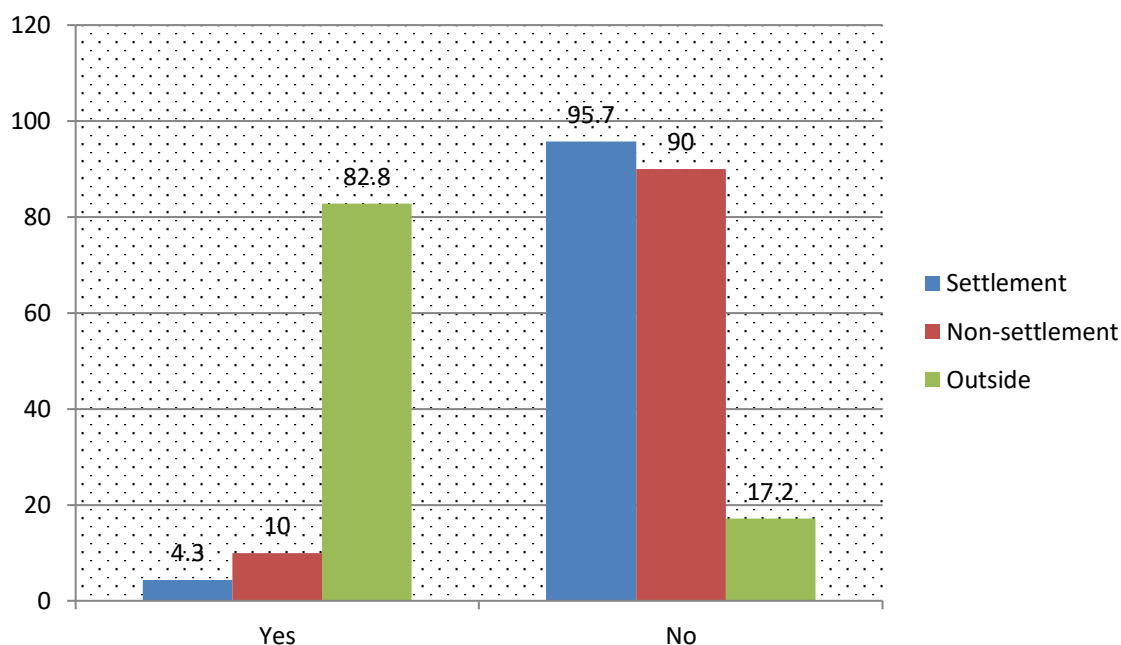


Fig. 4.45 Households' family migrate to other places for livelihood permanently

Data showed that more than 73% (67% in settlement and 73% non-settlement) come to the village during any festival and only 27% come (Table 4.86 & Fig. 4.46). This is significant that nearly 61% of the households (53% in settlement and 64% in non-settlement) are not satisfied with their present life. The household 39% who mentioned that they are satisfied, they mentioned some reasons such as 69% for better resettlement (only 11 in non-settlement), 64% better accommodation (only 17% among non-settlement), 59% more facilities for income, and 45% for better social opportunities among settlement households. On the other hand, 53% for more facilities for income and 36% for better social opportunities among non-settlement households (Fig. 4.47). The Pearson Chi-Square= 102.224, $p = .000$ as p -value (.000) is small compared to a =0.05 value which renders us to reject the null hypothesis. In other words, we can conclude that there is a statistically significant association between livelihood satisfaction and location variables (Table 4.87). On the other hand, the Pearson Chi-Square = 1067.222, $p = .000$ As p -value (.000) is small compared to a =0.05 value which renders us to reject the null hypothesis. In other words, we can conclude that there is a statistically significant association between livelihood satisfaction reasons and location variables; that is, livelihood satisfaction reasons have different effects across the location categories (Table 4.88). One Union Parishad member of an FGD of the non-settlement area of the Mathbor Char Union of the Shibchar Upazila of the Madaripur District expressed:

The Padma Bridge is our great inspiration towards our socioeconomic development. It is a great contribution to our present government. This bridge increases the attraction of the outsiders. Many people are now moving to this area from different parts of the country. People are doing good business here and they are earning a lot. Even many people have come back from outside the countries and doing varieties of business here.

Table 4.86: Households come in the village during any festival

Status to come to the village during any festival	Settlement	Non-settlement	Outside	Overall Average
Yes	32.8	27.4	--	26.6
No	67.2	72.6	100	73.4
Satisfied with present life				
Yes	47.5	35.9	7.2	39.1
No	52.5	64.1	92.8	60.9
Reasons for satisfying with the present form of livelihoods				
Better resettlement	68.6	11.1	14.3	35
More facilities for income	59.2	53	85.7	55.7
Better accommodation	63.8	17.2	28.6	36.6
Better social opportunities	44.5	35.8	28.6	39.4
Others	7.3	19.9	0	14.6

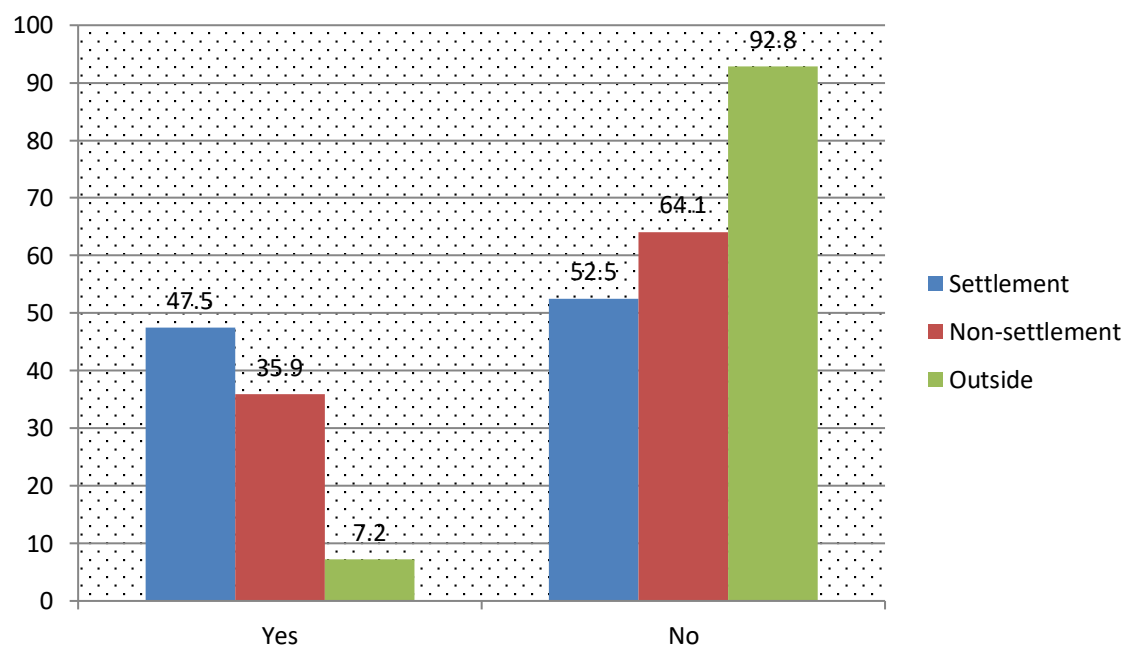


Fig. 4.46 Whether households come in the village during any festival

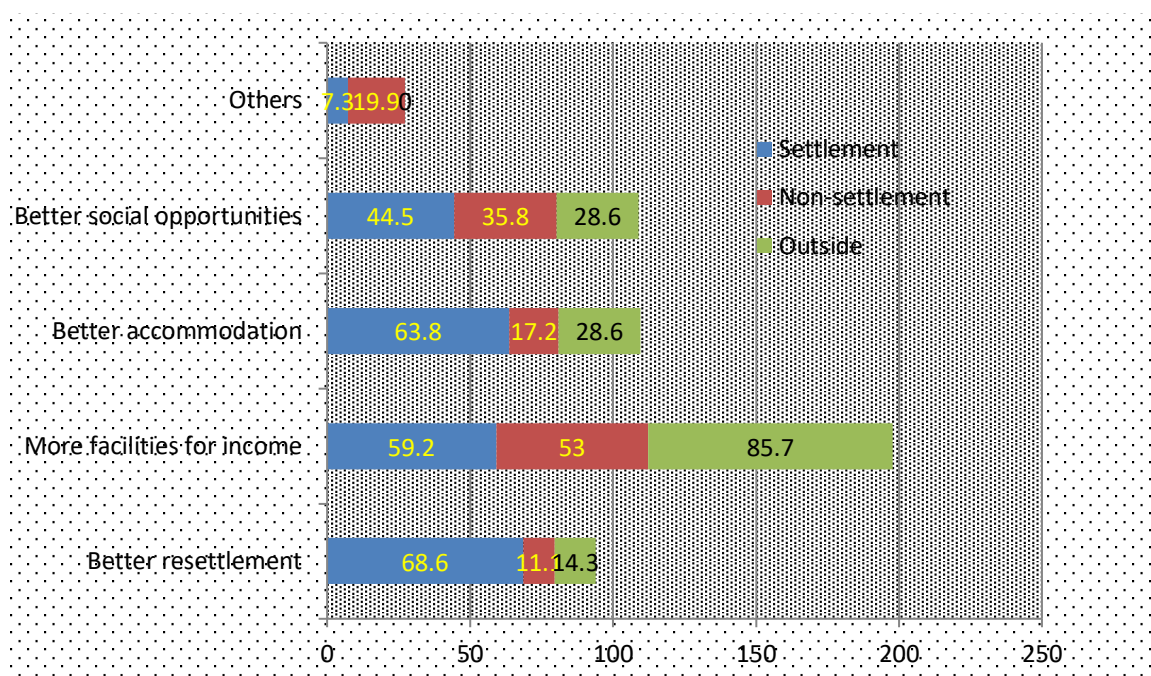


Fig. 4.47 Reasons households come in the village during any festival

Table 4.87: Chi-square test on satisfaction on the present form of livelihoods

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	102.224	2	.000
Likelihood Ratio	112.104	2	.000
Linear-by-Linear Association	92.120	1	.000
N of Valid Cases	4928		

Table 4.88: Pearson Chi-Square Tests on the reasons of satisfying with the present form of livelihood

		Nature of respondent
\$q10.16	Chi-square	1067.222
	Df	10
	Sig.	.000*
*. The Chi-square statistic is significant at the .05 level.		

Data showed that 83% of the households indicated that their family members or people from other villages have come or migrated to project areas which are the highest 91% in settlement and 79% non-settlement (Table 4.89). The households had to change livelihood patterns last five years due to PMBP. The highest 43% changed partially followed by 31%, not at all, 14% full, and 12% moderate. No significant variation was found in the locations. They migrated to project or nearby areas for different reasons. The highest 62% of the households for labour in PMB project followed by 54% (37% in settlement and 62% non-settlement) river erosions, 50% employment facilities, 36% better environment (56% settlement and lower a half 27% in non-settlement), 31% infrastructural development (49% settlement and 21% non-settlement), 27% security services (38% settlement), and 17% educational facilities (27% settlement) (Fig. 4.49). In this aspect, Talib in an in-depth case interview of the settlement area told:

I was a day laborer at ferry ghat (ferry station). I had no address (residence). I have changed my occupations 16 times due to river erosion. Now I am doing well with my business. What I got from the government is not bad at all, it is quite fine with my life right now.

In an in-depth case interview of the settlement area, Hafiza (74 years old woman) described that she underscored economic vulnerabilities and challenges due to the construction of the PMB project. She conveyed that the quality of houses has been improved but the income sources have been decreased and thus people become unemployed and poorer than before. She is no exception to this situation. Because of unemployment, her two sons have migrated to Dhaka and drive a taxi for means of living. Her daughter also works as a domestic worker in Dhaka. Only the elder son gives Tk. 3,000 in each month which is not enough for their survival.

Table 4.89: Type of change in livelihood pattern of household members and reasons for migration to project areas during the last 5 years

	Settlement	Non-settlement	Outside	Overall Average
Family members or people from other villages have come or migrated to project areas				
Yes	91.2	79.2	91	83.2
No	8.8	20.8	9	16.8
Type of change in livelihood pattern of household members during the last 5 years				
Full	14.4	13.8	2.1	13.8
Moderate	14.2	11.2	9.6	12.1
Partially	41.8	43.3	52.1	43.0
Not at all	29.6	31.7	36.2	31.1
Reasons for migration to project areas or nearby areas				
Better environment	55.6	26.8	2.2	36
Infrastructural development	48.8	21.8	2.2	30.5
Educational facilities	27.3	11.4	0	16.5
Health facilities	25.9	9.3	1.1	14.7
Employment facilities	50.3	50.7	15.4	49.8
Security services	38	23.7	0	28
River erosion	36.8	62.2	84.6	54.1
Labor in PMB project	60.1	63.1	68.1	62.2
Others	4.6	4.8	6.6	4.8

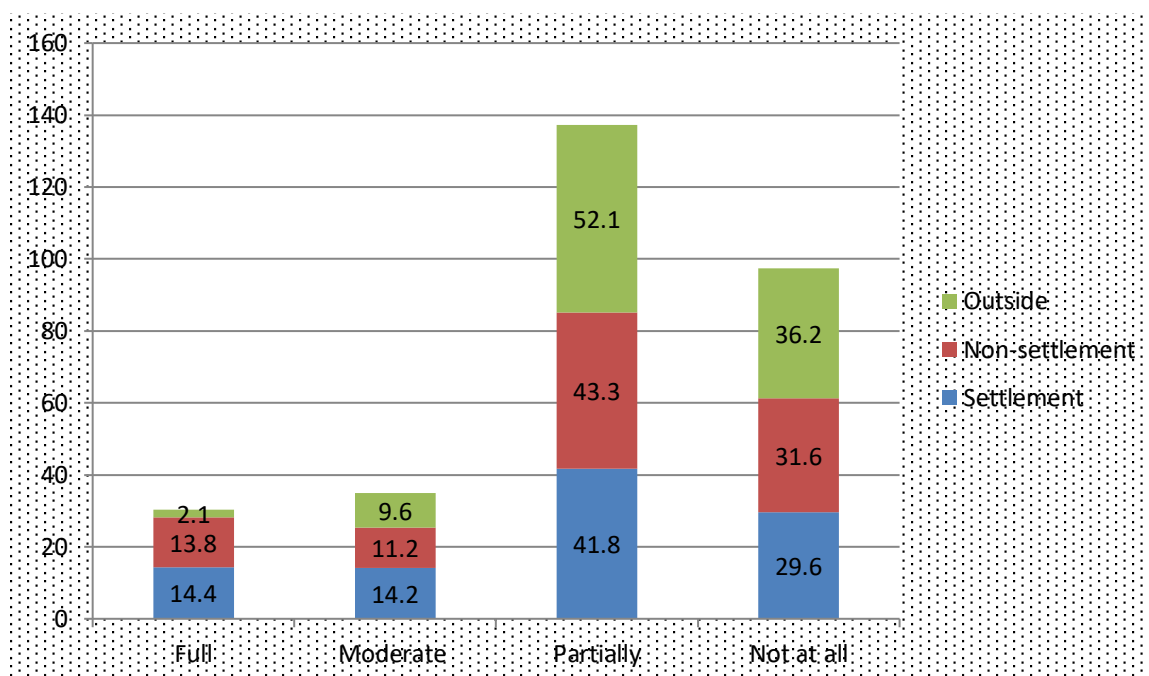


Fig. 4.48 Type of change in livelihood pattern of household members during the last 5 years

4.11. Livelihood Choices and Competencies

Data showed that the highest 60% of the affected households 1 member was engaged in income-generating activities followed by 2 members of 26% households, three members are 10 households (Table 4.90). More than three percent of the households' four members were engaged in income generation activities and below one percent five and above family members. The chi-square value and p-value indicate that the null hypothesis of no relationship between numbers of family members engaged in income-generating activities and types of the household may have rejected at a 5 % level of significance. Thus, we can conclude that they are associated (Table 4.91).

Table 4.90: Number of family members engaged in income-generating activities

Number of family members engaged in income-generating activities	Settlement	Non-Settlement	Outside	Overall Average
1	58.2	61.2	42.3	59.9
2	27.4	26.2	34	26.7
3	10.9	9.9	21.6	10.4
4	2.7	2.1	2.1	2.3
5+	0.8	0.6	0	0.7

Table 4.91: Chi-Square Tests on Number of family members engaged in income-generating activities

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.623 ^a	12	.006
Likelihood Ratio	25.696	12	.012
Linear-by-Linear Association	.958	1	.328
N of Valid Cases	5058		

The training facilities in the affected areas are fund meager; only 15% of the households mentioned received training which is the lower 13% in settlement and 16% non-settlement, and only three percent in outside residence (Table 4.92). They only received income-generating training which is 97%, whereas some other training such as disaster training, leadership training, health-related training, and community awareness training are found very poor. The highest 59% of them received training from NGOs followed by 22% from the Padma Multipurpose Bridge project (Fig. 4.49). This is assumed that these two types of training can be distributed one with another as some NGOs are providing training as a partner organization of the Padma Multipurpose Bridge project. The rest 12% took training by their initiatives and four percent from religious institutions. The Eco-Social Development Organization (ESDO) has initiated to provide 27 types of training on different trades that will cover a total of 5,165 people. Trade and Upazila wise of this training distribution are provided in Appendix 1. The training facilities outside of the project are absent except for project-based training facilities. The Pearson Chi-Square test shows that $\chi^2 = 21.577$, $p = .000$. *P-value (.000) is small compared to a $\alpha = 0.05$ value which renders us to reject the null hypothesis. In other words, we can conclude that there is a statistically significant association between training on livelihood development and location variables; that is, training on livelihood development has different effects across the location categories (Table 4.93).*

Our qualitative findings obtained from FGDs and in-depth case interviews are consistent with the quantitative findings on training facilities in both settlement and non-settlement areas. We have abridged all sources of such findings: The participation of the public, private organization, and local government in development works is present in the project area but their active actions are not appreciable. Although infrastructure, road communication, and housing facilities are good, free education, training and health services, disaster management facilities, and scope of self-employment are not easily available to the people who need to do something for their individual and community development. The local government's role in community development is poor. Some participants reported that the Union Parishad chairman and members should do more for the wellbeing of the people living in the affected areas. When the households experience some difficulties like family discords on money or materials, need the mobilization of youth for development or preventing potential threats of natural disasters communicate with the local government authority. But their actions in this regard were not found to be satisfactory. Even there are no local initiatives such as community-based organizations (CBOs) who will initiative training facilities for lives and livelihoods though there are many interest groups such as youth, women, and unemployed people who can get such training facilities from such local initiatives. A few NGOs are working for providing training and development facilities for the local people but their help is limited for microcredit, health, and education, but very few are interested to provide training facilities, but this is important for the betterment of the local people.

Table 4.92: Households' family members ever received training on livelihood development

	Settlement	Non-settlement	Outside	Average Total
Yes	12.7	16.3	3.1	14.9
No	87.3	83.7	96.9	85.1
Name of the received training				
Income generating training	98.9	96.7	100.0	97.3
Coping disaster	0.6	1.6		1.4
Leadership development		0.4		0.3
Health related	0.6	0.4		0.5
Awareness	0	0.8		0.6
Institutions for training				
From project	24.6	21.4	100.0	22.4
NGOs	53.3	61.1		58.9
Individual initiatives	20.4	8.2		11.5
Religious institutions	0.6	4.5		3.5
Others	1.2	4.8		3.8

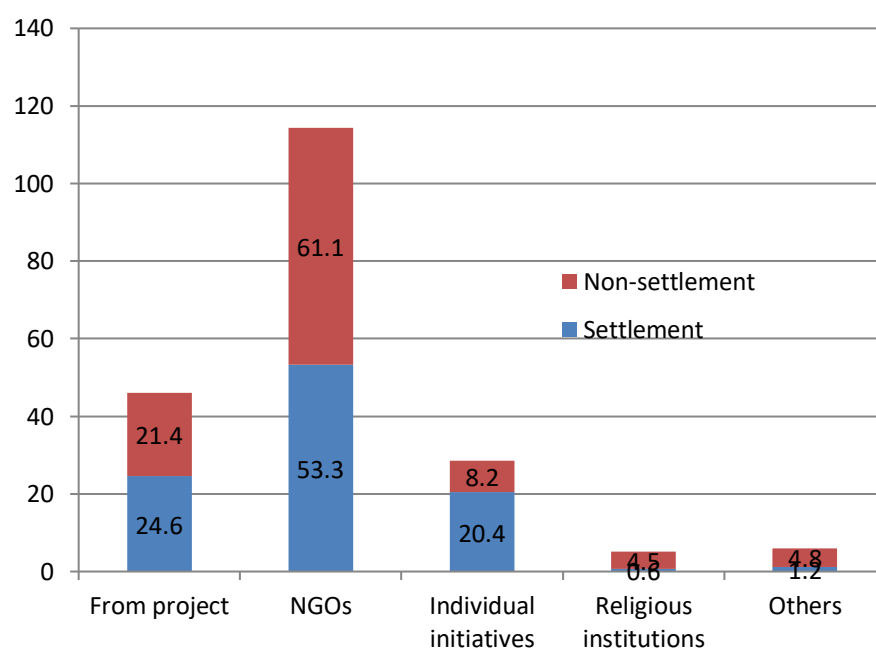


Fig. 4.49 Sources of households' family members ever received training on livelihood development

Table 4.93: Chi-square test on households' family members ever received any training on livelihood development

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.577 ^a	2	.000
Likelihood Ratio	26.075	2	.000
Linear-by-Linear Association	3.295	1	.069
N of Valid Cases	4957		

This study asked 11 types of income generation livelihood skills of the family members to the households (Table 4.94). This is remarkably noted that the highest number of all three categories of households (47% to 98%) mentioned 'not good at all' and in many cases, these numbers are more than 80%. Even the numbers of households on this opinion are found significantly high among the settlement households. This is also found in the higher number of households in the settlement areas mentioned that their livelihood skills are 'not good'. In many cases, the numbers are nearly 20%. It is because as we found the findings earlier that the affected community has very limited training facilities. Very few numbers of respondents mentioned these as 'good' and 'very good' except agriculture which is found 12%, 19% and 55% 'good' and 16%, 18%, and 11% 'very good' respectively among settlement, non-settlement and outside households; and tailoring 18% and 12% 'good' among settlement and non-settlement. The number of households who mentioned 'fair' also found very low except agriculture and livestock rearing which are ranged from 11% to 14%. Amazingly, nearly 46% of the people cannot use their training (Table 4.95). The cause might be there is no opportunity persistent in the community or they did not get any supportive facilities such as loans to use this training. Nearly 31% can use this training moderately and 24% can use decently.

The qualitative findings explored more astute and deeper understandings about the income generation livelihood skills and its quality. Due to PMB, the diversity of the availability occupation has decreased. In-depth case interview of the settlement area, Faruk recalled his earlier days:

I had the opportunities to engage with different works on different seasons, for instance, fishing, farming, boating, etc. but there are very limited prospects for doing those or some agricultural activities now. The occupational diversity is going to be limited and if any person loses his/her job, s/he cannot find another one. The secondary occupations are also limited.

Regarding livelihood and people's mobility, an in-depth case interviewee Harun at non-settlement area said:

It is the truth that once people of this locality had the land. They were farmers ancestrally and would plow lands like paddy, potato, onion, garlic, etc. but after the acquisition, they have lost their land instead of money. A large portion of the people could not utilize the money that they received, spent in the non-productive sector and consequently, they have become poorer losing their land as well as compensated money. Many traditional farmers are now rickshaw puller, auto driver, or day laborer.

A dozen in-depth case interviewees and many participants of the FGDs in both settlement and non-settlement reported: Government executes numerous programs under the social safety-net but many eligible people are not receiving any such benefit. We think that the amount of programs executed by the government is not sufficient. The number should be increased immediately. Besides, they do not see any such philanthropic or skill-based programs run by NGOs or local actors. Regarding women's involvement in job training or involvement in any income generation programs, people do not see any big changes. Jalal, a non-settlement inhabitant, around twenty participants in in-depth case interviews and a good number of FGD participants mentioned that they got training from the project but did not get any help to utilize the knowledge of that training. There was no loan facility from the project.



Image: PMBP Team is in a workshop on communication & skills development training, Source: BBA

Table 4.94: Households' opinions on the types of livelihood skills households' family members have

	Very good			Good			Fair			Poor			Not good			Not good at all		
Name of the income generating activities	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Tailoring	9.6	9.3	7	17.7	11.8	6	10	12.4	9	2.2	4.9	0	9.1	6.4	1	51.3	55.2	77
Grocery shop	7	7.1	6	8.6	11.7	13	9.6	11.3	8	2.2	3	0	10.8	6	1	61.7	60.9	72
Rickshaw/Van pulling	5.8	4.1	7	7.5	3.7	10	2.9	2.7	1	0.9	4.2	0	14.8	10.7	1	68.1	74.6	81
Fishing	3.7	5.2	44	4.6	7.1	7	7.1	8.8	4	1.1	3.9	0	12.8	7.8	1	70.7	67.2	44
Agriculture	11.8	19.3	55	16.2	17.7	11	11.1	11.4	5	1.1	1.4	2	5.5	3.1	1	54.3	47.3	26
Hawker	3.3	2.7	3	8.6	9.8	0	2.2	5.6	1	0.7	1	0	14.8	8	1	70.4	72.8	95
Livestock's Rearing	8.1	15	13	21.1	19.3	5	12.3	13.5	11	0.4	1	0	5.5	2.3	0	52.6	49	71
Furniture	1.9	1.1	0	2.3	3.2	0	0.8	3.4	1	0.6	1.4	0	19.8	10.4	1	74.6	80.5	98
Tea Shopkeeper	2.2	1.9	0	3.5	2.1	1	2.4	6.3	1	0.6	3.4	0	17.4	9.9	1	73.9	76.4	97
Sanitary	0.4	0.5	0	0.7	0.7	0	0.5	3.6	1	0.4	1.8	0	20.3	10.9	1	77.7	82.4	98
Boat men	0.6	2	0	1.6	1.9	0	1.8	2.6	1	0.1	3.9	0	18.1	11.1	1	77.7	78.6	98
Others	14.8	13.2	14	16.4	10.1	1	2.8	2.5	4	0.3	0.3	0	8.2	4.4	1	57.5	69.5	80

Table 4.95: Phase of training use

The phase of training use	Settlement	Non-settlement	outside	Average total
Can use decently	28.6	22.5	0	23.9
Can use moderately	30.2	30.4	75	30.6
Cannot use	41.2	47.1	25	45.5

4.12. Strategies to face environment, climatic change, and vulnerabilities

Findings showed that the highest number of households get the natural disaster-related forecast from informal sources. Data showed that 81% among the settlement and 73% non-settlement received this kind of message from their 'neighbor' (Table 4.96 & Fig. 4. 50). The television is found second highest which is 77% and 75% followed by mobile phone 61% and 63% and then friends 49% and 39% and social medias 32% and 27% respectively. The role of radio in this regard is found very low, only 10% and 13% and then newspaper 23% and 28% among both households. On the other hand, the highest 61% of the households' crops were damaged by disaster followed by a 40% decline in water level 39% decline in agricultural production, and 38% drought (Table 4.97 & Fig. 4.51). Comparatively, this happens higher in non-settlement.

Table 4.96: Ways of getting the forecast of natural disasters

Ways of getting forecast of natural disasters	Settlement	Non-settlement	Outside	Total
Radio	9.8	13.1	49.5	12.8
TV	76.5	74.5	51.6	74.7
Newspaper	23	27.9	4.2	26
Friends	48.5	39.4	28.4	42
Neighbors	80.7	72.6	80	75.2
Mobile phone	60.8	62.9	69.5	62.4
Social medias	32.3	27.1	9.5	28.4
Others	1.5	2.2	10.5	2.2

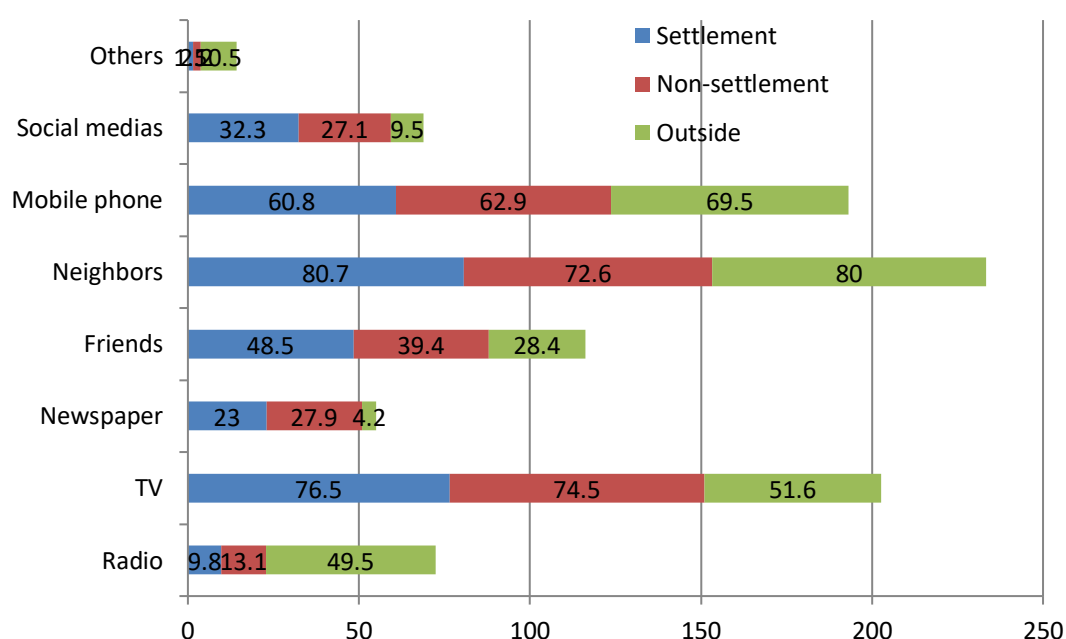
**Fig. 4.50 Ways of getting forecast of natural disasters**

Table 4.97: Types of climate change impacts in the locality

Climate change impacts	Settlement	Non-settlement	Outside	Total
Decline of river water level	29.6	43.5	68.4	39.7
Change of water flows	21.7	30	74.7	28.2
Drought	43.6	33.4	27.4	36.5
Over flooding	5	14.5	48.4	12.2
Cyclone	30.6	33.8	43.2	33
Reduction of agricultural production	28.8	43.4	35.8	38.8
Reduction of wild animals	11.8	13.3	1.1	12.6
Crops damage	48.1	67.1	64.2	61.2
Increase in contamination	64.5	68.6	51.6	67
Increase in dust and filth	60	58.4	42.1	58.6

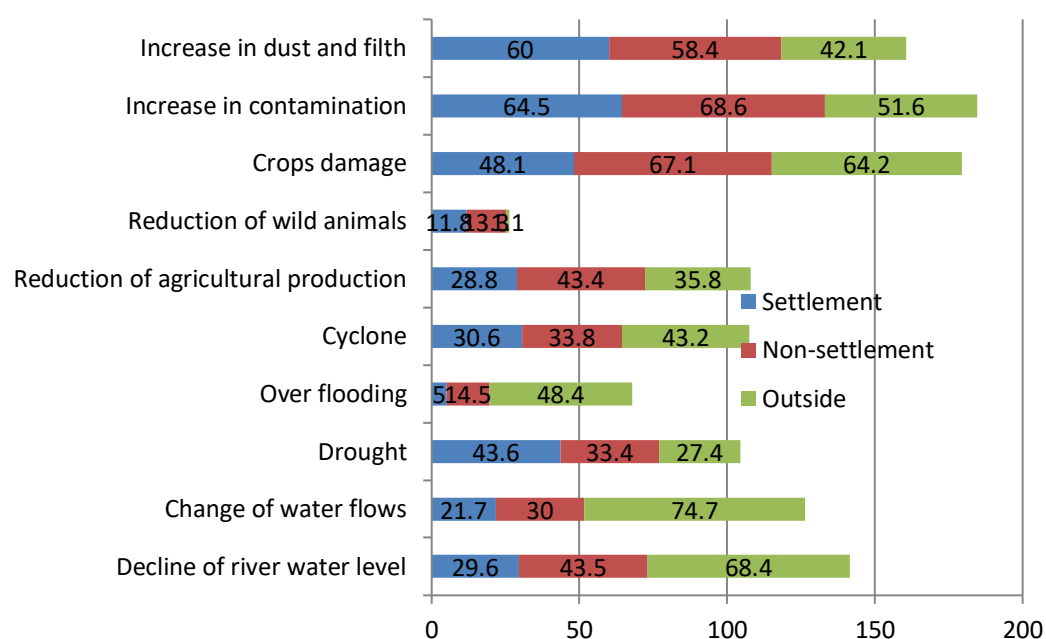


Fig. 4.51 Types of climate change impacts in the locality

Nearly 86% of the households (76% in settlement and 90% non-settlement and 100% outside) have an environmental impact due to Padma Bridge (Table 4.98 & Fig. 4.52). These impacts include the highest 75% heavy dust which is 71% settlement and 78% non-settlement followed by 20% 'no public toilet' and a very few five percent (seven percent in settlement) mentioned 'increase of diseases' (Fig. 4.53). A significant association is found between climate change impacts and respondents' dwelling status. The Chi-square test gives a p-value <0.001 which is significant at a 1% level of significance. The Chi-square test shows that finding any environmental impact due to the Padma Bridge Project is significantly associated with respondents' dwelling status (Table 4.99).

Table 4.98: Households find any environmental impact due to the Padma Bridge Project

	Settlement	Non-settlement	Outside	Average Total
Environmental impact due to Padma Bridge				
Yes	75.9	89.8	100	85.7
No	24.1	10.2	0	14.3
Types of environmental impacts due to Padma Bridge				
No public toilet	21.7	18.2	33.3	19.5
Heavy dust	70.5	77.6	63.5	75.4
Increase of disease	7.2	3.6	3.1	4.6
Lack of residential place	0.6	0.6		0.6

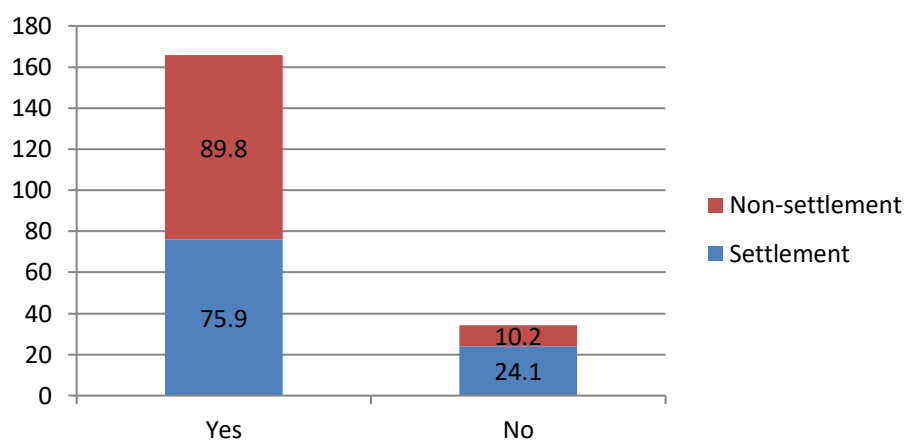


Fig. 4.52 Whether households find any environmental impact due to the Padma Bridge Project

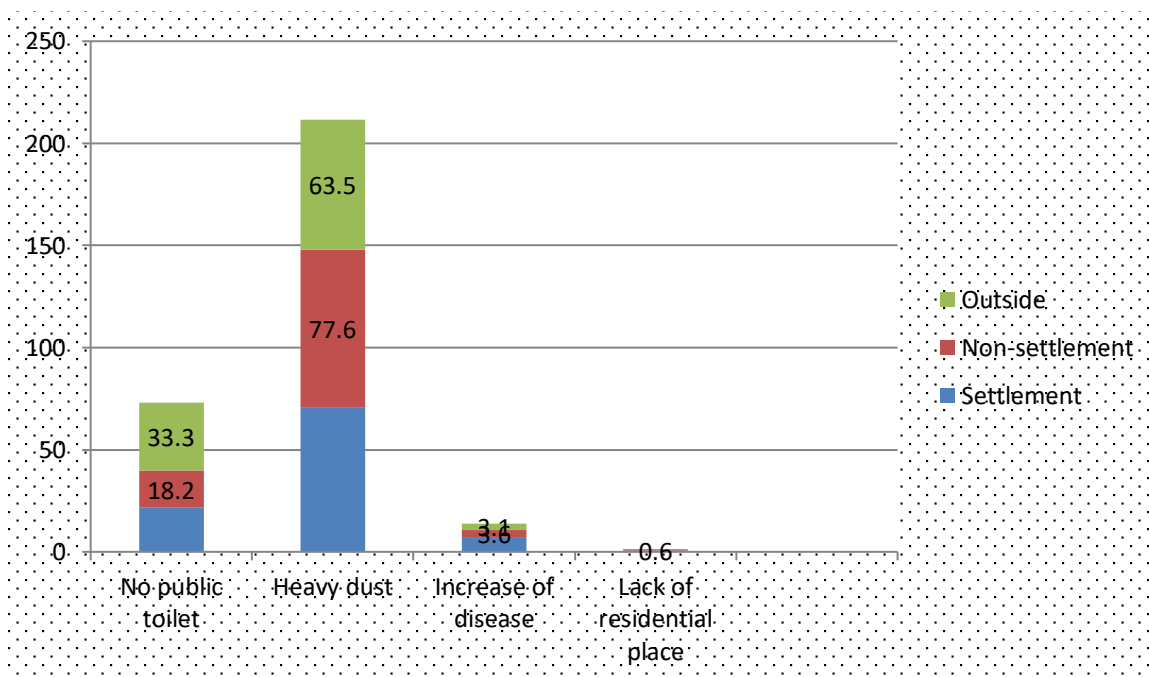


Fig. 4.53 Types of environmental impact due to the Padma Bridge Project

Table: 4.99 Chi-square tests on climate change impacts found in your locality

Pearson Chi-Square Tests			
Whether find environmental impact		Nature of respondent	
\$q12.2	Chi-square	829.620	
	Df	20	
	Sig.	.000*	
*. The Chi-square statistic is significant at the .05 level.			
Find environmental impact	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	184.243 ^a	2	.000
Likelihood Ratio	184.978	2	.000
Linear-by-Linear Association	183.323	1	.000
N of Valid Cases	5076		

The study attempted to know the magnitude of nine types of disasters on a six Likert scale (Table 4.100). The overall findings showed that the impacts of deep fog, heavy rainfall, wild winding, and thunderstorm are higher than other types of disasters. Findings showed that the highest number of households' magnitude is moderate, second-highest low, and then high and very low. The numbers are found very low on 'no' and the lowest 'very high'. The numbers who mentioned moderate is ranged 29% to 52%, where the highest numbers of settlement households 52% are found wild winding followed by 50% thunderstorm, 48% deep fog. On the other hand, among non-settlement households, the highest numbers are found 45% each thunderstorm and wild winding, and 35% each heavy rainfall and deep fog. The number of households is ranged from 11% to 26% who are mentioned the magnitude is low except five percent deep fog among non-settled households, where the highest are found 26% seasonal flood among settlement households followed by 23% heavily rainfall. On the other hand, the highest 23% non-settlement households mentioned seasonal flooding followed by 18% cyclone and 17% drought in this scale. The next highest numbers are found high magnitude which is ranged 14% to 38% on five types of disasters where the highest numbers among the settlement are found 30% drought, 28% deep fog, and 25% wild winding. On the other hand, this kind of magnitude is found highest 38% deep fog among the non-settlement followed by 29% heavy rainfall, 27% drought and 26% wild winding. A good number of households mentioned that there is no magnitude of the disasters. Among those in the settlement households, the highest 59% mentioned river erosion, 52% cyclone, and 42% flood, whereas the highest 49% in non-settlement households mentioned this opinion followed by 31% river erosion, and 20% flood. The highest eight percent in settlement households mentioned that the magnitude was 'very high' by deep fog which is also the highest 17% in non-settlement households.

The study calculated the number of households who were affected by nine types of natural disasters in the last five years (Table 4.101). The overall findings showed that different types of disasters had different negative impacts such as most of the affected households lost their trees and they faced environmental damage, and then their houses were damaged and they were also injured/wounded by some kind of disasters. The numbers of households who lost their trees are ranged from 33% to 83% and in many cases, the percentages were more than

50%. The highest numbers of the settlement households were found in this category are 82% storm, 76% cyclone, 49% heavy rainfall, and 38% drought. Among the non-settlement, these numbers are found highest 83% storm, 65% flood, 54% river erosion, 53% thunderstorm, 43% seasonal flood, and 42% cyclone. 34% to 66% of the households were faced with environmental damages except for 19% river erosion among settlement. Among settlement households, the highest 55% deep fog, 48% heavy rainfall, 45% flood; among non-settlement, the highest numbers are found 66% drought, 61% flood, 50% heavy rainfall, 48% each seasonal flooding, and deep fog, 46% storm, and 45% thunderstorm. Nearly 70% of their houses are damaged by clone, 46% storm, and 32% heavy rainfall in settlement area which are 51% by storm, 47% by river erosion, and 37% cyclone in non-settlement. They were also injured by river erosion 18%, cyclone nine percent, and thunderstorm eight percent in the non-settlement area. A significant number of non-settlement households had financial losses which are found 52% river erosion, 46% flood, 41% storm, and 40% seasonal flooding.

The study also looked at some other impacts of natural disasters such as the death of livestock, crop damage, collapse of living sources, diseases/health problems, and death of the human. From the death of livestock, it is found that the highest number 13% of the settlement households are affected by river erosion which is the highest 11% by a thunderstorm. Large numbers of households are reported that they are heavily damaged by their crops which are ranged 29% to 64% between settlement and non-settlement households and 100% in outside residence. The highest 64% settlement households had crops damaged, 52% river erosion, 40% droughts, 39% cyclone, and 37% seasonal flood which are 64% flood, 62% river erosion, 53% seasonal flood, 49% each heavy rainfall and drought in the non-settlement area. The heavy rainfall (25% settlement and 21% non-settlement), cyclone (19% settlement and 16% non-settlement), flood (19% settlement and 16% non-settlement), and deep fog (15% settlement and 17% non-settlement) are four natural disasters which collapsed the living sources of the affected areas. In the non-settlement area, the households are facing diseases/health problems which are found 22% by drought, 21% each by seasonal flood and flood, and 20% deep fog. Astonishingly, nearly 15% each of the non-settlement households had human death by cyclone and thunderstorm followed by five percent by the storm which is nine percent in settlement households by a thunderstorm.

The study investigated the government, non-government and local initiatives towards taking steps to face calamities (Table 4.102). In all three types of initiatives, the study found the highest numbers of households who mentioned 'no initiatives' to face the calamities, and then a significant number of respondents also mentioned the initiatives were not adequate. For example, in government initiatives, the higher number of households in all three areas mentioned 'no initiative' are ranged from 60% to 87% except 37% of the settlement households on plantation program where the highest among settlement was found 93% distribution of household followed by 86% distribution of fruit seeds, and 76% food distribution; among non-settlement, the highest 87% distribution of house building equipment, 82% distribution of fruits seeds, and 68% food distribution. The highest 21%

among settlement and 16% non-settlement households mentioned that the awareness program was not adequate. There were three initiatives such as the construction of embankment, plantation program, and pure water management showed adequate and moderate which are ranged from 23% to 31% among settlement areas and that is 17% to 20% among the non-settlement area.

The non-government initiatives were also found very high among all three kinds of households who mentioned 'no initiative' was taken to tackle the calamities which are ranged from 69% to 99% followed by 'not adequate' which are ranged two percent to 19%. More than 11% among non-settlement households mentioned the awareness program was moderate and 10% settlement household also mentioned moderate about the plantation program that the highest four percent mentioned adequately.

Like the previous two initiatives, the local initiatives were also found very low (in many cases these are zero) who mentioned these initiatives were 'adequate' and 'moderate' (Table 4.103). The highest number of households which are ranged from 78% to 99% mentioned that there was 'no initiative' to face calamities. A very small number of households one percent to 12% mentioned that there were some local initiatives, but these were not adequate which are the highest 11% in settlement and 12% in non-settlement on awareness and 14% on food distribution.

Table 4.100: Magnitude of disaster trends

Types of disasters	Magnitude of disaster																	
	Very High			High			Moderate			Low			Very Low			No		
	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Deep Fog	7.9	17.3	42.7	28.4	38.4	18.8	47.5	34.7	34.4	12.2	5.4	3.1	1.4	1.8	01	2.6	2.3	0
Drought	6.5	5.8	22.9	29.8	27	27.1	32.9	28.5	39.6	11.6	16.6	8.3	8.8	10.1	1	10.4	12	1
Flood	0.5	5.1	44.1	3.8	18.1	26.9	11.2	23.3	18.3	25.4	22	9.7	17.2	11.7	0	41.9	19.9	1.1
Heavy Rainfall	0.6	2.8	28.9	18.8	29.1	32.5	38.7	35.3	27.7	23.2	15.6	10.8	10.6	8.7	0	8.1	8.5	0
Seasonal flooding	0.3	2.3	30.8	3.9	14.6	45.1	16	27.5	12.1	25.6	22.7	9.9	20.7	12.9	1.1	33.4	20	1.1
River erosion	2.6	10.4	54.4	1.9	16.4	31.1	8.2	16.1	11.1	9.6	11.1	0	21.9	14.7	0	55.8	31.4	3.3
Wild winding	1.6	3.6	32.3	24.8	26	26	51.7	44.9	35.4	12.7	12.8	2.1	5.2	6	4.2	4	6.6	0
Cyclone	0.2	0.2	28.9	1.2	2.7	9.6	10	10.1	16.9	16	17.7	2.4	20.5	19.9	37.3	52.1	49.3	4.8
Thunder Storm	1.3	3.8	33.7	13.8	17.5	24.2	50.1	45.3	35.8	11.5	13.6	3.2	12.1	10.9	2.1	11.1	8.9	1.1
Other	1.3	3.2	0	4.9	5.3	14.3	4.9	4.6	7.1	2.1	1.6	7.1	3.4	1.4	0	83.6	83.9	71.4

Table 4.101: Natural disasters & impacts in the last five years

Natural disasters & impacts in the last five years	Loss of Trees			Environmental damage			Injury/ Wound			Financial loss			House damage		
	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Flood	32.5	64.6	76.6	44.5	61.3	62.7	0.5	3.1	33.9	29.8	45.7	76.3	11	31.2	84.7
Drought	38.1	38.4	33.3	69	65.8	33.3	0.5	1.2	0	11.4	26.9	5.6	2.5	4.5	0
River erosion	29.2	54.3	47.3	18.8	45.5	32.7	4.2	18.1	23.6	25	52.2	81.8	22.9	47	52.7
Heavy rainfall	49	47.8	13	47.8	49.7	4.3	0.4	1.7	0	31.2	32.9	4.3	32.4	23.8	4.3
Storm	81.8	82.7	87.7	39.7	45.6	13.8	3.8	9	3.1	21	41.2	55.4	45.8	50.7	78.5
Cyclone	76.4	42.2	100	35.4	40.8	0	1.1	8.7	100	31.5	26.2	0	69.7	37.1	0
Deep fog	29.6	41.2	0	55.1	48	13.3	0.4	2.5	0	8.1	22.6	6.7	3.7	4.2	0
Seasonal Flooding	32.1	43.1	60	33.9	48.1	43.3	0.6	1.9	13.3	13.9	40.4	36.7	17	16.6	50
Thunderstorm	35.4	52.5	100	39.3	44.6	16.7	1.9	8.2	16.7	7.4	26.6	0	1.6	11.5	16.7

Table 4.102: Steps were taken to face calamities (Government & NGOs)

	Adequate			Moderate			Not Adequate			No Initiative		
Government initiatives	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Food Distribution	0.3	1.3	0	11.3	10.7	5.1	12.4	20	21.4	76.1	68	73.5
Distribution of House building equipment	0.1	0.2	0	0.3	2	4.1	6.4	11.2	15.3	93.2	86.7	80.6
Pure water arrangement	9.9	3.4	1	12	10.7	5.1	5.3	12.5	7.1	72.8	73.4	86.7
Distribution of fruit seeds	0.1	0.3	0	2.4	4.5	4.1	12	12.8	9.2	85.5	82.4	86.7
Construction of embankment	15.6	9.7	2	25.3	17	6.1	9	15.5	28.6	50.1	57.7	63.3
Plantation Program	17.1	2.5	2	31.2	20.1	2	14.6	18	28.6	37.1	59.5	67.3
Awareness	4.7	3.1	0	23.8	19.5	5.1	20.9	15.7	17.3	50.6	61.7	77.6
NGO initiatives												
Food Distribution	0.1	0.3	0	1	2.6	0	6.1	12.2	9.2	92.8	84.9	90.8
Distribution of House building equipment	0	0.1	0	0.4	1	0	2.3	3.7	8.2	97.3	95.3	91.8
Pure water arrangement	0.8	0.6	0	1.4	2.3	1	3.2	6.8	8.2	94.6	90.3	90.8
Distribution of fruit seeds	0	0.1	0	0.8	1.4	0	2	3.2	4.1	97.3	95.3	95.9
Construction of embankment	0.1	0.1	0	1.6	1.4	0	3.5	5.5	1	94.8	92.9	99
Plantation Program	4.1	0.8	0	10.3	3.2	0	7.8	10.1	1	77.8	85.9	99
Awareness	3.4	1.6	0	8.9	10.7	0	19.3	15	10.2	68.5	72.7	89.8

Table 4.103: Steps were taken to face calamities (Local Initiatives)

	Adequate			Moderate			Not Adequate			No Initiative		
Steps	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Food Distribution	0	0.7	0	1	1.6	0	4.9	14.3	10.2	94.1	83.4	89.8
Distribution of House building equipment	0.1	0.2	0	0.2	0.4	0	1.3	3.6	1	98.5	95.8	99
Pure water arrangement	0.1	0.2	0	0.8	2	1	3.2	5.8	0	96	91.9	99
Distribution of fruit seeds	0	0.1	0	0.7	1.3	0	1.1	4.2	1	98.2	94.4	99
Construction of embankment	0	0.2	0	0.7	1.6	0	1.8	3.7	1	97.5	94.5	99
Plantation Program	0	0.7	0	1	3	0	3.7	8.9	5.1	95.3	87.4	94.9
Awareness	0	1.8	0	2.1	8.2	0	10.8	12	9.2	87.1	78.1	90.8

The households followed some coping strategies to face climate change and disasters where the highest 64% of the households mentioned 'reducing family cost', followed by 64% 'debt', 26% (21% settlement and 28% non-settlement) sale of poultry, 20% food consumption reduction and 12% change occupation (Table 4.104). A small number of households sent their children for income (seven percent), sale materials (six percent), and stopped child education (three percent).

Table 4.104: Types of coping strategies followed to face climate change and disasters

Strategies	Settlement	Non-settlement	Outside	Total
Food consumption reduction	17.3	21.9	15	20.4
Debt	62.9	64.2	88.8	64.3
Reducing family cost	65.1	68.7	73.8	67.7
Sale of poultry	20.9	28.3	13.8	25.8
Sale materials	6.5	6.2	5	6.2
Sale of land	0.6	1.8	5	1.5
Stop child education	1.6	3.8	2.5	3.1
Change occupation	11.6	12.5	7.5	12.1
Send children for income	7.3	6.4	18.8	6.9
Send children to relatives' house	0.8	1.5	1.2	1.3
Beggary	0.3	0.1	0	0.2
Others	10.5	7.2	7.5	8.2

4.13. Positive impacts resulted from the implementation of the Padma Multipurpose Bridge Project

This research asked 21 aspects to the households on the positive aspects of the Padma Multipurpose Bridge Project on their livelihoods on Likert 6 scale points. Data showed that the highest numbers of households at both settlement and non-settlement 'supported' these positive aspects followed by the second highest 'somewhat supported' (Table 4.105). A significant number of households are also highly supported by these positive aspects. A moderate number of households somewhat supported and a few numbers did not give any opinions on these aspects. The households who supported these positive impacts are ranged 11% to 47% (in most of the cases this is more than 20%) among the settlement and non-settlement households, where the highest 47% are found progress in education, 45% amenities have increased, 43% the scope of planed households, and 38% each health services reached to the grassroots level, security of women's movement has increased, and positive attitude of the government has increased. Among non-settlement, this is found 38% road communication has increased, 35% progress in education, 30% each positive attitude of the government has increased and security of women's movement has increased, 29% social mobility has increased.

The second highest households were 'somewhat agreed' about the positive impacts which are ranged 13% to 37% (in many cases these are more than 30%) where the highest three positive impacts are 34% each increased child and maternity services and loan facilities are

increased, and 33% freedom of expression has increased among settlement households and 37% freedom of expression has increased, 34% each amenities have increased and security of women's movement has increased among non-settlement households. A good number of households highly supported on some positive impacts such as 48% road communication has increased, 31% created the scope of planned change, and 28% housing plot allotment has been increased without interference among settlement.

Data showed that a significant number of households did not support that there are positive impacts of PMBP. In some cases, for example, 27% and 31% on income have increased, 26% and 31% on occupational training increased, 24% and 32% on the reduction of poverty, 22% and 49% satisfactory allowances received, 20% and 30% on increased good opportunities by cooperatives, 20% and 27% loan facilities have increased, 17% and 19% decreased child marriage, 16% and 29% on increased child and maternity services, 15% and 28% on social bonding has tightened, and 15% and 17% on social dignity have increased respectively among the

settlement and non-settlement households. No comments were found from nearly 21% and 24% of households on improved good opportunities and 14% and 16% on incomes have increased in both households.

The qualitative investigation presented some comparative and interlining opinions of the respondents on the positive impacts of PMBP. For example, a good number of participants in the FGD held at a non-settlement area at Medinimondol Union under Louhojong Upazila of the Munshigonj District expression their opinions as follows:

95% of the households are happy for the activities of the Padma Multi-Purpose Bridge Project. Those who had houses in the project area and were affected, they



Image: PMBP Team is explaining positive impacts of Padma Multipurpose Bridge, Source: BBA



Image: Tree plantation in affected area under PMBP, Source: BBA

have got the compensation for the house and house shifting cost and supports and whose lands or houses are outside the project location are disappointed as they missed the opportunity.

In an in-depth case interview in a settlement area of the Mathborer Char village of the Shibchar union under the Madaripur District, Faruk argued:

I have seven bighas of land. I lost all my land and housing by PMB. We have got only one household land that is only 7.5 decimals instead of three as my three sons are an adult and they have separate families. I do not get any old-age allowance. I have no progress but finished all.”

On the other hand, Hossain, a non-settlement inhabitant at Mathborer Char union of Shibchar Upazila gave a positive impression about the impact of the Padma Multipurpose Bridge: The Government cannot give full compensation of this PMB as many are immeasurable. I heard that people have got 50 decimals of land instead of 33 decimals. He told us that there was only one school in this area, but now the numbers have increased. The communication system is well in this area. People can move anywhere from this location. As a result, the people’s movement has increased a lot. People can easily move to Dhaka, Khulna, or Faridpur within a shortage of time. There are new clinics and private hospitals in this Upazila.

Hossain added:

I found that people are very happy now, they can contact with others very easily, many people are now visiting us and our social dignity and identity has increased. Women are now better respected; they can get legal support easily from Madaripur town. I do not see any kind of discrimination here. Social peace, integration, and social harmony have increased significantly. Economically, people are very well-off and they are involving in different sectors for income. Social infrastructures have increased including roads, electricity, and drainages. Many markets have been established here, the local business sector has increased that create a lot of income generation activities.

Table 4.105: Positive impacts resulted from the implementation of the Padma Multipurpose Bridge Project

Positive impacts	Highly Support			Support			Somewhat support			Somewhat not support			Do not support			No comment		
	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out	S	NS	Out
Progress observed in education	9.0	9.0		47.4	35.3	8.0	24.2	23.1	12.0	6.0	8.7	14.0	12.2	21.1	63.0	1.1	2.8	3.0
Health services reached to grass-root level	6.7	3.7		38.3	22.4	1.0	27.9	25.3	18.0	9.7	15.1	16.0	16.1	30.2	62.0	1.2	3.3	3.0
Increase child and maternity services	3.3	3.0		33.8	17.2	8.0	33.5	27.8	14.0	8.5	15.1	16.0	16.0	28.5	59.0	5.0	8.3	7.2
The infrastructural change resulted from the standard of living	22.6	9.8		47.4	27.8	1.0	20.9	32.6	24.0	2.4	8.5	16.0	4.2	14.9	55.0	2.6	6.4	4.0
Road communication has increased	47.6	29.6	1.0	35.8	37.8	64.0	13.2	19.0	18.0	0.9	4.0	2.0	1.9	7.8	12.0	0.6	1.9	3.0
Social and cultural bondage has tightened	5.8	3.4		22.2	13.8		32.0	27.6	2.0	21.2	14.8	28.0	15.9	30.2	66.0	2.9	10.2	4.0
Occupational training increased	5.3	4.0		17.0	11.2		25.6	25.2	5.0	16.4	16.0	18.0	25.5	30.9	51.0	10.2	12.7	26.0
Income has increased through changed occupations	5.6	5.1		20.2	12.1	7.0	16.1	18.2	5.0	16.2	16.1	4.0	27.8	31.7	8.0	14.2	16.7	76.0
Amenities of modern life have increased	26.6	10.5		44.6	28.3	8.0	21.2	34.1	16.0	2.3	7.7	15.0	3.4	14.3	58.0	1.9	5.2	3.0
Social dignity has increased	10.8	6.0		29.0	21.1	2.0	26.2	25.2	13.0	16.0	15.4	17.0	14.0	21.7	43.0	3.9	10.6	25.0
Improve good opportunities by cooperatives	16.2	7.2	1.0	38.3	28.7	2.0	31.0	32.2	19.0	3.9	8.9	17.0	4.6	11.5	25.0	6.0	11.5	25.0
Created the scope of planned housing	7.2	2.3		21.9	13.9	1.0	20.9	17.9	1.0	8.9	12.2	1.0	20.2	29.7	3.0	20.9	24.0	94.0
Decrease child marriage	30.6	4.2	1.0	43.2	19.2	5.0	16.0	24.7	15.0	3.3	9.2		4.6	28.4	6.0	2.3	14.3	73.0
Security of women's movement has increased	12.3	6.1	1.0	24.9	25.5	16.0	26.8	24.2	18.0	6.0	8.7	17.0	17.3	19.6	43.0	12.7	16.0	5.0

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Affected People

Freedom of expression has increased	9.0	5.3	1.0	38.0	29.7	14.0	28.6	34.4	22.0	8.8	7.9	22.0	9.3	12.3	37.0	6.2	10.3	4.0
The level of social order has increased	7.4	3.5		27.9	22.1	15.0	32.8	37.0	20.0	12.1	10.9	23.0	12.2	14.9	39.0	7.6	11.6	3.0
Reduction of poverty	9.5	5.8	1.0	28.8	20.1		34.0	30.4	22.0	11.0	14.9	33.0	10.5	17.5	41.0	6.1	11.2	3.0
Satisfactory allowances received as compensation	8.0	3.0		18.6	12.1	10.0	24.1	20.9	20.0	17.8	22.3	25.0	23.9	31.8	41.0	7.6	9.9	4.0
Loan facilities by Govt. and NGOs has increased	12.7	2.4		20.3	10.6	1.0	28.3	17.2	1.0	13.4	15.8	2.0	22.2	48.6	3.0	3.1	5.5	93.0
Housing Plot allotment has been ensured without interference	10.3	2.4	1.0	21.1	14.9		33.3	28.7	1.0	10.2	14.3	2.0	19.4	27.1	2.0	5.8	12.6	94.0
Positive government help	28.4	3.4		33.5	12.2	1.0	23.1	16.3	1.0	4.3	11.7	1.0	8.1	38.6	2.0	2.6	17.8	95.0
Progress observed in education	23.3	7.6	1.0	37.8	30.3	2.0	31.8	30.4	2.0	1.6	12.0	1.0	3.3	13.4	1.0	2.2	6.4	93.0

The study asked the settlement households about the sustainability issue that emerged by Padma Multipurpose Bridge on three main issues such as whether it is bearable, viable, and feasible on using a Likert Scale 6 points (Table 4.106 & Fig. 4.54). Around 90% of the households gave positive responses to these three issues of sustainability. For example, from the bearable aspect, the highest 56% support this which is 20% highly support and 15% somewhat support. On the other hand, from a viable aspect, the highest 59% support this, 25% highly support and 12% somewhat support. Infeasible aspect, 57% support, 27% highly support and 13% somewhat support. A few numbers of households did not support the aspect of bearable which were very low on viable and feasible aspects. It has been observed a highly significant association is found between opinions (bearable, viable, and feasible) as the emergent condition by Padma Multipurpose Bridge and respondents' settlement status. The obtained p-values from Chi-square tests are 0.033, 0.003, and 0.020 respectively, which indicate significant association at a 5% level of significance (Table 4.107). That means, different living areas have a significantly different opinion as to the emergent condition by Padma Multipurpose Bridge.

Table 4.106: Sustainability resulted from the implementation of Padma Multipurpose Bridge Project

Sustainability	Highly support	Support	Somewhat support	Somewhat not support	Do not support	No comment
Bearable	20.3	56.3	15.2	3.7	3.8	0.6
Viable	24.6	59.0	11.8	1.4	2.1	1.2
Feasible	26.6	57.4	13.3	1.3	0.6	0.7

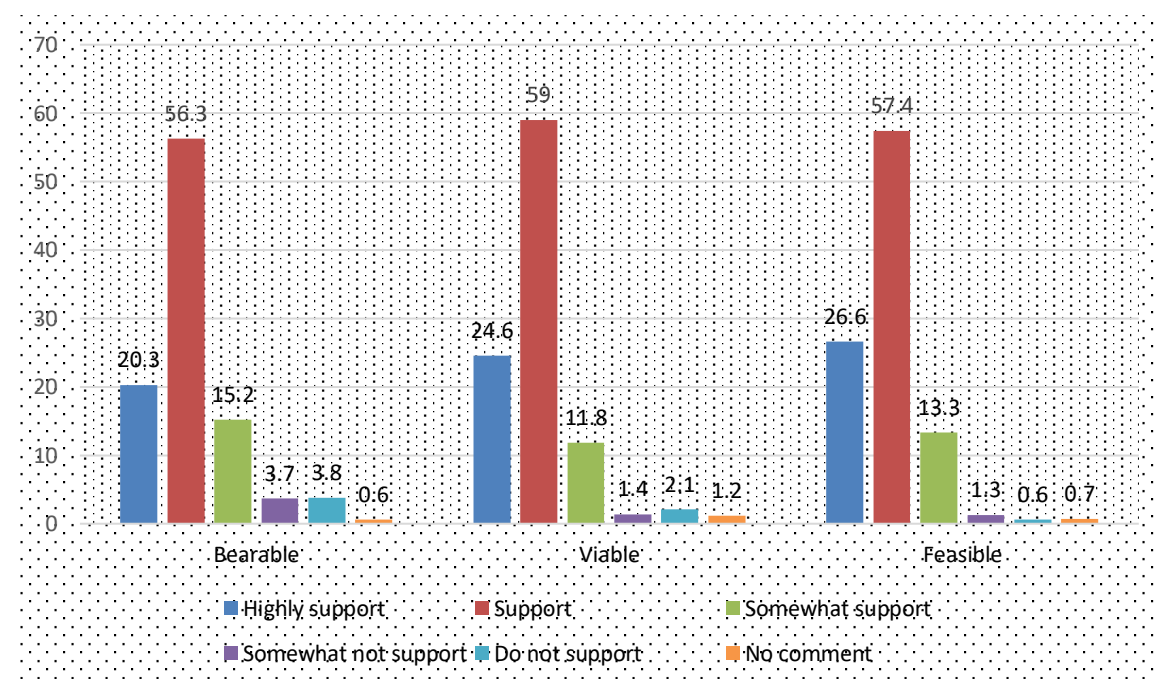


Fig. 4.54 Sustainability resulted from the implementation of Padma Multipurpose Bridge Project

Table 4.107: Chi-Square tests on opinion as to the emergent condition by Padma Multipurpose Bridge

	Value	df	Asymp. Sig. (2-sided)
Bearable			
Pearson Chi-Square	19.626	10	.033
Likelihood Ratio	14.768	10	.141
Linear-by-Linear Association	6.965	1	.008
N of Valid Cases	1770		
Viable			
Pearson Chi-Square	26.389	10	.003
Likelihood Ratio	18.655	10	.045
Linear-by-Linear Association	11.723	1	.001
N of Valid Cases	1760		
Feasible			
Pearson Chi-Square	21.205	10	.020
Likelihood Ratio	17.659	10	.061
Linear-by-Linear Association	15.079	1	.000
N of Valid Cases	1759		

The study asked the settlement households how their next generation will enjoy the benefits/facilities that emerged by the Padma Multipurpose Bridge Project on Liker Scale 6 points (Table 4.108). Like sustainability issues, more than 90% and even in some cases, a higher number of households gave positive opinions on different benefits and facilities that their next generation will enjoy. Among those, the highest number of households mentioned these benefits/facilities will be enjoyable followed by highly enjoyable and then moderately enjoyable. For example, the highest 52% mentioned food and nutrition will be enjoyable followed by 51% health facilities, 49% education, 43% financial opportunity, 44% pure drinking water, and 41% drinking water. The household who mentioned 'highly enjoyable' is 43% on business, 42% each employment and education, 32% health facility, 26% pure drinking water, and 25% training facility. The households who mentioned these facilities will be 'moderately enjoyable' are 37% social assistance, 36% social allowance, 27% training facilities, and 24% pure drinking water. A very few numbers of households mentioned those as difficulty followed the lower numbers (all are below one percent except social allowance three percent) mentioned highly difficult and a few numbers did not give any comments and it was 20% on social allowance and 15% on social assistance.

The qualitative data derived from FGDs and in-depth case interviews contradicted with the quantitative data. A total of 12 FGDs at both areas have given the following expression:

The Padma Bridge project was supposed to be negative and disappointing. Just because, a good number of people who lived on agricultural lands and crop production activities, now many of them are leading their lives in a variety of hardships that have led to mental agonies. Because, straight economic conditions resulting from land acquisition, loss of cultivable lands where they produced a wide range of crops to maintain livelihoods. Many of them were found to be anxious about the present and future conditions of life. Some participants reported a sense of disappointment because they sometimes feel loneliness, cannot find anybody/relatives readily available to provide helps in material and non-material terms in times of life crisis. Some

participants reported that their life in the future will get in uncertainties. One of the basic reasons, as they reported, is that upon completion of this bridge project, a huge number of people of the locality will have to lose their present occupations by which they are still managing their livelihoods.

In a non-settlement inhabitant in Medinimondal, around 18 in-depth case interviewees argues:

Earlier time, roads were wider, but now it is narrower due to land acquisition. We are feeling very frustrated because if we lose our shop then how we will survive here. We have frustration and pressure to our future, the situation of land will be... friends, relative left this place...feeling mental pressure...roads and surroundings are not up to the mark.

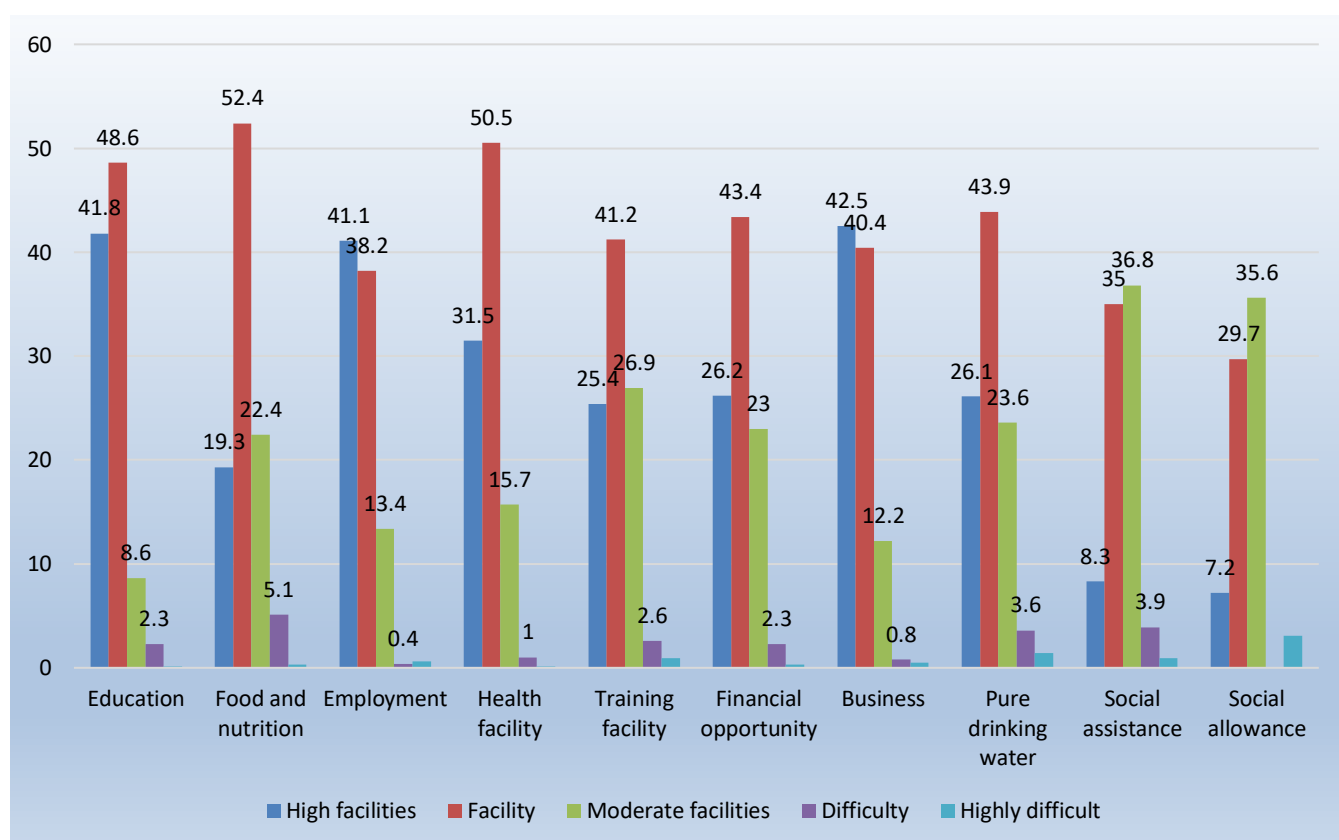


Fig. 4.55 Households next generation enjoy the benefits/facilities emerged by the Padma Multipurpose Bridge project

4.14 Qualitative Data Analysis on Selected Cases: FGDs and In-depth Case Interviews

This sub-section highlights the qualitative findings of four focus group discussions (FGDs) and four in-depth case interviews (two from settlement areas and two from non-settlement areas each). The main objective is to give detail real and contextual information on different aspects of the lives and livelihoods of the affected people.

Focus Group Discussions (FGDs)

FGD 1 in the settlement area

An FGD was held in one School of the settlement area of the Mathbor Char Union of the Shibchar Upazila of the Madaripur District. A total 15 participants from diverse occupations such as health worker, businessman, school and madras teachers, farmers, member of Union Parishad, Pharmacist, Medical Officer, residents of the settlement, Peon and night guard of a school under Padma Multipurpose Bridge, Imam of a mosque, and housewife participated in this FGD session. Their age was ranged from 18 to 68 years and the education level was illiterate to Masters. Many of them have MBA and Med Degrees. The main objective of this FGD was to explore the participants' observation of the various impacts of the Padma Multipurpose Bridge project. The participants told about the economic, social, cultural, and psychological aspects of whether most of the participants in this settlement area expressed the negative impacts of this project.

One worker in the community mentioned:

Due do PMB we have not many works at this local community, we do not have any cultivable land, so we are earning our livelihoods through day laborer.

One inhabitant mentioned:

We would agree there is development but many people lost their inherited land, property, housing, pond and trees. I lost my bamboo garden. The price of livelihood commodities has increased but employment opportunities have decreased and our sufferings have increased.

One participant mentioned:

Sir, there is no proper arrangement of medical diagnosis and treatment here. We have to go Faridpur or Dhaka which are far from our location. Many who do not have assistance and money cannot go there and they die without treatment. This is most vulnerable for pregnant women and aged people.

One participant mentioned:

They all get the proper price of land including diminishing their houses. The land distribution was fair and equal.

Another participant said:

I have seen that there is no equality of the distribution of the cost of diminishing houses, I got fewer amounts than many others. But I did not get any delay or disturbance about this.

One Head Teacher mentioned:

Due to PMB, there increases a lot of negative changes and social inequality. Life was easy and normal though their income was low. People feel comfort and security. Now the number of Yabba addicts has increased a lot because of easy access to communication. Women become very smart. I know that one girl went to Chadpur and brought her husband in this village. We are seeing such kind of social unrest now a day. The family conflict increased a lot. The divorce rate is very high. Many women are unemployed and there is a lack of government attention in this regard. Every household has LP gas and completion has increased in the whole community.

One farmer told us:

Due to PMB the cultivable land has decreased, tress and ponds also have decreased. People become landless and vulnerable.

One school teacher mentioned:

Depression has increased over time. It is because some people's income has increased a lot. People's expectation has also increased but there are lacks to fill up these expectations in this community. People are going to be concentrated in the business sector. Many indigenous occupations are already lost from this community.

One UP Member told us:

Social security has been increased a lot. Everybody has the right to get access everywhere. The incident of 'gang robbery' has been removed from this community except for one or two such kinds of incident.

One school teacher mentioned:

Women's and girls' social security has been improved. Whatever happens that happens through the mobile phone.

One resident mentioned:

There was a lot of commitment before PMB, no person will live in this community without work. But nobody is getting work from us, some works are available in this community but they are not involving us.

One school teacher and UP Member mentioned:

Most of the cases (unlawful works) are now settling by the Union Parishad and people are getting their rights accordingly. People are happy with this local justice system. People are now more conscious of their rights and dignity.

Participants have given some recommendations to improve the livelihoods that include creating income generation activities, improve health and hygiene facilities, training facilities, textiles, grammen cottage industries, opening new schools and training centers, more emphasize to provide employment facilities among the local community, and so on. Some of the participants also recommend preparing a complete list of the affected people who are still out of the services.

FGD-2 in the settlement area

A Focus Group Discussion (FGD) was conducted in the Kumarbhog settlement area of the Padma Multipurpose Bridge project, Laohagonj, Munshiganj to explore the impacts of the Padma Multipurpose Bridge project on their lives and livelihood. FGD was one UP member, Imam, businessman, school teacher, medical officer, driver, social service provider and NGO

worker. The objective of this FGD was to know the socio-economic and psychological conditions of the project-affected people. One of the FGD participants mentioned:

Cash flow has been increased for the affected people and they can utilize compensation money for investment to their business.

On contrary, one participant argued:

Cash against acquired land and house has been misused by their children instead of being invested in productive works.

An Imam replied that project-affected people have got money against land and house, and they have built well-structured buildings for rent. They have expanded sand and stone businesses and shops in the project areas. The one-woman UP member told:

Land ownership and agricultural lands have been reduced due to the project.

Business opportunities have also been quizzed because of changing old ferry ghat.

One participant expressed his observation that at present cash is available in the hands of local people, but unemployment will be created after finishing project works and job opportunities will be reduced.

FGD participants were asked to know how the social relation is affected by the Padma Bridge Project. Participants replied that their mutual relationship is good, but, new people are mixed with old people in the new settlement communities, so that so-called relationship with newcomers is established that cannot be considered as usual relations. Insecurity along with stealing has increased. One school teacher told:

Most of the affected people have no asset after being finished their cash against acquired lands and houses. Environmental hazards have grown into a serious problem, and huge dust is assorted with the environment. So, the respiratory problem is now a serious health problem in the project area.

The health condition of the project area is categorized as the primary, specialized, and reproductive health status of local people. They were asked to know to what context their health status is affected by the project. A one-woman participant told:

Health facilities of the project health centers are very limited and it is limited with the primary health care facilities. There is no specialized health services/ Women do not get their reproductive health services from these centers.

They informed us that the sewerage system does not function properly. This promotes water logging if there is a heavy rain. One participant told:

Huge amount of sands has been daggered from the river which ultimately affects us adversely. The dust has been created by transporting sands by vehicles.

Participants were asked to know the migration process, factors, and status affected people due to the project. Group discussion revealed that some people are migrated because of acquired their land for the project. Those who cannot get any plot in the settlement area, they are migrated from the old place to urban areas. In the past, many people have been migrated due to river erosion. It is also mentioned that living cost is now higher in the project area. So, poor people are going to another place for maintaining their normal livelihood. One participant told:

Vegetable cultivation is drastically reduced because due to the shortage of the cultivable land. As a result, the price of vegetables is very high.

The discussion also revealed that social relation with new settlers is poor. One participant told:

The modern culture has been introduced with the local culture in the project area. It increases cultural conflict. The younger generation does not respect to the older at family and community levels. Traditional cultural heritage has been ruined.

It is also revealed that drug trafficking and abuse have been increased because of coming new people in the community. Eve teasing and prostitution has been increased remarkably. A huge number of construction workers are working on projects works from the outside and they are living without a family. So, they are involved in illegal sexual behaviors. One participant told:

Local law order situation is very bad and violence and deprivation have happened in the grip of political shelter. Now it is out of local administration.

The people in the settlement areas are deprived from the privileges and opportunities, and they are the victims of land acquisition. They need to make up their compensation through additional assistance. Accordingly, some NGOs are working for the socio-economic development of affected people. ESDO, RIC, BRAC, ASA, Bureau Bangladesh, Sajeda Foundation, Proshika, and Caritas are working for their betterment. These NGOs are working in the fields of health, education, training, microcredit, rehabilitation program. Local government bodies such as union Parishad along with local political party leaders in power are working in solving rural conflicts at the community level. Participants were asked to know the status of violence against women and their participation in development and social service activities. The result is found that the majority of women are housewives. Most of the marriages have happened with dowry money. One participant replied:

Family conflict has been increased due to cash in the hands of affected people.

There is an increasing rate of divorce among local people and early marriage is comparatively high in the community.

It is also revealed from the group discussion that the male harassment by the female is also increased. Positive attitude towards education for girl children is also increased. But, boys are interested to go abroad to reach adult age. The majority of people go to Saudi Arab, Dubai, and Malaysia. Girl children have to continue their education until getting married. There is less discrimination between boys and girls. Traditionally house renter builds their houses on other lands with an annual subscription.

FGD participants were asked to give opinions for their betterment of lives and livelihood. They have given some recommendations for their better lives. They have suggested providing training to the unemployed youth and women on cottage industries, handicrafts, vocational trades. The tourism industry should be developed for employment opportunities and a river-based tourism resort can be built. The government should take initiative for the training needs assessment. They also suggest giving compensation for children in absence of parents. The garments industry can be developed in the Padma bridge project area so that local people can employ in garments industries. One participant told, *“dairy farm can be established based on local production and it will create huge employment opportunities.”*

FGD-3 in non-settlement area

An FGD was held at the Pachhan Girls School at the non-settlement area of the Mathbor Char Union of the ShibcharUpazila of the Madaripur District. A total of nine participants from diverse occupations such as health workers, businessman, school and madras teachers,

farmers, members of Union Parshad, and housewife participate in this FGD session. Their age was ranged from 28 to 70 years and the education level was illiterate to Masters. The main objective of this FGD was to explore the participants' observation of the various impacts of the Padma Multipurpose Bridge project. The participants told about the economic, social, cultural, and psychological aspects of whether most of the participants in this non-settlement area expressed their massive positive aspects of this project.

One small businessman told:

I cannot earn Tk. 200 before this bridge, but now I can earn more than Tk, 500 daily. The land price was Tk. 2,000 decimal now it is Tk. 40,000 decimal. This is a great matter.

One farmer reported to us:

I was shocked not to see my name as an affected person, but I can realize now, it was better for me not to include my name there. It is because the Government purchased our land by the double price but it is now 20 times more.

One UP Member told us:

There is no limit to the betterment of this project. People are building many houses and these are rented at higher prices, people are benefitted. People who bought land are also be benefitted in the bridge area. People can go to Dhaka within a shortage of time. It will create a better link with Dhaka. People will be modern through bridging and linking with capital Dhaka. People can come back Dhaka after finishing their work that was impossible before this project."

One Madrasa teacher told:

Our income has increased but people are squandering their money just like bay-leaf.

Two teachers reported:

People in this area have developed socially in terms of increasing their education; school infrastructures, the number of teachers and staff members have increased and improved. Many school-going children are returning to the schools in this area.

One UP member expressed:

The Padma Bridge is our great inspiration towards to our socioeconomic development. It is a great contribution to the present government. This bridge increases the attraction of the outsiders. Many people are now moving to this area from different parts of the country. People are doing good business here and they are earning a lot. Even many people have come back from outside the countries and doing varieties of business here.

One farmer told us:

Big change happens on occupational transformation. We do not find sufficient numbers of farmers here and we are bringing farmers from other districts because people are too much interested to do business and this is most profitable.

One businessman said:

The dignity of people has increased after the Padma Multipurpose Bridge, it is because of the diversity of occupations and occupational change. Even a farmer is now getting good status because they are earning money and they are sending their children to the school.

One UM Member told us:

Social security has been increased a lot in this area. It is because of the UP Chairman and Members of UP are now more responsible accountable to the inhabitants of this area. People are also more conscious. Most important is that women's status has increased a lot. Girls and women can safely move from their houses to school, works, and markets. Now nearly 99% of the girls are passing SSC and they are not only doing household works rather they are involving in different income generation works. Maidservant is very rare her. Many of them are moving to colleges and Dhaka city for higher education. The numbers of child marriage have decreased and dowry is not a problem in this society. Women are politically conscious here and they have full freedom to cast their vote.

One teacher mentioned:

Women's and girls' discrimination has decreased a lot. Drug addiction is the near absence in this community as they are now involving in education and income generation activities. People are more dynamic and they have to go through a competitive market in their livelihoods. The number of community police has increased.

One UP Member and one school teacher told us:

Most of the litigations are now around land as the land price is very high; there is no other kind of social crisis here.

Most of the participants mentioned some problems remaining here. These include the low livelihood facilities such as lack of modern treatment, women college and university, vocational training institutes, playground, supply gas and water, working industries for women, and facilities and services for the destitute women and aged people. They all recommend improving these facilities.

FGD-4 in non-settlement are

One of the focus group discussions was apprehended on 13 December 2019 at Medinimondol union under Louhojong Upazila of the Munshigonj District to make an argument on the impact of the livelihood of affected people of the Padma Multipurpose Bridge Project area. Different professionals from the non-settlement area like a member of Union Parishad, businessman, NGO worker, teacher, religious leader were involved in the discussion and gave their valuable views about the livelihood pattern of affected people.

The participants of the focus group mentioned some positive and negative impacts on the livelihood of the project affected people. The focus group discussion exposed some positive impacts related to social life, the status of women, the role of government, NGO issues. A social relationship has been improved, social life or family life without conflict have been achieved, social facilities have been increased like educational, religious, health institutions have been established. They are enjoying educational, health care, and transport-related facilities due to the establishment of various institutions in the locality.

Here 95% of peoples are happy due to Padma Multi-Purpose bridge project. Those who had houses in the project area and were affected, they have got the compensation for the house and house shifting. Those whose land or house is outside of the project; they are disappointed as they missed the opportunity.

They have expressed that their savings and investment have been increased now. Their standard of living has been improved and neighbors and relatives give value and respect to them. Their working skills have been increased due to the training program from the government. Criminal activities like drug addiction have been increased. The status of women in the project area is good and they can participate in the decision-making process. Now women are participating in the training program for skill development. They have also mentioned that due to project the communication system has been developed, landless people have been benefitted, the economic condition of locality has been improved, and employment opportunity has been created.

On the other hand, participants reported some negative issues in the project area. They mentioned that the price of land has been increased; house rent has been increased in the locality. They have mentioned that the economic conditions of businessmen have been damaged due to the replacement and cost of transportation.

There were many peoples who lived in the business shop, but now there is none. No one is allowed to run business beside the river. Many families are now dependent on the fish depot, but if the fish depot is dismantled or squeezed those families will be in crisis. Here most benefitted are those who were landless. Earlier they were in a rented house, now they got compensation and plot.

They have complained about their safety and security systems in the locality. The security system is not satisfactory and various types of the drug are available in the community. They mentioned that young people are engaged in various types of illegal issues like stealing, taking yaba, gambling, etc. According to the participants, the role of government is satisfactory and they are getting old age allowance, freedom fighters allowance, disable allowance, education stipend, medicine free of cost, etc. The NGOs are providing training and microcredit for community development. The role of local govt. in providing solar bulb, mitigation of conflict, youth development is adequate in the locality. Other important findings have been explored about the psychological conditions of affected people. They have mentioned that due to replacement in the new community their social bonding with their relatives and neighbors and siblings has been abridged.

Each family got house boundary with gate and thus communication among families has been lessened. Out of two, Kumarbhog Punorbashon is better but the situation of Josoldia Punorbashon is not good due to poor road conditions.

The participants provided some recommendations in the discussion session for improving the socio-economic conditions of the affected community. They have reported some suggestions like-micro credit without interest, permanent employment opportunity, training and better employment opportunity for youth creating an industrial zone, improvement of the quality of education, treatment facilities of pregnant women and children, development of laboratory in health complex, the establishment of Shishu park, playground, a theater hall, cinema hall, community center, public toilet, graveyard, college, university, etc.

In-depth Case Interviews

In-depth case interview-1 in the settlement area

Mr. Nazar is over seventy years old man living in a settlement area of the Mathborer Char village of the Shibchar union under the Madaripur District. He is illiterate and he has three sons and two daughters and now he is passing livelihoods as dependent with his first son with his 65 years old wife. They both are strong enough physically and mentally though both are not working. His three sons are living separately and independently managing their families in a neighbor community. Nazar was a worker in BRB cables before then started a small business and he earned approximately Tk. 15,000. He told me that he has observed and understand the impacts of PMB.

He said:

I have seven bighas of land. I lost all my land and housing by PMB. We have got only one household land 7.5 decimals instead of three as my three sons are an adult and they have separate families. I do not get any old-age allowance. I have no progress and finished all."

Neazuddin reported to me that the medical treatment in terms of quality and quantity has been increased. Doctors area locally available and they serve us as well as give us medicine."

He argued:

Social dignity and status have not increased, but increased corruption and the people who are involved in corruption are better. I have given an amount of money to get the bank cheque of my land and the amount is Tk. 15 thousand per lac. We are underdogs but the clever people were conquerors.

He mentions:

The overall social peace and social justice have increased over time but this has no link with PMB. But this is true we lost many of our relatives and neighbors, they are isolated and moved from our community even I am now living alone in a new community. I lost almost all my relatives and neighbor whom I know last fifty years. One of the problems is that we cannot give marry to our grandsons and granddaughter in this community.

He again mentions:

There is no remarkable positive economic impact of PMB. But I agree my son's wife got a job and later my daughter has got a job under PMB". "PMB has taken my all resources and properties. Some people are doing some jobs, some of them are van and rickshaw pullers and some are day laborers. Some opportunities have increased such as gas, supply water, health, and hygiene. School infrastructure, hospital, masjid, and the school have increased. I know the government gives many things but I did not get anything else. Not even my old age allowance, no VGF, and VGD cards, I am not even a member of any association.

I am very frustrated; this is all that I have got from PMB. My mental health is bad, my heart gives me pain, massive pain.

I think women empowerment has increased. I am seeing women are moving more outside the households and they can bargain, they are now in hat-bazar, roads, school, and everywhere. They are very fast.

Local government is now more empowered and doing more works including roads and highway, even local roads are now pacca (concrete). The Chairman and Members are very busy now. They are also busy with social activities such as local

justice, mitigation of local conflict. They are now a presence in the community and they are available all time to us.

Some recommendations for improving the livelihood conditions in the settlement areas:

- Old age allowance
- Relocate the people of the affected people
- Increase local government facilities

In-depth case interview-2 in the settlement area

Mr. Muhib, aged 59 is a settler of the Josodia settlement area. He is a married person and his family consists of a wife and two sons and one daughter. He is a businessman. His eldest son helps him in business. His son and daughter are studying in school and college. His monthly income is about 35,000/= and expenditure is about 30,000/=. His land is acquired by the government for the Padma bridge project and he got two plots (No. 303, 304) in the Josoldia settlement site. He got compensation for acquired land properly. His old living place was a tin shed but now he built a well-structured building. He informed:

I feel comfort in the present settlement area, there is security, well-connected roads, and the sewerage system is well planned. The living environment is also good.

Muhib was asked to know the social impact of the Padma Bridge project on their lives and livelihood. He informed:

We are getting project sponsored primary school, health center, free educational materials, and training facilities for skill development. The educational quality of schools is also good. Our children are getting motivated towards going to school.

There is a management committee for the Josoldia settlement site. They take care of the problems of community people. The project health center gives treatment for settlement area people and provides common medicines. An MBBS doctor is always there for treatment. There is also a community clinic for maternal and child health treatment. There are some common diseases like respiratory problems, cold and fever due to project works. He informed that a new relationship is established in the settlement area and they solve any problems arising from interaction with each other with the help of settlement management committee leaders. As Josoldia is a newly established community, violence-free, justice, scope of participating in the decision-making process is enjoyed by almost everyone. Social relationship with each other is moderate and kinship relationship is also there.

Muhib is asked to know the economic impact of the Padma Bridge project. He replied:

I received compensation against land and house acquisition properly without delay. Population density is comparatively lower than the old place. So, the business scope is less in the present settlement area. My income is reduced due to the bridge project.

He informed that his wife received training on poultry and livestock rearing for skill development. She is also using training experience for poultry and livestock rearing. Domestic and international migration is not there. He also informed that community infrastructure and local roads are *pakha* and electricity is well connected with every house. But, *Haat* is situated three kilometers away. A stationary shop is nearby. Josoldia settlement community is well planned with sufficient security. So, all are fine. Women in the community can enjoy the right to participation in the family decision-making process, the right to access appropriate information, the right to free from family violence and social discrimination. He was also asked to know the socio-economic and environmental challenges due to the Padma bridge project. He replied:

We comparatively face less socio-economic and environmental challenges than the non-settlement areas. We face less scope of employment, reduced income capacity but, our children do not get higher educational facilities and project health centers do not provide all emergency medicines as required. There are no specific environmental hazards in the community but, huge dust is mixed with the environment.

Muhib tries to cope with the challenges within his capacities and resources. He takes a resort to visit a specialized doctor in Dhaka city for his chronic illness. He does not want to change his occupation, and he would like to continue his business. But his eldest son could change and take the new business. Water supply is available centrally for every house. Some NGOs are working for the wellbeing of community people. ESDO and RIC are doing education, health, and rehabilitation programs for upholding their livelihood status. Unemployed youth and women are receiving training in different productive trade so that they can develop their skills and can engage themselves in self-employment opportunities. He was also asked to give some recommendations to uphold their livelihood status and overcome problems. He suggested the following recommendations to better their lives and livelihood. He has recommended the higher sidewall, giving scopes of children in employment opportunities, giving government loans in low interest, recruitment of skilled and trained teachers in schools, regular basis registered doctors' presence, and supplies of emergency medicines.

In-depth case interview-3 in non-settlement area

Mr. Saiful, a non-settlement area in Ali Mridhakandi, is a businessman. He is 52 years old and graduated with a Secondary School Certificate (SSC). His household size is six. He has a semi pucca house built with CI sheet and brick on 1 and a half *bigha* (49.5 decimals) of land. His family enjoys almost all types of civic amenities like electricity, cylinder gas except sewerage facilities.

As a resident of a non-settlement area, he feels that settlement areas are planned area and have many opportunities and facilities than the non-settlement area in terms of roads, school, health complex, environment development, etc. Infrastructural development is much evident in the project area. He informed me that students have to go to RS6 for studying in primary school. Improved treatment facilities are available at *Shibchar* and *Jajirapazila* head quarters. In the local area, only primary treatment facilities are available but doctors are irregular, free medicines are not provided properly. They have to depend on *Upazila* Health Complex.

He has good intimacy with his neighbors. He gets honor and respect and participate in local decision making and undertake social responsibilities. He mentioned that there are no obstacles in enjoying different rights for instance freedom of mobility and observing religious festivals, protection from violence, or getting justice. Even the social relationship is very strong among relatives and neighbors.

His 30 *bighas* (10 acres) land has been acquired by the government for the PMB project. He did not experience the delayed process of getting compensation but he had to pay 15 percent cash in advance to the DC office to get the money, which he considers as corruption on the part of the government officials. He claimed that his resources have been decreased due to land acquisition and experiencing loss in business. He said:

After acquiring my land I had only 4 bighas (1.33 acres) land which impacts my economic condition. I invest my cash of compensation in business and building my house in a non-settlement area. Since I was in Singapore before, I had some savings that I also invested in the business. Now I have no savings rather have a loan of 5 lakhs from agricultural Bank and local money lenders.

Diminished and waned economic condition has generated mental stress, anxiety, and frustration in him. He is struggling to cope with the economic crisis as well as mental stress. Though the new environment of the non-settlement area is challenging, he is trying to develop group bonding and solidity among the people of his new community. He tried to regain his mental strength through cooperation with relatives and neighbors.

He commented that women's empowerment is necessary for their locality because most of the women are housewives like his wife and dependent on their husbands. He accentuated that both men and women should work together to overcome the economic crisis created by the PMB project. But women do not have skill and access to and control over resources and decision-making capacity too. He also mentioned that incident of women's oppression is very rare in the project area.

Important information he shared with the researcher that his non-settlement area is near the cantonment. Hence, he is always in tension and scares about the acquiring of land again by the government. He expressed his fear and said:

We have already lost a lot of lands and social status, and became poorer than before. Despite the economic loss I tried to be resilient and invest all my efforts to overcome this situation. If such an acquisition were to happen, I will be assetless. So we need a clear declaration that this land will never be acquired anymore.

He prioritized economic susceptibilities over social and environmental vulnerabilities in non-settlement areas. He emphasized declining job opportunities, reduced agricultural work, decreasing income due to changing occupation, choosing dissatisfactory occupations like rickshaw or van pulling as prime economic challenges.

He admired the role of the local government in ensuring social security and alternative dispute resolution. He also mentioned the role of NGOs in assisting in building the house and improving the environment. Again, the government role has been stated by him in the improvement of education and health services in a limited sphere.

However, he claimed that the non-settlement area is less developed than the settlement area. Therefore, school, mosque, health complex, the drainage system should be established in the non-settlement area. He suggested the loan without collateral, skill development training, and work opportunity for the people of the non-settlement area for the betterment of the residents.

Salam Khan was a person of well off family and staying in Singapore for a long time. As a result, he could accommodate his worsening economic condition due to the PMB project. At present as an affected person, he is struggling to improve his socio-economic condition and optimistic to face the situation. But he is staying in the anxiety of land acquisition again by the government. Difference between settlement and Non-settlement areas in terms of facilities like education, health, drainage, etc. and infrastructural development have been reflected by

his statement. Although the project authority has given him compensation for land, still he is suffering from an economic crisis. Land acquisition has also created job insecurity and unemployment, reduced income sources, and the affected people obliged to change occupation. Thus, an uncertain future has been reflected as one of the significant features of the lives of people of non-settlement area.

In-depth case interview-4 in non-settlement area

Mr. Mosharaf is 40 years old man living in a non-settlement area at Mathborer Char union of Shibchar Upazila of the Madaripur District. His education level is Secondary (Class IX pass) and he has two sons. He has a small business and his monthly income is Tk. 18,000 but he has some debt while he went to Kuwait as a migrant worker. He returned to Bangladesh in the last three years.

He gives a positive response to different aspects of the PMB. He mentioned that the Government cannot give full compensation of this PMB as many are immeasurable. I heard that people have got 50 decimals of land instead of 33 decimals. He told us that there was only one school in this area but now the numbers have increased. The communication system is well in this area. People can move anywhere from this location. People's movement has increased a lot. People can easily move to Dhaka, Khulna, or Faridpur within a shortage of time. Locally, there are new clinics and private hospitals in this Upazila.

Mosharaf informed:

I can surely happy to see that people are very happy now, they can contact others very easily, many people are now visiting us and our social dignity and identity have increased. Women are now better respected; they can get easy legal support from Madaripur town. I do not see any kind of discrimination here. Social peace, integration, and social harmony have increased significantly.

Mosharaf mentioned that economically people are very well-off and they are involving in different sectors for income. Social infrastructures have increased including roads, electricity, and drainages. Many markets have been established here, the local business sector has increased that create a lot of income generation activities. Many NGOs are working here.

But one important negative aspect is:

The number of landowners has decreased. The rich people are buying all lands, even the price is very high, and the real farmers cannot buy any land due to the high price.

One of the important aspects that Mosharaf mentioned is that social mobility has increased a lot, fewer people are migrated, who are migrated are very temporary but they are coming back when they are going to be older. With social mobility, social security has improved here, even the women can come back at night time without any scare. He mentioned:

"There is no women discrimination and deprivation rather the males are dominating by females."

Mosharaf further mentioned:

Due to social and infrastructural changes, people are facing trouble to adjust with new procedures and systems. But we need to accept this problem for the sake of the development of the country. There no shocks or stress in this community due to PMB. People may get loan facility.

Chapter 5: Discussion: Comparative Analysis

Introduction

This chapter dowers two imperative analysis namely, i) compare the current foremost findings with the Bangladesh Institute of Development Studies conducted in 2009-2011 (BIDS, 2009, 2010 & 2011) and the Eco-Social Development Organization (ESDO, 2016) and ii) show the key analysis of the lives and livelihoods how the settlement and non-settlement communities are better each other. In the second section, this chapter provides a comparative analysis between the settlement and non-settlement households how each is better in terms of different lives and livelihood components. The section will be very useful to the readers for two reasons, first- the readers will simply comprehend the whole scenarios and trend of the major indicators of the lives and livelihoods while they will compare the previous two study findings with the current one and two settlement areas within the study; secondly- they will understand about the current lives and scenarios between settlement and non-settlement. The whole analysis will be very useful to make a conclusion, policy implication, and recommendations.

Improvements in the lives and livelihoods from previous studies

Comparative analysis

This section compared findings with previous two notable studies e.g., four separate studies conducted by the Bangladesh Institute of Development Studies conducted in 2009-2011 (BIDS, 2009, 2010 & 2011) and the Eco-Social Development Organization in 2016 (ESDO, 2016). There are some challenges encountered while comparing findings with two of these studies with the current study. First, this is a fact that there was a certain level of dissimilarities between these three different studies conducted at different times. Secondly, the objectives of the current study were far different than the other two previous studies. Thirdly, the current research title and its major components/indicators are far different than the previous studies; Fourthly, the current research focused on the lives and livelihoods of the affected people of the Padma Multipurpose Bridge. On the other hand, the BIDS conducted four different studies entitled: one- Report on Census of Households and Establishments Requiring Relocation from Resettlement Sites (RAP-I) and Approach Road, Service Area and Toll Plaza Areas (RAP-II) (15 November 2009), two- Report on Census of Households and Establishments Requiring Relocation from Railway and New Services (RAP-II) (Addendum) (14 March 2010), three- Report on Census of Households and Establishments Requiring Relocation from River Training Work Areas (RAP III) (25 May 2011) and four- Potential Pre- and Post-Construction Impacts of PMBP on the Chalrands in the Up and Downstream from the Bridge Site: An Assessment (May 2011). The Eco-Social Development Organization (ESDO) conducted the study entitled: 'Planning of Resettlement Action Plan (IRAP) (2016). However, considering the title and scope of these studies, there are some basic differences between the current and previous two studies. Fifthly, in many cases, this is remarkably found that the previous two studies did not follow the standard components on the major areas/headings/variables that the findings presented. However, our research team found many inconsistencies and dissimilarities between the current study and two previous studies. For example, the components of occupations (primary and secondary), types of assets, sources of income, sources of family expenditure, use of the sources of loan and

investment, ownership of land types, list of assets, savings, available physical infrastructure in the community, water sources and sanitation conditions, ownership of water and sources of water for drinking, toilet types, types and sources and amount of compensation, losses, food security, components of women empowerment, causes of migration, types, and usages of training, types of disaster the household faced, etc. The mentioned components were included in the previous two studies but the standard components that we used in our current study were not similar.

This is also very crucial that many lives and livelihood components are completely missing in those previous two studies. These include residence types and quality, supports to build houses, sewerage system, cleanness, education, and infrastructure (including teachers, students and staff, doctors, nurses and supportive staffs), quality and services of education and health services, general diseases the households faced and treatment, communication system particularly road and highways and distances from their residences, social and psychological losses, and services received and gap analysis, psychosocial vulnerabilities and social dignity, kinships, social services, and social security issues, disasters, and vulnerability, coping strategies, disaster mitigation, migration and displacement, social mobility, livelihood choices and competencies, strategies to face climatic changes and vulnerabilities environment, positive impacts of Padma Multi-purpose Bridge Project particularly its positive impacts and sustainability. However, within the above-mentioned restrictions, we could compare our findings with very minimum components with the previous two studies.

Education

Table 5.1 and Fig. 5.1 present a comparative analysis between three studies. It clearly shows that the literacy rate among the affected households increased significantly over time. According to data of the BIDS, 2011, more than 3% of the household heads were literate which increased to 24% in 2016, nearly 21% more within 5 years and then the rate recused nearly 3%, but the rate of secondary, SSC pass and graduate increased over time. There is a bit inconsistency, particularly this variation and inconsistency found more between ESDO, 2016 with BIDS 2011 and current study 2020. If we compare data between BIDS 2011 and the current study 2020, there is a clear indication of the increased rate of education on a different level over time.

Table 5.1: Comparison of education rate among the affected household*

Level	BIDS (2011) %	ESDO 2016**	Current study 2020
Primary	42.9	21.05	13.20
Secondary	19.9	26.70	29.30
SSC pass	3.0	8.27	12.20
HSC pass	1.4	6.68	5.40
Graduate	0.7	1.43	2.10
Masters	0.4	1.43	0.80
Illiterate	28.1	8.43	16.60
Literate	3.4	23.52	20.40
Mass edu	0.2	0.52	-
Total	100.0	100.0	100

*Education rate calculation might be a bit different to calculate across the studies. *ESDO includes all family members counting the education rate

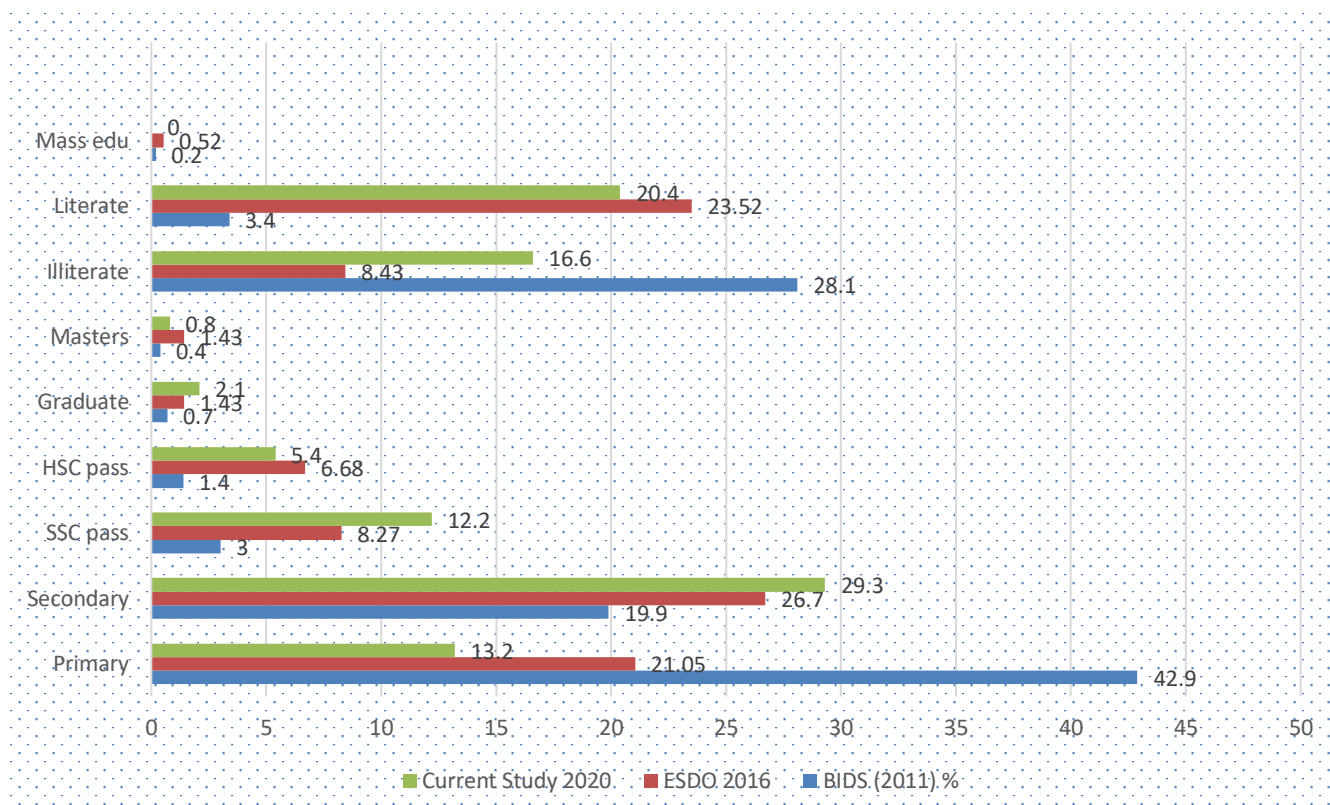


Fig. 5.1 Comparison of education rate among the affected households

Economic Status

Findings clearly showed that the PMBP has serious impacts on agriculture where the households' primary occupation was found 55% in 2011 that was reduced nearly three times less (18%) and then further reduced 1 and a half percent in 2020 (16%), whereas the dependency on trade/business has increased 18% in 2011 to 34% in 2020 (Table 5.2 & Fig. 5.2). On the other hand, the skilled labor force increased 18% to 34% (it was 27% in 2016), but the number of 'not able to work' and 'unemployment' people decreased which are found 12% to 2011 to 8% and 8% to 6% between 2016 and 2020 respectively. The number of migrated people look unchanged for over 4 years.

Table 5.2: Primary occupation of households*

Primary Occupations	BIDS 2011	ESDO 2016	Current study 2020**
Agriculture	54.7	17.49	16.1
Industry	3.7	-	6.5
Construction	2.3	-	-
Skilled Labour	-	2.78	9.8
Transportation	7.7	2.84	4.7
Trade/Business	18.1	26.70	34
Service	13.1	5.06	10.5
Not able to work	-	11.51	8.3
Migrated (Overseas & inland) labour)	-	3.13	3.2
Unemployed	-	8.46	6.3
Retired persons	-	2.42	-
Others	.5	7.31	2.6
Total	100.0	100.0	100.0

* Data were anomaly across three different studies **Data were reorganized compared with previous studies

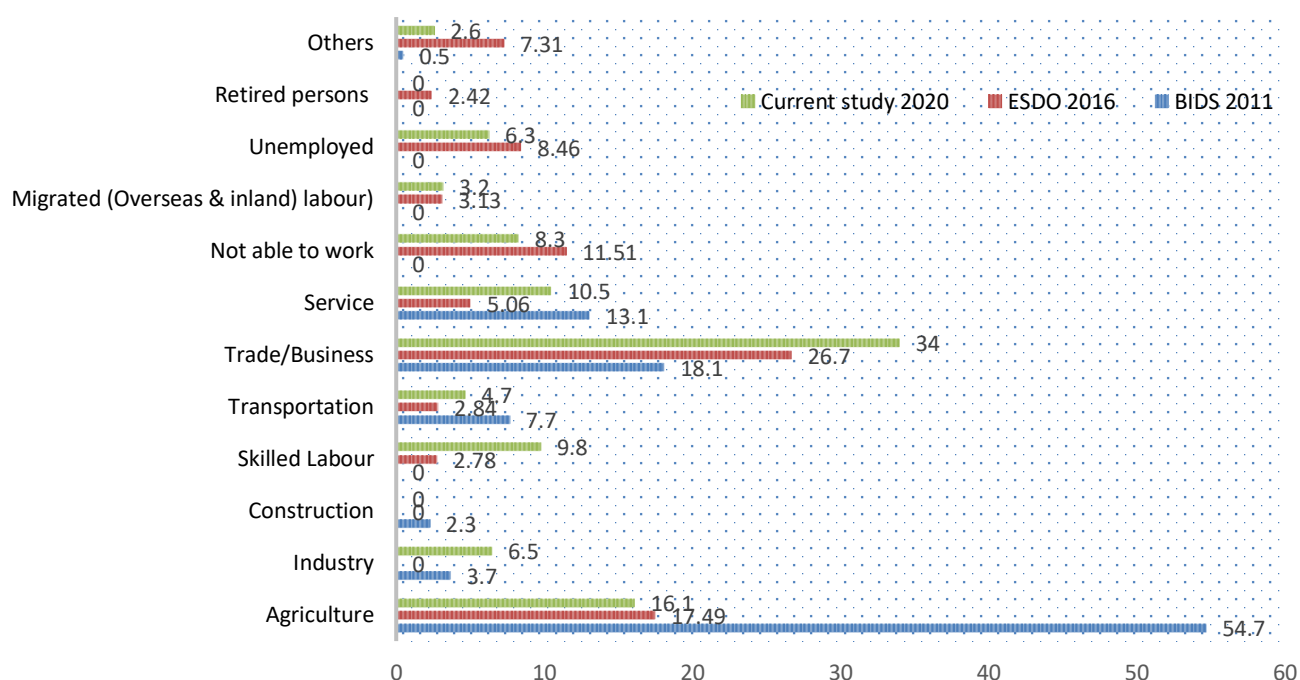


Fig: 5.2 Primary occupations of households

Figure 5.3 showed the comparative findings between BIDS 2011 and the Current Study 2020. It is found that the monthly per capita income became more than double Tk. 10,580 in 2011 to Tk. 23,493 within nine years. The source wise income annual income showed that the income from services decreased a bit whereas income from agricultural sources become more than double and non-agricultural income thrice. It is concluded that this income consisted of time.

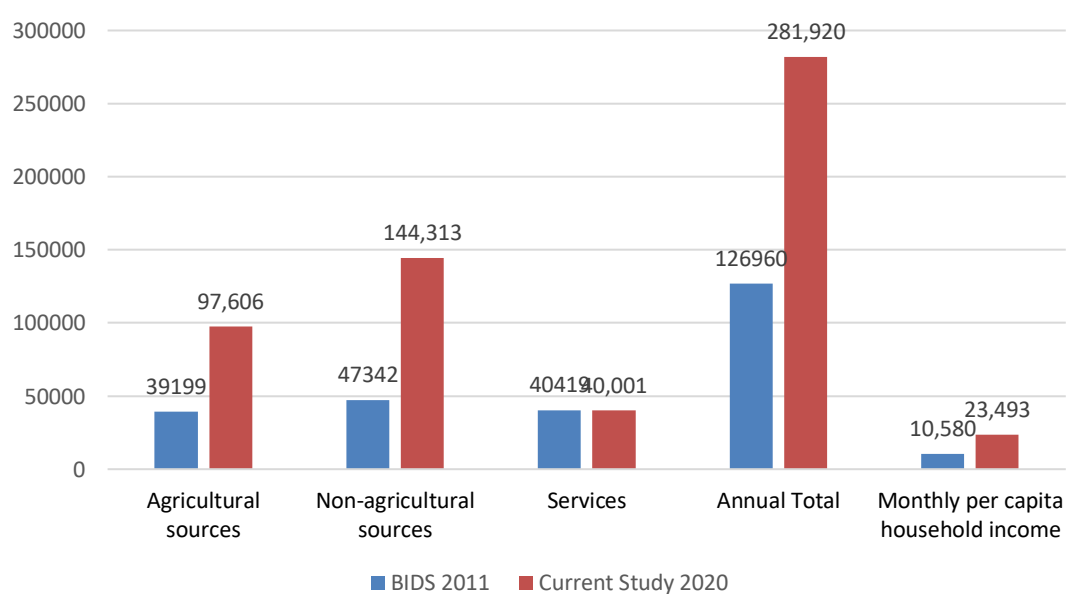


Fig. 5.3 Comparison of households' income

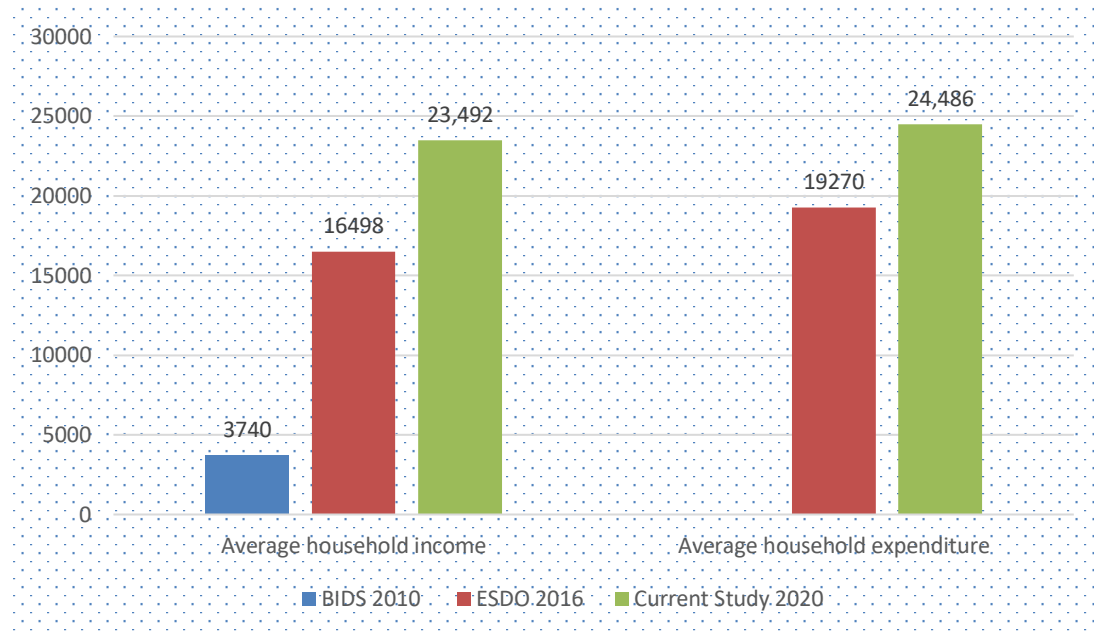


Fig. 5.4 Comparison of average household income and expenditure

Figure 5.4 shows comparative households' income versus expenditure. It is found that the household income from 2011 to 2016 increased by four times within 6 years, which became nearly one and a half times higher within another 4 years' time. The total expenditure shows higher in both sources than income. It is nearly three thousand more in 2016 and one thousand in 2020. This means that households are always in debt.

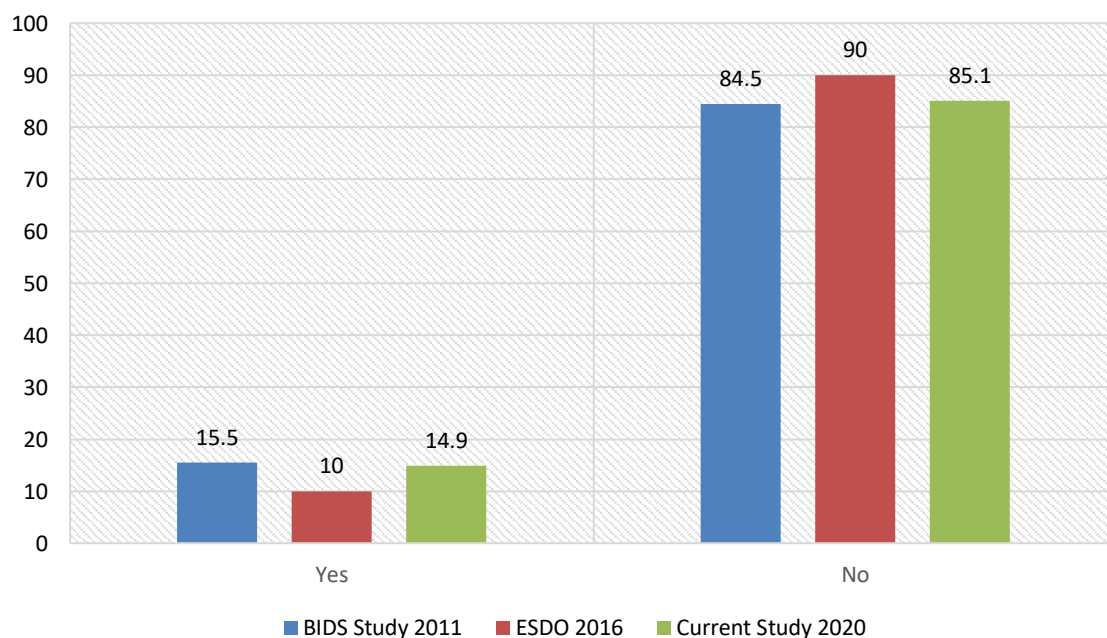


Fig. 5.5 Comparison of households received livelihoods/IGA training

Effective occupational rehabilitation of the affected people largely depends upon the training they and their household members received. Disappointingly, an overwhelming proportion

of the affected people and their household members did not receive livelihood training. Between 2011 and 2016, the training received reduced from 15.5% to 10% respectively, but a gradual increase of 4.9% is demonstrated between 2016 and 2020 (Fig. 5.5).

Training

Training courses received by affected household members encompassed a wide array of categories of training. The overall findings in both sources showed that the household members received only income generation training which found higher 97% in 2020 which is seven percent higher than in 2016. The coping disaster training is found only 1.4% and leadership training 0.3% in 2020 which was zero in 2010. But health-related training has reduced from 3.33% in 2010 to 0.5% in 2020. But the social awareness training reduced nine percent (10.6% in 2011 to 0.6% in 2020 (Fig. 5.6).

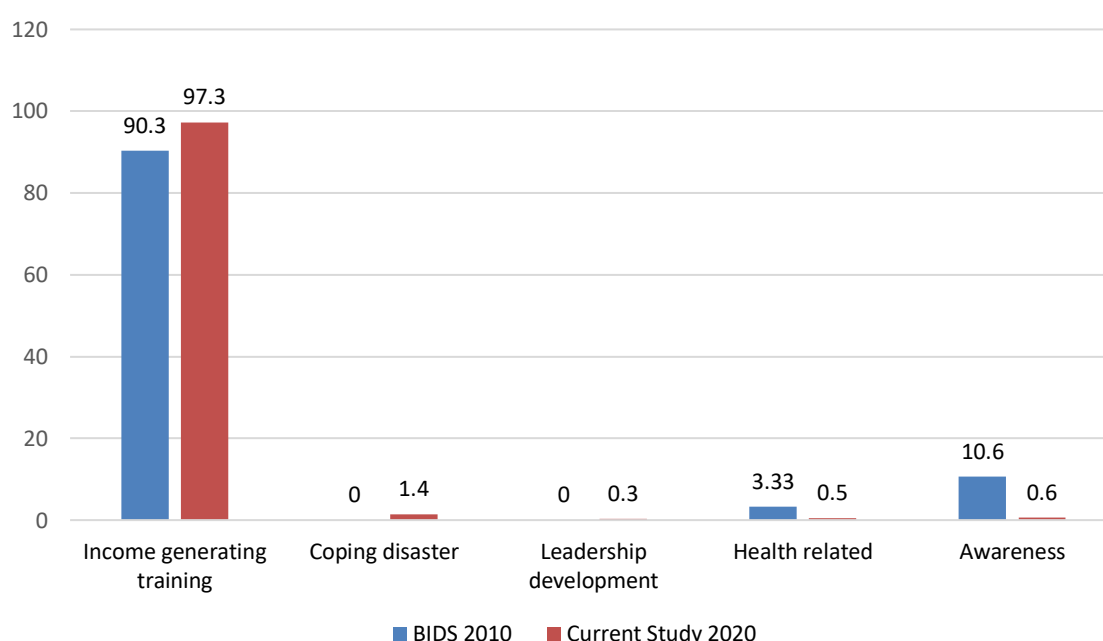


Fig. 5.6 Comparison of the households received training in different areas

*Data were categorized in the light of the current study. Source: BIDS, 2010 & Current Study, 2020

Land affected by PMBP

Land types affected by PMBP are found far different. According to the finding of BIDS 2011, 89% of households' land was affected which is found only 22% in 2020. According to the current study, 39% Mortgage, 33% sharing/Bogra, and 24% khashland were affected by PMBP.

Table 5.3: Land ownership affected by PMBP

Land types*	BIDS 2011	Current Study 2020
Own Land	89.1	22.1
Squatter	9.3	-
Mortgage	-	39
Rentee	1.3	-
Khashland	-	23.8
Encroacher	0.3	-
Sharing/Borga	-	32.5

*Land types are categorized differently by both studies. Source: BIDS (2011) and Current Study 2020

Toilet facility

The comparative analysis was a bit difficult as both studies used the toilet types differently. According to the current study 100% people are using sanitary latrine in the settlement area (73% personal and 27% slab ring) which were mentioned 31% non-water sealed and 27% water sealed sanitary latrine in ESDO 2016. However, the increase of sanitary latrine use has increased a lot over time (Table 5.4). the ESDO 2016 data also showed that 2.13% used open defecation, 29% kaccha latrine and 10% offset latrine.

Table 5.4: Toilet facility

Types of toilet*			
ESDO 2016		Current Study 2020	
Open defecation	2.13	Open place	000
Kaccha latrine	28.87	Community/collective toilet	00
Non-water sealed sanitary latrine	31.28	Personal sanitary latrine	73
Water sealed sanitary latrine	27.49	Made of private slab ring	27
Offset latrine	10.23	Hanging toilet	00
		Others	00

*Types of the toilet are different in both studies. Source: BIDS (2011) and Current Study 2020

Infrastructural compensation

As the previous table, there are differences between the components of infrastructural compensation received by the households. It is clear from the evidence that the households received higher what they expected in 2011, for example purchasing land/financial compensation was 80% in 2010 which found 97% in 2020 followed by constructing structure/new plot 89% and 95% respectively. The number of IGA training recipients shows an increase from 5.78% to 7.4% in 10-year time (Table 5.5).

Table 5.5: Households received Infrastructural compensation due to PMBP

Infrastructural compensation received	BIDS 2010	Current Study 2020
Purchasing land/ Financial compensation	79.86	97
Constructing structure/ New plot	89.02	94.5
Housebuilding support	-	20.3
Getting credit	22.54	-
Receiving training in IGA	5.78	7.4
Planned residential facility	-	39.3
Compensation due to heirloom	-	3.8
Others	0.34	3.7

Source: BIDS (2010) and Current Study (2020)

Positive impacts due to PMBP

The positive impacts between the expectations (BIDS, 2011) and which received provided a more interesting picture. The BIDS (2011) in char land study showed that during the construction period of PMB, the most notable positive impact will be increased in job opportunities followed in order by the fair price of goods, increase in the price of commodities

produced locally, and an increase in income. Anticipated major negative impacts during PMB construction include an increase in environmental pollution, an increase in sound pollution, increased crowding, and deterioration in the law and order situation (Table 5.6). The post-construction impacts of PMB as perceived by the study char land people are found mostly positive. Among the major positive impacts, while an array of crop production, economic condition, employment, purchasing power, health service, education opportunity, marketing facility of crops produced, women empowerment, and overall facility in the area will increase, there will be a decrease in flood, river erosion, frequency of inundating agricultural land and house, the height of water on agricultural land and courtyard and duration of the flood. Among the major perceived negative impacts are: decrease in the navigability of Padma river and fish caught in the river, adverse impact on fish breeding and catching the decline in the visit of the migratory birds, and an increase in the incidence of disease.



Image: Honourable Minister and Ex-Secretary of the Ministry of Road Transport and Bridges inaugurated four schools and five health complexes under PMBP, Source: BBA



Image: Honourable Ex-Secretary of the Ministry of Road Transport and Bridges is sharing project findings of PMBP, Source: BBA

Table 5.6: Potential impacts of PMB during construction

Potential impacts	%
Job opportunities will increase	63.8
The price of commodities will increase	30.0
The scope of business will increase	21.9
The fair price of goods produced will be ensured	36.3
Will increase sound pollution	23.1
More crowd	13.1
Income will increase	15.6
Environmental pollution will increase	15.6
Dust will increase	0.6
River communication will be hampered	3.1
Have to use the alternative communication system	1.9
Fish production will decrease	2.5

Law and order situation will improve	4.4
Supply of daily necessities in the increase	6.9
Opportunity for catching fish in the river will decrease	4.4
Social security/law and order will deteriorate	10.6
Wage will increase	9.4
Don't know	5.0

Source: BIDS (2011)

The BIDS study also mentioned that people in the locality could foresee some benefits accruing from the PMBP. These are (i) employment generation in the adjoining areas, (ii) reduction in the cost and time of transport primarily to Dhaka, (iii) induced development of physical and social infrastructure, and (iv) development of tourism. It was reported that if RTW takes place, the char people will get a new lease of life with new economic activities. This, however, is likely to significantly increase the cost of all factors of production including land. It is anticipated that PMBP would open up considerable direct employment opportunities for the char lands people especially during actual construction works of PMB which would require hiring a large number of construction workers locally. This would inevitably contribute to increased personal earnings of the char land people and eventually to their improved economic well-being. Spending by the construction workers would also have a multiplier effect inducing additional spending and jobs in the area and contributing to poverty reduction in the char lands.

Table 5.7: Positive impacts of Padma Multipurpose Bridge

Positive impacts	% of agreed households
Progress observed in education	80.6
Health services reached to grass-root level	72.9
Increase child and maternity services	70.6
The infrastructural change resulted from the standard of living	90.9
Road communication has increased	96.6
Social and cultural bondage has tightened	60
Occupational training increased	47.9
Income has increased through changed occupations	41.9
Amenities of modern life have increased	92.4
Social dignity has increased	66
Improve good opportunities by cooperatives	85.5
Created the scope of planned housing	50
Decrease child marriage	89.8
Security of women's movement has increased	64
Freedom of expression has increased	75.6
The level of social order has increased	68.1
Reduction of poverty	72.3
Satisfactory allowances received as compensation	50.7
Loan facilities by Govt. and NGOs has increased	61.3
Housing Plot allotment has been ensured without interference	64.7
Positive government help	85
Progress observed in education	92.9

Source: Current Study (2020)

The BIDS data is very consistent with the current study, rather provided more positive impacts of PMBP (Table 5.7). The current research asked 21 aspects of the households on the positive aspects of the Padma Multipurpose Bridge Project on their lives and livelihoods. The notable positive impacts are around 90% and above households supported that road communication has increased, progress observed in education, amenities of modern life have increased, the infrastructural change resulted from the standard of living and decreased child marriage followed by improving good opportunities by cooperatives (86%), Positive government help (85%), Progress observed in education (81%), Freedom of expression has increased (76%), Reduction of poverty (72%), Increase child and maternity services (71%), Level of social order has increased (68%), Housing Plot allotment has been ensured without interference (65%), the security of women's movement has increased (64%), loan facilities by Govt. and NGOs has increased (61%).

The qualitative data gives a more pluralistic feature about the positive impacts of PMBP. Like Hossain, an inhabitant of a non-settlement area, more than 15 in-depth interviewees reported us:

"PMBP has brought the change in the whole life in this area. In a word, this area was backward historically. PMBP has lightened this area. We are enlightened due to PMBP. PMBP has inspired the people on education. School attendance and admission rate has increased and the dropout rate has decreased. One upon a time, there was different types of superstitions in this area. PMBP has removed the superstition a lot. Modern thinking has been created among the people. Theft and dacoit was a great problem in this area. This type of crime has lessened a lot due to PMBP. Early marriage was a great problem in this area. But now, it has lessened. PMBP has worked as a blessing in this area. Some crimes such as drug addiction and immoral activity have increased in this area. At present, drug addiction is a great problem in this area. Infrastructural development has improved in this area. Houses, schools, colleges, hospitals/clinics, trade, and commerce have largely improved. The presence of doctors/nurses has increased. Family planning services, primary health care, pregnancy mother, mother, and children health care services have improved due to PMBP.

The study recorded the overall social impact of the PMBP from some FGDs:

"Women empowerment has increased. Women are employed in income-generating activities. The participation process is being increased gradually in family and social related affairs. Women can express their opinion freely. Psychological stress, despair, and depression have increased due to the modernization process. PMBP has a large impact on the economy. Many people have changed their traditional profession. Employment opportunity has been created largely in this area. Income and expenditure have increased many times than before. The modernization process has become speedy.

Settlement area: Better Lives and Livelihoods Facilities than Non-settlement

This section provides a comparative analysis of how the settlement households are better lives and livelihoods than the non-settlement. It is remarkably found that the settlement households; lives and livelihood statuses are found much better than the non-settlement households. Following the results chapter, this section only considers the components under the sub-heading of the livelihood components. The tables and figures are prepared with the components of the livelihoods of the settlement households which are only better than the non-settlement households.

Education

According to education (Fig. 5.7), the 'literacy' and 'able to sign' rates are higher in the settlement area than the non-settlement, and the difference is 4.5% and 10.6% respectively.

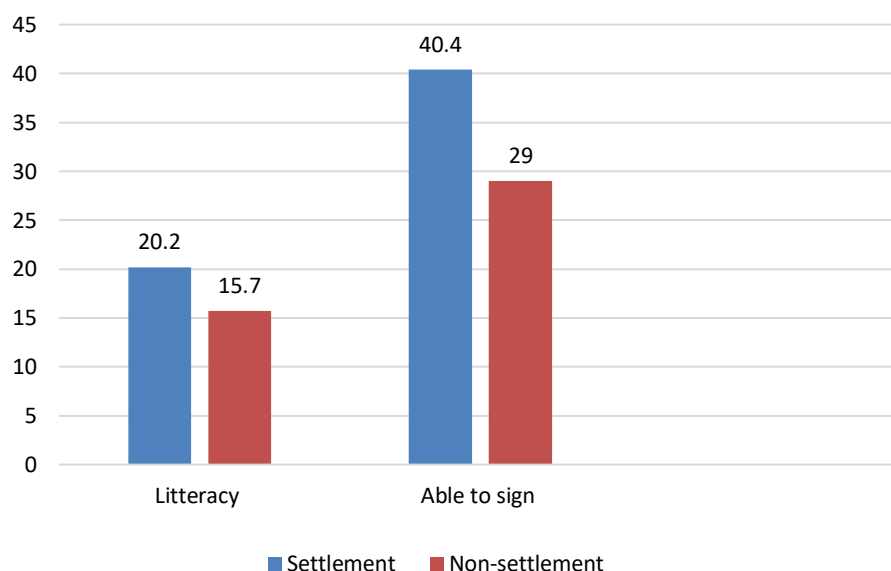


Fig.5.7 Literacy and able to sign rates

Household loan and land ownership

The land ownership and total household loan are found better in settlement households than the non-settlement. After PMBP, land ownership is found 98% which is 88.6% in non-settlement households. On the other hand, there is found a little bit lower debt among settlement households and the amount is Tk. 1,217.675 and Tk. 1.237,956 respectively which is Tk. 20,281 less (Fig. 5.8).

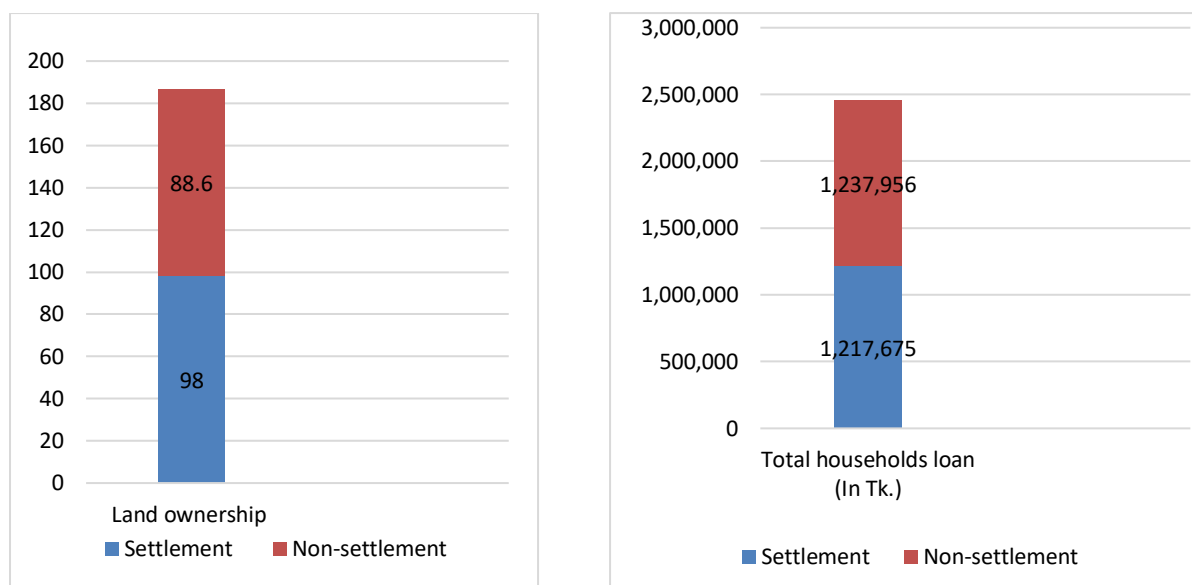


Fig. 5.8 Household land ownership and loan

Physical infrastructure

The physical infrastructure on different components is found much better in the settlement area than non-settlement. Data showed that the settlement household has a 70% concrete road and 26% brick road, which are 15% and 16% in non-settlement. Whereas 69% of non-settlement households used soil road, which is less than 4% in the settlement area. Nearly similar better road conditions are also found on households' main road connections from residence with some differences (Table 5.8). More than 49% of the households in settlement areas' distance is <1 from their residence which is 47% in the settlement area. They also have a higher number of the project maintained school (58%). More than 52% of the settlement households have community clinics and 83% have a project health center, which is 15% and 28% respectively in the non-settlement area. They also have better training facilities such as more than 4.3% have technical and 10.8% handicrafts training institutions, which are 4.2% and 6.5% respectively in non-settlement. The settlement people also enjoying better hat-bazar facilities where 73% have daily bazar, 60% permanent market, 52% community personal shop, and 70% retail raw market which are 69%, 42%, 40%, and 62% respectively in non-settlement area.

Table 5.8: Physical Infrastructure (%)

	Settlement	Non-settlement
Roads for the community movement		
- Soil road	3.9	69.1
- Brick road	26.1	15.7
- Concrete road	70	15.03
Households' main road connection from residence		
- Concrete road	70.4	21.9
- Soil road	5.3	62.5
- Brick road	24.4	15.5
The distance from the highway <1 km from the residence	49.3	46.9
Project maintained school	58.2	14.9
Types of health care institutions surrounding of respondent's residence		

- Community clinic	52.4	36.9
- Padma bridge health care center	83	27.6
Types of training institutions surrounding respondent's residence		
- Technical training	4.3	4.2
- Handicrafts training	10.8	6.5
Types of hat-bazar surrounding respondent's residence		
- Daily bazar	72.5	69
- Permanent market	59.8	41.6
- Community personal shop	52.4	39.6
- Retail raw market	70.1	62.3

Residence, latrine, water source, and sanitation

According to the last meeting (meeting number 133) of the Eco-Social Development Organization (ESDO), 754 landless people got new plot under the ILRP & IRP Project. This plot was allocated in the light of the Bangladesh Gazette (22 June 2017) of the Resettlement Action Plan I, II, III, IV, V. The settlement households are enjoying better residence, water facilities, and sanitation conditions (Table 5.9). More than 98% of them have their own house and 17% are living in a brick house, which is 89% and 12% in the non-settlement area. Nearly 82% built their houses by their income and 13% of them were provided by the government, which are 79% and 6% in the non-settlement area. Their household conditions are 'very good' and 'good' also higher than the counterpart. Their residence generally damaged a low percentage (29% versus 46%) by natural disasters and their households significantly loss by a natural disaster is also nearly half of the non-settlement area. 83% of the settlement households have a drainage system which is only 32% in non-settlement and the numbers of 'very good' and 'and 'good' rates are also higher and 100% have sanitary latrine which is 90% in the non-settlement area. The settlement household's average distance of sources of cooking, bathing, washing, and toilet usage of water from residence (in meter) are found significantly lower (2 to 3 times) distance than the non-settlement. Both households (97% to 98%) mentioned the women's security is not a problem for collecting drinking, cooking, and bathwater and much safer in settlement households. 74% of households in settlement area drink arsenic-free water, which is 66% in non-settlement) and their quality of drinking water is much better (77% and 70% respectively). The settlement area's cleanness is found higher in both 'very good' and 'good', nearly double than the non-settlement area.

Table 5.9: Residence, latrine, water source, and sanitation conditions

Indicators of residence, latrine, water source, and sanitation condition	Settlement	Non-settlement
Home ownership (own house) (%)	98.4	88.7
Brick house (%)	17.1	12.4
Person(s) who helped in building residence of households (%)		
- Own earning	81.5	78.5
- Provided by government	13.4	6.4
Households' house condition (%)		
- Very good	9	7.1
- Good	42	33.1
Households' residence generally damaged by natural disasters	29.1	46.4

Households significantly lose by natural disasters	5.8	10
Have drainage system	83.1	32.3
Condition of drainage system (%)		
- Very good	9.1	6.4
- Good	46.6	32.5
Have sanitary latrine	100	90
The average distance of sources of water from residence (in meter)		
- Cooking water	39.82	72.74
- Bath Water	6.37	20.62
- Cloth washing water	6.10	18.08
- Toilet using water	5.45	10.50
Women security to collect water (%)		
- Drinking water	98.2	96.6
- Cooking water	97.3	92.1
- Bathwater	98.7	98
Quality is good of households' drinking water (%)	76.8	69.7
Arsenic-free water (%)	74.1	66.1
Cleanness of area (%)		
- Very good	4.6	2.8
- Good	60.5	28.5

Education and health facilities

The higher number of households in the settlement area mentioned that they have available schools, a higher number of school-going children, settlement primary school, and NGO/charity schools in their community than the non-settlement area. The higher numbers of them also mentioned that their education system is 'very good' and 'good' (Table 5.10). According to the data obtained from the Head Teachers/Teachers, there are some activities/events in the schools (Table 5.10). The numbers per school are found higher in all events in the settlement area than the non-settlement. Nearly three percent of the students in settlement schools got a scholarship for their academic excellence, which is a bit more two percent in non-settlement schools. The number of PEC/JSC successful students in 2019 is shown 83% in the settlement which is 76% in non-settlement. The number of mother assembly was 2.25 and 2.10. number of CAB program 2.50 and 1.50, number of parents meeting 8.20 and 7.25, number SMC meeting 9.98 and 7.85, and cultural program 1 each respectively in settlement and non-settlement schools.

This is also important that the number of educational institutions damaged by river erosion and waterlogging in the last five years is found 0.4% in the settlement which is 3.4% in settlement (Table 5.11). None of the educational institutions was fully damaged by river erosion and waterlogging in the settlement area, which is found 36% in the non-settlement area. A very little number (0.6 %) children stop their school in the settlement area which is 4.3% in the non-settlement area. The settlement households also getting available treatment

services from the settlement area health center, Government house to house health service, community clinic, and government union health center than the non-settlement. On the other hand, regarding the quality of services of the health facilities of the settlement health center, government health center, NGO maintained and private clinic, a higher number of settlement households mentioned this as 'very good' (though the number are low) and 'good' than the non-settlement.

Table 5.10: Education and health conditions

Indicators of education and Health	Settlement	Non-settlement
Any school in the community	98.4	97.6
Any child in the family in schooling	72.1	66.4
Settlement area primary school	77.3	21.9
NGO/Charity school	15.1	7.5
Quality of education system		
- Very good	10.6	6.3
- Good	67.9	63.7
Per school activities/events (in number) of the school in four Upazilas in 2019		
- No. of students received a scholarship	2.50	2.25
- No. of PEC/JSC successful students	83%	76%
- No. of mother's assembly in the school	2.25	2.10
- No. of CAB program	2.50	1.50
- No. of parents' meetings	8.20	7.25
- No. of SMC meetings	9.58	7.85
Damage of educational institutions by river erosion and waterlogging last five years	0.4	3.4
Fully damaged educational institutions by river erosion and waterlogging last five years	0	36.4
Number of children stop attending school	0.6	4.3
Sources of the general treatment of households		
- Settlement area health Center	74.3	16.4
- Govt. house to the house service provider	1.7	1.4
- Community clinic	15.9	10.9
- Family health center	5	4.9
- Govt. union health center	14.3	11.3

Table 5.11: Quality of services of community health facilities

Sources of health facilities	Very good		Good	
	Settlement	Non-settlement	Settlement	Non-settlement
Health center under settlement area	2.2	1	34.9	9.4
Government health center	1.5	0.9	21.1	11.2
NGO maintained	0.3	0.2	3.3	2.3
Private clinic	9.9	8.3	34.9	30

Damages, service received, and service demands due to PMBP

Table 5.12 and Figures 5.9 to 5.19 compared the damages, service received and service demands due to Padma Multipurpose Bridge between settlement and non-settlement households. Regarding all types of land damage, the percentages are much lower in the settlement area, and in many cases, it is more than half, such as cultivable land and valuable trees. In monetary value, the losses due to natural disasters were nine times less than the non-settlement households (Tk. 46,617 in settlement and Tk. 432,497 in non-settlement). The higher numbers of settlement households received infrastructural compensation and some are significantly high such as a new plot 95% (only 13% in settlement), housebuilding support 38% (only 12% in the non-settlements and planned residential facility 39% (only 2% in non-settlement). The settlement households also showed higher to receive additional benefits against infrastructural losses such as home protection cost, social security, pure water supply, gas supply, sewerage system, and road light though the differences are not very momentous. They also face fewer administrative barriers such as long time, non-cooperation, harassment, and provide financial facility than non-settlement households. Again the settlement households had occupational losses on traditional fishing, agricultural land cultivation, and loss of cultivation fish found low but they received more benefits against economic and losses. In some cases, these benefits are nearly double or more such as educational services, health services, new social relations, and NGOs' social awareness. The other services such as health services provided by PMBP, family planning, immunization, maternity and child care, health service for older people), field health service workers (immunization, maternity, and reproductive health) are better in settlement area than the non-settlement though the differences are not very high. Regarding the quality of health services, 37% in the settlement area mentioned as 'good' which is 21% in the non-settlement area.

Table 5.12: Damages, service received, and service demands due to Padma Multipurpose Bridge

Indicators	Settlement	Non-settlement
Type of land damaged by PMBP		
- Cultivable land	29	62.9
- Valuable trees	35.4	24
- Fallen land	2.2	4.5
- Own land loss	63	85.4
Infrastructural compensation received by households		
- Financial compensation	97	96.5
- New plot	94.5	12.6
- House building support	37.9	12
- Planned residential facility	39.3	2.3
- Training facility	7.4	6.3
Additional services households get benefits due to infrastructural loss		
- Home protection cost	59.3	55.6
- Social security	54.2	41
- Pure water supply	62.4	61.3
- Gas supply	77.6	68.2
- Sewerage system	67.2	64.5
- Recreation center	35.4	36.1

- Road light	75.3	60.9
Administrative barriers to getting compensation		
- Long time	47.1	52
- Non-cooperation	15.4	25.5
- Harassment	34.2	40.6
- Harassment of broker	20.3	31.3
- Provide financial facility	54.7	56
Types of occupational loss of households		
- Traditional fishing	4.9	4.5
- Agricultural land cultivation	38.3	56.7
- Loss of cultivation of fish	4.7	5
Additional services households get benefits due to economic loss		
- Job facilities	72.5	60
- Income generation training	78.8	66.1
Benefits households received due to social loss		
- Educational service	61.6	32.3
- Health service	58.2	25.8
- New social relation	82.6	51.3
- Benefits of modernization	77.5	45.9
- NGOs awareness services	39.4	29
- Connection with high profile officers	14.1	10.7
Types of health service provided by PMPB		
- Family planning service	62.4	55
- Extended immunization	100	95
- Maternity service	50	40.6
- Child (primary health service)	40.2	28.3
- Child health and maternity services	43.5	38.6
- Health services for older people	39.8	30.5
Initiatives are taken by field health workers due to PMBP		
- Immunization	100	95
- Maternity services	59.2	44.1
- Reproductive health	47.8	34.8
Opinions about health service		
- Very good	3.0	1.7
- Good	36.9	20.7

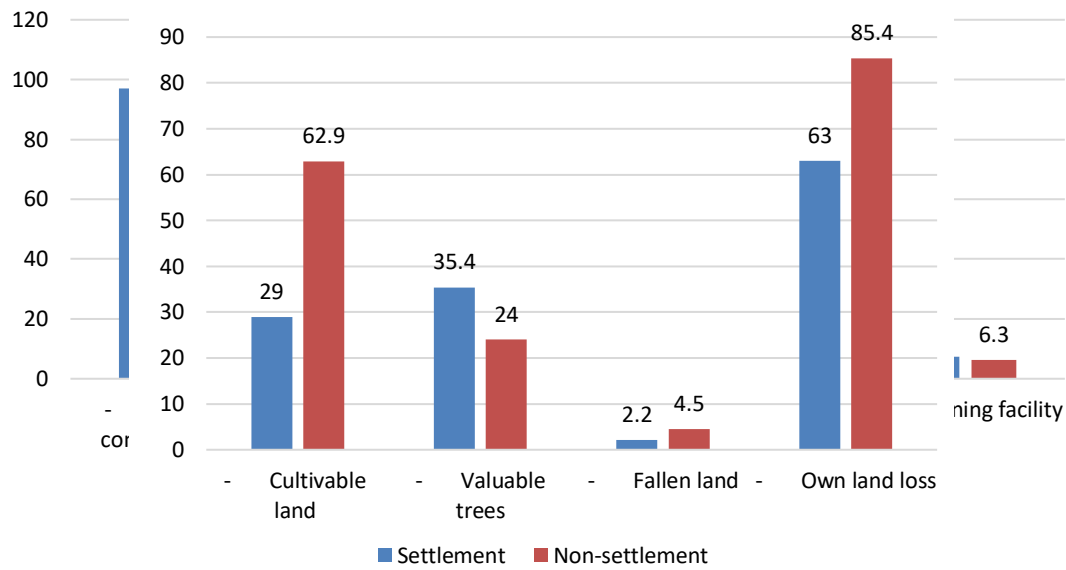


Fig. 5.9 Type of land damaged by PMBP

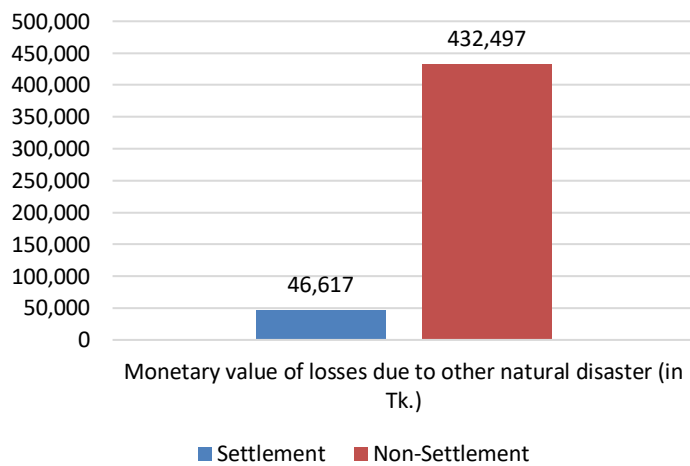


Fig. 5.10 Monetary value of losses due to other natural disasters (in Tk.)

Fig. 5.11 Infrastructural compensation received by households

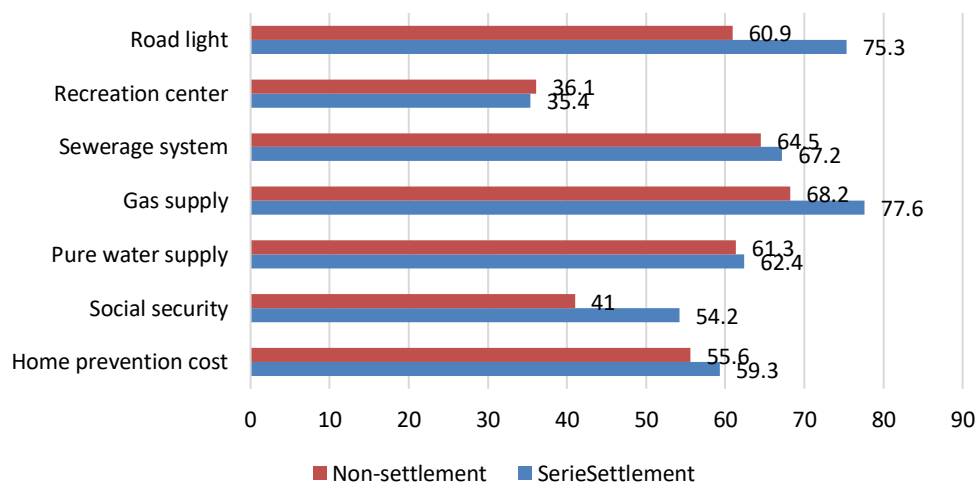


Fig. 12 Additional services households get benefits due to infrastructural loss

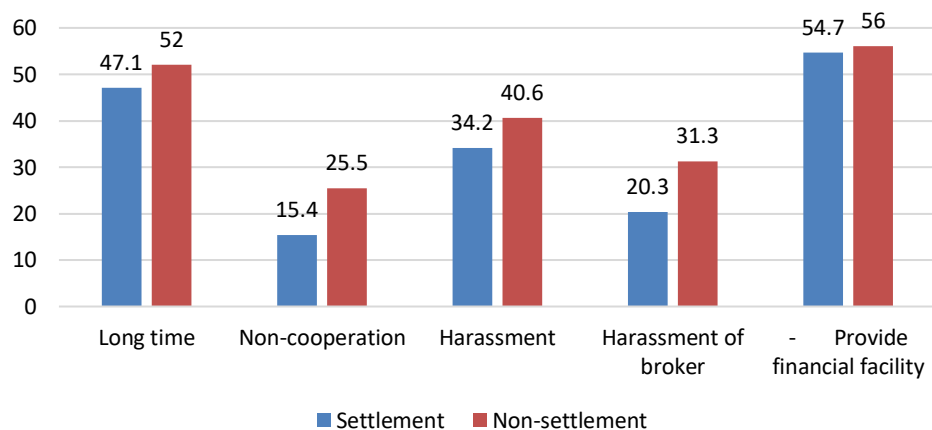


Fig. 5.13 Administrative barriers to getting compensation

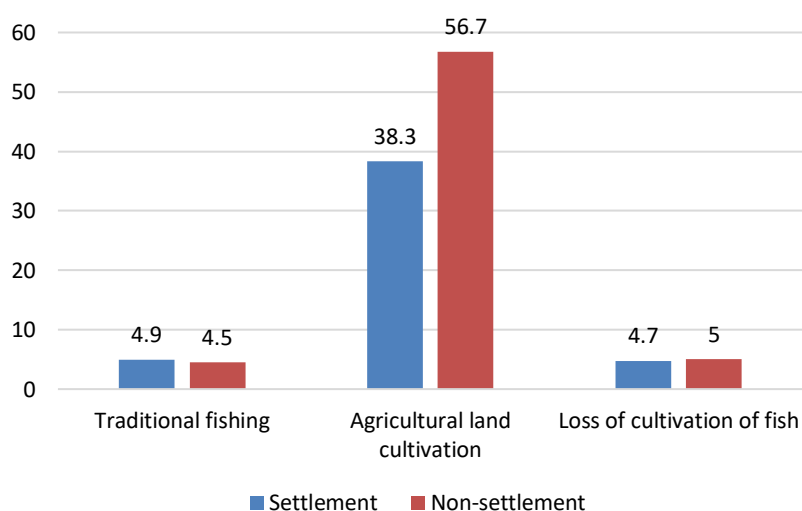


Fig. 5.14 Types of occupational loss of households

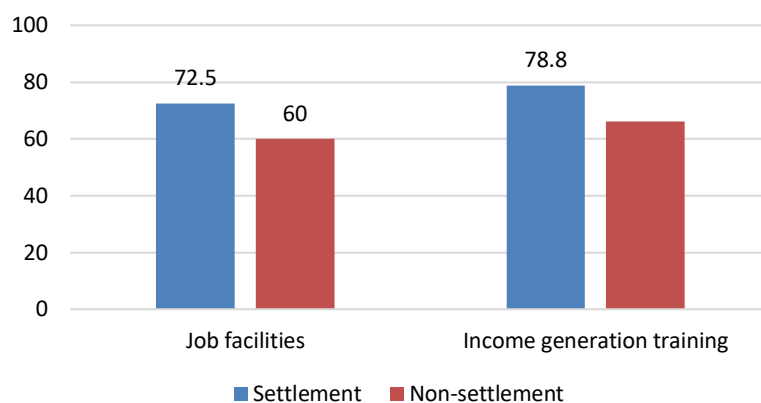


Fig. 5.15 Additional services households get benefits due to economic loss

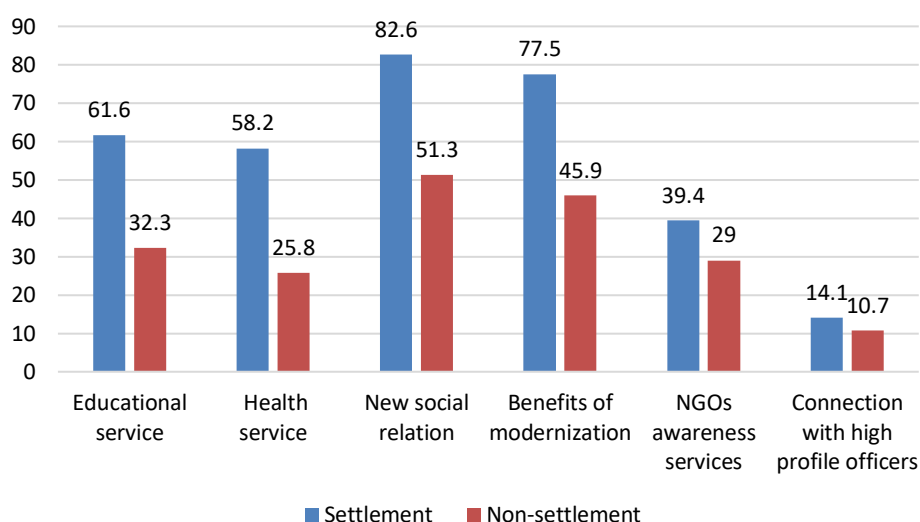


Fig. 5.16 Benefits households received due to social loss

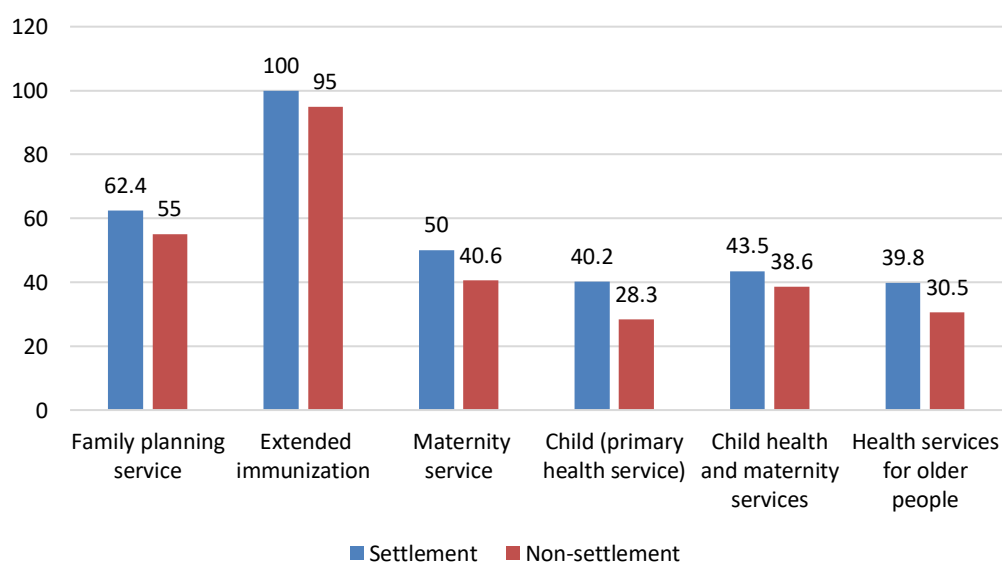


Fig. 5.17 Types of health service provided by PMPB

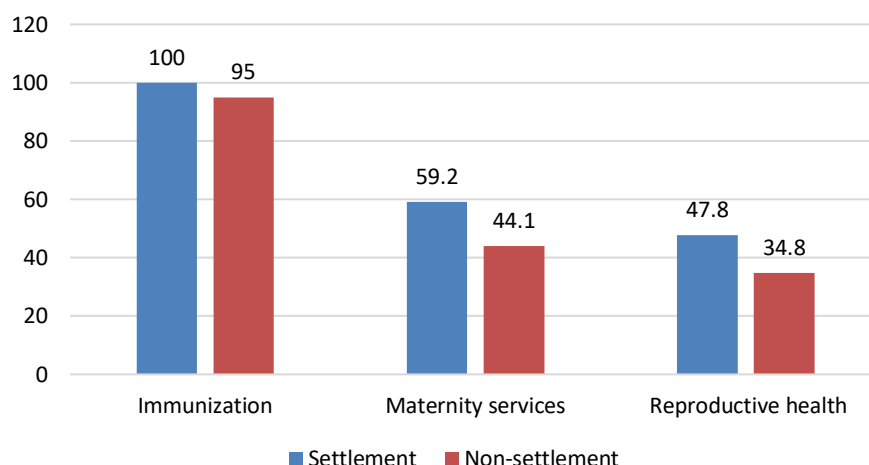


Fig. 5.18 Initiatives taken by field health workers due to PMBP

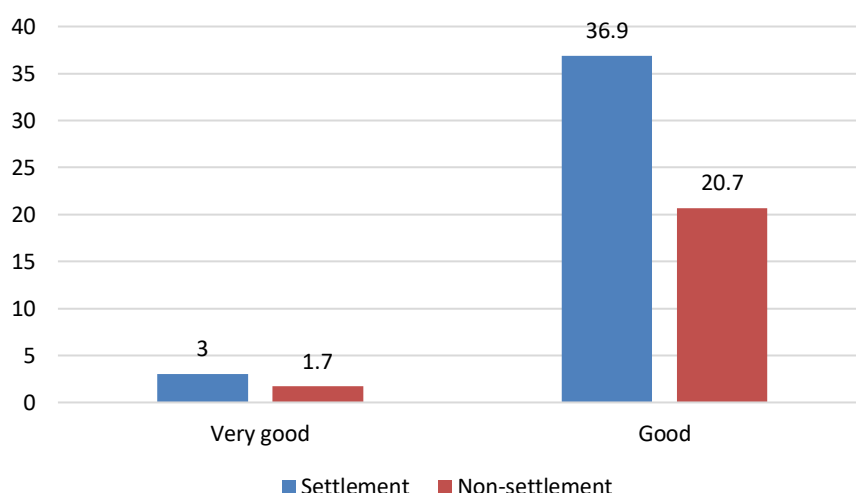


Fig. 5.19 Opinions about health service

Table 5.13: Damaged by Padma Multipurpose Bridge, services received, and the difference between damages and received services

Type of loss	Difference between loss and service getting			
	Equal		More loss and less service	
	Settlement	Non-settlement	Settlement	Non-settlement
Infrastructural loss	37.6	22.3	62.4	77.7
Financial loss	30.8	12.4	69.2	87.6
Social loss	36.0	21.7	64.0	78.3

This research finds a big gap between the loss and services the households received (Table 5.13). According to the comparison between settlement and non-settlement, the higher number of settlement households mentioned this was equal which are infrastructural 38%, financial loss 31%, and social loss 36% in settlement area which was 22%, 12%, and 22% in the non-settlement area. The number of settlement households is also found less who mentioned more loss and fewer services received, which are 62%, 69%, and 64% on those three types of loss against 78%, 88%, and 73% non-settlement respectively.

Social services

The higher number of settlement households mentioned the quality of social services such as social security, police station, local park, hat-bazar, govt. hospital, pharmacy, clinic, school/college/madrasah, and family planning service are 'good'. In some cases, such as social security, local park, govt. hospital and family planning are significant (Fig. 5.20).

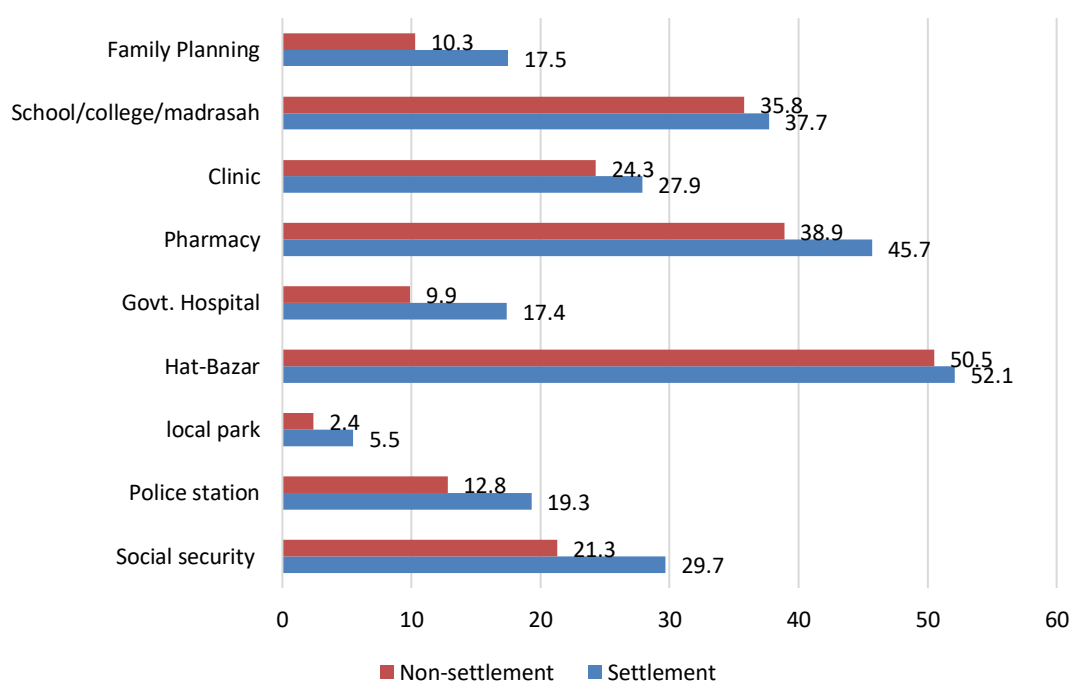


Fig. 5.20 Quality of social service 'good'

The settlement households are in a better position on many social issues in their local community (Table 5.14 & Fig. 5.21) where they highly agreed on these social issues. Though the differences between these two locations are not very significant, in some cases the percentages show high such as sufficient roads, sufficient school/college/madrasah, and sufficient health services.

Table 5.14: Opinions on social issues on the local community

Opinion on social issues on the local community	High	
	Settlement	Non-settlement
Social security	45.1	42.8
Adolescent girls freedom of movement	45.6	43.9
Women have freedom of expression	34.8	33.8
Women have security	47.4	45.4
Sufficient roads available	36.1	24.2
Sufficient schools, colleges, Madrasah	32	27
Good training facilities	6.5	5.6
Sufficient health services	18.3	9.7
Religious institutions	39.3	34.2

Recreational Arrangement (Park/Play/Ground/Club/Library)	10.9	6.2
Local government system	15.5	14.1
Local administrative officer communicate regularly	9.8	7.2
Role of the law enforcement group	15.4	11.4

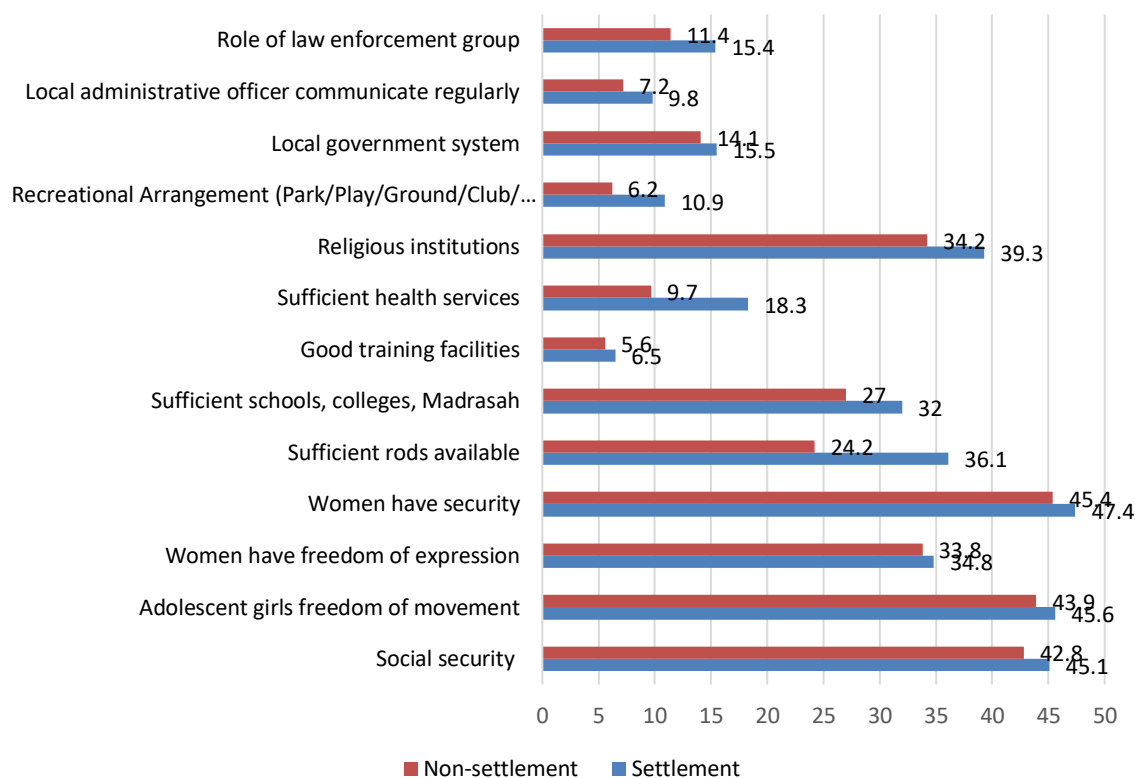


Fig. 5.21 Opinions on social issues in the local community

Women empowerment

The higher number of settlement households think that women have equal power like men at the house on different indicators. In some cases, the differences between these two locations are not very high (Table 5.15) but in a few cases such as advancement arrangement in agriculture, trading in livestock, marriage, land purchasing, and house building, the women empowerment found much higher in the settlement area.

Table 5.15: Women Empowerment Related Information

Women Empowerment areas	Have equal power like men at the house	
	Settlement	Non-settlement
Advanced arrangement in agriculture	30.7	21.9
Trading in livestock	31.5	25.2
Medicare/health services for family	39.2	37.6
Marriage	43.3	34.7
Big kind of household shopping	33.6	30.8
Contact with social service providers	32.4	29.3
Land purchasing	36.4	26.2

Participation in social activities	26.9	25.1
Political decision making	30.8	26.7
Participation in associations/social network	23.9	21.7
House building	37.9	28
Participation in different functions	35.8	30.6
Family values and entertainment	35	33.1
Reproductive health/ family planning/no. children in the family	39.5	38.4
Social benefits	39.8	34.5

Losses and vulnerabilities

The settlement households have a better position in terms of sort of losses households had to face due to riverbank erosions last five years. In some losses such as loss of land, crop loss, scarcity of pure drinking water and income loss are nearly half of the non-settlement area (Table 5.16 & Fig. 5.22).

Table 5.16: Sort of losses households had to face due to riverbank erosions last five years

	Settlement	Non-Settlement
Sort of losses households had to face due to riverbank erosions last five years		
- Loss of land	33.9	60.6
- Income loss	16.9	26.4
- Loss of homestead land	22	30.6
- Scarcity of pure drinking water	3.4	6.9
- Crops loss	23.7	46.8
- Livestock loss	5.1	7.6
- Morbidity/increasing intensity of the disease	1.7	2.1
- Loss of employment	6.8	9.7
- Injury	0	2.8

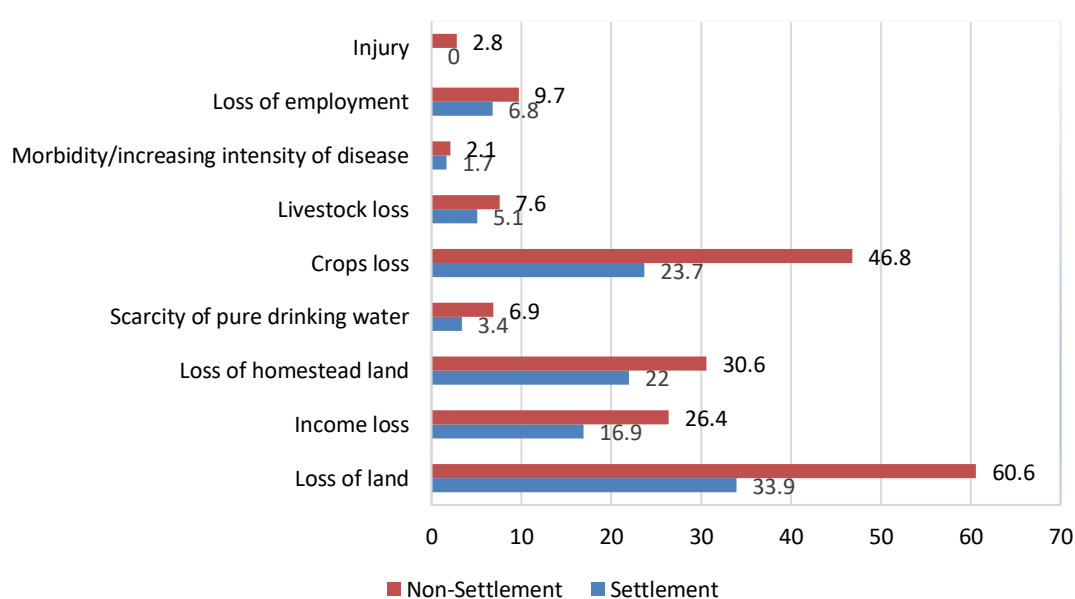


Fig. 5.22 Sort of losses households had to face due to riverbank erosions last five years

The highest number of households are found who were agreed about the psychosocial vulnerabilities (Table 5.17). Data showed that the higher numbers of the settlement households were found than the non-settlement area. Though the differences in different issues are not very big, some vulnerabilities such as gender-based violence, child marriage have increased, and the recovery process has controlled by the political institutions and local power politics are significant.

Table 5.17: Psycho-social vulnerability among households

Psycho-social Vulnerability	Agree	
	Settlement	Non-Settlement
Family members are suffering from physical problems	7.5	12.6
Social and cultural bondage have been broken	27.5	31.9
Individual and Social networking has been broken	29.4	30.1
My household occupation has changed	20.7	21.3
social inequality has increased	11.5	16.3
Human problem created	17.7	19.5
Feel helpless	15.8	20.9
Face tremendous challenges with our older, pregnant women, especially needy people, widow, and children	11.4	14.6
Lack of association	25.4	27.6
Mental stress, depression, and anxiety	16.7	18.3
Gender-based violence	2.3	4.2
Child marriage has increased	1.3	3.8
feel social distance	19	24
Feel insecurity	7.2	12.8
Many people were involved in illegal practices	7.1	8.4
Did not find any job/work	17.5	19.3
Forcefully displaced households	10.5	12.3
The recovery process has controlled by political institutions and local power politics	6.9	11

Table 5.18: Social status and social dignity related to vulnerability

Social Status Related Vulnerability	Agree	
	Settlement	Non-Settlement
Being disrespectful to society	7.3	10.9
become dependent on other	12.1	15.7
Lost social identity	12.8	13
Leading a low life	8	14.1
Lost all the ways to establish	8.1	12.8
Become inferior to society	6.8	11.9
Become financially unstable	21.4	26.2
Do not get much more respect and dignity	6.1	11.7
The path of the establishment has closed	6.4	11.3
Feel the absence of leadership	6.7	12

Like psychosocial vulnerabilities, the number of settlement households has lesser on some social status and social dignity related vulnerability (Table 5.18). In some cases, the differences are very significant such as leading a low life, lost all the ways to establish me, become inferior to the society, do not get much more respect and dignity, the path of establishing has closed, and feel the absence of leadership.

Migration and social mobility

On different indicators of the migration and social mobility, the settlement households have better situations (Table 5.19). The higher number of settlement households are highly satisfied and satisfied. As a result, a higher number of people do not have a migration plan. On the other hand, a lower number of settlement households want to migrant for a better life, health, and education. Three times fewer households' families migrate to other places for livelihoods permanently than non-settlement and a higher number of households come to the village during the festival because of better livelihoods. Nearly, 48% of the settlement households are satisfied with their present life which is 36% in the non-settlement area because of better settlement (69% settlement and only 11% in non-settlement), more facilities for income, better accommodation (64% in settlement and only 17% non-settlement) and better social opportunities. The types of change in livelihood patterns in full, moderate, and partially during the last five years are also found low at the settlement areas. On the other hand, because of a better environment, infrastructural development, educational facilities, health facilities, less river erosion, and more labor in PMB projects attract more households in the settlement areas.

Table 5.19: Migration and social mobility

Indicators	Settlement	Non-settlement
Level of satisfaction with current occupation		
- Highly satisfied	6.1	3.5
- Satisfied	29.3	22.4
Don did not have a plan for migration	94.5	81
Reasons for migration		
- Better life	53.2	79.2
- Health	24.5	42.2
- Education	22.3	42.3
Households' family migrate to other places for livelihood permanently	4.3	10
Households come in the village during any festival	32.8	27.4
Satisfied with present life	47.5	35.9
Reasons for satisfying with the present form of livelihoods		
- Better resettlement	68.6	11.1
- More facilities for income	59.2	53
- Better accommodation	63.8	17.2
- Better social opportunities	44.5	35.8
Type of change in livelihood pattern of household members during the last 5 years		
- Full	14.4	13.8

- Moderate	14.2	11.2
- Partially	41.8	43.3
Reasons for migration to project areas or nearby areas		
- Better environment	55.6	26.8
- Infrastructural development	48.8	21.8
- Educational facilities	27.3	11.4
- Health facilities	25.9	9.3
- River erosion	36.8	62.2
- Labor in PMB project	60.1	63.1

Climate change and disaster impacts

The impact of PMB on climate change and the environment showed lower in the settlement area than the non-settlement. The differences between these two locations regarding the negative climate change are not very high but still, the settlement households have less over flooding and fewer crop damages (Table 5.20). On the other hand, a lower number of settlement households found environmental impact than the non-settlement.

Table 5.20: Climate change and environmental impact due to PMB

	Settlement	Non-settlement
Types of climate change impacts in the locality		
- The decline of river water level	29.6	43.5
- Change of water flows	21.7	30
- Over flooding	5	14.5
- Cyclone	30.6	33.8
- Reduction of agricultural production	28.8	43.4
- Reduction of wild animals	11.8	13.3
- Crops damage	48.1	67.1
- Increase in contamination	64.5	68.6
Households find any environmental impact	75.9	89.8

The magnitude of disaster trends: very high and high was found comparatively lower in the settlement area than the non-settlement (Table 5.21 & Fig. 5.23). Some disaster magnitude is several times lower in the settlement area such as flood 4% (23% in non-settlement), seasonal flooding 4% (17% in non-settlement), river erosion 5% (27% in non-settlement) and cyclone 1% (3% in non-settlement).

Table 5.21: Magnitude of disaster trends: Very high and high

Types of disasters	Settlement	Non-settlement
Deep Fog	36.3	55.7
Flood	4.3	23.2
Heavy Rainfall	19.4	31.9
Seasonal flooding	4.2	16.9
River erosion	4.5	26.8
Wild winding	26.4	29.6
Cyclone	1.4	2.9
Thunder Storm	15.1	21.3

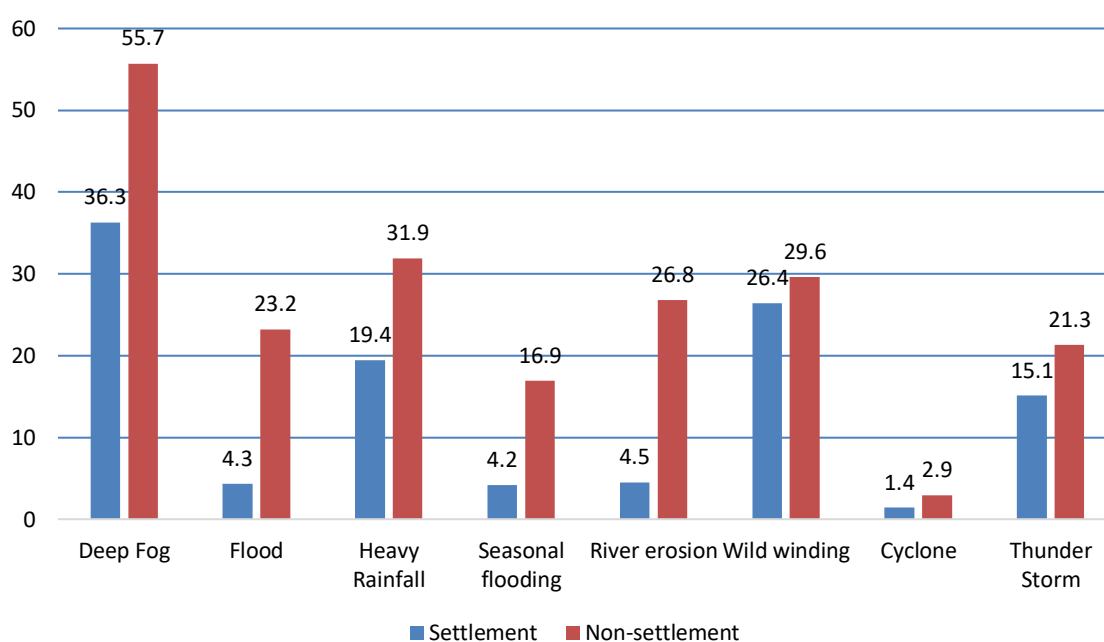


Fig. 5.23 Magnitude of disaster trends: Very high and high

Positive impacts by PMBP

Table 5.22 showed that the higher number of the settlement households applauded on the various socioeconomic positive impacts of the PMBP where they highly agreed and agreed than the non-settlement. In some cases, the number of households is much higher such as 70% Infrastructural change resulted from the standard of living (38% in settlement), 71% amenities of modern lives have increased (39% non-settlement), 74% decrease child marriage (23% non-settlement), 27% satisfactory allowances received as compensation (15% non-settlement), 62% positive government help (16% non-settlement), and 61% progress observed in education (38% non-settlement).

Table 5.22: Positive impacts resulted from the implementation of the Padma Multipurpose Bridge Project

Number of households highly support and support	Settlement	Non-settlement
Progress observed in education	56.4	44.3
Health services reached to grass-root level	45	26.1
Increase child and maternity services	37.1	20.2
The infrastructural change resulted from the standard of living	70	37.6
Road communication has increased	83.4	67.4
Social and cultural bondage has tightened	28	17.2
Occupational training increased	22.3	15.2
Income has increased through changed occupations	25.8	17.2
Amenities of modern lives have increased	71.2	38.8
Social dignity has increased	39.8	27.1
Improve good opportunities by cooperatives	54.5	35.9
Created the scope of planned housing	29.1	16.2
Decrease child marriage	73.8	23.4
Security of women's movement has increased	37.2	31.6
Freedom of expression has increased	47	35

The level of social order has increased	35.3	25.6
Reduction of poverty	38.3	25.9
Satisfactory allowances received as compensation	26.6	15.1
Loan facilities by Govt. and NGOs has increased	33	13
Housing Plot allotment has been ensured without interference	31.4	17.3
Positive government help	61.9	15.6
Progress observed in education	61.1	37.9

Special plot allocation for the landless people

The government has taken a special plot allocation under the PMBP of the landless people who have directly affected by this project. The government provides this additional support under the land acquisition laws as safeguard policy. The people who have no homestead land but they lost their houses because of this project and got housing compensation from DC office are eligible for this plot. Detail of the terms and conditions and related matters will be available from the website: http://www.dpp.gov.bd/upload_file/gazettes/21913_19182.pdf. According to the last meeting (meeting number 133) of the Eco-Social Development Organization (ESDO), 754 landless people got new plots under the ILRP & IRP Project. These plots were allocated in the light of the Bangladesh Gazette (22 June 2017) of the Resettlement Action Plan I, II, III, IV, V.

Non-settlement area: Better Lives and Livelihoods facilities than Settlement

Education

Data showed that the education rate 'can read' to 'Graduation and above' was found higher among the non-settlement area. There is a much upward trend of this education while the level is going higher (Fig 5.24), from SSC to Graduate and above are found more than double compared with the numbers of settlement households.

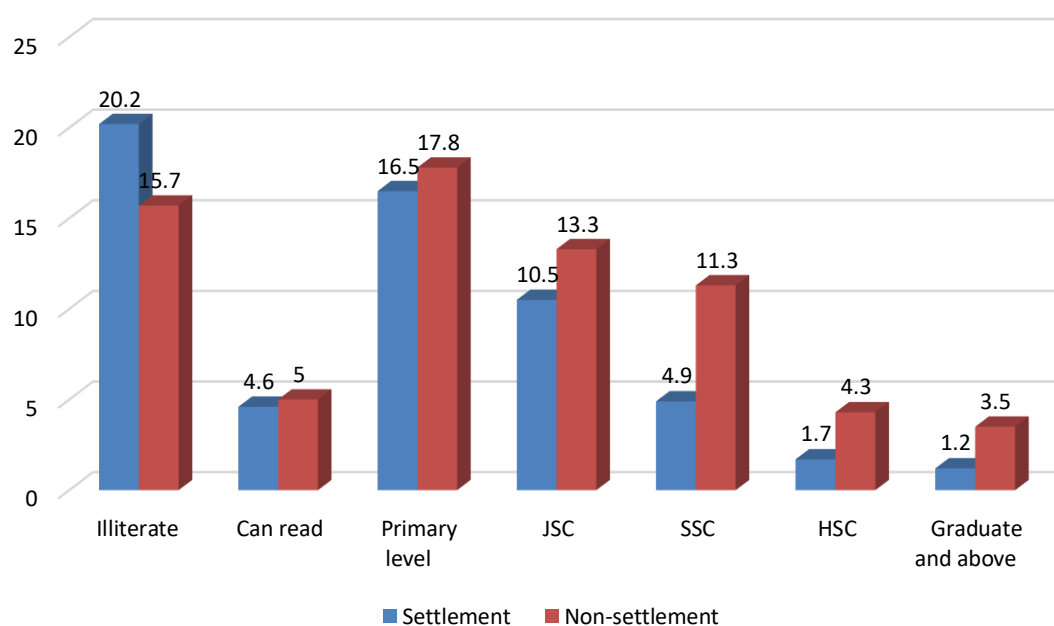


Fig. 5.24 Education of households

Economic status

In most of the economic indicators such as total monthly income, expenditure, total assets and savings are a bit higher among the non-settlement household than the settlement (Table 5.23 and Fig 5.25). The own land is nearly six times higher in non-settlement than the settlement. On the other hand, the number of households in non-settlement areas' dwelling house, the cultivable land pond is less affected than the settlement households. Comparatively, the non-settlement households have a bit higher monthly income and expenditures (Fig. 25 & 26).

Table 5.23: Economic status of households

Economic indicators	Settlement	Non-settlement
Monthly income (in Tk.)	20,396	24,054
Monthly expenditure (in Tk.)	25,378	26,918
Total asset (in Tk.)	3,121,735	3,780,272
Total saving (in Tk.)	130,068	150,497
Own Land (in decimal)	6.4	29.8
Disaster affected land (%)		
Dwelling house	93.4	85.6
Cultivable	52.8	49
Pond	14.6	9.7

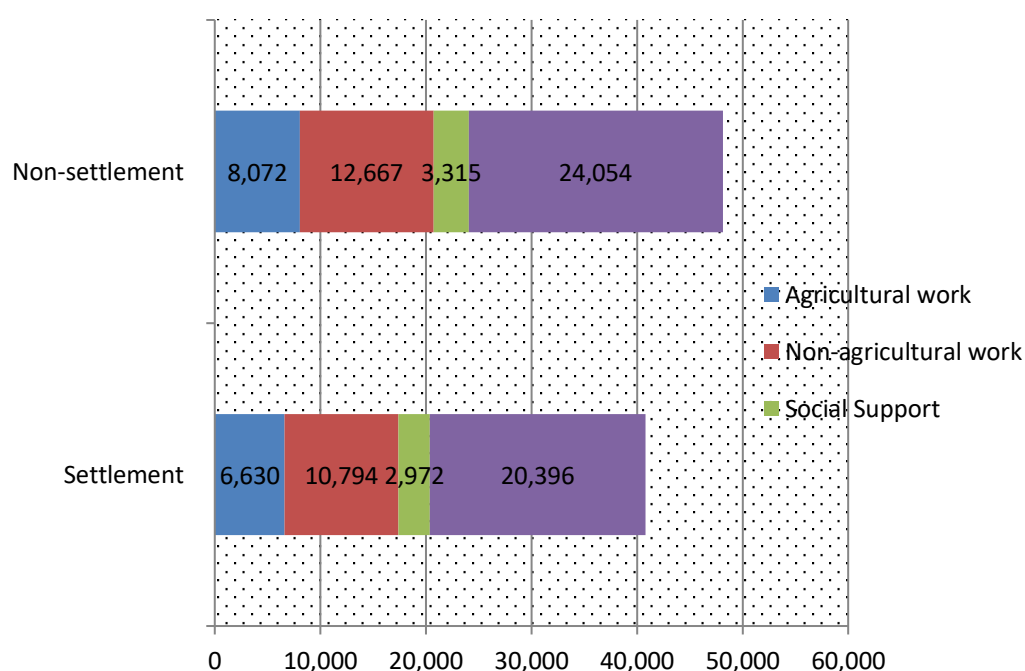


Fig. 5.25 Monthly income from different sources (in Tk.)

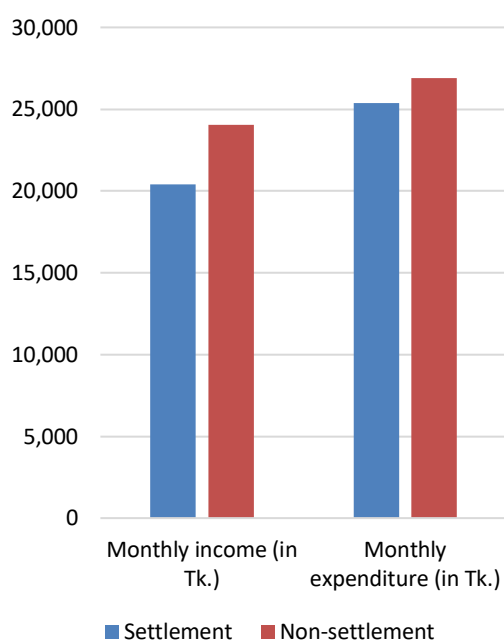


Fig. 5.26 Monthly income and expenditure (in Tk.)

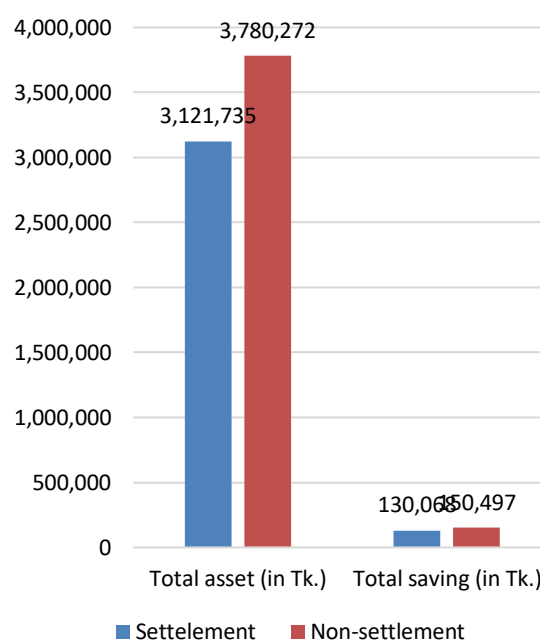


Fig. 5.27 Total asset and savings (In Tk.)

Infrastructure

Data from Table 5.24 showed that educational, health, and training infrastructural opportunities are much better in the non-settlement area than the settlement. The primary, secondary, and higher secondary schools are much available in the non-settlement area. They also enjoying better union health and family welfare center support, NGO clinic, and homeopathy medical care. Though the numbers of receiving training in computer training, foreign labor training, and animal husbandry training, but the numbers are a bit higher in the settlement area.

Table 5.24: Physical infrastructures

Indicators of physical infrastructures	Settlement	Non-settlement
Types of educational institutions surrounding of respondents' residence (%)		
Primary school	93.4	96.2
Secondary school	62.7	74.6
Higher secondary school	9.8	10.9
Types of health care institutions surrounding of respondent's residence (%)		
- Union health and family welfare center	48.3	53.2
- NGO clinic	7.6	9.7
- Family welfare center	16	18.6
- Homeopathy	21.4	28.7
Types of training institutions surrounding respondent's residence (%)		
- Computer training	10.7	14.1
- Foreign labor training	1.4	2.3
- Animal husbandry training	18.3	19

Ownership of water and distance

The ownership of both drinking and cooking water is nearly double in the non-settlement area than the settlement. Their source of drinking water is 18.22 meters which is 22.45 meters in the settlement area (Table 5.25 & Fig. 5.28).

Table 5.25: Ownership of water and distance

Ownership of water and distance	Settlement	Non-settlement
Ownership of water		
- Fully own drinking water	36	70.6
- Fully own cooking water	37.2	52.4
The average distance of drinking water from residence (in meter)	22.45	18.22

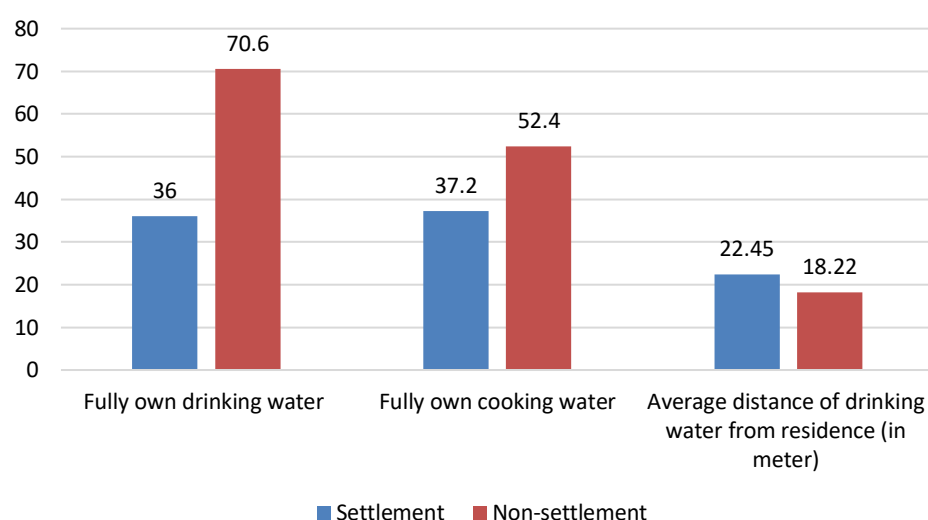


Fig. 5.28 Ownership of water and distance

Damages, service received, and service demands due to PMBP

Table 5.26: Damages, service received, and service demands due to Padma Multipurpose Bridge

	Settlement	Non-settlement
Type of land damaged and valuable tress by PMBP		
- Homestead land	92.9	61.5
- Garden	11.9	11.4
- Pond	15.2	10.3
- Commercial land	2.7	3.4
- Valuable trees	35.4	24
Types of infrastructural damage of households		
- Residential area	98.7	64.4
- Meeting place	28.8	22
- Cooking place	92.5	56.4
- Cow house	29.4	21.5
- Storeroom	11.8	7.5
- Toilet	87.8	48.7
- Tube-well	65.9	36.5

Types of occupational loss of households		
- Old business	20.7	16.8
- Loss of income source	69.9	68.7
Type of social loss due to PMBP		
- Decrease social relation	82.3	75.1
- Breakdown of relative's relation	62.6	61.8
- Breakdown of the old tradition	49.4	44.3
- Not to meet with former neighbors	74.4	60.1

Table 5.26 and Figures 5.29 to 5.32 compared data of damages, services, and demand between two locations. The number of people whose land and valuable trees were damaged found less though the differences are not very high except the damage of homestead land where 93% of the settlement households of such land were damaged by PMBP which was 62% among non-settlement. The less infrastructural damage such was also found among non-settlement households, this was a significant level of less of their cooking place, storeroom, toilet, and tube-well. The numbers are nearly half of the settlement area. The types of occupational and social losses by PMBP were comparatively less on different points though these are not much different except 'not to meet with former neighbors; of the social loss where 60% raised this problem which was 74% in the settlement area.

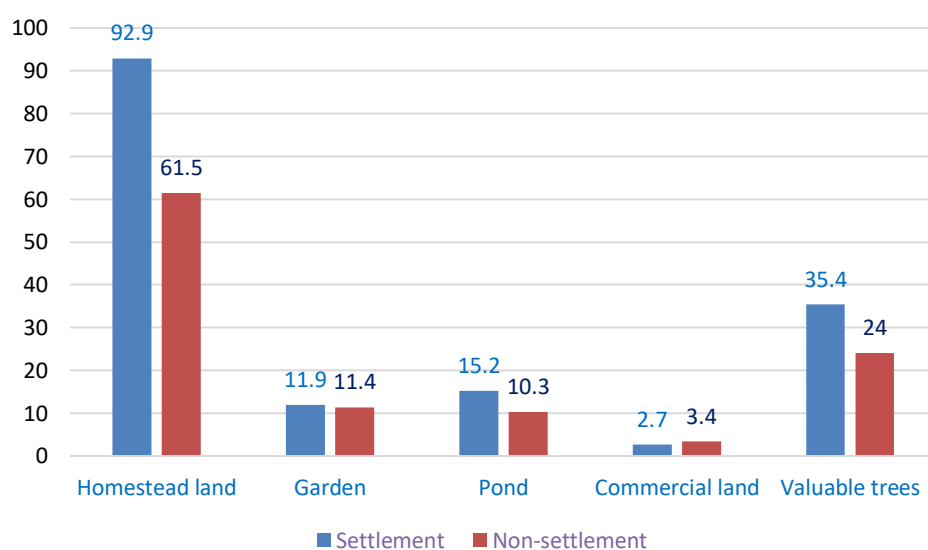


Fig. 5.29 Type of land damaged and valuable trees by PMBP

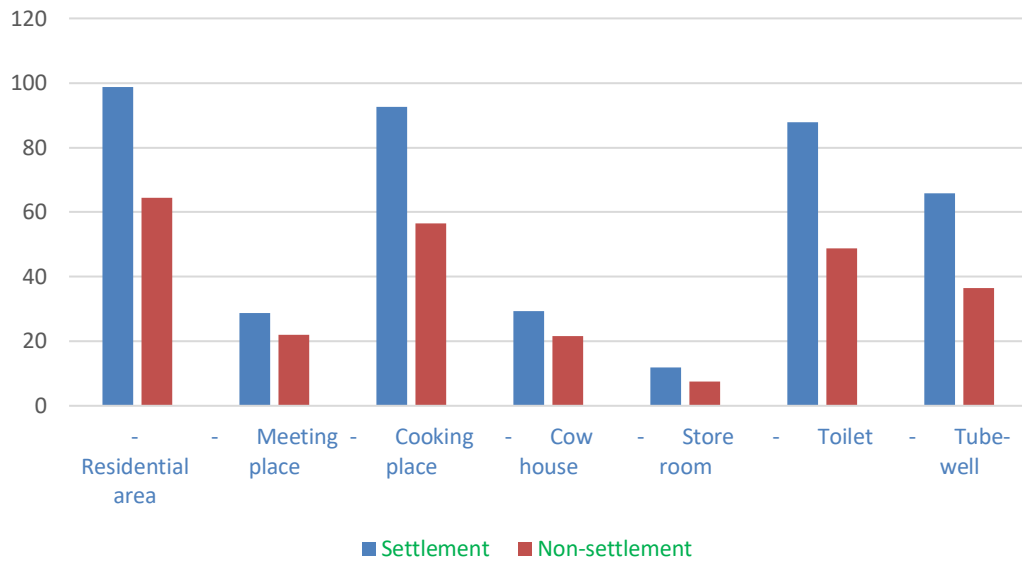


Fig. 5.30 Types of infrastructural damage of households by PMBP

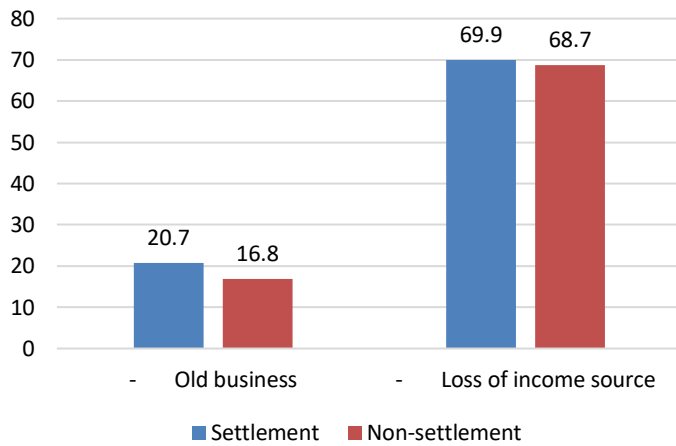


Fig. 5.31 Types of occupational loss of households by PMBP

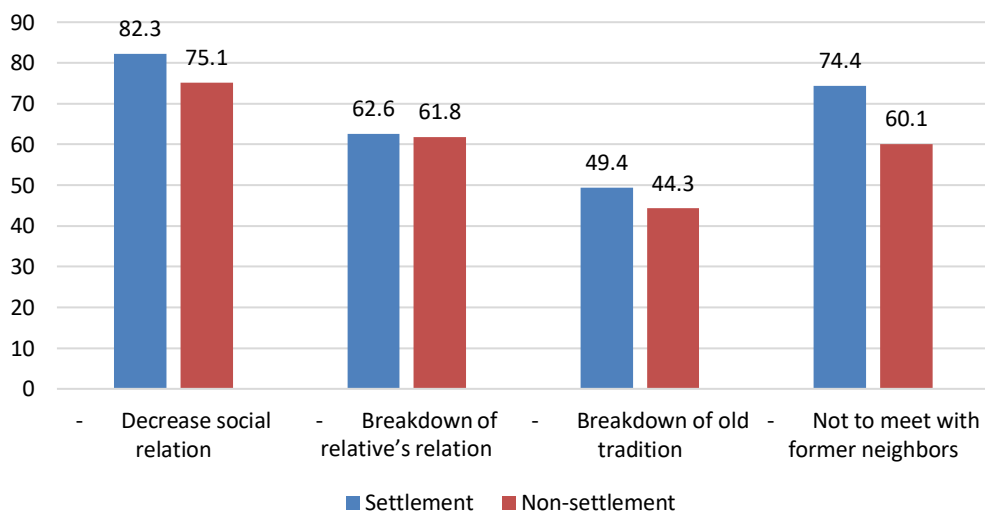


Fig. 5.32 Type of social loss due to PMBP

Displacement and migration

The displacement due to PMBP was massive in the settlement area (97%) which was nearly a half (58%) in the non-settlement area. Reasons for migration such as lack of employment and avoid waterlogging, two leading causes were found less in the non-settlement areas (Table 5.27).

Table 5.27: Displacement and migration

	Settlement	Non-settlement
Displacement due to Padma Bridge	96.8	58.1
Reasons for migration		
- Lack of employment	68.1	15.5
- Avoid waterlogging	39.4	29.9

Livelihood competencies

Though the of people who received training are found very low in both locations this is 3% higher in the non-settlement area. Also, the larger number of people in the non-settlement area got training on the coping disaster, leadership development, and social awareness from NGOs and religious institutions (Table 5.28).

Table 5.28: Household received training

	Settlement	Non-settlement
Households' family members ever received training on livelihood development	12.7	16.3
Name of the received training		
- Coping disaster	0.6	1.6
- Leadership development	00	0.4
- Awareness	0	0.8
Institutions for training		
- NGOs	53.3	61.1
- Religious institutions	0.6	4.5

Table 5.29: Households' opinions on the types of livelihood skills households' family members have

Livelihood skills reported as poor, not good, and not good at all	Settlement	Non-settlement
Grocery shop	74.7	69.9
Fishing	84.6	78.9
Agriculture	60.9	51.8
Hawker	85.9	81.8
Livestock's Rearing	58.5	52.3
Furniture	95	92.3
Tea Shopkeeper	91.9	89.7
Sanitary	98.4	95.1
Boatmen	95.9	93.6

The livelihood skills among both types of households were very poor. The lower number of people reported such a negative response on livelihood skills (as poor, not good, and not good

at all). Though this difference is not very bulky the non-settlement households have better skills on the listed livelihood skills (Table 5.29 & Fig. 5.33).

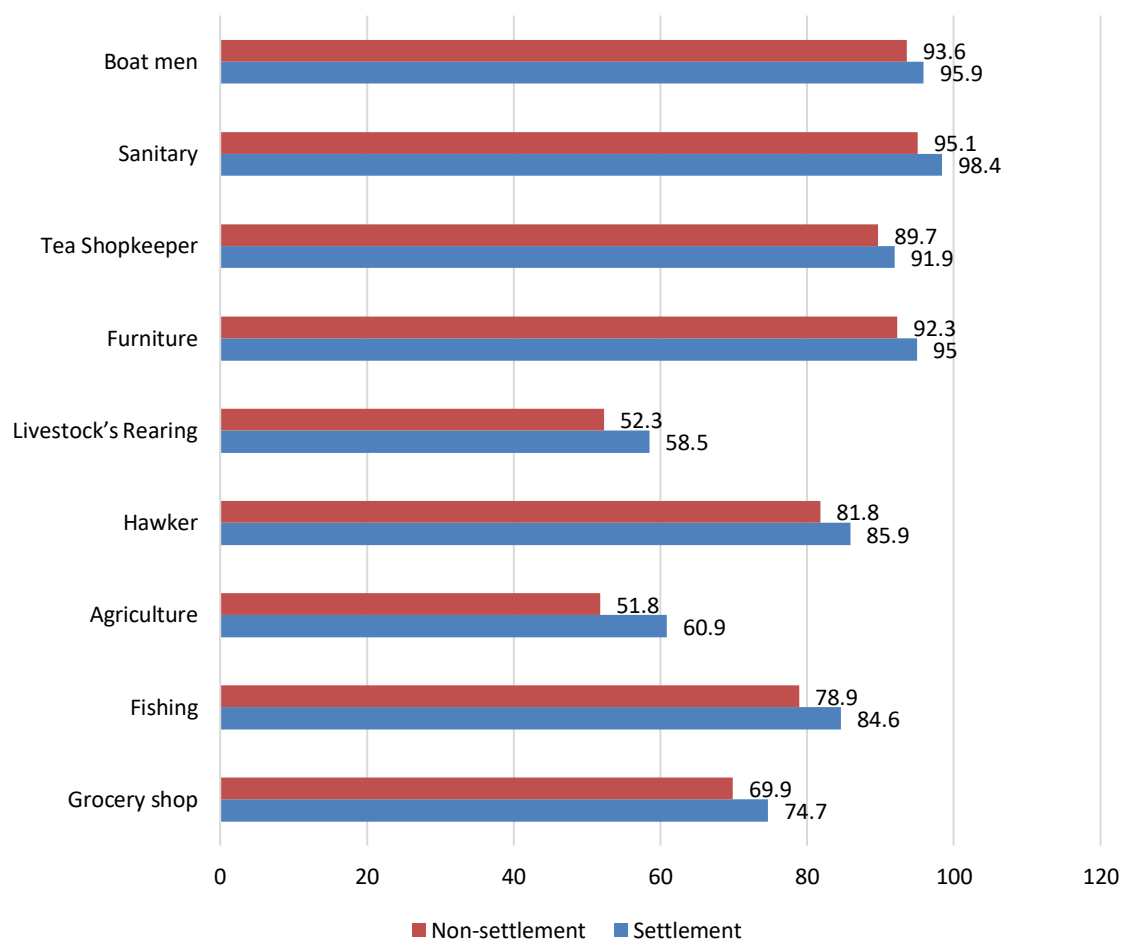


Fig. 5.33 Livelihood skills reported as poor, not good, and not good at all

There are negative climate change impacts in the locality through this impact showed a bit lower in the non-settlement areas such as drought, cyclone, and dust though this difference is not large (Table 5.30). The number of households who reported that there increased disease as an environmental impact due to Padma Bridge was also found low just half of the settlement area. The magnitude of the drought was also found a bit less here.

Table 5.30: Climate change impacts

	Settlement	Non-settlement
Types of climate change impacts in the locality		
- Drought	43.6	33.4
- Cyclone	30.6	33.8
- Increase in dust and filth	60	58.4
Increase of disease as an environmental impact due to Padma Bridge	7.2	3.6
Drought: Magnitude of disaster trends	36.3	32.8

This study recorded that the number of people was higher in both residences who mentioned that there were 'no initiative' of the government, NGO, and local initiatives to face calamities

(Table 5.31). There were not many differences between the opinions of these two categories of households though the numbers were found a bit lower in the non-settlement area except the significant differences such as plantation program (government).

Table 5.31: Steps were taken to face calamities (Government, NGO, and local initiatives)

Types of initiatives	Settlement	Non-settlement
No government initiatives		
Food Distribution	76.1	68
Distribution of House building equipment	93.2	86.7
Pure water arrangement	72.8	73.4
Distribution of fruit seeds	85.5	82.4
Construction of embankment	50.1	57.7
Plantation Program	37.1	59.5
Awareness	50.6	61.7
No NGO initiatives		
Food Distribution	92.8	84.9
Distribution of House building equipment	97.3	95.3
Pure water arrangement	94.6	90.3
Distribution of fruit seeds	97.3	95.3
Construction of embankment	94.8	92.9
Plantation Program	77.8	85.9
Awareness	68.5	72.7
No local initiatives		
Food Distribution	94.1	83.4
Distribution of House building equipment	98.5	95.8
Pure water arrangement	96	91.9
Distribution of fruit seeds	98.2	94.4
Construction of embankment	97.5	94.5
Plantation Program	95.3	87.4
Awareness	87.1	78.1

Chapter 6: Conclusions, Policy Implications, and Recommendations

Conclusions

The objective of this research was to know the current lives and livelihoods status on demographic, socioeconomic, and psychological conditions of the affected population of the Padma Multipurpose Bridge; understand the impacts of current education, health, training, and income generation activities (IGA programs); know the kinship development among the migrated people to other places; know the changing livelihood patterns and livelihood options and compare with baseline findings; explore their psychosocial and natural vulnerabilities, migration and displacement, their coping strategies, social adaptation, community resilience and the impacts of recovery processes taken by PMB project; determine/measure the gaps of services (demand and supply delivery system), and know the further directions towards their future betterment.

This study employed a mixed-method approach to collect both quantitative and qualitative data where a social survey method for quantitative and a case study for qualitative were used. Data were collected from 11 Unions from four Upazila in three districts of the Padma Multipurpose Bridge Project affected households (settlement and non-settlement). These Louhajong and Shireenagor Upazilas in the Munshiganj District; Zajira Upazila in the Shariatpur District and Shibchar Upazila in the Madaripur District. A total of 5,076 households (1,596 households from settlement and 3,480 households from non-settlement) were selected for data collection from the total 7,638 households. On average, it is nearly 66% of the total households in those four Upazilas. A total of 100 households were also chosen from outside of the project area as a control group who are considered as non-affected areas. A well-structured face-to-face interview schedule was used to collect quantitative data from the selected household heads. The FGDs, in-depth case study, KIIs, and community mapping were conducted with relevant stakeholders such as community leaders, project teams, relevant NGOs, government officials, and line departments, etc.

This report provided an ample literature review with a brief but pulsating theoretical framework and showed how the research outcomes/findings possessed. The results section provided field findings on 12 main lives and livelihood indicators in light of the research objectives and research questions. These 12 indicators are i) economic status, ii) infrastructures, iii) residence, water sources, latrine and sanitation, iv) education and health, v) damages, service received, and service demands, vi) food security, social service, and social security, vii) women empowerment, viii) vulnerability, ix) migration and social mobility, x) livelihood choices and competencies, xi) strategies to face environment, climatic change and vulnerabilities, and positive impacts of PMBP on the lives and livelihoods including demographic information of the households. Findings are presented in the different types of tables and figures with major relevant statistical applications considering three main household categories such as settlement, non-settlement, and outside households with overall averages. However, the findings provided a clear comparison between the category of stakeholders on one hand, and to see the overall average and total on the other.

In the fifth chapter, the report includes a discussion that illustrated a comparative analysis. This has two main sections. First, the current study findings are analyzed with the previous

two notable studies that were completed by BIDS in 2010 to 2011 and the Eco-Social Development Organization (ESDO) in 2016. This report mentioned some challenges such as differences in the objectives, differences of the indicators of lives and livelihoods, lack of some components of the lives and livelihood indicators, and so on. The second section of the discussion chapter highlighted very clearly how the settlement households are better than the non-settlement households and vice versa on the different lives and livelihood components. The study found that in most of the indicators the settlement households are better than the non-settlement and outside households, though the non-settlement households have high-income status and economic opportunities as many people in non-settlement households have houses there but living outside.

Policy implications

There are some national and international policy documents where the current study findings would be useful guidelines for improving, modifying, or including new options in those policies. The notable policy documents are the Sustainable Development Goals (SDGs); VISION 2021, Seventh Five Year Plan (2016-2020); National Planning for Disaster Management (2016 – 2020), Bangladesh Climate Change Strategic Action Plan (BCCSAP) 2009, acts such as Disaster Management Act 2012; Sendai Framework for Disaster Risk Reduction (SFDRR) (2015-2030), etc. (Fig. 6.1) The findings will be also worthwhile in the current planning and working options of the Padma Multipurpose Bridge Project, the Bangladesh Bridge Authority, the Road Transport, and Highway Division and the Ministry of Road Transport and Bridges, Peoples Republic of Bangladesh.

Major policy documents in Bangladesh: Lives and livelihoods of Padma Multipurpose Bridge affected people

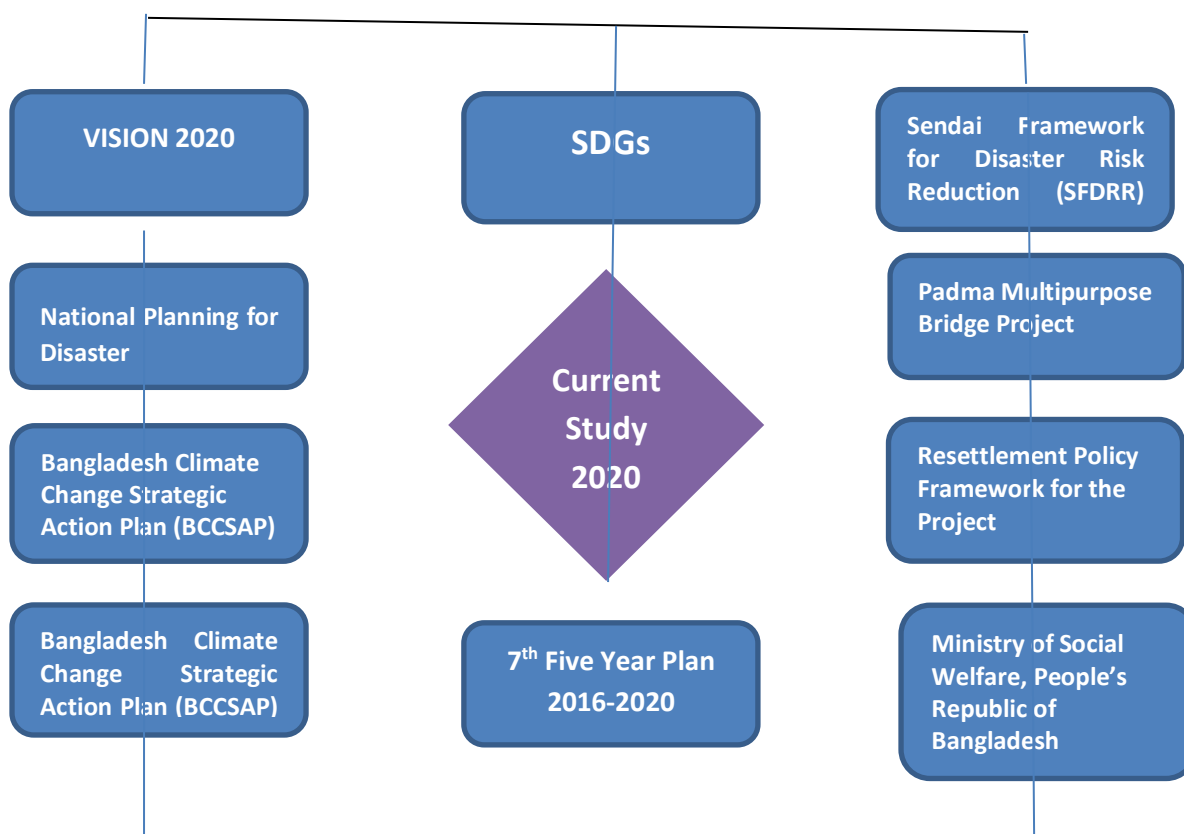


Fig. 6.1 Policy documents around study findings

SDGs

SDG 1: End poverty in all its forms everywhere

- NPI 1 Reduce the proportion of the population living below extreme poverty line below 3% (SDG Indicator 1.2.1)
- NPI 2 Reduce the proportion of the population living below national poverty line below 10% (SDG Indicator 1.2.1)

SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

- NPI 3 Reduce the prevalence of stunting among children under 5 years of age to 12% (SDG Indicator 2.2.1)
- NPI 4 Ensure the proportion of cultivable land at a minimum of 55% of the total land area

SDG 3: Ensure healthy lives and promote well-being for all at all ages

- NPI 5 Reduce neonatal mortality rate to 12 per 1,000 live births (SDG Indicator 3.2.2)
- NPI 6 Reduce under-5 mortality rate to 25 per 1,000 live births (SDG Indicator 3.2.1)
- NPI 7 Reduce the maternal mortality ratio to 70 per 100,000 live births (SDG Indicator 3.1.1)
- NPI 8 Reduce death rate due to road traffic injuries to 1.2 per 100,000 people (SDG Indicator 3.6.1)

SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- NPI 9 Ensure 100% completion rate of primary education
- NPI 10 Ensure 100% completion rate of junior secondary education
- NPI 11 Ensure the proportion of students at the technical level above 20% to the total students passed every year in the secondary education (SSC, Dakhil, and Vocational)
- NPI 12 Ensure the proportion of schools by 100% with access to the following: A. Electricity B. Internet C. Basic drinking water D. Single-sex basic sanitation facilities (SDG Indicator 4.a.1)
- NPI 13 Ensure the proportion of schools by 100% with access to adapted infrastructure and materials for the child/ students with a disability (SDG Indicator 4.a.1)

SDG 5: Achieve gender equality and empower all women and girls

- NPI 14 Reduce the proportion of women aged 20-24 years who were married before age 15 to zero (SDG Indicator 5.3.1)
- NPI 15 Reduce the proportion of women aged 20-24 years who were married before age 18 to 10% (SDG Indicator 5.3.1)
- NPI 16 Increase the female labor force participation rate to 50%

SDG 6: Ensure availability and sustainable management of water and sanitation for all

- NPI 17 Ensure 100% population using safely managed drinking water services (SDG Indicator 6.1.1)
- NPI 18 Ensure 100% population using safely managed sanitation services (SDG Indicator 6.2.1)

SDG 7: Ensure access to affordable, reliable, sustainable, and modern energy for all

- NPI 19 Ensure access to electricity for 100% population (SDG Indicator 7.1.1)
- NPI 20 Increase renewable energy share in total final energy consumption to 10% (SDG Indicator 7.2.1)

SDG 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all

- NPI 21 Increase the annual growth rate of GDP to 10% (SDG Indicator 8.1.1)
- NPI 22 Reduce unemployment rate below 3% (SDG Indicator 8.5.2)
- NPI 23 Reduce the proportion of youth population (15-29 years) not in education, employment, or training to 10% (SDG Indicator 8.6.1)

SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation

- NPI 24 Ensure 100 percent pucca roads (suitable for all seasons) (SDG Indicator 9.1.1)
- NPI 25 Increase Industry (manufacturing) value-added as a proportion of GDP to 35% (SDG Indicator 9.2.1)
- NPI 26 Increase manufacturing employment as a proportion of total employment to 25% (SDG Indicator 9.2.2)
- NPI 27 Increase the number of entrepreneurs ten times in the Information and Communication Technology sector

SDG 10: Reduce inequality within and among countries

- NPI 28 Reduce the ratio of income of the top 10% population and bottom 10% population to 20

<ul style="list-style-type: none"> NPI 29 Reduce the recruitment cost borne by employee as a proportion of yearly income earned in a country of destination to 10% (SDG Indicator 10.7.1)
SDG 11: Make cities and human settlements inclusive, safe, resilient, and sustainable <ul style="list-style-type: none"> NPI 30 Ensure women, children, elderly, and persons with disabilities have convenient access to public transport (minimum 20% seats) (SDG Indicator 11.2.1)
SDG 12: Ensure sustainable consumption and production patterns <ul style="list-style-type: none"> NPI 31 Ensure 100% of industries install and operate waste management system
SDG 13: Take urgent action to combat climate change and its impacts <ul style="list-style-type: none"> NPI 32 Reduce the number of deaths, missing persons, and directly affected persons attributed to disasters to 1500 per 100,000 population (SDG Indicator 13.1.1)
SDG 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development <ul style="list-style-type: none"> NPI 33 Expand the coverage of protected areas to marine areas by 5% (SDG Indicator 14.5.1)
SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage ests, combat desertification, and halt and reverse land degradation and halt biodiversity loss <ul style="list-style-type: none"> NPI 34 Enhance forest area as a proportion of total land area to 18% (SDG Indicator 15.1.1) NPI 35 Increase the area of tree-covered land by 25% to the total land area
SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for and build effective, accountable, and inclusive institutions at all levels <ul style="list-style-type: none"> NPI 36 Increase the proportion of children under 5 years of age whose births have been registered with civil authority to 100% (SDG Indicator 16.9.1) NPI 37 Increase the proportion of complaint Settlement against cognizance of cases by the National Human Rights Commission to 60%
SDG 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable development <ul style="list-style-type: none"> NPI 38 Increase total government revenue as a proportion of GDP to 20% (SDG Indicator 17.1.1) NPI 39 Increase the proportion of individuals using the Internet to 100% (SDG Indicator 17.8.1)

7th Five Year Plan (2016 to 2020)

The 7th Five Plan seeks to reduce the poverty rate to 18.6% and extreme poverty to around 8.9% by FY20. Along with growth, the 7th Plan will emphasize human development, social protection, and social inclusion as essential elements of a comprehensive poverty reduction strategy.

Plan Goals and Targets

Income and poverty

- Attaining average real GDP growth rate of 7.4% per year over the Plan period
- Reduction in the head-count poverty ratio by 6.2 percentage points
- Reduction in extreme poverty by about 4.0 percentage points
- Creating good jobs for the large pool of under-employed and new labor force entrants by increasing the share of employment in the manufacturing sector from 15 percent to 20 percent
 - Growth will be inclusive, pro-poor, and environmentally sustainable
 - By the end of the 7th FYP, extreme poverty will be around 8.9%
 - All the additional labor force will be employed, including much of the under-employed

Human Resource Development (Education, Health, and Population)

- Achieving 100 percent net enrolment rate for primary and secondary education
- Percentage of cohort reaching grade 5 to be increased to 100 from current 80 percent
- Under 5 mortality rate to be reduced to 37 per 1000 live birth
- Maternal Mortality Ratio to be reduced to 105 per 100,000 live births
- Immunization, measles (percent of children under 12 months) to be increased to 100 percent
- Reduce the proportion of underweight children among under-five children to 20 percent
- Births attended by skilled health staff to be increased to 65 percent XLIX
- Reduction of Total Fertility Rate to 2.0
- Increasing Contraceptive Prevalence Rate to 75 percent

Water and Sanitation

- Safe drinking water for all
- Proportion of rural population with access to sanitary latrines to be raised to 90 percent

Energy and Infrastructure

- Construction of 6.15 km. long Padma Multipurpose Bridge at Mawa-Janjira

Gender equality, income inequality, and social protection

- Female to male ratio in tertiary education to be raised from current 70 percent to 100 percent
- The ratio of literate female to male for the age group 20-24 to be raised to 100 percent from the current 86 percent
- Encourage female enrolment in technical and vocational education
- Reduce or maintain the current income inequality of 0.45
- Spending on Social Protection as a share of GDP to be increased to 2.3% of GDP

Environmental Sustainability

- Increase productive forest coverage to 20 percent
- At least 15% of the wetland in peak dry season is protected as an aquatic sanctuary
- Land zoning for sustainable land/water use completed
- Environmental, Climate Change, and disaster risk reduction considerations are integrated into project design, budgetary allocations, and implementation process
- Canals and natural water flows of Dhaka and other major cities restored

UNDP (2020)

VISION 2021

Addressing challenges of poverty reduction

The diverse underlying causes of poverty in Bangladesh include vulnerability, social exclusion, and lack of assets and productive employment; although the main symptom is often hunger. The extremely vulnerable poor can potentially lift themselves out of poverty with appropriate short to medium-term support. A sharp rise in inequality would not only undermine the impact of growth but may also threaten social cohesion and breed instability and discontent. Both poor and non-poor families are **vulnerable to shocks (e.g. natural disasters, health problems)** that can return them quickly into extreme poverty. There are four major concerns that the current rate of progress in reducing extreme poverty may not be maintained: (1) slowdown in the global economy together with domestic factors; (2) growing population density is likely to force more of the poorest people to live in the most vulnerable areas; (3) **climate change will exacerbate the vulnerability of poor people to environmental shocks, with the predicted increase in extreme climate events; and (4) demographic and social changes may further increase vulnerability and social exclusion.** Risks and vulnerability are mainstream problems in the lives of the average Bangladeshi and are recognized as such by governments, individuals, and communities. Safety Net Programs to address risk and vulnerability have been an integral part of the anti-poverty strategy of the governments and will remain so for the next decade. **Risk reduction and social protection are important not only in themselves but also because an unaddressed risk atmosphere carries negative psychological consequences for the livelihood initiatives of the poor and community efforts at social cohesion.** Effective policy initiatives based on a holistic approach to social protection will require sharper profiling of risks, old and new. These include disasters, anticipated risks such as monsoon and seasonal poverty, public health risks associated with the urbanization process, social ills such as dowry, erosion of family-based safety nets, and the emergence of new vulnerable groups such as the elderly and the disabled which may give rise to new categories of poor whether in terms of worker displacement, **livelihood losses or victims of environmental disasters.** The potential of local government bodies, particularly the **Union Parishad, to coordinate** a streamlined institutional strategy needs to be actively explored

National Planning for Disaster Management (2016-2020)

The disaster management vision of Bangladesh is to **reduce the risk of people, especially the poor and the disadvantaged**, from the effects of natural, environment, and human-induced hazards to a manageable and acceptable humanitarian level and to have in place an efficient emergency response management system. The main mission is to achieve a paradigm shift in disaster management from conventional response and **relief to a more comprehensive risk reduction culture and to promote food security** as an important factor in ensuring the resilience of communities to hazards. The plan has three **core goals such as saving lives, protecting investments, and effective recovery and rebuilding**. **Bangladesh has taken a holistic approach towards disaster management**, where the emphasis has been given to working together with all stakeholders to build strategic, scientific and implementation partnerships with all relevant government departments and agencies, and other key non-government players including NGOs, academic and technical institutions, the private sector and donors. **Flood is an annual phenomenon generally affecting 30 percent of the country, but up to 70 percent in extreme years**. Flood-related fatalities are decreasing, but **economic losses have been increasing over the years**. The government has been developing and implementing **various measures to better equip the country to deal with floods**. **Important initiatives include the flood action plan, flood hydrology study, flood management model study, national water management plan, national water policy, flood early warning study, and construction of flood embankments and flood shelters**.

Bangladesh Climate Change Strategic Action Plan (BCCSAP) 2009

The climate Change Action Plan is built on six pillars:

1. Food security, social protection, and health to ensure that the poorest and most vulnerable in society are protected from climate change and that all programs focus on the needs of this group for food security, safe housing, employment, and access to basic services, including health.
2. Comprehensive disaster management to further strengthen the country's already proven disaster management system to deal with increasingly frequent and severe natural calamities.
3. Infrastructure to ensure that existing assets (e.g. coastal and river embankments) are well-maintained and fit-for-purpose and that urgently needed infrastructure (e.g. cyclone shelters and urban drainage) is put in place to deal with the likely impacts climate change.
4. Research and knowledge management to predict the likely scale and timing of climate change impacts on different sectors of the economy and socioeconomic groups.
5. Mitigation and low carbon development to evolve low carbon development options and implement these as the country's economy grows over the coming decades and the demand for energy increases.
6. Capacity building and institutional strengthening to enhance the capacity of government ministries and agencies, civil society, and the private sector to meet the challenge of climate change and mainstream them as part of development actions.

Disaster Management Act, 2012

The objectives of the Act are substantial reduction of the overall risks of disasters to an acceptable level with appropriate risk reduction interventions; effective implementation of post-disaster emergency response; rehabilitation and recovery measures; provision of emergency humanitarian assistance to the most vulnerable community people; strengthening of institutional capacity for effective co-ordination of disaster management involving government and non-government organizations, and establishing a disaster management system capable of dealing with all hazards for the country. The Act is intended to help in promoting a comprehensive disaster management program upholding the all-hazard, all-risk and all-sector approach where risk reduction as a core element of disaster management has equal emphasis with emergency response management with a greater focus on equitable and sustainable development.

Sendai Framework for Disaster Risk Reduction (SFDRR) (2015-2030)

The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) is the first major agreement of the post-2015 development agenda, with seven targets and four priorities for action. It was endorsed by the UN General Assembly following the 2015 Third UN World Conference on Disaster Risk Reduction (WCDRR). The Sendai Framework is a 15-year, voluntary, non-binding agreement that recognizes that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector, and other stakeholders. It aims for the following outcome: The substantial reduction of disaster risks and losses in lives, livelihoods, and health and the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries. The Sendai Framework is the

successor instrument to the Hyogo Framework for Action (HFA) 2005 – 2015: Building the Resilience of Nations and Communities to Disasters. It is the outcome of stakeholder consultations initiated in March 2012 and inter-governmental negotiations held from July 2014 to March 2015, which were supported by the UNISDR upon the request of the UN General Assembly. UNISDR has been tasked to support the implementation, follow-up, and review of the Sendai Framework

Ministry of Social Welfare, People's Republic of Bangladesh

- Equitable socio-economic development
- Social protection for the disadvantaged people
- Social justice and social inclusion
- Women's Advancement and Rights (Social Protection, Interest-Free Microcredit, Protection of orphaned and helpless children under the Government management, Protection, development and welfare of the persons with disabilities)
- Social Safety Net: (Old Age Allowance, Allowances for the Widowed, Deserted and Destitute Women, Allowances for the Financially Insolvent Disabled, Stipend for Disabled Students, Fund for the Welfare of Acid Burnt and Disables, Livelihood Development of the third gender, bedridden and others)

Padma Multipurpose Bridge Project

• Environmental Action Plan (EAP):

Under EAP an Environmental Management Plan (EMP) has been prepared to minimize or avoid high and medium ranked adverse environmental impacts as identified in the EIA during three implementation stages of the project,

- Pre-construction,
- Construction, and
- Operation Maintenance.

Each adverse impact during implementation stages is addressed in the EMP as follows

- Dredged Material Management Plan- Dust management- Top Soil Stripping, Storage and Reuse- Noise and vibration management- Emergency Response Plan
- Development of Hydro-meteorological station
- Community Environmental Management Plan of Resettlement Sites (RS)
- Tree Plantation and Greenbelt Development Plan.
- Biodiversity Management Plan (Wildlife baseline monitoring including hilsha fish and Dolphin migration monitoring)- Padma protected Sanctuary, Development of Visitor center- Resettlement Action plans- Public Health Action Plan
- Income and livelihood Restoration Plan
- Formation of the Environmental Enhancement Fund (Padma Multipurpose Bridge Project, 2020a).

• Resettlement Action Plans

Resettlement Action Plans (RAPs) were prepared to address and mitigate the adverse impacts on the lives and livelihood of the Affected Persons (APs) due to the acquisition/requisition of lands for the Padma Multipurpose Bridge Project. The RAPs were prepared based on major Components of the Bridge as mentioned below:

- Development of Four Resettlement Sites: RAP-I
- Main Bridge, Approach road, Service Area and Bridge End Facility: RAP-II
- River Training Works: RAP-III
- Construction Yard at Janjira including Temporary Resettlement Site, Janjira: RAP-IV
- Construction Yard at Mawa: RAP-V (Padma Multipurpose Bridge Project, 2020b).

Resettlement Policy Framework for the Project

The resettlement policy framework for RAP-III has been designed to (a) cover all affected persons irrespective of titles to land, (b) compensation for lost assets, and (c) restore or enhance the livelihoods of all categories of affected persons. The households/persons affected by the component of RTW will not only receive cash compensation for land and other assets at full replacement cost as per market price at the time of dispossession but additional measures will also be undertaken to ensure minimum disruption of their lives and livelihoods during the project construction period. Households to be displaced physically and affected economically will

receive due to compensation, relocation assistance, and allowances by the following guidelines and policy which are also part of the Project Resettlement Framework.

- (i) Affected persons will receive the replacement value of the land and other assets before relocation. Likewise, loss of standing crops and trees will be compensated at market price. (ii) Owners of residential/commercial units will be compensated at replacement costs. Renters/leaseholders affected by the loss of living quarters or commercial premises will receive compensation and resettlement benefit due to loss of income.
- (iii) Affected community structures or physical cultural resources will be re-built or replaced at market prices under project supervision.
- (iv) Affected people will receive assistance to re-establish lost assets or livelihood. The owners of de-acquired land will receive assistance. Persons affected in their income and livelihood due to ferry closure will also be assisted.
- (v) The needs of women and vulnerable groups will be identified and provisions made for social and economic development support, employment, and means of subsistence to improve their status/livelihoods.
- (vi) Resettlement sites will be developed by the project with civic amenities to resettle the affected people, particularly those losing homestead and business structures, within the proximity of their “original” villages.
- (vii) BBA/resettlement implementing NGO will assist PAPs and business-owners/operators – directly and indirectly affected – in all aspects. The EA (through the resettlement unit) will involve all stakeholders in the decision-making process concerning relocation and resettlement.
- (viii) BBA will guide, supervise, and monitor the land acquisition, compensation payment, and resettlement of the PAPs, including grievance redress and resolution of disputed claims for compensation/resettlement benefits.
- (ix) Grievance redress committees (GRCs) will be formed to ensure participation, and speedy and out of court settlement of as many disputes as possible.
- (x) Independent third party monitoring by an External Monitoring Agency (EMA) will be contracted to monitor resettlement operations and outcomes evaluation.

All affected households and persons, as per the above policy/principles and guidelines, will be eligible for compensation and resettlement assistance from the project. The policy framework for the Padma Multipurpose Bridge Project has been designed to ensure that those affected are not disadvantaged, receive full support during the resettlement processes, and can regain their lost income and livelihoods. The entitlements are further explained and elaborated in the entitlement matrix (Bangladesh Bridge Authority for the Asian Development Bank, 2011).

We understand that different policy documents have different dimensions. The SDGs have wider and broad implications with the findings of this current study and almost all goals of this policy document have more or fewer implications. On the other hand, though the 8th Five Year Plan (2021-2025) is not published yet, from different sources, this is confirmed that this policy document will be prepared in the light of the SDGs. The 7th Five-Year Plan (2016-2020) mostly covers the study findings on poverty alleviation through increasing income, reduce income inequality and gender gap, improve education, health-sanitation and hygiene, secure social services, and social protection and environmental sustainability. The Vision 2020 widely emphasized poverty alleviation and explained how it would be reduced poverty and vulnerability shocks due to climate change and disaster. On the other hand, the National Planning for Disaster and Management (2016-2020) attempts to reduce the risk of people, especially the poor and the disadvantaged people in Bangladesh. Food security and minimization of losses due to disaster are important focuses of this document. The Bangladesh Climate Change Strategic Action Plan (BCCSAP) 2009 attempts to implement six pillars including food security, comprehensive disaster management, ensure infrastructural losses, research and knowledge, and institutional capacity building to disaster mitigation. The main objectives of the Disaster Management Act, 2012 are a substantial reduction of the overall risks of disasters to an acceptable level with appropriate risk reduction interventions; effective implementation of post-disaster emergency response; rehabilitation, and recovery measures. The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework)

aims for the substantial reduction of disaster risk and losses in lives, livelihoods, and health and the economic, physical, social, cultural, and environmental assets of persons, businesses, communities, and countries. The Ministry of Social Welfare, People's Republic of Bangladesh has some activities such as equitable socio-economic development, social protection for the disadvantaged people, social justice and social inclusion, women's advancement and rights (social protection, interest-free microcredit, protection of orphaned and helpless children and welfare of the persons with disabilities) and Social Safety Net. Under the Padma Multipurpose Bridge Project, there are environmental and resettlement programs including a wide range of lives and livelihood for the affected people. Finally, the Resettlement Policy Framework for the Project has taken a wide range of programs to ensure that those affected are not disadvantaged, receive full support during the resettlement processes, and can regain their lost income and livelihoods. Through reviewing these policy documents, we would understand that the current study findings are in the line with these policies. The findings have huge policy implications and have a comprehensive contribution to implementing the policies/activities, to give new dimension and consideration into policies or to redesign the policies in the light of these findings. This section highlighted some specific policy implications based on the above policy documents in light of the current research findings.

- Poverty reduction policy for river erosion affected people

The findings have direct links with several policy agendas that cover the SDGs, 7th Five Year Plan, Vision 2020, and the Ministry of Social Welfare focused on poverty alleviation, development of the ultra-poor, and char livelihood project, and special support for the socially excluded people. The extreme poverty in char areas is one of the major concerns in the poverty reduction policy of the Bangladesh government (Islam and Hossain, 2014; Islam, 2018). Indeed, it has been argued that policy interventions would do little effect on poverty dynamics unless the context of household vulnerability is properly understood (IPCC, 2014; Shah et al., 2013; Hahn et al., 2009). The GoB (2011) has emphasized the need to identify the most vulnerable sectors and geographical areas impacted. The government also acknowledges in the policy documents that the riverside people are severely disadvantaged in terms of ownership of assets, inadequate access to institutional finances, and other basic services, including quality education, healthcare, water and sanitation (Paul and Islam 2015). However, a special poverty alleviation program for these affected people would be very fruitful. This kind of consideration will be based on the local context and local realities of the affected people. Some relevant ministries with the association of NGO and local service providers can take different initiatives for poverty alleviation.

- A holistic management approach

The affected people are suffering different problems such as land acquisition, compensation of losses, lack of education and training facilities, jobless and lack of income opportunities, health and sanitation, environmental pollution, social isolation, social unrest, and many more. These are in line with the Ministry of Social Welfare, Padma Multipurpose Bridge Project, and Resettlement Policy Framework for the Project. However, it is important to introduce a holistic management approach to coordinate the initiatives taken by these authorities. This approach will be very useful for communication and interaction proposed to integrate the activities of different stakeholders into a functional partnership framework (Khan and Rahman, 2007; Islam and Hasan, 2015; Islam, 2018). The government alone cannot do it due to the constraints of resources as well as the wide scope of the tasks. Therefore, a broad-based partnership involving all the stakeholders is a desirable and realistic approach to all

stages of disaster management, namely prevention, preparedness, response, and recovery (Quarantelli 1990; Khan and Rahman, 2007; Islam and Hasan, 2015; Islam and Shamsudoha, 2017; Islam and Khan, 2018). The possible groups of this partnership include the stakeholders like government ministries/agencies, National Parliament, and the Parliamentary Standing Committee on Disaster Management, the NGOs/CBOs, the private sector, the media, academia, donors, and regional countries. This holistic approach to disaster management and mitigation takes into consideration the various larger social, political, and economic conditions. A strong monitoring system should be established to implement this holistic management system.

- **Community-based interventions**

This research has acquired some important evidence that the affected people are facing some problems such as lack of income generation programs, natural disasters, sanitation and hygiene problem, health problem, lack of women empowerment, psychosocial vulnerabilities, and lack of livelihood choices and competencies. All of these problems are very contextual and related to the community and local level participation and engagement. However, some community-led interventions with the association of local administration, local service providers (GO-NGO), and community-based organizations (CBOs) are very essential. This can be a problem based on where some volunteer initiatives can be strengthened with strong monitoring of the local service providers and local administration. This will help enhance indigenous coping mechanisms of the affected people (Islam and Hasan, 2015). It is also found that the local people do not have much control over the participation in decision making and recovery construction, planning, and programs. The acquisition of knowledge and skills about the preparedness of hazard intensity can play a positive impact on their health, well-being, and safety (Islam et al. 2013; Hutton and Haque 2003).

- **A more resilience livelihood policy**

A more resilient livelihood policy is essential for the affected people. We have found in the analysis of the national plans and policies as well as international agreements that the trend of national and international resource allocation solely towards physical prevention and control of environmental events that ignore the need to link the poor and marginalized people such as PMBP affected people with the development process. In Bangladesh, the marginalized peoples have a lack of control over their basic economic and political mechanisms, and the conventional development theory has traditionally associated what is popularly termed as a deprivation trap, a reinforcing situation of disenfranchisement, powerlessness, passivity, and apathy (Chambers, 1983; Hutton and Haque, 2003). The current system offers only partial solutions in the recovery and mitigation efforts.

- **A community-led post-rehabilitation and recovery policy**

A community-led post-reconstruction and rehabilitation recovery policy are most important for the river erosion affected people in Bangladesh, where a large number of the marginalized and poor people are living on both sides of the Padma river. Still, these effected communities have assets, e.g. skills, and land that could be leveraged to create new income streams (Islam and Hasan, 2014; Islam, 2018). However, the policy strategies should reflect the typical geographical setting such a way so that the local institutions can identify the users and resources (Reddy 2000; Islam and Hasan, 2014). The local peoples' participation through emphasizing local leadership would provide many opportunities to formulate an effective

community-led recovery policy. There is evidence from the study that the local NGOs' response towards their rehabilitation and recovery initiatives was very low in the study areas.

- **Boost up alternative livelihood opportunities**

There is evidence that most of the time, the affected people expect immediate relief such as cash, food, and water and treatment facilities after such kind of reconstruction and recovery processes. This is now more important than the vision of development policy would be to build the capacity of the local communities to reduce their dependency on government helps and increase their resilience (Islam and Walkerden 2015). Various studies already proved that the immediate outside helps such as compensation of the government alone is not enough to enable people to cope with resiliently and to fully recover (Mallick et al. 2005; Islam, 2018; Islam and Hasan, 2014). This study reported that due to the lack of livelihood options, e.g. employment, homestead, cash, and social networking, the affected people have lost miseries and psychosocial vulnerabilities and in some cases, they moved to other places. Some livelihood options should be included in the recovery policy, e.g. immediate cash (incentive), food-for-work, relief and rehabilitation, and interest-free loan service so that the affected people can secure their livelihoods in their local communities.

- **Supporting programs**

It should also be taken into account that physical measures may not reduce human suffering and asset damages and losses as much as expected in the long run. These 'hard' investments must be complemented by education, job training, and other 'soft' investments designed to reduce reliance on resources and assets whose value may be eroded by climate change (Dasgupta et al., 2011). Our study showed that many people are living in the affected communities without many livelihood options. The current government policies should include the proper settlement issue with special consideration. The coverage of the safety net program in the study areas seems to be inadequate, which needs to be expanded significantly (Alam et al., 2017). However, in the long-term, the development of improved communication, transportation, access to markets, and services are also important in supporting existing and alternative livelihoods for individuals and vulnerable households. Poor farmers' access to credit should be ensured. This will enable them to obtain the resources and technologies they might need for adaptation. Adaptation strategies and intervention policies, which are centralized in nature in Bangladesh, need to consider local circumstances when developing new crop varieties, high-value crops, and technology, particularly for char land to accelerate the effective and logical autonomous adoption of adaptation processes. This will enhance the resilience of vulnerable households in riparian areas across Bangladesh.

Recommendations

This section suggests some recommendations towards better lives and livelihoods of the Padma Multipurpose Bridge affected people. These recommendations are based on the study findings and empirical experiences of the study team. In some cases, previous study recommendations were also reviewed by considering the real scenarios of the study. This is an important note that these recommendations are prepared with a better understanding of the existing policy documents and policy implications of Bangladesh that we discussed above. Most of the recommendations are written by considering the contextual perspectives, problems, and opportunities of the affected communities. However, these recommendations are credible to bring positive changes in the lives and livelihoods of the affected people. To consider these into mind, this study suggests a total of 21 recommendations with three main types such as immediate/short term recommendations, medium-term recommendations,

and long term recommendations, seven each under these broad headings (Fig. 6.2). It is a note that many of these recommendations are related to each other, and some may look overlapping as many initiatives are linked with each other.

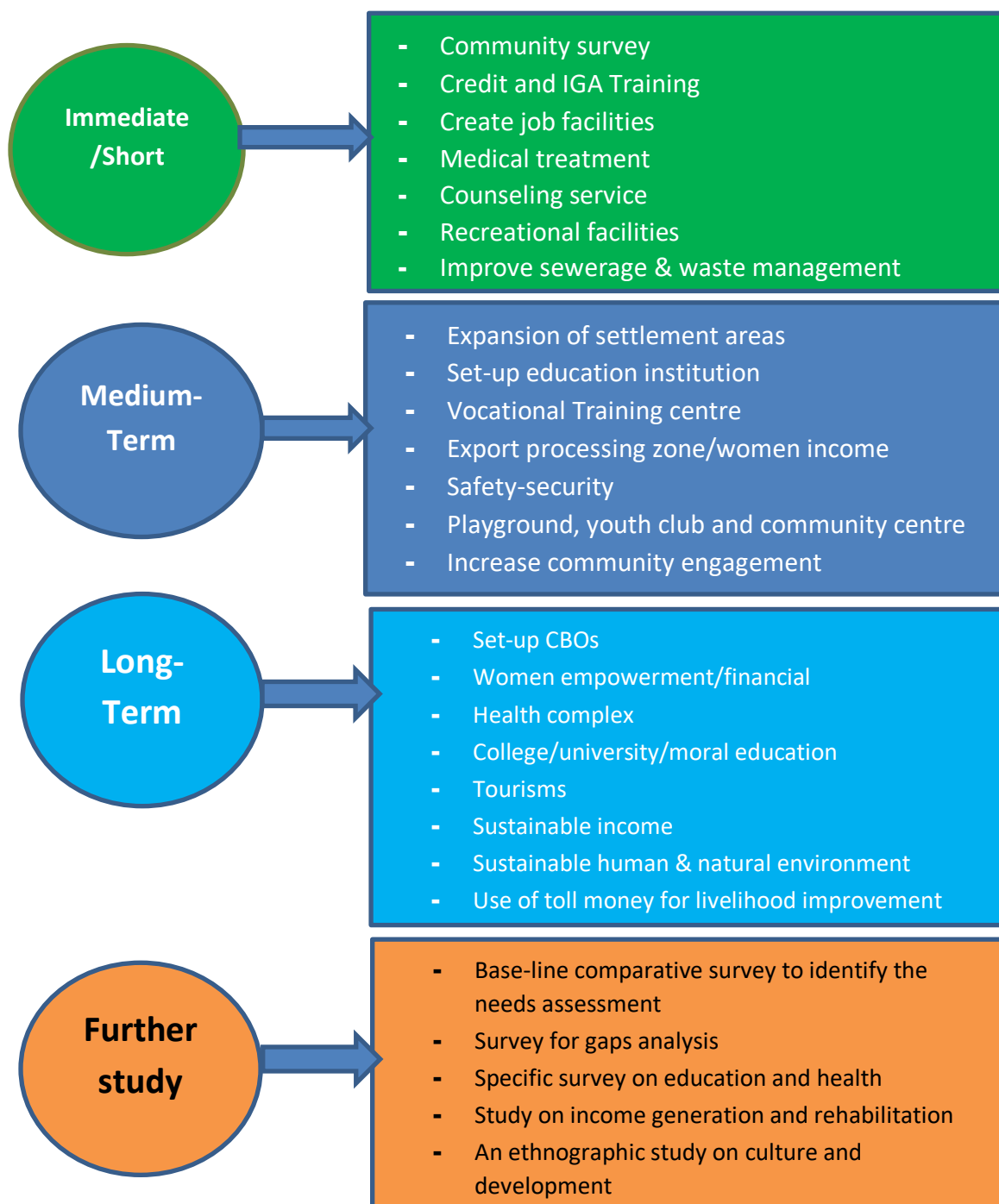


Fig. 6.2 Recommendation for better lives and livelihoods for affected people. Source: Research Team

Immediate/short term recommendations

- **Community survey:** A community survey is essential to indemnify/locate the people from both settlement and non-settlement areas who have still claim that they are not included in the settlement list, but they lost their lands due to Padma Multipurpose Bridge. A small but good number of people claimed that they could be included in the list

who lost their land in this project. The PMBP authority with the association of local service provider can conduct this survey.

- **Credit and IGA Training:** This is a commonly important recommendation that should be considered immediately. There were two strong observations in the finding that the households in both locations frequently asked. First, the IGA training facilities are very poor in all areas in two locations, and this has not been increased over time, but this has a high demand in the community. Many youths, educated people, women, and retired persons want to get IGA training. This is also equally important to have other types of training as well. Secondly, many households reported that they cannot use their IGA skills due to job opportunities or lack of credit for trading or business, or even a kitchen garden. Many respondents also reported that they have lost their occupations, and they now need to do small business where credit is very essential. It is observed that the NGOs operated micro-credit as well as government facilitated credit opportunity is found very low throughout the locations in all Upazilas. This credit opportunity can create many job opportunities and can resolve the unemployment problem in the community. Some ministries and NGOs can be involved to do this.
- **Create job facilities:** This is again a very crucial recommendation that should take immediately for the greater welfare of the affected community. This is a note that this is a common problem all over the country, but it has contextual importance. This is evidence that due to PMBP, many people lost their inherited/exiting jobs and now looking for new jobs. There is also evidence that the diversity of job opportunities has been squeezed due to PMBP. Because of these two problems, the affected people facing severe unemployment problems. However, some job opportunities should be created/offered to these people. Many alternative matters can be thought of. First, the agricultural system can be recouped in the community which has been loosened due to PMBP. Though it would not easier, it will help to return them to their previous occupation what skills they have. The advantage is that this would be easier for the people to rehabilitate them on one hand, and this will further intensify the agricultural development, on the other. Secondly, the development of the informal sector would be an important alternative sector for the job opportunity for the affected people. If we look at the national employment sector, the informal sector is the highest where a large number of people are employed. However, this informal sector should be strengthened. It needs to increase more training with a financial incentive so that they can be engaged in different informal sectors such as small business, poultry farm, village shop, local transport, footpath business, mobile business, etc. The NGOs should be encouraged to operate their micro-credit in these affected areas.
- **Medical treatment:** Medical/health service is one of the basic needs of a human being. The study explored that the medical facilities in the affected areas are very poor. Though there are some medical centers under the PMBP, and the quality of these medical services is better, but the general medical services are not enough and good in the affected areas. In some areas, there is no hospital, and the private medical services including doctors, nurses, and medical staff are very truncated. Many households claimed that they cannot buy the medical services from their local community, particularly the specialized health care including medical tests is very scarce. They have

to go to Faridpur or Dhaka, and in some cases, the patients die on the way. Many people do not have transport facilities to reach to this medical care. This is important to note that the affected people have a higher frequency of diseases due to heavy dust for construction, both bridge sides, and highways. To consider this situation, medical opportunities should be increased in the affected areas.

- **Counseling service:** This is again important for the affected people. There are many areas where these counseling services are essential. First, the people who have got a good amount of money as compensation from their land acquisition and different losses due to PMBP, this study explored that they cannot use their cash and they already spent their money due to the lack of proper advice. The people still who have some money need proper guidelines/advice/counseling so that they can productively utilize their money. Secondly, this study found that the affected people are suffering from different psychosocial problems/vulnerabilities and social unrest due to social transformation, lack of employment, cultural change, and change in their occupations. They have a certain level of shortages of their coping strategies, lack of adaptation capacity, and community resilience. As a result, they need psychological counseling to enhance their psychosocial vulnerabilities and frustration, increasing coping strategies, improve their adaptation capacity, and competency skills. The Ministry of Social Welfare, the Ministry of Youth and Sports, and the Ministry of Family Welfare and Health in association with local service providers can take such initiative.
- **Recreational facilities:** The recreational facilities are massively lacking in the affected community. We did not find sufficient numbers of playgrounds, parks, community centers, cultural organizations, volunteer associations, youth clubs, and other recreational centers in the community. The overall recreational facilities for all people in the community are very poor. For better lives and livelihoods, a higher level of social gathering, sharing people's ideas and knowledge, refreshment media, cultural practices, village fares, restore indigenous cultures, all are important. The PMB authority in association with the Ministry of Youth and Sports can take such initiative.
- **Improve sewerage and waste management system:** This study found very poor sewerage and wastage system throughout the communities. Most of the households are not happy with this. This is important that this poor sewerage and the waste system can massively hamper on the human, social, and natural environment. This is true that the number of people particularly in the non-settlement area is increasing over time because of the improvement of road and communication system in one hand, and this is closer to capital Dhaka on the other. In the long run, this poor waste system can hamper the water pollution of the Padma river that may have long-term negative consequences, particularly this can block the natural water flow of the river. Another negative impact may raise on natural fishing. As a result, without improving the sewerage and waste system, this would be difficult to maintain a clean environment in the affected area. In this case, the Bangladesh Bridge authority can take immediate initiative about this. The authority can link with other related ministries and departments to do this work.

Medium-Term

- **Expansion of settlement areas:** The comparative analysis (previous chapter) showed that the settlement areas are better lives and livelihoods than the non-settlement area. Our study also found that many non-settlement households have desired to be included in the settlement area because of this better livelihood facility. However, the Bridge authority may think to expand the settlement area. This is also true that the existing planned health facilities, education arrangement, social security, low disaster incidence, higher community well-being, etc. in the settlement area attract many non-settlement inhabitants.
- **Set-up education institutions:** Lack of education institutions particularly shortages of secondary school and colleges prevail in both settlement and non-settlement areas. A good number of households mentioned that due to the shortages of secondary schools and colleges, they cannot send their children to these institutions. The transport cost and security are apprehensions to the parents, particularly for girl students. The PMBP and the Bridge authority can jointly work with the Ministry of Education to increase the number of secondary schools and colleges. Particular, this is important to establish some girl secondary schools and colleges. The government can encourage private initiative.
- **Vocational Training center:** The vocational training center is one of the most prioritized considerations. The study found that this is essential, but the availability is very insufficient. This initiative is in line with the present government policy and initiative as the government is committed to increasing the vocational training center throughout the country. This is mostly important to such kind of affected people where there occurred massive occupational transformation due to PMB, many indigenous occupations such as farming, fishing, cultivation, and related works have been lessened a lot. The affected people are now jobless, but the job opportunities are limited and more competitive. People cannot move to other occupations due to the lack of their working skills. However, vocational training institutions can be very effective to upsurge their working skills and individual capacity. The Bridge authority can work with the Ministry of Youth and Sports, Ministry of Social Welfare, and the Ministry of Labor and Employment. The demand of the local job market, job sector, possible prospective specialized jobs for women and youth, particularly handloom, cottage industry, workshop, waste management, fishing, garments, construction, etc. can be considered. It is particularly important to establish a specialized IGA training center for women so that they can be engaged in self-employment at their homes. This is important to increase women's empowerment as well.
- **Export processing zone:** An export processing zone (EPZ) can be established in the affected area. This is very potential. Currently, Bangladesh has nine EPZ and recently the government has approved another 37 economic zones in the country. To consider the space and location, this initiative would be the epitome. This has a very long-term impact and can cover a wide range of geographical locations. This can bring a lot of changes, particularly in the South and South-West part (Greater Barisal and Khulna divisions) of the country.

- **Safety-security:** Safety and security is an essential component for lives and livelihoods, but this is an immense concern in the affected areas. Due to the improvement of the roads and communication system, social and economic transformation, cultural change, globalization, degradation of moral character, safety and security issue has been raised as social snags in the communities. This safety-security issue can be secured with collaboration with the local government, local service providers, police departments, and active participation of the local community. Many households are recommended to increase community policing and to initiate a voluntary basis social security system under local administration in the affected areas.
- **Playground, youth clubs, and community centers:** Playground, youth clubs, and community centers are three indispensable entities for lives and livelihoods. The study found a very small number of playgrounds, youth clubs, and community centers in the affected areas. These can be instigated with some ministries and departments such as the Ministry of Youth and Sports, Ministry of Social Welfare, and the Ministry of Women and Child Affairs with the collaboration of the local government. These kinds of bodies are important to deliver recreational facilities, increase community engagement, sharing ideas and knowledge, social gathering, increase human capacities, group formation, increase community engagement particularly among the aged people, cultural practices, and many more social benefits.
- **Increase community engagement:** This is further an important medium-term recommendation. This recommendation has two main extensions, first- involvement of the community people in the local activities, and secondly, enlargement of the women and aged people in the development activities. The last one has two broad objectives, one is to involve them in voluntary activities particularly aged people so that they can contribute to society, and secondly, increase of women engagement at the societal level. This will help increase their participation, decision-making capacities, and economic contribution to their families. Some other recommendations can be merged with this specific recommendation.

Long-Term

- **Set-up CBOs:** To set-up, community-based organizations (CBOs) are very important for sustainable communities. The government should initiate this into the communities so that if any initiative is phased out, this kind of organization can take responsibility and can continue the development activities. Some community development and organizations can be set-up such as self-help groups, volunteer organizations, the formation of civil society, strengthening local governance, community-based local development organizations, local resource mobilization, community participation, etc.
- **Women empowerment:** Women's empowerment is still a dominant indicator of national development in Bangladesh. This study ascertained that women have lacked in different sectors such as lack of education, lack of employment, lack of leadership, lack of political participation, lack of decision-making capacity in different aspects, and

many more. This is also found that women have a lack of income opportunity and community engagement in the affected areas, and most of them are doing domestic works. There is also limited industrialization in the affected areas, where women can work. However, some initiatives can be considered for women empowerment such as the curlicue of women in leadership including political participation, create women job opportunity (i.e. cottage industry, handlooms, cottage industry, and women trade, etc.), increase education opportunity, facilitate training for improving their capacities and skills. There are some social aspects such as women's rights, their dignity, expression of freedom, free movement, and girls' and women-friendly environment are also essential.

- **Health complex:** An enduring health complex should be established for securing health well-being for the affected people. A minimum one specialized hospital is essential. We explored the fact that households have top priority to have a specialized hospital with all modern facilities. This hospital can facilitate some other facilities such as counseling service, family planning service, availability of the medical test, child health care, maternity service, physiotherapy, medical advice, etc. The Ministry of Family Welfare and Health can include this service in the nearer future.
- **To establish a University:** The number of University colleges is very few and there is no university in this area. We have understood in the field survey that the households have a high demand to establish a government university in this area. This can provide higher education opportunities. This university can facilitate women's higher education, leadership capacity, and job opportunities for local people.
- **Tourism:** Tourism can be an important landscape around PMB. We strongly believe in a line of the qualitative participants that this kind of industry can open many opportunities for this locality. The view of the Padma river, Padma Bridge, and surroundings both sides can be very attractive to the tourists. Several sectors can be developed around this tourism industry, such as hotels-motels, restaurant business, shopping malls/complex, forestations and beautifications, flora and fauna, indigenous museum, and many more. This has three important aspects. One, this creates huge job opportunities and can expand many business sectors. Secondly, this is helpful for a sustainable environment and beautification, and thirdly, it will increase the standard of living of the local people. The bridge authority can work with the Ministry of Civil Aviation and Tourism. Public-private partnerships can be encouraged to develop this industry.
- **Sustainable income:** This is also the expectation of both households on both sides of the river that they need a continuous income source. This recommendation can link with some other above mentioned recommendations. The need for such income opportunity was raised as a critical question to the inhabitants because of the rooted-out of their inherited income opportunities. On the other hand, social transformation,

lack of industries, and complete job market and their lack of skills twisted this issue so complex.

- **Sustainable human and natural environment:** Finally, to preserve sustainable human and natural environment is an important long-term consideration. This issue is related to many policies and interlinking and interrelated activities of both governmental and non-governmental organizations, and public-private partnership. This recommendation would be useful to revisit the ongoing development activities around the bridge, whether any kind of activities is harmful to sustainability issue both human and natural environment. The BIDS (2011) along other studies mentioned this many concerns such as water pollution, air pollution, deforestation, destroy of wildlife including natural fishing, human and natural hazards, noise pollution, dust, degradation of water flow, destroy of social networking, breakdown of kinship, and many other social losses. All are adversaries for the sustainable human and natural environment. A long-term sustainable human and natural environmental plan is very essential with the involvement of the Ministry of Environment, Forestry, and Climate Change. This is also in line with the implementation of SDGs and other government policy implementations.
- **Use of toll money for livelihood improvement:** The study team believes that some portion of the toll money should be spent for the improvement of the affected people. Several income generation and social projects can be initiated by this money. These include skills training, health services, education facilities, entrepreneurship development, improvement of recreational facilities and financial incentives for the poor people.

For Further Study

- **Base-line comparative survey to identify the needs assessment:** A broad-based long-term comparative base-line survey is needed to identify the needs assessment of the settlement and non-settlement households. These survey will comprise the general needs that are related with better lives and livelihoods.
- **Survey for gaps analysis:** This is important to explore the gaps analysis between needs and services provided to the affected people. This study found a big gap regarding this issue. This is also evidenced that the government provided huge supports for the affected people for their betterment. This future study will be useful to measure these gaps on different levels.
- **Specific survey on education and health:** Education and health are two important aspects for better lives and livelihoods. This study found big gaps between the settlement and non-settlement areas on the quality of education and health. This current study suggests that the proposed study will provide detail information about these two issues
- **Study on income generation and rehabilitation:** The current study finds huge demands about the shortages of income-generation training and the affected people argues the shortages of income facilities in the affected areas. This proposed study can explore

these issues so that the government can take necessary initiatives to provide training and income generation activities including loan and required supports.

- An ethnographic study on culture and development: This is more important to conduct an ethnographic survey. This participatory research can provide real information on different aspects of lives and livelihoods of the affected people. This study can minimize many myths and confusions.

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Appendices

Appendix 1: Data collection instruments

Structured Interview Schedule

Serial No-

Code No:

Structured Interview Schedule

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Setu Bhaban, Dhaka
And
Institute Social Welfare and Research
University of Dhaka



[This research is funded by the **Padma Multipurpose Bridge Project** under the Bangladesh Bridge Authority and conducted by Institute of Social Welfare and Research, University of Dhaka. Collected information will be used only for research purpose and its confidentiality will be maintained]

Name of Respondent:			
Household Head		(1) Yes	(2) No
Nature of Respondent: Settlement=1, Non Settlement=2, Outside=3 Nature of House: Main House=1, Char=2		Name of Interviewer..... Date of Interview..... Mobile No.....	

Is the respondent head of household	1. Yes	2. No
-------------------------------------	--------	-------

Relationship with Household	Father=1, Mother=2, wife=3, Son=4, Daughter= 5, Other (identify)=6									
Mobile No (Respondent)	0	1								

1. Identify of respondents and demographic information	
1.1 Status of Respondent	
Name of Household	
Village/Ward	
Union	Medinimondol= 1, Kumarvhog=2, Haludia=3, Kolapara=4, Vaggokul=5, Rarikhal= 6, Kathalbari=7, Matborer Char= 8, Kutubpur=9, Naodoba= 10, East-Naodoba=11, outside area=12, Others (Mention specifically)=13.....
Upazila	Louhajanj / Sreenagar / Shibchor / Jajira
District	Munshigonj / Madaripur / Sariatpur
Division	Dhaka

1.2 Detail Information of Household								
	Name of the household head and his/her Family Members (Elder to younger)	Sex Male=1 Female=2	Marital Status Unmarried=1 Married=2 Divorce=3 Widow=4 Others=5	Age (Yrs)	Education I Qualification (Write below Code)	Primary Occupation (Write below Code)	Secondary Occupation (Write below Code)	Average Monthly Income (in Taka)
1.								
2.								
3.								
5.								
6.								
7.								
8.								
9.								
10.								
Total Monthly Income of Family								
Illiterate=1 Able to Sign=2, Can Read=3, Primary Level=4, JSC=5 Secondary Level (SSC)=6, HSC Pass=7, Bachelor Degree and above=8,								
Primary and Secondary Occupation: Farmer=1, Household=2, Agriculture Day labor=3, Non agriculture Day labor=4, Services=5, bamboo/crane= 6, Construction Worker=7, Fisherman=8, Boatman=9, Blacksmith=10, porter=11, Rickshaw/Van Driver=12, wood maker=13, Business= 14, Small Business=15, Migrated Labor-inland (send money)=16, Migrated Labor-overseas (send money)=17, Unemployed=18, Retired=19, Not able to work=20, Saloon Worker=21, Tailoring=22, Cottage industry=23, Handloom=24, dummy hair=25, student=26, Teacher=24, coaching=28, Others (mention specifically)=30								

1.3 Number of Family Member with special needs (if Any): Number=Type= Physical=1, Psychological= 2	
1.4 Religion of Respondent	Islam=1, Hindu=2, Christian=3, Buddhist=4, Others=5 (mention specifically)

2. Economic Status of Household/Respondent (Occupation, Income, Expenditure, Asset and Land)			
2.1 Asset List			
Types of Asset		Quantity/Numbers	Approx. Value(taka)
1.	Cash Money		
2.	Investment (Cash Capital)		
3.	Land (in decimal)		
4.	Ornaments (Gold/Silver)		
5.	Animal (Goat/Pigeon/Hen/Duck/Buffalo)		
6.	Household Asset		
7.	Boat		
8.	Transport		
9.	Trees		

10.	Fishing Net		
11.	Shop		
12.	Business		
13.	Furniture		
14	Agricultural Instruments		
15	Others (mention specifically)		

2.2 Family Income Sources

Sources of Income	Name of Business/Farm/Job	Monthly Total Income (Taka)
Agricultural work	1. Crop production	
	2. Fisheries	
	3. Dairy	
	4. Fishing	
	5. Cow rearing	
	6. Goat/Lamb rearing	
	7. Honey collection	
	8. Wood collection	
	9. Poultry/hens rearing	
	10 Other Farming (specify)	
Non-agricultural work	11. Ready-made garments	
	12. Service (Govt.+ Private)	
	13. Daily Labor (specify)	
	14. Driving (Rickshaw/Van/Auto/Motorcycle/Boating/Rented Boat/Rented/others (mention specifically))	
	15. House Rent/Shop Rent	
	16. Small Business (Tea stall/Grocery/Fish cell/ mention specifically)	
	17. Begging	
	18. Others (Specify)	
Social Support	19. Govt. Pension	
	20. Jakat and fitra	
	21. Old age allowance (Tk. 500 monthly)	
	22. Widow allowance (Tk. 500 monthly)	
	23. Freedom fighters honorarium allowance (Tk.12,000)	
	24. education stipend	
	25. relief program	
	26. cash money for work/training	
	27. disable allowance (Tk. 500 monthly)	
	28. farmers card	
	29. VGD/VGF	
	30. Others (mention specifically)	
Total Monthly Income		

2.3 Family Expenditure Details

Sources of Expenditure	Monthly Expenditure (Taka)
1.Agriculture and agriculture related items purchase	

2. Food	
3. Dress	
4. Land purchase	
5. Cash in hand	
6. House build/re-pair	
7. House furniture purchase	
8. Education	
9. Cosmetics	
10. Transport/Travel	
11. Health/Medicine	
12. Electricity/Water/Fuel	
13. Festival (Religion/Social/Cultural)	
14. Recreation/Treat	
15. Vehicle	
16. Loan repay	
17. Dowry	
18. Mobile phone	
19. Land rent	
20. Others (mention specifically)	
Total Monthly Expenditure	

2.4 Family Loan related information:

2.4.1 Have you taken any loan from bank or any other source? Yes = 1, No = 2

2.4.2 If Yes, What is the source of Loan		
Serial No.	Source of Loan	Total Loan Amount (Taka)
1.	Bank	
2.	NGO	
3.	Mahajon	
4.	Relative	
5.	Co-operative	
6.	Arotdar	
7.	Dadonder	
8.	Shopkeeper	
9.	Others (mention specifically)	
Total Loan		

2.4.3 In which sector the Loan have been used?

Serial No.	Where and in which sector the Loan has been used	Total Amount (Taka)
1	Land purchase	
2	Seed purchase	
3	Agriculture	
4	Livestock purchase	
5	Food purpose	
6	Education	
7	Health	
8	Loan repay	

9	Business (mention what type of business)	
10	Social program/Gift for marriage program (what type)	
11	Migrate to Foreign country	
12	Agricultural Instrument	
13	Housebuilding	
14.	Purchase of fancy materials	
15.	Unused of loan	
16	Others (mention specifically)	
Total		

2.5 Savings (in last 1 Year)	Amount (Taka)
1. Cash in Hand	
2. Savings at Bank	
3. Savings at NGO	
4. Savings with Relative	
5. Give loan to others on interest	
6. Others (mention specifically)	
Total	

2.6 Ownership and possess of land

2.6.1 Do you have any land		Yes = 1	No = 2
2.6.2 Please give details of your Land	Types of Land	Amount of Land (decimal)	Land Usage Type (select below code)
	Own		
	Mortgage		
	Khash land		
	Sharing/Borga		
	Others		
Code of Land usage type: Housing=1, cultivable land=2, Pond=3, non-cultivable land=4, others=5			

2.7 Description of disaster affected land

Disaster affected land	Yes=1 No=2	If answer is Yes what types of land is affected by disaster? Dangerous types; Seasonal Flood=1, Flash Flood=2 Drought=3, Salinity=4, Cyclone=5, Tidal Wave=6, Dam Breakdown=7, river erosion=8, Water logging=9, Others(Specify)=10
1.Dwelling house		
2. Cultivable		
3. Pond		
4.non-cultivable land		
5.Others(specify)		

3. Physical Infrastructure Information

3.1	Respondent's community movement road	Soil road=1, Brick road=2, Concrete road=3, Others=4 (specify)
3.2	The main road connection from the respondent's residence	Concrete road=1, Soil road=2, Brick road connection=3

3.3	Distance of the highway from the respondent's residence	Less than 1 k.m=1, 1k.m=2, 2k.m=3, 3k.m=4 4k.m=5, More than=6
3.4	Types of educational institutions surrounding of respondents' residence.(Multiple answers)	Primary school=1, Secondary school=2, Higher secondary school=3, Moktab=4, Madrasah=5, Kindergarten school=6, NGO school=7, Project maintained school=8
3.5	Types of health care institutions surrounding of respondent's residence. (Multiple answers)	Community clinic=1, Padma bridge (health) care center=2, Union health and family welfare center=3, NGO clinic=4, Family welfare center=5, Homeopathy=6, Others=7(specify)
3.6	Types of training institutions surrounding respondent's residence. Multiple answers)	Technical training institution=1, Computer training center=2, Foreign labor training center=3, Handicrafts training center=4, Animal husbandry training\sewing training=5, No training center=6, Others=7(specify)
3.7	Types of hat-bazar surrounding respondent's residence. (Multiple answers)	Daily hat=1, Weekly hat=2, Permanent market=3, Community personal ownership shop=4, Retail raw market=5, Others=6(specify)
3.8	Distance of the closest hat-bazar from respondents' residence	Walking distance=1, Half k.m distance=2, 1k.m distance=3, 2k.m distance=4

4. Residence, Water source, Latrine and Sanitation conditions

4.1	What is the status of your home ownership?	Brick house=1, partially brick house(Tin)=2, kacha home=3, Tin/Wood/Bamboo=4, Soil/straw=5, Others=6(specify)
4.2	How is your residence type? (Observe and tick the correct answer)	Very good=1, Good=2, Average=3, Bad=4, Very bad=5
4.3	Who helped to build your residence?	Inheritance=1, Own earning=2, Provided by government=3, , Provided by NGO=4, personal/ relative donation=5, Others=6(specify)
4.4	What is the condition of your residence? (Observe and tick the correct answer)	Very good=1, Good=2, Average=3, Bad=4, Very bad=5
4.5	Is your residence generally damaged by storm winds, heavy rains, river breaks, or floods?	Yes=1, No=2, If yes, There was a slight loss=1, there was a roughly loss=2, There was a significant loss=3, Others loss=4 (specify)
4.6	Is your residence damaged by natural disaster?(last 5 years)	Yes=1, No=2, If yes, There was a slight loss=1, there was a roughly loss=2, There was a significant loss=3
4.7	Is there a drainage system?	Yes=1, No=2
4.8	If answer is yes, what is the condition of the types of drainage system existence?	Very good=1, Good=2, Average=3, Bad=4, Very bad=5
4.9	Give your opinion about sewage system	Regular=1, Sometimes=2, Irregular=3, No system available=4
4.10	What types of toilet you and your family members generally use? (Observe and tick the correct answer)	Open place=1, Community/Collective toilet=2, Personal sanitary latrine=3, Made of private slab rings=4, Hanging toilet=5, Others=6(specify)

4.11 The key type of ownership and water supply for use in your residence

Types of water use	Water source(Deep tube-well=1, Shallow tube-well=2, Supplies=3, ponds=4, canal=5, River=6) Others=7(specify)	Ownership Types(Fully own=1, Partnership=2, Relatives=3, Community=4, Government=5, Neighbors=6)	Distance from residence	IS it adequate for demand?		Women security to collect water from sources		Quality of water of the residence
				Yes=1	No=2	Yes=1,	No=2	
Drinking water								
Cooking water								
Bath Water								
Cloth washing water								
Toilet using water								

4.12	Is your drinking water free of arsenic?	Yes=1, No=2, Don't know=3
4.13	How is the cleanness of your area?	Very good=1, Good=2, average=3, Bad=4, Very Bad=5, No comment=6

5. Education and Health Condition

5.1 Is there any school in your area?		Yes=1	No=2
5.2	If yes, what kind of school do you have near in your home? (Multiple answer)	Settlement area primary school=1 Government Primary school=2, Secondary school=3 Higher secondary=4 University=5 Government Madrasah=6 Non-Governmental Madrasah=7 NGO/ Charity school=8 Others=9(specify)	
5.3	Does any of your child study in any education institution?	Yes=1	No=2
5.4	If answer is yes, what educational institution do your child study and in which class? Institution name: Class:		

5.5	Tell your opinion about the education system Very good=1 Good=2 Average=3 Not good=4 Not good at all=5		
5.6	Did you feel any problem to take admission of your child?	Yes=1	No=2
5.7	If answer is yes, what types of problem do you feel?	Lack of information to take admission of child=1 Long distance school=2 School is not teacher-guardian friendly=3 Child has no time due to engage as child labour=4 Physically challenged child=5 Child is not interested=6 Lack of quality education=7 Bad behavior of the teachers=8 Others=9	
5.8	Has the educational institution been affected by the river erosion / water logging in the last five year?	If answer is yes, Fully damaged=1, Medium damaged=2, partially damaged=3	
5.9	Did your child stop attending school due to river erosion and water logging in the last five years?	Yes=1	No=2
5.10	If answer yes, how long your child did not go school? (specify)Month	
5.11	What are the general diseases that your family members are suffered?(Multiple answer)	Cold=1, Goggle=2, Diarrhea/ cholera=3, Skin disease=4, Fever=5, Asthma=6, Cough/ Tuberculosis=7, Malaria=8, Diabetes=9, Back pain=10, Headache=11, Cold problem=12, High blood presser=13, Low blood presser=14, Others=15(specify)	
5.12	Where do you go for general treatment?(Multiple answer)	Health center at settlement area=1, Village doctor=2, Government house to house service provider=3, Community clinic=4, Family health center=5, Government union health center=6, Government Upazila/ District Hospital=7, Pharmacy=8, Religious broomstick=9, Traditional=10, Private clinic=11, Others=12	

5.13 Sources and quality of services of your current community health facilities

Sources of health facilities	Quality of service					
	Very good =1	Good=2	average=3	Bad=4	Very bad=5	No comment=6

Health center under settlement area						
Government health center						
NGO maintained						
CBO maintained						
Private clinic						
Others(specify)						

6. Damages, service received and service demands due to Padma Multipurpose Bridge

6.1	Types of land damaged due to Padma Multipurpose Bridge (Multiple answer)	Homestead land=1, cultivable land=2, Garden=3, pond=4, Fallen land=5, Commercial land=6, valuable trees=7, Others=8
6.2	Loss of land due to Padma Multipurpose Bridge (Multiple answer)	Own=1, Lease=2, Government=3, Mortgage=4, Tenant=5, Plan land=6, Others=7(specify)
6.3	Types of infrastructure damaged due to Padma Multipurpose Bridge (Multiple answer)	Residence area=1, Meeting place=2, Cooking place=3, Cow house=4, Store room=5, Toilet=6, Tube-well=7, Borders wall=8, cultivable Ponds/marsh=9, Ponds not cultivated=10, Infrastructural not loss=11, Others=12
6.4	Types of occupations loss due to Padma Multipurpose Bridge (Multiple answer)	Traditional fish cultivate=1, Agriculture land cultivate=2, Old business=3, Loss of cultivation of Fish=4, Loss of income source=5, Others=6
6.5	Types of benefits that respondents get due to Padma Multipurpose Bridge (Multiple answer)	New job opportunity=1, small loan opportunity=2, Investment opportunity=3, Working opportunities because of padma bridge=4, Business opportunity=5, Training facilities=6
6.6	Infrastructural compensation that respondents received due to Padma Multipurpose Bridge (Multiple answer)	Financial compensation=1, new plot=2, House building support=3, planned residential facility=4, Training facility=5, Compensation for warrior formula =6, Others=(specify)
6.7	What types of administrative barriers you faced to get compensation?	Long time=1, Non-cooperation=2, Harassment=3, harassment of broker=5, provide financial facility=6, problem of warrior formula=7, No problem=8, because of lawsuit= 8, Others=9(specify)
6.8	What types of social loss the respondents face due to Padma Multipurpose Bridge (Multiple answer)	Decrease of social relation=1, breakdown of relative's relation=2, breakdown of old traditions=3, not to meet with former neighbors=4, breakdown of cultural tradition=5, Others=6(specify)
6.9	Types of benefits the respondents get social benefits due to Padma Multipurpose Bridge (Multiple answer)	Education service=1, Health service=2, New social relation=3, benefits of modernization=4, NGOs awareness services=5, Connection with high profile officers=6, Others=7(specify)
6.10	Types additional supports and services that respondents get benefits due to economic loss due to Padma Multipurpose Bridge (Multiple answer)	Government financial facilities=1, Job facilities=2, Income generation training=3, Others=4(specify)
6.11	Types additional supports and services that respondents get	Home preservation cost=1, society security=2, society cooperative club=3, Pure water supply=4, Gas supply=5,

	benefits due to infrastructural loss due to Padma Multipurpose Bridge (Multiple answer)	transport facility=6, reduce water logging=7, sewerage system=8, Play ground=9, Recreation center=10, Road light=11, Graveyard/cremation=12, Others=13 (specify)
6.12	Types additional supports and services that respondents get benefits due to social loss due to Padma Multipurpose Bridge (Multiple answer)	Sustain health service=1, Establish government primary school=2, cultural organization=3, government support for sports=4, Others=5 (specify)
6.13	Do you know about the health services of project area?	Yes=1,, no=2, If answer is yes, what types of services are being provide?(Multiple answer) Family planning service=1, Extended immunization=2, Maternity service=3, child (primary health service)=4, child health and maternity services=5, General health services for older people=6, Others=7(specify)
6.14	How many days after the health worker come?	After 1month =1, After 3months=2, After 6months =3, After 1 year =4, Never come=5
6.15	What types of initiatives the field health workers take for health awareness?	Immunization=1, Maternity service=2, Reproductive health=3, HIV/AIDS/STDs issue=4, Primary health care awareness=5, General health problems=6, Others (Specify)
6.16	What is your attitude/opinion about health service?	Very good=1, Good=2, average=3, Not good=4, Not good at all=5

6.12 Damaged by Padma Multipurpose Bridge, services received and difference between damages and received services

No	Types of loss	Enormity of the loss			Service Getting		Loss and service getting difference	
		Extreme=1	Medium=2	No loss=3	adequate=1	Not adequate=2	Loss and received services is equal=1	Loss more received services less=2
1	Infrastructural loss							
2	Financial loss							
3	Social loss							

7. Food Security

7.1 Number monthly consumed meals

Months	Number of meals consumed in a day	Months	Number of meals consumed in a day
1. January		7. July	
2. February		8. August	
3. March		9. September	
4. April		10. October	
5. May		11. November	
6. June		12. December	
Code: One meal=1, Two meals=2, Three meals=3			

7.2 Mention the types foods that you usually take in the morning, noon and night

Time	Meals										
	Rice=1	Bread=2	Vegetable=3	Biscuit=4	Tea=5	Fish=6	Panta Rice And Salt=7	Bread=8	Meat=9	Pulse=10	Others=11
Morning	1	2	3	4	5	6	7	8	9	10	11
Noon	1	2	3	4	5	6	7	8	9	10	12
Night	1	2	3	4	5	6	7	8	9	10	13

8. Social Service and Social Security based Management

Opinion	Indicators	Quality of service							
		Very good=1	Good=2	Medium=3	Not good=4	Bad=5	Very bad=6	No comment=7	
8.1 What types of local services are available and its quality? (Put tick)	1. Local Union Parishad office	1	2	3	4	5	6	7	
	2. Social security program	1	2	3	4	5	6	7	
	3. Police station	1	2	3	4	5	6	7	
	4. Local club	1	2	3	4	5	6	7	
	5. Women club	1	2	3	4	5	6	7	
	6. local recreational park	1	2	3	4	5	6	7	
	7. Mosque	1	2	3	4	5	6	7	
	8. Hat-Bazar	1	2	3	4	5	6	7	
	9. Government Hospital	1	2	3	4	5	6	7	
	10. Pharmacy	1	2	3	4	5	6	7	
	11. Clinic	1	2	3	4	5	6	7	
	12. School/college/madr asah	1	2	3	4	5	6	7	
	13. Family Planning service	1	2	3	4	5	6	7	
	14. NGO service	1	2	3	4	5	6	7	
	15. CBO service	1	2	3	4	5	6	7	
8.2 What is your opinion on the mentioned social issues (do not tick, if no such facilities are available)	Indicators		Level of Participation						
			Very High =1	High =2	Average =3	Low=4	Very Low =5		
	1=You have freedom of movement at your local community.		1	2	3	4	5		
	2=You have freedom of expression at your local community.		1	2	3	4	5		
	3=You have social security at your local community		1	2	3	4	5		
	4=Adolescent girls have freedom of movement at your local community.		1	2	3	4	5		

	5=Women have freedom of expression at your local community.	1	2	3	4	5
	6=Women have security at your local community.	1	2	3	4	5
	7=Sufficient roads are available at your local community	1	2	3	4	5
	8=Sufficient schools, colleges, Madrasah, in your local community.	1	2	3	4	5
	9=Good training facilities are available at your local community.	1	2	3	4	5
	10= Have sufficient local health services	1	2	3	4	5
	11= Religious institutions (Mosque, Temple, Church, Community Centre, Local Market, Hat-Bazar etc.)	1	2	3	4	5
	12= Entertainment / Recreational Arrangement (Park, Play Ground,Club,Library)	1	2	3	4	5
	13= Give your opinion about local government system	1	2	3	4	5
	14= Does local administrative officer communicate regularly?	1	2	3	4	5
	15= What is your opinion about the role of law enforcement group?	1	2	3	4	5

8.3 Women Empowerment Related Information

8.3	Women empowerment situation at households (Code:1= Women do not have any power, 2=Women have moderate power, 3=women have sufficient power, 4= Women have equal power like men at house, 5= Women have more power than the men have at household)					
	Decision making issue or subject					Code
8.3.1	Advanced arrangement in agriculture					
8.3.2	Trading in livestock's					
8.3.3	Medicare/health services for family					
8.3.4	Education					
8.3.5	Marriage					
8.3.6	Big kind of household shopping					
8.3.7	Contact with social service providers.					
8.3.8	Land purchasing					
8.3.9	Participation to social activities					
8.3.10	Political decision making					

8.3.11	Participation in associations/social network	
8.3.12	House building	
8.3.13	Participation in different functions	
8.3.14	Family values and entertainments	
8.3.15	Reproductive health, family planning, having the number children in the family	
8.3.16	Social benefits (old allowances, widow allowances, disabled allowances, Honorius for freedom fighter, third gender.	

9. Vulnerability

9.1 Economic vulnerability due to natural disasters			
9.1.1	In the last 5 years, what sort of losses your HH had to face due to these river bank erosions? (Use multiple code)?	Loss of homestead infrastructure= 1 Loss of land=2 Income loss=3 Loss of homestead land=4 Scarcity of pure drinking water= 5 Crop loss=6 Livestock loss= 7 Morbidity/increasing intensity of disease=8, Loss of employment=9 Injury= 10, Food scarcity= 11 Other (specify)=12.....	Estimated monetary loss (total in taka)
9.1.2	In the last five years, what/which type of losses you had experienced due to other natural disaster?	Yes=1, No=2	If yes, monetary value in taka.....

9.2 Psycho-social and Social Dignity Related Vulnerability

9.2.1 Psycho-social Vulnerability

Types of psycho-social vulnerability	Supporting on the level for vulnerability					
	Strongly Agree	Agree	Some What Agree	Some What disagree	Strongly disagree	No Comment
9.2.1.1 My family members are suffering from physical problems because of Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.2 Social and cultural bondage have been broken down due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.3 Individual and Social networking have been broken due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.4 My household occupation has changed due to PMB	1	2	3	4	5	6

9.2.1.5 After River Bank erosion, social inequality has increased due to PMB	1	2	3	4	5	6
9.2.1.6 Padma Multi-purpose Bridge has created human problem	1	2	3	4	5	6
9.2.1.7 We feel helpless due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.8 We face tremendous challenges with our older, pregnant women, specially needy people, widow and children due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.9 Many of our relatives, neighbors and community people moved to another place because of Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.10 We feel lack of association at our community due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.11 Our mental stress, depression and anxiety are associated with Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.12 Gender based violence has increased due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.13 Child marriage has increased due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.14 We feel social distance due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.15 We feel insecurity due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.16 Many people in our locality were involved in illegal practices due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.17 We did not find any job/work because of Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.18 Padma Multi-purpose Bridge has increased poverty in our community	1	2	3	4	5	6
9.2.1.19 We do not get any loan facilities from NGOs because of Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.20 Many schools and social institutions were damaged due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.1.21 Padma Multi-purpose Bridge has created food insecurity among the households (HHs)	1	2	3	4	5	6
9.2.1.22 Padma Multi-purpose Bridge forcefully displaced households (HHs) members	1	2	3	4	5	6
9.2.1.23 Participation of Padma Multi-purpose Bridge in recovery process has controlled by the political institutions and local power politics	1	2	3	4	5	6

9.2.2 Social Status Related Vulnerability

Types of social status vulnerability	Supporting level on vulnerability					
	Strongly Agree	Agree	Some What Agree	Some What disagree	Strongly disagree	No Comment
9.2.2.1 We are being disrespectful to the society due to Padma Multi-purpose Bridge	1	2	3	4	5	6
9.2.2.2 I become dependent on other	1	2	3	4	5	6
9.2.2.3 Lost our social identity	1	2	3	4	5	6
9.2.2.4 Leading a low life in the society	1	2	3	4	5	6
9.2.2.5 I have lost all the ways to establish myself	1	2	3	4	5	6
9.2.2.6 I become inferior to the society	1	2	3	4	5	6
9.2.2.7 I become financially unstable to the society	1	2	3	4	5	6
9.2.2.8 I do not get the much more respect and dignity to the society	1	2	3	4	5	6
9.2.2.9 The path of establishment in the society has closed	1	2	3	4	5	6
9.2.2.10 We feel absence of leadership to the society	1	2	3	4	5	6

10. Migration and social mobility

10.1	Are you displaced due to Padma Multi-purpose Bridge?	Yes=1	No=2
10.2	Are you satisfied with your current occupation if your previous occupation changed due to migration or displacement?	Yes=1, No=2, Unchanged occupation=3	
10.3	If, answer is yes, how much are you satisfied?	Highly satisfied=1, Satisfied=2, Average=3, Dissatisfied=4, not satisfied at all=5, no comments=6	
10.4	What was your occupation before coming here?	Agriculture=1 House work=2 Agricultural laborer=3 Employee =5 Bamboo/crane work=6 Contraction =7 Fishermen=8 Boatman=9 Blacksmith=10 Kuli=11 Rickshaw puller=12 Wood maker =13 Small business=14	

		Unemployment=15 Retirement=16 Unable to work=17 Barber=18 Leather business=19 Tailoring=20 Other (specify) =21.....		
10.5	How long are you living here with your family?	1=From starting day of the project, 2= 3-10 Years, 3= 10-15 Years 4= 15-20 Years, 5= 20-25 years= 6since father generation=7		
10.6	Have you ever been displaced?	Yes=1, No=2	If yes, how many times.....	
10.7	If yes, what were the reasons behind your displacement? (Multiple answer possible)	Land acquisition=1 River erosion=2 Due to flood=3 To avoid bank erosion=4 To avoid water logging=5 To avoid salinity=6 To avoid storms=7 To protect household from cyclone=8 Lack of employment=9 Loss of homestead=10 For better life style=11 Extend of mortgager=12 Change of occupation=13 River erosion=14 Others (specify)=15		
10.8	Do you have any plan to migrate this place?	Yes=1, No=2		
10.9	If yes, please tell us the reasons of your migration.(Multiple answers possible)	To avoid water logging= 1 Degeneration= 2 To avoid water logging=3 To avoid disaster, flood, cyclone, storms=4 Influence of local leaders= 5 Lack of employment= 6 Better life= 7 Health = 8 Education=9 Better facilities=10 Others=11(specify).....		
10.10	Did any members of your family members migrate to other place for livelihood?	Yes=1, No=2		
10.11	If yes, give the following in formation			
10.12	Number of migrated family member	Where do they go (Code)	For which work/occupation (code)	Years

SL	Gender (Male= 1, Female = 2)	Inside the country : 1= Neighbor place 2= In Dhaka 3= Other area 4= Outside the country (Specify the name)	Day labor= 1, Hawker= 2, Rickshaw puller= 3, Bus Driver/Helper= 4, Garments Worker= 5, Other= 6, (Specify).....	From which month to month	Migrated months
10.13	Did any member of your family migrate to other place for livelihood permanently?			Yes=1, No=2	
	If answer is yes, then Outside the country =1 Inside the country = 2				
10.14	If yes, do they come in the village during ceremony, social gathering, religious festivals or special occasion?			Yes=1, No=2	
10.15	Are you satisfied with your present form of livelihood		Yes=1, No=2		
10.16	If yes, why are you satisfied? (Multiple answers)		Better Resettlement = 1, More facilities to get more income = 2, well planned & better accommodation system= 3, Better social opportunities and services = 4, Other= 5, (Specify).....		
10.17	In the last five years, have any changed in livelihood pattern of household members?		Full = 1, Moderate = 2, Partially= 3, Not at all = 4,		
10.18	<p>Whether family members or people from other villages have come or migrated to project areas or nearby areas? Yes=1, No=2</p> <p>If yes, for which reasons they have migrated? Better Environment=1, Infrastructural development=2 Educational Facilities=3 Health facilities=4 Employment facilities=5 Security Services=6 For River erosion=7 As labor in PMB project=8 Other= 9, (Specify).....</p>				

11. Livelihood Choice & Competencies

11.1	How many members of your family are engaged in income generating activities?
11.2	Have you or any of your family members ever received any training on livelihood development?	Yes=1, No=2
11.3	If yes, mention the name of the training that you received	1.Income generating training (Specify) 2. Coping Disaster

		3. Leadership development 4. Health related 5. Awareness																										
11.4	If yes, please mention the name of institutions from which you have received trainings ...	From project= 1, NGOs= 2, Individual Initiatives= 3, Religious Institutions= 4, Other= 5, (Specify).....																										
11.5	What types of livelihood skills your family members have?	<table border="1"> <tr> <td>Name of the income generating activities(Please Tick)</td> <td>(Skill level) 1= Very good, 2 = good, 3= Fair, 4=Poor, 5= Not good at all</td> </tr> <tr> <td>Tailoring</td> <td></td> </tr> <tr> <td>Grocery shop</td> <td></td> </tr> <tr> <td>Rickshaw/Van pulling</td> <td></td> </tr> <tr> <td>Fishing</td> <td></td> </tr> <tr> <td>Agriculture</td> <td></td> </tr> <tr> <td>Hawker- Cloths/Pickles/Cosmetics/Cake</td> <td></td> </tr> <tr> <td>Livestock's Rearing</td> <td></td> </tr> <tr> <td>Furniture</td> <td></td> </tr> <tr> <td>Tea Shopkeeper</td> <td></td> </tr> <tr> <td>Sanitary</td> <td></td> </tr> <tr> <td>Boat men</td> <td></td> </tr> <tr> <td>Others (Specify).....</td> <td></td> </tr> </table>	Name of the income generating activities(Please Tick)	(Skill level) 1= Very good, 2 = good, 3= Fair, 4=Poor, 5= Not good at all	Tailoring		Grocery shop		Rickshaw/Van pulling		Fishing		Agriculture		Hawker- Cloths/Pickles/Cosmetics/Cake		Livestock's Rearing		Furniture		Tea Shopkeeper		Sanitary		Boat men		Others (Specify).....	
Name of the income generating activities(Please Tick)	(Skill level) 1= Very good, 2 = good, 3= Fair, 4=Poor, 5= Not good at all																											
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Tea Shopkeeper																												
Sanitary																												
Boat men																												
Others (Specify).....																												

11.6	Phase of Training Use
	1. Can use decently
	2. Can use moderately
	3. Cannot use

12. Strategies to face environment, climatic change and vulnerabilities	
12.1 How do you get forecast of natural disaster? (Multiple answer)	Radio=1, TV=2 Newspapers=3 friends=4 neighbors=5 mobile phone=6, Social medias=7, others= 8
12.2 What kinds of climate change impacts found in your locality? (Multiple answer)	Decline of river water level= 1, change of river water flows= 2 Drought=3, Over flooding=4 cyclone=5, Reduction of agricultural production=6, reduction of wild animals=7, crops damage= 8, increase in contamination = 9, increase in dust and filth= 10, drought= 11 , others(specify)= 12

12.3 Do you find any environmental impact due Padam Bridge Project?	Yes= 1 No= 2
12.4 (If yes) What kinds of impacts?	No public toilet= 1 Heavy dust =2 increase of diseases= 3, lack of residential place=4

**12.5 What kinds of disasters in your locality and how is the magnitude of disaster trends?
(Multiple response acceptable)**

Pattern of Disasters	Disaster Trends based Magnitude/ Degree					
	Very high=1	High= 2	Moderate= 3	Low= 4	Very low =5	Absence/ No= 6
Deep Fog	1	2	3	4	5	6
Drought	1	2	3	4	5	6
Flood	1	2	3	4	5	6
Heavy Rainfall	1	2	3	4	5	6
Seasonal flooding	1	2	3	4	5	6
River erosion	1	2	3	4	5	6
Wild winding	1	2	3	4	5	6
Cyclone	1	2	3	4	5	6
Thunder Storm	1	2	3	4	5	6
Other (Specify)	1	2	3	4	5	6

12. 6 Natural disasters that you faced and its impacts in the last five years (Multiple Response)

Types of disasters	Impacts									
	Loss of trees =1	Environm ental damage=2	Injur y/ Wou nd	Finan cial loss=3	Hous e dama ge	Dea th of life stoc ks	Crops dama ge	Colla pse of living sourc e	Diseas es/ Health proble m	Deat h of huma ns
Flood	1	2	3	4	5	6	7	8	9	10
Drought	1	2	3	4	5	6	7	8	9	10
River erosion	1	2	3	4	5	6	7	8	9	10
Heavy rainfall	1	2	3	4	5	6	7	8	9	10
Storm	1	2	3	4	5	6	7	8	9	10
Cyclone	1	2	3	4	5	6	7	8	9	10
Deep fog	1	2	3	4	5	6	7	8	9	10
Seasonal Flooding	1	2	3	4	5	6	7	8	9	10
Thunderst orm	1	2	3	4	5	6	7	8	9	10
Other(Spe cify)	1	2	3	4	5	6	7	8	9	10

12.7 What kinds of steps are taken to face calamities in your locality and whether these are adequate? (Multiple response)

Initiatives	Degrees of Adequacy				
Government Initiatives	Food Distribution	1	2	3	4
	Distribution of House building equipment	1	2	3	4
	Pure water arrangement	1	2	3	4
	Distribution of fruit seeds	1	2	3	4
	Construction of embankment	1	2	3	4
	Plantation Program	1	2	3	4
	Awareness	1	2	3	4
Non-governmental Initiatives	Food Distribution	1	2	3	4
	Food Distribution	1	2	3	4
	Distribution of House building equipment	1	2	3	4
	Pure water arrangement	1	2	3	4
	Distribution of fruit seeds	1	2	3	4
	Construction of embankment	1	2	3	4
	Plantation Program	1	2	3	4
Local Initiatives	Awareness				
	Food Distribution	1	2	3	4
	Food Distribution	1	2	3	4
	Distribution of House building equipment	1	2	3	4
	Pure water arrangement	1	2	3	4
	Distribution of fruit seeds	1	2	3	4
	Construction of embankment	1	2	3	4
	Plantation Program	1	2	3	4
	Awareness	1	2	3	4

12.8 What kind of coping strategies have you and your family members followed to face climate change and disasters? (Multiple Response)

Food consumption reduction=1, Debt=2, Reducing family cost=3 sale of poultry/ livestock=4, Sale Materials/Things used in households=5, Sale of land=6, stop child education=7, change occupation=8, send children for income=9, send children to relatives' house=10, beggary=11, Others (Specify)=12

13. Positive impacts resulted by the implementation of Padma Multipurpose Bridge Project

	Support of Positive Effects						
types of Positive Effects	Highly Support	Support	Somewhat agree	Somewhat not support	Do not support	Don't support	No comments
Progress observed in education	1	2	3	4	5	6	7
Health services reached to grass root level	1	2	3	4	5	6	7
Increase child and maternity services	1	2	3	4	5	6	7
Infrastructural change resulted standard of living	1	2	3	4	5	6	7

Road communication has increased	1	2	3	4	5	6	7
Social and cultural bondage has tightened	1	2	3	4	5	6	7
Occupational training increased							
Income has increased through changed occupations	1	2	3	4	5	6	7
Amenities of modern life have increased	1	2	3	4	5	6	7
Social dignity has increased	1	2	3	4	5	6	7
Improve good opportunities by cooperatives	1	2	3	4	5	6	7
Created the scope of planned housing	1	2	3	4	5	6	7
Decrease child marriage	1	2	3	4	5	6	7
Security of women's movement has increased	1	2	3	4	5	6	7
Freedom of expression has increased	1	2	3	4	5	6	7
Level of social order has increased	1	2	3	4	5	6	7
Reduction of poverty	1	2	3	4	5	6	7
Satisfactory allowances received as compensation	1	2	3	4	5	6	7
Loan facilities by Govt. and NGOs has increased	1	2	3	4	5	6	7
Housing Plot allotment has been ensured without interference	1	2	3	4	5	6	7
Positive government help	1	2	3	4	5	6	7

14. (Only applicable for the residence of settlement) Sustainability issue of Padma Multipurpose Bridge

14. 1 Your opinion as the emergent condition by Padma Multipurpose Bridge

Nature of sustainability	Highly Support	Support	Somewhat agreed	Somewhat not support	Do not support	No comments
Bearable	1	2	3	4	5	6
Viable	1	2	3	4	5	6
Feasible	1	2	3	4	5	6

14.2 How will your next generation enjoy the benefits/facilities emerged by Padma Multipurpose Bridge project

Residence	High facilities =1	Better Facility/ Benefits=2	Moderate facility/ benefits =3	Difficulty =4	Highly Difficulty=5	No Comments
Education	1	2	3	4	5	6
Food and nutritional	1	2	3	4	5	6
Employment	1	2	3	4	5	6
Health Facility	1	2	3	4	5	6
Training Facility	1	2	3	4	5	6
Financial opportunity	1	2	3	4	5	6
Business	1	2	3	4	5	6
Pure drinking water	1	2	3	4	5	6
Social Assistance	1	2	3	4	5	6
Social Allowance	1	2	3	4	5	6

Thank you for your valuable information

Focus group discussion- (FGD)

Research Title: Impacts on lives and livelihoods of Project affected people
 Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka
 and
 Institute of Social Welfare and Research, University of Dhaka

[The present study is financed by Padma multipurpose bridge project and conducted by institute of social welfare and research, university of Dhaka. the collected data will be used only by this study and all matters will be kept confidential]

Information regarding focus group discussion:

Name of the project area:

Union

Thana/Upazila

District

Date

Introduction and brief description of the participant:

Name	Age	Educational qualification	Occupation

1. What do you think that in which side, the people of Padma multi-purpose bridge project are benefited or lost?

(A)Economic aspect

Positive	adversity/Difficulty/hazards situation
increase in income, Receiving house rent ,Employment generation, being owner of land/house, become self-reliant, starting new business	Increasing in unemployment/Increasing seasonal unemployment, Increasing poverty, Decreasing land ownership, Landlessness, Losing business.

(B)Social aspect

Positive	adversity/Difficulty/Hazards situation
Inclusion with new social group, achieving good neighbor, developing relationship with the people of project area. Achieving noiseless social life.	Declining social relationship, Losing Relationship with relatives, Access to illiberal social life. mistrust of people, family/social disorder

(C) Psychological aspect

Positive	adversity/Difficulty/hazards situation
Satisfied life, Living in group life, Family support, achieving Confidence of others.	Depression, loneliness, lack of support, uncertain life

2. Say about the impact on migrated people caused by the initiation of project.
 Increasing in income and expenditure, declining poverty, Increase in skills through training, change in past career. Increasing in accumulation and investment, increasing self-dependency, Increasing standard of life than previous time, decreasing crime.

3. Say about the Social dignity in present settlement.
Self-esteem and self-satisfaction, change in social respect and dignity, development in thinking and scope of empowerment, Communicative relation and mutual respect among the people.
4. Say about ---condition of security in project area.
Women safety. Law and order situation, social violence and torture, role of law enforcement agency in the project area, the role of social groups, crime and crime control system, Role of local chairman and members. Role of elected local politician leaders
5. Say about the women of project area.
Decision making power in Family and social environment. Skill capability to work and self-dependency, increase in income and Role in family expenditure, early marriage, and Dowry and women torture. Receiving training and credit, participation in self-employment, independent living and freedom of expression. Child girl education.
6. Say about the role of local government, government and non-government in improving overall development and facing adversity.
* Government:
 Infrastructure development, House construction, Free education, training, Medical facilities, Disaster management and crime prevention,
Non- government:
 Training, Loan supplies, support in self-employment generation, Public health, Involvement of people in education and development
Local Government:
 Arbitration system to resolve disputes, youth development, Assist in meeting disaster, Initiatives to solve social problems. Organize people in development.
7. What has been your social status in present society?
Changes in social respect and dignity. Development in thinking and scope of empowerment, Self-esteem and self-satisfaction, increase in Communicative relation and mutual dignity among people.
8. What programs could be taken for the development of the life and livelihood of people of project area
* Economic
 Loan supplies, Initiation of self-employment scheme, prevention of women and child labor. Training and job opportunities of youth, modern farming and alternative income system.

*Social
 Stable family, formation of cooperative, following sound politics and social values.
*Education
 Women education, making children school oriented, Technical education, Education allowance.

*Health/treatment
 Ensuring primary health care, initiation of specialized medical centers, Provide vaccine, Vitamin Capsule to children, Cleanliness, Prevention of malnutrition, Change food habits, establishment of gymnasium, and expansion of Family Planning programs.
Recreation:
 Building park, celebration of festivals, cultural competition, preparing playgrounds. Sports competition, song related programs, drama
Infrastructure:
 Reformation of roads, establishing community center, continuous supply of electricity, disaster shelter center, establishing market and colleges,
Others:

Thanks for your cooperation

Name of the moderator	
signature of the moderator	
Date	

Name of the Rapporteur	
signature of the Rapporteur	
Date	

In-depth case Interview Guideline

Guideline for In-depth Case Study

Research Title: Padma Multi-Purpose Bridge: Impacts on Lives and Livelihoods of Project Affected People

Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

And

Institute of Social Welfare and Research, University of Dhaka

The present research has been conducted by ISWR with funding of Padma Multi-purpose Bridge Research Project

(Collected data will be used for research purpose and the all kinds of confidentiality of data will be maintained)

Socio-Economic and Demographic Data

1. Name of the respondent with age, sex, educational qualification, marital status, occupation (Present and previous), monthly income and expenditure, savings, address and mobile number.

2. Demographic information of family members of respondents

Sl. No.	Name	Relationship with respondents	Age (years)	Education Qualification	Marital Status	Present occupation	Previous occupation	Monthly Income	Monthly expenditure

Information Regarding the Effects of Padma Multi-Purpose Bridge Project

3. Social Impacts

a) What kind of impact you find on your habitat due to the construction of PMBP?

[Types of ownership of house, Loss/profit due to rehabilitation, getting citizen amenities such as sewerage, electricity or Gas facilities, roads, environment]

b) What kind of impact you feel in education sector as a result of PMBP?

[Establishing school, benefits of getting educational materials, scholarship, infrastructure development, interest to education, creates Teacher-student-guardian friendly environment, increase or decrease the quality of education, role of concerned officials, teachers, and school-management committee]

c) What kind of changes you observe in health sector because of PMBP?

[Setting up of new health complex, presence of doctor, supply of medicine, service duration, family planning services, services for pregnant/progenitress/lactating mother and child, cleanliness, outbreak of diseases, treatment cost.]

d) How PMBP affect the social status and social relationship?

[Increase/decrease the respect, status and social responsibilities, self-identity, participation in social decision making process, social relationship]

e) What is the present status of enjoying different rights?

[Getting Justice or injustice, freedom of speech and mobility, freedom of observing religious festival, facing violence/protection from violence]

f) How is your kinship pattern in project area?

[Relationship pattern with neighbor and community, bondage with relatives]

4. Economic Impacts

a) How the construction of PMBP does affected your economic life?

[Occupation, self-employment, resources, income, Loan, occupational satisfaction, expenditure, corruption, irregularities or delay in getting compensation]

b) Resource, Training and Skill

Please tell elaborately about your resource, training and skills.

[Quantity of present and previous land, types of productive work and training, acceleration/decline of skills, amount and types of savings and creating job opportunities for accelerating skill]

5) Social Mobility and Migration

Please state about the present status of mobility and internal/international migration at project area.

6) Social Security Program

Please speak about the nature of incorporation into social security programs.

[VGD, VGF, freedom fighter honorarium, old-age allowance, widow allowance, disable allowance, formation of samity]

7) Infrastructural Change

Could you please provide us the information regarding infrastructural change in project area?

[homestead, provision of roads, waterway, electricity, Market, sewerage]

8) Psychological Impact

a) Would you please express the nature of change in your mental state during inhabiting/residing in project area?

[Increase the mental stress, anxiety, frustration, depression, feeling loneliness, adjustment problem in new homestead, lessening motivation/growing challenging attitudes, mutual cooperation, diminishing group bondage when at stake, nature of taken measures]

9) Women empowerment

a) How have the women been benefitted through the project?

[Opportunities for participating in income generating process, , e generating program, establishing access to and control over resources, creating partnership in familial and social decision making process, enjoying protection rights from domestic/social discrimination and violent behavior, access to information, increasing social mobility, increase or decrease the women oppression.)

10) Threats and Challenges

Social vulnerabilities and Challenges	Economic vulnerabilities and Challenges	Natural and Environmental vulnerabilities and Challenges
Education, Health, Social relationship, mobility, migration	Occupation, income, Loss of houses, employment	Natural calamities, Salinity in water,

11. Information Regarding Coping Strategies

How do you face the vulnerabilities of your life?

[Searching for new jobs, formation of new social group, being the member of any new club, strengthening the bondage of cooperation, creating attitudes to accept new occupation and neighbor, communicate with education and health officers]

12. Role of local government, government organization, non-government organization, community based organization

Could you please mention the role/contribution/services of local government, government organization, non-government organization, community-based organization in project area?

[Training, cooperation in income generating program, provide micro credit with collateral and without collateral, assistance in buying land and building house, assistance in agricultural extension and expansion of marketing agricultural products and goods, supply safe drinking water, expansion of education and health services, environmental development.]

13. Opinion Regarding Recommendations;

What do you think regarding the necessary steps that should be taken in rehabilitation of affected people by the construction of PMBP?

Thank you for your cooperation

Name of the data collector	
Signature of Data collector	
Date of data collection	

Key Informants Interview Guideline

Research Title: Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

&



Institute of Social Welfare and Research, University of Dhaka

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Upazila Health Officer

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

1. Manpower of health sector in Padma Multipurpose Bridge Project area in your upazila

Total No. of Hospital		Total No. of working doctors	Total No. of working nurses ©	Other Staffs
Type of hospital	No.			
govt. hospital				
non-govt. hospital				
Clinic				
Others				

2. Common diseases suffered by local people in this area:

3. What type of health services are running at your upazila and its quality of services

Health Services	Quality of services				
	Very good	good	Moderate	bad	very bad
Primary health service					
General health service					
Health test					

Specialized services					
Emergency services					

4. Health services and its quality of services under Padma Multipurpose Bridge Project

Health services	Quality of services				
	Very good	Good	moderate	bad	very bad
Primary health service					
General health service					
Health test					
Specialized services					
Emergency services					

5. Gap between demand and supply of health services under Padma Multipurpose Bridge Project

Health services	Gap between demand and supply of health services			
	No gap	Slight gap	Equality between demand and supply	Highly gap
Primary health service				
General health service				
Health test				
Specialized services				
Emergency services				

6. Three positive changes in health sector of this area due to Padma Multipurpose Bridge Project

- a)-----
- b)-----
- c)-----

7. Three negative changes in health sector of this area due to Padma Multipurpose Bridge Project

- a)-----
- b)-----
- c)-----

Key Informants Interview Guideline

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

&



Institute of Social Welfare and Research, University of Dhaka

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Civil Engineer (Upazila Padma Multipurpose Bridge)

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

1. Description of physical infrastructure in Padma Multipurpose Bridge Project area of your upazila

Physical infrastructure	No.	Meter/Kilometer
Pakha road		
Masjid/madrasha		
School		
Haatbazaar		
Park		
Pond		
Marsh		
Playground		
Water supply		
Electricity		
Sanitation		
Others		

2. Five positive impacts in physical infrastructure of this area due to Padma Multipurpose Bridge Project
 - a).....
 - b).....
 - c)....
 - d).....
 - e).....
3. Five negative impacts and consequences in physical infrastructure of this area due to Padma Multipurpose Bridge Project
 - a).....
 - b).....
 - c)....

Key Informants Interview Guideline

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

&



Institute of Social Welfare and Research, University of Dhaka

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Upazila Education Officer

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

1. Educational information of your upazila at Padma Multipurpose Bridge Project area

Type of educational institution	No. of educational institution	No. of Teacher	No. of Students
Primary			
secondary			
madrasha			
College			
Total			

2. What type of educational stipends are running and No. of students received stipend

Name of the stipend	No. of Students

Key Informants Interview Guideline**Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of
Project Affected People****Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka****&****Institute of Social Welfare and Research, University of Dhaka**

[The study is being conducted by the Institute of Social Welfare and research, University of Dhaka financed by Padma Multipurpose Bridge Project. The collected information will be used for research purpose and confidentiality will be strictly maintained]

Headmaster (Primary and Secondary)**Name of the school:****Year of establishment:**

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

1. Total No. of teacher, students and percentage of attendance

Total No. of Teacher	Class	No. of students	percentage of Presence (last year)	percentage of Absence (last year)	percentage of Drop out (last year)
Total					

2. Mention the number of underwritten subjects

Subjects	No.
No. of students received scholarship in this year	
No. of PEC/JSC unsuccessful students in this year	
No. of mother's assembly in the school in this year	
Total No. of CAB program in this year	
Total No. of parents 'meetings in this year	
Total No. of SMC meetings in this year	
Total No. of cultural program in this year	

3. Causes of drop out and absence of students in your school

- a).....
- b).....
- c).....
- d).....
- e).....

4. Impact on education in this area (positive and negative)

Positive

- a).....
- b).....
- c).....

Negative

- a).....
- b).....
- c).....

5. Problems and recommendations in education

Problems

- a).....
- b).....
- c).....

Recommendations

- a).....
- b).....
- c).....

Key Informants Interview Guideline

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

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Institute of Social Welfare and Research, University of Dhaka

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Upazila Social Service Officer

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

1. Running social safety net programs and No. of beneficiaries and No. of persons seeking for social safety net

Services	No. of beneficiaries	No. of persons seeking for social safety net
a) social safety net		
Old age allowances		
Allowances for destitute women		
Honorarium for freedom fighter		
Allowances for disabled		
Educational stipend for disabled		
VGD		
VGf		
b) Other services		
a)		
b)		
c)		
d)		

2. What type of problems you are facing and how can these problems be solved?

Problems:

a)

b)

Way out to solve the problems:

a)

b)

Key Informants Interview Guideline

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

&



Institute of Social Welfare and Research, University of Dhaka

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Union Parishad Chairman

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

1. What type of social services the local people receive under Padma Multipurpose Bridge Project

Name of services	No. of beneficiaries

2. Other services local people receive from Union Parishad in your area

Name of services	No. of beneficiaries
VGD	
VGf	
assistance for river erosion and stopping catch fishes	
relief distribution	

3. Impact on social security in your area due to Padma Multipurpose Bridge Project

Positive

a).....

b).....

c).....

Negative

a).....

b).....

c).....

4. What type of measures can be taken for the development of social security in your area.

a).....

b).....

c).....

Key Informants Interview Guideline

Padma Multipurpose Bridge: Impacts on Lives and Livelihoods of Project Affected People



Padma Multipurpose Bridge Project, Shetu Bhaban, Dhaka

&



Institute of Social Welfare and Research, University of Dhaka

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NGO Officer

Name of the NGO:

Union:

1. What type of development organizations are working in this union of Padma Multipurpose Bridge Project area

Name of the respondent:

Name of the Designation:

Union:

Upazila:

District:

Type of organization	type of services	quality of services
Government		
Non-government		
CBO		

2. What type of development works is your organization doing?

Programs	No. of beneficiaries	impact

3. What type of programs can be taken for socio-economic development of local people in your working area?

- a).....
- b).....
- c).....
- d).....
- e).....

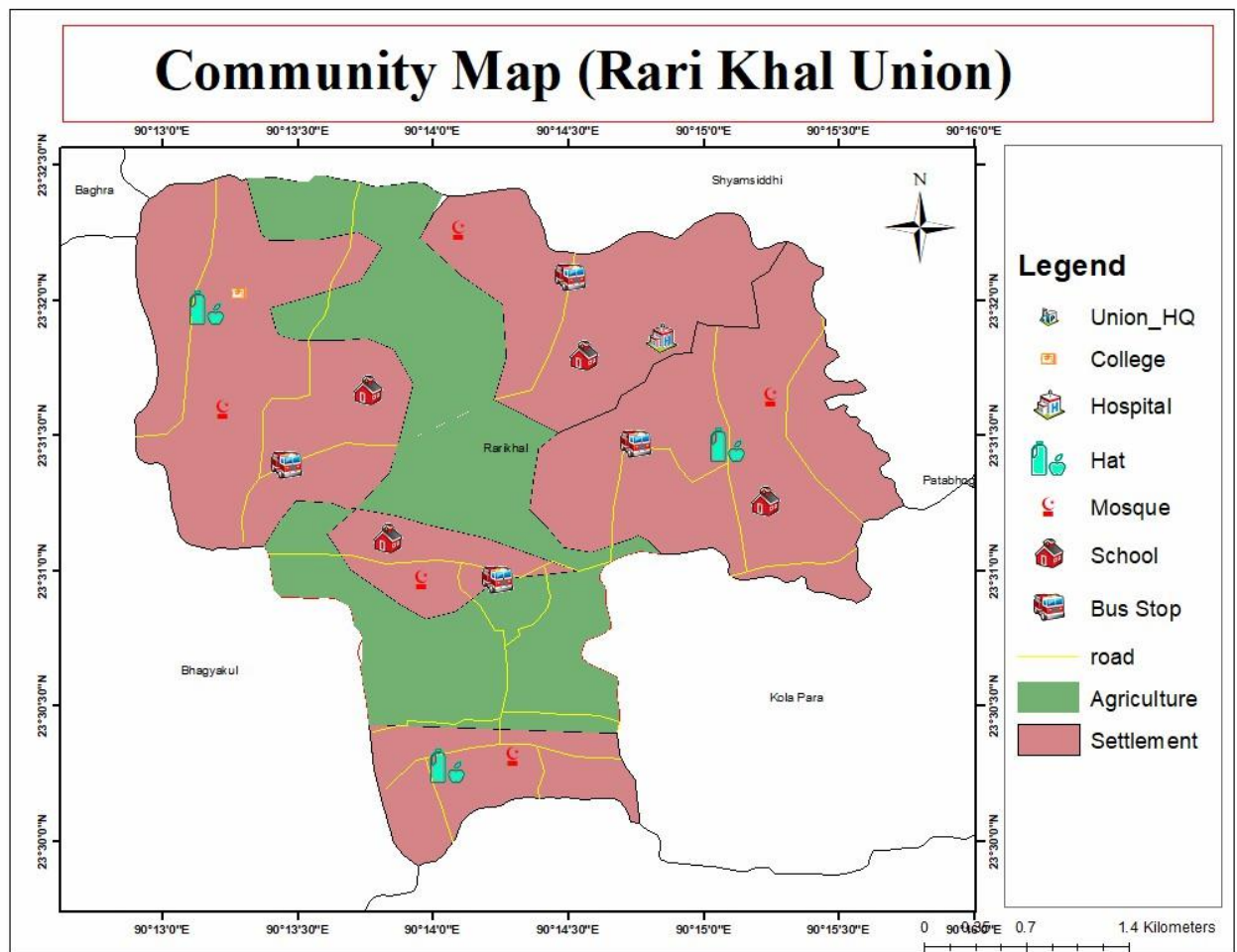
Observation Checklist

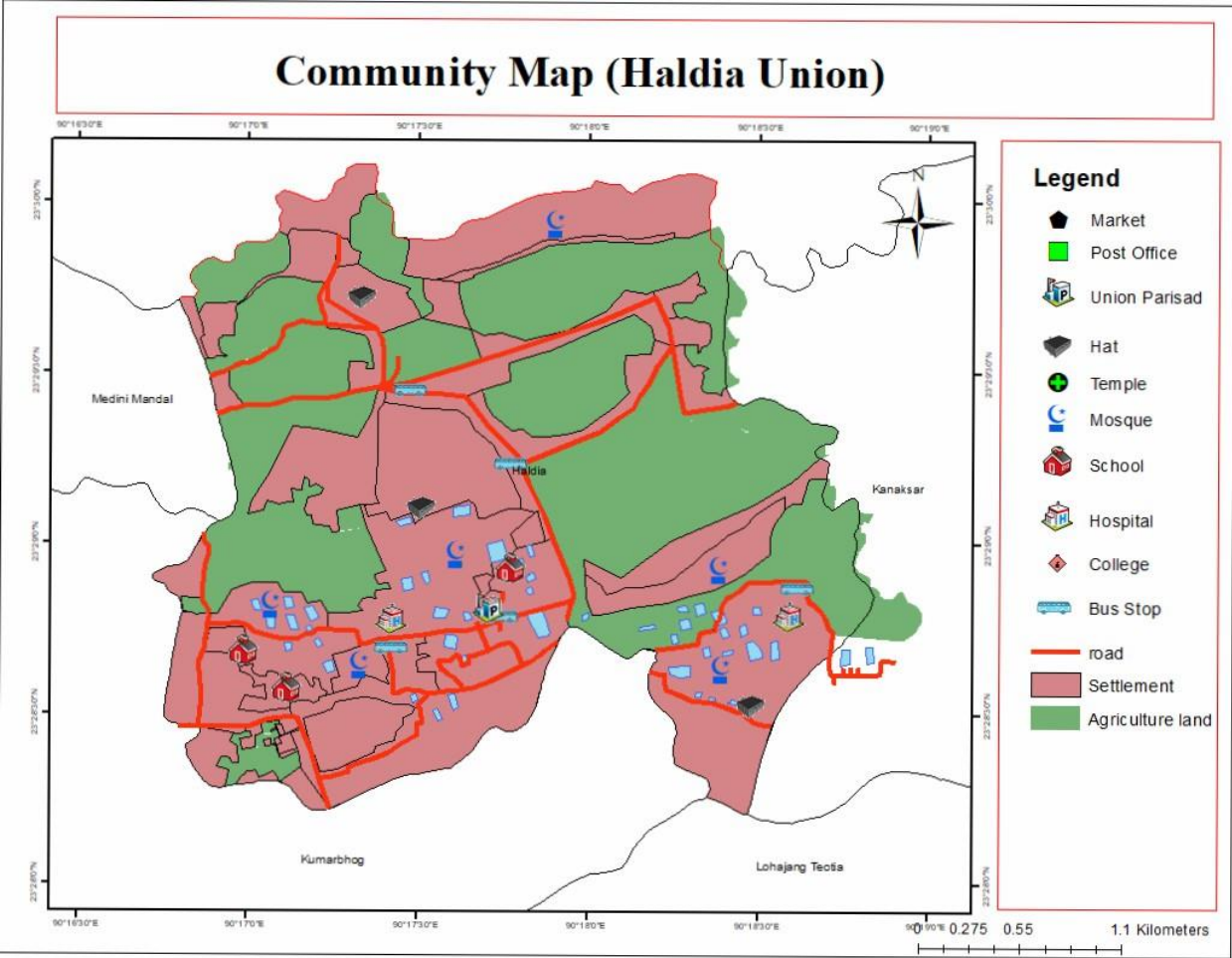
1. Road connection : ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad
2. House condition: ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad
3. Clothes and dress: ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad
4. Trees and plantation at home: ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad
5. Sanitation: ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad
6. Drainage system: ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad
7. Living environment: ☐ Very good ☐ Good ☐ Average ☐ Bad ☐ Very bad

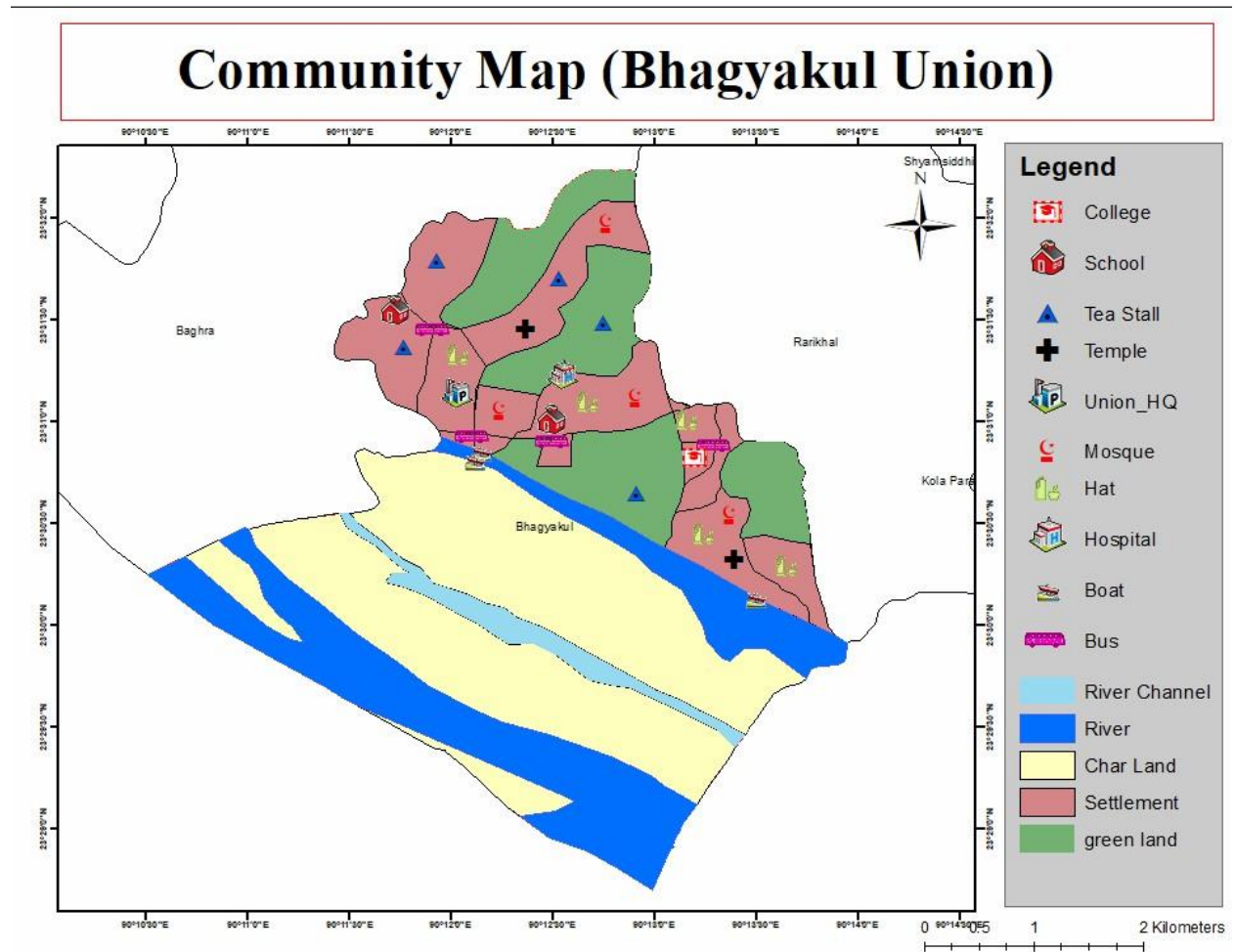
Community mapping

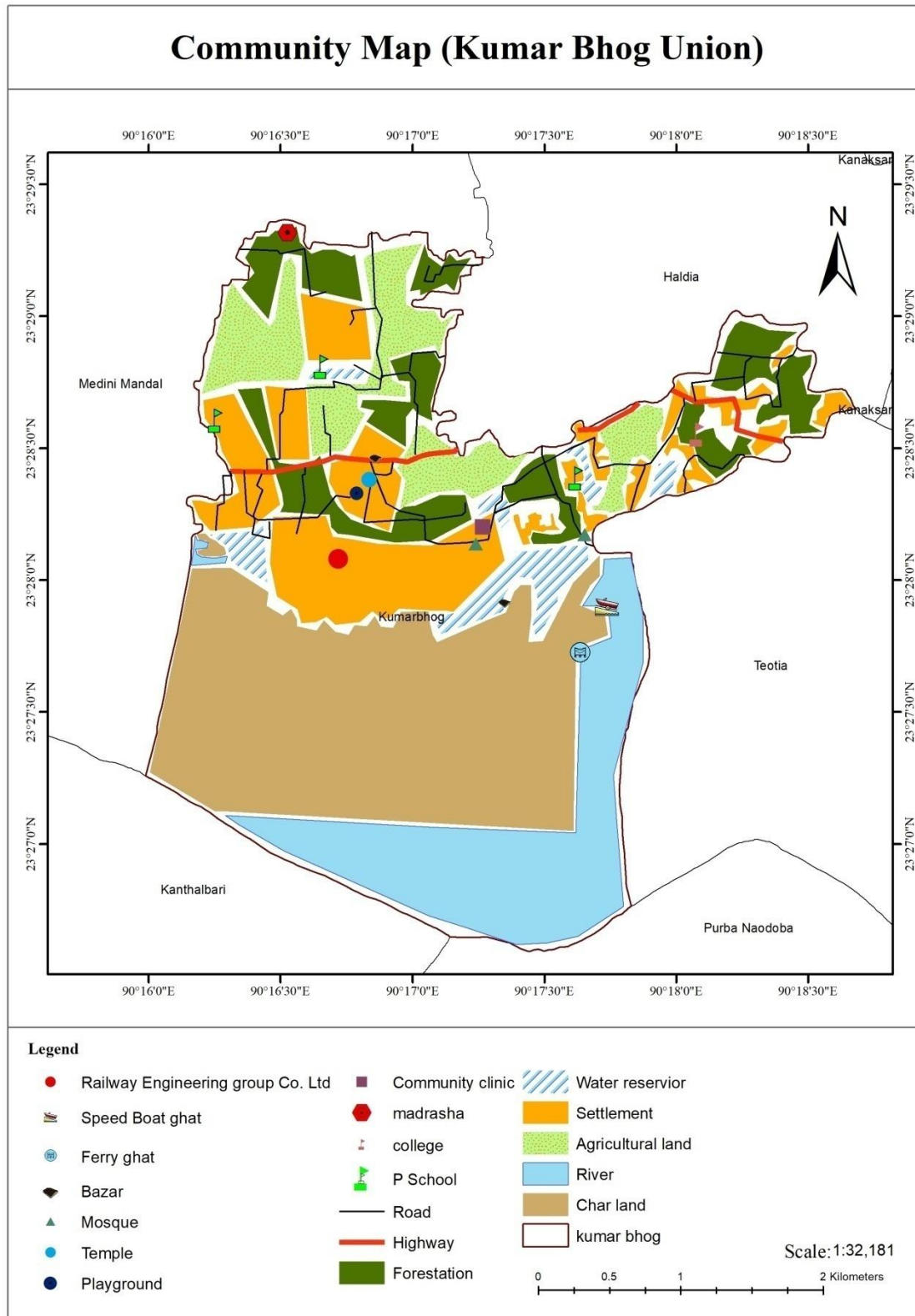
1. Density of population
2. Settlement and non-settlement residences
3. Women headed families
4. Famous person's house
5. Union Parishad
6. Municipality
7. Forestation
8. Char land/hilly area
9. Road and highway
10. Industries
11. School, college and madrasa
12. Hut Bazar/community shop
13. Hospital/clinic/pharmacy
14. Bank
15. River/pond/bill/canal/hawar
16. Bridge/ferry ghat
17. Women working sector
18. Club/park/garden/recreation centre
19. Community centre/ Hotels (Residence)
20. Mosque/church
21. NGO/CBO offices/Government offices
22. Power station
23. Indigenous communities (if any)
24. Thana/Police station
25. Sports ground

Appendix-2: Community Mapping

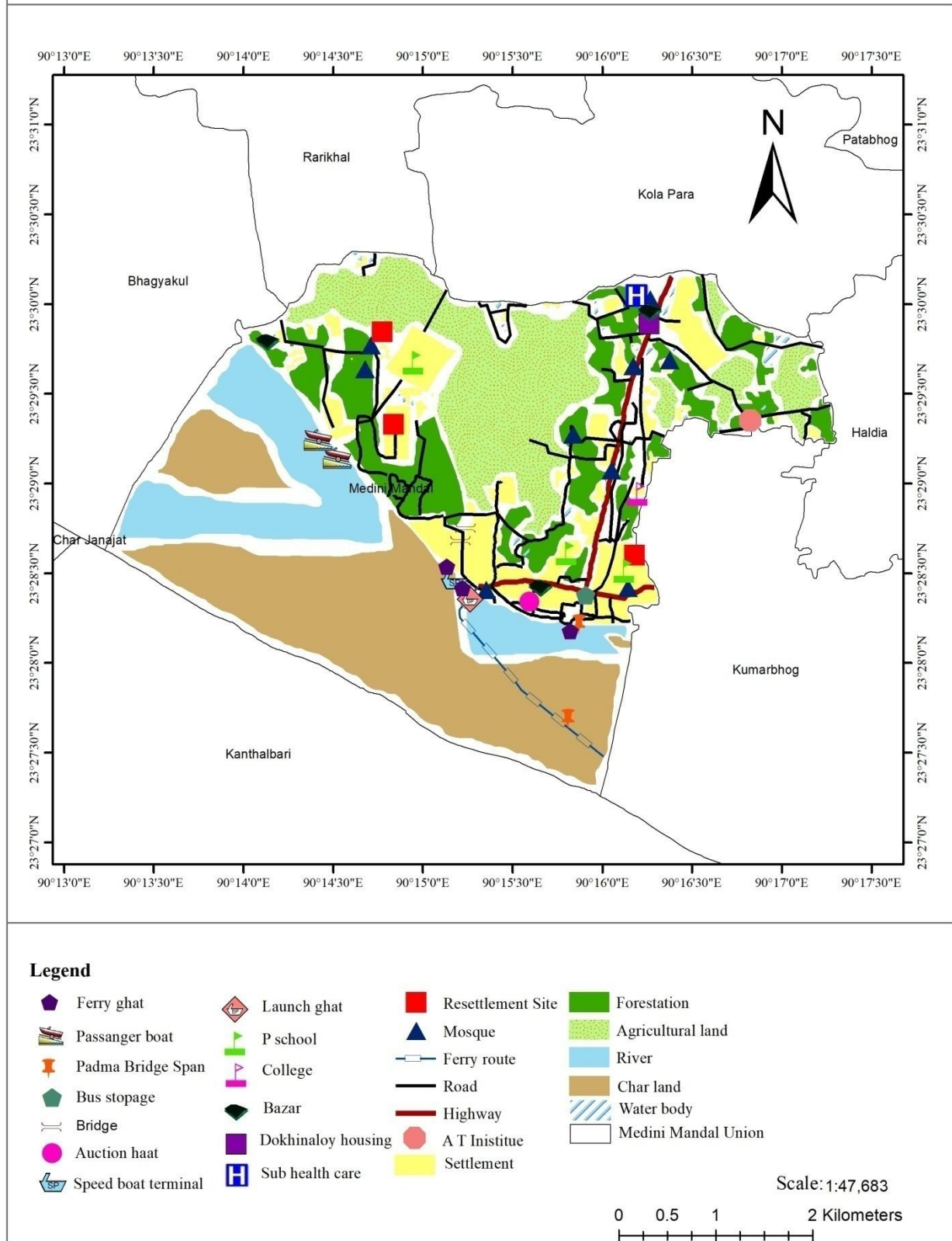


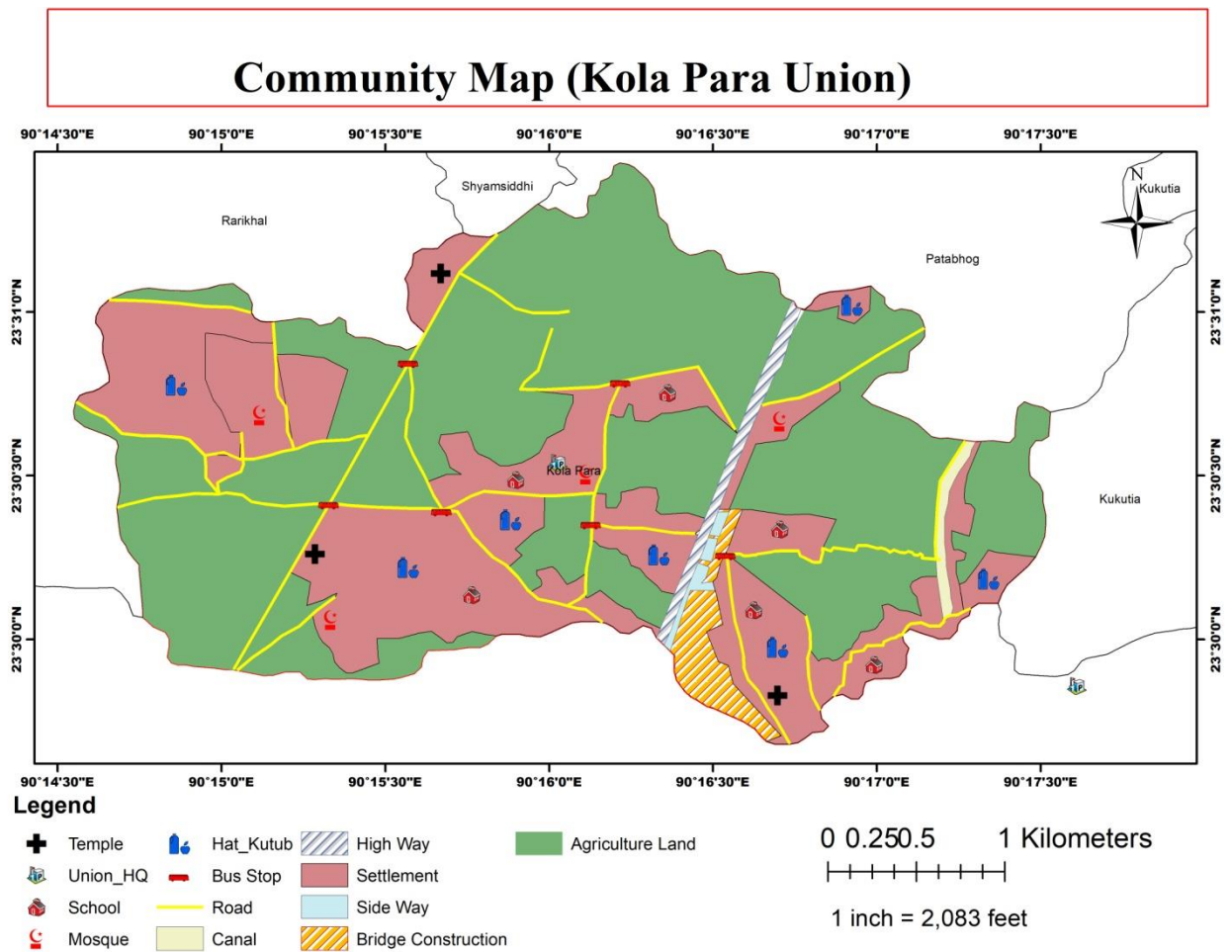




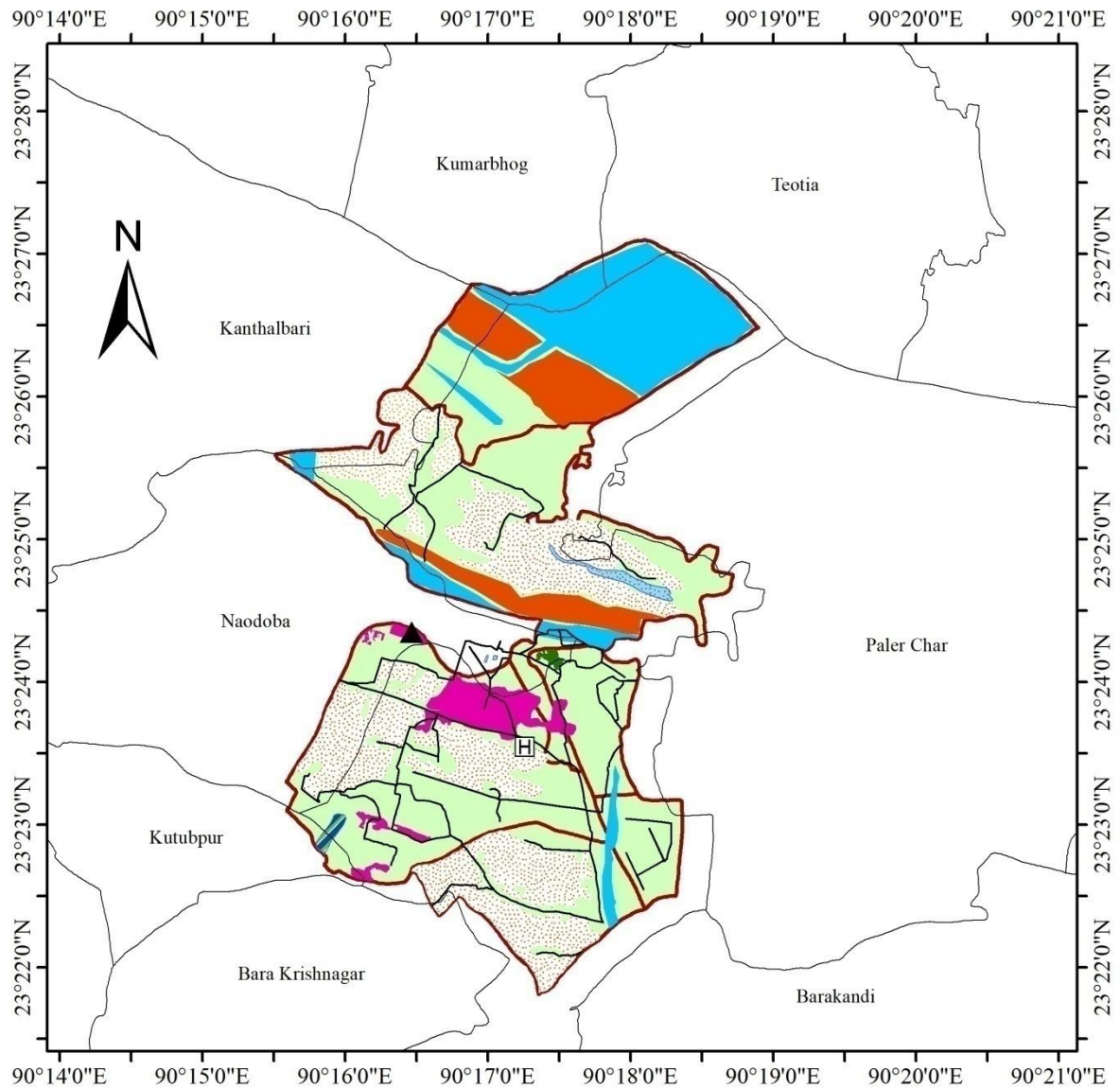


Community Map (Medini Mandal Union)





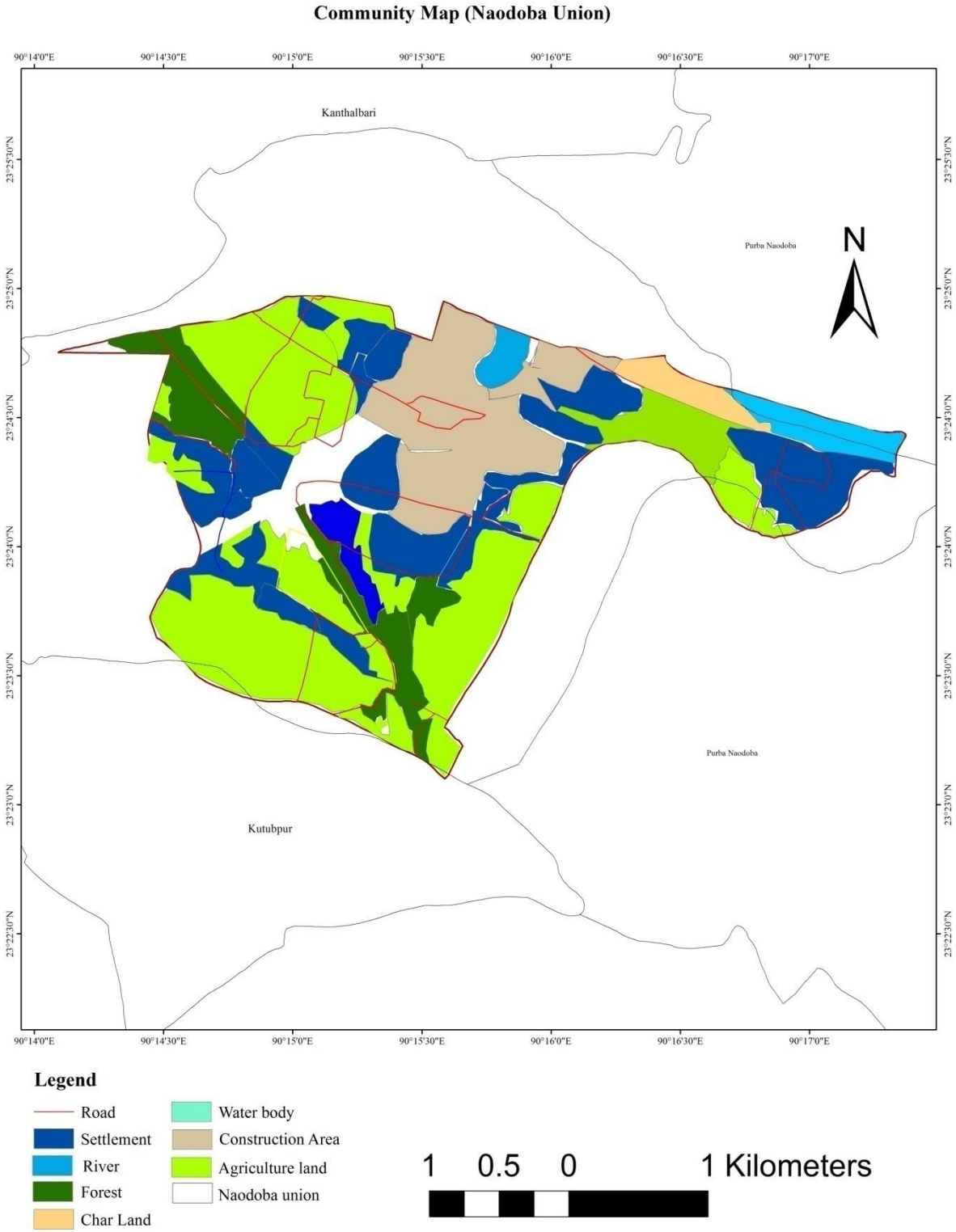
Community Map (Purbo-Naodoba Union)

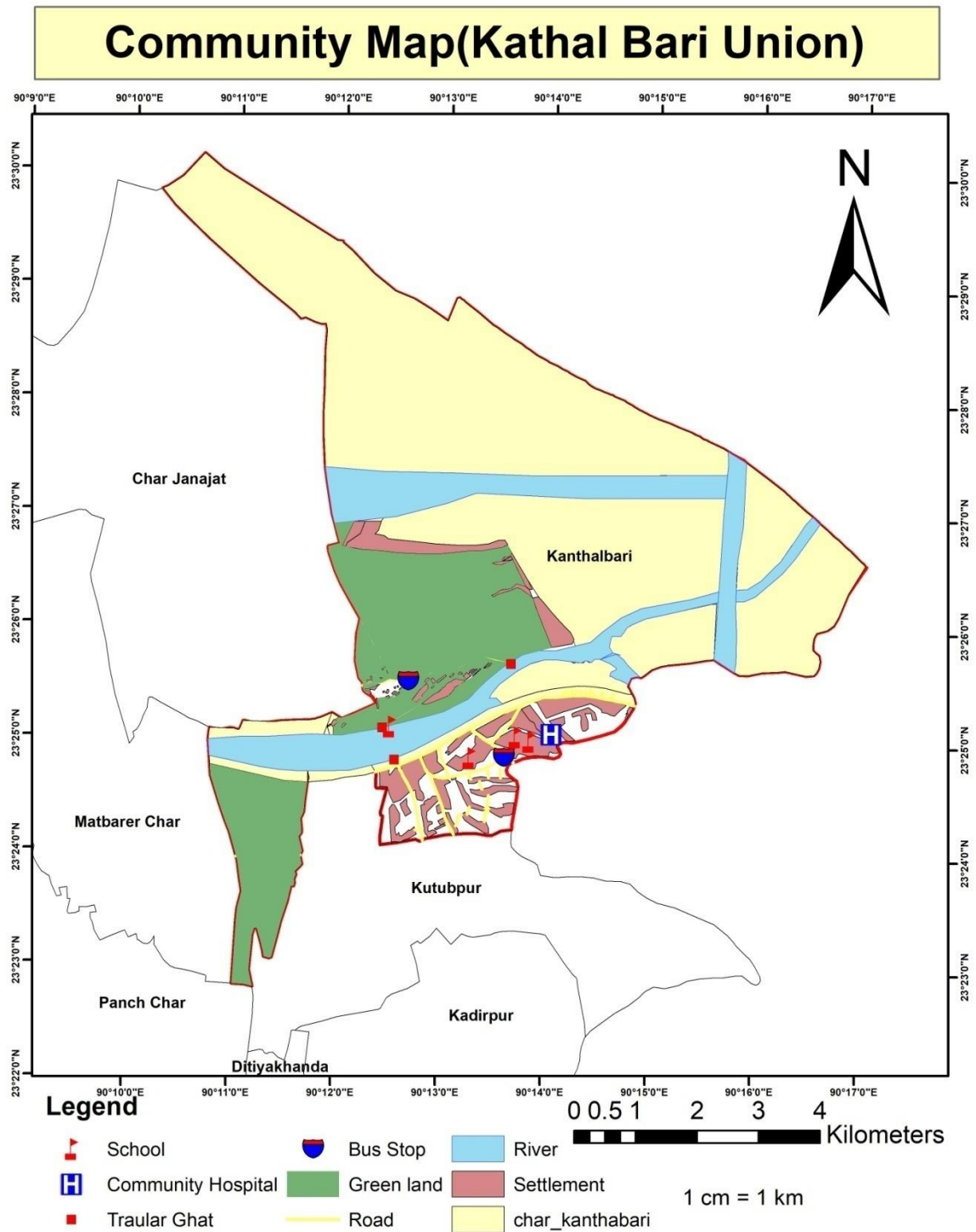


Legend

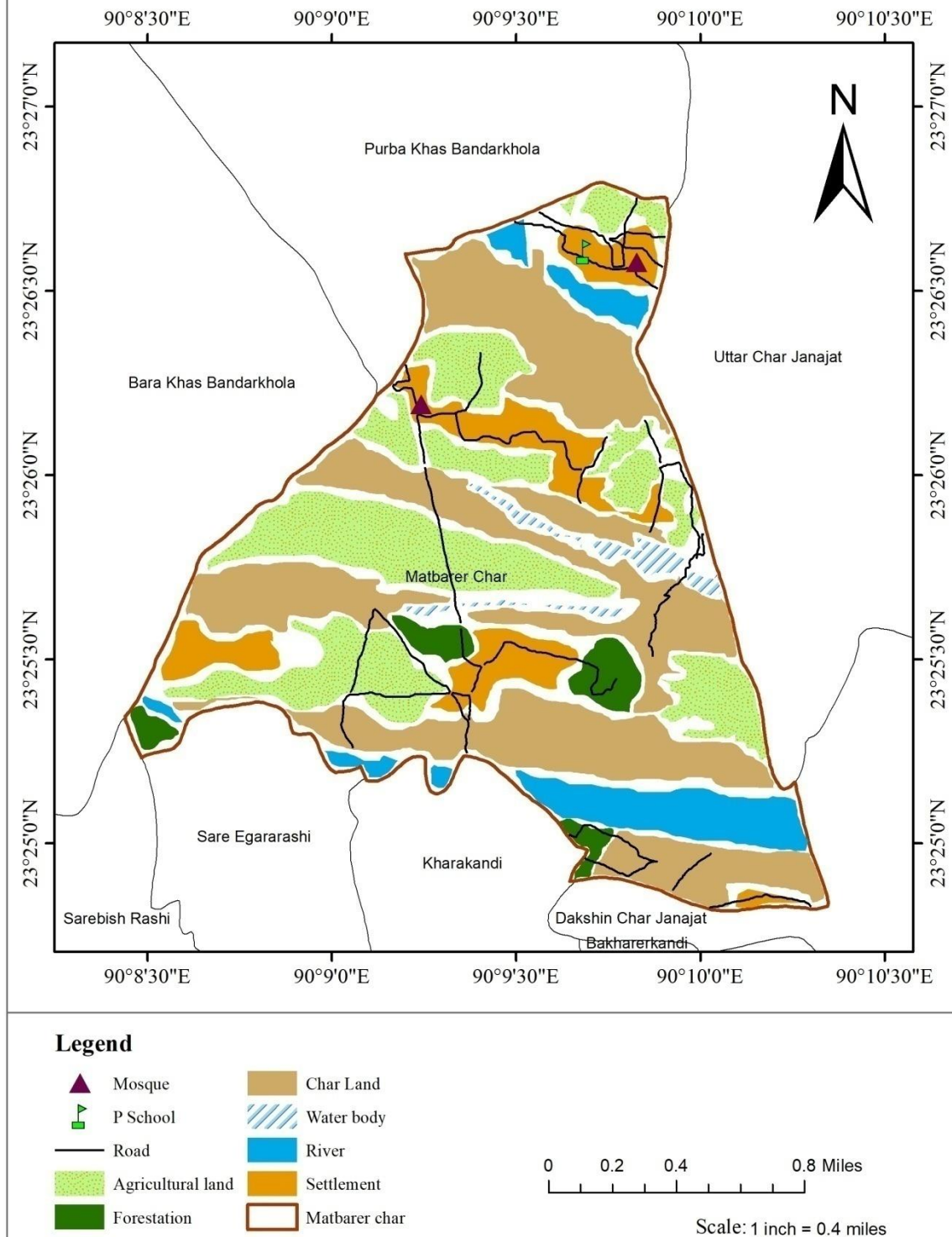
	Union Parshad		Agriculture Land
	Madrasha		Road
	Road Lines		Char Land
	Water Body		River line
	Forestation		Settlement
	Wetland		Naodoba Union

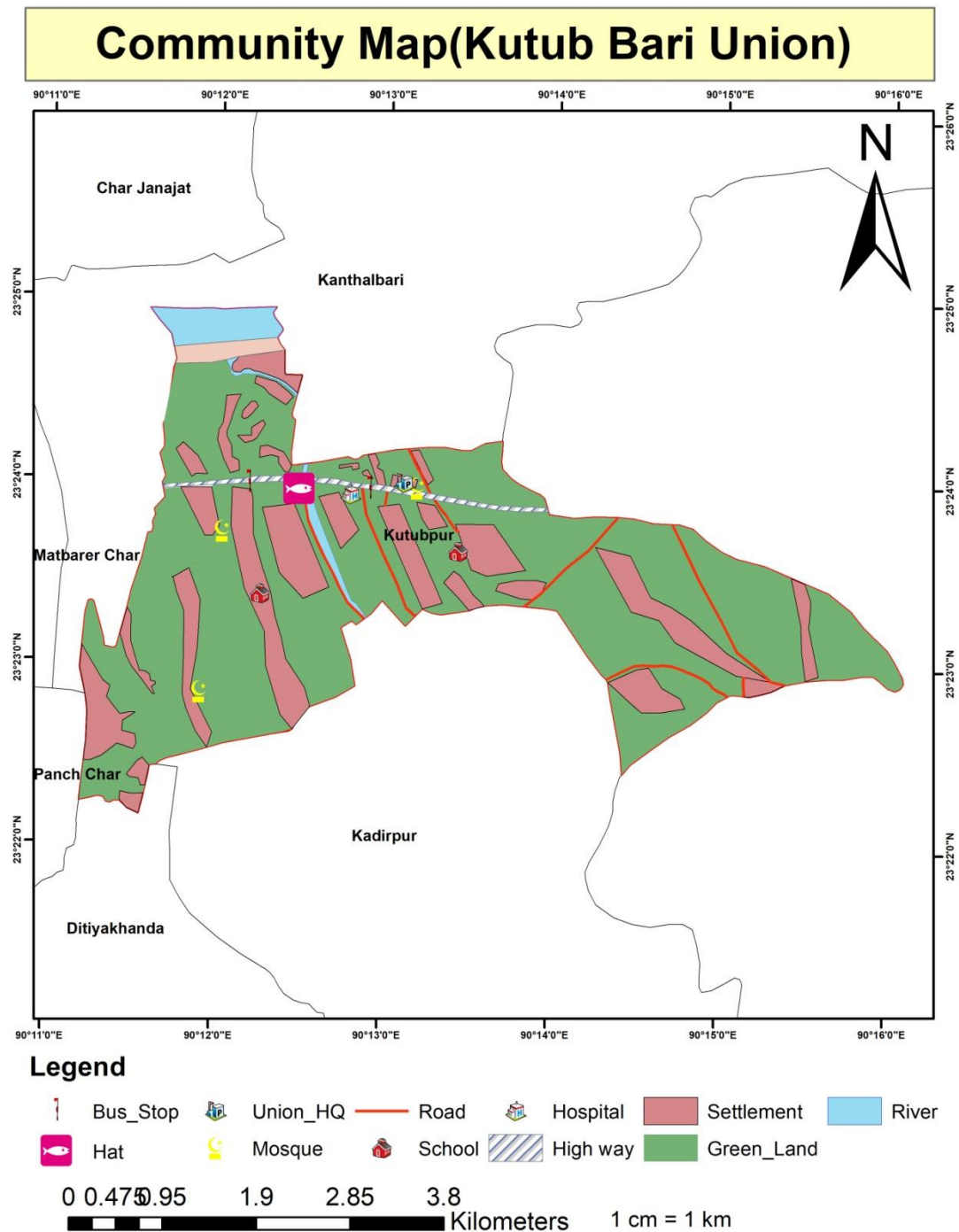
0 1 2 4 Kilometers





Community Map (Matbarer Char Union)





Appendix-3**Team Composition**

Team members, their service length and area of interests, qualifications, and team position

Name of team member	Service length & areas of interests	Qualifications	Position in Team
Prof. Tahmina Akhtar	28 years. Women Development, Social Policy and Planning, & mental health	MSS in Social Welfare (SW)	Team Leader
Prof. ASM Atiqur Rahman	32 years. Gerontology and geriatric welfare, & social research	Ph.D., Masters in Demography & MSS	Chief Investigator
Prof. Md. Nurul Islam	28 years. Community development, rural development & victimology	PhD & MSS in SW	Chief Investigator
Prof. Mahbuba Sultana	25 years. Women Development; NGO Sector; Project Design	PhD (India) & MSS in SW	Chief Investigator
Prof. Golam Rabbani	20 years. Human rights of the ethnic population, Industrial management & social compliance	PhD, Masters in Family Studies (Gothenburg) & MSS in SW	Chief Investigator
Prof. M. Rezaul Islam	24 years. Poverty and inequality, social justice, social development, human rights, community development, & international migration	Ph.D. (Nottingham) MSW (Nottingham) MSS in SW	Chief Investigator
Prof. Tania Rahman	26 years. Mental health	PhD & MSc in Psychology	Team Member
Prof. Golam Azom	26 years. Community Development; Social Deviance and Social Research	Ph.D. (Tsukuba) MSS (Tsukuba) & MSS in SW	Team Member
Prof. Fozle Khoda	24 years. Social Development; Social Research	Ph.D. (Western Sydney), Masters (Gothenburg) & MSS in SW	Team Member
Prof. Mohammad Shahin Khan	15 years. Public Health; Gender Issues; Social Development	Ph.D., Masters (Free University Brussels) & MSS in SW	Team Member
Prof. Sk. Tauhidul Islam	15 Years. Disability & youth development, criminology & victimology	Ph.D., Masters (Gothenburg) & MSS in SW	Team Member
Prof. Mohammad Hafiz Uddin Bhuiyan	15 Years. Gerontology and geriatric welfare	PhD & MSS in SW	Team Member
Prof. Md. Rabiul Islam	15 Years. Aging; Gender Issues	PhD & MSS in SW	Team Member
Prof. Sahana Nasrin	14.Years. Indigenous people, gender development	Ph.D., MPhil (Norway) & MSS in SW	Team Member
Associate Prof. Dr. Md. Ashraful Islam	10 Years. Criminology & labour studies	PhD & MSS in SW	Research Associate
Assistant Prof. Mohammad Mainuddin Mollah	10 Years. Urban development, climate change, and disasters	PhD (ongoing) & MSS in SW	Research Associate
Assistant Prof. Anuradha Bardhan	10 Years. Gerontology and geriatric welfare	PhD (Ongoing) & MSS in SW	Research Associate
Assistant Prof. Md.Tawohidul Haque	8 Years, Criminology, the criminal justice system, and victimology	PhD (Ongoing) & MSS in SW	Research Associate
Assistant Prof. KamrunNahar	6 Years Disaster and women welfare	PhD (ongoing) & MSS in SW	Research Associate

Appendix-4: Detail participants' list for training under ILRP (Trade Wise)

Padma Multipurpose Bridge Project (PMBP)
ILRP & IRAP Project
CNGO: Eco Social Development Organization (ESDO)
Detail Participant List for training under ILRP (Trade Wise)
Summary Sheet

Sl	Trade	Rap Matrix 10				Rap Matrix 11				Rap Matrix 12				Rap Matrix 14				Grand Total			
		Munshigonj	Madaripur	Shariatpur	Total	Munshigonj	Madaripur	Shariatpur	Total	Munshigonj	Madaripur	Shariatpur	Total	Munshigonj	Madaripur	Shariatpur	Total	Munshigonj	Madaripur	Shariatpur	Total
1	Small Business	15	47	4	66	7	26	5	38	3	3		6	149	231	107	487	174	307	116	597
2	Duck and Poultry Rearing	22	19	4	45	14	14	13	41	5	1	1	6	116	100	85	301	157	134	102	393
3	Cow and Goat Rearing	14	85	10	109	9	62	46	117	4	4		8	78	585	282	945	105	736	338	1179
4	Koyal Bird Rearing				0				0				0				0	2	0	1	3
5	Mushroom Cultivation	2			2	2			4				0	12	2	1	15	16	2	1	19
6	Fish culture in the Pond	3	3	1	7	1	8		9				2	14	47	12	73	17	60	13	90
7	Handicraft	1			1	1			2	1			1	11	21		13	14	2	1	17
8	Tailoring	67	25	3	95	53	23	28	104	25	1	1	27	424	211	268	903	569	260	300	1129
9	Electric Sewing And Embroidery				0	1		1	2				0	4	5	6	15	5	5	7	17
10	Bamboo and Cane work				0				0				0	3			3	3	0	0	3
11	Bakery Item (Processed food)				0				0				0	1	1		2	1	1	0	2
12	Chanachur and Chips production				0				0				0	4			4	4	0	1	5
13	Pickle production	1			1				1				0	3	1	1	5	4	1	1	6
14	Sweet box production	2			2	1			3	1			1	7	2		9	11	2	0	13
15	Mobile Repairing	4	4	1	9	1	5	1	7	2			2	27	19	24	70	34	28	26	88
16	Computer skill Training	33	6	3	42	14	7	2	23	5			5	261	67	134	462	313	80	139	532
17	Computer /Laptop/Tab Repairing				0	1		2	3				0	21	8	8	37	22	8	10	40
18	TV and Fridge Repairing	1	1		2	2	1	3	6	1			1	11	12	34	57	15	14	37	66
19	Motorcycle Repairing		2	2	4	1		3	4				0	4	4	11	19	5	6	16	27
20	Bi-cycle/Rickshaw Repairing				0				0				0		2		2	0	2	0	2
21	Agricultural Instrument Repairing				0			1	1				0	1	1	1	3	1	1	2	4
22	Beauty Parlor	2			2	2	2		4	2			2	33	16	10	59	39	18	10	67
23	Potter				0				0				0				0	0	0	0	0
24	Blacksmith				0				0				0				0	0	0	0	0
25	Paper packet production	1			1				1				0	1		3	4	2	0	3	5
26	Candle production				0	2			2				0	14		2	16	16	0	2	18
27	Painter	4	1		5	1	1		2				0	6	3	4	13	11	5	4	20
28	Nursery		1		1		1		2				0	1	4	4	9	1	6	4	11
29	Welding	12	3	1	16	10		1	11	5			5	70	5	26	101	97	8	28	133
30	Masson	2	3		5	2		1	3	1			1	6	7	2	15	11	10	3	24
31	Wooden work				0				0	2			2	9	2	6	17	11	2	6	19
32	Electric House Wiring	1	5	2	8	2	1	3	6	2			2	25	25	49	99	30	31	54	115
33	Thal Frame work				0			1	1	1			1	4	2	3	9	5	3	3	11
34	Water supply line work				0				0	1			1	1	4	2	7	2	4	2	8
35	Block and Batik print				0			1	1				1	17	1	5	23	18	1	6	25
36	Driving	19	18	5	42	7	7	13	27	5			5	114	63	203	380	145	88	221	454
37	Others			1	1	1			2				0	5	3	13	21	6	3	14	23
	Grand Total	206	223	37	466	134	159	125	418	67	11	1	79	1459	1435	1308	4202	1866	1828	1471	5165

Eligibility Criteria : 10: Loss of income from Displaced Commercial/ Industrial Premises (Owner Operated)

11: Temporary loss of income (Wage earner in Agriculture, Commercial & Small business and Industry)

12: Loss of income from Rented-Out of Residential/ Commercial Premises 12, a. Owner, 12, b. Renter

14: Households Losing more than 10% of their income (From agriculture or business) due to the project

Prepared By

Endorse By

Approved By

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Data Manager
ILRP, ESDO-PMBP
Mawa, Munshigonj

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ILRP & IRAP-ESDO, PMBP
Mawa, Munshigonj

Abu Zafar Nur Muhammad
Team Leader
ILRP & IRAP-ESDO, PMBP
Mawa, Munshigonj