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Thesis title: BEYOND DWELLING: Factors leading to the improvement of social capital in informal settlements: A case of UPPR project in Gopalgonj, Bangladesh.

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Summary

Having a large number of informal settlements Bangladesh is facing evictions randomly for the sake of large infrastructure development. According to UNDP (2013), about 115 evictions happened from 1996 to 2004 in several cities of Bangladesh which made about 3 million people homeless. Adding that in the Gopalganj Molavi para community more than 345 households, about 2,000 people lost their land due to eviction (Mostafa, 2019). Therefore, they lost access to jobs and services as well as lost physical assets and social networks. Addressing this, Bangladesh Government has initiated the Urban Partnership for Poverty Reduction Programme (UPPR) to empower the urban poor. Gopalganj slum is also facilitated by land tenure security to 346 evicted families and affordable housing schemes (UNDP, 2013) which improve not only their physical assets but also social capital. Several researchers have identified social networks as the core value of social capital (DFID, 1999; Pieper et al., 2019; Yoo and Lee, 2016). Moreover, without community participation, it is impossible to uplift the living condition (Nikkhah and Redzuan, 2009). Payne (2002) mentioned that secure shelter is the prerequisite to access their livelihood (social capital,....). Therefore, the study aimed to identify how did the participatory approach and land tenure to improve Social Capital after this UPPR project in Gopalganj.

The participatory approach was based on the concept of micro-planning, a thematic approach of slum upgrading focused on the participation in decision making, designing, and implementation (Hamdi and Gorthert, 1988; Abbott, 2002). Also, land tenure explained with the concept of community land trust (CLT) and settlement land mapping(SLM) considering as a means of capacity building and empowerment. Social capital is explained with the social sustainability framework (Pieper et al., 2019) which is connected with social cohesion.

The study is under explanatory research type and a single Case Study strategy has been used with the mixed method. Both qualitative and quantitative data were used from questionnaires, interviews, secondary data, and accessing websites.

To analyze the obtained data the descriptive analysis has conducted along with inferential tests, for instance, t-test, chi-square test, correlation, and Cronbach's alpha test to check internal validity. The research findings indicate that the level of interaction increased moderately and the nature of the interaction has become more integrated than before, as the level of participation in decision-making is quite higher more than half of the people participated in designing. However, the lack of participation in implementation hampered the quality of interaction which impact their saving credit activities. Addressing Land tenure, it can be summarized that land tenure indicates strong positive relation through empowering the community and moderate positive influence through skill-building. Another dimension is found that, the participation of availing the collective land tenure influence to improve social capital, not the tenure itself which indicates a potential relationship between the participation and the land tenure.

Finally, the study ended with some recommendations regarding the possible actions to improve social capital through community involvement. Maximum participation throughout the project should be ensured and it's better to provide funds as a housing loan rather than a grant to improve social interactions and capital.

Keywords

UPPR, Social sustainability, Social capital, Participatory approach, Land tenure,

Acknowledgements

Abbreviations

IHS	Institute for Housing and Urban Development Studies
ACCA	Asian Coalition for Community Action program
CAP	Community Action Planning
CDC	Community Development Committee
CDMP	Comprehensive Disaster Management Program
CHDF	Community Household Development Fund Committee
CLM	Community Land Trust
DFID	Department for International Development
inSPIA	Integrated Social Planning and Infrastructure Assessment
PIC	Project Implementation Committee
SDG	Sustainable Development Goals
SL	Sustainable Livelihood
SLM	Settlement and Vacant land Mapping
UPPR	Urban Partnership for Poverty Reduction
UNDP	United Nations Development Programme

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Chapter 1: Introduction

1.0 Introduction

This chapter describes the background on how urban poor are suffering from the lack of social capital which makes them socially unsustainable. Besides, it also provides information on Government poverty reduction projects that were implemented throughout the country, Bangladesh, and more specifically in Gopalgong city. Finally, this chapter shows the variables behind the outcome of the project lead to the research objective as well as research questions.

1.1 Background

World urbanization is growing faster than the prediction. The majority (ninety-five percent) of this expansion is happening in the developing world. This growth was frozen in several Asian cities for a couple of decades which resulted in an enormous concentration of poverty (Davis, 2006). Meanwhile, Davis (2006) also mentioned that urban slums are a reminder of the global catastrophe of urban poverty. In rapidly growing cities automated production of informal settlements by marginalized people can be defined as a 'slum' (Davis, 2006). Bangladesh is one of those countries facing rapid urbanization which increases inequalities and deprivation of the urban poor. As the access to economic and social services is becoming exclusive to a certain group of people, a significant number of people live below the poverty line (Mostafa, 2019). Therefore, slums are becoming the most significant evidence of poverty in Bangladesh (UNDP, 2013).

Consequently, the densification of the residential area in Dhaka city is creating inequalities among the urban poor. They are deprived of access to basic shelter (Ghafur, 2006) and started living in slums. Not only big cities are facing this issue but also small municipalities like Gopalganj has a large number of slums. Gopalganj is a district city that is five hours southwest from capital Dhaka surrounded by river Modhumoti (ACCA, 2012). A city-wide slum survey conducted in 2010 found 1,266 slum pockets in Gopalganj (ACCA, 2012). The survey also identified that about 30% of city people live in scattered informal settlements and squatter. According to UNDP (2013), about 115 evictions happened from 1996 to 2004 in several cities of Bangladesh (Dhaka, Chittagong, Dinajpur) which made about 3 million people homeless. Mainly large infrastructure development projects are responsible for these evictions. In Gopalgonj for creating the provision for national sports complex South Molavi Para[1] (community) slum dwellers also faced eviction in 2009 (ACCA, 2012) and started temporary living in 32 different locations around the city (Mostafa, 2019).

As a response to poverty, Bangladesh Government has initiated the Urban Partnership for Poverty Reduction Programme (UPPR) to empower the urban poor. The project was financially supported by the Government of Bangladesh, UKaid, UNDP, and the communities who are benefited from the project (UPPR, 2016). The focus is on empowering the urban poor through socio-economic development, mobilization of community, providing educational facilities, capacity building of local government, improving settlement infrastructure, and advocating pro-poor policy (UPPR, 2014). From 2008, UPPR has started several projects in multiple cities mentioned in table 1.

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[1] Para – A particular neighborhood with a certain group of people locally called as Para.

UPPR Projects	Location
1.Savings and credits	Rajshahi
2.Women empowerment	Rajshahi
3.Improving housing and tenure security	Gopalganj
4.Water and sanitation access	Comilla
5.Water and sanitation	Khulna
6. Creation of a new fund for disaster management	Sirajganj
7.Health and apprenticeship	Tangail
8.Health awareness and services	Hobiganj
9.Improve child security and enabling the employment of mothers	Mymensingh
10.School attendance improvement	Gazipur
11.Apprenticeship and skill-building	Naogaon

Table 1:UPPR projects (UPPR, 2016, P.2)

This research is only focused on Gopalganj city. Because Gopalganj is the first city exercising with the housing and tenure security and the Gopalganj story created a learning ground for initiating this exercise in other cities (Mostafa, 2019). Besides, the project innovates a remarkable housing model that resulted in a comprehensive successful outcome under the UPPR initiatives (UPPR, 2014; UPPR, 2016).

1.2 Problem Statement

Analyzing the regional perspective (UPPR, 2016) claims that poverty is portrayed as the absence of social network or social capital which makes the inhabitant 'Excluded' from the society. Nowadays informal slums are increasing significantly in different cities of Bangladesh which not only affect economic sustainability but also social sustainability. While studying with the slum of Dhaka city, (Ghafur, 2006) identified that insecure land tenure is one of the core reasons behind the poor quality of life in a slum. Due to eviction, in the Gopalganj Molavi para community more than 345 households, about 2,000 people lost their land and were forced to leave their houses. Houses, shops, latrines, tube wells, and drains were all destroyed and demolished in one day what took 10 years to construct (Mostafa, 2019). Therefore, they lost access to jobs and services as well as lost physical assets and social networks which lead them to an uncertain future. Some of the inhabitants moved to other slums and some went back to their village. As they lost their networks, they cannot participate to improve their condition. Several researchers have identified social networks as the core value of social capital (DFID, 1999; Pieper et al., 2019; Yoo and Lee, 2016). Moreover, without community participation, it is impossible to uplift the living condition (Nikkhah and Redzuan, 2009).

As a part of the UPPR project in the Gopalganj slum Government offered land tenure security to 346 evicted families and affordable houses collaborating with the municipality and private parties and community (UNDP, 2013). UPPR staffs along with municipality and community people sourced the government vacant land at Mandartola to ensure security with 99 years lease for long-term collective tenure. The selected land is only 1 km away from the city center (ACCA, 2012). In collaboration with the municipality and ACCA (Asian Coalition for Community Action) project, UPPR also offered them low-cost housing inspired by a new approach developed by CODI[2]. They called it people-driven housing where community participants play the role of a vital actor to find solutions and implementation mechanisms (UNDP, 2013).

Caistor-Arendar et al. (2011) stated that Social Sustainability creates a sense of belongingness that can be achieved by social capital since it can contribute people to feel secure

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[2] "CODI is a public organization with a goal to build a strong societal base using the collective power of civil groups and community organizations." (UNDP, 2013)

by putting down roots. Another article by Akbar et al. (2007) has presented a creative model in which urban poor can facilitate themselves on a small scale to access basic services through partnership-based **participation**. Yoo and Lee (2016) stated that **social capital** can lead to a sustainable society by creating a sense of belongingness. The article also identified community stability and **participation** as a variable of social sustainability. The most important thing is to think about the people to whom we are working for and to incorporate the community people as a stakeholder in the whole process in a bottom-up way to empower urban poor (Nikkhah and Redzuan, 2009). Payne (2002) mentioned that secure shelter is the prerequisite to access their livelihood (social capital,....) and other opportunities. Therefore, the study is going to conduct in-depth knowledge about the influence of the **participatory approach** and **land tenure** which impacted social sustainability to improve **Social Capital**.

1.2.1 Problem statement summary
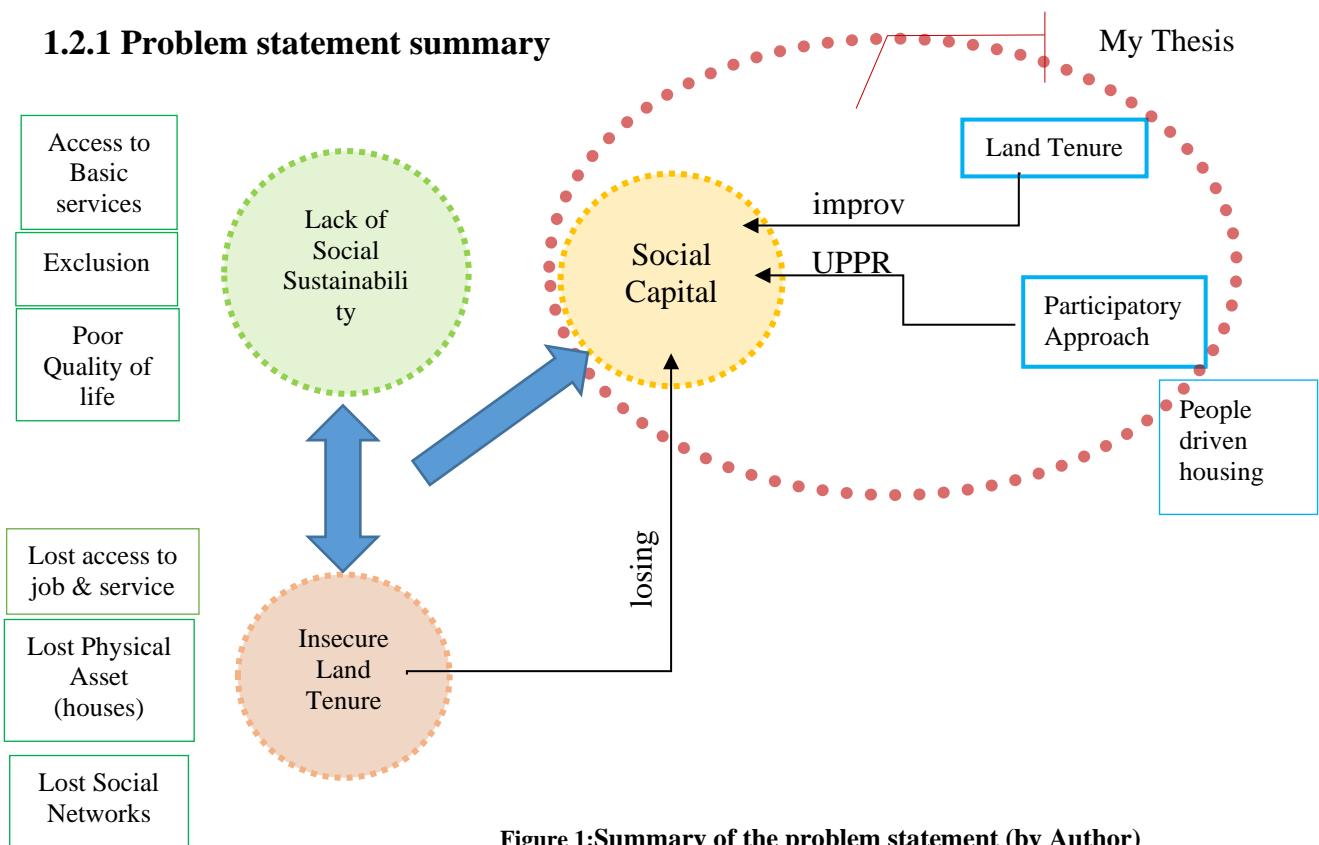
Figure 1:Summary of the problem statement (by Author)

1.3 Research Objective

To explain the influence of the **Participatory Approach** and access to **Land Tenure** on the improvement of **Social Capital** in Gopalganj slum after implementation of the UPPR project (from 2009-2015).

1.4 Research question

1.4.1 Main Research Question:
How did the **Participatory Approach** and **Land Tenure** influence the improvement of **Social Capital** in Goplaganj slum through the UPPR project?

1.4.2 Sub research question:

- How the **UPPR** project was implemented in Gopalganj?

- How did the **participatory approach** influence improvement in **social capital** in the Gopalganj UPPR project?

- To what extent did **Land Tenure** influence the improvement of **social capital** in the Gopalganj UPPR project?
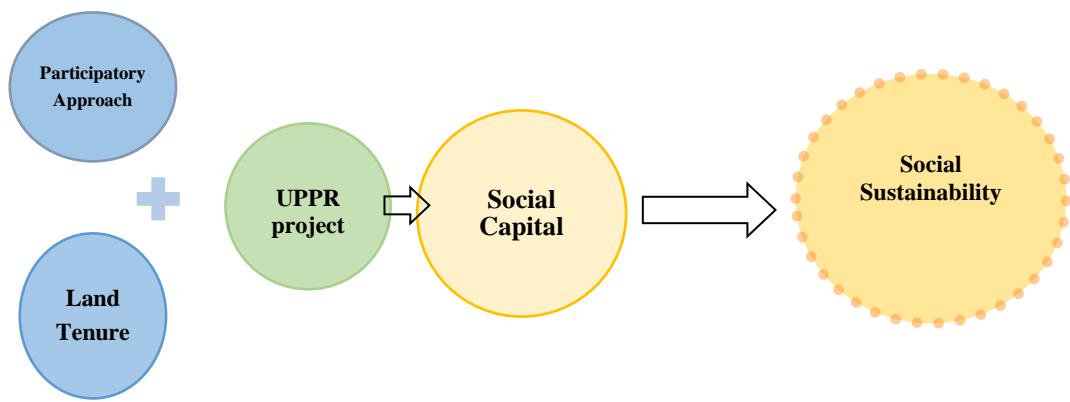
Figure 2: Variables from the research question which lead to social sustainability (by Author)

1.5 Research Relevance

The research can contribute from local to global levels. From the city context, the study can create an impact on societal development and poverty reduction in the slums of several cities in Bangladesh. At the national level also, it can make guidelines to develop the informal settlement in a more integrated way by introducing a process rather than a project. Furthermore, it has the potential to improve the quality of life of the urban poor with the co-operation of the central Government. Moreover, as the research is focused on the UPPR project which is based on one of the agenda for Sustainable Development Goal, 2030 (SDG), it has significance to the global level.

Furthermore, the research has academic relevance to address the sustainability concept from a social aspect. Although the social aspect of sustainability is well established, still the clear definition or idea about it remained unexplored (Dempsey et al., 2011). Furthermore, several researchers have conducted studies on the informal settlement to address social sustainability, most of them deal with either physical capital or economical capital. For instance, the slum up-gradation project in Rio gave more focus on physical infrastructures along with short term tenure status (Handzic, 2010). Thus social capital got less priority in the slum context. Measuring social capital is also difficult as it needs to consider not only the interactions but also the nature and quality of it (DFID, 1999). Therefore, this study has relevance to the growing literature about social capital addressing social sustainability.

1.6 Scope and Limitations

The COVID-19 condition throughout the year was the main challenge to this study, as collecting primary data has faced challenges. The study is based on informal settlement, digital format (online questionnaires and interviews) for primary data collection was not appropriate for them, because most of them don't have access to digital media. Therefore, primary data was collected through the cell phone, and also some of them have collected with a local research assistant.

Chapter 2: Literature review/theory

2.0 Introduction

This chapter starts with the explanation of social sustainability theory and concepts explored by several researchers. Social capital has become a significant means to achieve social sustainability along with economic and environmental sustainability (Cuthill, 2010; Pieper et al., 2019). SOLA model and sustainability framework from the '*inSPIA*' project used in the adjacent chapter to understand the interlink between social sustainability and social capital. In continuation with the SOLA model, social capital then explains with the sustainable livelihood approach and other concepts to portray how it is linked with the participatory approach. The participatory approach is explained with the Micro planning theory and some other relevant concepts. Furthermore, land tenure is also a modern tool for sustainable community building to avoid social exclusion (Bailey, 2010; Dempsey et al., 2011) as well as perform as a prerequisite to access the livelihood of urban poor (Payne, 2002). Consequently, SLM and CLT models have explained the interlink between social capital and tenure security. Finally, analyzing the theories and concepts of different variables chapter 2 is going to introduce the conceptual framework.

2.1 Social Sustainability

2.1.1 Social sustainability: concept and theories

While searching for the correlation of urban structure and social sustainability Dempsey et al. (2012) argued that social sustainability is the combination of 2 vital concepts which are community sustainability as well as social equity. Community sustainability refers to the collective social settings of individuals (Dempsey et al., 2011). Besides, the authors discussed five co-related aspects of social life which refer to (1) collective participation and community network, (2) social interactions, (3) sense of belongingness, (4) community stability, and (5) Safety and security (Dempsey et al., 2011; Dempsey et al., 2012). However, all these five aspects are not directly linked with this study, the initial two aspects are clearly mentioned about the collective action of participation can contribute to sustainable social life. The initial concept of social equity deals with the participation of all individuals economically, socially, and politically as well as the distribution of services without exclusion (Pierson, 2002). As access to services is an extensive concept, (Dempsey et al., 2012) narrow it down to job opportunities, adequate housing, and a range of basic services. Therefore, the concept of community sustainability and social equity has made a general idea about how community participation interacts with a social life to create a sustainable society.

2.1.2 Social sustainability framework – from '*inSPIA*' project

Cuthill (2010) has conducted research to create a framework on social sustainability to strengthen the concept in the context of Australia. He portrayed the interdependent relationship with not only economic and environmental sustainability but also other core elements of social sustainability. The identified four components are social capital, engaged governance, social equity, and justice and social infrastructure through inSPIA project (Cuthill, 2010). 'inSPIA'

is a project in Queensland namely 'Integrated Social Planning and Infrastructure Assessment' to create the connection between theory and practice of social sustainability. It stated social capital as an initial point to reach social sustainability theory which refers to social network and more a sum of individuals. It observed social infrastructure from an operational perspective which means not only the 'social and community' infrastructure (health, education) but also 'soft structure' such as capacity-building. Equity and justice gave the ethical imperative that is talked about access and right to services as well as participation in decisions that affect their lives. The last one engaged governance observed from the methodological aspect which means 'working together' with shared commitment (Cuthill, 2010). However, this framework illustrated not only the social capital but also the other three elements still, it creates the baseline to discuss a more integrated social sustainability framework (SOLA model).

Figure 3: Social sustainability framework (Cuthill, 2010; P.336)

2.1.3 Social Sustainability framework – SOLA model:

Furthermore, another research of Pieper et al. (2019) offers an interdisciplinary meta-model that provides a general framework to a conceptual dimension of social sustainability. The SOLA model argued social sustainability is a dynamic concept that performs as a mediator between individual lives and **social capital** (Pieper et al., 2019). That is not only concerning present social structures, organizations, and shaping individuals' lives but also means integrated vision for a good life (quality of life) which leads to a good society. In other words, Social Sustainability is social integration through the capacity of social systems or networks. The capacity can be linked to the empirical level with social capital – trust, loyalty, socio-emotional bonding. In reference to the SOLA model fig -4 shows that the vertical ellipse indicates the social quality determinants and the horizontal ellipse highlights the role of social integration with social capital (Pieper et al., 2019) and the combination leads to social sustainability.

2.1.4 Overview:

As a contemporary concept social sustainability is defined from various angles by several researchers. Cuthill (2010) mentioned about 4 elements of social sustainability including social capital. However, if the interpretation is analyzed (section 2.1.2), it can be observed that all of them (eg. Working together, capacity building) leads to social capital. Another researcher focused on community sustainability which can be achieved through community network and participation, (Dempsey et al., 2011). Pieper et al., (2019) give a comprehensive framework (fig. 4) of social sustainability where it shows how other elements of social sustainability are interlinked with the social capital. Thus it helps to understand the social capital more in-depth and open a door to point out social cohesion as a sub variable for this research by keeping it at the intersection point (fig. 4). Since the next part is going to analyze the theories of social capital according to this framework.

2.2 Social Capital

2.2.1 Social Capital – from social sustainability framework:

Edwards (2014) argued that Social capital creates an umbrella for several functions which integrates not only capacity-building and service delivery but also advocacy. Although there is an argument on the perception of social capital – does it belongs to social networks, institutions, cultures, communities, or individuals?; Pieper et al. (2019)observed it from a unified (society as a whole) perspective rather than an individual's living condition. According to Pieper et al. (2019), the core concept of social integration is identified as social capital. In the SOLA model, the article re-defined the social capital approach which is structured across multiple social dimensions including the form of civil society, affective well-being as well as **social cohesion** on the community level, even at the national or global level(see Fig.2). Social cohesion is at the intersection (see Fig.2) of the vertical ellipse (social quality) and horizontal ellipse (social capital) which means it is the property of **social capital** that helps to achieve social quality.
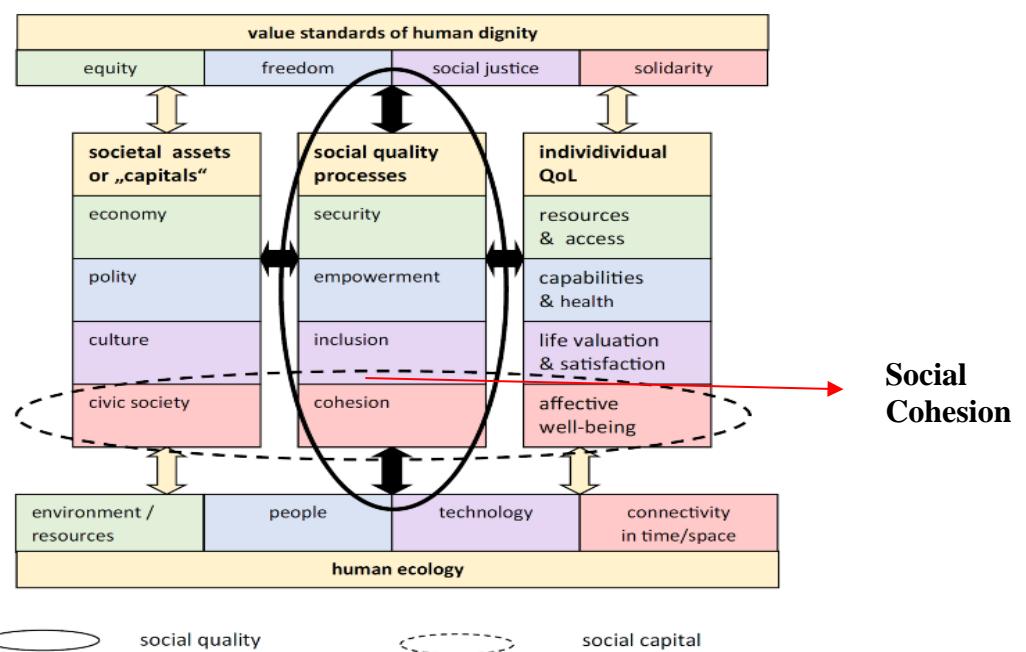
Figure 4: General SOLA model (Pieper et al., 2019,P. 556)

Social Cohesion: Social cohesion can be defined as the mediator to facilitate **Relationships** (interactions) based on the Networks and Trust among communities or social groups (Pieper et al., 2019). From the theoretical ground, social cohesion can be explained as a contributor to fair and just societies which is related to the interactions among all the inhabitants of the community (Lister, 2000). Also, the networks which support to function them and sustain the ability to be a sustainable community. In essence, the idea relates to the sustainable community mentioned by Dempsey et al., (2011). Where the authors denoted that community stability can be achieved through social cohesion encompasses social interaction among community people; participation in collaborative local organizations; a strong sense of identity and trust across the local level.

2.2.2 Social Capital – from livelihood approach:

The core of the sustainable livelihood framework (DFID, 1999) is the asset pentagon with five different capitals to support livelihoods. The pentagon (Fig. 5) shows how social capital is interlinked with other capitals such as physical or human capital. DFID (1999) defined social capital from a sustainable livelihood perspective. It means the social resources or capital influence to achieve the livelihood objectives through several elements. The initial one is

networks, as well as connectedness, which refers to increasing trust among patron and individuals to work together. And then, the memberships of multiple formalized groups help them to make mutual agreements within a balanced platform. After that, the relationships of trust, reciprocity, and exchanges help to collaborative transactions that reduce costs and ensure their safety informally (DFID, 1999). The study also identified social capital as a direct tool for asset accumulation through managing internal groups as well as an external link. However, the study acknowledged that it is not easy to measure social capital still, it can be possible if we measure not only by calculating the number of enrolled groups in the community but also by measuring their nature and quality.
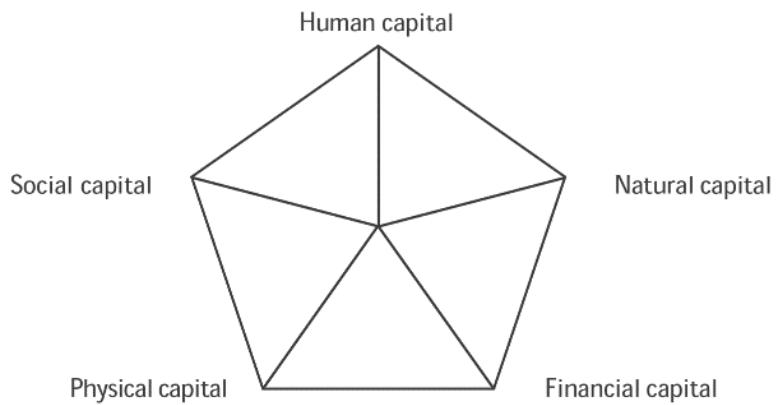
Figure 5: Asset pentagon (DFID, 1999; P. 5)

2.2.3 Social capital – start point of social sustainability:

Cuthill (2010) portrayed social capital as a theoretical baseline of social sustainability. While discussing the author focused on social network and trust as well as defined social capital as a concept for creating strong, resilient, and sustainable communities. Edwards and Onyx (2007) researched to explore the correlation between social capital and community development with a study of the progressive community. The study defined social capital as informal laws and norms as well as networks that promote collaborative actions (Edwards, Mel and Onyx, 2007; Woolcock and Narayan, 2000). The authors also argued that the absence of bonding to social capital perform as a 'dark side' for sustainable community development. Yoo and Lee (2016) also identified social capital as a 'social network' which refers to collaborative actions from the members of the society.

2.2.4 Social capital – social network & trust:

Kassahun (2015) conducted a study with 497 households in Addis Ababa, Ethiopia to understand how social capital influences social trust and intensity of confidence in institutions. Therefore, the study identified that using existing social capital (trust and confidence) contributes to community improvement projects in urban poor localities. The author also identified connectedness as a significant social capital to improve trust and confidence. He identified both formal and informal personal networks are quite high among the residents living in slums (Kassahun, 2015). Here, formal networks refer to membership of association from locality and informal networks means the connectivity with community people.

2.2.5 Overview: Social Capital

While analyzing the concepts of social capital, it is visible that several authors observe it from various angles, for instance, Cuthill (2010) focused on the social network; Kassahun (2015)

focused on trust. However, for this research purpose, I have chosen the SOLA model, as it is comprehensive enough to integrate diverse concepts and indicators in a unified manner. Besides, it creates the empirical ground for **social capital** which ends up with **social cohesion.** Social cohesion can be quantified through the **level of interaction in groups** and also the **nature** and **quality of the groups** (DFID, 1999). Besides, the livelihood approach helps to understand how these indicators can be measured. On the other hand, theories from Cuthill (2010) and Kassahun (2015), it is clear that **community participation** can create a doorway to improve social capital. They focus on community development through collaborative actions with participation. Therefore, the latter part is going to discuss the participatory approach. Besides, these concepts and literature support to create not only the conceptual framework but also helps to make a meaningful conclusion by comparing this with the research outcome.

2.3 Participatory Approach

2.3.1 Community Based Approach:

While experiencing the Participatory Urban Development Project in Egypt Nour (2011) discussed several strategies to explain the level of involvement of government sectors, actors from private parties, and community people in a participatory approach. He mentioned about four strategies which are (1) Community-based, (2) Process-based, (3) Area-based, and (4) Functionally based approaches. The community-based approach is aiming at local development through capacity building of local community groups to manage basic urban services with legal process and policy (Nour, 2011). This approach also empowers activities which are mostly focused on people's right for instance on tenure security, awareness binding, and self-help housing.

2.3.2 Partnership based approach:

Another research focused on participation as a process rather than a product, where the authors mentioned participation 'as an end' (Nikkhah and Redzuan, 2009). They also talked about how different approaches of participation impact differently on community empowerment. For instance, Top-down participation empowers the community less than bottom-up participation which is more sustainable. The study also mentioned about partnership-based approach (working together) which refers to moderate empowerment. The partnership-based approach means collective works of community with government or private agencies which provide the option to control over decision-making process that has a direct impact on their lives (Nikkhah and Redzuan, 2009).

2.3.3 Micro planning (Community action planning) and physical infrastructure provision:

Furthermore, an analysis by Abbott (2002) portrayed different thematic approaches of participation for informal settlement upgrading, those are - micro-planning, Plano global, and physical infrastructure provision. Where the physical infrastructure provision refers to primary infrastructure provision from the government level e.g. ensuring the security of tenure for the gradual up-gradation of housing.

On the other hand, micro-planning pointed out the process of community participation in the project cycle including project initiation; project planning and design as well as implementation and maintenance (Abbott, 2002). Hamdi and Goethert (1988) argued that micro-planning is a people-driven process enabling small communities to **design and implement** the development program locally and collectively. The authors also mentioned three elements as a core function of the process which are management of **decision-making**, **design** & training.

2.3.4 Overview: Participatory Approach

To summarise, it can be said that in the contemporary world the participatory approach has to be put into practice to improve collective actions (Abbott, 2002). For this research purpose, I have chosen the micro-planning theory for creating an empirical ground of the concept 'participatory approach'. For the concept of community participation, the identified constructs from mico-planning theory are **decision making**, **design,** and **implementation** of the program. These can be measured by asking the people about their **level of participation** within the community, and **Perception about interaction** with each other (Baker and Palmer, 2006)**.** Besides, the Physical infrastructure provision approach has been used, as the Goplagonj project got tenure security as an initial infrastructure provision to make successful housing with a participatory approach. Therefore, the next part will describe the concept of land tenure.

2.4 Land Tenure

2.4.1 Community Land Trust (CLT)

Midheme and Moulaert (2013) conduct the research in search of an alternative form of tenure security to fulfill the housing need of the urban poor. From the case of Kenya, the study pointed out CLT as an innovative tool to facilitate housing for low-income urban poor. By analyzing the Tanzania-Bondeni community in Voi the author argued that although CLT has a great impact on low-income **housing provision**, still community commitment and productive leadership are important factors. Bailey (2010) described that CLT is a contemporary tool that offers to a particular group for holding and acquiring land in trust. He mentions community land trust is a vehicle for handling the issue of social exclusion as well as a feasible means for community-building. According to Bassett (2005), CLT is a non-profit corporation where land is owned by the community, and individuals (lessees) can **build their own houses** with affordable rent to CLT.

CLT is not only common for affordable long-term local development but also creates sustainable communities (Bailey, 2010). Midheme and Moulaert (2013) argued that the CLT model **empowers** community people and encourages the participation of communities in land management as CLT lessees provide decision making power to them about land use and financial management.

2.4.2 Community-Led Settlement and Vacant Land Mapping (SLM)

SLM is a method to identify and map information on informal settlement and vacant land within a city in which community people are at the core of the process. For sustainable development, this process ensures the tenure security of the urban poor (Kananke, 2010). The citizen-centric SLM was introduced in Sri Lanka by Sevanatha in 2002 to facilitate housing of low-income communities. The focus of this approach was to accommodate the grassroots women saving group as a key stakeholder. Therefore, SLM is not only an innovative tool for changing the tenure status of urban poor but also contribute to **capacity building** by developing their skills and expertise to create a map. This method was adopted with local women saving groups in the Gopalganj UPPR project in 2009 with the assistance of Mr. Jayaratne (Kananke, 2010). Besides, ADB (2013) claimed SLM as a mapping tool through **capacity building**, especially for women to contribute to urban development planning. It **empowers** the community by improving land tenure and involving local government as a co-operative actor. Another study by UN-HABITAT (2011) mentioned about five folds objective of the SLM concept. One of the main objectives is to **improve the capacity** of the urban poor, as they can improve their living condition by themselves.

2.4.3 overview: Land Tenure

From all over the world millions of urban poor spending their hard-earning to improve their houses which they do not belong to or legally owned by them (Payne, 2002). Payne (2002) also mentioned that secure shelter is the prerequisite to access their livelihood (social capital ...) and other opportunities. Therefore, tenure security can be the baseline for improving their living condition. This research is going to use the SLM as a representation capacity-building tool & the CLT concept is used for explaining the long-term collective tenure. In both concepts, it is portrayed that land tenure helps to the empowerment of urban poor, and SLM also give focuses on capacity building of the community. Therefore, **empowerment** and **capacity building** are two constructs to create the operational ground at this research. Empowerment can be measured by the **sense of ownership**, adapted from SDG indicator 1.4.2 indicator (UNHABITAT, 2020), and getting the provision to build the house (CLT). Capacity building can be measured through the **number of training or workshop** received as well as the scope to get **access to credit** (ADB, 2013). The next part will give a general overview of the UPPR project, as this is the key to providing the land tenure and participatory housing to the community that helps to improve social capital.

2.5 UPPR project

Bangladesh Government has initiated the Urban Partnership for Poverty Reduction Programme(UPPR) to mobilize the urban poor. The notion of the UPPR project was to improve the livelihoods and living conditions of 3 million urban poor from 23 cities including various city corporations and municipalities of Bangladesh (UPPR, 2016). As poverty reduction is the main notion of the UPPR project, the poverty reduction concept from literature could better explain the project.

2.5.1 Poverty Reduction

Generally, poverty reduction is a simple way of lifting many people over the poverty line with the advantage of economic growth (Barder, 2009). However, there are several observations of defining poverty reduction, the author stated it from the ethical point of view which indicates social justice for human welfare. He defined it as a global system of distributing resources to poor people without any expectation for the economic outcome for enabling their good life (Barder, 2009; Cammack, 2004). Cammack (2004) acknowledged poverty reduction can be defined as societal transformation which deals with not only the economic advancement of capitalist society but also the social advancement of developing countries. The world bank strategy for poverty reduction is to facilitate the poor with basic social services by the best use of their main capital. The strategy should be designed in such a way that it allows more participant countries by looking at the changing dynamic between economy and society which affects the development process (Cammack, 2004).

2.5.2 SL approach: Poverty reduction

Furthermore, the study of Krantz (2001) mentioned the more contemporary concept of poverty reduction which is Sustainable Livelihood (SL). The study also compared the SL approach from three different organizations which are CARE, DFID, and UNDP. CARE emphasis on capacity building of poor people which made them secure their livelihood. DFID determines the multi-level citizen-centric activities for sustainable development. Hence, UNDP and DFID are mainly working with the community level, they also deal with the policy level that can create a long term impact (Krantz, 2001).

At the conducted research the study area is also facilitated with a response of poverty reduction through a partnership-based participatory approach. Therefore, the UPPR project of this

research can be described through the concept of the SL approach of poverty reduction. As this approach is concentrated on the actions and the participants of the applied project, so the implementation of the UPPR project can be measured with involved stakeholders as well as activities.

From the above concepts and theories the conceptual framework is derived as follows:

2.5 Conceptual Framework
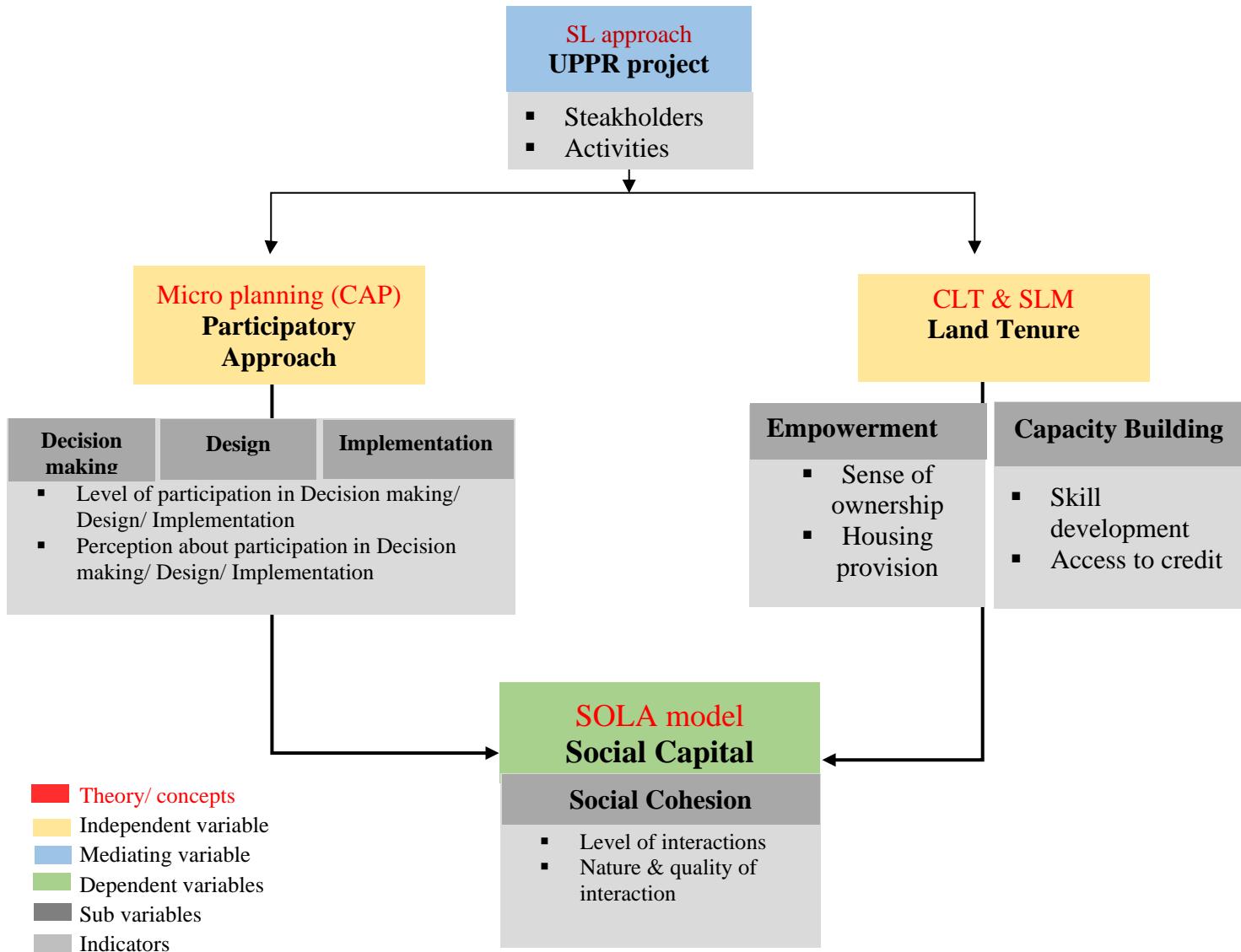
Figure 6: Conceptual Framework (by author)

The participatory approach was based on the concept of micro-planning towards the thematic approach of slum upgrading, considering the participation in **decision making**, **designing**, and **implementation** throughout the project. Also, Land Tenure will be considered as an independent variable based on the concept of CLT and SLM; considering as a means of **capacity building** and **empowerment** through ownership. The dependent variable in this framework is Social capital, based on the SOLA model which is connected with **social cohesion** can be measured through the level of interactions as well as nature and quality of

interactions. In the case of this research that is the key vehicle of the **UPPR program** that will be operationalized with involved **actors** and **activities**.

Chapter 3: Research design, methods, and limitations

3.0 Introduction

This chapter portrayed how the theory and concepts related to this research found an empirical form of the theoretical ground. Therefore, this part is focused on research type, strategy as well as the operationalization table from basic definitions. The later part discussed the data collection method with sample type to data analysis method.

3.1 Research type & strategy

The research objective is to explain and determine with empirical data, to which extent the participatory approach and land tenure influence the improvement of social capital in the Gopalganj UPPR project. Therefore, this refers to the **explanatory** research type. To explain the phenomena of this research a single **Case Study** is the most relevant research strategy. Van Thiel (2014) claimed that a Case study deals with in-depth knowledge of certain phenomena which can be based on a real-life event. This strategy also facilitates the researcher to have an insightful outcome of a specific context (Van Thiel, 2014). As the study aims to acquire in-depth knowledge about a certain context and a specific project of Gopalganj, a case study can provide insightful knowledge. Moreover, it wants to know how the participatory approach and land tenure create an impact on social capital, this strategy can give scope to achieve critical insight into the factors behind the phenomena. As Case study has applied nature (Van Thiel, 2014) and this research is attempting to make contributions to a concrete social issue, there is no compelling reason to consider different cases. So, this research is going to select the single case of the UPPR project at the Mandartola community, Goplaganj.

3.2 Validity & Reliability

The study focused on a specific project of poverty reduction in Gopalganj city. Therefore, looking at the context it is obvious that the outcome cannot be generalized with another city or context, which may cause limited external validity (Van Thiel, 2014). However, this method can ensure high internal validity for the particular research, as it can support the claim with various data collection methods to accommodate enough information. Hence, to enhance the validity issue the most reliable methodological approach is **data triangulation** which refers to use a technical combination of data sources (Van Thiel, 2014). For this research, data triangulation will be done with secondary data sources, interviews, and data from several pieces of literature.

3.3 Data collection method

This research has conducted not only to explain the phenomena but also to get an insight into the influence of factors behind it. Therefore, collecting data with mixed-method both **qualitative** and **quantitative** on each variable (social capital, participatory approach, and land tenure) supported to reach a desirable outcome. **Primary data** from both officials & community people as well as **secondary data** from the projects' resources were used according to answer each question. Primary data collected from structured questionnaires and structured interviews conducted in the local language (Bangla) which was translated later for this research.

3.3.1 Structured questionnaires:
Access to the site is limited, so well-structured questionnaires according to each variable have provided the respondents with a clear image of expected information.

3.3.2 Structured interviews:
Because of the Corona pandemic, face-to-face interviews were not possible. So, the interviews with officials were conducted through zoom meetings. And then, the interviews of community leaders and community people (CDC members) have continued purposively through digital devices (cell Phone) with local co-workers of the researcher who had finished his internship from Co-creation Architects[3].

3.3.3 Secondary data:
Secondary data collected from the UPPR office, Gopalganj municipality, UNDP website, UPPR project reports, and ACCA reports on these specific projects. More detail is presented in Annex- 6 about the documents type.

3.4 Operationalization

3.4.1 Definitions
Social Capital:
According to Pieper et al. (2019), the core concept of social integration is identified as social capital. The SOLA model re-defined the social capital approach which is structured across multiple social dimensions including the form of civil society as well as social cohesion where **social cohesion** is the vital property to achieve social quality

- **Social Cohesion:** Social cohesion can be defined as the mediator to facilitate **interactions** based on the Networks and Trust among communities or social groups. Social relations & interactions are creating formal and informal bonding through co-operation (Pieper et al., 2019).

Participatory Approach:
Micro-planning pointed out the process of community participation in the project cycle including project initiation; project planning and design as well as implementation and maintenance (Abbott, 2002). Hamdi and Goethert (1988) argued that micro-planning is a people-driven process enabling small communities to **design** and **implement** a development program locally and collectively.

- The authors also mentioned three elements as a core function of the process which are management of **decision-making, design** & training.

Land Tenure

For securing tenure to urban poor SLM is a method to identify and mapping information on informal settlement and vacant land within a city for **capacity building** of urban poor through their core participation (Kananke, 2010).

<div align="center">&</div>

Bailey (2010) described CLT is a modern tool that offers to a particular group for holding and acquiring land in trust. Midheme and Moulaert (2013) argued CLT as an innovative tool to **empower** the urban poor by facilitating **housing provision** for the low-income community.

UPPR: To understand the implementation of the UPPR project the project duration, involved stakeholders & activities have been operationalized.

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[3] An architectural firm worked on local communiy development

3.5 Operationalization Table

Theory/ Concept	Variables	Sub Variables	Indicators	Scale of measurement	Data collection method	Research instruments & (data sources)
SOLA model	**Social Capital**	**Social Cohesion**	**Level of interactions** # with other community members #with several groups	Nominal, ordinal	Qualitative & quantitative	Questionnaires, project reports (Primary & Secondary)
			Nature of the interaction(group/individual)	nominal		Questionnaires, project reports (HH, secondary)
			Quality of interactions # Sharing resources and information to work together	Ordinal		Questionnaires Interviews (primary)
Microplanning (Community Action Planning)	**Participatory Approach**	**Decision Making**	**Level of participation in decision making** # of attended meetings with formal groups	Nominal	Qualitative & Qualitative	Questionnaires, UPPR (primary, secondary)
			Perception of participation in decision making # of habitants who feel satisfied with participation	Ordinal		Questionnaires (primary data)
		Design	**Level of participation in Design** #Percentage of habitants who participate in planning the community layout and designing their housing unit.	Ratio	quantitative & Qualitative	Questionnaires, UPPR (primary, secondary)
			Perception of participation in Design # of habitants who feel empowered by taking part in decision-making processes	Ordinal		Questionnaires (primary data)
		implementation	**Level of participation in the implementation** # Percentage of habitants who participate to construct their housing unit. # Percentage of habitants who participate to construct common services (Tube wells, Pathways)	Ratio	quantitative & Qualitative	Questionnaires, UPPR (primary, secondary)
			Perception of participation in the implementation process #of habitants who feel the belongingness through participation	Ordinal		Interviews, Questionnaires (primary)

Settlement and Vacant land mapping (SLM) & Community Land Trust (CLT)	Land Tenure	**Empowerme nt**	**Sense of ownership** # percentage of residents who feel empowered with individual land title	Ordinal, nominal	Qualitative & quantitative	questionnaires, interviews (Primary)
			Housing provision # percentage of residents who are inspired to invest in the house			
		Community Building	**Skill building** # percentage of residents got training on land mapping #perception of skill-building who joined the training or workshop	Nominal		Questionnaires, UPPR (primary, Secondary)
			Access to credit # number of residents got additional income activities / new job	Ordinal		questionnaires (Primary)
Poverty reduction	UPPR project		**Duration (period)**	Ratio	quantitative, qualitative	UPPR, Interviews (Primary, secondary)
			Involved stakeholders # formal level # Community-level	Ordinal		
			Activities # Community-level actions (workshops) #Focus group discussion (implementation)	Ordinal		

Table 2: Operationalization table

3.5 Sampling Method

Due to the Corona pandemic, the most challenging part of this research was to collect data according to the demand of the researcher. To address this issue snowball sampling was the most valid sampling method to reach the respondents which is a popular form of non-probability sampling (Van Thiel, 2014). Initially, the respondents' list was selected from the UPPR staff (planner, housing consultant) and responsible person of the municipality through purposive sampling for interviews. And then, respondents were identified through snowball sampling with the initial respondents for questionnaires. After that, through community leaders and formally responsible residents from the community, the process was repeated, thus the sampling continued until reaching a desirable number. The sample size and list of the sample are as follows. At 95% confidence level, according to the Yamane formula

Sample size, $n = \dfrac{N}{1+N(e^2)}$, n= population size

e = allowable error (10%)

$$= \dfrac{138}{1+138(.1^2)}$$

$$= 57$$

Table 3: List of respondents (by author)

Interviewees list **Sampling method: Purposive sampling**			Total **12**
Officials			
1. The consultant from Srilanka (international consultant)			**1**
2. Town planner manager (Higher level)			**1**
3. Town planner expert (Mid-level)			**1**
4. Slum development officer (municipality/local level)			**1**
From community			
1. President of CDC			**1**
2. Treasurer of CDC			**1**
3. Secretary of CDC			**1**
4. Five members from the community			**5**
Sample for questionnaries **Sampling method: Snowball sampling**			
Collected	targeted	Population size (HH)	
40 HH	57 HH	138	

3.6 Data Analysis Method

To achieve the desired outcome for this research both qualitative and quantitative data have been analyzed. Qualitative data will be categorized and clustered with certain coding according to each variable mentioned in Table.2. with ATLAS.ti. The co-occurrence has been used to understand the causal relationship between the dependent and independent variables. The interviews are also manually analyzed to summarize them and

For quantitative data, The crosstabulation was done for descriptive analysis where two or more variables are tabulated against each other for multivariate frequency distribution (Van Thiel, 2014). For the statistical analysis paired t-test has conducted to understand whether the social capital increased or not after the project. (Van Thiel, 2014) mentioned the t-test is used to study the difference between the group scores on one single variable and also measures whether the difference between pre-test and post-test. Also, for categorical nominal data Chi-square test can be used to analyze whether a certain relation between two variables is systematic. Therefore, categorical data were analyzed with the Chi-square test through SPSS which shows also the significant association between the variables if the P-value is≤.05. If the p-value is ≤.05 that means the null hypothesis is rejected and there is an association with the variables. Moreover, from the chi-square test phi-coefficient is the measure of association between two binary variables (DV and IV). It indicates the strength of the relationship which ranges from -1 to 1 where 0 means no relation 1 shows a very strong positive relationship (Glen, 2016). After that, the correlation was conducted to analyze the Likert scale data (e.g. Perception) in SPSS to understand whether any interrelation exists or not within the dependent and the independent variable. Before conducting a correlation Cronbach's alpha test was conducted to see if multiple-questions Likert scale surveys are reliable.

3.7 Scope &Limitations

The research was conducted in a specific informal settlement which is the Mandartola community in Gopalganj. Hence, a single case analyzed and the aspects related to social sustainability was taken into consideration. The case analyzed from not only the community

people perspective but also from the UPPR project perspective which helps to reach a non-biased research outcome.

In this case, most of the residents' didn't have access to the internet and due to the Corona pandemic; it was a challenge to reach them. Although the interviews of officials were conducted easily by online meetings, primary data collection has faced difficulties for the community people. Digital devices (cell phones) and local co-workers of the researcher provided the solution. Also sometimes the snowball sampling method has the problem of selection bias. Moreover, in a case study approach ensuring external validity is another challenge. Therefore, data triangulation has been done to solve this problem.

Chapter 4: Presentation of data and analysis

4.0 Introduction

This chapter is going to present the research findings from the analysis. The analysis is based on the primary data from questionaries and interviews as well as secondary data. The expected target is to present the research findings of the main research questions through analysis.

4.1 Sub Q -1: Variable UPPR project

The first sub-question is to analyze how the project was implemented. To answer the first sub-question mainly the interviews and secondary data are used and to triangulate the data some specific questionnaires were asked to community people to verify. The study area is one of the UPPR town Gopalgonj where the eviction in 2009 affected one CDC fully, and other CDC half for the canal beautification and provision for sports ground (UPPR, 2013). As UPPR was already involved with the evicted community they got a quick response from authorities. Each indicator of UPPR(V) is described with the collected data to answer this question.

4.1.2 Indicator: stakeholders

4.1.2.1 Stakeholders: Formal level

- **Technical assistance & land support**

After eviction UNDP, community, and municipality raised their voice to get exposure to the concerned authorities and also made the human chain[4] immediately. The UPPR project decides to find a solution to this situation and found a government vacant land to relocate the evicted residents to Mandartola. After that, the UPPR had been leased 4.16 acres of land for 99 years from the central govt. to the local govt (municipality) for the rehabilitation of the people who were evicted. After finalizing the land UPPR arranged a 7-days workshop in collaboration with ACHR, Gopalganj municipality, LGED, Khulna University Architecture discipline (KUAD), and ACHR. They invited architects From KUAD and ACHR and community people from different layers. They also provided engineering and planning support along with managing different workshops and meetings.

- **Funding**

The UPPR project doesn't have a housing fund itself. Therefore, initially, ACHR approved 43 k dollars for housing (32 lakh BDT) including 3k dollars for workshops and training. As the fund was not enough, another project of UNDP called CDMP (comprehensive disaster management program) added 4 crore BDT (39,9009 EUR) more for the housing project. Per house (with 2 house unit) cost 4 lakh 20 k BDT. The beneficiaries received the money as a loan which they need to pay back gradually to CDC.

4.1.2.2 Stakeholder: Community level

- **Community Development Committee (CDC)**

Initially, several groups are formed with 15 to 20 families from the community as a women saving group and each group has 2 leaders. And then, by combining 15 -20 groups CDC has formed and become the entity of the community. The group mainly focused on community mobilization to drive local policy intervention negotiating with the municipality and influenced the local government. Thus the CDC could create a network with local government.

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[4] A line of people for a protest or demonstration by linking hans together.

- **Community Housing Development Fund (CHDF)**

The CDCs and CDC clusters established a Community Housing Development Fund (CHDF) through a collaborative process with a 9-member Executive Committee (EC) and a 5 member Advisory Committee on 16 November 2012. The municipality Mayor, along with representatives of the DC, LGED, UPPR, and a Community Leader, heads the Advisory Committee. The role of the Advisory Committee is to oversee and monitor the activities of the CHDF. The establishment of the CHDF was instrumental in providing financial support to the landless and urban poor of the CDC, to build a permanent home (UPPR, 2016).

4.1.3 Indicator: Activities

At first, they identified the most vulnerable urban poor community and mapping them by settlement land mapping (SLM). SLM is the tool to measure the poverty level by using 16 indicators. After identifying the vacant land they have started the housing process.

4.1.3.1 Community-level action

The participatory workshop was arranged with a mixed group of about 100 participants from different layers including CDC leaders, CDC cluster leaders, and the community people. It was a 7-days regional workshop to make the cluster layout and the low-cost housing model with semi-permanent material which cost 60K BDT. In the workshop, five subgroups were made with the participants and shared the case study of a housing project in Myanmar. Each group has given homework to sketch their dream house. After that, considering the house plan from each subgroup they finalize one option. Then the Cluster plan was done including the courtyard, structure type, and infrastructure. The master plan was also done with subgroup discussions. Finally, the financial scheme was also decided to construct each house and a model house was constructed to perceive the house model. ((UPPR, 2011 and Interviews)

4.1.3.2 Focusgroup discussion in implementation

The design output from the workshop was not implemented perfectly, as some conflict arises due to the local temporary material for the house. Some of the community people and selected officials also wanted to make a permanent house instead of the local material which may not be possible within the budget. After that, another project of UNDP called CDMP gave 4 crore BDT funds for the project. Then they have to manage the permanent structure with roads keep in mind the designed house plan. However, the cluster layout was not properly followed. Per house (with 2 house unit) cost 4 lakh 20 k BDT. The community people got the money as a loan which they need to pay back gradually to CDC. But as the community people were not completely involved in the construction, they did not agree to pay the money and don't feel that they entirely own the project. Only some community leaders were involved in the implementation phase. Implementation Committee (PIC) meets weekly for sharing progress and taking decisions for the smooth operation of the project (interview and report summary). Finally, in 2015 they have completed 138 houses and through the Gopalganj UPPR project which was further replicated in several UPPR towns in Bangladesh (Mustafa, 2019; UPPR, 2011)

4.2 General description of the sample:

As the population size was 138 households (HH), for the quantitative survey the targeted respondents were 57 HH (see 3.5). However, due to COVID- 19 situation 40 respondents are done for the quantitative survey. On the other hand, 12 interviews are covered with a good combination of officials and community people that meet the target. The general characteristics of 40 respondents are:

Age: The majority of respondents are within the 30-50 (58%) age group, as they were the main participant group, 12% of respondents are above 50 as they can explain from their

experience. And the rest of the 30 % is within 30 to understand what the young group feels about the project (graph 1).

Gender: The majority of the sample have chosen from the female community which is 77 % of the total sample. Because as a women saving group most of the members are female that group. The rest of the respondents are male 23%, as it was important to have their opinion as well.

Martial status: Amon the respondents 92% were married and only 8% were unmarried. As the findings are based on the participants in the projects most of them are within the range of middle age.

Family member: Maximum HH (45%) have less than 5 family members; 35% of household have 5-6 members in their family and other 20 % have more than 6 members. This variation helped to understand their perception of the house is enough or not for all types of family size.

Profession: Most of them are housewives which are 60%, among them, 48 % of housewives are involved in making fruit packets to make money. About 15% are associated with small businesses such as a grocery shop. There are some day laborers and workers (20%). Only 5 % of them are teachers and students as it can be possible to observe their perception of the project as well.

Therefore, the majority of the respondents belong to the middle age group, female, married, housewives, and families between 2-6 members. As one of the focuses of this project was women empowerment by involving them in saving groups. Thus the women of each family come and join the CDC.

Graph 1:Description of samples
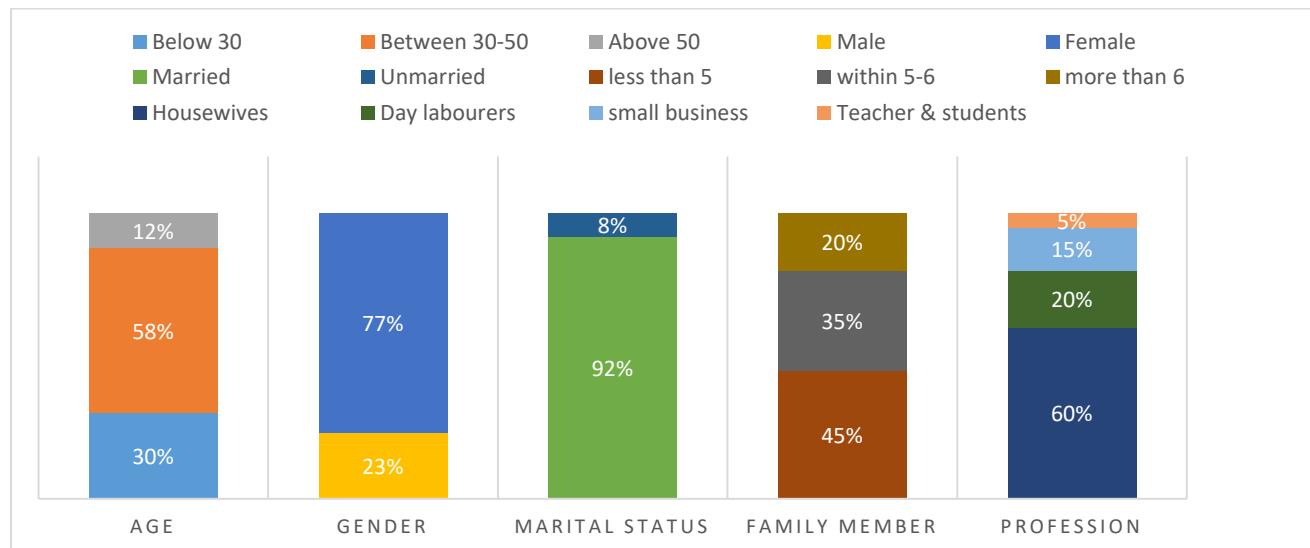
4.3 Sub Question 2:

The second research question is to analyze the influence of the participatory approach on improving social capital. To summarise the findings the first part is focused on the descriptive analysis with the support of qualitative and quantitative data according to each indicator from social capita (DV) and participatory approach (IV). And then, the statistical analysis has carried out between the indicators from the participatory approach (IV) and Social capital (DV) with SPSS software and the interview summary has presented through Atlas ti. Finally, findings from descriptive and statistical analysis will be discussed with the help of secondary data as well as the literature to summarize the answer.

4.4 Social Capital (Dependent variable)

4.4.1 Social cohesion (Sub-variable)

To analyze social capital the sub variable is social cohesion which has the following three indicators: level of interaction, nature of interaction, and quality of interaction. This part has presented a descriptive analysis of these indicators.

4.4.1.1 Level of interaction (Indicator)

Graph 2 reported that the majority of respondents (93%) communicate with each other for several kinds of help after the project which was about 77% before. But significant improvement can be seen in the group membership. 95% of household are the member of CDC (Community development Committee) and CHDF (Community Housing Development Fund committee) now, which was only 5% before in different groups. Sharing leisure activities also increased by 18% which was 67% before the project. Another positive increase (60%) is noted in making group informally to accommodate any kind of need of the community other which was 35% before.

Graph 2: Level of interaction (by author)

	Communicate with neighbour, N=40	Member of group, N=40	Sharing leisure activities, N=40	Group for other activities, N=40
■ Afetr (Yes)	37	38	34	24
■ Before (yes)	31	3	27	14
■ After (No)	3	2	6	16
■ Before (No)	9	37	13	26
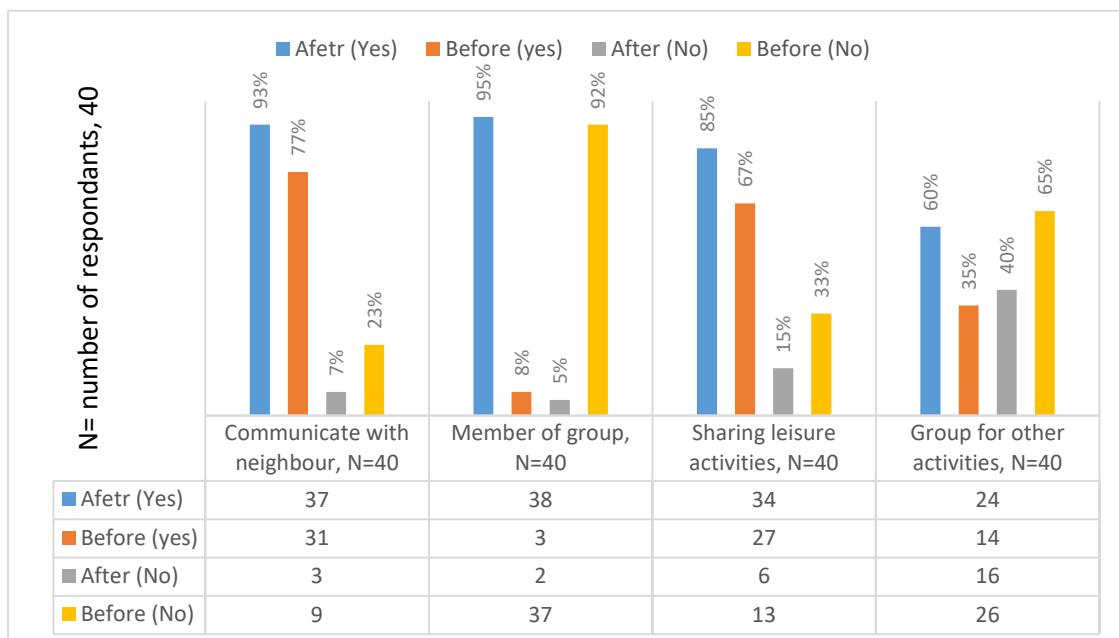
Table 4: Level of interaction - Summary from interviews (by author)

Summary	(out of 12)
Their interaction level has become quite strong after this project as all of them are members of their communal group. Also, they share their leisure and religious activities more than before.	9
The interaction level is high because when they realize that another person is also suffering from the same crisis, then they start making a group among them to solve the crisis together. The same interest makes them come closer.	3

Discussion: Graph 2 indicates that when the majority of the household becomes a member of the communal group (CDC) with the UPPR support, it helps them to increase the communication with neighbours and sharing leisure or other activities. According to interviewee 2, *"The interaction level increases drastically after forming the CDC. It is really visible if we compare it before creating the CDC."* Adding that literature also pointed out, membership and involvement in the formalized group increase the accessibility to other

organizations as well as enhance attachment with the collaborative or mutually agreed regulations and consent (DFID, 1999).

4.4.1.2 Nature of interaction

Graph 4 noted that 87% of respondents mentioned CDC as women saving formal group with the community people where they belong to and 8% of them are the member of some other formal group (NGOs). The CHDF is the formal group within the community that maintains the linkage partnership with formal organizations such as a municipality. Therefore, all of the CDC members are automatically part of the CHDF after the project. Although the leisure activities show the same nature after the project, a slight increase is observed in the percentage of people who share leisure activities. For instance, 32% of people spent leisure with group talks before which increased by 5%, also cultural activities sharing have been increased by 11%. However, the percentage of people involved in tree plantation decreased by 10%, (Graph 3).

Graph 4: Kind of group-after(by author)
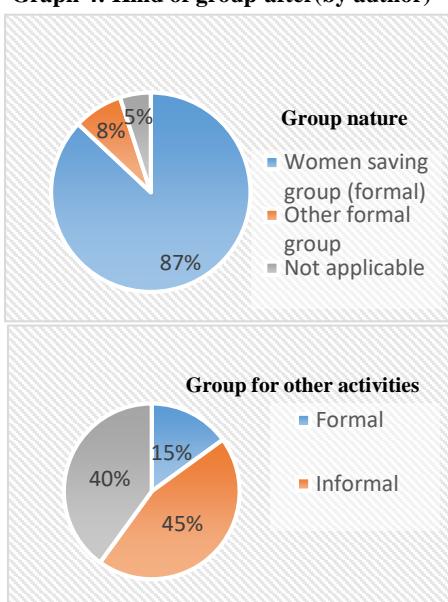
Graph 3:Type of leisure activities (by author)
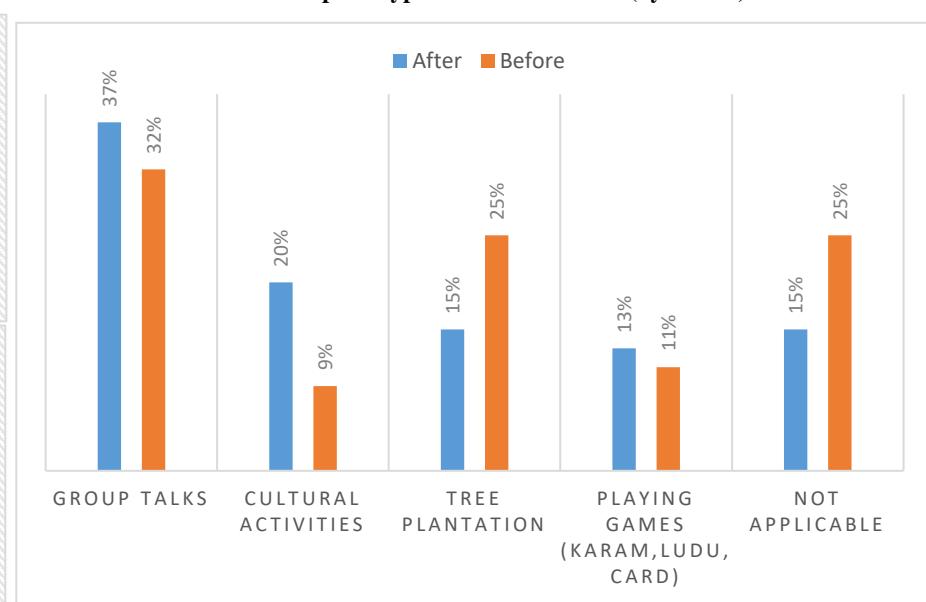
Table 5: Nature of interaction - Summary from interviews (by author)

Summary	out of 12
They have two formal groups in the community which are CDC (saving group) and CHDF. CHDF is the citywide group, so through CDC, they are connected with the CHDF that helps them to reach a bigger platform. This gives them access to important figures (DC[5], mayor, officials) to express their problems which give them a feeling that they are also an important part of this community.	10
They have some casual group (informal) activity as well such as most of them spend leisure time together. Also, make fruit packets with each other assistance; sell them to generate partial income.	08
However, the percentage of tree plantation decreases because they mentioned there is a lack of space at the individual house unit. So, some of them planted a few trees in a communal space which is very small.	05

[5] DC- the person whi is incharge od the district

Discussion: Although the interaction has become more formalized and integrated after the project which helps to interact with other formal organizations such as service providers, it has very minimal impact on their type of leisure activities. Interviewee 1 mentioned that "*To fulfill their right and need they have made partnerships with other organizations according to their necessity with the help of CDC*". From DFID (1999), the interactions and connectedness with shared interest promote the capacity for working together as well as widen the connections to civic bodies or formal organizations which improve the management of public goods and resources.

4.4.1.3 Quality of interaction

The majority of them (83%) think their interaction level increased as they are part of the CDC. 90% of people share resources which were 75% before the project (ANNEX-9). Although resource sharing increased by 15%, a slight change can be seen in the frequency of resource sharing and the type of resource shared. Graph 5 and 6 reported that the maximum number of people shared daily necessities (food & groceries) which is almost the same after (22) and before (24) the project. However, a slight increase can be seen in the frequency of sharing financial resources and moral support from the before-after scenario. Besides, a balanced condition is illustrated in graph 5 for the frequently shared resources, previously which were only focused on daily necessities.

Graph 5:Type of shared resources*Frequency of sharing resources-after the project (by author)
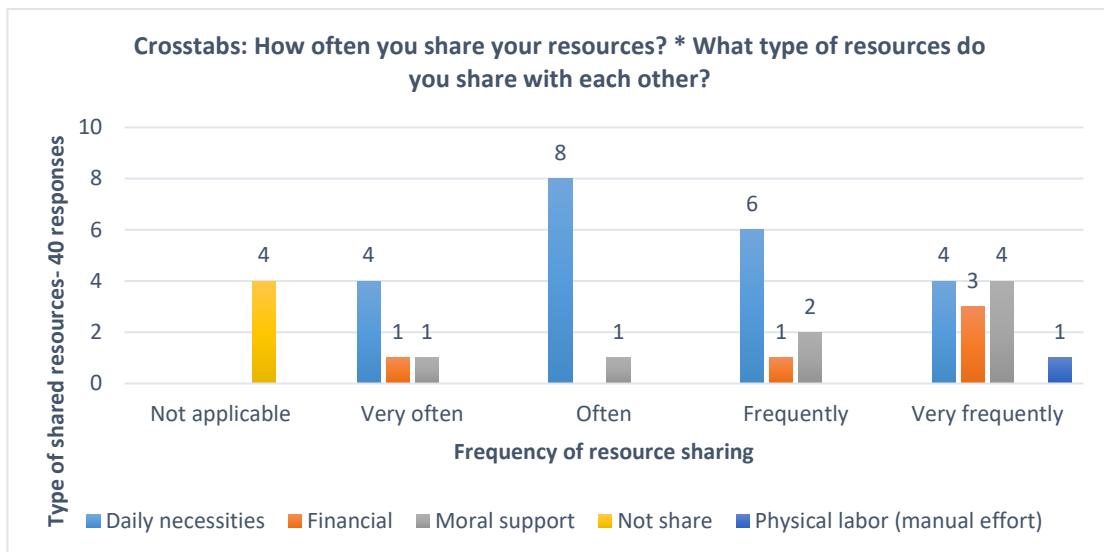
Graph 6: Type of shared resources*Frequency of sharing resources-before the project (by author)

Table 6: Quality of interaction - Summary from the interviews (by author)

Summary	out of 12
With the neighbours, they support each other with their financial and daily necessities. Their mental relationship also becomes strong which helps them to be closer to each other now.	08
With their interaction with CDC and CHDF, they can get a loan. Also, they save their credit together in CDC based on their trust.	11
However, some of them have fear of losing their money.	02

According to one community leader, "*Initially the officials achieve the trust of the community people through their activities to develop relations with them. Therefore, they got faith in the officials, rely on them, and start participating.*"

Discussion: Another community leader said*, "helping the people to get their legal documents for land, I feel very proud. Everyone respects me a lot that I feel they are really close to me even, more than my relatives."* Adding that the literature also mentioned, the interactions based on trust facilitate people to exchange their resources, promote collective action, and ensure safety informally. Thus common norms to pursue the same interest encourage them to form new groups (DFID, 1999).

4.4.2 Overview

It is very visible that, the overall social capital improved considerably as the level of interaction increased a lot after the project as well as the nature of interaction became more formalized, organized, and integrated. To some extent quality of interaction also improved e.g resource sharing increased a lot. However, the uneven contribution found in saving credit activity through CDC, which impacts negatively interaction quality. The latter part is discussed in a participatory approach to analyze how it influences this improvement.

4.5 Participatory Approach (Independent Variable)

The participatory approach has three sub-variables based on decision making, design, and implementation. All of them have two indicators which are the level of participation and perception about participation in the implementation of different activities. The initial part has discussed the descriptive analysis of each indicator according to the sub-variables. And then, the influence of participation on social capital has been presented through inferential analysis.

Graph 7: Level of participation in decision making, Design, and Implementation (by author)
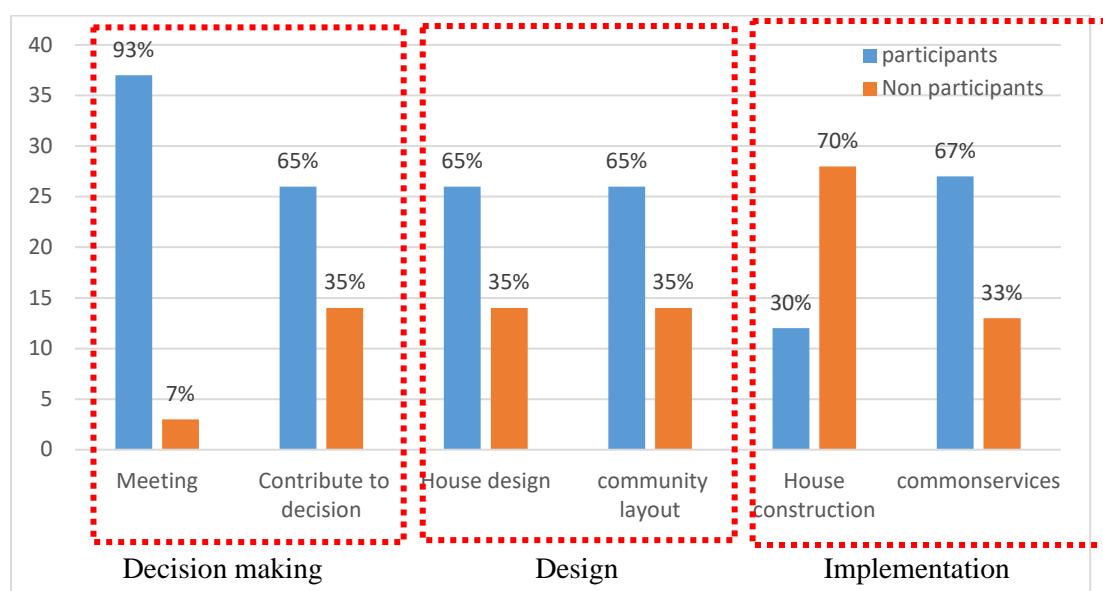
4.5.1 Participation in Decision Making (Sub Variable)

4.5.1.1 Level Participation in Decision Making (Indicator)
Graph 7 reported that 93% of HH participated in different meetings arranged by UPPR during the project. Among them, 65 % of people contributed to making decisions.

Table 7:Level of participation in decision making – Summary from the interview (by author)

Summary	out of 12
▪ About 100 HH participated in the workshop as a member of the CDC and CHDF, where decisions were made on the community layout and house plan. It helps them to increase the interaction level drastically. A group of 18 people also visit Thailand to observe participatory housing.	11
▪ Also, community people participated in different focus group meetings according to their necessity with UPPR officials.	3

Discussion: In decision making phase participation is quite high (95%), which have a positive influence on their perception of participation in meetings and workshop. Although all of them couldn't get a chance to implement their own decision, they learned how to agree on group decisions and how to communicate with various actors. Adding that, *"Through CDC they started to do Community Action Plan to identify their problems and started to prioritize their problems."* Goethert and Hamdi (1988) also mentioned the participatory process as a problem-driven approach where problem identification and articulation are the base for taking an equally treated decision.

4.5.1.2 Perception of participation in Decision making (Indicator)
The community people have a more or less positive response about their perception of participation in decision making. Among the respondents 12.5% of people feel very honored; 40% of them feel honored and 12.5% feel moderately honored while they took part in decision making (ANNEX-10).

Table 8:Perception about participation in decision making - Summary from interviews (by author)

Summary	(out of 12)
▪ Most of them feel highly empowered as they can get a chance to make a decision on a formal ground and contribute to their house design which improves their nature of interactions.	10
▪ The CDC gives them a chance to communicate with each other to accumulate their savings as well for helping them to the socio-economical aspects. CHDF support them to make linkage partnership with the formal organization (municipality, UPPR, NGOs). Thus the quality of the group helps them to take their own decision.	09

Discussion: Formal recognition of expressing their decision reinforce the leadership skill of the community people and interactive sessions help to give value to individual decisions (Hamdi and Goethert, 1988). Thus positive perception is observed about participation in decision making among the respondents participate in several meetings. The following crosstabulation indicates that the respondents who think the interaction level increased being a part of the CDC, among them, a large number of people feel honoured (14) and very honoured (4) by participating in decision making (graph 8).

Graph 8:perception of participation in decision making * interaction level (by author)

Chart data:

	Not applicable	Moderately honoured	Honoured	Very honoured
No	4		2	1
Yes	10	5	14	4

Y-axis: 40 responses (0 to 16)
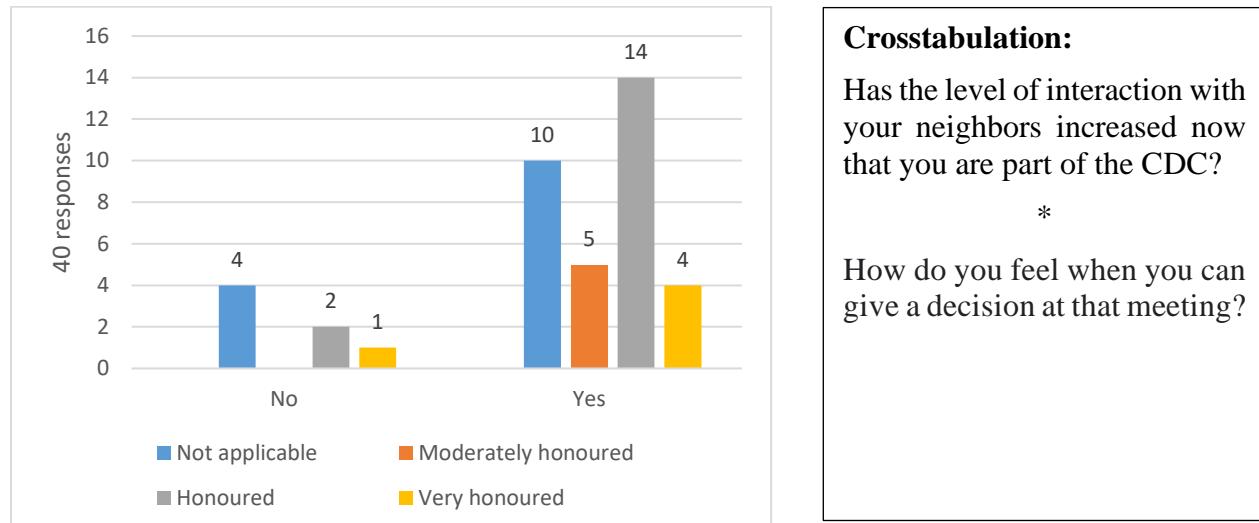
Crosstabulation:

Has the level of interaction with your neighbors increased now that you are part of the CDC?

*

How do you feel when you can give a decision at that meeting?

4.5.2 Participation in Design (Sub variable)4.5.2.1 Level Participation in Design (Indicator)

From graph 7, 65% of HH participated in designing the house layout as well as community layout. 35% didn't get a chance to contribute.

Table 9:Level of Participation in Design – summary from the interviews (by author)

Summary	out of 12
▪ The participated 100 HH were also involved in the design process of the house as well as the cluster layout plan. They give the measurement, give their opinion about the position of the room, toilet, kitchen.	10
▪ However, the cluster plan was done in the workshop was not properly followed as the CDMP was involved in the later part for the house fund. The building material was also changed instead of the designed one.	4

Discussion: According to interviewee 03, *we have made a group among the participants and got options of house unit and community layout from 5 groups. We choose the final option in a community meeting where all of them agreed on that considering the budget and availability of materials."* Adding that, after problem identification microplanning refers to participation to exercise possible strategies for tackling the problem rationally and feasibly (Hamdi and Goethert, 1988). Although not all of them participated in the design, those who participated become more interactive among them which is visible in the percentage (60%) of participants to accommodate common services for them.

4.5.2.2 Perception of participation in Design (Indicator)

For people who participated in design the house or making the model and designing the layout, about 30 % feel they entirely belong to the project and 20% of them feel moderate and the other 10 % feel more belongingness than before (Annex-10).

Table 10: Perception about participation in design - Summary from interviews (by author)

Summary	out of 12
Their participation in designing the housing unit has made their interaction more strong which helps them to organize other activities among them and also creates belongingness about the house.	07
However, some of them are still not happy with the comfort level of the house.	03

Discussion: *"When I see that I have been involved in building so many houses in my hands and also helping the people to get their legal documents for land, I feel very proud."* A positive perception was found among the people who participated rather than non-participants (Annex 10). Besides, the following crosstabulation also indicates that the maximum number (11) of participants in the design process who think their interaction level increased also feel that they entirely belong from the house.

Graph 9: perception of participation in design * interaction level (by author)

Crosstab:

Has the level of interaction with your neighbors increased now that you are part of the CDC?

*

How much you feel you belong to it, when you make your own house plan ?
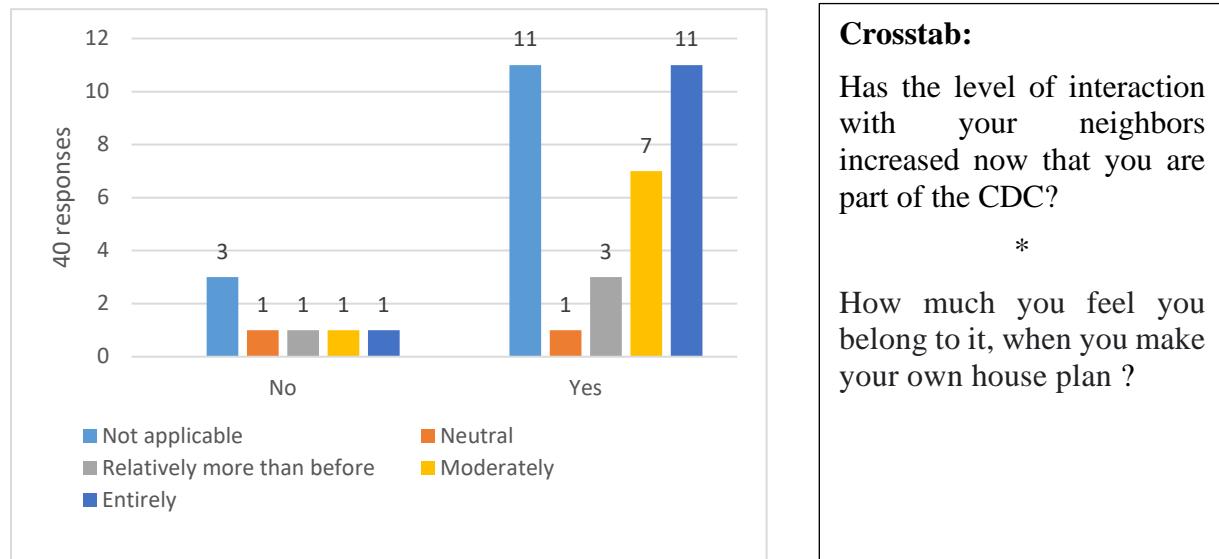
4.5.3 Participation in Implementation (Sub Variable)

4.5.3.1 Level of Participation in Implementation (Indicator)

During the implementation process, only 30 % (graph 7) participated in construction-related work. Among them, only community leaders were involved in the supervision of house construction throughout the project and 20 % have made a wall in the verandah, 7% did the plastering, or painting afterward. Also, 73% mentioned they have constructed some common services such as tubewell, pathway by themselves with the fund from CDC.

Table 11:level of participation in implementation -summary from interviews (by author)

Summary	Frequency (out of 12)
▪ During the construction phase, only community leaders have participated which impacts their comfort level with the house condition and the quality of interaction.	8
▪ However, they maintain their interaction through groups that help them build a temporary mosque & temple. Also through CDC, they got access to the municipality for the power supply.	7

Discussion: The agreements and funds of the implementation process should be compatible with local administration, local resources, and politics to make the design strategy workable (Hamdi and Goethert, 1988). As in the study area, the housing fund comes from another stakeholder: CDMP (see section 4.1.2.1), they try to improvise the strategy to house construction as well as budget. Thus the level of participation in implementation affects negatively their quality of interaction, as their saving credit activity hampered. Besides, participation in constructing common services shows a higher percentage.

4.5.3.2 Perception of participation in Implementation

Only 30 % of people were taking part in the construction work, among them (15+7.5)%=22.5% feel they belong to the house as they took part in the construction (Annex-10). As the housing fund supported by CDMP and community were only involved in weekly progress sharing meeting. They hired a contractor to manage the construction which creates a negative impact on their sense of belongingness. Adding that Hamdi and Goethert (1988) denoted that for successful microplanning ensuring participation in three levels plays a vital role.

Table 12:Perception about participation in implementation- Summary from interviews (by author)

Summary	Out of 12
▪ Participating in CDC they get access to the service provider to meet their need. For instance, through CDC they negotiate with the municipality to get their electricity provision. They convince one of the local political leaders to provide them 4 tube wells in the community.	07
▪ However, the lack of participation in construction work impacts negatively on their saving credit activity. ▪ Some of the HH are unwilling to give money to the saving group as they have fear of losing their money.	06 02

Discussion: Less participation in implementation hampered the saving credit activity, as some of them disagree to repay the house loan. The following crosstabulation (graph 10) also indicates a positive perception among very few respondents. The respondents who think the interaction level increased being a part of the CDC, among them only 6 persons (entirely) and 3 of them (moderately) feel that they belong to the house by participating in construction work. Adding that town planner expert mentioned, *"The community people got the money as a loan which they need to pay back gradually to CDC. But not all of them were involved to build their house, they disagree to pay the money"*. Although the quality of interaction is obstructed, still they are interactive to construct common services as they have a strong group.

Graph 10:perception of participation in implementation * interaction level (by author)

Crosstab:

Has the level of interaction with your neighbors increased now that you are part of thCDC?

*

How much you feel you belong from the house as you took part in the construction?
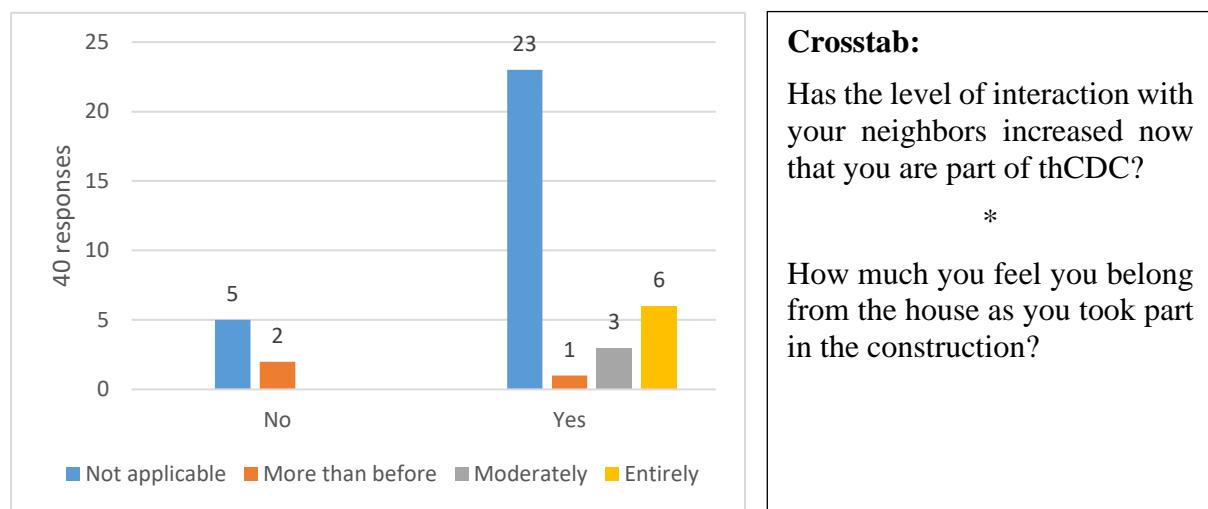
4.6 Statistical analysis: Influence of Participatory approach (independent variable) to Social capital (dependent variable)

The statistical analysis started with the T-test with the Social Capital (DV) to analyze whether social capital is increased or not after the project. After that, the Chi-square test has conducted to identify the association between the level of participation (IV) and the level of interaction (DV). After that, the Spearman correlation helps to identify the relation between perception of participation (IV) and interaction level (DV). Moreover, a summary of the co-occurrence table is also shown in the later part to explain the casual relationship with the participatory approach and Social Capital from Atlas Ti.

4.5.1 T-Test- Social capital (before & after)

The t-test is used to find the difference between the group scores on one single variable and also measures whether the difference is significant or not (Van Thiel, 2014). And paired or dependent T-test compares the means of the same group at a different time (before & after). Therefore, a paired T-test is done here and means are presented to see if there is a difference. The p-value is presented if the difference is significant or not (table 13). Before this Cronbach's alpha test has conducted with the following constructs and the value is .764 >.7 which indicates the data is reliable for further tests. The detailed pairwise T-test results are presented at ANNEX-11.

Table 13: Paired (dependent) T-Test- Social capital (before * after)

Social Cohesion (SV) Before * After		Mean		N	Paired T-test P-value
		After	**Before**		
Level of interaction	Communication with neighbour	.93	.78		**.012***
	Member of the group	.95	.08		**.000***
	Sharing leisure activities	.85	.68		**.006***
	Group for other activities	.60	.35	40	**.001***
Nature of interaction	Kind of group	1.80	.08		**.000***
	Kind of group for other activities	.70	.40		**.002***
Quality of interaction	Sharing resources	.90	.75		**.006***
	Frequency of resource sharing	2.48	2.35		**.058**
The difference is significant when the P-value is < .05					

Table 13 reported that the level of interaction increased significantly, as all the construct under this shows a significant difference after the project rather than before (e.g. communication with neighbours). The nature of interaction also shows a significant difference from before. Furthermore, the quality of interaction also increased as resource sharing indicates a significant difference now. However, the frequency of resource sharing does not show a statistically significant variance. Therefore, statistics indicate significant improvement for the social capital after the project which also supports the descriptive analysis. The later statistical analysis has conducted to explore whether the participatory approach has any influence on that improvement.

4.5.2 Chi-Square Test (Social capital & Participatory approach)

To understand the influence of the level of participation on Social capital, the Chi-square Test has conducted with the three indicators of the dependent variable in Table 14. For categorical nominal data, the Chi-square test can be used to analyze whether a certain relation between two

variables (DV &IV) are systematic. It also can identify if there is any significant association between the variables (Van Theil, 2014). Hence, the Chi-square test has done here, as DV and IV both have categorical data. In the Chi-square test, if the value of P is ≤0.05 that means the null hypothesis is rejected. Therefore, it can be said that a significant association is there between those two variables. Moreover, from the chi-square test phi-coefficient is the measure of association between two binary variables (DV and IV). The detailed chi-square test results are presented at ANNEX-12 and the phi-coefficient list at ANNEX-13.

Table 14:Chi-Square Test (Social capital & Participatory approach) (by author)

	Indicators	Dependent variable					
		Level of interaction		Nature of interaction		Quality of interaction	
		1.After the project the interaction (increased / not increased)	2.Are you a member of any group? (Y/N)	1.Kind of group in the community (saving group/other groups)	2.Kind of group in for other activities (formal / informal)	1.Resource sharing (shared/not shared)	2.Is the interaction increased as you are part of the CDC? (Y/N)
		Significance level: **P-value**					
Independent Variable	**Level of participation in decision-making** 1. Did you participate in any meeting of the project? (Y/N)	**0.02***	**.01***	**.018***	.198	.161	**.02***
	2. Did you get a chance to contribute to making any decision in the meeting? (Y/N)	.176	.648	.176	**0.05***	.077	.176
	Level of participation in Design 1. Did you participate in making the layout of your neighborhood? (Y/N)	0.631	.648	.705	**.019***	.658	.631
	2. Did you make any plan or model of your house unit? (Y/N)	0.631	.648	.705	**.019***	.658	.631
	Level of participation in Implementation 1. Did you participate to construct the housing unit?(y/n)	.928	.342	.608	.375	.358	.928
	2. Did you participate to construct common services such as tube well and pathways? (Y/N)	**.015***	**.037***	.611	.731	**.05***	**.015***
	▨ Dependent variable: Social Cohesion (SV) ▨ Independent variable: Participation in Decision making (SV); Participation in Design (SV); Participation in implementation (SV) * Null hypothesis is rejected if significance level, P-value ≤0.05						

The Chi-square of table 14 indicates that the participation in the meetings is significantly associated with the interaction level (increased/not increased) after the project (0.02) as well as the member who belong to any group (.019). Therefore, it can be said that **level of interaction** has a significant association with participation in decision making. Furthermore, participation in implementation also reported significance with the level of interaction as the construction of common services shows a significant association with the

interaction after this project (.015 ≤ .05) and group membership (.037≤.05). However, participation in the design and construction of the housing unit doesn't show any significant association with the level of interaction.

Besides, the **nature of interaction** indicates a significant association with the level of participation in decision making as well as the level of participation in design. From table 14, the kind of group in the community has significance with the participants in project meetings (.018) and the kind of group for other activities has significance with the participants who have direct contributions to make a decision (.05). Moreover, the kind of group for other activities also shows a significant association with the participants in designing house units (.019) as well as community layout (.019). However, it does not show any significant association with participation in implementation.

The table also shows that the people who think their interaction level increased as a part of the CDC are significantly associated with the people who participated in project meetings (.02). Also, the people who participated to construct common services are significantly associated with the people who shared their resources (.05) and who think their interaction increased for CDC membership (.015). Therefore, the **quality of interaction** is related to participation in decision making and participation in implementation.

In the Chi-square test phi-coefficient is the measure of association between two binary variables (DV and IV). It indicates the strength of the relationship which ranges from -1 to 1 where 0 means no relation 1 shows a very strong positive relationship (Glen, 2016). Annex-13 noted that most of the significant associations with the participatory approach and social capital indicate a moderate positive relationship, as the phi coefficient value varies from .302 to .383. For instance, membership of group* participation in project meeting (.368); interaction after the project*participation to construct the common services. Furthermore, the kind of group for other activities indicates a strong positive relationship as the phi coefficient is .445.

4.5.3 Perception of participation * interaction level

Before correlation, the reliability testing is done through Cronbach's Alpha test with the variable mentions in table 15. As the value Cronbach's Alpha is 0.73 which is greater than 0.7, the data is reliable for the spearman correlation.

Table 15:Spearman correlation - Perception of participation (PA) * interaction level (social capital) (by author)

Indicators	Interaction level(Very strong to very weak- Likert scale)
Perception: Participation in decision making How do you feel when you can give a decision at the meeting?	**.438*** **.005** (P value)
Perception: Participation in Design How much you feel you belong to it when you make your house plan?	.158 .331(p value)
How did you feel when you participate in the community layout?	**.368*** **.02** (p value)
Perception: Participation in Implementation How much you feel you belong to the house as you took part in the construction?	.159 .326
▭ Depedent variable – Social Cohesion (SV) ▭ Independent variable- Participation in [Decision making (SV)+ Design (SV)+ implementation (SV)] ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).	

Perception interaction level is positively correlated with all the indicators of perception of participation. Furthermore, the significance is seen with the perception of participation (.005<.01) in decision making and perception of participation in designing community layout (.020<.05). However, the perception of participation in Implementation has no significant relation with the interaction level.

4.5.4 Analysis from interviews through Atlas

The summary of the occurrence table from Atlas Ti, have analyzed to understand the causal relationship of participatory with social capital. It has also shown the frequency of quotations of each variable that will help to select the quotation to explain the relations more in-depth.

Table 16:Co-occurrence table summary: Causal relationship with the participatory approach and Social Capital from Atlas Ti. (graphical representation is at Annex-14) (By author)

Indicators	Frequency of Co-occurrence	Frequency of quotations
Level of Interaction * Participation in (Decision making+Design+Implementation)	6	17
		35+44+23
Nature of interaction (Group/ Individual) * Participation (Decision making +Design +Implementation)	11	24
		35+44+23
Quality of interaction (group/ individuals) * Participation (Decision making+ design+ implementation	14	25
		35+44+23

From interview1 to interview12 maximum co-occurrence is found between the quality of interaction and Participation in (Decision making+ design+ implementation) which is 14. It indicates that the interviewees mention the relationship with these variables by 14 times. it is visible from table 16 that all the indicators from social capital with all the indicators from the participatory approach have a positive relationship. Some quotations are mentioned here to support the relationships.

Interviewee 06 mentioned how their quality of interaction improved and mentioned, *"It is a great honor for me to work on this project, I got the opportunity to contact with so many officers, I went abroad and learned how the participation of each member of the community can create the strongest community."*

According to interviewee 2, *"After the completion of the project, they did not receive support from other projects, but due to increasing the social network, they are still surviving as they have saving credit activities among them".*

Moreover, *"when people interact with each other keeping the saving credit at the center, they become more mobilized which makes their bonding more strong."*

Town planner expert said, *"The beauty of a community-driven approach is that the community is telling their own story in-group through mobilized themselves. We enable them to speak on behalf of them."*

4.6 Overview form descriptive and statistical analysis concerning literature and secondary data (discussion):

From descriptive analysis and statistical analysis, it can be summarized that the participatory approach has a moderately positive influence on the improvement of social capital. However, the lack of participation in implementation hampered the quality of interaction which impact their saving credit activities. The descriptive and statistical analysis support that the level of interaction increased and the nature of the interaction has become more integrated than before, as the level of participation in decision-making is quite higher more than half of the people participated in designing. Although participation in project implementation is quite low, still people have involved in the construction of common services and share their resources as they have a strong group. Besides, the frequency of sharing resources and saving credit activities become unstable.

On the other hand, secondary data sources presented this project as an extensive successful example regarding participation throughout the design, planning, and implementation phase which contribute a crucial improvement to their social capital (communication skill, relationships) by improving the physical capital (UPPR, 2016). Besides, another report mentions the dissatisfaction of habitats as most of them couldn't participate in the implementation phase. Furthermore, the literature indicates that social capital is accelerated by collective actions where collective actions refer to participation that leads to synergy and reciprocity (Rupasingha et al., 2006; Sherrieb et al., 2010). Norris et al. (2008) mentioned social participation as one of the components to achieve social capital where participation encompasses the structured relationship of the group as well as individuals. Hamdi and Goethert (1988), mentioned micro-planning as an interactive and interdisciplinary process where interaction happens among several actors across different layers where individuals perception is valued. Thus it improves social capital through everyone's participation.

4.7 Sub Question: 03

The third sub-question is to analyze the influence of land tenure on improving social capital.

4.7.0 Introduction

To summarise the findings the first part has started with the descriptive analysis with support from quantitative and qualitative data findings according to each indicator. As the indicators from Social Capital (DV) are already discussed, this part has started with the analysis of Land Tenure (IV). After that, statistical analysis from SPSS software and interview summary from Atlas Ti have presented to understand the influence of land tenure on social capital. Finally, an overview has been discussed from the summary of descriptive and statistical analysis with the combination of literature and secondary data.

4.7.1 Land Tenure (Independent variable)

Empowerment and capacity building are two sub-variables of land tenure. Therefore, to understand the influence on social capital analysis has been done with all the indicators from social cohesion with the indicators from empowerment and capacity building.

4.7.1.0 Empowerment (Sub-variable)

4.7.1.1 Sense of ownership: (Indicator)

From graph 12, although 88% of people have legal documents 83% think that they have land ownership now. It happens because some of them still think the land belongs to the government and they cannot inherit it generation by generation. 85 % have an individual stamp which is by the name of the women of every HH 5% who are enlisted.

Table 17:Sense of ownership-summary from the interview (by author)

Summary	Out of 12
▪ As a part of the CDC, they had a strong community that helps them to raise their voice after the eviction and also give them access to the authority (land Ministry) to get the legal documents (Individual Stamp). Also, they feel empowered as they have ownership which gives them the confidence to make a partnership.	9
▪ However some of them are still not empowered with the ownership status as they think they will not inherit the land, they cannot even sell that.	2

Discussion: Community leader said, "*all of the documents were registered with the women's ownership, I also have my document.*" Adding that one official mentioned, *"The women who did not get out of their house for any purpose, after getting this ownership they got empowered and how they communicate with formal officials and other partners that is impressive."* According to literature, the SLM approach empowers the community network by making room for managing and planning their land (Kananke, 2010) which promotes a sense of ownership. Therefore, the process of getting land ownership helps to improve their nature and quality of interaction as well as the relationship in the group.

Graph 12: Sense of ownership & housing provision (Empowerment) (by author)   **Graph 11: Invesment to house fund**
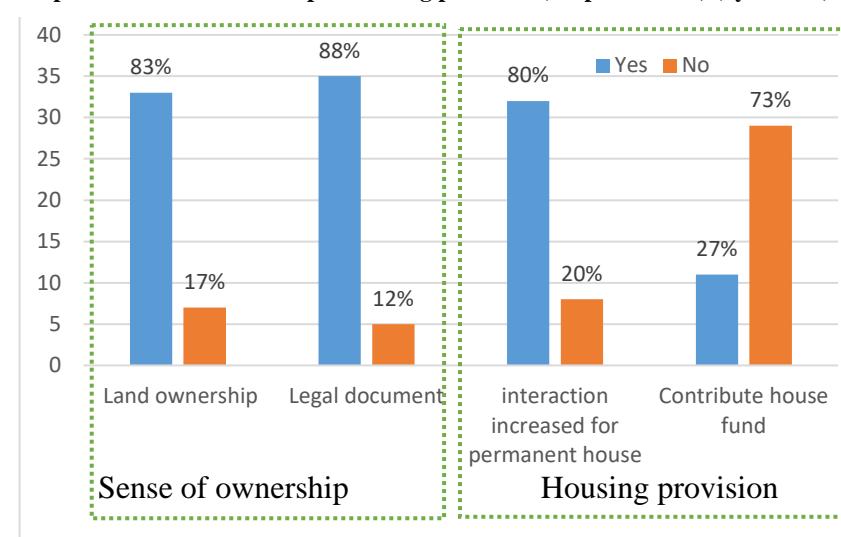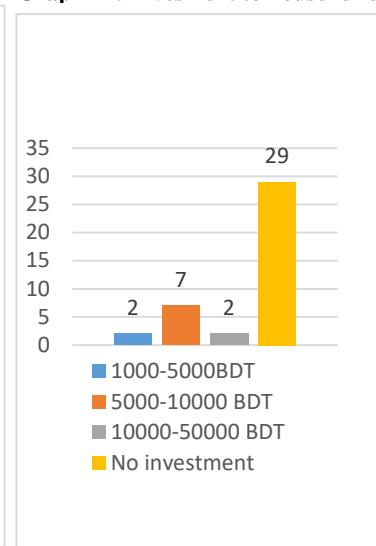
4.7.1.2 Housing provision: (Indicator)

All the HH get their own house and 80 % (graph 12) of them think that their interaction level increased as they have a permanent house now. However, from graph 11, only 26% of HH contributed to the house fund. Among them 16% invested only 5,000 to 10,00 BDT and 5 % invested from 10,000 to 50,000 BDT.

Table 18:Housing provision- summary from the interview (by author)

Summery	Out of 12
▪ As they have a permanent house to live together, now they feel more secure here which helps to increase their communication with each other. Also, their communication of community leaders with UPPR officials supports them to get the housing fund from CDMP.	10

▪ Also with CDC, they have collected partial funds for their house which also increases their bonding.	3

Discussion: The tenure security creates the housing provision with equal facilities and infrastructure which increases their bonding and sharing. Interviewee 8 noted that *"Our relationship with the neighbors is much better now because of the integrated settlement. We help each other in any kind of necessity for instance we share our daily necessities as well as working tools."* Adding that, SLM creates provision to form housing Coops with communal lease and making area planning with that (Kananke, 2010). However, the contribution to the housing fund is quite low which makes the imbalance distribution to their saving credit activity.

4.7.2.0 Capacity Building (Sub variable)

Graph 13:Skill building & access to credit (capacity building) (by author)
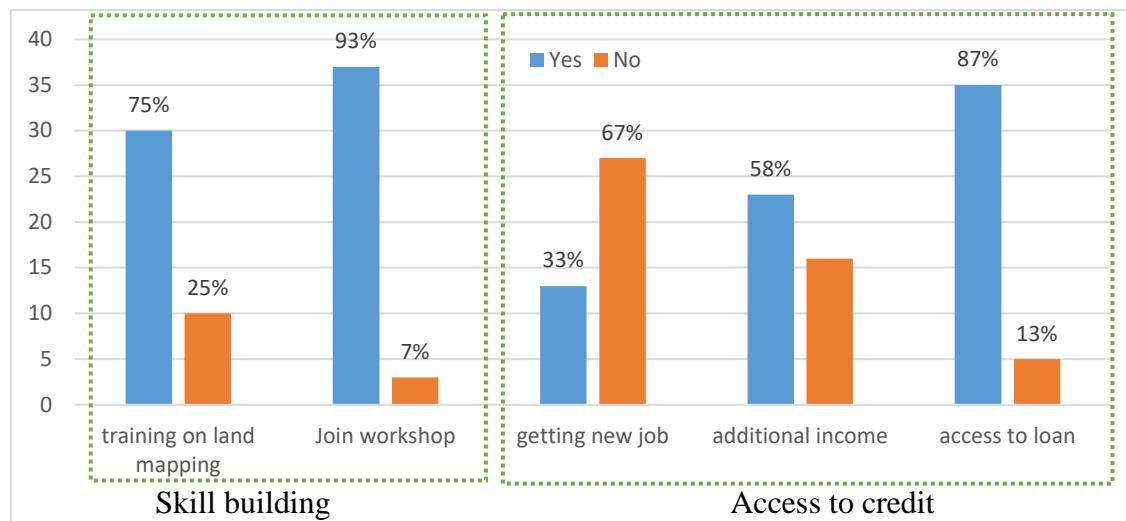
4.7.2.1 Skill-building (Indicator)
According to graph 13, 75 % of people got training on land mapping and 93% of people attend the workshops where they got training on house design and making the layout.

Table 19: Skill-building- summary from the interview (by author)

Summary	(out of 12)
▪ They attended the workshop together where they got training on design their house, making cluster layout in small subgroups that develop their skill as well as helped them to interact with each other.	9
▪ They have convinced and negotiated with the DC and UPPR staff to get tenure security which helps them to improve community skills as well as managing skills to get services.	5

Discussion: Therefore, this project indicates that community training, workshop, and making partnerships interactively increase their skill. One Community leader added, *"My experience has become much more than my age, just because of being in this project."* The SLM expert from Sri Lanka noted, *"It is not always the capacity building is only drawing lines, but also developing their human capital for instance managing skill and negotiating skill."* A vital

contribution of SLM is to train the community organization to manage and mapping land. Furthermore, it enables them to solve problems with land-related issues through negotiation with higher authorities, politicians through the articulation of their spatial knowledge (Kananke, 2010).

4.7.2.2 Access to credit:

Only 33% of people said that they get a new job (informal job) after coming here, most of them (67%) didn't get a new job, especially the women who worked as a housemaid in the neighboring area, they lost their job. However, 58% of them get an additional income source which is making paper packets for fruits or other stuff. Moreover, 87% of them think they are eligible now to get access to loan because most of them are a member of the CDC and CHDF (graph 13).

Table 20: Access to credit- summary from the interview (by author)
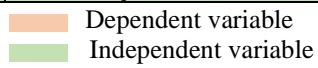
Summary	Out of 12
▪ They got training in design and planning which does not help them to make money. Most of them are involved in their previous job. Some women lost their job as they worked as a housemaid in the neighboring area.	08
▪ However, after coming here most of the housewives have made paper packets with each other assistance which is an additional income. Very few of them got training on tailoring.	11
▪ Being eligible to get a loan they need to be a part of the CDC (small business, education) or CHDF (house, land). Therefore, through interaction with the group, they get access to credit.	10

Discussion: Interviewee 10 reported that "*after coming here some of them can't find any new job, on top of that moving away from the city will increase their transportation costs*." Adding that, *"I have admitted my little boy to another school, as the transportation cost is 20 BDT per day which is too high for us"*. However, some of them got additional income sources as making fruit packets with paper. Adding that, "*after coming here I have started making it and the income is about 3/4k BDT per month if the sale goes well"*.Moreover, the group membership gives easy access to loans, but now the saving credit for housing funds is not going properly. Although the beneficiaries got the fund as a loan, later the authority couldn't manage them to repay and it becomes like a grant. According to literature, the initial SLM model with grant funding was not sustainable, as a result, it has replaced with the women saving credit group showed grant success in many cities (Kananke, 2010). Thus it hampered the quality of interaction.

4.8 Statistical analysis: Influence of land tenure (IV) to Social capital (DV)

This part has dealt with the analysis to identify whether there is any statistical significance or not between the variables. A Chi-square test has been conducted to identify the association between the indicators of land tenure (IV) and the indicators from social capital (DV). After that, a summary of the co-occurrence table is also shown in the later part to explain the casual relationship with the land tenure and Social Capital from Atlas Ti. Detailed Chi-square result is presented at ANNEX-15 and explanation in section4.5.2.

Table 21: Chi-square test (Land tenure * Social capital)

SV	Indicators	Level of interaction		Nature of interaction		Quality of interaction	
		After the project the interaction (increased / not increased)	Are you a member of any group? (Y/N)	Kind of group in the community (saving group/other groups)	Kind of group in for other activities (formal / informal)	Resource sharing (shared/not shared)	Frequency of resource sharing
		Significance level: **P-value**					
Empowerment (SV)	**Sense of ownership** 1.Do you have land ownership now? (Y/N) 2.Do you have legal documents? (Y/N)	**.05*** .157	.504 .583	**.006*** **.05***	.621 .533	**.001*** **.017***	**.018*** .092
	Housing provision 1.Did you contribute to the housing fund? (Y/N) 2.Is the relationship getting better as you own a permanent house now? (Y/N)	.944 **.000***	.372 **.002***	.659 .076	.551 .311	.288 .071	.437 .077
Capacity building (SV)	**Skill building** 1. Did you receive training on land mapping? (Y/N) 2.Did you attend the workshop? (Y/N)	**.031*** .088	.402 .826	**.03*** **.045***	.231 .926	.224 **.014***	.072 .128
	Access to credit 1.Did you get any new job after coming here? (Y/N) 2.Do you have any additional income source now? (Y/N) 3.Do you think it became easier for you to get a loan now that you own a house?	.807 .497 .157	.588 .076 .583	.826 .181 **.05***	.294 .189 .533	.736 .519 **.017***	.687 .454 .092

| Dependent variable |
| Independent variable |

* Null hypothesis is rejected if significance level, P-value ≤0.05

The chi-square test (table 21) denoted that the **level of interaction** is significantly associated with the sense of ownership, as land ownership shows a significant association with land ownership (.05). Moreover, the relationship for having a permanent house showed significance with the interaction level after the project (.000) as well as membership of the group (.002). Furthermore, receiving the training on land mapping is significantly associated with the interaction level after the project (.031) which indicates the significance of the skill-building. However, access to credit and contribution to housing fund hasn't shown any significant association with the interaction level.

The **nature of interaction** denoted a significant association with a sense of ownership as the kind of group has a significant association with land ownership (.006) and having legal documents (.05). Another significance is observed with the nature of interaction and skill-building, as the kind of group is significantly associated with the training on land mapping (.03) and the respondents who attended the workshops (.045). However, housing provision and access to credit except for the provision of getting a loan (.017).

Quality of interaction is significantly related to the sense of ownership as resource sharing indicates a significant association with land ownership (.001) as well as having legal documents (.017). Also, resource sharing has a significant association with the respondents who attend the workshops and access to getting loans. Therefore, skill-building and access to credit have a significant association with the quality of interaction through resource sharing. However, the frequency of resource sharing doesn't show any significance except land ownership (.018). Also, housing provision has no significant association with the quality of interaction.

4.8.1 Analysis from interviews through Atlas

After that, by using the summary of the occurrence table from Atlas Ti, it is explained how many times the indicators from the land tenure are correlated with the indicators of social capital. It also has shown the frequency of quotations of each indicator that will help to select the quotation to explain the relations more in-depth.

Table 22:Summary from Co-occurrence table (ANNEX- 17) with the Land tenure and Social Capital from Atlas Ti. (by author) (Graphical representation is at ANNEX-17)

Indicators	Frequency of Co-occurrence	Frequency of quotations
Level of Interaction *	**10**	17
▪ Capacity Building (Skill building, & Acess to credit)		48
▪ Empowerment (Sense of ownership & Housing provision)		45
Nature of interaction (Group/ Individual) *	**4**	24
▪ Capacity Building (Skill building, & Acess to credit)		48
▪ Empowerment (Sense of ownership & Housing provision)		45
Quality of interaction (group/ individuals) *	**11**	25
▪ Capacity Building (Skill building, & Acess to credit)		48
▪ Empowerment (Sense of ownership & Housing provision)		45

From interview 1 to interview 12 maximum co-occurrence is found between the quality of interaction with empowerment and capacity building which is 11. It indicates that the interviewees mention the relationship with these variables 11 times. And the minimum co-occurrence is with the nature of the interaction. Furthermore, from the summary of table 22, it is visible that all the indicators from social capital and all the indicators from the Land tenure show positive relationships. Some quotations are mentioned here to support the relationships.

The SLM expert from Sri-Lanka mentioned about how their negotiation skill is developed which improve their quality of social interaction. He noted: *"The whole land tenure achieved through a negotiation process from the community people. it was a negotiation with the government to give a long-term 99 years lease which builds the capacity among people."*

He also mentioned that *"It may take time, but also a long time doesn't matter because through this negotiation process they can continue by themselves to reach all of their needs."*

The town planner manager described," *We registered all the stamps at the name of the female member of the family. This brings a very strong societal change in the community, especially among women. They cannot even talk to an outsider before, now they are dealing with their problems to formal authorities."*

4.9 Overview form descriptive analysis concerning literature and secondary data

From the descriptive and statistical analysis, it can be summarized that land tenure has an influence on social capital through empowerment and skill-building. Because housing provision shows a strong positive relationship with the level of interaction (Annex-16) after the project. However, an uneven small contribution to the house fund slows down the saving activity. The sense of ownership also indicates a strong positive relationship with nature and quality of interaction (Annex-16). Furthermore, interaction (level, nature, quality) is influenced by skill-building in a moderately positive way (Annex-16). However, this project does not help to access income sources or jobs, although they got the land and house loan and some additional income sources.

According to literature, SLM regularized and allocate land through critical partnerships with communities, women saving groups, local government, NGOs, etc. As all groups from various interest come forward to achieve the same goal (Kananke, 2010), it creates the ground to increase interaction level and improve the nature and quality of interaction. Magigi and Majani, (2006) described that involving community in the land regularization system as a vital instrument to generate social capital as well as mobilize their resources to ensure land tenure. The social capital increase because of participation, fund contributions, as well as the landowner, get a chance to associate with the community which evolves the power of collective networking. Secondary documents reported the Mandarlota model is a successful example to mobilize the financial and political capital of a landless community through improving their social capital, as this approach integrated their networks and skills (UPPR, 2016).

Moreover, the following crosstabulation (graph 14) indicates that the respondents who think their interaction level is strong or very strong, most of them are empowered or highly empowered with land ownership. Therefore, perception ownership shows a proportional relation to the interaction level. The crosstabulation from graph 15 indicates that the respondents who think that their interaction level is strong or very strong, most of them also think that the interaction increased through their workshop and training.

Graph 14: Perception empowerment *interaction level (by author)

Crosstabulation:
How do you rate the interactions with your neighbors and friends?
*
How do you feel having this ownership?

Title: **BEYOND DWELLING:** Factors leading to the improvement of social capital in informal settlements: A case of UPPR project in Gopalgonj, Bangladesh.
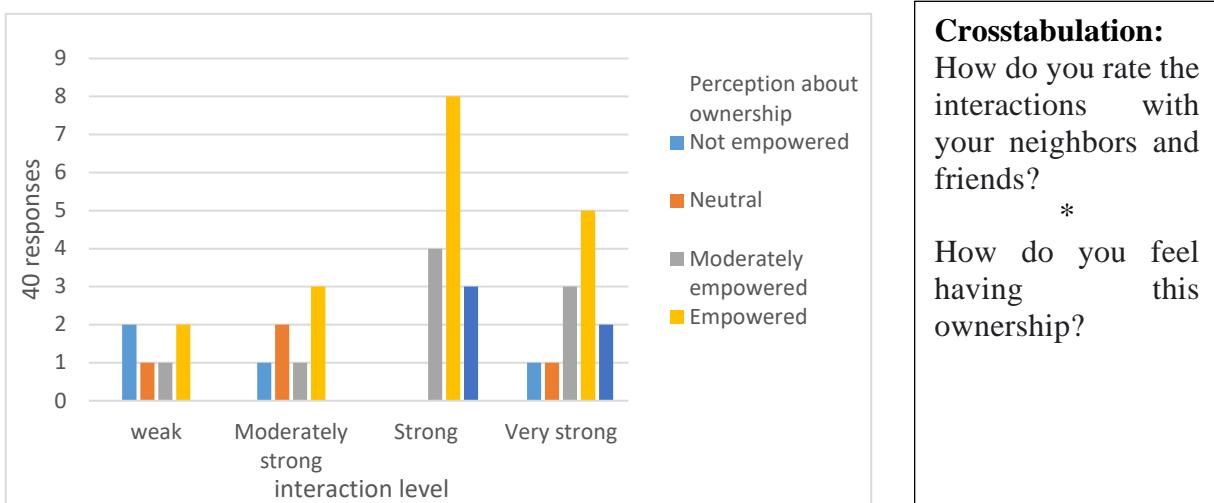
Graph 15:perception capacity building* interaction level (by author)
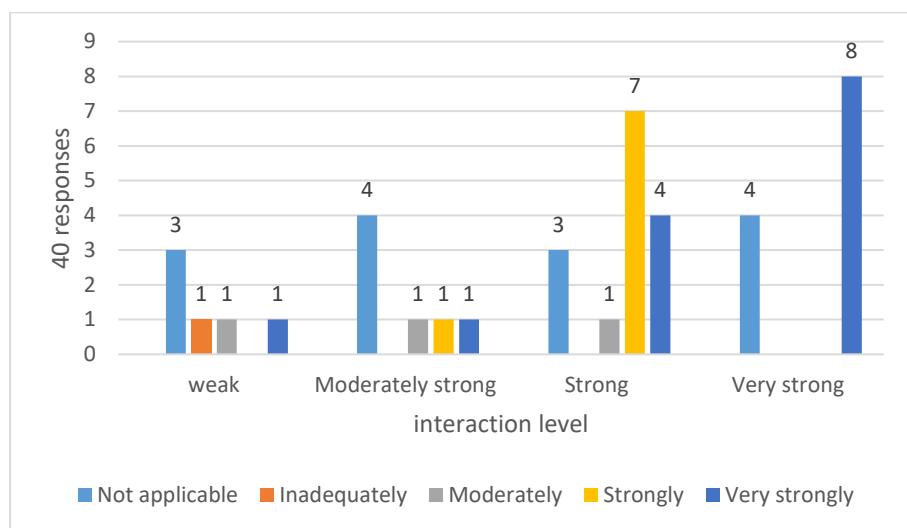
Crosstabulation:
How do you rate the interactions with your neighbors and friends?
*
How much the communication level increased, After this workshop/training?

Chapter 5: Conclusions

Introduction

The adjacent chapter has portrayed the summary based on the analysis in chapter 4 to answer the main research question by answering the sub research questions. Moreover, this part also discussed how the research can contribute to the growing literature and how the limitations impacted the research outcome. Although it is not from the expert, some recommendations have been provided from the observations of the outcome. Furthermore, a few suggestions have been denoted for further research scope.

Conclusion

The UPPR authority comes forward to support the vulnerable landless people at Gopalgonj and identified as a core problem that they have loosened their physical (house and land) and social capital. Therefore, to address this issue they have managed to support those people by providing them land tenure security as well as a participatory housing scheme. Thus, this research has conducted to identify how did the participatory approach and land influence improving their social capital.

The 1st sub-question was to explain, *How the UPPR project was implemented in Gopalganj?* It was mostly based on descriptive analysis to find who did what and what activities were done to reach the outcome. Bangladesh Government acts as the key actor along with UNDP and mobilized the landless community as well as the Gopalganj municipality. Govt. provide the land support; Housing fund comes from CDMP (major) and ACCA(partially) and the technical support provided by the UPPR project itself. The project was started with community workshops where the housing design experimented with their participation. Other vital activities were 2 international trips with selected community leaders and technical persons; focus group discussion during the construction period and when they feel the necessity to decide anything in a group. It took almost 4 years to complete 138 housing units.

Addressing the 2nd sub-question which was asked, *How did the **participatory approach** influence improvement in **social capital** in the Gopalganj UPPR project?* it was indicated from the analysis that the participatory approach has a moderately positive influence on improving

the social capital of the particular community. The descriptive analysis support that the level of interaction increased and the nature of the interaction has become more integrated than, as the level of participation in decision-making is quite higher and more than half of the people participated in designing. Inferential results also show a significant association with participation in decision-making and design with the level of interaction and the nature of the interaction (table 14) periodically. Participation in design has a strong positive relationship with the group for other activities (eg. electricity, water, and participation in decision making have a moderate positive relationship with the level of interactions as well as the nature of the interaction (Annex 13). Besides, resource sharing increased through participation. However, Hamdi and Goethert (1988) said, participation in decision making, designing, and implementation resulted in successful microplanning which is also reflected in this study. Because, it is identified that, the saving credit activity becomes uneven and irregular for the lack of participation in implementation (construction house unit) which hamper the quality of interaction. Still, participation in the design shows significant association with the group (informal) for the construction of common services, as through participation in design and decision making their bonding became strong which inspire them to create the informal group among them to meet their necessities.

Social Capital encircled with three elements including social participation, community bonds, and social support (Norris et al., 2008; Sherrieb et al., 2010). The study portrayed that social participation creates structured interactions of individuals with groups as well as organizations. Community bonding refers to citizen participation in collaborative activities with the group. By practicing these two elements the third one, social support can be achieved that refers to an individual's interactions with family and neighbours. In this research, the community people participated in communal groups e.g. CDC, CHDF which can be described as social participation, as it increases their interactions with organizations. Moreover, being a member of this group they have participated in project planning, design, and saving activity that improve community bonding. Together these two improve their relationships.

Addressing the 3rd sub-question which was asked, *To what extent did **Land Tenure** influence the improvement of **social capital** in the Gopalganj UPPR project?* it was found that land tenure has an influence on social capital through empowerment and skill-building. Where empowerment refers to making sense of ownership with land and housing provision among the community. Moreover, the sense of ownership also indicates a significant association (Table 21) and a strong positive relationship (Annex 16) with nature and quality of interaction.

Bailey (2010) described that when a particular community holds and acquired the land trust in a group, it not only gives the ownership but also works as a vehicle for community building by improving their interactions. Midheme and Moulaert (2013) added that collective tenure empowers them, as together they can be involved in land management and decision making.

Housing provision shows a significant association and a strong positive relationship with the level of interaction after the project. Literature also coherent with this, as Midheme and Moulaert (2013) claimed CLT as an innovative tool to facilitate housing for low-income urban poor and SLM is a method to facilitate housing of low-income communities in which the grassroots women took part saving group as a key stakeholder (Kananke, 2010). Thus creating a group among them and connect with the local government enhance their interaction level. However, the uneven small contribution to the house fund impacted the quality of interactions. Although initially they were supposed to repay the house loan, later they started to consider it as a grant which slows down the saving activity.

Furthermore, skill-building indicates a moderate positive relationship with social capital, as the interactions (level, nature, quality) show significant association with skill-building. According

to Kananke, (2010) SLM is an innovative tool for changing the tenure status of urban poor but also contributes to capacity building by developing their skills through workshops and training. Thus it helps to expand the community interaction with other stakeholders (municipality, private parties). However, this project does not help to access new income sources or jobs, although they got the land and house loan and some additional income sources.

To conclude the main research question, It can conclude that the participatory approach and land tenure both influence improving social capital. To what extent they influenced is described in the above section addressing sub-question 2 & 3. However, the participatory approach indicates a moderate positive relationship which is not significant as described in the literature. The identified reason behind that 100% participation was not possible in this project. That is obviously coherent with the microplanning concept of Hamdi and Goethert (1988). Addressing Land tenure, it can be to summarize that land tenure indicates strong positive relation through empowering and moderate positive through skill-building. Adding that, the participation process of availing the collective land tenure influence to improve social capital, not the tenure itself. Literature is also coherent at this point. Magigi and Majani (2006) claimed community involvement in land regularization as a collective social theory of networking where community participation plays a vital role to engender(synonym) social capital. Nour (2011) pointed at the community based participatory approach that empowers the community through capacity building by focusing on their rights e.g. tenure security, self-help housing, awareness building. Therefore, it is clear there is a bridge between the two independent variables: the participatory approach and the land tenure. In essence, the conceptual framework indicates another potential relationship with land tenure and participation.

Relating to limitations and relevance

The identified main challenge was to deal with the COVID-19 pandemic which causes a lot of obstacles during the data collection period. The targeted population couldn't reach as some of the respondents were unwilling to face the questionaries and interview. However, it didn't impact that much because the saturation level was reached after covering 30 respondents. Another challenge was to ensure external validity, as the study was based on a single case. It was dealt with data triangulation according to each indicator. However, access to the site was impossible during the survey period which might provide an in-depth observation to the researcher.

Above all of this, the research still has relevance to the growing academic literature about improving social capital, thus social sustainability (SS). Dempsey et al.(2011)mentioned social sustainability as a dynamic idea that is neither constant nor absolute and the image is still fuzzy. This research analyzed the linking bridge to social sustainability to social capital which also can contribute to the growing literature about social capital along with SS. Referring to asset pentagon by DFID (1999) indicates how social capital is interrelated with the other capitals. Thus it also has relevance to improving other capital through improving social capital

Recommendations

A few recommendations are explained as follows based on the observations of the research analysis:

- As it is visible from the research outcome that less participation hampers their quality of interactions. Therefore, while scaling up, participation should be ensured at each level including decision-making, designing, and implementation to improve social capital. Moreover, it should take into consideration how maximum participation can be ensured.

- Providing housing funds is more fruitful rather than support them with a grant, as it can increase the scope to build their capacity as well as saving credit activity can be more integrated, thus can contribute to improving the social capital.

- While supporting the landless people with tenure security it should take into consideration that does the relocation will impact positively or negatively on their social and physical capital.

Further research suggestion

The research outcome found that social capital increasing immensely, but the participatory approach and land tenure create a moderate influence on that improvement. Therefore, there are still other factors behind it. Hence, further research can be conducted on what are the other factors that influence the improvement of social capital? Also how everyone's participation can be ensured while implementing this type of project?

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ANNEX

Annex 1: Sustainable Livelihood framework
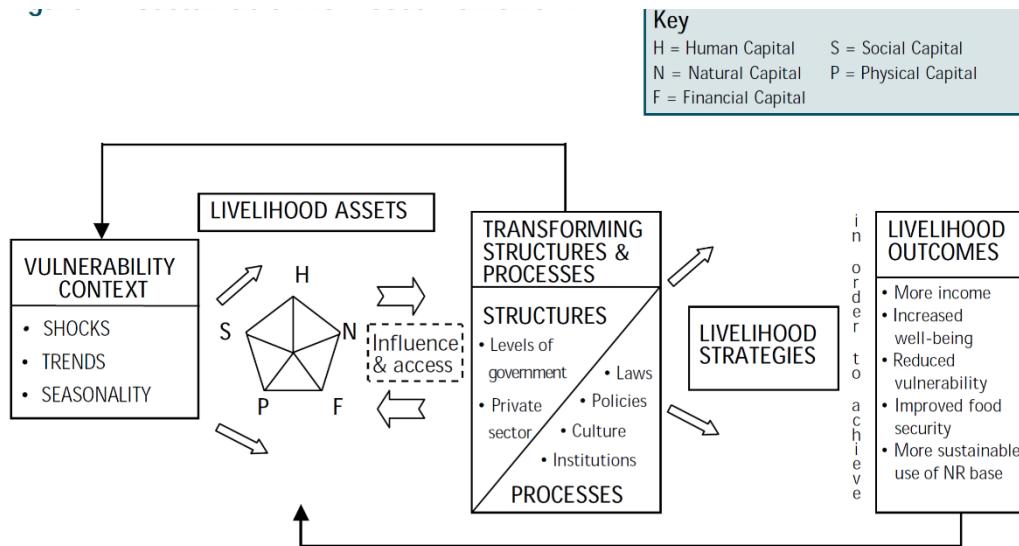
Figure 7: sustainable livlihood framework (DFID, 1999; P.1)

Annex 2 : Sampling method and target population

For interviewees			
	Committee name	interviewees	Number
Purposive sampling	officials	1.Project manager 2.Planner 3.The responsible person from UPPR(management) 4. responsible person from the municipality	Try to take interviews with all of them according to availability. Not less than 10.
	Community people	6. president of the committee 7.community leaders (exact no can be identified from the official) 8. other members of CDC	
For questionaries to Households (HH)			
	Population size	Target population	Number
Snowball sampling	Population size:138 HH	Initially started with the community leaders, will be decided when the process will be repeated.	57 (see section 3.5)

Annex 3: variables, sub variables and indicators

Theory/Concept	Variables	RQ	Sub Variables	Indicators	Scale of measurement	Data Sources	Data collection method	Research instruments	Questionnaires
SOLA model	Social Capital (dependent v.)	Sub question 2 and 3	Social Cohesion	**Level of interactions** - with other community members -with other groups	Ordinal	Household, Community leaders, officials, documents	Quantitative & qualitative	Questionnaires, Interviews, project reports (primary, Secondary)	Do you communicate with your neighbours for any kind of help? If yes how often you tell them for this kind of help? In the month? Are you a member of any group in the community? If yes since when? Has the level of interaction with your neighbours increased now that you are part of the CDC? / after the project? How?
				Nature of the interaction (group/ individual) -Formal group -Informal group	Ordinal	Household, Community leaders, officials, documents	Quantitative & qualitative	Questionnaires, interviews, project reports (primary, secondary)	What kind of group it is? Do you share your leisure activities with friends and neighbours? What kind of activities? Do you have any casual group among yourself for leisure or other activities? What kind of group? Kind of other activities?
				Quality of interaction (group/individual) -Sharing resources and information interest to work together	Ordinal	Household, Community leaders, officials	Quantitative & qualitative	Questionnaires, Interviews (primary)	Do you share your resources with neighbours? If yes how often you do that? What type of resources do you share with each other? How do you rate the interactions with your neighbours and friends?
Microplanning (Community Action Planning)	Participatory Approach (int. V)	Sub question 2	Decision Making	**Level of participation in decision making** -of attended meetings with formal groups (UPPR, municipality, and ACCA)	Nominal	Household, Community leaders, documents	quantitative	Questionnaires, UPPR (secondary, primary)	Did you participate in any meeting of the UPPR project? If yes, Which group you participated in the meeting?
				Perception of participation in decision making - of habitants who feel satisfied with participation	Ordinal	Household, Community leaders, officials	Qualitative	Questionnaires, Interviews (primary data)	Did you get a chance to contribute to making any decision in the meeting? How do you feel when you can give a decision at that meeting?
			Design	**Level of participation in the design process** -Percentage of habitants who participate in planning the community layout. - Percentage of habitants who participate in designing their housing unit.	Ratio	Household, Community leaders, documents	quantitative	Questionnaires, UPPR (primary, secondary)	Did you participate in making the layout of your neighbourhood? Y N Did you make any plan or model of your house unit? Y N Do you know anybody that has done it: y n How many people

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				Indicator	Level	Source	Type	Tools	Questions
				Perception of participation in the Design - of habitants who feel empower by with decision making power	Ordinal	Household, Community leaders, officials	Qualitative	Interviews, Questionnaires (primary data)	How did you feel when you participate in the community layout? How did you feel when you make your house plan? If you get another chance to develop your house, will you feel interested in it? Do you think that with what you know, now you can help your friend/neigbours to develop their house plans? y / n
			implement ation	**Level of participation in the implementation** - Percentage of habitants who are involved in the construction of their own housing unit / construct common services (Tube wells, Pathways)	Ratio	Household, Community leaders, documents	quantitative	Questionnaires, UPPR (primary, secondary)	Did you participate to construct your house unit? (Y/ n) If yes what type of work you did? Did you participate to construct the common services such as tube well and pathways? Y n Which common service?
				Perception of participation in the implementation - of habitants who feel the belongingness through participation	Ordinal	Household, Community leaders, Officials	Qualitative	Interviews, Questionnaires (primary data)	How much did you feel you were part of the housing project
Settlement and Vacant land mapping (SLM) & Community Land Trust (CLT)	Land Tenure (independent v.)	Sub question 3	**Empower ment**	**Sense of ownership** -of residents who feel empowered with individual land title	Ordinal, nominal	HH,C leaders, officials	quantitative & qualitative	questionnaires, interviews, UPPR (Primary)	Do you have land ownership now? (Y/N) What kind of document? Do you have the legal documents for that? What kind of legal document do you have? How do you feel having this ownership?
				Housing provision -Number of residents who are inspired to invest in the house		Household, Community leaders, documents			Did you contribute to the housing fund? y / n If yes, how much you are willing to invest in the house? Do you think the interaction level increased as u have a permanent house now?
			Capacity Building	**Skill building** -percentage of residents got training on land mapping	Nominal	Household, Community leaders, officials	quantitative	Questionnaires, UPPR (primary, Secondary)	Did you receive any training on land mapping and selection? Do you think you can apply the skill later if necessary?
				Access to credit -percentage of residents got the scope to additional income activities or a new job	Ordinal	Household, Community leaders, officials	quantitative & qualitative	questionnaires (Primary)	Did you get any new job after coming here? If yes, what kind of job? Do you have any additional income source now? Do you think it will be easier for you to get a loan from the banks now that you own a house? In what will you use the loan?
Poverty reduction	UPPR project	Sub question 1		**Duration (period)**	Ratio	Documents, Official A, Official type B	quantitative, qualitative	UPPR, Interviews, Questionnaires, (Primary, secondary)	How much time does it take to reach the outcome?
				Involved stakeholders -formal level - Community-level	Ordinal	Community leaders, Officials, documents			Which organizations were involved from the private and Govt. level? Which organization were involved from the community level? What kind of support did you get from private organizations and the government level?
				Activities - Community-level actions (workshops) - Focus group discussion		Community leaders, Officials, documents			How many people participate in each phase? Did you arrange any workshop or training? If yes, What kind of workshop or training? How much their interaction level increased as you participated in the workshop/training?

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Annex:4 Questionnaires for community participants

General information:
Name: …………………………………….
Age: …………………………………….
Marital status: …………………………….
Gender:

Male	female

> **Social Capital:**

Do you communicate with your neighbours for any kind of help?

Yes	No

If yes how often you tell them for this kind of help?

More than 4	2-4 times	1-2 times	Once in a month	never

Are you a member of any group in the community?

Yes	No

If yes form when?

After coming here	Before coming here	Intend to join

Has the interaction level increased as you are a member of the group (CDC)

Yes	No

How the interaction level has increased?
- o By sharing knowledge
- o By leisure activities
- o By helping each other
- o By working together
- o Others

What kind of group it is?
- Saving group
- Other groups
- Not applicable

Do you share your leisure activities with friends and neighbours?

Yes	No

What kind of activities?
- o Playing games (Karam, Ludu, card)
- o Group talks (gossiping)
- o Cultural activities
- o gardening
- o Others

Do you have any casual group among yourself for leisure or other activities?

Yes	No

Do you share your resources with neighbours?

Yes	No

If yes how often you do that?

Very frequently	frequently	often	Very often	Not shared

What type of resources/support do you share?

financial	Daily necessities	Moral support	Physical labour	Not applicable

How do you rate the interactions with your neighbours and friends?

Very strong	strong	Moderately strong	weak	NA

Has the interaction level increased after the project?

Yes	No

➢ **Participatory approach**

Did you participate in any meeting of the UPPR project?

Yes	No

Did you get a chance to contribute to making any decision in the meeting?

Yes	No

If yes, how do you feel when you can give a decision at that meeting?

Very honoured	honored	Moderately honoured	neutral	NA

Did you participate in making the layout of your neighbourhood?

Yes	No

Did you make any plan or model of your house unit?

Yes	No

How did you feel when you participate in the community layout?

Very satisfied	Satisfied	Moderately satisfied	neutral	NA

When you make your house plan, how much you feel you belong to it?

Entirely	moderately	Relatively more than before	Neutral	NA

If you get another chance to develop your house, will you feel interested in it?

Join happily	neutral	Not join

Did you participate to construct your own house unit?

Yes	No

If yes what type of work you did?

Preparing raw materials	Building (wall, fencing)	Finishing work	Painting/plastering	NA

Did you participate to construct common services such as tube well and pathways?

Yes	No

Which common services?
- o Pedestrian/ walkways
- o Common toilets
- o Waste management

o Tube well/ Water management

o others

How much you feel that you belong to it by participating in the construction work?

Entirely	moderately	Relatively more than before	Neutral	NA

> **Land Tenure:**

Do you have land ownership now?

Yes	No

Do you have the legal documents for that?

Yes	No

How do you feel having this ownership?

Highly empowered	Empowered	Moderately empowered	Neutral	NA

Did you contribute to the housing fund?

Yes	No

If yes, how much you have invested in the housing fund? (BDT)

1,000-5,000	5,000-10,000	10,000 -50,000	50,000-1,00,000	Not applicable

Did you receive any training on land mapping and selection?

Yes	No

Do you think you can apply the skill later if necessary?

interested	Not interested

Did you get any new job after coming here?

Yes	No

If yes what kind of job?

Permanent/formal	informal

Do you have any additional income source now?

Yes	No

How much you earn from that? (BDT)

1000-1500	1500-2000	2000-3000	More than 3000	Not applicable

Do you think it will be easier for you to get a loan from the CDC now that you own a house?

Yes	No

In what will you use the loan?

o Improving house

o For land

o For small business

o For education

o others

Is the relationship getting better as you own a permanent house now? (Y/N)

Yes	No

UPPR project
How much time does it take to reach the outcome?
Which organizations were involved from private and Govt. level?
Which organization were involved from the community level?
- o CHDF
- o CDC
- o Women group
- o Saving group
- o Others

What kind of support did you get from private organizations and government level?
- o Land ownership
- o Fund for house
- o Capacity building (training/workshop)
- o Mental support
- o Others

How many people participate in the project?
- o 1-50 households
- o 50- 100 households
- o 100- 150 households
- o Every household
- o None

Did you receive any workshop or training?
If yes, What kind of workshop or training?....................................

Tailoring, wiring	Urban agriculture	Planning & Design	Mapping	Others

How much the communication level increased, After this workshop/training?

Strongly	Moderately	Average level	Inadequately	Not really

Annex 5: Interview guide

For officials :
Social Capital
1. Are the community people involved in any group of the community? From when?
2. Has the level of interaction with their neighbours increased now that they are part of the X group?
3. How the interaction level has increased? Why?
4. What kind of group it is?
5. Do they share their leisure activities with friends and neighbours? What kind of activities?
6. Do you have any casual group for other activities? What kind of group? What kind of other activities?
7. Do they share resources with neighbours? What type of resources?
8. How do you rate the interactions with their neighbours and friends? Why?

Participatory approach:
9. How (many) did you manage people to participate in the meeting of the UPPR project? With which group?
10. Did they get a chance to contribute to making any decision in the meeting?
11. How do they feel when they can give a decision at that meeting? Why?
12. How did people participate in making the community layout of their neighbourhood?

13. How did people participate in making the plan or model of their own house unit?
14. How did they feel when they participated in the community layout? Why?
15. What was their feeling by making their own house plan? Why?
16. Do you think that they can use their skill now to help their friend/neighbour to develop their house plan? How?
17. How did people participate to construct the housing unit? What type of work they did?
18. Did they participate to construct the common services such as tube well and pathways? How?
19. How much did you feel you were a part of the housing project? Why?

Land Tenure
20. How did you support them to have land ownership and legal documents?
21. What do you think about their feeling by having this ownership? Why?
22. How did they contribute to their housing fund? Can you brief the process?
23. What kind of training did they receive on land mapping and selection? How?
24. Do you think they can apply the skill later if necessary?
25. Did they get any new job after coming here? What kind of job?
26. Do they have any additional income source now? What kind of sources? How much you earn from that?
27. Do you think it will be easier for them to get a loan from the banks now that you own a house? How they can proceed with the loan?

UPPR project
28. How much time does it take to reach the outcome?
29. Which organizations were involved from private, Govt. level, and community level? What kind of support did they provide? How they participated?
30. How many people participate in the project?
31. What kind of training and workshops were arranged? How? Why?
32. How much the communication level increased, After this workshop/training?

Community leaders:

Social Capital
1. How do community people communicate with neighbours for any kind of help? Which groups you are involved in the community? Since when?
2. Has the level of interaction with your neighbours increased now that community people are part of the X (several) groups? How? Why?
3. What kind of group it is? How does it function?
4. What kind of leisure activities do they share with friends and neighbours? How?
5. Do you have any casual group for other activities? What kind of activities? How you arrange that?
6. What kind of resources people share with neighbours? How often?
7. How do you rate the interactions of community people with neighbours and friends? Why?

Participatory approach:

8. With which group you participated in meetings? Did you get a chance to contribute to making any decision in the meeting? How?
9. How did you feel when you can give a decision at that meeting? Why?
10. Did you participate in making the layout of your neighbourhood? How? How did you feel when you participate in the community layout? Why?
11. Did you make any plan or model of your own house unit? How much you feel you belong to it when you make your own house plan? Why did you feel that?

12. How many people from your community participated? How did you contribute to managing them?
13. If you get another chance to improve your house, how much will you feel interested in it? Why?
14. Do you think that with your skill now you can help your friend/neighbour to develop their house plan? How?
15. Did you participate to construct your house unit? what type of work you did?
16. Did you participate to construct the common services such as tube well and pathways? Which services? How?
17. How much did you feel you were a part of the housing project? Why? What do you think about the feeling of other participants?

Land Tenure
18. Do you have land ownership and legal documents now?How did you get that?
19. How do the community people feel having this ownership?
20. Did every household contribute to the house fund? What was the process to collect the fund?
21. Did everybody receive the training on land mapping and land selection? What type of skill they received? How they can apply this later if necessary?
22. Did the community people get a new job after coming here? What kind of job? Do they have any additional income source now? How much they earn from that?
23. Do you think it will be easier to get a loan from the banks now that all of you have owned a house? Why? How do you want to use the loan?

UPPR project
24. How much time does it take to reach the outcome?
25. Which organizations were involved from the private and Govt. level and community level?
26. What kind of support did you get from private organizations, government level, and community level?
27. How many people participate in the project? Can you explain the participation process briefly?
28. Did you receive any workshop or training? What kind of workshop/training?
29. How much the communication level increased, After this project? Why?

Annex 6: type of secondart data

▪ Gopalganj housing Booklet-Spora
▪ Gopalganj Housing brochure
▪ Yearly report by UPPR on Urban partnership for Poverty Reduction project
▪ Mid-term review on Urban Partnership for Poverty Reduction
▪ Fact-finding report on Mandartola Resettlement Housing Scheme
▪ Workshop report (Housing by people at Mandartola)
▪ Internship report on comprehensive site planning and low-cost housing in Mandartola, Gopalganj.
▪ Publications by UNDP; UNHABITAT and ACCA based on UPPR project. (websites)

Annex 7: UPPR project – stakeholders and activities (summary from interview)

<table>
<tr><td></td><td>Indicators</td><td>Summary from interview</td><td>Frequency (out of 12)</td></tr>
<tr><td></td><td>Duration</td><td>4 years (from 2011 to 2015)</td><td>11</td></tr>
<tr><td rowspan="2">Involved Stakeholders</td><td>Formal Level</td><td>Technical assistance :
UPPR (Urban Partnership for Poverty Reduction-(supported by UNDP and UKaid)),
ACHR (Asian Coalition for Housing Rights)
Goplaganj municipality
Institutions (KUAD, CODI)
Financial assistance
CDMP (Comprehensive Disaster Management Program)
ACHR/ACCA
UPPR (supported by UNDP and UKaid)
Land support
LGED,
Land Ministry,
Bangladesh Government.</td><td>09</td></tr>
<tr><td>Community Level</td><td>CDC   - Community Development Committee

CHDF - Community Housing Development Fund

PIC   - Project Implementation Committee</td><td>12

5</td></tr>
<tr><td rowspan="2">Activities</td><td>Communilevel action</td><td>7- days workshop with community
Subgroup discussions (Several according to necessity)
2 international visit (Thailand, Srilanka- only community leaders, officials)</td><td>10

6</td></tr>
<tr><td>Focused   group discussion</td><td>Weekly meeting for sharing progress & making the decision during the implementation phase</td><td>4</td></tr>
</table>
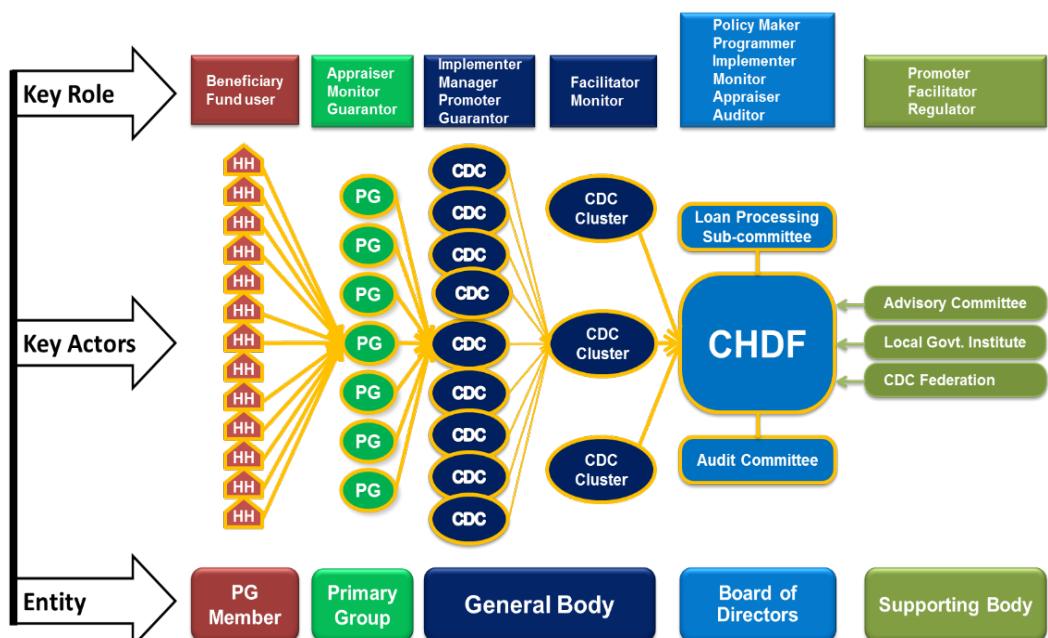
Figure 8:governance structure of CHDF and CDC (UPPR report)

Annex 8 : participatory workshop image

Photograph 1: Participatory workshop; source:UPPR workshop report, 2011; P.05

Annex 9: Quality of interaction (Graph)

1. Has the interaction level increased that you are the part of CDC/ CHDF?

40 responses

- ● Yes
- ● No
- ● Not applicable

12.5%

82.5%
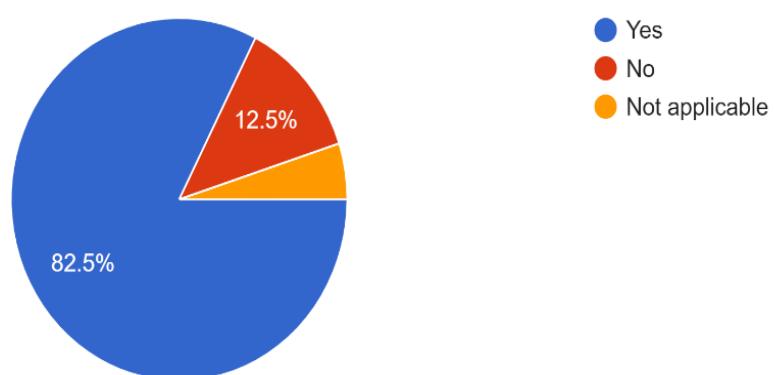
2. Do you share your resources? (after the project)

After-Shareing resources with neighbors

10; 10%

90; 90%

■ No ■ Yes
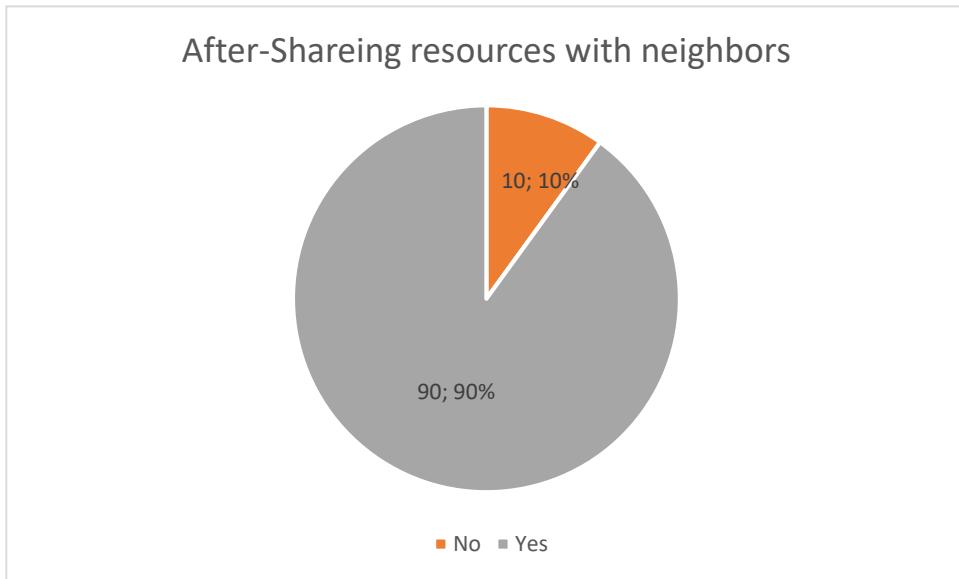
3. Do you share your resources? (Before the project)

Before- Shareing resources with neighbors

25; 25%

75; 75%

■ No ■ Yes
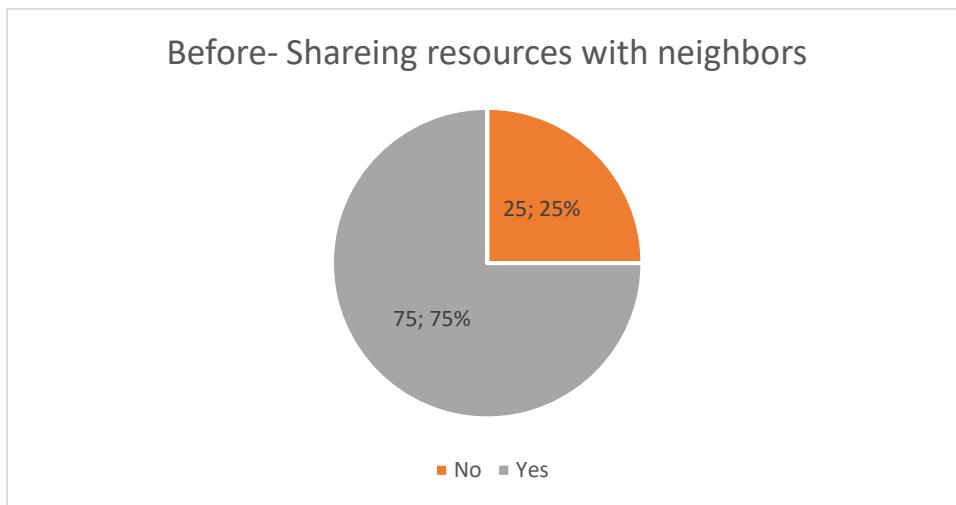
Annex 10: Perception of participation (Graph)

How do you feel when you can give a decision at that meeting?
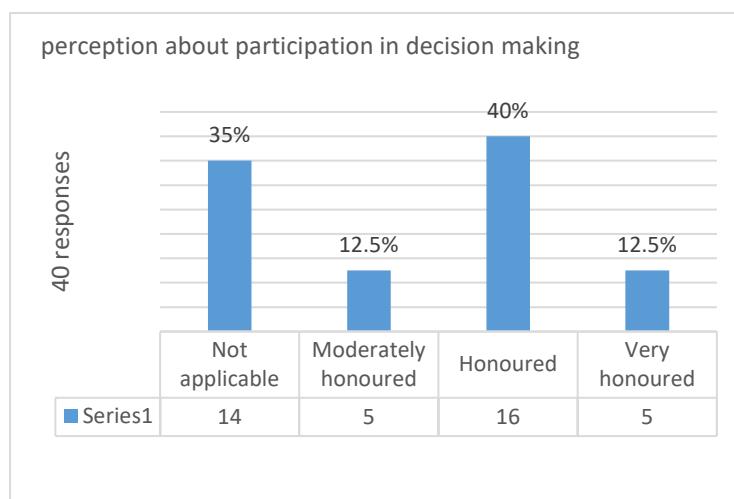
perception about participation in decision making			
	Not applicable	Moderately honoured	Honoured	Very honoured
	35%	12.5%	40%	12.5%
Series1	14	5	16	5

(40 responses)

How much you feel you belong to it when you make your own house plan?

perception about participation in making house plan				
	Not applicable	Neutral	Relatively more than before	Moderately	Entirely
	35%	5%	10%	20%	30%
Series1	14	2	4	8	12

(40 responses)

How much you feel you belong to the house as you took part in the construction?

Perception about participation in Implementation			
	Not applicable	More than before	Moderately	Entirely
	70%	7.5%	7.5%	15%
Series1	28	3	3	6

(40 responses)
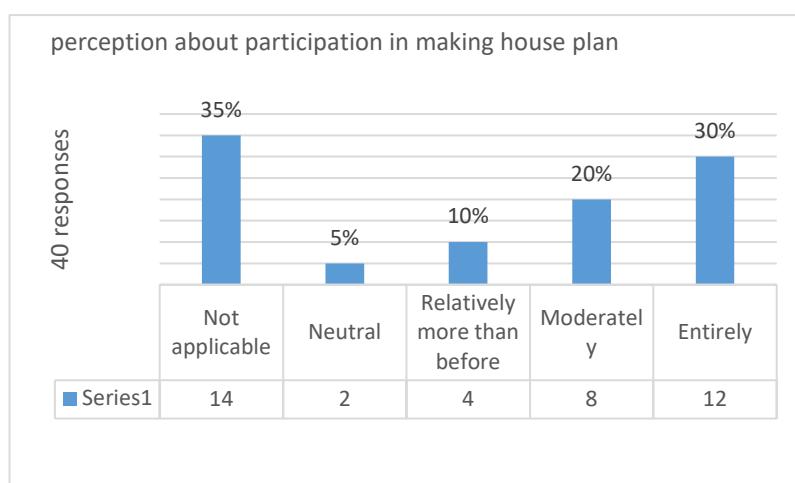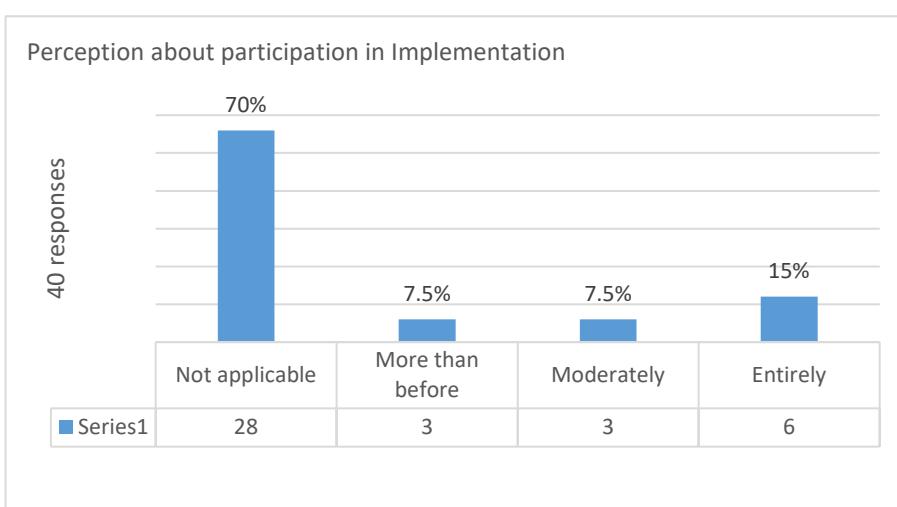
Annex 11: paired sample T-test result (After & before the project)

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	After- Communicate with neighbors	.93	40	.267	.042
	before - Communicate with Neighbour	.78	40	.423	.067
Pair 2	After- Member of any group	.95	40	.221	.035
	Before- member of group	.08	40	.267	.042
Pair 3	shareing leisure activities with friends and neighbors	.85	40	.362	.057
	Before- shareing leisure activities with friends and neighbors	.68	40	.474	.075
Pair 4	After- Casual group for other activities	.60	40	.496	.078
	Before-Casual group for other activities	.35	40	.483	.076
Pair 5	After- kind of group	1.80	40	.516	.082
	Before- kind of group	.08	40	.267	.042
Pair 6	Kind of group for other activities	.70	40	.648	.103
	Before- Kind of group for other activities	.4000	40	.59052	.09337
Pair 7	After-Shareing resources with neighbors	.90	40	.304	.048
	Before- Shareing resources with neighbors	.75	40	.439	.069
Pair 8	after-Frequency of resource sharing	2.48	40	1.339	.212
	Before -Frequency of resource sharing	2.35	40	1.477	.234

Paired Samples Test

| | | Paired Differences | | | | | | | Sig. (2-tailed) |
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | t | df | |
					Lower	Upper			
Pair 1	After- Communicate with neighbors - before - Communicate with Neighbour	.150	.362	.057	.034	.266	2.623	39	**.012**
Pair 2	After- Member of any group - Before- member of group	.875	.335	.053	.768	.982	16.523	39	**.000**
Pair 3	After-shareing leisure activities with friends and neighbors - Before- shareing leisure activities with friends and neighbors	.175	.385	.061	.052	.298	2.876	39	**.006**
Pair 4	After- Casual group for other activities - Before-Casual group for other activities	.250	.439	.069	.110	.390	3.606	39	**.001**
Pair 5	After- kind of group - Before- kind of group	1.725	.640	.101	1.520	1.930	17.046	39	**.000**
Pair 6	After- Kind of group for other activities - Before- Kind of group for other activities	.30000	.56387	.08916	.11967	.48033	3.365	39	**.002**
Pair 7	After-Shareing resources with neighbors - Before- Shareing resources with neighbors	.150	.362	.057	.034	.266	2.623	39	**.012**
Pair 8	after-Frequency of resource sharing - Before -Frequency of resource sharing	.125	.404	.064	-.004	.254	1.955	39	**.058**

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UPPR project in Gopalgonj, Bangladesh.

Annex 12: Chi-square test (Level of participation * Social capital)

As the chi-square is possible only a 2X2 table, the number of the table is too many. Therefore, some examples are presented here for detailed understanding.

- **Has the level of interaction increased after the project (increased/ not increased)? * Participate in decision making**

Crosstab

Count

		Participate in decision making		Total
		No	Yes	
5.Has the level of interaction with your neighbors increased after the project?	No	2	5	7
	Yes	1	32	33
Total		3	37	40

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.430[a]	1	.020
Continuity Correction[b]	2.373	1	.123
Likelihood Ratio	3.973	1	.046
N of Valid Cases	40		

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .53.

b. Computed only for a 2x2 table

- **Has the level of interaction increased after the project (increased/ not increased)? * participation to construct the common services**

Count

Crosstab		participation to construct the common services		Total
		No	Yes	
5.Has the level of interaction with your neighbors increased after the project?	No	5	2	7
	Yes	8	25	33
Total		13	27	40

Chi-Square Tests

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.372ᵃ	1	.037*
Continuity Correctionᵇ	1.733	1	.188
Likelihood Ratio	4.719	1	.030
N of Valid Cases	40		

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .65.

b. Computed only for a 2x2 table

▪ Member of any group * participation to construct the common services

Count

Crosstab

		participation to construct the common services		
		No	Yes	Total
3.Member of any group	No	2	0	2
	Yes	11	27	38
Total		13	27	40

Chi-Square Tests

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.372ᵃ	1	.037*
Continuity Correctionᵇ	1.733	1	.188
Likelihood Ratio	4.719	1	.030
N of Valid Cases	40		

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .65.

b. Computed only for a 2x2 table

kind of group * Participate in decision making

Crosstab

Count

		Participate in decision making		
		No	Yes	Total
7.kind of group	Not applicable	1	1	2
	other group	1	3	4
	Woman saving group	1	33	34

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.992[a]	2	.018*
Likelihood Ratio	5.016	2	.081
Linear-by-Linear Association	7.784	1	.005
N of Valid Cases	40		

a. 5 cells (83.3%) have expected count less than 5. The minimum expected count is .15.

▪ **Kind of group for other activities * participation in making plan or model of house unit**

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.912[a]	2	.019*
Likelihood Ratio	8.208	2	.017
Linear-by-Linear Association	.167	1	.683
N of Valid Cases	40		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.40.

Crosstab

Count

		participation in making plan or model of house unit		Total
		No	Yes	
11 Kind of group for other activities	Not applicable	8	8	16
	Informal group	3	17	20
	formal group	3	1	4
Total		14	26	40

Annex 13: Phi –coefficient from chi-square test ((Level of participation * Social capital)

The value of Phi-coefficient pointed the strength of the relationship varies from -1 to 1, where 0 means no relation and 1 means very strong positive relation; .30 to .39 means moderate positive relationship; .40 to .69 mean strong positive relationship (Glen, 2016)

Indicators **Independent variable** ▬ **Dependent variable** ▬	Questions (construct) under each indicator	Phi-coefficient
Level of participation in decision-making ***** **Level of interaction**	Did you participate in any meeting of the project? * After the project the interaction (increased / not increased)	.368
	Did you participate in any meeting of the project? * Are you a member of any group? (Y/N)	.370
Level of participation in decision-making ***** **Nature of interaction**	Did you participate in any meeting of the project? (Y/N) * Kind of group in the community (saving group/other groups)	.447
	Did you get a chance to contribute to making any decision in the meeting? (Y/N) * Kind of group in for other activities (formal/informal)	.375
Level of participation in design ***** **Nature of interaction**	Did you participate in making the layout of your neighborhood? (Y/N) Did you make any plan or model of your house unit? (Y/N) * Kind of group in for other activities (formal/informal)	.445
Level of participation in Implementation ***** **Level of interaction**	Did you participate to construct common services such as tube well and pathways? (Y/N) * After the project the interaction (increased / not increased)	.383
	Did you participate to construct common services such as tube well and pathways? (Y/N) * Are you a member of any group? (Y/N)	.331
Level of participation in Implementation ***** **Quality of interaction**	Did you participate to construct common services such as tube well and pathways? (Y/N) * Resource sharing (shared/not shared)	.302
	Did you participate to construct common services such as tube well and pathways? (Y/N * Is the interaction increased as you are part of the CDC? (Y/N)	.383

Co-occurrence table: **Relationship between participatory approach & Social Capital**

	I: Pa Ap: De:... 31	I: Pa Ap: De:... 13	I: Pa Ap: Di Mk... 29	I: Pa Ap: Di M... 6	I: Pa Ap: Imp... 13	I: Pa Ap: Im... 10	I: So Ca:... 17	I: So Ca:... 24	I: So Ca:... 25
I: Pa Ap: D... 31		2 (0.05)	9 (0.18)		3 (0.07)		2 (0.04)	4 (0.08)	3 (0.06)
I: Pa Ap: D... 13	2 (0.05)			5 (0.36)		3 (0.15)			2 (0.06)
I: Pa Ap: Di... 29	9 (0.18)				1 (0.02)		4 (0.10)	9 (0.20)	4 (0.08)
I: Pa Ap: Di... 6		5 (0.36)				2 (0.14)			1 (0.03)
I: Pa Ap: I... 13	3 (0.07)		1 (0.02)			3 (0.15)		1 (0.03)	1 (0.03)
I: Pa Ap: I... 10		3 (0.15)		2 (0.14)	3 (0.15)				
I: So Ca: S... 17	2 (0.04)		4 (0.10)					3 (0.08)	6 (0.17)
I: So Ca: S... 24	4 (0.08)		9 (0.20)		1 (0.03)		3 (0.08)		
I: So Ca: S... 25	3 (0.06)	2 (0.06)	4 (0.08)	1 (0.03)	1 (0.03)		6 (0.17)		

participatory approach * social capital

Title: **BEYOND DWELLING:** Factors leading to the improvement of social capital in informal settlements: A case of UPPR project in Gopalgonj, Bangladesh.
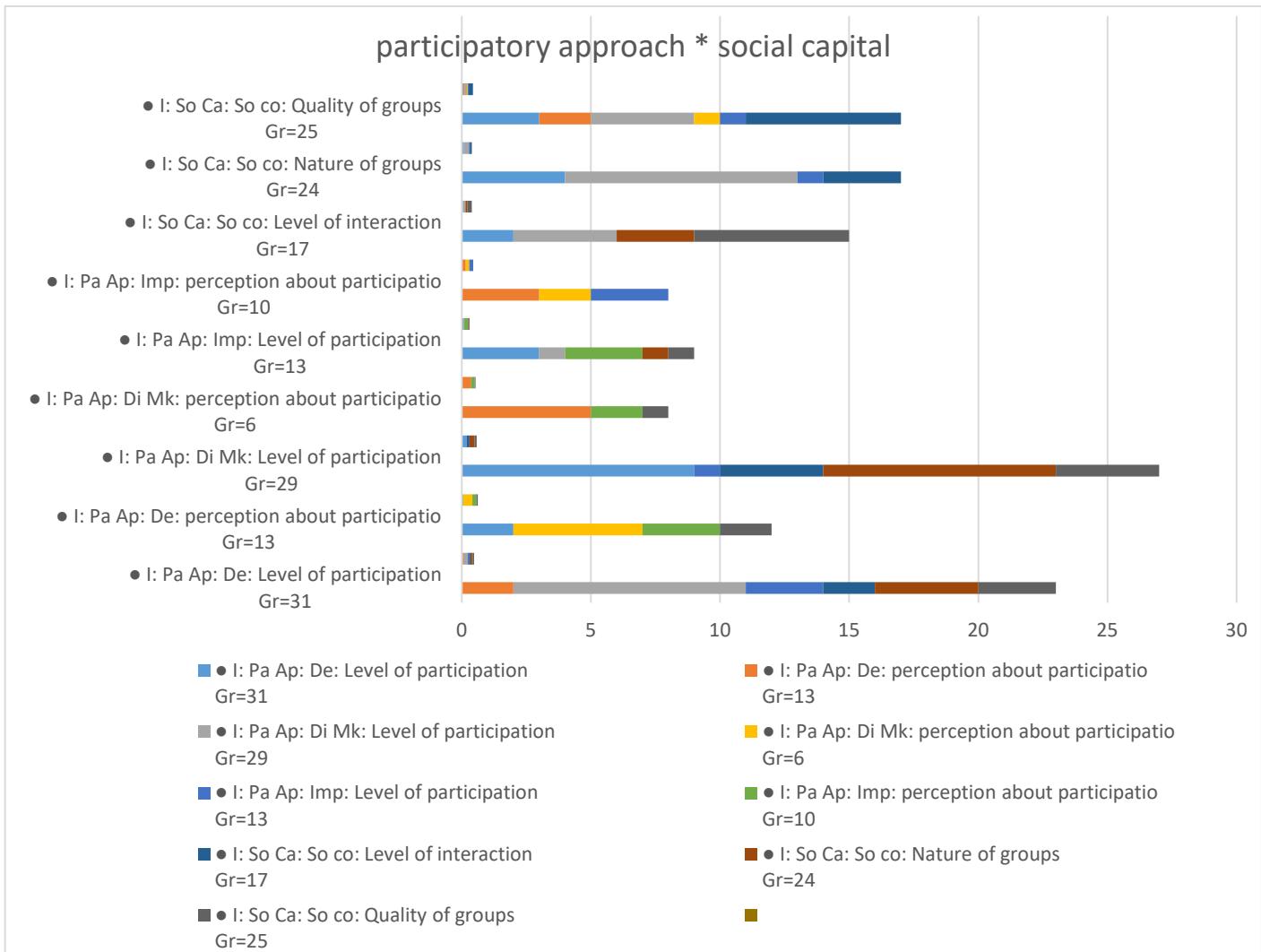
Annex 15: Chi-square test (Land tenure * Social capital)

As chi-square is possible only the 2X2 table, the number of the table is too many. Therefore, some examples are presented here for detailed understanding.

Has the level of interaction with your neighbors increased after the project? * land ownership

Crosstab

Count

		land ownership		Total
		No	Yes	
5.Has the level of interaction increased after the project?	No	3	4	7
	Yes	4	29	33
Total		7	33	40

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.779ᵃ	1	.05*
Continuity Correctionᵇ	1.950	1	.163
Likelihood Ratio	3.161	1	.075
N of Valid Cases	40		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.23.

kind of group * land ownership

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.359ᵃ	2	.006*
Likelihood Ratio	7.969	2	.019
Linear-by-Linear Association	1.662	1	.197
N of Valid Cases	40		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .35.

Crosstab

Count

		land ownership		Total
		No	Yes	
7.kind of group	Not applicable	0	2	2
	other group	3	1	4
	Woman saving group	4	30	34
Total		7	33	40

Shareing resources with neighbors * land ownership

Crosstab

Count

		land ownership		Total
		No	Yes	
Shareing resources with neighbors	No	3	1	4
	Yes	4	32	36
Total		7	33	40

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10.178ª	1	.001
Continuity Correction^b	6.234	1	.013
Likelihood Ratio	7.484	1	.006
N of Valid Cases	40		

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is .70.

Frequency of resource sharing * land ownership

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.910ª	4	.018*
Likelihood Ratio	10.774	4	.029
Linear-by-Linear Association	3.861	1	.049
N of Valid Cases	40		

a. 7 cells (70.0%) have expected count less than 5. The minimum expected count is .70.

Crosstab

Count

		land ownership		Total
		No	Yes	
Frequency of resource sharing	Not applicable	3	1	4
	Very often	1	5	6
	Often	0	9	9
	Frequently	2	7	9
	Very frequently	1	11	12
Total		7	33	40

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kind of group * training on land mapping and selection

Crosstab

Count

		training on land mapping and selection		Total
		0	Yes	
7.kind of group	Not applicable	1	1	2
	other group	3	1	4
	Woman saving group	6	28	34
Total		10	30	40

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.980[a]	2	.03*
Likelihood Ratio	6.028	2	.049
Linear-by-Linear Association	4.500	1	.034
N of Valid Cases	40		

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .50.

Has the level of interaction with your neighbors increased after the project ? * training on land mapping and selection

Crosstab

Count

		training on land mapping and selection		Total
		0	Yes	
5.Has the level of interaction with your neighbors increased after the project?	No	4	3	7
	Yes	6	27	33
Total		10	30	40

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4.675[a]	1	.031*
Continuity Correction[b]	2.828	1	.093
Likelihood Ratio	4.133	1	.042
N of Valid Cases	40		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.75.

b. Computed only for a 2x2 table

## Annex 16: Phi –coefficient value from the chi-square test ((Land tenure * Social capital) (by author)

The value of Phi-coefficient pointed the strength of the relationship varies from -1 to 1, where 0 means no relation and 1 means very strong positive relation; .30 to .39 means moderate positive relationship; .40 to .69 mean strong positive relationship (Glen, 2016)

Indicators **Independent variable** ▮ **Dependent variable** ▮	Questions (construct) under each indicator	Phi-coefficient
Sense of ownership * Level of interaction	Do you have land ownership now? * After the project the interaction (increased / not increased)	.308
Sense of ownership * Nature of interaction	Do you have land ownership now? * Kind of group in the community (saving group/other groups)	.509
	Do you have legal documents? * Kind of group in the community (saving group/other groups)	.382
Sense of ownership * Quality of interaction	Do you have land ownership now? Do you have legal documents? * Resource sharing (shared/not shared)	.504 .378
	Do you have land ownership now? * Frequency of resource sharing	.546
Housing provision * Level of interaction	Is the relationship getting better as you own a permanent house now? (Y/N) * After the project the interaction (increased / not increased)	1.0
	Is the relationship getting better as you own a permanent house now? (Y/N) * Are you a member of any group? (Y/N)	.498
Skill building * Level of interaction	Did you receive training on land mapping? * After the project the interaction (increased / not increased)	.342
Skill building * Nature of interaction	Did you receive training on land mapping? * Kind of group in the community (saving group/other groups)	.418
	Did you attend the workshop? * Kind of group in the community (saving group/other groups)	.393
Skill building *Quality of interaction	Did you attend the workshop? * Resource sharing (shared/not shared)	.388
Access to credit * Nature of interaction	Do you think it became easier for you to get a loan now that you own a house? Kind of group in the community (saving group/other groups)	.382
Access to credit * Quality of interaction	Do you think it became easier for you to get a loan now that you own a house? Resource sharing (shared/not shared)	.378

Annex 17: Co-occurrence table from Atlas Ti.

Co-occurrence table: **Relationship between Land tenure & Social Capital**

	I: Ln Tn: Ca... 21	I: Ln Tn: Ca... 27	I: Ln Tn: Em:... 22	I: Ln Tn: Em:... 24	I: So Ca: So... 17	I: So Ca:... 24	I: So Ca:... 25
I: Ln Tn: Ca Bl: Access to credit　21			3 (0.08)	1 (0.02)	3 (0.09)	2 (0.05)	3 (0.07)
I: Ln Tn: Ca Bl: Skill building　27			5 (0.11)	5 (0.11)	3 (0.07)		4 (0.08)
I: Ln Tn: Em: Housing Provision　22	3 (0.08)	5 (0.11)		1 (0.02)	1 (0.03)		1 (0.02)
I: Ln Tn: Em: Sense of ownership　24	1 (0.02)	5 (0.11)	1 (0.02)		4 (0.11)	2 (0.04)	3 (0.07)
I: So Ca: So co: Level of interac...　17	3 (0.09)	3 (0.07)	1 (0.03)	4 (0.11)		3 (0.08)	6 (0.17)
I: So Ca: So co: Nature of groups　24	2 (0.05)			2 (0.04)	3 (0.08)		
I: So Ca: So co: Quality of groups　25	3 (0.07)	4 (0.08)	1 (0.02)	3 (0.07)	6 (0.17)		

Land tenure* Social capital

Legend:
- ● I: Ln Tn: Ca Bl: Access to credit Gr=21
- ● I: Ln Tn: Ca Bl: Skill building Gr=27
- ● I: Ln Tn: Em: Housing Provision Gr=22
- ● I: Ln Tn: Em: Sense of ownership Gr=24
- ● I: So Ca: So co: Level of interaction Gr=17
- ● I: So Ca: So co: Nature of groups Gr=24

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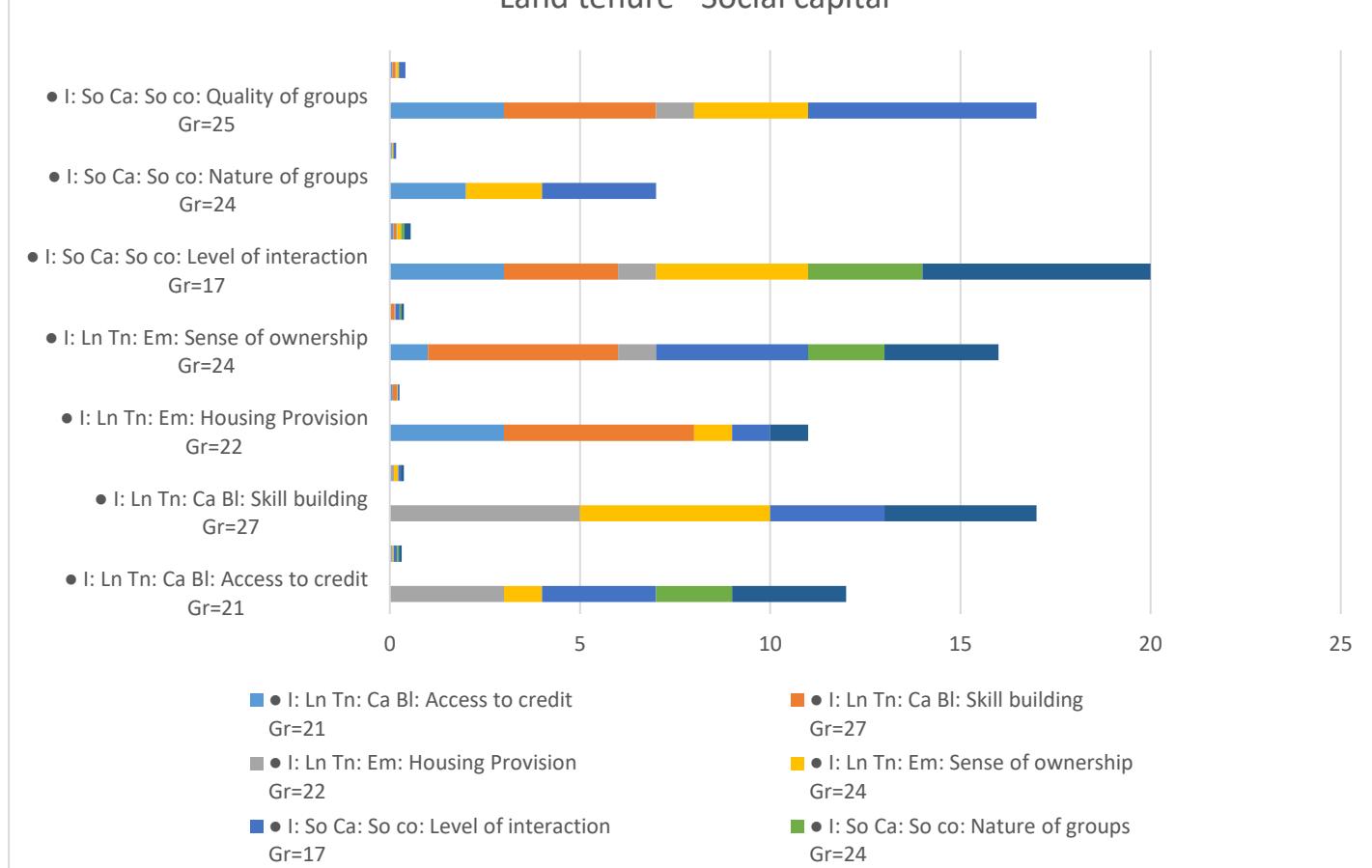
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