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Changes in livelihood assets due to the intervention of a development project: A case study at Khutamara Union, Bangladesh

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Abstract: Presently, any development initiatives without considering sustainability can barely be imagined. There has been a paradigm shift in the focus of the development partners from the mere development to sustainable development. However, the role of development partners in bringing sustainability in livelihood assets of the rural community has long been questioned. Hence, this study aims to explore the sustainability in the form of changes in livelihood assets of a local community in Bangladesh. This study considers the changes in livelihood assets of the community over the three-time frames - before, during, and after a project implemented by a national NGO called 'UST' and subsequently identifies the community's capacity to sustain the project outcomes after the completion of the project. 'Sustainable Livelihood Framework (SLF)' developed by Department for International Development (DFID) was utilized in this study to analyse the vulnerability and livelihood issues of the community members. Data has been collected through focus group discussions, household survey and key informants' interviews from three distinct villages of 'Khutamara' union in the 'Nilphamari' district of Bangladesh. The finding of the study states that all the livelihood assets such as the social capital, human capital, natural capital, financial capital, physical capital have positively changed due to the interference of the development partners. This study further finds that even after the completion of project tenure, such positive trends continue to exist among the community members indicating sustainable development. Moreover, political capital- a new type of livelihood has also emerged because of the project implementation which was not quite evident before the inception of the project. In addition, this study explored the unique phenomenon of the Shabolombee Gram, where the transformation altering farmers', livelihoods does not come from the government or the private sector but originates from a Non-Governmental Organization (NGO). Therefore, the government and its development partners may adopt and incorporate the Modified Sustainable Livelihood Framework (MSLF) to ensure the sustainable development.

Keywords: livelihood assets; NGO; sustainable development; rural area; community members; Khutamara; Bangladesh

1. Introduction

Consistent growth of livelihoods of disadvantaged rural households in recent years brings momentum to achieving the Sustainable Development Goals (SDGs) in a remote area of northern Bangladesh. The NGOs play a pivotal role in supporting livelihood projects in the rural and remote parts of the country (Baser and Abu Hasnath, 2023; Islam, 2017). While most donor-funded NGOs emphasize community capacity development and attaining financial solvency through micro-credit, the question remains whether the outcomes attained during the project period can be carried

forward after the completion of the development projects. This question has become more crucial in recent times because the government of Bangladesh is currently implementing various development projects to achieve SDGs (sustainable development goal) and Bangladesh is on the path to transitioning from a Least Developed Country (LDC) to a Developing Country by 2024 and striving to become a developed country by 2040 (Sustainable Development Goals | United Nations in Bangladesh, n.d.). However, answering this question requires assessing the micro-level understanding of the project outcomes that bring changes in the local communities, particularly in the livelihood assets of the primary stakeholders. While there are well-established frameworks for assessing project outcomes or sustainable development, such as the DFID's Sustainable Livelihoods Framework (SLF), ABCD (Asset Based Community Development) approach, and Broadlands's Sustainable Development Framework, understanding the local perspective towards sustainability is quite challenging because of the diverse needs of community-level stakeholders (Jabareen, 2008).

In addition, the beneficiary communities often face challenges in maintaining positive outcomes after the completion of development projects (Field notes) (Toch, 2015). Therefore, assessing the project output in the communities after project tenure should be explored by considering the local contexts of the primary stakeholders. As developing countries are moving towards the attainment of the Sustainable Development Goals (SDGs), understanding sustainability of project outcomes, is essential for translating these SDGs into the local community contexts (Sustainable Development Goals | United Nations in Bangladesh, n.d.). Keeping these challenges in mind, our study aims to explore the local contexts of sustainability in the form of changes in livelihood assets over time. To achieve comprehensive understanding of sustainability from the perspective of local communities our study attempts to pursue two broad research objectives: first, to explore the changes in livelihood assets of the community people over the three-time frames—before, during, and after a project implemented by a national NGO, and second, to identify the community's capacity to sustain the project outcomes even after the completion of the project cycle.

To achieve these two research objectives, our study seeks to answer two research questions: (1) how the changes in livelihood assets occurred (both positive and negative) within the members of a local community in Bangladesh under three distinct time frames—before, during, and after the intervention of a development project employed by a local NGO, and (2) does this local community members able to maintain the growth/recover the negative outcomes in the livelihood assets obtained during the project period even after the termination of the project? To explain the changes in livelihood assets of the community people, this study has chosen a particular development project 'Shabolombee Gram' (sustainable village), implemented by a local NGO—Unnayan Shahojogy Team (UST), from 1999–2008.

2. Literature review

The term 'development' implies improvement, growth, and change which entails social, psychological, political, economic, socio-cultural, environmental, and technological renovation or transformation in communities and societies as a whole

(Ibuot et al., 2021; Lin, 2011; Sabran, 2003; Scheyvens and van der Watt, 2021). Consequently, community development can be seen as a collaborative approach of all community members to involve in the activities directed towards enriching their current welfare along with ensuring their future well-being, with or without the intervention of external development partners (Nelson, 2019; Rowe, 2016; Waren, 1972). Therefore, the term ‘community’ is crucial to interpret at first in an appropriate manner before focusing on its functions while defining it. According to many social scientists, the community can be termed as a social system characterized by the people living together, sharing common services and facilities, and having a common interest, needs, values, and functions besides having a similar psychological identity with a common communication network. Here, the functions of the community incorporate both vertical and horizontal interrelationships between the members of the society as a whole (Mwanri et al., 2021; Sabran, 2003).

However, the key challenge is that any development action without community involvement might affect the interest of community-level primary stakeholders. Thus, the community is the core of any development action beside ensuring sustainability. (Christenson and Robinson, 1989; Fendley and Christenson, 2009; Zainal Abiddin et al., 2022) in their study explained that ‘Community Development’ means providing the community a better place to live while improving their socioeconomic conditions by mitigating environmental challenges and eradicating poverty in a sustainable way. However, understanding of the term “sustainability” varies from country to country, and the definition of it also differs according to distinct thoughts and disciplines (Austin, 2006; Bothale, 2015; Mikalauskiene et al., 2018; Xu, 2022). The top-down and bottom-up approaches have been extensively used as a community developmental tool for a long time, and researchers have preferred one method over another depending on their school of thought. Irrespective of the approach adopted, the success factor of the developmental projects lies in the evaluation of the project outcomes and to know whether the project goal was achieved or not and its effects on the communities (Isidiho and Sabran, 2016; Kaiser, 2020; Purba and Wahyu, 2022). Based on this idea, our study also attempts to explore the changes in sustainable livelihood assets of a local community in Bangladesh after the intervention of a development project.

The development projects in Bangladesh are also embedded in the enigma of choosing between a structured top-down approach and a participatory bottom-up approach (Khan et al., 2022). Previous studies suggest any development project followed by top-down approach is usually well-structured and systematic and entails well-planned budgets, implementation framework, and predefined control and monitoring system. Moreover, the well-set hierarchy of the decision-making system makes it more compatible with formulating project frameworks such as Logical Framework Analysis (LFA). The prior literature also identifies the limited implementation of participatory approach-based projects, even in micro-credit-based projects that are one of the major contributors to poverty alleviation in rural Bangladesh. While the top-down approach-based projects are easy to implement and economically viable, there exists a concern about the communities’ capacity to carry forward the lessons learned, and benefits obtained during the project period. In many cases, after the termination of the development projects, the project officials leave the

area, and sometimes, the local project offices are closed (Austin and Murtaza, 2011). The extant literature also identifies limited post-project monitoring by the NGOs due to the discontinuity of funds provided by the sponsors after the implementation of projects (Kourtzanidis et al., 2021; Myers et al., 2014; Peter et al., 2019; Turkson-Ocran et al., 2020). As a result, the primary stakeholders are often left to fend for themselves after such development projects are completed.

However, there is a dearth of existing literature regarding the community development, in the context of developing country like Bangladesh in particular, regarding the changes in their livelihood assets and post effect of development projects. Most of the prior studies related to community development primarily focused on the short-run effect of a development project which is a shallow perspective. Only a few studies (Kourtzanidis et al., 2021; Madson et al., 2022; Myers et al., 2014; Peter et al., 2019) considered long run sustainability of project outcomes while evaluating a development project, creating a huge knowledge gap to be filled up by the future researchers. To address these lacunae in the existing literature, our study attempts to identify long term changes in sustainable livelihood assets in three distinct time frames—before, during, and after the implementation of a development project implemented by an NGO at Khutamara Union in Bangladesh.

2.1. About the project ‘Shabolombee Gram’

The ‘Shabolombee Gram’ project is a popular identity of the social development projects carried out by a national NGO for around a decade starting from 1999 in the study area. Projects were of different titles but focused on empowering the poor and disadvantaged women, sustainable livelihoods, water and sanitation, children’s education, ecological agriculture, and social network with service providers. ‘Shabolombee Gram’ is a Bangla term that represents the conceptual meaning of a Self-help village, which emerged out of local people’s practices throughout the projects’ work, resulting in women empowerment and sustainable livelihoods along with children going to school, villagers’ habit of using hygienic toilet from open defecation, ability to save and consume by the poor women, capacity to establish access to social development services of the government and NGOs, and power to protect them from exploitations and abuses of different forms.

2.2. Conceptual framework for assessing changes in livelihood assets

This study uses the Sustainable Livelihood Framework (SLF) developed by the Department for Foreign Development (DFID) to measure the changes in livelihood assets of the community members at Khutamara Union in Bangladesh in three-time frames (before, during, and after the intervention of development partners) to explore the contribution of development partners towards sustainability. The DFID Sustainable Livelihood Framework recognizes a community’s Human, Social, Physical, Natural, and financial capital and their interconnection to measure the extent of sustainable development within this community by basing different factors (Badur et al., 2024; Baffoe and Matsuda, 2018; Blackmore et al., 2023; Sustainable Livelihoods Approach Guidance Sheets: Livelihoods Connect, 2002a). The framework attempts to exhibit how organizations, policies, institutions, and cultural

norms shape the livelihood assets of a community by identifying their possible ways of access to different livelihood assets and defining what range of livelihood strategies are open and striking to people (Carney, 1998; Stringer, 2014; Udoh et al., 2017; Wu et al., 2023). The sustainable livelihoods framework (SLF) basically connects the inputs (defined with the term ‘capitals’ or ‘assets’) and outputs (livelihood strategies), connected in turn to outcomes, which combine familiar territory (of poverty lines and employment levels) with broader aspects (of well-being and sustainability) (Horsley et al., 2015; Scoones, 1998, 2009; Wang et al., 2022).

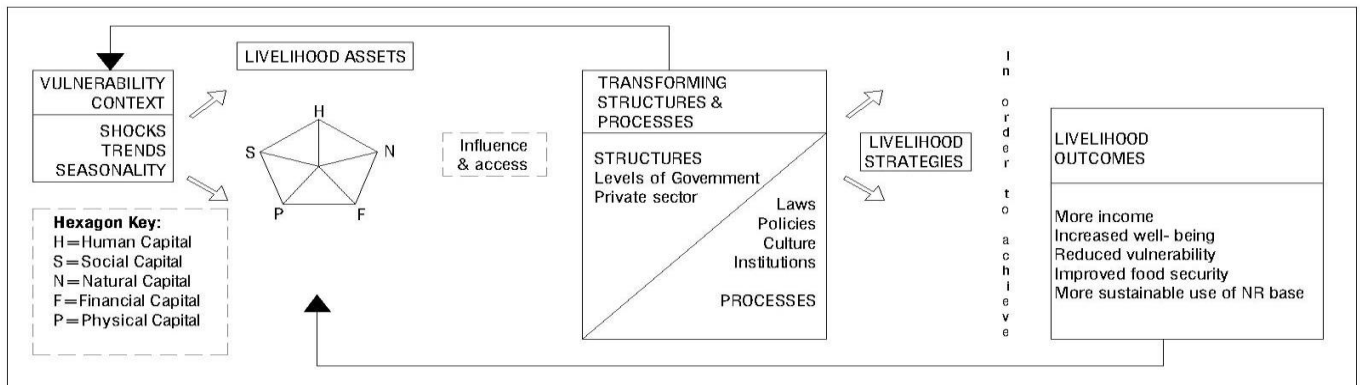


Figure 1. Sustainable livelihood framework (DFID, 2000).

The SLF approach (**Figure 1**) strengthens understanding of the linkages between people’s asset statuses and livelihood strategies and their access to natural resources and is, therefore, a functional approach for comprehending both the problem and the possibility of promoting sustainable development at the bottom level (Krantz, 2001). Lesse Krantz (2001) also stated that the SLF approach provides us a more suitable basis for examining the socio-economic effect of the projects as it offers a more pragmatic framework for evaluating the effects on people’s overall living status rather than solely one-dimensional productivity or income criteria.

Even though livelihood perspectives have been supported since the 1990s, the discussions on the anatomy of livelihood ideas and approaches reveal that the livelihood perspectives can be traced back more than 50 years. Being an interdisciplinary concept, the livelihood approaches have manipulated the political, social, economic, and environmental rural development thinking and practices. Even today, it is being widely used to measure development and its sustainability (Scoones, 2009). Although Scoones is an advocate of livelihood perspectives of rural development, in his work, Scoones (2009) criticized the narrow perspectives of SLF on the ground that it failed to concentrate on the macro-level aspects of the economy and did not consider the power and political complexities in development practices. He further argued that the livelihood perspectives could not properly address climate change or environmental issues in its framework, and it failed to figure out the long-term shifts in rural economics and its inevitable complexities. To reconcile the narrow perspective of SLF, Scoones (2009) suggested four re-energizer themes (Knowledge, Politics, Scales, and Dynamics) to make the framework more inclusive and robust. However, in Scoones’ framework, the effect of the local perspective is not adequately addressed. Where the popular notions reveal that sustainable livelihood framework is

not effective in dealing with politics, in his study, Scoones (2009) suggested that enhancing the indiscriminate access to the livelihood assets and answering some critical questions of the social power structure, livelihood framework can be modified to cover the political aspects affecting sustainable development. This study has also incorporated the political capital in its SLF as an additional component as per the Scoones (2009) directives to better reflect the extent of sustainable development in rural settings (Scoones, 2009). Following the strong advocacy for sustainable livelihoods approaches in development practices from the 1990s (Ashley and Carney, 1999; Carney, 1998, 2002; Chambers, 2002; Scoones, 1998), many development partners such as NGOs also have become a supporter of the livelihoods approaches as a means of their programming, and even in developing organizational structures (Scoones, 2009) and it has become an important player in the transformation process

2.3. NGO as a transformation agent

In DFID's Sustainable Livelihood Framework (SLF), it is clearly articulated that any sort of development initiative in the society usually originates from the part of govt. (state) and private sector or market (Sustainable Livelihoods Approach Guidance Sheets: Livelihoods Connect, 2002b). However, this study presents a unique scenario of the 'Shabolombe Gram' project, where the transformation changing the life standards of the villagers does not derive from the government or private sector but originates from the intervention of a Non-Governmental Organization named UST, which is a crucial novelty in this paper. The transformation process used by the NGO is quite different from the approaches adopted by the state or private entity (Dutta, 2021). When the transformation agent is government or state, the development initiative usually stems from the top and is implemented at the root level and is more structured and policy driven and focuses on policy implementation, infrastructure development, and public service delivery targeted to a broader population rather than meeting specific needs of a community (Ademola Eyitope, 2020). Here, regulations, political agendas, and bureaucratic processes may affect the pace and efficiency of transformation efforts. In the case of private sector involvement, we notice market-driven approaches, targeting profit generation while addressing livelihood challenges. Private sector investments are usually concentrated on creating income-generating opportunities while often ignoring the specific needs of marginalized communities or low environmental consideration is there if not properly structured (Ebghaei, 2021; Khan and Kumar, 1997; Pauw, 2015).

In contrast, when an NGO leads the transformation process, it usually focuses on community empowerment, meeting a very specific need of a disregarded community, capacity building, and participatory approaches. In the case of NGOs, the livelihood-changing initiatives encompass grassroots engagement, local knowledge integration and a bottom-up decision-making process. NGOs often prioritize sustainability and social effect over profit (Banks et al., 2015; Beyuo, 2020; Mahajani et al., 2018; Menon and Allen, 2021). Apart from this, NGO enjoys more flexibility in implementing development projects and can apply innovations as they operate on a smaller scale and independent of bureaucratic constraints (Atia and Herrold, 2018; Banks and Hulme, 2012; Vannier, 2010). Therefore, as a transformation agent, key

differences among all entities (government, private sector, or NGO) actually embed on the objectives, approaches, and motivations. In the study, the researchers have given more emphasis on the role of NGOs rather than govt. or private entity while addressing the changes in the livelihoods of the villagers of the ‘Khutamara’ union and suggested a new, modified livelihood framework by incorporating NGO as a transformation agent in addition to govt. and private sector. The modified version of the SLF (**Figure 2**) looks like follows:

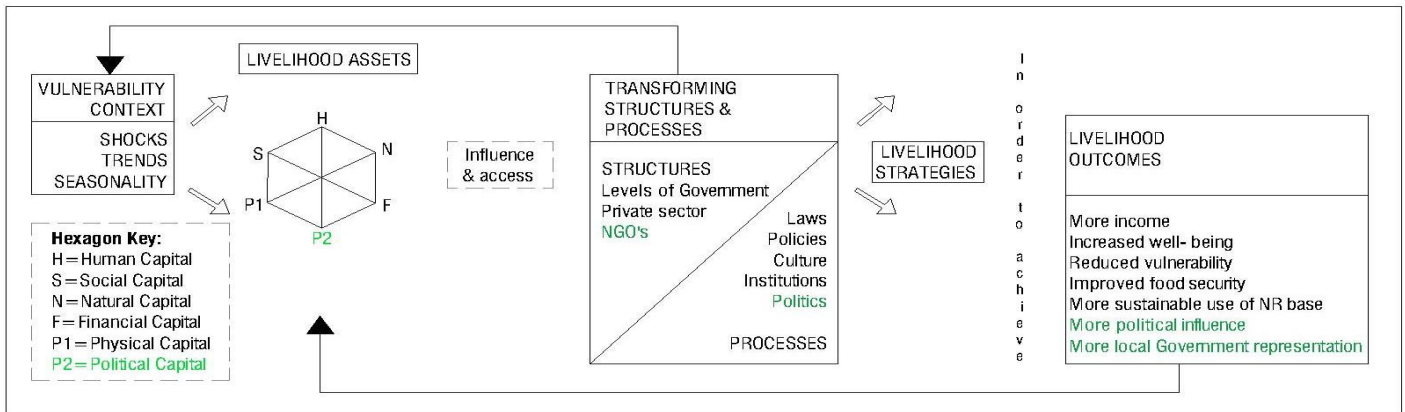


Figure 2. Modified Sustainable Livelihood Framework developed by the authors with the help of study findings.

3. Methodology

3.1. Study area

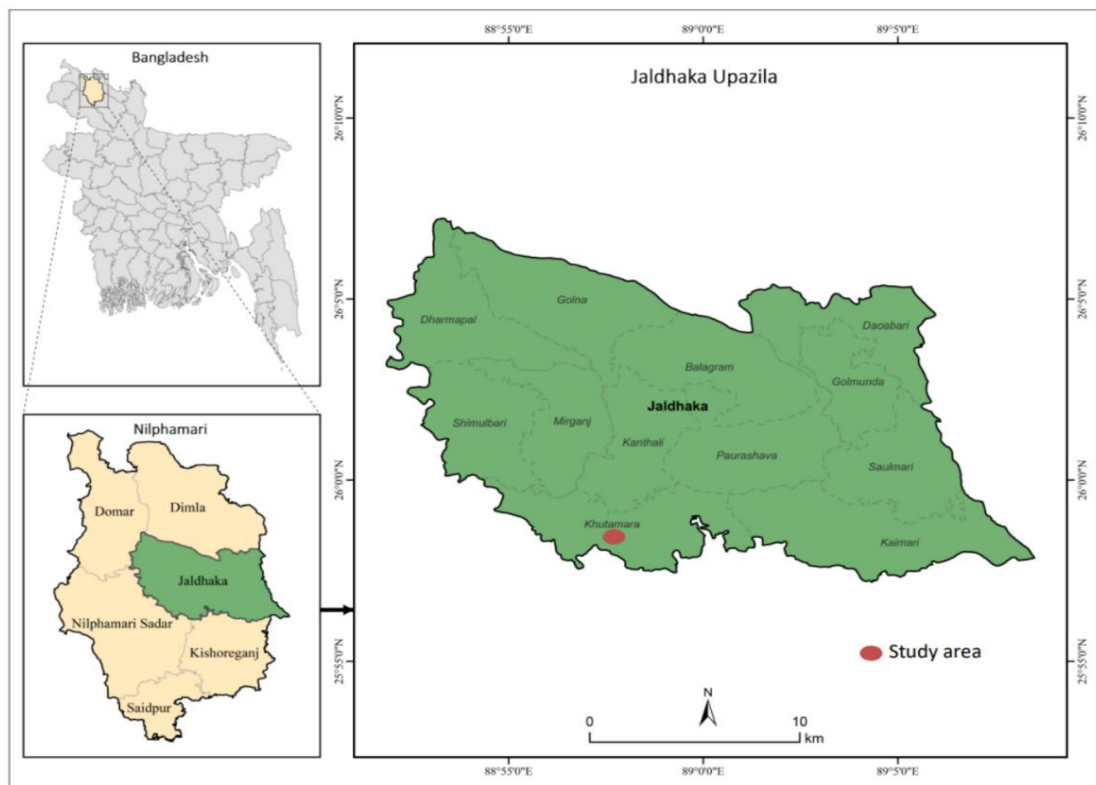


Figure 3. Study location map (Madrashapara, Kabirajpara, and Jelepura villages within Khutamara Union, Jaldhaka Upazila, Nilphamari District in Bangladesh).

The field study is conducted with the primary stakeholders of the UST's 'Shabolobee Gram' project in November 2018 and March 2020. The study area, the community of Khutamara Union, is situated at Jaldhaka Upazila of Nilfamari district in the northwestern of Bangladesh (**Figure 3**), which is located approximately 320 kilometers north of Dhaka city, the capital of Bangladesh.

3.2. Data collection method

Required data for this study are collected from primary sources. A mixed research approach, referring to the use of two or more methods in single research, including qualitative and quantitative approaches (Hollstein et al., 2021; Rahman and Huq, 2023), has been utilized in this study to explore the sustainability among the locals of Khutamara Union in terms of changes in livelihoods assets. Mixed Method has been applied to increase the accuracy and level of confidence of the research (Kelle, 2005; Rahman and Huq, 2023). To comprehend the effects of NGO intervention on the livelihoods, understanding of local peoples' perception and local context is essential (Lahai et al., 2022). For this reason, this study has initially conducted a stakeholders' consultation with different professionals and occupational groups, to get a preliminary picture of changes in livelihoods of the locals and impact of development project on their overall living standards. After gaining a primary understanding of the effects of development project on the livelihoods of the community people, the authors have finalized the questionnaire for Household Survey and Focus Group Discussions, which includes socioeconomic characteristics, land ownership status, and demography of the respondents, as well as respondents' life experiences over the past two decades.

A total of 200 respondents from three villages are interviewed to collect primary data by utilizing a semi-structured questionnaire between November 2018 and March 2020. Two focus group discussions (FGD) have been organized involving 30 leaders of women groups from three villages (Madrashapara, Kabirajpara, and Jelepara). The study selects 3 villages under Khutamara Union, as they are included under the coverage of the project 'Shabolombee Gram'. Purposive sampling technique has been employed to select the samples. Sample areas are jelepara, madrasha para and kabiraj para (**Table 1**). The number of samples from each village for household survey are as follows:

Table 1. Sample distribution.

Areas under study	No. of samples
Jelepara	100
Kabirajpara	39
Madrashapara	61
Total	200

Participants of the FGD sessions are among leaders of different 'Mohila Shamity' (Women group) formed under the 'Shabolombee Gram' (sustainable village) project of the NGO-UST. Each FGD session lasts around two hours. Due to time and budget constraints, the study limits the sample size to 200 respondents for the household survey. Apart from that, the researchers have interviewed only one respondent from

each household who is aged above 35 years and resides in the area for generations. Nevertheless, for a population of 435,162 persons, a sample size of 208 is ideal (with a confidence level of 85% and a margin of error of 5%), which is close to our sample size of 200 (Rahman et al., 2023).

The participants in the focus group discussion (FGD) have been selected based on their age groups, particularly targeting women who are aged above 35 years. This age group is chosen due to their presumed higher level of experience and knowledge regarding livelihood asset changes. The professions and occupations of the respondents are also taken into consideration. This diverse range of respondents is chosen in the study to capture a comprehensive understanding of their viewpoints regarding NGO intervention and resulting effects on the local population. The FGD respondents are all female respondents as our project in interest 'Shabolombe Gram' only targeted women for community development as they were the most vulnerable in the project term. However, each FGD is conducted by a facilitator with few assistants for collecting notes and recording the FGD sessions, which are later transcribed into text form. All the quantitative data collected from the field are processed by using Microsoft Excel. The study has followed standard ethical protocol, and all the respondents are informed in advance about the study objectives. The researchers have also taken the verbal and written consent of the respondents before interviewing them, and findings of the study are verified by the respondents after analyzing the data.

Under this study, as all the data have been collected from the primary sources and are self-reported, they are subjective in nature and thus might be prone to personal bias. To enhance the robustness of the findings of the study, the researchers have addressed these issues and overcome these limitations by following a few steps. Firstly, Key Informants Interviews (KII) [See Appendix A] are taken from NGO workers and other professionals to identify key ideas about the changes in livelihoods of the locals. Then two FGDs [See Appendix B] are conducted to find out the similarity in findings. After that data are collected in two time points (2018 and 2020) to check any significant deviations. Moreover, only one respondent is taken from each household to avoid bias in response.

3.3. Data analysis

As mentioned earlier, the researchers collect both qualitative and quantitative data for investigation. Quantitative data mostly include household demographics and land use/land cover information, while qualitative data include their perceptions about changes in sustainable livelihoods in the area as well as vulnerabilities they have been experiencing. The study uses descriptive statistics to interpret the data. Data are analyzed using Microsoft Excel software, particularly for measuring frequencies, percentage, mean, and standard deviations. The FGD data are collected into text and transcribed forms and analyzed with the help of Microsoft Excel to inductively discover important emergent themes from the data from each FGD. The following four stages were applied in the text collected to do the necessary thematic analysis.

Prior studies used both unweighted scores and weighted scores to measure the changes in livelihood assets (Chen et al., 2013). Although both methods provide objectivity in analyzing the changes in livelihood assets, they merely provide

information about what changes happen in the community rather than how those changes occur. As this study focuses on the nature of changes in the community’s livelihood assets over time, emphasis has been given to the stories behind the changes rather than ‘checklist’ based reporting of the livelihood assets. For that, stories are classified under different livelihood capitals, utilizing the open-ended questionnaire asked during the FGD session, and key themes (individual engagement) are identified from the discussions.

Table 2. Thematic analyses.

Stage 1	Identify key sentences from the script.
Stage 2	Organise the key statements under common themes.
Stage 3	Classify the themes under livelihood capitals and other key groups.
Stage 4	Categorise the livelihood capitals based on three distinct timeframes: before, during and after the project (1, 2 and 3 respectively).

Three distinct time frames such as time, before the project, during the project and after the project, have been considered in the study (**Table 2**) to examine the effect of development project intervention on the living standard of the villagers whereas time frame, ‘before the project’, includes the years before 1999 [T1] and time frame ‘during the project’ entails the period starting from 1999 to 2008 [T2] and time frame, ‘after the project’ includes the year from 2009 to 2018 [T3]. The study also contains scores to measure the changes in livelihood assets over time (**Figure 4**—web appendix). Consistent with the work of Batenga et al. (2023), the following Likert Scaling (**Table 3**) is used to develop the scoring:

Table 3. Likert scale.

Score	Description
0	Do not exist
1	Rarely exists
2	Exists but difficult to utilize
3	Exists and useful to utilize
4	Ability to utilise with minor difficulties
5	Ability to utilise and maintain the capital

The validity and reliability of those scores are checked through repeated independent exercises by the authors. Both the first and second authors do the same exercise independently of each other. Then the scores are matched to identify consistency and discrepancy between the authors. These independent exercises have allowed the authors to measure the changes and check whether the scoring is consistent or not. In about 80 percent of cases, authors come up with scores consistent with each other. Therefore, the scoring used in the study serves its purpose to measure and visualizes the changes in livelihood assets over the study period.

4. Result and discussion

The changes in the livelihood assets of the Khutamara are summarized in **Table**

4. Notable that the scoring is used as a supplement to visualize the changes in livelihood assets over time. It does not replace the nature of changes identified under the focus group study.

Table 4. Composition of livelihood assets over time (average scores).

Livelihood assets	Before the project (T1)	During the project (T2)	After the the project (T3)
Human Capitals	1.3	3.0	4.5
Financial Capitals	1.3	3.3	4.1
Natural Capitals	1.3	2.3	3.1
Physical Capitals	0.7	2.4	3.1
Social Capitals	1.2	3.0	3.8
Political Capitals	0.0	2.3	3.5

Based on the information in **Table 4** the livelihood assets hexagon has been developed. **Figure 4** illustrates the livelihood assets hexagon, which represents the pictorial representation of the changes in livelihood assets of the community under a three-time frame—before, during, and after the intervention of development partner—UST.

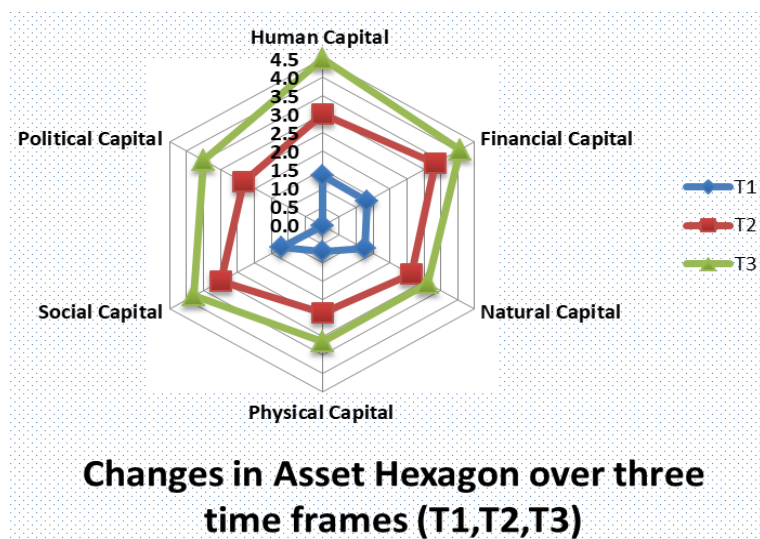


Figure 4. Changes in Livelihood Assets Hexagon of the community of Khutamara over time.

4.1. Changes in human capital

The first capital of interest of the study is human capital. The UST’s ‘Shabolombe Gram’ (sustainable village) project primarily focused on capacity development and training women groups in the community, essential components of human capital. Changes in human capital are pivotal for understanding the direct impacts of the UST. The participants in the focus group discussion pointed out that, before the commencement of the project (i.e., before 1999), they had little capacity to utilize their human capital. Specifically, the women could not utilize their human capital due to the community’s socio-economic conditions. Participants mentioned a scenario about their backyard where they had no idea about utilizing the unused land

of their household to grow vegetables. For that, they had to rely on nearby markets to buy vegetables and incur additional expenditures to meet the family's nutrition needs. However, most of the households often did not have enough money to meet their nutritional demand. Therefore, it affected their ability to work, and diseases and malnutrition were very common household problems in that time.

During the project implementation phase (from 1999 to 2008), members of the women group were trained on different economic, social, and health issues such as the utilization of unused backyards for growing vegetables, developing savings habits among the community members, benefits of girl's education, pure drinking water and sanitation, etc. The participants' feedback indicated that with the training and capacity-building activities, they received recognition from other family members as benefactors for the family. This recognition, in turn, has elevated their status in the family—from dependent to contributory members. The participants also claimed that the education and training they received during project term was the foundation for developing a self-sustaining lifestyle in the community. Especially the women's group leaders were the catalysts towards maintaining the positive outcomes of the UST's project, even after the termination of the project.

After the completion of the project (from 2008 to 2018), the members of the women's groups continue their activities and expand them into other villages in the neighborhood. Initially, it is very challenging for them as the new environment posed new threats. However, with the training and knowledge base developed during the project session, the women groups cope with the challenges of expansion and training new groups. Moreover, the women's groups are developing their own content for training programs to make the training more effective. The current model of women's group training programs utilizes the contents from the prior project as well as new content on child education, prevention of child marriage and dowry system, dealing with contingency expenses (such as sudden illness, repair, and maintenance of homes), using financial services offered by commercial and specialized banks and so on. Based on the results of FGD analysis, this study calculated average scores for human capital in three-time frames to identify corresponding changes over the study period. The livelihood assets pentagon shows the average scores for human capital are 1.3, 3.0, and 4.5 at T1 (before the project), T2 (during the project), and T3 (after the project), respectively. Both the responses of the participants in FGD and the asset pentagon demonstrate that there is a paradigm positive shift in the human capital of the community of Khutamara from T2 to T3.

4.2. Changes in financial capital

The study largely focuses on the changes in the financial capital of the community under study to explore the impact of development intervention by the development partner (UST) to measure sustainable development in a remote village in Bangladesh. The success of any development project is primarily measured by the changes in the financial capital of a group. Such changes may be positive and vice versa. But, if the changes in financial capital are positive and the group under study is able to maintain it even after the intervention by the development partners, then it is a better indication of sustainable development in terms of financial capital. Hence, understanding

financial capital and its components is the prerequisite to understanding sustainable development. A community's financial capital status is better reflected by its saving status, saving propensity, saving usage pattern, access to loans and other financial services, and discrimination in wages and salaries. In the study, these variables are also taken as a base to observe any changes in the financial capital of the 'Khutamara' community to explore sustainability regarding financial capital due to the interference of UST through 'Shabolombe Gram' project.

From the discussion of the focus group, it is obvious that before the inference of the UST (i.e., before 1999), the community members had literally no access to any bank or financial institutions. Villagers used to take loans from money lenders to finance their households and investments in exchange for extensively high interest, which would make them more vulnerable to financial stress. This loan system was known as 'Agaam' and was used as a tool for exploitation by the rich class of society. In such system, villagers did not have any flexibility in loan payments, making them prone to financial collapse in case of failure to pay instalments. Before the start of the project, villagers had few savings as their level of income was very low and they did not know how to invest their money in productive sectors such as livestock farming, purchasing land, and so on. Loan facilities were rare, and access to loans was only limited to 'Agaam'. Their sufferings knew no bound due to financial instability. During project period (from 1999 to 2008)), the conditions of the villagers started to transform. From FGD, it is apparent that access to banking institutions was comparatively better, and villagers used to deposit their savings in the banks or other financial institutions. The saving status of the villagers started to grow due to increased human capital achieved in project tenure. Villagers started to learn how to invest their savings in a productive way due to project's intervention. In addition to banks, society members had also access to NGOs for taking loans and advances.

According to participants of the FGD, the study has further discovered that even after the termination of the project (T3 phase), the villagers continue to maintain their financial stability achieved in project period. During that time, saving propensity among the community members have increased dramatically. Almost all villagers have been found somehow involved with many micro-Cooperative Societies for their savings, and the level of savings has significantly increased. Villagers have learned how to invest their savings in productive sectors. Besides, villagers can prudently manage their funds in disaster situations and are found financially resilient as well. Access to loans has become easier and flexibility in loan payment is evident in addition to insurance facilities. Loan facilities are extended to NGO and cooperative societies, and 'Agaam' system has come to extinction due to available better alternatives. Although wage discrimination is still prevalent between male and female workers, the degree of such practice has considerably decreased. Based on the FGD, the average score of the financial capital is 1.3, 3.3, and 4.1 for before project (T1), during project (T2), and after project (T3) periods, respectively. This figure depicts striking changes in the level of financial capital from T1 to T2 (from 1.1 to 3.3), and the after the project period (T3) period also exhibits a sharp increase in average score from the earlier phase (from 3.3 to 4.1). Therefore, the average score of financial capital has increased positively and sharply throughout the period under study, which indicates enhancement of the community's capability to fairly employ its financial capital in

dynamic sectors. From the study, it is also quite apparent that the villagers can maintain their financial status even after the termination of the project of UST indicating sustainable development in the financial sector.

4.3. Changes in natural capital

During the 1980s, there was a massive river restoration and canal development project nearby the study area. The participants had access to canal facilities since the early 1990s (just at the beginning of the project). However, before 1999 (T1), they did not have the capacity to utilize these canal facilities for irrigation purpose or seasonal fishing due to a lack of proper knowledge. Especially the households did not have the idea about leasing this facility for irrigation or seasonal fishing. Most of the community members were dependent on the intermediaries who used to exploit the households by controlling water quotas and overpricing farmland irrigation. For that, there was limited capacity for the villagers to use the natural resources.

During the project's intervention phase (from 1999 to 2008), a lot of training programs were provided to the women group including skill and capacity development that helped the participants learn how to utilize the natural capital in the community. With the improved knowledge base and human capital, the community members were able to reduce the dependency on intermediaries controlling the water supply of the canal facilities. In addition, they were able to negotiate better terms with the intermediaries as a group, which helped them reduce the cost of irrigation and agro-production. Thus, the condition of the community members in utilizing natural resources improved during the project term. After the completion of the project (from 1999 to 2008), the women's groups take their own initiatives to use the natural capital of the community. For instance, some groups are now bidding and obtaining leases of canal facilities and currently, they are no longer dependent on intermediaries for such facilities. At the same time, other groups are also working together to ensure the collective use of lands owned by the members and are sharing the harvest and the earnings from those lands. Although there have been no changes in the composition and the number of natural resources in the study area, now the community members are more capable of utilizing their natural resources than ever before. Based on the FGD analysis, the average scores on natural capitals are calculated at 1.3, 2.6, and 3.1 for T1, T2, and T3, respectively. These scores indicate a high magnitude of positive changes from T1 (before the project) to T2 (during the project) and small changes from T2 to T3 (after the project). Nonetheless, the average score at T3 (after the project) is around 3, which reflects improvement in the community's capacity to use its natural capital fairly.

4.4. Changes in physical capital

Before the inception of the project, the households did not have enough physical capital due to the lack of financial capital. In that time, income generated from the limited use of natural and human capital was used up to meet the daily necessities. Moreover, lack of adequate savings and suffering from seasonal unemployment ('Ovaber Mash') contributed to the households' inability to invest in physical capital. The participants of the FGD pointed out that due to these two vulnerabilities, they

often had to sell their physical capital to meet the financial needs. At project implementation phase (T2), although the project did not primarily focus on the financial capital of the community, such as micro-finance or other financial models, the knowledge base developed through the project training helped the beneficiaries to develop and maintain their own physical capital. For instance, through the training, the project officials and trainers used to encourage the community members to invest a portion of their savings in productive physical assets such as pure drinking water sources, sanitary latrines, repairing home, and so on. However, the key challenge was to prevent the members of the women's group from investing all their savings on non-productive physical capital or spending on daily necessities. The participants pointed out some cases where the members used that money to pay their personal loans (taken from farmers as an advance against wages what they call 'Agam') or installment for micro-credit (borrowed from other NGOs). Consequently, members who used their savings for loan repayments and personal expenditures did not have enough funds to transfer the benefits of savings for future. Nonetheless, the participants claimed, with few exceptional cases, they made partial investments in physical capital, especially relating to shelter and sanitation that contributed towards healthy living conditions for the households.

The villagers have been found making partial investments in physical capital even after the termination of the project. The growth achieved in financial and human capital at that period,) triggers new opportunities to spend more on productive physical capital such as land. Moreover, the participants are now able to buy televisions, cell phones (some cases smartphones), motorbikes, and solar panels for their families indicating that their quality of life has been improved significantly. The respondents also articulate that, although they have the capacity to spend more on luxuries such as smartphones, cosmetics, and motorbikes, they never compromise their children's health or education for those luxuries. As such, they now make partial investments in physical capital and spend more fund on purchasing productive assets, providing child education, and health facilities. Based on the FGD analysis, the average scores for before the project period, during the project period (T2), and after the project period (T3) were calculated respectively at 0.7, 2.4, and 3.1. The scores elucidate that, from T1 to T2, there was a high growth in the communities' physical capital. In addition, progress in physical capitals is also quite evident from T2 to T3. Overall, both the FGD and the livelihood assets pentagon reveal stable growth in the physical capitals of the community over the three-time frames under study.

4.5. Changes in social capital

Based on the FGD analysis, there have been dramatic changes in the life of disadvantaged community members in terms of social capital during the study period. Social capital, a major indicator of sustainable livelihood, is usually measured by the number of friends, frequency of communications, degree of respect received from others, intensity of interaction among relatives, degree of usage of provision of services of Govt. organizations and NGO networks and ease of access to pre-cooperative societies and so on. Before the implementation of the project (before 1999), villagers' access to govt. network and health service was very restricted and

they did not have adequate access to any social development program of the government such as Old Age Allowance, Allowances for the Widow, Destitute and Deserted Women, Allowances for the Financially Insolvent Disabled Persons, Food for Work/Work for Money and Test Relief, Vulnerable Group Development program, Vulnerable Group Feeding (VGF), Maternity Allowance Program for the Poor, Primary School Stipend, Secondary Education Stipend, Higher Secondary Stipend, and so on. Furthermore, village women had a fewer number of friends, and their husbands used to demean their wives' ideas, opinions, and even they used to ignore their wives' contribution towards household works. Most of the women were illiterate and had limited decision-making capacity, and domestic violence was acute in that time. Interaction with friends and relatives was very low and villagers had bare access to Union Parishad Level.

This scenario started to change gradually at the project period (from 1999 to 2008). Villagers' interaction with their friends and relatives started to increase besides having improved access to cooperative society and many govt. and NGO networks. During the project intervention period, due to the changes in the human capital, villagers had been found becoming more and more conscious about their political rights, and they came to know that women can also participate in active politics as their male counterparts. And such notion brought huge positive changes in the pattern of using social networks by the community members. In addition, village husbands started to show more respect to their wives for their increased education and decision-making capacity. Although women had wider access to the workforce at that time, wage discrimination was severe. Women used to get lesser wages than that of male workers. The pace of positive changes in social capital further aggravated after the project period (2008–2018). After the termination of the projects, there have been conspicuous changes in the life of the villagers in terms of social capital due to the cascading effects of the development project. Villagers have become more conversant and started to maintain longer lasting valued networks with different stake holders such as govt. agencies, NGOs, friends, relatives and so on. Beside increased social bondage among friends and relatives' women are now more organized and empowered. Currently, villagers have representations at the 'Union Parishad Level', and they play an important role in the power politics and the govt highly values their opinions. Village husbands now give huge respect to their wives as they seem to have a high level of knowledge and provide more financial contribution to their families. From the FGD analysis, the average social capital scores are 1.2, 3.0, and 3.8 for T1 (before 1999), T2 (1999 to 2008), and T3 (2009 to 2018), respectively. These scores depict a high level of changes from T1 to T2 and insignificant changes from T2 to T3. However, every change is positive in nature, indicating community's sustainable growth in terms of social capital even after the termination of the development project conducted by the UST.

All statistical data to support the changes in livelihood assets of the villagers are presented in the appendix section (See Appendix C). (Population & Housing Census 2022)

4.6. Key factors that enable and pose challenges to sustainability of the primary stakeholders

Although the implementation of ‘Shabolombee Gram’ project by UST has been able to bring no huge positive changes in the life of the community villagers, few major challenges still exist, posing serious threat to sustainable community development. First, the investment in non-productive physical assets such as motorbikes, color televisions, smartphones, and jewelry has been increased. Especially, the children of the project beneficiaries often demand luxuries as they think are necessary to maintain their social status in the neighborhoods, affecting the spending on productive assets and reducing savings. Second, although the FGD reveals that there has been significant development in human capital stemmed from the transformative role of UST via ‘Shabolombee Gram’ project, the custom of dowry system has not completely abolished from the community. The villagers now accept dowry in the guise of said “gifts” or “presents” (Fattah and Camellia, 2022). According to FGD, domestic violence is often found in various parts of the community related to dowry, and sadly most of them go unreported. The asset loss due to dowry pushes poor families further into financial vulnerability, creating hindrance towards sustainable development (Patoari, 2020). The FGD also identifies ‘child marriage’ as another threatening factor to sustainable development of the villages under study. The participants in the FGD acknowledge that early marriage is very common in their communities like other parts of our country. In Bangladesh, 59% of girls are married before their 18th birthday and 22% are married before the age of 15 (UNICEF, 2017). Most people in Bangladesh do not consider child marriage as a form of sexual violence. The country, however, has committed to eliminate child marriage by 2030, and the National Parliament of Bangladesh passed the Child Marriage Restraint Act, 2017 (Act No. VI of 2017)¹ on February 27, 2017. (Buchmann et al., 2023). Moreover, the community women also face wage discrimination in the work settings. Still the working women receive much less wages compared to male workers, posing a major threat to sustainable living standards (Rahman and Al-Hasan, 2022). Even though there have been positive significant changes in all the livelihoods of the villagers, the question of why wage discrimination still exists in the society, has not yet been addressed in any of the prior studies, creating an avenue for further research. However, from the field study, the researchers have also found several enabling factors that foster the growth of sustainable development in the study areas. A summary of the factors (**Figure 5**) which influenced the persistence of positive project outcomes can be presented as follows:

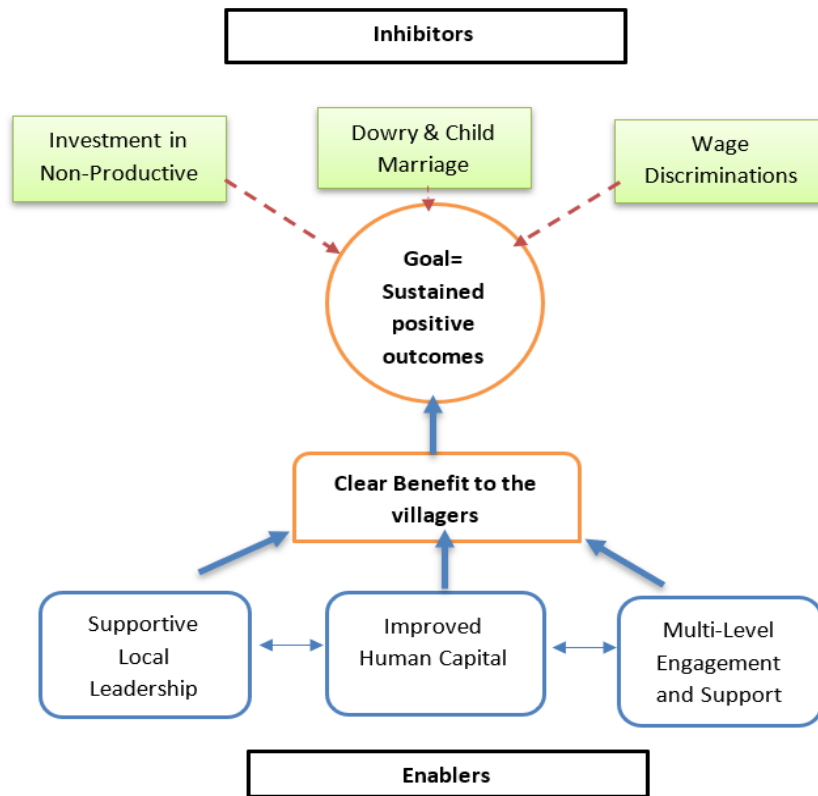


Figure 5. A summary of the factors which influenced the persistence of positive project outcomes. Enabling factors are in unshaded boxes and enabling influences are represented by solid connecting lines; inhibiting factors are in shaded boxes and inhibiting influences are represented by dashed lines. Figures modified from the work of Myers et al (2014).

4.7. Political aspect of livelihood assets changes: the possibility of political capital?

From the discussion with the villagers, it is quite apparent that after the project period (2009–2018), many women leaders now take part in the local union council elections, and they are now participating in local government decision makings such as identification of the beneficiaries of food for work program, social safety net program and old age allowances. Moreover, currently some community members have become part of the community’s arbitrary council that deals with family disputes, prevention of dowry, and child marriage. FGD with the community members further reveals that before the commencement of the project (before 1999), villagers’ access to political capital was very restricted. During the project tenure, this scenario started to change gradually. But after the intervention of the development project, access to political capital has become easier. The respondents further claim that their participation and sharing of political power in the local government has also enhanced their leadership role in the society. Moreover, with more influence in the local government organizations, the community members are now more capable of maintaining the growth in their other livelihood assets. The disadvantaged women are now more confident and creative, and they have more representation in local govt. organization Here, creativity is not merely a characteristic of individuals, nor is it merely sponsored by institutions, but it is embedded in social fields, tied to interaction

orders, linked to group cultures, and the outcome of social relations (Corte et al., 2019). We can speak of the collective actions of the community women as their political asset whereas collective actions mean examining the factors that motivate individuals to coordinate their activities to improve their individual and aggregate well-being. Gradually, collective actions construct boundaries of power that protect the interest of disadvantaged women (Huq, 2000). The notion of collective action recognizes that social life is replete with images, representations, and categorizations of things, people, and institutions that are assumed or pictured as somehow constituting a unitary whole (ibid) and subsequently this practice of collective action gives birth to political capital. Therefore, by analyzing the study areas and through the presentation of **Figure 6**, this study suggests an additional component of livelihood asset known as political capital in the existing DFID’s Sustainable Livelihood Assets Pentagon.

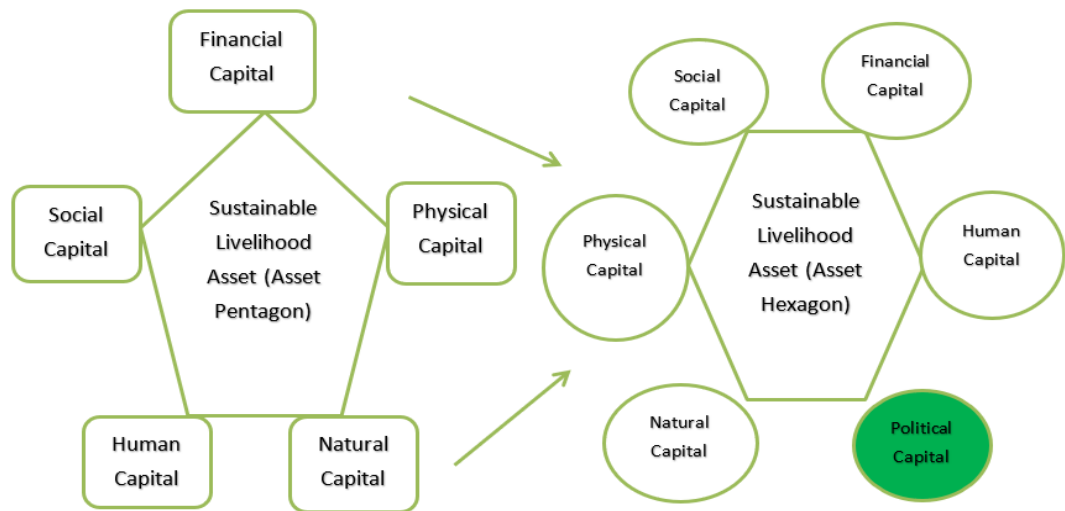


Figure 6. Inclusion of political capital in the asset pentagon of DFID’s sustainable livelihood framework.

With the inclusion of political capital in the livelihood framework the DFID’s asset pentagon has now transformed to asset hexagon. The addition of new capital in the existing DFID’s livelihood framework is a fundamental innovation of this study. All the prior studies (Dube and Chatterjee, 2022; Guo et al., 2022; Li et al., 2020; Sargani et al., 2023) largely focused on DFID’s Asset Pentagon while measuring the changes in living standards of a community. However this study has utilized a modified livelihood framework containing an asset hexagon to describe the changes more explicably, which is a unique contribution to the extent of literature.

Political capital is a crucial aspect of the sustainable livelihood framework, enabling individuals or groups to influence decision-making and policy outcomes related to sustainable development and livelihood improvement. It is a form of social capital, representing the relationships and connections within political systems and institutions (Booth and Richard, 2012; Eroğlu and Kangal, 2016; Puffer et al., 2016; Walters, 2002). People use their assets to pursue various livelihood strategies, such as agriculture, fishing, trading, wage labor, entrepreneurship, and other income-generating activities. Political capital can be instrumental in accessing opportunities, resources, and support for these strategies by engaging with policymakers,

government agencies, community leaders, and other relevant stakeholders (Baumann and Sinha, 2001; Natarajan et al., 2022; Novignon et al., 2021). Political capital enables individuals and groups to navigate and influence these institutions, policies, laws, and regulations that affect access to resources, services, markets, and rights (Shen et al., 2021). It also helps mobilize collective action and advocacy efforts to address issues of social justice, equity, and environmental sustainability (Hasanov and Zuidema, 2022; Scoones, 2016). In conclusion, political capital is an essential dimension of the sustainable livelihood framework, enabling individuals and groups to engage with political processes, institutions, and governance mechanisms to advance their interests, rights, and aspirations for sustainable livelihoods and well-being.

Through the FGD, this study also finds the political capital is very crucial to sustainable development of the villagers under study. The exercise of other capitals might become constrained due to the absence of political capital. Before the inception of the 'Shabolombe Gram' project (before 1999), the villagers had access to natural or some other capitals. But they could not reap the full benefit of it as they did not have any role in power politics. During the project period, the scenario has started to change. The villagers were able to socialize with them more and learned how to perform collectively for greater interest. Then these collective actions enabled them to play an influential role in local politics. From FGD, this study identified that the women have more representation in local govt. administration and even they can influence the outcome of regional election by considering as 'Vote Bank'. Through ensuring more and easier access to other livelihood assets, the presence of political capital is subconsciously helping the disadvantaged women of the villages to bring more positive changes in their living standards. Consequently, this study has introduced political capital as a new livelihood asset and modified the existing DFID's Sustainable Livelihood Framework to assess the changes livelihood asset more comprehensively.

4.8. Community's resilience towards shocks

The ability to withstand the shocks affecting the livelihood assets indicates the sustainability of the livelihood capitals of the community (Sustainable Livelihoods Approach Guidance Sheets: Livelihoods Connect, 2002). These shocks cover a wide array of factors that affect one or more livelihood assets simultaneously. The DFID's sustainable livelihood framework contains a detailed methodology to analyse these shocks' impacts. However, this study emphasizes the shocks that are more relevant to the community of Khutamara. Four potential shocks have been identified from the FGD session of the women group leaders: 'Ovaber Maash' (months of hardship), sudden contingency expenses (such as house repair and medical expenses), dowry trend, and child marriage. According to the respondents, all the shocks were prevalent before the project period (before 1999) Specifically, the 'Ovaber Maash' was the most critical factor that made their livelihood vulnerable. These months of hardship (two months in late autumn—September–October) and heavy rainfall made it difficult to leave home. This led to the seasonal unemployment, and the households had to borrow money ('Agaam') from local landlords and intermediaries. Under this 'Agam'

(advance) system, the borrowers had to work for free or at a lower wage at the landlords' property to repay the loan. As a result, it further accelerated vulnerability in the financial and physical capital of the households. After the intervention of the development partner (from 1999 to 2008), the overall livelihood capital of the women group members had improved (see assets hexagon in **Figure 4**). The improvement in livelihood assets aided them in breaking the shackle of financial and social extortion in the form of 'Agam' system. As a result, the magnitude of adverse impacts of the months of hardship reduced significantly at project period. The households have been found efficient in maintaining the trend of managing vulnerability even after the winding up of UST's 'Shabolombe Gram' project. The vulnerability arising from 'Ovaber Maash' had lessened at post project period, and the community people has been found able to withstand these shocks.

Regarding contingency expenses (such as medical treatment or sudden household repairs), community members opine that it was a major concern before the project, as they had to deal with the months of hardship as well as the 'Agam' system. As a result, they did not have enough financial or physical capital to fund the contingency expenditures, which made their livelihood vulnerable. This is no longer a major issue for the participants. The other three shocks' impacts were overwhelming before the intervention of UST (before 1999). As the project under study largely focused on training and capacity development of the community people, the improved knowledge base helped the villagers overcome the shocks, specifically, the dowry system and child marriage.

5. Conclusions and policy implications

The study was carried out to investigate on how the changes in livelihood assets occurred (both positive and negative) within the community members of Khutamara union under three distinct time frames in relation to a project employed by a local NGO, known as UST and attempted to answer the question whether this local community is able to maintain the growth or recover the negative outcomes in the livelihood assets achieved during the project tenure even after the termination of the project? The findings of the study assert that all forms of livelihood asset such as natural capital, human capital, social capital, financial capital, physical capital of the community people were progressively changed due to the involvement of the development partner. And the community participants were also able to maintain the growth gained during the project interval even after the termination of the 'Shabolombe Gram' project indicating a sustainable development in the livelihood assets of the villagers. In addition, for the interference of the UST, a new form of capital, known as political capital (which was previously invisible among the villagers), was also materialized among the community locals. From the study, it is also quite apparent that before the intervention of the development project, women, particularly the disadvantaged poor, in the study area, were ever deprived of the scope and opportunities to earn knowledge and skills of organized livelihoods activities. This study suggests that these women have potentials of managing households in shortage of livelihoods capital of all forms. They can manage poverty with high resilience power and are efficient in handling struggles. They can grow their confidence level

high by unfolding their potential if they are provided with proper scope and opportunities. Therefore, the study recommends that social development projects, designed in a participatory manner (both locals and development partners), can work significantly in constructing pathways of women's empowerment that can build and rebuild livelihood assets of the poor and disadvantaged village people stronger with sustainability. In addition to recommendations, the findings of the study offer some important policy implications as well. The government and its development partners may adopt and incorporate the modified Sustainable Livelihood Framework (SLF) developed in this study into their policies to assess the changes in livelihoods of a community by the interventions of a development project deployed by development partners (such as NGOs) more comprehensively to ensure sustainable development.

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Appendix A

Key Informants Interview (KIIs) Checklist

The selected individuals have been interviewed (discussed with) about different aspects of the study project namely, project design, implementation and management, and impact of the project changing livelihood of the ultra-poor of the study area. The stakeholders are:

- Extension service providers
- Local Government Representatives
- NGO professionals
- Former Grant Management Expert of UST
- Former Team Leader of UST Technical Assistance Team.

The KII checklists:

- (i) Relevance of the “Shabolombe Gram” project
- (ii) Effectiveness
- (iii) Efficiency
- (iv) Sustainability
- (v) Impact of the project on the livelihood assets of the villagers
- (vi) Access to extension service
- (vii) Participation in decision making and social empowerment
- (viii) Health, education and personal hygiene
- (ix) Food security
- (x) Disaster Risk Reduction
- (xi) Overall comments on changing livelihoods of the project beneficiaries through NGO (UST) interventions.

Appendix B

FGD guideline for qualitative data collection

FGD Guidelines

FGD Venue:

Selected locations within the “Shabolombe Gram” project area in 3 selected Villages (Jelepara, Madrashapara & Kabirajpara) of ‘Khutamara’ Union under ‘Nilphamari’ district.

Participants Type:

Project beneficiaries, Leaders of different “Mahila Shamity” and other project Stakeholders (Project beneficiaries, Project personnel, Extension service providers, UP Representatives and other relevant persons at the local level).

No. of Participants:

Two focus group discussions (FGD) will be organized involving 15 leaders of women groups in each FGD from three villages (Madrashapara, Kabirajpara, and Jelepara). Thus, total 30 leaders will participate in the focus group discussion.

Tools of FGD:

The following Tools have been used in conducting FGD:

- 1) Social Mapping
- 2) Seasonal Calendar
- 3) Food Nutrition Chart

The FGD Checklist (s):

- (i) Income and expenditure
- (ii) Productive assets profile and ownership index
- (iii) Health practice behavior (knowledge and practice)
- (iv) Personal health and hygiene (knowledge and practice)
- (v) Social empowerment, social participation and decision making
- (vi) Children education
- (vii) Food security issues:
 - Food security status calendar
 - Pattern of food intake (nutrition)
 - Food availability
 - Food stock and purchase
- (viii) Rights and access to services and social safety net programs
- (ix) Life skill and skill development training related information
- (x) Group approach in developing participatory enterprises/group Enterprise

Awareness of environmental issues, climate change and disaster risk reduction

Appendix C

Table C1. Changes in sustainable livelihoods.

Key Elements of Sustainable Livelihoods	Jelepara			Madrasha Para			Kabirajpara		
	Before the Project (T1)-1998	During the Project (T2)-(2009-2018)-Average	After the Project (T3)-2019	Before the Project (T1)-1998	During the Project (T2)-(2009-2018)-Average	After the Project (T3)-2019	Before the Project (T1)-1998	During the Project (T2)-(2009-2018)-Average	After the Project (T3)-2019
Human Capital:									
Literacy Rate (%)- out of total population	5.1%	6.0%	8.0%	10.3%	11.7%	17.1%	15.7%	19.0%	20.5%
% of Primary School Dropout- out of total population	30.00%	25.26%	13.47%	42.00%	25.63%	15.68%	25.00%	17.00%	14.56%
Unemployment Rate- out of total population	45.00%	30.00%	17.00%	58.00%	45.00%	35.00%	60.24%	40.87%	37.63%
Number of Education & Training Centers	7	20	35	2	10	25	1	15	23
Infant Mortality Rate (%)- Out of total Population	35%	25.23%	10.0%	40%	26.24%	8.65%	45%	23%	12%
Physical Capital:									
% of household having electricity connections	10.56%	47.78%	65.56%	7.50%	32.50%	55.00%	12.68%	42.36%	69.87%
% of household having smartphones	2.30%	10.31%	35.65%	3.50%	12.21%	56.11%	2.11%	15.63%	51.65%
% of household having own livestock	4.30%	12.31%	37.65%	5.50%	14.25%	40.19%	5.02%	17.43%	36.65%
% of Sanitation Coverage	2.30%	70.65%	90.24%	4.49%	65.24%	92.28%	1.09%	47.26%	65.17%
Natural Capital:									
% of forest-out of total land	25.01%	23.02%	26.08%	26.00%	25.03%	17.09%	34.02%	30.05%	20.50%
% of total cultivable land out of total land area	20.36%	29.23%	46.17%	22.05%	46.02%	55.26%	22.65%	45.07%	62.15%

Table C1. (Continued).

Key Elements of Sustainable Livelihoods	Jejepara			Madrasha Para			Kabirajpara		
	Before the Project (T1)-1998	During the Project (T2)-(2009-2018)-Average	After the Project (T3)-2019	Before the Project (T1)-1998	During the Project (T2)-(2009-2018)-Average	After the Project (T3)-2019	Before the Project (T1)-1998	During the Project (T2)-(2009-2018)-Average	After the Project (T3)-2019
Number of sources of water	225	1051	5050	127	2021	6078	164	998	2027
Social Capital:									
% of people using online social medium-(Facebook, Twitter etc.)	0.02%	12.50%	25.23%	0.03%	15.25%	22.23%	0.06%	15.62%	20.36%
Number of Cooperative Society	2	10	15	5	21	30	5	15	35
Financial Capital:									
Poverty Rate-out of total population	72.50%	49.87%	30.23%	62.50%	45.00%	28.89%	75.60%	42.36%	22.23%
Number of Saving Accounts	145	2450	10,747	53	1004	3145	25	998	1523

All the variables used to represent the changes in livelihoods are modified from the work of (Fahad et al., 2022).

All the statistical data supporting the changes in livelihood asset of the villagers are extracted from the website of Bangladesh Bureau of Statistics (BBS). (Population & Housing Census 2022).