

Acknowledgement

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Abstract

Construction workers in Dhaka city are mainly migrant workers from rural Bangladesh. They migrate to Dhaka city to overcome the vulnerability context and to secure a sustainable livelihood. However, workers' vulnerability and sustainable livelihoods largely depend on their livelihood assets and occupational activities. Therefore, in the first stage, this research attempted to explore workers' vulnerability considering the reduction of livelihood assets and occupational activities. The reduction of livelihood assets has considered the assets changes because of migration, and occupational activities have considered the working conditions at workplace. I developed a vulnerability index for measuring workers' livelihood vulnerability in the quantitative segment of this research. The quantitative findings of the research suggest that other than financial capital, workers vulnerability indexes on the four assets (Human, social, physical and natural) in Dhaka are comparatively higher than the context of the village. This suggests construction workers might be slightly more vulnerable in Dhaka compared with their life in village. Considering all the values of asset's indicators for both Dhaka and the village, the P-value of a paired t-test is 0.05 which validates that there is some evidence against the research's null hypothesis, and the research accepts the alternative hypothesis; - construction workers are more vulnerable in urban context compared with their rural context. In addition, the workplace vulnerability index suggests that workers are acutely vulnerable in their workplace. In the final stage, a qualitative research has studied the violation of workers' rights and its impact on workers' livelihood. Qualitative findings of the final stage suggest that workers usually receive minimum safety and welfare facilities, which mean they work in unsafe and risky conditions, making them even more vulnerable in the workplace. Also, Workers cannot demand their rights because they are afraid of losing their jobs; as they are easily replaceable by other jobless poor workers. Workers do not or cannot claim any compensation due to the lack of a written contract. Therefore, it reveals that workers need their rights protected more than their livelihood assets, in order to cope and adapt with vulnerability in the village and to secure a sustainable livelihood.

Key words: Vulnerability, livelihoods, Sustainable livelihoods, Construction worker, workers' rights.

List of Abbreviations

BBS: Bangladesh Bureau of Statistics

BDT: Bangladesh Taka

BNBC: Bangladesh National Building Code

BLA: Bangladesh Labour Act

CPD: Centre for Policy Dialogue

DCC: Dhaka City Corporation

DFID: Department for International Development

GDP: Gross Domestic Product

ILO: International Labour Organization

LVI: Livelihood Vulnerability Index

RAJUK: RajdhaniUnnayanKartripakkha

REHAB: Real Estate Housing Association of Bangladesh

SLF: Sustainable Livelihood Framework

UNDP: United Nations Development Program

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1. Introduction

1.1. Background of Research Problem:

The Construction sector is a growth engine for Bangladesh. This sector has been growing considerably since the last two decades. Nowadays this sector contributes around 10 percent of total Gross Domestic Production (GDP) and its 2 percent growth rate is higher than the three other major sectors- agriculture, industry and service in Bangladesh (Ahmed et al., 2012). In addition, this sector employs more than 2 million people that absorb an important share of Bangladesh Labour force (Biswas, 2014). And, its employment growth rate of 7.3 percent predicts a total of 3.32 million construction workers by 2020 (Ahmed et al., 2012). This enormous contribution of this sector is helping Bangladesh to reduce poverty by generating employment for poor people. Construction work is a vehicle for the rural unemployed because poor villages migrate to urban areas to work as construction worker (Research Initiative for Social Equity Society (RISE Society), 2012).

Along with job creation, the construction sector has also created new capitalist companies or Real Estate companies. In one way, these companies are contributing to GDP and housing demand in Dhaka city. And, in another way, these companies are exploiting construction workers by not providing a safe workplace and proper wages. Therefore, a large percentage of construction workers in capital city of Dhaka work in risky environment and without any safety measures (Biswas, 2014). This unsafe workplace or corporate negligence makes workers' livelihoods more vulnerable and can lead them into the cycle of poverty again. Injuries and even death are common because of inadequate safety measures and negligence at construction sites. A daily newspaper report suggested that the number of accidents in the construction sector in Bangladesh has increased by 178 percent in the first six months of 2014, compared to 2013 (Haque, 2014). A total of 78 workers were killed and 53 were injured in first six months of 2014, compared to 28 dead and 30 injured in 2013 (Haque, 2014). The major factor behind the reasons of these casualties is being inadequate safety measures or corporate negligence.

The common household livelihood strategies in rural areas are migration, livelihood diversification and agricultural intensification and that depends on resource availability and access (Scoones, 1998). Same as, Migration is an important livelihood strategy for the poor people of Bangladesh to come out of poverty. Migrant workers in Dhaka city are the victim

of natural disasters, or suffer from lack of incomes or lack of assets in village. They migrate to Dhaka city to secure their livelihoods or to overcome the vulnerability, but these workers might not truly overcome their livelihood vulnerability because of the unsafe working condition or the dependency only on income or wage from construction work. Construction workers earn \$5.18 per day which is more than the poverty line (Ahmed, et al 2012)but they might be vulnerable, because the level of vulnerability of an individual or community is determined by how weak or strong their livelihoods are, what occupational activities they are engaged in, the range of assets they have access to pursuing their livelihood strategies and the strength of and support of the social networks and the institutions that they are part of or which have influence over them (DFID, 1999).Consequently, workers' vulnerability depends on the range of assets and occupational activities to pursue their livelihoods. In urban context or in new settings, workers livelihood assets and social connection might reduce and livelihoods could be vulnerable, but a safe and secure occupational or working environment can rescue workers' livelihoods even in new context.

A safe and secure occupational environment is considered as the most central workers' rights. For lack of livelihood assets, workers have to depend on their work and this dependency might give the opportunity to capitalist companies or real estate companies to exploit these workers. This exploitation starts from unsafe and insecure working condition which is a violation of workers' rights. Without such rights, it might be hard to secure sustainable livelihoods.

Based on the above understanding, this research attempted to explore workers vulnerability considering the reduction of livelihood assets and occupational activities. The reduction of livelihood assets has considered the assets changes because of migration, and occupational activities have considered the working conditions at workplace. If their livelihood assets decrease, this might lead to workers becoming vulnerable. But in spite of lack of livelihood assets, workers might not be vulnerable as long as they have a safe and secure occupation or their occupational rights are protected. Therefore, this research also examined the violation of workers' rights and how this affects workers' standards of living.

1.2. Background Information of Construction Sector in Bangladesh:

The construction sector in Bangladesh is vast. Therefore, this section describes the relevant information on the construction sector in Bangladesh that is related to this research. The contribution of the construction sector is remarkable in the national economy of Bangladesh. This sector is considered as an important driving force of development. It has contributed 8.3 per cent and 9.3 per cent to the GDP in 2009-2010 and 2011-2012, respectively (Ahmed, et al 2012). Also the growth rate of the construction sector was estimated to be 8.6 per cent which is the highest in the last five year (Centre for Policy Dialogue (CPD), 2014). In 2008-09, total construction sector employment stood at 2.024 million. Even at this growth rate, employment in the construction sector was predicted to increase to 2.88 million by 2014 and 3.23 million by 2020 (Ahmed, et al 2012). The Bangladesh Labour Force Survey indicates that more than 95 percent of the 56.7 million individuals in the labour force (Over 15 year in age) were employed in 2010 in different economic sectors of Bangladesh. Agriculture alone employs 49 percent of the labour force, even though it shares only 18.6 percent in GDP (BBS, 2010). The inability of agriculture sector to absorb surplus labour force is one of the major causes for the increasing number of workers in the construction sector. After agricultural workers, construction workers constitute the second most important flow of internal migrants in Bangladesh. This migration of labour from rural to urban is an important aspect of poor peoples' livelihoods in Bangladesh. Migration from rural to urban has become a livelihood strategy, adopted by a large number of families who migrate to capital, Dhaka in search of better employment opportunities.

The construction industry of Bangladesh contains a large number of small firms (Johnson, 1988). In general the working culture such that, either a public agency or a private agency hires firm for construction work or a construction firm needs to bid to acquire construction project. It is hard to measure the total structure of the construction industry because of a lack of published papers on the total number of firms. Some firms are involved in the repair and maintenance of works; including internal finishing and services, plus a wide variety of different works such as road, bridge and dam constructions and others firms are involved in housing, electricity and mechanical works.

Among these different sectors, housing construction plays a vital role in the context of the economy of Bangladesh and serving housing demands. Rapid urbanization and housing demands have boosted both the building construction companies and real estate business in Bangladesh. Aside from meeting the housing needs, the real estate sector contributes in GDP. Also, this sector is a labour-intensive industry that provides many jobs for skilled, semi-skilled and unskilled workers both in formal and informal sector. The real estate sector at present creates employment for about one million people who are directly or indirectly involved in this sector. According to a report on Labour force survey 2010, the highest positive growth rate of employed persons was in real estate and renting and business activities at 24.7 percent (Bangladesh Bureau of Statistics (BBS), 2010). Real estate business especially apartment projects, took off in Dhaka city in the 1970s (Amin et al., 2012). At present more than 1500 companies are active in the real estate business in the country with 1081 of them registered with the Real Estate and Housing Association of Bangladesh (REHAB) (Amin et al., 2012). In general, the building construction culture in Bangladesh is such that either land owner builds a structure on his/her land or Real Estate Company builds a structure by a mutual negotiation with land owner. However, building construction technology has not developed to the level as that observed in most developed countries. The structural safety conditions and injury records are in worst when compared with other industries in Bangladesh. Statistics shows that, the total number of deaths suffered by workers from different sectors has increased gradually from 383 in 2010 to 388 in 2011 and 490 in 2012 (Safety & Rights society, 2013). Altogether the number of deaths in construction sector for last three years is 479 which is the highest compared to other sectors (Safety & Rights society, 2013). The following tables demonstrate the total death of workers in the different sectors.

Table 1: No of incidents and deaths

	2010	2011	2012
No of incidents	270	332	328
No of Deaths	383	388	490

Source: Safety & Rights society, 2013

Table 2: Deaths by sector

Sector	2010	2011	2012	Total
Construction	144	183	149	479
Manufacturing	153	85	173	411
Service	63	74	82	219
Agriculture	6	15	32	53
Mine	1	-	-	1
Transport	19	31	54	104

Source: Safety & Rights society, 2013

The rate of death is alarming and proves the absence of any guidelines that suppose to be followed or mentioned by the employers in workplace. It also indicates the absence of any law or their implementation. Though construction workers render a significant contribution to economic growth, especially in respect of Bangladesh, but for the lack of policy measures and support from stakeholders, construction workers socio-economic conditions are not in good standard. As a result, construction workers are totally in the control of traditional middlemen or ‘sardar’ in most of the cases.

The government of Bangladesh has formulated policies and acts to ensure workers’ rights for their betterment. But these policies and acts are far away from being put in practice. Therefore, the alarming number of injuries in construction sector is increasing year after year. Construction safety rules are provided in the Bangladesh National Building code, 2006 (BNBC), but a limited implementation of BNBC does not support workers. In most of the construction sites, these are ignored due to lack of enforcing agencies. The labour act 2006 seems to be crude and far away from the expectation of the construction workers. Also the Real Estate and Housing Association of Bangladesh hardly plays any role or develops any plan or policy for the betterment of workers (Biswas, 2014). Therefore, migrating to Dhaka and working in the construction sector sometimes becomes a curse instead of a blessing for many workers.

1.3. Research Objective and Questions:

Rapid urbanization and cheap labour in Dhaka city have opened up construction business for corporations to develop high-rises buildings due to land scarcity. It also appears that the construction business is highly profitable. According to the Real Estate and Housing Association of Bangladesh (REHAB), at least 9000 buildings are constructed every year. However, corporate companies are obligated to ensure safe and secure working conditions by the General duties of employers which are specified in the International Labour Organizations (ILO) code of practice for safety and health in construction (ILO, 1992). It is a companies' positive duty to ensure safe and secure working conditions for workers. But in practice it is questionable, - how much these companies are doing for workers betterment. Based on this understanding the following research objective was formulated.

The main objective of this research is- to assess construction workers' vulnerability. To achieve this, the research went through two stages. In the first stage, my research has compared workers' present livelihood assets in an urban context and their past livelihood assets before migrating to Dhaka. This stage tested the hypothesis H1: Construction workers are more vulnerable in an urban context compared to their rural context. The data in this research was analysed using the Sustainable Livelihood framework (SLF) in order to understand livelihood vulnerability. The underlying assumption in the Sustainable Livelihood Framework is that people pursue all forms of livelihood outcomes (such as income, increasing wellbeing or improved food security) based on a range of livelihood assets through the use of a variety of livelihood strategy (Farrington et al., 1999). Based on this assumption, the research has compared the livelihood assets of workers both in an urban and rural context to assess their vulnerability. The research questions for this stage were:-

- What are the present livelihood assets in an urban context?
- What were the past livelihood assets in a rural context?

From these questions, the research has assessed and compared the present and past livelihood assets to examine if workers have become more vulnerable. The results suggest that workers have indeed become more vulnerable, due to a decline in their livelihood assets. What so ever the level of the livelihood assets, Workers migrate to Dhaka city to overcome the vulnerability context and to secure a sustainable livelihood. Therefore, migration and working in construction is a livelihood strategy of workers because livelihood strategy and

outcomes are influenced by vulnerability context- stressors, shocks, trends and seasonal variations (DFID, 1999, Farrington et al., 1999). However, workers' vulnerability and sustainable livelihood largely depend on their occupational activities. Therefore, it is important to assess workers' working conditions to analyse workers' vulnerability. Workers might be vulnerable because of a decline in livelihood assets but a safe and secure working condition can offer a sustainable livelihood for workers. Therefore, this research has also assessed the workers' working condition. Working condition is directly linked with workers' rights. As a result, in the final stage, research has studied violation of workers' rights and its impact on workers livelihood. For this, research questions of this stage were:

- How corporate negligence creates unsecure working condition?
- How unsafe working condition affects workers livelihood?

An unsafe working condition, or a violation of workers' rights, means more vulnerability or an unsustainable livelihood. The first question in this stage addressed workers' rights in their workplace which included workplace safety and job security. The second question assessed how workers' livelihoods are affected by a violation of workplace safety and job security.

1.4. Study Area:

My Research study area is in the capital city of Bangladesh, Dhaka. I selected Dhaka because a large number of construction workers migrate from rural areas to capital city for work. The study samples of this research are the construction workers who usually work in building construction projects supervised by members of the Real Estate Housing Association of Bangladesh (REHAB). The main reason for choosing this study samples was to discover the changes of livelihood assets of workers, and how the employers are violating workers' rights.

General Information of Dhaka city: Total Population: 7033075, Total Household: 1580672, Total area of Dhaka City Corporation: 143 km², poverty: 32 percent in 2005

Source: BBS 2012, World Bank 2008



Research data was collected from 8 different construction sites. Most of the sites were located in these four redcircle areas in Dhaka city

Figure 1: Map of Dhaka City Corporation (DCC) area
Source: Banglapedia, 2014

1.5. Literature Review:

A comprehensive literature review will help provide the guidelines for my research in the context of theories and other research. Therefore, a literature review defines the important concepts that have been employed within this research; particularly with regards to the research objective. To begin with, the literature review briefly describes the migration scenario of Bangladesh, which explains the reasons for migration. The literature review also explains theories of sustainable livelihoods, livelihood assets and their relation to this research. Finally, a literature review will illustrate why workers' rights are important for sustainable livelihood and poverty alleviation.

Following the ILO code of practice for Safety and health in construction (ILO, 1992), relevant definitions or terminologies have been used for this research.

Corporate/Employer: Corporate are the real estate companies that are listed in REHAB (Real Estate and Housing association of Bangladesh).

Corporate negligence: Corporate negligence is the breaches of its particular duty to workers for a safe workplace. Corporate specific duties are the General duties of employer's according to the ILO code of practice for safety and health in construction (ILO, 1992) and will also comply with the Bangladesh National Building code 2006 (BNBC, 2006).

Construction activities: Any ongoing construction activities in Dhaka city that are operated by REHAB listed real estate companies. Construction activities includes excavation, construction, structural alteration, renovation, repair and demolition of all types of buildings or structures

Construction site: Any site where any construction activities occur by any employer.

Worker: Any person engaged in construction activities on a construction site.

Migration is a part of risk mitigation strategies of rural people's (Hussein & Neljon, 1998). Usually when people lose livelihood, they move into cities in the hope of a better life. Construction workers also migrate to Dhaka for the loss of their livelihood. Consequently, migration is seen as a central element in the livelihood of many households in Bangladesh (Haan, 1999). Most of the cities in Bangladesh experience rapid rural urban migration (Uddin & Firoj, 2013). Majority of migrants concentrate mainly in Dhaka city which attracts around 300000-400000 new migrants each year (World Bank, 2007). Both economic and non-economic factors are responsible for internal migration in Bangladesh. Migrants move to Dhaka city for jobs. The majority of these migrants secured their first job with the help of their social networks and the least of them had information about the job prior to arrival (Afsar, 2003). Construction workers migrate to Dhaka for better livelihood but they generally face physical insecurity, poor housing, and negative discrimination, and consequently they possess poor health and greater vulnerability compared to the general urban population (Afsar, 2003). Migrants might have a better income but may not have a sustainable livelihood in an urban context because livelihoods of the poor people are based on multiple activities and sources of food, income and security (Chambers, 1995).

The concept of vulnerability and livelihoods are central to this study. The concept of vulnerability has been reconsidered in the literature; although this is a highly disputed concept. Vulnerability is conceptualized in many different ways by scholars from different research communities and even within the same research community (Fussel, 2005). However, the concept is often associated with population at risk (Scoones, 1998; Twigg and Bhatt, 1998; Turner II et al., 2003). The use of vulnerability model depends on the place, time, form, unit of analysis (Mushongah, 2009). There are different perspectives to understand vulnerability. Among these, the social perspective is more applicable for this study. The central of social perspective is a focus on access to assets both material and social. According to Cannon et al. (2003), vulnerability is determined by how weak or strong someone's livelihood is and how good his access is to a range of assets that provide the basis for his livelihood strategy and how useful different institutions are in providing social protection. Thus, vulnerability is closely linked to livelihoods or asset ownership because assets provide defence in the face of shocks and stresses. This means people are more vulnerable when livelihoods are weak and have less tangible and intangible assets.

However, for this research, most suitable definition of vulnerability is defined by O’Riordan (2002), “Vulnerability as the incapacity to avoid danger, or to be uninformed of impending threat, or to be as politically powerless and poor as to be forced to live in conditions to danger” (p 369). This might be the circumstances that construction workers find themselves in, as workers are forced to work and live in unsafe and risky working condition, just because they are poor or for their own needs.

On the other hand, livelihood refers to gaining a living, including livelihood capabilities, tangible assets and intangible assets (Chambers and Conway, 1992). In the sustainable livelihoods framework, a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future (DFID, 1999). The sustainable livelihoods framework is designed to help understand and analyse poor people’s livelihoods. Therefore, this research has used this livelihood framework.

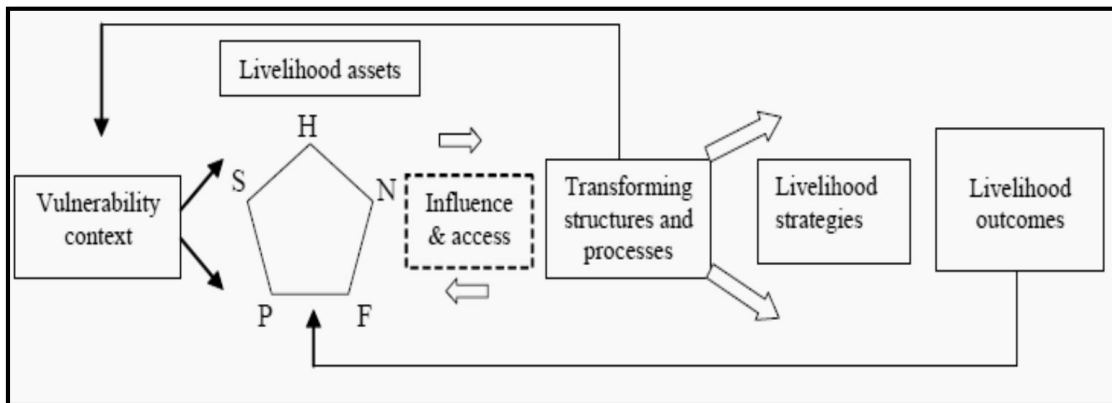


Figure 2: DFID’s Sustainable Livelihoods Framework
Source: Carney, 1998

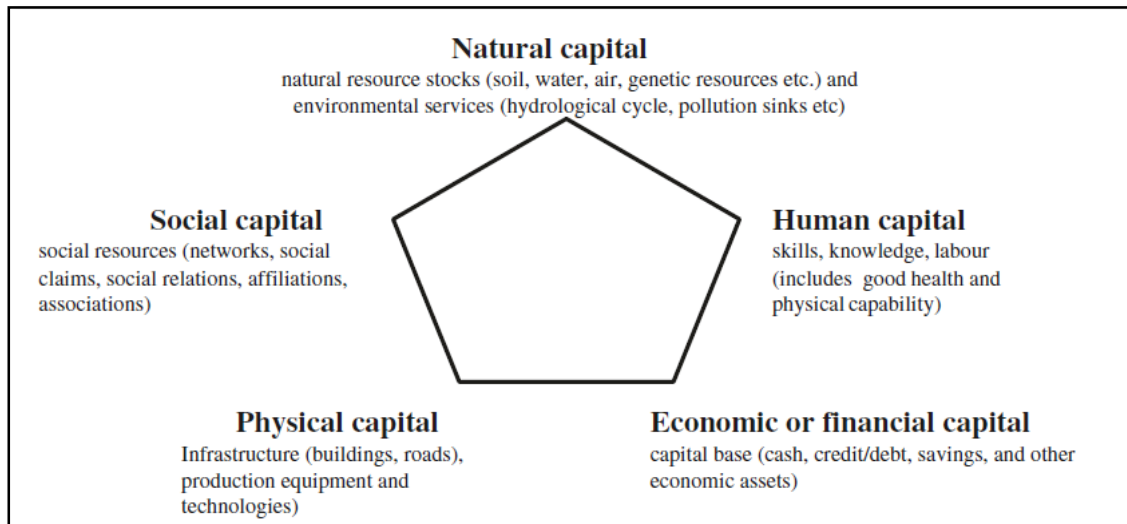


Figure 3: Asset Pentagon
Source: Carney, 1998

This livelihoods approach attempts to put people at the centre of development and is founded on a belief that people require a range of assets to achieve sustainable livelihoods. This is also particularly true for poor people whose access to any given category of assets tends to be very limited. As a result, they have to seek ways of promoting and combining what assets they do have in innovative ways to ensure survival. Therefore, the livelihood framework identifies five core asset categories or types of capital upon which livelihoods are built. This is called the ‘asset pentagon’. These core five assets are Human capital, Social capital, Natural capital, Physical capital and Financial capital.

The shape of the pentagon is used to show visually the variation in people’s access to assets. People with more assets tend to have a greater range of options and ability to switch between multiple strategies to secure their livelihoods. Also, poverty analyses have shown that people’s ability to escape from poverty is critically dependent upon their access to assets. Using this asset pentagon in this research for construction workers has shown asset difference between rural and urban context which has demonstrated the ability of these workers in urban context. Assets ownership is closely linked with vulnerability because assets provide an important buffer or defence in the face of shocks and stress (Mushongah, 2009). Therefore, this research has considered vulnerability as the lack of assets and has used the definition of vulnerability which has been by cannon (2006), “how vulnerable someone is, is determined by how weak or strong their livelihoods are and how good their

access to a range of assets that provide the basis for their livelihood strategy and how useful different institutions are in providing social protection” (p 47). This definition is sufficient to clarify this research’s approach and the method of measuring construction workers’ vulnerability. Comparing the present and past livelihood assets has determined how weak or strong their livelihoods are and how good their access is to a range of assets to support their livelihood strategy. Also, the sustainable livelihood framework has pointed out that institutions and organizations are a key element. Institutions and organizations mediate the ability to carry out such strategies and achieve livelihood outcomes (Scoones, 1998). But defining and understanding of institutions and organizations is not simple because there is no neat relationship between institution and organization (Scoones, 2015). A more simple and useful definition is that, institutions are the rules of the game, while organizations are the players (North, 1990). Based on this definition, this research has also defined the institutional and organizational setting of workers, which reflects the strength and weaknesses of the relationship between institution and organization. A strong institutional and organizational setting of workers is a key element that can protect workers’ rights to achieve livelihood outcomes. Also by assessing workers’ rights it is possible to verify how useful different institutions are in providing social protection. Finally, we can then conclude how vulnerable these construction workers are.

Along with the assets ownership, an enabling policy and institutional environment makes it easier for the poor to gain access to assets they need for their livelihoods. But a disabling policy and institutional environment may discriminate the poor. Therefore, this research has also assessed Bangladesh labour laws of 2006, the Bangladesh National Building Code 2006, and the status of corporate companies in order to evaluate workers’ rights.

1.6. Justification of This Research:

Vulnerability has two sides: an external side of risks, shocks and stresses to which an individual is subject, and an internal side which is defenceless, meaning a lack of means to cope without damaging loss (Chambers, 1989). Considering this perspective, internally construction workers are migrated from rural to Dhaka which might make them defenceless because of the loss of livelihood assets. Externally, workers face risks at their workplace. Therefore, to execute research on workers' vulnerability is a rational choice.

It is also claimed that there are two differing perspective on vulnerability. The first perspective is called the "risks-centric view", whereby vulnerability is defined as variability in living standards caused by consumption or income shocks. The second perspective is called, the "right-centric view", whereby vulnerability is caused by the lack of social and political rights (Philip and Rayhan, 2004). Based on these two different perceptions, this research have been arranged to address the "risk-centric view" by assessing livelihood assets changes and the "right-centric view" by assessing the violation of workers right. Thus, the research questions are reasonable to address workers' vulnerability.

Vulnerability and poverty are interlinked in such a way that each can be the cause of other (Philip and Rayhan, 2004). Workers' income is just above the poverty line of \$2, but workers are vulnerable because of unsecure livelihoods or working condition. This unsecure livelihood makes them vulnerable which might lead them to poverty. Compared with garments workers, construction workers are highly neglected by both national and international support. Considering the growth of the construction industry and the vulnerability of construction workers, it is essential to ensure secure, better, safe working conditions for workers to reduce their vulnerability, which makes this research significant.

2. Research Methods

2.1. Sample Identification:

Before starting the methodology, I identified the actors who have influence on construction sites are mostly responsible for workers' livelihoods. These actors are the Real Estate Housing Association of Bangladesh (REHAB), Real estate companies, Middleman or sub-contractors, Govt. or public bodies, other stakeholders, workers' union and construction workers.

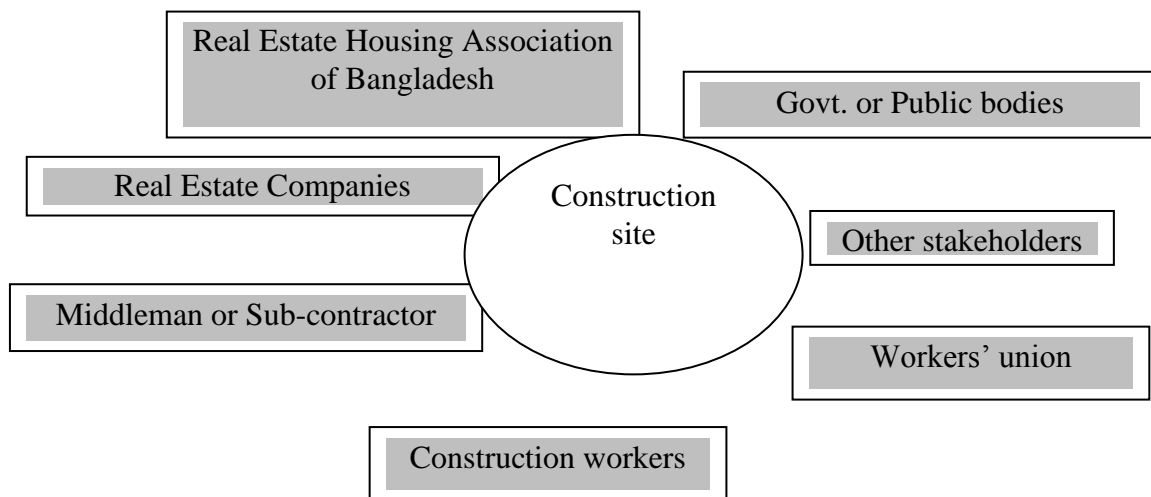


Figure 4: Actors in Building construction sector of Bangladesh

Based on my research objectives, a survey was conducted on construction workers, middleman or sub-contractor, real estate managerial and REHAB members. The types of samples, their participation and survey approach are illustrated below

Table 3: Research samples

	Actor	Participation	Survey approach
Sample 1	REHAB board members	Refuse to participate	Qualitative survey
Sample 2	Real Estate Managerial personnel	Participate voluntarily	Qualitative survey
Sample 3	Middlemen or Sub contractors	Participate voluntarily	Qualitative survey
Sample 4	Construction workers	Participate voluntarily	Both quantitative and qualitative survey

2.2. Research Design:

There are two stages in this research. In the first stage, the research has tested the hypothesis. To test the hypothesis, the research went through a quantitative approach which compared the present and past vulnerability of workers. And in the second stage, research has used a qualitative approach which has assessed the violation of workers' rights and its impact on workers' livelihoods. This research is the combination of both quantitative and qualitative approaches. Selection of suitable and ideal samples that truly represent the target population of this research is significant. Therefore, this research needed construction workers, or samples who work for corporate companies or real estate companies. As a result, I followed a systematic approach to both qualitative and quantitative surveys. At first I wanted to perform a qualitative survey of two board members of REHAB, however they refuse to participate. Through REHAB, I attempted to get appointments of real estate companies. With the exception of the negative response from REHAB, I succeeded in approaching Real Estate companies directly, where I performed semi-structured interviews with 5 real estate managerial personnel. Through these 5 real estate companies, I obtained permission to conduct my survey with construction workers and middleman or sub-contractor at their construction sites where I performed semi-structured interviews with 4 middleman or sub-contractor. In addition, I performed quantitative survey of 44 workers and semi-structured interviews with a total of 15 workers in two groups. The sampling technique was therefore systemic.

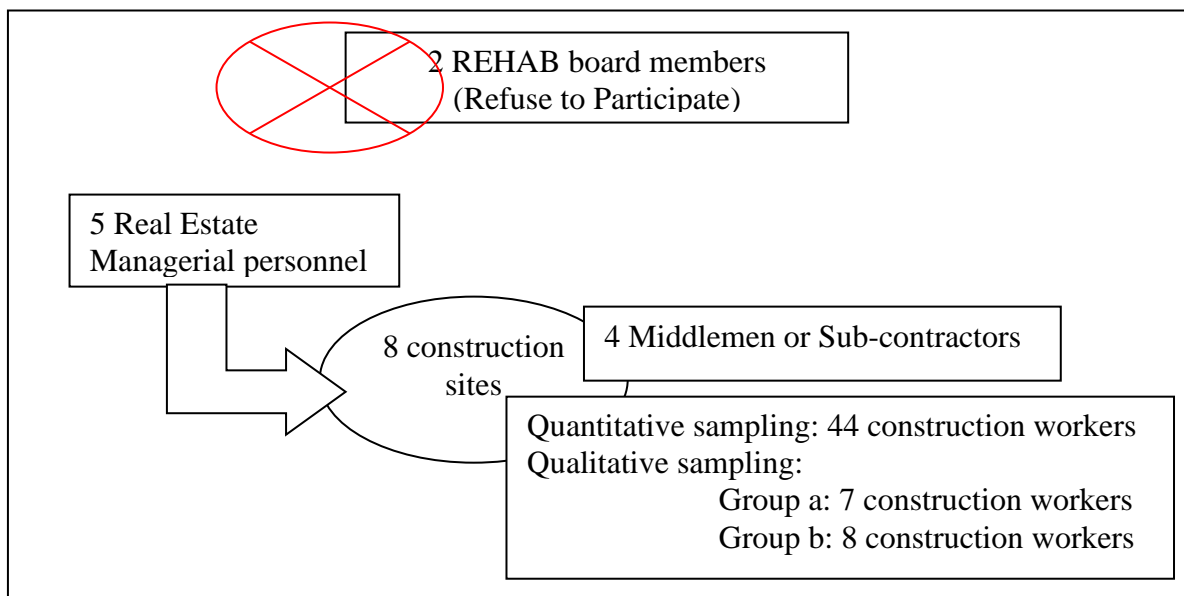


Figure 5: Techniques to get research samples

2.2.1. Qualitative approach:

To assess the violation of workers' right and its impact on their livelihood, this research performed qualitative survey. In this qualitative approach, 3 actors: Company managerial personnel, Middleman and workers have been surveyed. These samples are directly or indirectly related to construction workers. The qualitative approach followed a semi-structured interview.

2.2.1.1. Sampling and data collection:

Sample 1 (REHAB board members): Any two personnel from the executive board of the Real Estate and Housing Association of Bangladesh (REHAB) were to be interviewed. Their participation was voluntary. At first, a request was made to REHAB. But REHAB members refused to give me an appointment and did not show any interest.

Sample 2 (Real Estate Managerial personnel): First, I selected 7 real estate companies on the basis of their reputation and popularity. Reputation and popularity are based on my personal experience and knowledge which i have gathered while living in Dhaka city. Also I studied on real estate sector and gathered knowledge while studying for my bachelor degree in Urban and Regional Planning. All these selected real estate companies are members of the Real Estate and Housing Association of Bangladesh. And then, i was requested their participation for my research. However, Five out of seven real estate companies showed their interest and gave an appointment to meet with their respective personnel. One managerial personnel from each of these 5 real estate companies were interviewed. Among these five personnel, three were Managing Directors of their companies, one was chief engineer and one was executive officer. In total 5 managerial personal were interviewed.

At the end of their interview, each company were requested to participate voluntarily, giving their consent, for me to visit two construction sites to perform my questionnaire survey to the construction workers. However, I did not get two construction sites from each company. But I received permission for eight construction sites in total. Out of these 8 sites, 6 construction sites were private housing projects and 2 sites were commercial office projects. All were within the area of Rajdhai Unnayan Kartripakkha (RAJUK) which is the Dhaka Development Authority of the Government of Bangladesh.

Sample 3 (Middlemen or Sub-contractors): Each site had one sub-contractor who was responsible for managing and hiring of worker. In total there were eight sub-contractors. I requested them to participate voluntarily in this research. Four out of eight sub-contractors participated.

Sample 4 (Construction workers): Before doing the qualitative survey, I did the quantitative questionnaire survey of workers. A total of 44 workers were participated voluntarily in questionnaire survey. But the number of participants varied among these eight construction sites. For the qualitative survey, a total of 15 workers out of that 44 workers participated voluntarily in two groups. These groups were formed by me according to their shelter status or where they were living. At first, I sorted out workers in two groups. Group A contained only these workers who live in a house or room in Dhaka city and Group B contained workers who live in their work place or construction site. However, both groups were interviewed separately. Group A had seven workers and Group B had eight workers

2.2.1.2. Data analysis techniques: After collecting the data, a coding process managed and analysed the data. In order to fulfil the research objective and research questions, an inductive coding was applied for sorting and organizing the interview data because inductive coding closely read the text and inherent meaning in the text, and then identify the text segments that contain same meaning. After that, the same text segments need to be assigned into a new category. Finally, categories need to be analysed to reduce overlapping and redundancy to create a model for the research questions (Thomas, 2003).

Table 4: Coding process in inductive research

Initial read through text data	Identify specific segment of information	Label the segments of information to create categories	Reduce overlap and redundancy among the categories	Create a model incorporating most important categories
Many pages of text	Many segments of text	30-40 categories	15-20 categories	3-8 categories

Source: Creswell, 2002

In this research, at first all the interviews were transcribed which are considered as the text data. Then, the text data was initially read through. Same topic related text data were marked with the same colour and placed into segments. After that, segments were analysed and created categories. And then, categories were analysed to reduce overlapping and redundancy and finally created the model that is essential for the research questions. However, throughout the whole process, data were stored in a secured location in my laptop which needs a password to login. All the data was handled with care and privacy. Also, there was no bias to influence the data analysis and findings.

2.2.2. Quantitative approach:

The main segment of this research is to compare the present and past livelihood assets. For this segment, this research followed a quantitative approach. This approach was chosen because quantitative research provides reliable result that can be generalized to some large population (Field, 2009). To generalize the research result to some large population, selection of survey location and sample population are important. Sampling techniques in quantitative approach are described below. Before illustrating the sampling technique, it needs to be pointed out, to compare the present and past livelihood assets this research has modified the DFID sustainable livelihoods framework for this research purpose but without any fundamental changes. The following figure is the modified version of DFID framework for this research.

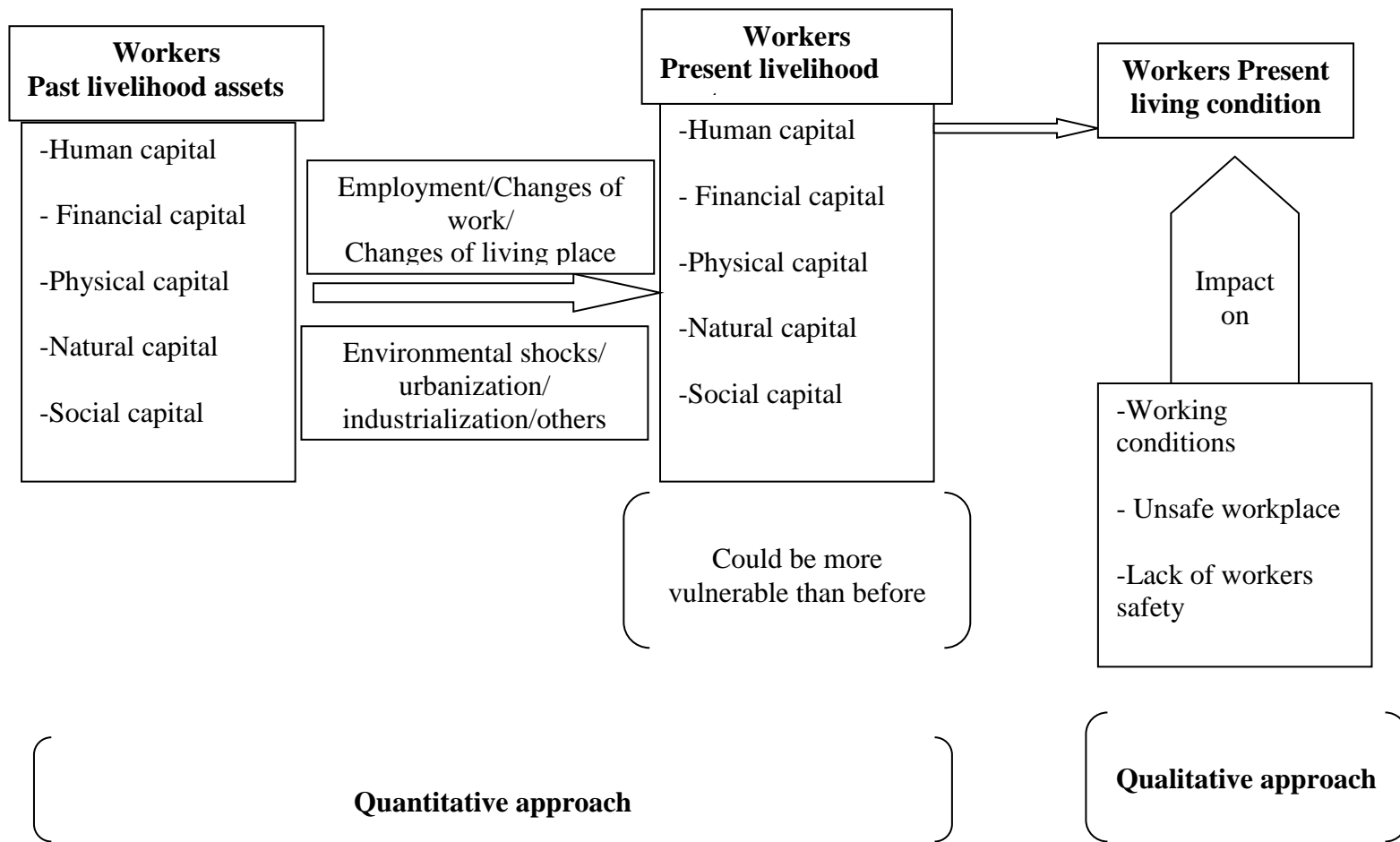


Figure 6: Modified Sustainable Livelihoods Framework for this research

2.2.2.1. Sampling and Data collection: A quantitative survey was conducted amongst the construction workers and on the construction sites belonging to real estate companies. For this quantitative survey, a questionnaire was developed. To prepare a final survey questionnaire, a pilot survey was performed to adjust the final questionnaire. And then I visited all eight permitted construction sites and approached every worker to participate in the questionnaire survey. A total of 44 workers participated voluntarily in the survey. But the number of participants varied among these eight sites. The samples were totally independent. Workers participated willingly. The table below illustrates workers' participation according to construction sites.

Table 5: Workers participation from different construction sites

Real Estate company	Construction site	Participants (workers)
Company 1	Site 1	5
	Site 2	4
Company 2	Site 3	7
	Site 4	6
Company 3	Site 5	5
Company 4	Site 6	6
Company 5	Site 7	7
	Site 8	4
Total	8	44

2.2.2.2. Data analysis Technique: For the quantitative survey a variable matrix is essential. A variable matrix table gives a clear understanding of the indicators. The lists of indicators for this research have been given below. Indicators were valued according to workers' past and present living contexts. Most indicators have therefore two values. The first value is in the context of Dhaka and the other value in the context of the village where the workers used to live. But for some indicators, the same value was used in both context- Dhaka and village, in order to keep the weight the same. Using this variable matrix, research has compared workers' vulnerability which is the first object of this research. However, in addition, this research needs to identify workers' workplace vulnerability to determine their present livelihood vulnerability. Therefore, an additional variable matrix was also used to discover workers' workplace vulnerability.

Table 6: Asset variable matrix

Indices Or asset variables	Indicators
Human Capital	<ul style="list-style-type: none"> - Age - Work experience - percentage of workers who did not attend 5 years of schooling - percentage of workers without another job - percentage of workers' whose health is poor - percentage of workers having health problem after starting to work in construction
Social Capital	<ul style="list-style-type: none"> - Dependency ratio - Wage earner - Average number of family members - percentage of workers not living with family - percentage of workers with children below 15 years - percentage of workers that received financial or food or material support from a neighbour - percentage of workers not giving any financial or food or material support to a neighbour - percentage of workers has not received any financial or food or material support from govt. -percentage of workers who are not member of any group or cooperative
Physical Capital	<ul style="list-style-type: none"> - percentage of workers not living their own house -Percentage of workers without own bedroom. - percentage of workers without access to clean drinking water - percentage of workers without proper sanitation facilities - percentage of workers without access to electricity - percentage of workers using fire wood for cooking
Natural Capital	<ul style="list-style-type: none"> - percentage of workers without access to public land - percentage of workers without access to livestock - percentage of workers without access to natural water bodies - Percentage of workers without access to natural food stuff. - percentage of workers who do not own land
Financial Capital	<ul style="list-style-type: none"> - percentage of workers without savings - percentage of workers with credit - percentage of workers with debt - percentage of workers living below the poverty line (\$2)

A livelihood vulnerability index (LVI) was used to test the research questions. LVI is a balanced weighted average approach. It assumes that each variables or indicators contribute equally to the overall vulnerability (Sullivan, et. al, 2002). Therefore, each of the indicators needs to be standardized as an index because of different units of variables. After that, the average of the standardized index of each variable needs to be calculated to

estimate the indices for each livelihood assets. Finally, the balanced weighted average of the variables will consider as the final LVI score for the workers. The LVI is scaled from 0 (least vulnerable) to 1 (most vulnerable). Following this Livelihood vulnerability index (LVI), workers vulnerability has been measured. At first a percentage amount from these indicators has been used. But some indicators needed to be standardized because of different units of variables. Therefore, the following equation has been used for standardization of indicators. This equation has been drawn from the Human Development Life Expectancy Index which is the ration of the difference of actual value and minimum value and the range of maximum and minimum (UNDP, 2015).

$$\text{Index} = \frac{\text{Actual value} - \text{Minimum Value}}{\text{Maximum value} - \text{Minimum Value}}$$

Finally, the average value of all indicators from each individual asset variable is the vulnerability index for each asset variables. And finally, the Livelihood vulnerability Index is the average value of all asset variables. Therefore, in this research there are two Livelihood vulnerability index value for workers. One value has provided the present vulnerability in an urban context and the other value has provided the past vulnerability in a rural context. Consequently, the vulnerability index will provide two different shapes of the asset pentagon, which is the core of the livelihoods framework within the vulnerability context.

In addition, this research has identified workers' workplace vulnerability. Depending only on these asset variables may not truly reflect workers' present vulnerability in Dhaka city because their livelihoods also depend on their occupation. Therefore, occupational safety or workplace vulnerability is also important to determine workers' present livelihood vulnerability. For that reason, an additional workplace variable matrix was used to discover workers' workplace vulnerability. Consequently, the average value of workplace variable matrix and Asset variable matrix may clarify workers' livelihoods vulnerability more precisely. The workplace variable matrix has been specified below.

Table 7: Workplace variable matrix

Workplace vulnerability indices
work stress
percentage of workers without safety equipment
percentage of workers with height problem
percentage of workers without work training
percentage of workers without first aid training
percentage of workers without safety training
percentage of workers without access to clean drinking water
percentage of workers without bathing facilities
percentage of workers without proper toilet facilities
percentage of workers without proper bedding facilities
percentage of workers using same clothes at work and outside of work

2.3. Ethical Consideration:

Prior to conducting the work, the research proposal was submitted to the Department of International Environment and Development Studies (Noragric), at the Norwegian University of the Life Science. The proposal was approved by respective and this research was planned. So the chance of misleading results has been minimized due to oversight. In addition, the research has followed all ethical procedures, and has taken all appropriate steps to protect and ensure the dignity and welfare of all participants.

The research has maintained the dignity and welfare of all participants by protecting them from harm, unnecessary risk, or mental and physical discomfort. Participation in this research was voluntarily. Before any interviews or questionnaire surveys or video or audio recording, informed consent from participants was taken. Participants were also told that they were free to decline or withdraw from interview or questionnaire survey or video or audio recording at any time. Also, they were assured of confidentiality and anonymity in their responses. The research data and information have been kept secret and have been used only for this research. Results will be circulated in collective form only at a professional level by publication in academic journal.

As an independent researcher, I took great care that there be no fabrication or falsification of data and data findings. I declare that this is my own research. My research is independent and impartial and I have not presented the work of others. But where referenced, i have given appropriate credit for the work of others through citation.

3. Findings

3.1. Questionnaire Finding:

The main segment of this research is to compare the present and past livelihood assets of construction workers in Dhaka. For this segment, this research followed a quantitative approach. My quantitative approach was based on having by 44 construction workers answer my questionnaires. Participation was voluntary. Most of the participants were very interested and they participated cheerfully. But some participants' answers were confusing and possibly untruthful as their answers were misleading and did not match or fit with the respondents' general information. As an example, a 28 year- old worker gave the answer of '20 years' for his work experience. This means he started working in construction when he was 8 year old. But, if we consider the economic conditions of Bangladesh 20 years ago, this might actually be possible, since there is known to have been abuse of child labour. Also, in some points workers were unable to be exact about his past livelihood assets. But they gave an answer, as much as they could remember. Based on their answers, the research has compared the present and past livelihood assets of workers. However, this section has provided the workers' present and past livelihoods assets starting with their demographic information. After demographic or general information, this section has described and compared workers' livelihoods vulnerability in five different assets both in present and past context. And to check the vulnerability differences, a paired t-test has been performed to describe the significance of the difference. At the end, the section is the findings of workplace vulnerability of workers.

3.1.1. Workers general information: General information is significant to justify the probability of research findings amongst the total population. By using general information, a researcher can check how the sample of that research is distributed. When a sample is normally distributed, there is higher probability of reflecting the characteristics of the total population. The method of sampling in this research is systematic where I have identified the potential survey respondents by workplace and choose the samples of persons who work in construction. However, for this normal distribution check, I have used three general information attributes of workers. These are age, years of living in Dhaka and their years of experience in construction. Also, the general information describes the demographic characteristics of workers.

Age: Workers age ranges from 17 to 62 year but most of the workers are young. The most active working age group belongs to the 21- 30 age group, which is 45.45 percent of the total. Workers average schooling is 5.43 years, which means they have attended primary school. However, around 22.5 percent of workers have never been to school.

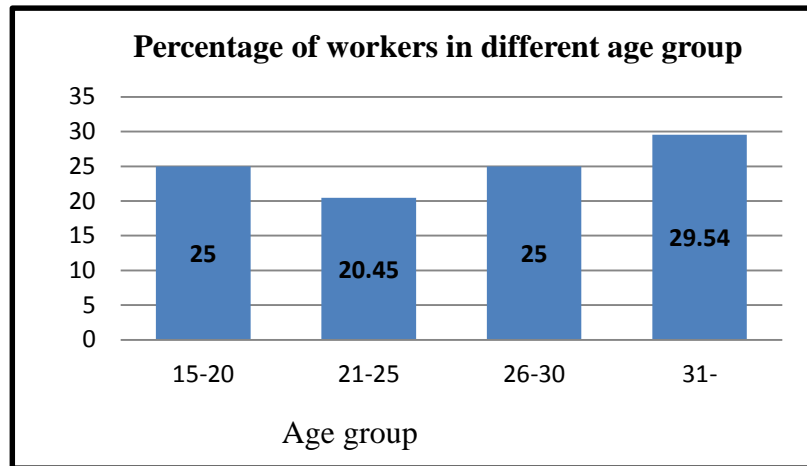


Figure 7: percentage of workers in different age groups

Gender: Research findings suggest that Male workers dominate the construction sector. Amongst the 44 participants in the research survey, 95.45 percent are male and 4.55 percent are female. Their marital status shows that around 68.18 percent are married and 31.82 percent are single. But only 30 percent out of the total 68.18 percent married workers live with their family while 14.28 percent out of the total 31.82 percent of single workers live with parents in Dhaka. In total, only 25 percent of workers live with their family in Dhaka and rest of workers' families live in rural areas. This means around 75 percent of workers are living alone in Dhaka, and only for working or earning potential. Also, every family has more than 5 members which lead to the dependency ration of 3.75 with an average wage earner of 1.72 persons in each family.

Table 7: percentage of workers living with family

Marital status	percentage of workers	percentage living with family or parents in Dhaka
Married	68.18 percent	30 percent
Single	31.82 percent	14.28 percent

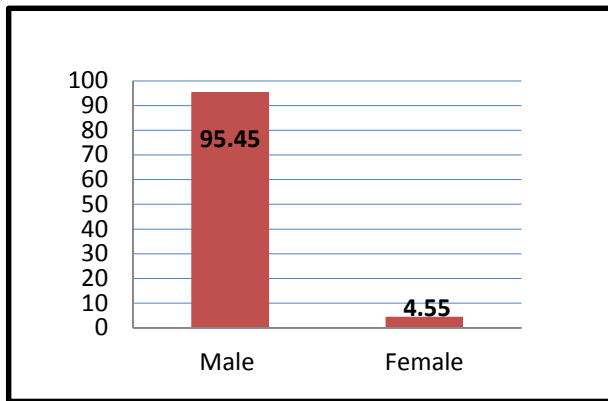


Figure 8: percentage of Male and Female workers

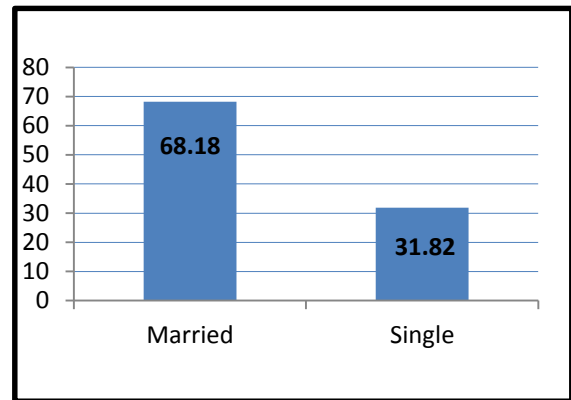


Figure 9: percentage of workers marital status

Workers' occupation before migrating to Dhaka: Most the workers have migrated from rural Bangladesh. Though most of the workers do not live permanently in Dhaka, for working purposes partially they live an average of 7.53 years in Dhaka. Usually they migrate, live and work in Dhaka in between the harvest season. In the harvest season, around 75 percent of workers go back to their villages and work as a farmer on their family land. Although construction workers involvement in agriculture is still countable, before starting to work in construction, around 70 percent of workers' income or livelihood was fully dependent upon agricultural and non-agricultural occupations. Around 23 percent of workers were unemployed and 11 percent were students in rural Bangladesh. Non-agricultural occupations were small businesses, vendors, in hotels & restaurant and in workshops etc. However, employment and better income is one of the factors behind these workers' involvement of average 7.43 years in the construction sector.

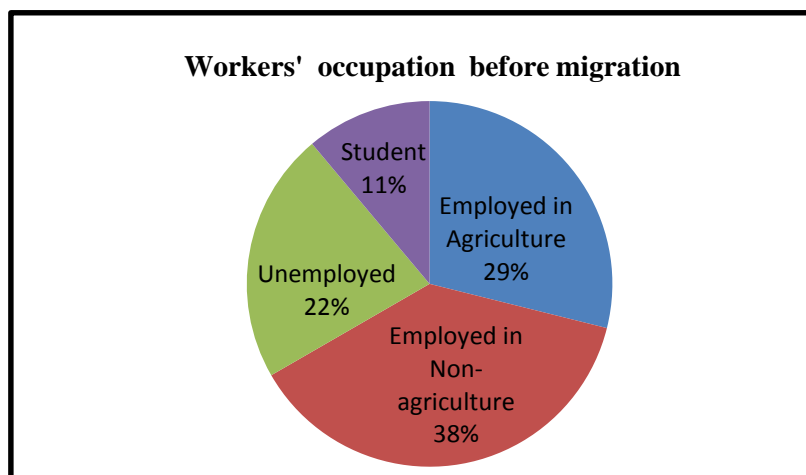


Figure 10: Workers' occupation percentage

This above ‘general information’ is based on my surveyed sample of 44 construction workers. But the question arises, do these samples represent the total population of construction workers. To defend this question, it is important to verify how these samples are distributed. If samples are normally distributed; there is higher probability of reflecting the characteristics of the total population. To check the normal distribution of samples, i have used some simple statistical tools to process the workers’ general information: Age, years of living in Dhaka and their years of experience in construction. These visual tools are a histogram, box plot and normality plot.

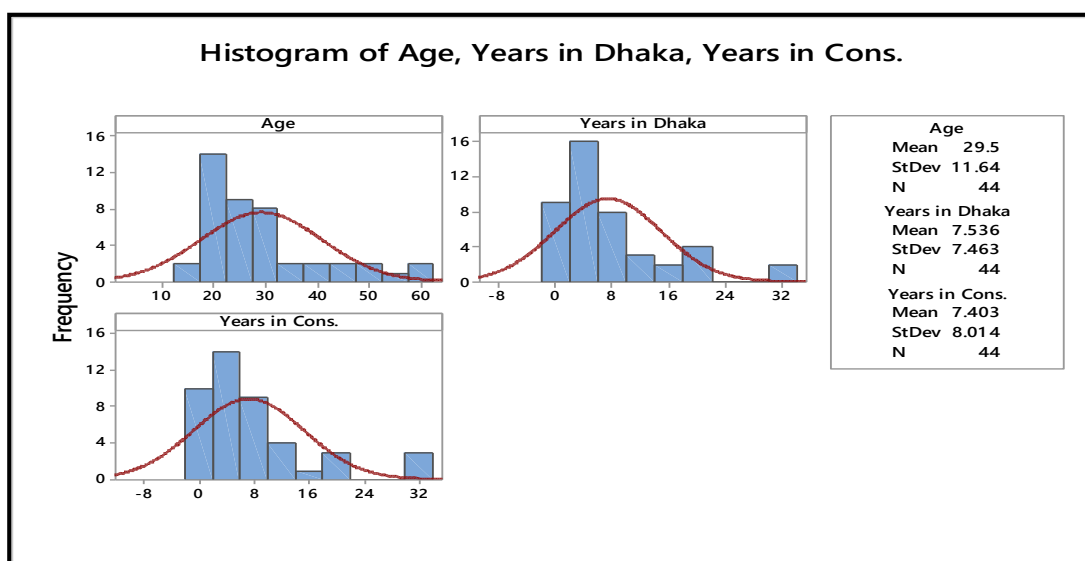


Figure 11: Histograms of age, years of living in Dhaka and work experience of construction workers

These histograms of age, years of living in Dhaka and experience of construction workers clearly show that the histogram does not fit within the normality curve line. This means samples are not distributed normally. Histograms show that the data are not symmetrical. These data are right skewed in these three criteria. In the histogram, these samples are not normally distributed but this does not mean that there is less probability to reflect the characteristic of all construction workers, as the sampling technique was clustered and samples were collected from construction sites, and also because the three criteria; age, years in Dhaka and work experience need to be dealt with differently in this situation. For age, there is a large number of young workers work in construction because construction works need high labour effort.

When these workers get older or just after the age of 30, workers start to shift to other jobs or work. Most of the workers are young and have migrated from rural Bangladesh. Therefore, histograms of age and years in Dhaka are dominated by young workers leading to a right skewed histogram. In the same way, the histogram of ‘years in construction’ is also affected by young workers where working experience is limited. Considering these reasons, if we look back to the histogram, it can be stated that the samples are quite well distributed. Boxplots of age, years in Dhaka and years in construction have some outliers, which pull the mean value from the median value of samples. Otherwise, means and median value are positioned close to each other. But the boxes are not equal pieces because of right skewed data where the upper part of box above the median line is bigger than the lower box. This means, there are more young workers than the older. Therefore, this needs to be dealt with differently for a normality check.

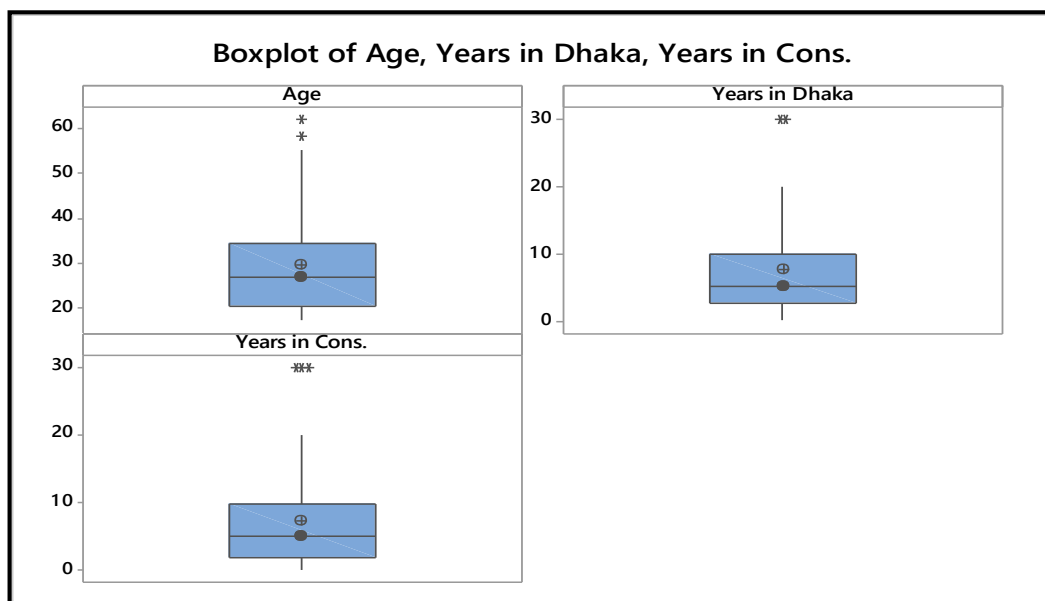


Figure 12: Boxplot of Age, years in Dhaka and years in construction workers

However, to justify the sample distribution, a normal probability plot can identify substantive departures from normality and P-values can provide the significance level of normality. Therefore, the below probability plot of age, years in Dhaka and years in construction indicates that the normal probability plot is not straight. Also, the P-value in each criterion is less than 0.05 on 95 percent confidence interval. This usually means there is evidence that the samples are not normally distributed. However, these samples are not normally distributed largely due to some outliers and extreme values. Therefore, this does not

mean that there is less probability of reflecting the characteristics of the total construction workers.

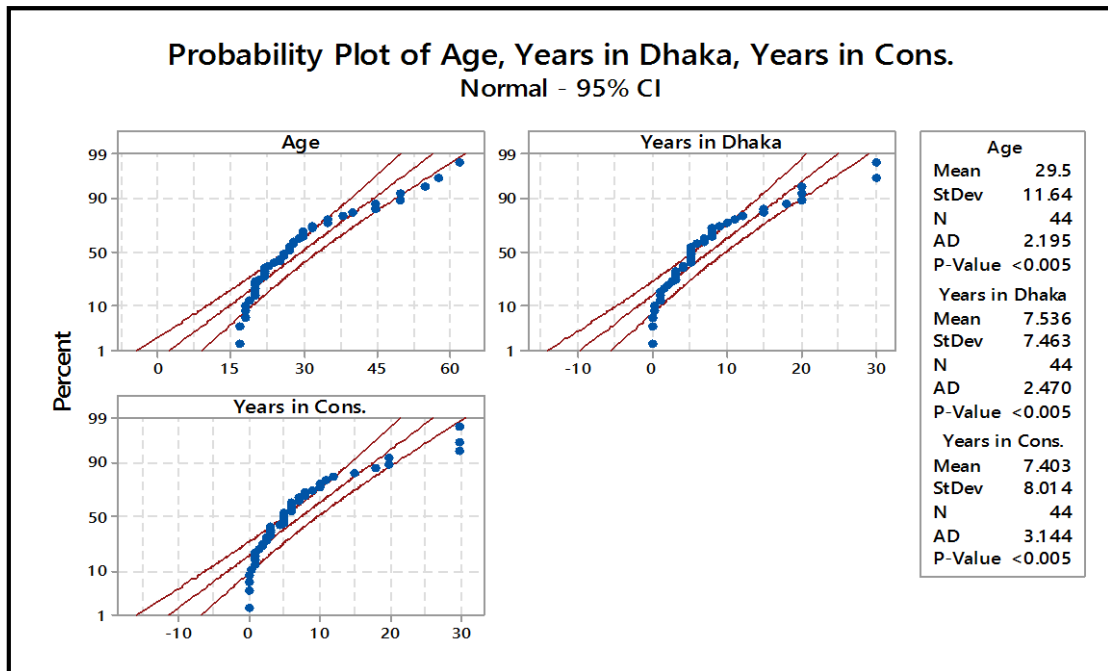


Figure 13: Probability plot of age, years in Dhaka and years in construction

The reasons behind this uneven probability plot might be the total number of samples or too many extreme values or the subject of a large number of young workers in the total sample. However, normal distribution is a means to an end, not the end itself. A nonparametric test may be used to analyse the data findings because it does not require normal distribution of samples. But in this research, a parametric test has been as it is more powerful and can perform well if the sample size is greater than 20 even in non-normal sample distribution. Therefore, I have used a paired t-test to check the workers' vulnerability because the sample size is greater than 20. In addition, these samples are not normally distributed mainly due to some outliers and extreme values.

3.1.2. Workers’ asset difference or vulnerability (present and past): Workers’ vulnerability is shaped by livelihood assets and strategies. Livelihood assets are the centre of a sustainable livelihoods approach. A sustainable livelihoods approach considers the assets that poor people need in order to sustain an adequate standard of living. The deficiency of livelihoods assets makes workers more vulnerable. Therefore, research findings on workers’ Human capital, Social capital, Physical capital, Natural capital and financial capital can explore workers’ vulnerability.

3.1.2.1. Human capital: Human capital represents the skill, knowledge, ability to labour and good health. Human capital enables people to pursue different livelihood strategies and achieve their livelihood objectives. Consequently, workers human capital depends on their skill, knowledge, ability to labour and good health. Research findings suggest workers’ vulnerability index on human capital in Dhaka city is .35 and in the village was .23. Both of these vulnerability index values are the total average values of human capital indicators. For measuring this human capital index, seven human capital indicators were taken into account. In both contexts, this value is moderate. However, based on human capital indicators, workers are more vulnerable in Dhaka city compared to the village.

Table 8: Human capital vulnerability index of workers

Human capital indicators	Vulnerability index in Dhaka	Vulnerability index in village
percentage of workers without another job	.88	.68
percentage of workers whose health is poor	.18	.02
percentage of workers having health problem after starting work in construction	.36	.02
Age	.31	
percentage of workers who did not attend 5 years of schooling	.13	
Work experience	.24	-
Average	.35	.23

In Dhaka, 88 percent of construction worker depends only on one job or work. This means only 12 percent of workers have another opportunity or source of income, whereas in the context of the village 32 percent of worker had another opportunity or source of income. According to the workers’ perception, their health status is more vulnerable in Dhaka

compared with the context of village. About 18 percent of workers believe that their health condition gets poor after starting to work in Dhaka (present health) whereas only 2.27 percent of workers health condition were poor when they used to live in village (previous health). On the other hand, around 82 percent of workers believe that their health is good or better in the context of Dhaka compared with 98 percent in the context of village.

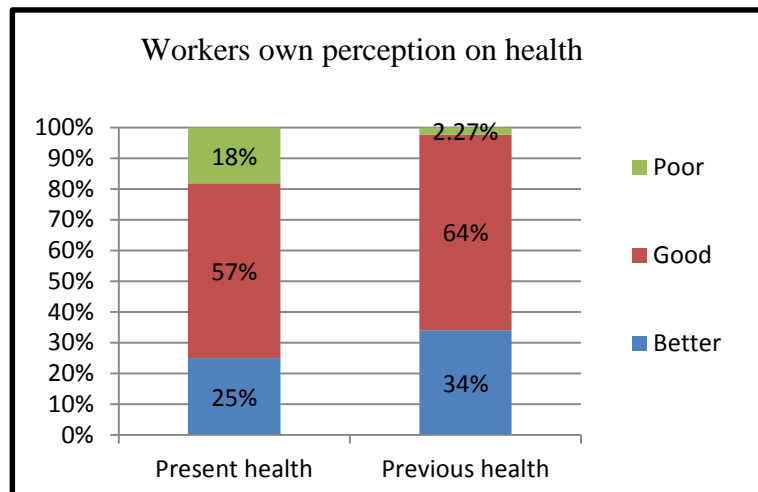


Figure 14: workers' health status

Both age and work experience indicators were measured by using a livelihood vulnerability index (LVI) equation where the average age of the surveyed workers is 29.5 year, maximum age is 55 years and minimum age is 17 years. And the average work experience is 7.40 years with a maximum of 30 and minimum of .08 years.

3.1.2.2. Social capital: Social capital is social resources such as relationships with either more powerful people or with others like themselves, or membership of groups or organisations. Generally relationships of expectation, reciprocity and exchange that the poor can draw on in times of need, and that lower the costs of working productively together. Like human capital, social capital has a fundamental value; good social relationships are not simply a means, they are an end in themselves. Generally, in an urban context, a social network or relationship is less strong than in the village context. Research findings suggest that the vulnerability index of social capital in Dhaka city is higher than the vulnerability index of social capital in the village. The social vulnerability index value in Dhaka and in the village are .51 and .40 respectively. The dependency ratio is the number of family members dependent on an individual construction workers' income. The Dependency ratio indicator was normalized by using the livelihood vulnerability index where the average dependency

ratio is 3.75 with a minimum value of 1 and a maximum value of 9. Also, both Family members and wage earner indicators have been standardized by using the livelihood vulnerability index equation. The average family members of construction workers are 5.68 with a minimum of 1 and a maximum of 14 members. And the average wage earner in each family is 1.72 with a minimum of 1 and a maximum of 4. But measuring vulnerability depending on social relations is complex because when people are better off, they become individualistic. Also, receiving support and giving support to neighbours depend on ability, willingness, faith and the prestige of neighbours.

Table 9: Social vulnerability index of workers

Social capital indicators	Vulnerability index in Dhaka	Vulnerability index in Village
percentage of workers receive support from a neighbour	.18	.45
percentage of workers not giving support to a neighbour	.66	.37
percentage of workers not receiving support from govt.	.97	.77
percentage of workers who are not member of any group or cooperative	.93	.88
Dependency ratio	.34	
Average number of family members	.36	
Wage earner	.24	
Workers with children below 15 years	.50	
percentage of workers not living with family	.75	0
Average	.54	.43

3.1.2.3. Physical capital: Physical capital is the basic infrastructure, the tools and equipment needed to support livelihoods. Physical capital helps people meet their basic needs and to be more productive. Lack of particular types of infrastructure is considered to be a core dimension of poverty. For example:-, shelter, water, sanitation systems and energy. Based on the physical capital indicators, workers' vulnerability index in Dhaka is .39 and in the village was .34. Both values are temperate. Though average values of the physical vulnerability index in Dhaka and the village do not have that much defence, the values of each physical capital indicator demonstrates significant differences between the vulnerability index in Dhaka and the village. But the main findings in this section is that, around 56 percent of workers live in construction sites which do not have proper water, sanitation or bedding facilities.

Table 10: Physical vulnerability index of workers

Physical capital indicators	Vulnerability index in Dhaka	Vulnerability index in Village
percentage of workers not living their own house	.56	.09
percentage of workers without own bed room	.85	.14
percentage of workers without clean drinking water	.25	.03
percentage of workers without proper sanitation facilities	.28	.23
percentage of workers without access to electricity	.07	.55
percentage workers using fire wood for cooking	.36	1
Average	.39	.34

Also around 38.63 percent of worker lives in shared room. Living conditions are poor and unhealthy which and do not meet a minimum standard level in Dhaka. Therefore, we can conclude that 80 percent of workers do not have proper access to basic infrastructure which is a core dimension of poverty.

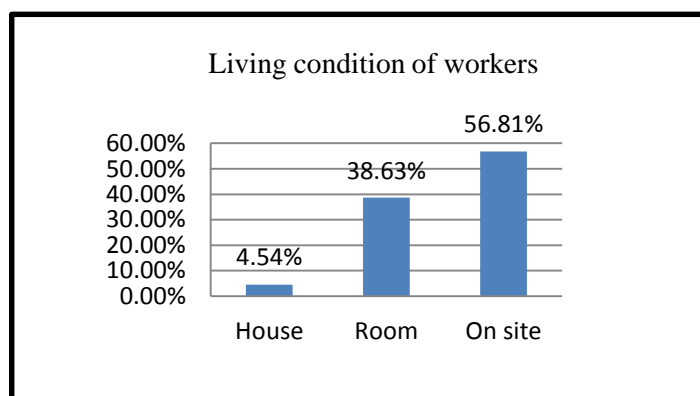


Figure 15: Workers' living condition is Dhaka

3.1.2.4. Natural capital: Natural capital is the term used for the natural resource stocks that people can draw on for their livelihoods. There is a wide variation in the resources that make up natural capital from intangible public goods to divisible assets including land, forests,

water, air and so on. Research findings suggest that the vulnerability index of natural capital in Dhaka is .82, which is severe. This is because of urban or city life. In the context of Dhaka city, workers cannot draw natural capital for their livelihoods. But in the context of the village, the vulnerability index of natural capital is .34, which is less than moderate.

Table 11: Natural Vulnerability index of workers

Natural capital indicators	Vulnerability index in Dhaka	Vulnerability index in Village
percentage of workers without access to public land	.97	.50
percentage of workers without access to livestock	.93	.36
percentage of workers without access to natural water bodies	.97	.27
percentage of workers without access to natural food stuff	.95	.29
percentage of workers who do not own land	.29	.29
Average	.82	.34

Research data shows that around 93 percent of workers do not have easy access to livestock in Dhaka because workers cannot keep livestock in Dhaka; therefore, they have to buy for their consumption needs. But in the context of the village, 64 percent of works have access to livestock because rural households usually own domesticate livestock. Common livestock are goat, chicken, cow and duck. Access to livestock has nutritional benefit which is a core concept of poverty. Also 71 percent of workers have answered that they have their own land, but in most of the cases, land is family owned, therefore, the individual accessibility as a member of the family is questionable.

3.1.2.5. Financial capital: Financial resources are those resources that people use to achieve their livelihood objectives. It may include savings, in whichever form, access to financial services and regular inflows of money. Financial capital is the most versatile of the five categories of assets. It can be converted into other types of capital, and can be used directly to achieve livelihood outcomes. It can also be transformed to social and political influence. However, it is also least available to the poor. Research data suggests that construction workers vulnerability index of financial capital in Dhaka is comparatively better

than the village. The financial vulnerability index in the context of Dhaka and the village are .21 and .56 respectively.

Table 12: Financial vulnerability index of workers

Financial capital indicators	Vulnerability index in Dhaka	Vulnerability index in Village
percentage of workers without savings	.56	.88
percentage of workers with credit	.04	.11
percentage of workers with debt	.22	.25
percentage of workers living poverty line (\$2)	.07	.85
Average	.22	.41

Financially, workers are less vulnerable in Dhaka city because of higher and regular income compared with the village. Only 7 percent of workers earn less than the poverty line in Dhaka city. Around 85 percent of workers earn below the poverty line based on 2 dollars per day. Considering that the poverty line is only 2 dollar per day, a worker needs to earn 4712 BDT (Bangladesh taka) per month (exchange rate 1 dollar = 78.53 BDT).

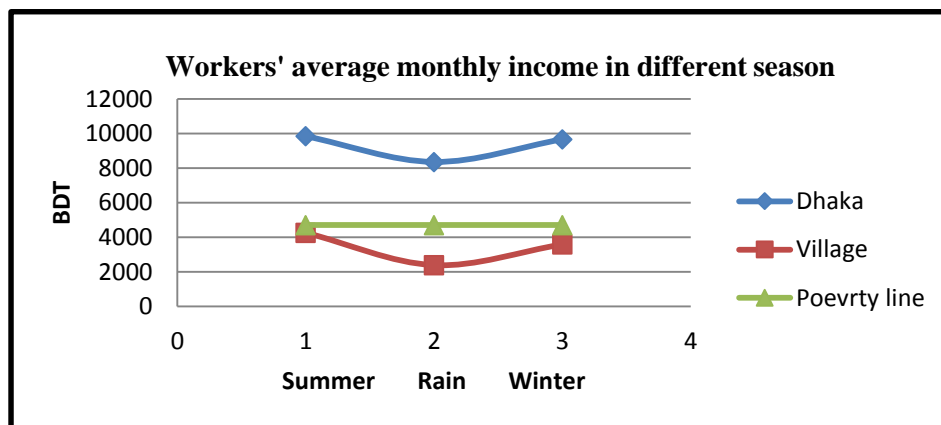


Figure 16: Workers' average monthly income in different season

Workers earnings vary seasonally. In the rainy season, workers usually earn less compared with summer and winter. However, in the context of the village, workers average monthly income is below the poverty line in each season. And In the context of Dhaka, workers earn double the poverty line. Research findings suggest that opportunity of better income and income difference are the dominant factors of migration of workers from the village to Dhaka. Also, recent research claims that urban pull factors: available jobs, getting access to

city's informal economy and better income is the most dominant factors of migration from village to Dhaka (Istiaque & Ullah, 2013).

However, other than financial capital, workers vulnerability index on the four assets in Dhaka are comparatively higher than the context of the village. If we take the total average value of these five assets' vulnerability index for both the context of Dhaka and village, subsequently the total assets livelihood vulnerability index of construction workers is 0.45 in Dhaka and 0.38 in the context of village. This means, Construction workers are slightly more vulnerable in Dhaka compared with their life in village. A visual presentation of a vulnerability asset pentagon can easily demonstrate the overall picture of workers' vulnerability.

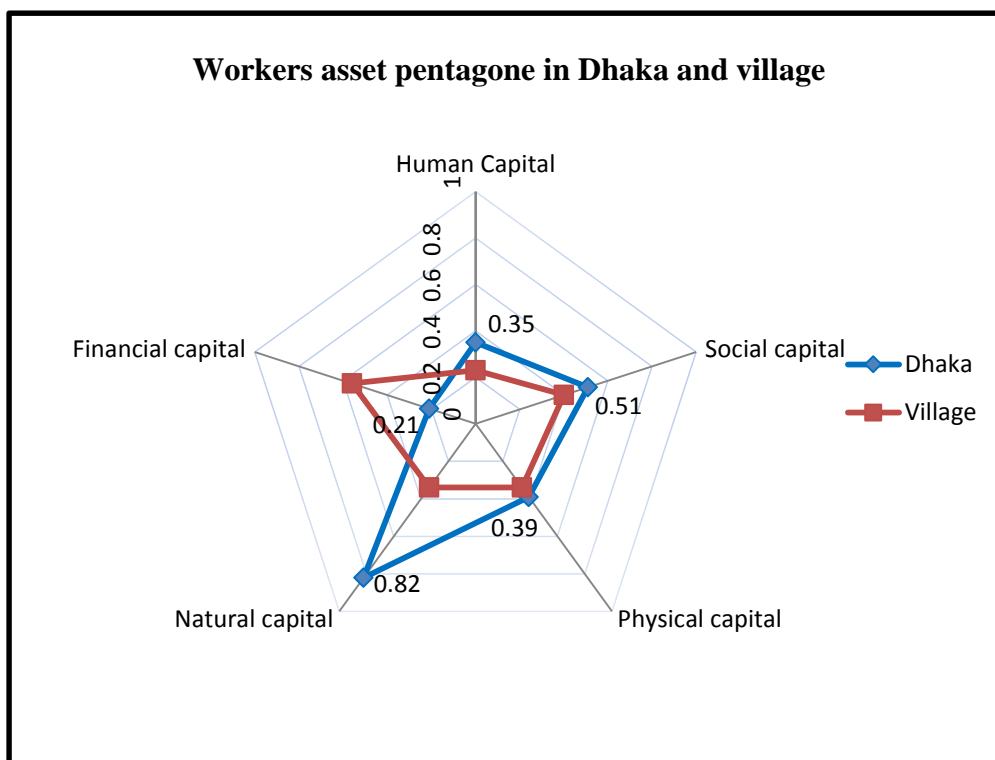


Figure 17: Workers livelihoods vulnerability asset pentagon

In general, data findings recommend that workers are slightly more vulnerable in the context of Dhaka compared with the village. However, to support the initial objective of this research, I have to test the research hypothesis. Therefore, I have to test “Are Construction workers more vulnerable in an urban context compared with their rural context?”. Considering all the capital indicators for both Dhaka and the village, the outcome of a paired t-test is,

Table 13: P- value

	N (Indicators)	Mean	StDev	SE Mean
Workers in Dhaka	31	0.46	0.32	0.05
	31	0.35	0.29	0.05
	31	0.11	0.37	0.06
95 percent lower bound for mean difference: - 0.0016				
T-Test of mean difference = 0 (vs > 0) : T- Value = 1.67 P-value = 0.05				

P-value of paired T-test is 0.05. This means there is some evidence against the research null hypothesis. So the research can reject the null hypothesis and can accept that Construction workers are more vulnerable in urban context compared with their rural context.

Less livelihood assets do not always mean more vulnerability. But less livelihood assets mean less capability for sustainable livelihoods. The level of vulnerability of an individual or community is determined by how weak or strong their livelihoods are, what occupational activities they are engaged in, the range of assets they have access to pursuing in their livelihood strategies and the strength of and support of the social networks and the institutions that they are part of, or which have influence over them. Research findings suggest that workers have less accessibility to livelihood assets in Dhaka compared with their accessibility to assets they had in village. Yet workers are still migrating, living and working in the construction sector. The main aim behind this livelihood strategy of migration and working is to secure a sustainable livelihood. But is it possible to have a sustainable livelihood without dignity and rights? This is why this research has also assessed the workers working conditions because workers’ working conditions are a factor that has impact on their livelihoods. Working conditions are directly linked with workers’ rights. Consequently, the

following findings relate to workers' rights which have described how workers are vulnerable in their workplace for lack of rights' and consequent impact on living standard of the workers.

3.1.3. Workers' workplace vulnerability:

Research findings suggest that no worker who had a written contract with a Construction Company or sub-contractor. Workers get salary on a daily, weekly and monthly basis. Around 50 percent of workers get their salary on a daily basis. Salary ranges from 300 (\$3.82) to 550 (\$7) BDT per day. However, sometimes they do not get their salary on time. Around 12 percent of workers reported that they do not get wages on time. In addition, workers do not have any specific time schedule: how long they have to work in a day. Therefore, they do not have any option to get overtime payment. But research suggests that they work an average of 9.30 hours per day, with a one hour break.

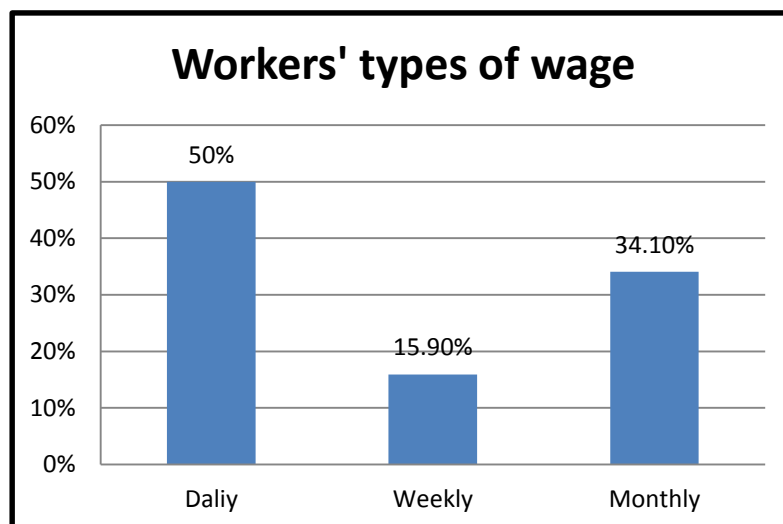


Figure 17: percentage of worker in different types of wage

Work stress has negative impact on workers' health. Therefore, perception of work related stress can be a way of measuring excessive pressure on health. Around 30 percent of workers feel that working in the construction field is very stressful. The stress is due to extra work or extra load and rushing at work. Around 95 percent of workers reported that they frequently carry more than 20 kilogram of weight alone. Surveyed data also suggests that around 24.09 percent of workers have experienced being verbally abused to complete work

quickly or to work in bad weather or to work with sickness. Although the value can be considered moderate in terms of vulnerability, but this is a violation of workers' rights.

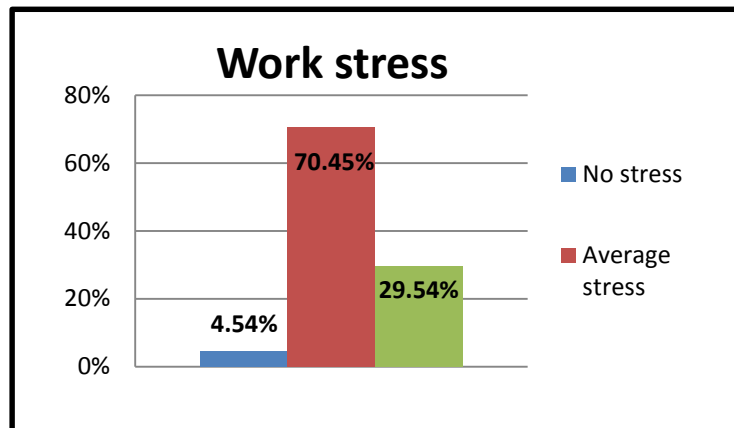


Figure 18: Workers perception of work stress

A trained worker is an asset for himself and also for a company because training educates workers, develops workers' skill, reduces accidents, promotes safety, and improves productivity and profitability. But research data suggests that workers do not have any training. Only 6.81 percent of workers have construction work related training and only 2.72 percent of workers have first aid and safety training, which can be considered extreme in terms of workplace vulnerability.

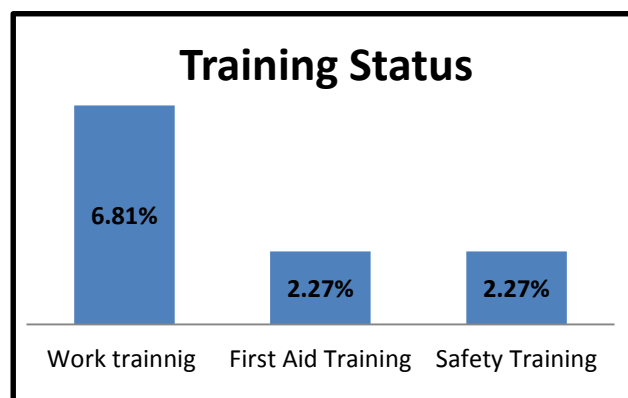


Figure 19: workers' training status

Work stress and training has impact on workplace accident which causes injuries. Injuries range from minor and fatal. In this research, we defined, fatal injuries as those that oblige workers not to attend work for a day or more. Research suggests that around 27 percent out of a total 68 percent of injured workers have suffered fatal injury and cannot attend at work for a day or more within the last year. These injuries are either for work stress

or for unsafe work place. Also survey data suggests that workers were hurt on an average of 3.3 times within the last 12 months. Only 13.13 percent of workers received treatment and only 6.06 percent of workers got compensation from companies within the last year. Data also suggests that only 34.09 percent workers use safety equipment while working.

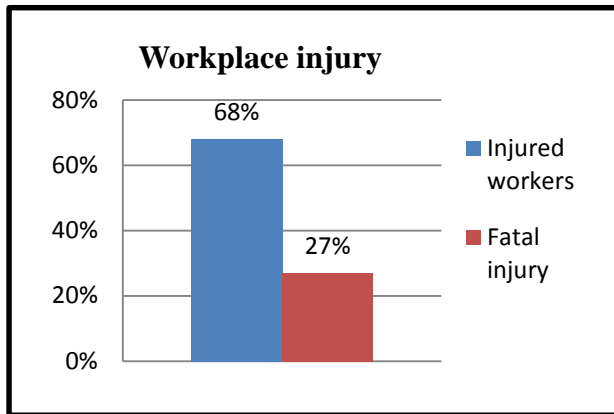


Figure 20: Workplace injury

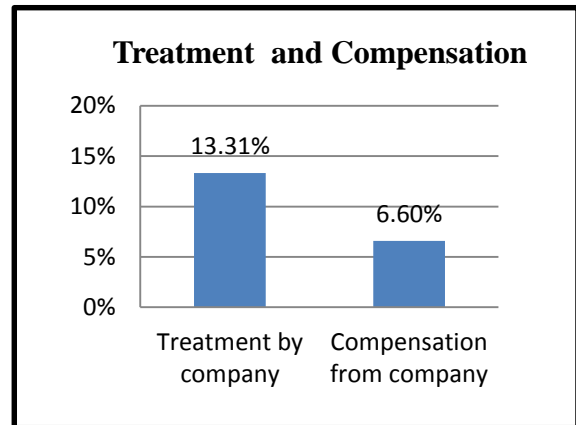


Figure 21: Treatment or Compensation from Company

Along with a safe workplace, working condition also includes the basic amenities for workers; such as clean drinking water, proper washing and bathing facilities, proper sanitation and proper bedding facilities. These facilities are most essential for workers, are also considered as a basic need. These facilities have an impact on workers' health, productivity and workplace injuries. Research data shows that 38.64 percent of workers do not have access to pure drinking water, 52.28 percent of workers do not have a washing and bathing facility and 36.37 percent workers do not have proper sanitation facility in workplace. In addition, 29.54 percent of workers mentioned that they use the same cloths at work and in private and 70.46 percent of workers do not have proper bedding. Considering these basic amenities, it can be weighed up moderate in term of workplace vulnerability.

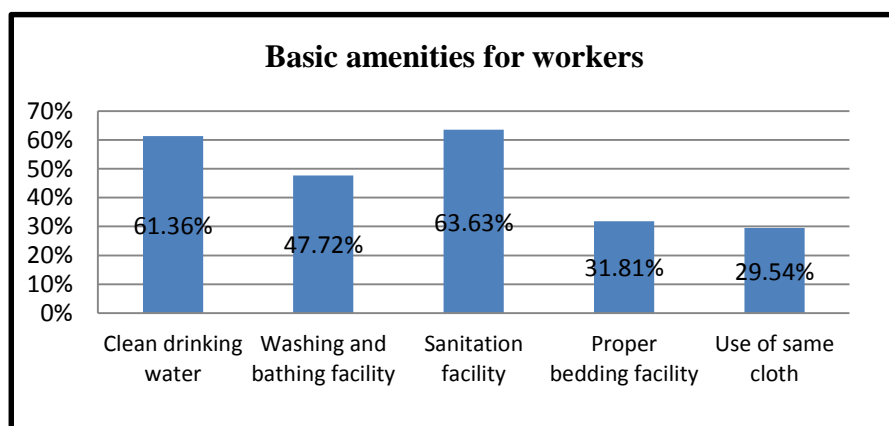


Figure 22: Basic amenities for workers in workplace

Proper wages, a safe workplace and suitable working conditions are the basic workers' rights. Unfair wages, lack of safe workplace and lack of proper working conditions are in the violation of workers' rights. This violation of workers' rights has an impact on workers' health and their livelihoods, making workers vulnerable. Considering some variables from the workplace, workers' workplace vulnerability index table is,

Table 14: Workers' workplace vulnerability index

Workplace indices	Vulnerability index
work stress	0.29
percentage of workers without safety equipment	0.82
percentage of workers with height problem	0.66
percentage of workers without work training	0.94
percentage of workers without first aid training	0.98
percentage of workers without safety training	0.98
percentage of workers without access to clean drinking water	0.39
percentage of workers without bathing facilities	0.53
percentage of workers without proper toilet facilities	0.37
percentage of workers without proper bedding facilities	0.69
percentage of workers using same clothes at work and outside of work	0.71
Average	0.67

The following diagram can easily represent workers workplace vulnerability.

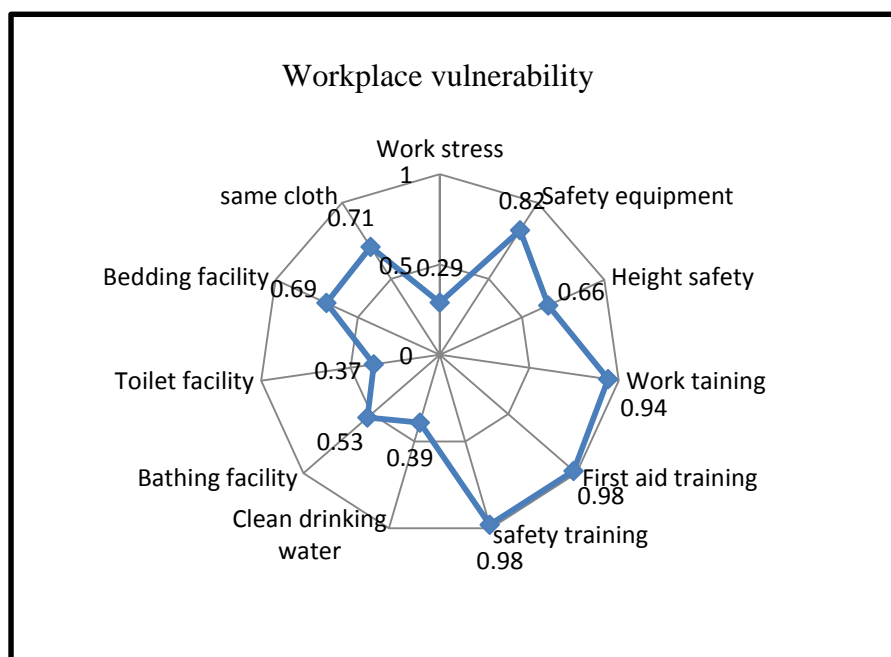


Figure 23: Workers' workplace vulnerability index

The workplace vulnerability index table suggests that the average workplace vulnerability index is 0.67 which can be considered severe (vulnerability index 0 represents low vulnerable and 1 represent highly vulnerable). This means workers are acutely vulnerable in their workplace. Now if we take the total average of this workplace vulnerability index (0.67) and the assets vulnerability index of workers in Dhaka city (0.45), then, the livelihoods vulnerability index of construction workers in Dhaka city is 0.56 which is higher than the asset vulnerability index in the village.

In conclusion, data findings articulate that construction workers are more vulnerable in an urban context compared with their rural context. Also, workers vulnerability partly depends on the condition of their work and workplace. Workers' working conditions are directly linked with workers' rights. Data findings suggest that workers' working conditions are severe (workplace vulnerability index (0.67)). Violation of workers' rights must have an impact on workers' livelihood. Therefore, the next section of this research; -the qualitative or interview findings, have described how workers' livelihood are affected by the violation of rights.

3.2. Interview or Qualitative Data Findings:

This section has demonstrated the qualitative data findings. The qualitative data especially dealt with occupational vulnerability and construction workers' livelihoods or standard of living. Occupational vulnerability means the unsafe and unsecure working conditions. A safe and secure working condition can provide sustainable livelihoods that are considered as central to workers' rights. For lack of livelihood assets, workers have to depend on their work and this dependency may provide an opportunity to capitalist companies to exploit these workers. This exploitation starts from unsafe and unsecure working condition which is a violation of fundamental workers' rights. Without workers' rights, it might be hard to develop sustainable livelihoods. Consequently, without a sustainable livelihood or income, there is hardly any way for these construction workers to escape from poverty. Therefore, qualitative data findings have described, how occupational vulnerability or violation of workers' rights impacts the standard of living and livelihoods of construction workers. The data was gathered through semi-structured interviews with real estate company personnel, with middleman or sub-contractors and with workers.

3.2.1. Company perspective:

Company perspective data findings result from the interviewed responses of real estate company personnel. There were five Real estate company personnel interviews. Three of them were Managing Directors of their companies, one was the chief engineer of a company and another was executive officer of a company. The numbers of ongoing projects were 8 to 15 projects in each company when the interviews were taken. These projects vary from residential to commercial including land development, housing, offices, a shopping centre, as well as 3 star and 5 star hotels. A total of 50 to 500 construction workers, in different projects that were managed by these companies.

All interviews were conducted in the participants' offices and they were interviewed separately. Interview duration varied between 15 to 30 minutes each. These five participants or company personnel fall in the range of 40 to 55 years old, and their experience in the real estate sector ranges from 8 to 21 year. As an expertise in the real estate sector, they were very calm and cunning while the interview was going on. They were cunning in a sense that sometimes they gave short answers to escape or to avoid the main point of the questions. However, some of them were very friendly and pointed out the issues properly and answered in details. According to their response on the future of real estate and the construction sector,

the consensus was that the real estate sector has a bright future because of surplus population and housing demand in Dhaka city which also makes it a profitable business. As an example, one individual stated that “I will say.....housing demand is infinity....for this 40 million urban population....housing demand is high. So real estate has a bright prospect. But at present sales are slow” (Interview, October 15, 2015). Based on their interview, the following out-comes have been identified which relate to occupational vulnerability and construction workers’ livelihoods or standard of living.

Hiring and Recruitment of workers: The interview data suggests that companies do not hire or recruit workers. The company only hires sub-contractors through the company’s contracting department. The sub-contractor is responsible for hiring and recruiting of workers. Therefore, the company does not have any idea about recruitment criteria, contract system, and salary and payment method of workers. A company does not have any list of worker in their projects. As an example, one respondent has mentioned that “we do not deal with workers. So I do not have any idea how a sub-contractor deals with those things.We do not recruit workers because if we have any contract, we have to pay them every month even if there is no project”(Interview, October 15, 2015). Therefore, construction workers do not have any contracts with the real Estate Companies but they work on that company’s projects. In a sense, without any written contract, workers are illegally in construction sites. For this absence of contractual relation between companies and workers, companies can easily refuse their responsibilities and obligations towards the workers. However, Section 5 of the Bangladesh Labour Act 2006, made it mandatory for the employers to provide an appointment letter of employment of each and every worker and also issue an ID card to the worker, free of charge. A letter of appointment or a written contract or ID card empowers workers to demand their needs and rights. Lack of contract means a worker without power.

Dealing and relationship with workers: It is clear that the sub-contractor is the one and only organization dealing with workers. The company does not recruit workers. So, the company does not need any department to deal with workers. But in some cases, engineering departments or construction department deals with workers to a certain degree. Therefore, the company does not have any direct relationship with workers. The company does not meet with workers, but company discusses workers’ issues at their meeting. As an example, one respondent said, “Each department does their meeting on every day and talk about workers’ issues.....Each department submits a weekly report to higher department, and in every 2

week, we do our official meeting with all departments together...ahh.... but we do not do any regular or official meeting with workers”(Interview, October 14, 2015).On the other hand, the Bangladesh National Building Code 2006 has obliged employers to consult workers or their representatives regarding the suitable personal protective equipment and clothing. So, without any consultation, how employers can ensure workers safety is questionable. Therefore, it is clear that workers have no place to represent themselves or to demand their needs or rights. This suggests an imbalance in power relations, as the company restricts workers’ participation in any negotiation process.

Project area and workers safety: Interview findings suggest that the company conceives workers’ safety as a moral obligation not a legal obligation. The company does as little as possible to ensure workplace safety. The company does not provide any training; such as work, safety, or first aid training. Sometimes companies provide a minimum amount of safety equipment; safety belt, helmet, gloves, boots and clothes, and give some oral instruction to sub-contractors. On the other hand, workers are not use to use these safety equipment because of their rural life style. As an example, one respondent has mentioned, “workers prefer to wear lungi (The lungi is a traditional garment worn around the waist, also known as a sarong) instead of trousers”(Interview, October 15, 2015). Also, the company thinks it is a common sense that workers can take precautions for their own safety. All respondents claim that they have inspection team that inspects the construction site safety and workers safety. Also some companies have the provision of 100 BDT penalties for not wearing safety equipment but companies cannot apply this penalty from a moral sense because this 100 BDT penalty will cut a large portion of money from the workers’ daily wage of 350 BDT. But on the hand, a company wants to make sure zero fatal or death injuries, not out of respect for workers’ rights but for the company’s reputation. As an example, one respondent has said, “most of the companies try to make sure no death on workplace only because of reputation” (Interview, October 16, 2015). Most of the companies do not have any insurance policy for workers. Usually the company shares costs with the sub-contractor if any major incidents occur. The Bangladesh National Building Code (BNBC) 2006 sets out the obligations relating to workplace safety and worker safety. And The BNBC has imposed obligation upon owners and developers to ensure workplace safety in the construction site, but in most of the cases developers or owners do not directly employ workers. Consequently, it is questionable, why or how companies can oblige workers to use safety equipment and exercise the provision of worker safety or the provision of penalties without any formal

agreement or employment contract with the worker. Therefore, the lack of a contractual agreement is a way to exploit workers.

The company's role for improving the living standards of workers: Most of the respondents have replied that they provide all the basic amenities or facilities; water, sanitation, lighting, bedding, saline (in hot weather) to workers. These are the workers' welfare facilities. Welfare facilities not only improve workers' welfare but also enhance their efficiency. Both Bangladesh National Building Code 2006 and Bangladesh Labour Act 2006 obligations direct that Owners and Contractors have responsibilities regarding welfare facilities on construction projects. But some companies think, providing these facilities is not obligatory; rather, they provide these facilities voluntarily. Also some companies conceive that they do not have any role to play outside of work. However, some companies believe that they can play a good role for improving the living standards of workers in return workers giving better output. As an example, one respondent said, "Our Company provides necessary facilities in workplace like water, sanitation, proper bedding. We provide everything voluntarily. yah..... Companies can play better role. There are many companies and actually that will provide more output in return"(Interview, October 15, 2015).Therefore, this is understandable that there is a gap between the law and its implementation. Only the implementation of these laws can change employers' realization and can oblige them to do their duty to improve the living standards of workers.

In summary, the data illustrates that companies do not have any written agreement or contract with workers. A contract empowers worker to claim their needs and rights. Therefore, workers are powerless as the company does not allow workers or their representatives to participate in project meetings, which also restricts workers from claiming their rights. On the other hand, companies do not recruit workers directly; companies hire a sub-contractor who hires workers. In this way, companies easily avoid their responsibility by not having any contract with workers. For the absence of a contract or relation with workers, companies conceive that companies are not legally obliged to provide the basic amenities or facilities for workers. They provide these facilities from a moral obligation. Therefore, companies provide as minimum worker safety as possible to avoid any deaths in the workplace, merely in order to protect their reputation.

3.2.2. Middleman or sub-contractor perspective:

Middleman or sub-contractor perspective has described the interview findings from 4 sub-contractors who are between 40 to 50 year old. Their experience ranges from 5 to 10 years. Before starting to work as a sub-contractor, they used to work as a construction worker. Their educational qualification is between, 0 to 10 year of schooling. The number of completed projects by a single sub-contractor varies from 10 to 50, small and large projects. The sub-contractor has a contract with company. A sub-contractor does not have any licence or official organizational setup. Also they do not have any training like first aid or safety. A sub-contractor hires workers to do the construction work according to the work schedule. Usually a sub-contractor has contract with the company. This contract describes the project phases and work schedule. Based on their interview, the following out-comes have been identified which relate to the occupational vulnerability and workers' livelihood or standard of living.

Contract with company: Usually a company hires a sub-contractor on the basis of a personal connection or relationship. This connection or relationship is built up when the sub-contractor worked as a foreman under the supervision of construction engineer. A foreman is the head of a group of construction workers. Sub-contractors usually have a written contract with a company. As a sub-contractor, he needs to submit a budget depending on workload and work schedule. This budget describes the predicted number of workers and their daily expenses. This budget is also approved in negotiation with a company. Depending on budget, a company provides a certain percentage (10 percent to 50 percent) of money before starting to work on any phase of construction. Also, some companies keep 10 percent of the budget for one year as a maintenance guarantee. However, sub-contractors do not get any salary from a company. Their income depends on that budget. If they can save money from the budget, that is their income. As an example one sub-contractor has said, "I do not have any income as like monthly salary..... My income comes from this work budget. If I can save any money from the budget, after using all the workers then this is my income.....sometimes contractors need to sale their own land to pay the workers because of late payment from companies and late payment means I cannot make enough money for me"(Interview, October 18, 2015). So it is clear that the contract between a company and a sub-contractor does not even consider workers and consequently companies do not give any guidelines to sub-contractor regarding worker wage and safety. But many of the Bangladesh Labour Act 2006

obligations particularly those relating to welfare are not within the control of the contractor. Implicitly, these responsibilities are under the developer or the property owner.

Hiring and dealing with workers: A sub-contractor always hires workers depending on personal relation, skill and wage. There are always some regular workers who work under a sub-contractor. There is surplus of workers. Therefore, a sub-contractor does not need to look for workers. Workers come to a sub-contractor through someone's reference. Therefore, a sub-contractor selects his regular workers first and then he selects workers on the basis of wage. As an example one sub-contractor has said, "Usually I try to hire cheap workers. So I can make profit. But sometimes it is problematic when new workers work. On the other hand, it is good for me because I can make profit and new workers can learn. Also, there are available new workers"(Interview, October 17, 2015). There is no written contract between the sub-contractor and workers. There is only an oral contract. The sub-contractor usually uses a combination of workers, which is a way of making profit. A combination of workers consists of foreman, main worker, helper or worker. Usually a sub-contractor uses more helper or worker than main workers. On an average, the market wage of a foreman is 500 to 550 BDT per day, a main worker earns 400 to 450 BDT per day and a helper or general worker earns 300 to 350 BDT per day. However, sub-contractors do not pay the full amount per day. They keep 100 BDT from each worker as a security deposit. At the end of the month or project, they return this deposit money to the workers. Also, the wage of new workers depends on an arbiters' recommendation. The sub-contractor usually visits his sites in the morning, takes workers attendance and then gives the instruction to foreman and workers. The instruction is about the work and schedule and how much they have to finish in a day. Then the foreman is responsible to take care of the works. And in the evening, the sub-contractor visits his sites to observe work progress and to pay the daily wage of workers. If a worker needs anything work related, or has any problem, he can ask the sub-contractor who may or may not consider this as a need or problem. Therefore, who actually monitor working conditions and workplace safety or worker safety is questionable. For the absence of any guidelines from the company to the sub-contractor, the sub-contractor does not have any legal obligation and principles regarding workplace safety and worker safety. Workers work under the control of the sub-contractor and company, but they are not an employee of sub-contractor or the company. Therefore, if worker demands anything of the sub-contractor, the sub-contractor simply says no stating that the company does not provide it or will not allow it.

Relationship with company and workers: Interview data suggests that the site manager or site engineer usually deals with the construction project site and gives instruction to a sub-contractor. Then the sub-contractor gives this instruction to the workers. In general, company officials do not talk to workers. They have a link only with the sub-contractor. In the absence of the sub-contractor, the foreman is the key person to guide the workers. Sub-contractors conceive that there is no need of relationship; workers are here only for work and they can manage everything. As an example, one respondent has said that, “what is relationship.....this is a simple work. If I give the instruction to a foreman and workers, than they can manage. ...ahh... I do have relation with company site engineer or site manager. They visit the workplace and give me instruction”(Interview, October 18, 2015).Therefore, it is clear that the sub-contractor does not even know their responsibilities or duties. Their knowledge of their responsibilities is limited. Also, the sub-contractors have a lack of expertise, or judgement regarding workplace and work safety.

Workers safety: Sub-contractors do not have any basic training on workplace safety or first aid. Also they consider that they do not need training as they have gathered all the basic knowledge during their career. As an example, one sub-contractor replied that “No.....I do not have any training. Also, I do not need training..... I learnt these things when I used to work as a worker.....I have been working in construction since 25 year and I know everything.”(Interview, October 17, 2015). They do not have any standard safety guidelines for workers. Usually when the site engineer or site manager comes to visit the project, the workers need to tidy up the place. The main reason behind this tidy up is for saving the waste of construction products. However, sometimes the sub-contractor gives some guidelines orally to maintain workplace safety. Like; keeping bamboo or tin in the corner, to sweep the dust and keep the workplace dry. When a worker gets injured, other workers help him and give him first aid by using their conventional knowledge. If the injury is minor, the sub-contractor gives money to buy medicine. Therefore, usually workers go to the pharmacy and buy medicine without consulting a doctor. If there is any fatal injury and the treatment charge is not that costly, than the sub-contractor usually pays the expenses of treatment otherwise the company also shares expenses. But even now, there is a conventional or religious belief existing in workplace. For example, if any worker dies in the workplace, it is still considered as God’s will. Believing this, most of the time workers do not get, or even do not demand to get the full compensation. As an example one sub-contractor said that “if a worker dies..... we (company and i) try to give some compensation. But you know,

death is a death, controlled by God. There is no one's hand. So usually they (victim party) do not demand anything except the funeral cost" (Interview, October 17, 2015). It is clear that sub-contractors are over confident about their knowledge, as they do not have any training regarding first aid and workplace safety. Workers' safety is fully dependent upon workers' own responsibility, which means workers have to take their own initiative and have to be cautious in every step of their work. Conventional thinking and religious belief still dominate in the workplace. Workers use their conventional knowledge to deal with any injury that might cost a workers' life, while religious belief restricts workers from gaining full compensation.

In summary, it is clear that sub-contractors usually have a written contract with a company. This contract specifies workload and work schedule. There is nothing about worker safety in that contract because of a lack of workers' participation in the contractual process. However, a company and sub-contractor are responsible for the workers' participation and safety. Also, sub-contracts often have a framed portrait about workplace safety saying that workplace safety is simple and a worker can manage their safety by themselves. On the other hand, a sub-contractor does not have any written contract with the workers. Sub-contractors usually employ known and cheap workers for their profit. In addition, the sub-contractor seizes a certain portion of the workers' salary for a certain period to prevent them from working elsewhere. The sub-contractors are over confident in their knowledge of workplace safety and first aid. For any minor injury workers usually buy medicine from pharmacy without consulting a doctor. Furthermore, a company and sub-contractor use the religious beliefs of the workers as a means to escape from their responsibilities and avoid compensation.

3.2.3. Workers perspective:

In the qualitative interview, a total of 15 workers participated in 2 separate groups. All the workers also participated in that quantitative survey. Most of the participants' ages were between 18 to 30 years and their experience varied from 1 to 10 years. Between these 2 groups, one group comprised temporary workers who usually live in the construction sites for a certain period of time in a year, and the other group of workers permanently reside in Dhaka city. Amongst these 15 workers, there was only one female who permanently resided in Dhaka city. But there were a combination of workers; foreman, main workers and helpers. A foreman is the most experienced worker who is also the head of the other workers. Usually he guides the main workers. Main workers are those workers who usually do the main labour. And a helper helps the main worker. All the participants were very interested in talking. Sometimes they were emotional and sometimes they were outraged. However, to follow the pre-arranged semi-structured interview questions with workers was quite difficult because the workers speech was not in order, therefore interviews with workers followed an unstructured interview process, where questions appeared on the basis of the workers' reply. Considering the research goal, the interview findings with workers illustrates the workers livelihood strategies, vulnerability and their struggles for sustainable livelihoods.

Reasons for migration and construction work: The interview data found that the majority of workers do not migrate due to a decrease in livelihood assets. Mainly workers migrate for lack of regular cash income to cope with seasonal variation or to improve their living standards or to reduce the dependency on family assets and to ensure sustainable livelihoods. Seasonal variation refers to a season when there is no farming or agricultural production, which is known as a non-agricultural period. In that period, workers do not have any source of income from their land in village. Therefore, they need to sell their accumulated rice to meet their needs. For the lack of cash, households face shortage or deprivation. This is one reason that workers migrate to Dhaka. Also, they use their income in their cultivation period. Therefore, migration and working in construction is a strategy to escape seasonal poverty. As an example one worker said that “we have land in the village... If we sell our rice and lentils to cultivate our land, then we will face scarcity in the house again, ... Therefore, this cash income helps us to buy food” (Interview, October 27, 2015). Consequently regular cash income in a matter of sustainable livelihoods for these workers. Some workers also migrate to reduce the dependency on household assets and to support their family. As, one worker mentioned that “we have 5 bigha (1bigha= 1621.34sq meter) land and

we have 4 brothers. Now my elder brother is married and that land is just enough for his family” (Interview, October 27, 2015). There is a common inheritance law that the elder brother typically takes care of the family land. Also some workers migrate to improve their living standards because workers can earn more money in a day in Dhaka than in the village and earning in Dhaka is regular compared with the village. As a worker mentioned, “Sometimes we can earn 200 or 300 BDT per day or sometimes we cannot earn a single penny in village..... It depends on the availability of jobs...” (Interview, October 27, 2015). Therefore, only having land cannot ensure a sustainable livelihood as long as the productivity from that asset is not capable of meeting ones’ basic needs. However, most of time workers need the help of social connections before they migrate to Dhaka. Also some workers conceive that depending on agriculture is a way just for surviving, not away to improve living standards. As an example, one worker reported that “...why we should work hard in agriculture....if we do not get maximum return to meet our needs.... it is better to work in construction... there is no need of investment like cultivation investment”. This indicates that workers have this fear to lose their basic standard of living if they only depend on agriculture. Workers have the desire to improve their living standards. They do not want struggle to live only to get their basic needs met.

Alternative options or opportunities: It is comparatively easier to get a job in construction than any other sector, especially if the worker has link with other workers or sub-contractors. But to change sub-contractor and to work under another sub- contractor is not easy for workers because every sub-contractor has his own workers and the sub-contractor does not know anything about a new worker or his experience. Therefore, sometimes it is hard for workers to get alternative options or opportunities. However, some workers have good education but still work in construction because of competition within the surplus workforce and a lack of other opportunities. As an example, one worker has said that “what kind of job, i should do..... No one give me any job. After finishing my 10 yearsof schooling, I cannot get a job to use pen and paper” (Interview, November 11, 2015).Economic growth is giving this opportunity to workers to work in construction but they cannot harmonize their expectation because of surplus labour compared with economic growth. On the other hand, workers do not have any option to earn if they get sick or injured because their income depends on their daily labour. Usually, when they get sick or injured for few days, they either spend their savings or borrow money from co-workers. And when they get sick or injured for long time, they move back to village and stay in the village as long as

they are not fit to come back to Dhaka. Therefore, a day labourer does not have alternatives or options to earn when they get sick or injured and this impacts their strategy of sustainable livelihoods.

Living accommodation: A large number of workers live at the construction site. They usually live in a temporary house within the construction area. The condition of the house is not good compared with the house that workers are used to live in the village. Also, it is risky to have accommodation within the construction area. As an example worker said that “this evening, one piling pillar has fallen just 6 inches away from 4 workers who were taking rest on their bed” (Interview, October 27, 2015). So considering the condition and risk of that temporary house, living in a construction site does not bring any real benefit in shelter or physical assets to the workers compared with a village house. Also the standard of facilities is poor in some places. For example, they use the same water tap for drinking and construction work, and have open bathing and cleaning facilities. Though the facilities are poor and living in construction at the site is dangerous, still workers want to live there to save their housing rent or expenditure, so they can save more money to send back to village. Along with these poor facilities, most of the workers live in Dhaka without their families, which also have a negative impact on their happiness or mental satisfaction and even concentration at work. Though they have three meals a day, the nutritional value of the meals are questionable. On the other hand, some workers live permanently in Dhaka. Those permanent workers either live alone or with their family. They usually live a shared room or house. They share drinking water and sanitation facilities with others. According to the workers own opinion, workers have proper water and sanitation facilities in the shared house. But some in depth interview questions in this research found out there is a gap between their judgment and the hygienic standard of these facilities. As an example, one worker lives in shared house where there are two toilets and one tube well for around 40-50 people. Along with this, they also experience theft of money from their rooms. This makes it clear that workers’ living accommodations are not better in Dhaka. Workers trade off their physical assets for a regular income. They trade off to secure a sustainable livelihood for the year. Consequently, it is apparent that financial assets or regular income is more significant or vital than shelter or the physical assets of workers. Therefore, decent working condition and a safe workplace are fundamental for workers to ensure a regular income to secure a sustainable livelihood.

Working condition and Workplace safety: Working conditions begins with the working contract; there is no written contract between workers and a sub-contractor or Real Estate Company. Usually a sub-contractor hires workers. Therefore, if the sub-contractor does not need a worker, he can discharge him without any notice. As long as workers are working in construction site, they are construction workers. But when they are out of their work, they do not have any means to show their identity or skills or work experience to get another job in construction work. And if workers do manage to get another job, the sub-contractor devalues their per hour wage because of lack of any proof of their skills. Also, due to lack of identity papers, sometimes they are harassed by police. As one worker said that “Police took me to jail when I was going back home after finishing my work at 11 PM, police thought that I am a drug addict and sell drugs just because of my tired and exhausted face.....I do not have any identity card to show them..” (Interview, November 11, 2015). Consequently, some workers carry a measuring tape as an identity to show to the police. Due to the lack of written contract, workers do not know what their rights in their workplace are, or how long they have to work in a day. There is no standard working duration or time schedule for workers. Usually they work more than the standard working hours but there is no scheme or payment for over-time. Sometimes, workers start working early in the morning and finish at midnight. It depends on the sub-contractor. The sub-contractor always tries to use fewer workers and wants to finish work quickly. If the sub-contractor can finish scheduled work one day early, then he can make more profit. Therefore, sometimes they rush to finish work quickly. As an example; “.....they (sub-contractors) behave fine. But they rush to finish work early before the scheduled day” a worker said(Interview, October 27, 2015). Along with this, most of the workers have acknowledged that they work in an unsafe and risky place but they do not have any other options. As an example a worker has said “this is not a life....., there is no guarantee, at any time I can die. We are poor that is why we are doing this risky job. If there is poverty, there is no need to think about risk and safety”(Interview, October 27, 2015). It is obvious that neither working conditions nor workplace safety is in favour of the workers. Workers place themselves in that unsafe and risky place to ensure a sustainable livelihood. Workers take risks for regular income to have a sustainable livelihood. Workers who are lucky can accumulate assets and can adapt to ‘shocks’ but unlucky workers might lose everything, even his life. In 2012, around 149 workers died in the construction sector because of unsafe conditions (Safety and Rights

Society, 2013). Therefore, the questions arises, can only livelihood assets guarantee a sustainable livelihood or is it possible to have a sustainable livelihood without considering the peoples' occupational safety and rights?.

Workers' rights: Violation of workers' rights start from their working contract. Workers do not have any written contract with any actors; the sub-contractor or real estate company. Therefore, they do not have any identity. Because of lack of identity, they cannot easily switch their sub-contractor or work. Also they do not have any ways to show their work experience. Sub-contractors usually keep a portion of workers' wage as a security which is a violation of the workers' right. Some workers have agreed that keeping a portion of the money as a security is good in a sense; as the workers can get a large sum of money at the end of the month or the project. Workers use this large sum of money as an investment. On the other hand, some workers have disagreed, and that keeping a portion of the money is terrible as it restricts their opportunities and limits their capacity to fulfil their needs on time.

Workers do have little knowledge about their rights. Also they do not know the responsibilities of sub-contractors or companies as right bearers. For the lack of workers' rights' workers still conceive the conventional thinking. For example, a worker has mentioned, "this work is like that"(Interview, November 11, 2015). This means, workers conceive that they have to work in unsafe condition and have to live without any standard facilities or amenities. The same way another worker has said that "safety means we need to be careful..... We have to take care of ourselves. Sometimes accident could happen even if you are careful..... And we cannot blame the company for this accident. We work here, so need to be careful. Everything happens for God's wishes" (Interview, October 27, 2015).This reflects workers knowledge and thinking about their working conditions and rights. Due to lack of knowledge, workers believed that the unsafe working conditions are the norm. However, some workers recognise that they do not have safety and security or rights in their occupation. But they cannot raise their voice to establish their rights because they are powerless because of their fragility. They have the ability to migrate and work in Dhaka but they cannot raise their voice because they are easily replaced by other unemployed workers and can lose their job. Poverty is an active force in oppression, as it reinforces or supports the practice of keeping the poor powerless. In an economically challenged country, there are not so many opportunities for a worker. Plus, there is surplus of labour. Therefore, workers cannot raise their voices for fear of being fired. Also, due to the lack of good governance,

workers' rights are violated daily. As an example, a worker has expressed that "Government has rules but government does not do this project. Government gets tax from company. Government does not monitor this project. Company does this project"(Interview, October 27, 2015).

Workers migrate to work in construction to ensure a sustainable livelihood. They may have better livelihood assets in their village but when they live in Dhaka, they compromise or trade-off these assets for a sustainable livelihood. However, while workers may ensure a sustainable livelihood by working in construction, they put themselves in unsafe and risky working conditions. Therefore, just depending only on livelihood assets for sustainable livelihoods have less concentration with the quality of the process by which livelihood outcomes were achieved. As a result, the quality of working conditions and workers' rights can also be considered as a livelihood asset to determine the poor peoples' vulnerability. Construction workers may have ensured sustainable livelihoods but they are vulnerable because of a lack of occupational safety and their rights.

4. Discussion:

This discussion chapter describes the research findings and how these findings impact the workers' standards of living. Discussions have followed the literature review or the theoretical foundation of this research. The first part of this chapter describes the institutional and organizational setting of workers and their impact on workers' livelihoods. The second part describes the workers' rights and their practice and impact on workers' livelihoods. And the final part describes workers' livelihood assets, livelihood strategies, vulnerability and sustainable livelihoods in light of this research literature.

Institutions and organizations are key elements in the sustainable livelihoods framework. Institutions and organizations mediate workers' ability to carry out strategies to achieve the present livelihood outcomes. But it is not easy to define the institutional and organizational setting of workers. Therefore, this simple definition has been used for workers; institutions are the rules of the game, while organizations are the players (North, 1990). Based on the definition, research data shows the following institutional and organizational setting for workers. In this setup, personal connections or relationships help other workers to find construction work in Dhaka. Other than the personal connection, workers do not have any other strong connection that can mediate to achieve a sustainable livelihood.

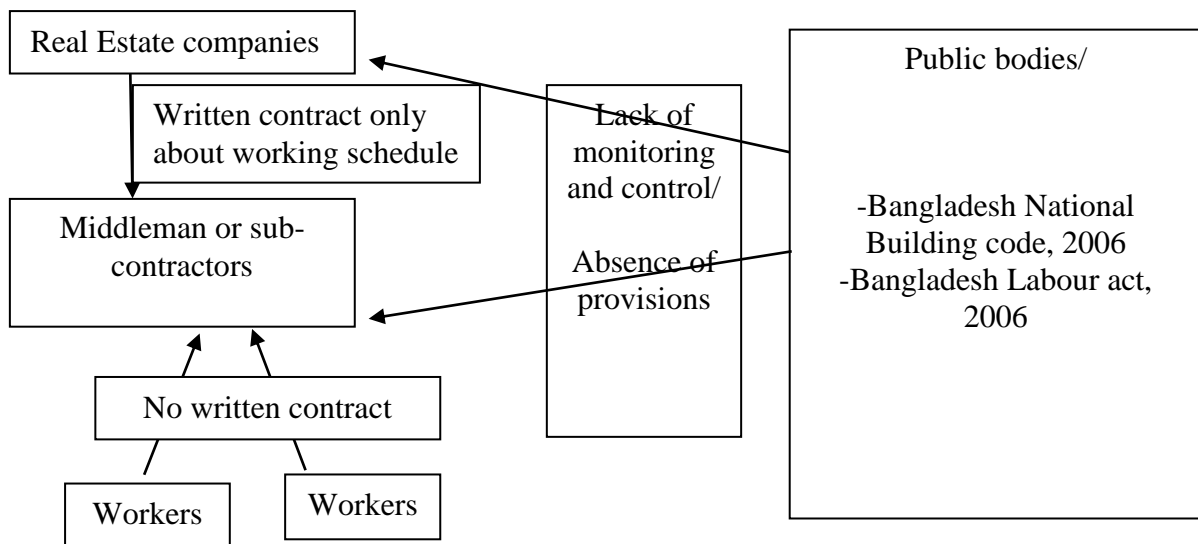


Figure 24: Institutional and organizational setting for workers

Even workers do not have any contract or relation with company. Workers only have oral contract with sub-contractor. But, Bangladesh Labour act 2006 section 5 makes it mandatory for employers to provide appointment letter for employment of each and every worker and also issue ID card to worker free of charge. Also Bangladesh National Building code has mentioned a cleared defined contract between the different parties involved in the construction of the building. So this clear that workers' rights are dishonoured by employers. However, Bangladesh National Building Code 2006 is the legislative and administrative measures in relation to health and safety issue of workers. Also the Bangladesh Labour act 2006 is in relation to welfare issues. The labour act of 2006 has consolidated 25 separate acts into one labour code that regulates employment relations, working hours, wage, trade union and industrial relation, which is the general law for all labour. Therefore, it does not set out principles of safety management in relation to construction. On the other hand, Bangladesh National Building code is a large document, most of which relates to building quality standards. But only one section of it contains obligations relating to worker safety issues. As, BNBC consists of 10 parts. Among these 10 parts, only chapter 3 in Part 7 has the provision of workers' safety under the title of safety during construction.

4.1. Workers' Rights and Its Practice

4.1.1. Present policies and practices: The Bangladesh National Building Code 2006 (BNBC) is the only legislative and administrative measures to improve occupational health and safety for construction workers. However, the Bangladesh Labour Act 2006 (BLA) (BEF, 2009) does not have any specific principles of safety management in relation to construction workers. Therefore, the question arises, under which law construction workers should be treated. However, both the BNBC and the BLA have the provision of clearly defined written contracts between employer and workers. But in most cases the real estate companies do not directly employ workers. Also the provisions on workers safety in the BNBC and welfare in the BLA are imposed upon owners and developers. But in most cases, contractors employ the workers on the construction site. Therefore, on the one hand, sub-contractors do not provide facilities to workers because sub-contractors are not responsible for supporting, respecting, or protecting workers' rights under the present laws. On the other hand, the real estate companies do not fully support or respect or protect workers' rights because the companies do not employ the workers directly or they do not have written

contracts with the workers. Therefore, there is always a blame game of who is the rights bearer because of the absence of a written contract. However, Rajuk is the only government body to enforce the BNBC but RAJUK has an administrative boundary which covers only Dhaka city and its' surrounding areas. Out of this administrative boundary, RAJUK has no authority to monitor or to implement the provisions of BNBC. Therefore, how and who will monitor, control or protect construction workers' rights is questionable, because construction workers work all over Bangladesh.

The ILO country report has mentioned that the Bangladesh Labour act 2006 is consistent with the ILO conventions in a number of ways. Though legal provisions exist to uphold the fundamental principles and to protect rights at work, their implementation and enforcement remain challenging (ILO, 2013). Both the ILO convention and national law have recognized the freedom of association and collective bargaining. But the applications and provisions of the law is the main challenge because of restrictive policies and mind set of the employers. Therefore, unionization in the private sector is very low. Weakness in the law and the registration process hamper the growth of trade unions (ILO, 2013). This is the typical scenario in every economic sector of Bangladesh. Therefore, it can be stated that unionization in the construction sector is very weak. Also there are no proper guidelines or separate laws for construction workers for safeguarding their safety, health, welfare and rights. So far Bangladesh has ratified 33 ILO conventions (ILO, 2013) but Bangladesh has not ratified the Safety and Health in Construction Convention, 1988, yet. This might be a reason for the lack of attention from the national and international community towards construction workers. However, the Government of Bangladesh has amended the Bangladesh Labour Act 2006 in 2013 which is considering as the first step towards the obligations of the fundamental rights to freedom of association and collective bargaining and to address the critical need to strengthen occupational safety and health.

4.1.2. Gender in construction: The data suggests that females' participation in construction work is very low. The construction sector is dominated by man. In this masculine society, women are always treated as slow and unable to do hard work. Therefore, women usually do the work that is time consuming like breaking bricks, tiles cleaning, sweeping and cleaning. They do not have any opportunity to work like a man in construction. Consequently, they cannot be a foreman or head worker. Also women do not get the same salary as a man. Sub-contractors usually do not want to employ any female workers as

builders or brick layers because they think women are not cost-effective and strong enough to do these jobs. However, if they employ any female worker, than she usually has to cook food for all the workers along with her construction work. For this female role, some sub-contractor likes to employ one female worker who can cook well. If there is no female worker, than a male worker usually does these tasks for other workers.

4.1.3. Workers' identity and rights violation: They are farmers, and they are construction workers. As long as they are in the construction site, they are construction workers. But outside the construction site, workers do not have any identity in Dhaka city. They do not have any proof to show that they are construction workers because of an absence of a written contract and identity card. Therefore, it is questionable how these temporary migrant workers can join or form an association to execute the fundamental workers' right of freedom of association. Without a working contract or identity card, workers cannot establish their work experience to find or to shift to other construction work. Therefore, workers have limited options to change their sub-contractor or to raise their daily wage. Due to the absence of an identity card, sometimes they have been harassed by police in Dhaka city which is a matter of human dignity. Consequently, workers' basic rights' are violated for this lack of contract and identity card which could be considered as workers' identity crisis.

4.1.4. Company reputation and rights violation: The ILO Declaration on Fundamental Principles and Rights at works 1998 has adopted the principles of the elimination of all forms of forced or compulsory labour and the elimination of discrimination in respect of employment and occupation (ILO, 2002). But both of these fundamental principles and rights are violated in the construction workplace. The research findings suggest that workers do not have any scheduled hours for their work, and they work extra hours without any extra payment. Sub-contractors force workers to do work quickly and give more hours. Also the gender discrimination is noticeable at workplace .Workers' rights are not only socio-economic and political rights. They also include occupational rights, rights to have a safe and secure workplace. But research findings suggest that companies do the minimum occupational safety to protect workers life. They do this to save the company's reputation not from a sense of human dignity or respect. Workers are the least protected. Injury in the workplace has both direct and indirect costs. Direct costs are the prevention, care, cure cost. And indirect costs are the loss of income, investment and food. It is not acceptable that the workers must be resigned to face disproportionate risks to their safety and

health because they are poor. In addition, inadequate housing, unsafe water, and poor sanitation contribute to the ill health of workers, which is one of the main obstacles in the path of poverty reduction.

4.1.5. Needs Vs Rights: Workers work in construction to fulfil their needs. On one hand, workers cannot demand their rights because they are powerless. They cannot raise their voice and claim their rights because there are too many poor, jobless people. They are afraid if they raise their voice, they might lose their job because workers are easily replaceable by other poor jobless people who are looking for work. Therefore, workers do not want to make demands and claim their rights. They subsist in construction work to meet their needs to ensure a sustainable livelihood, without respect or dignity.

4.2. Workers Livelihood Assets and Livelihood Strategy:

Data results suggest that workers have less accessibility and availability to livelihood assets in Dhaka compared to their village perspective. Workers' livelihoods in Dhaka rely on daily regular income. Workers save their income to invest on physical assets in village or to spend for household expenditure. Livelihood assets refer to the resource base of individual, household or community. In the DFID version of the sustainable livelihood framework, there is highlighted an asset pentagon with five capitals; Human, social, physical, natural and financial capital. It may be true that an individual's livelihood depends on these assets but measuring livelihoods is problematic because livelihoods are diverse, varied and multidimensional. As an example, understanding social capital as the density of relationships was critical for understanding development (Putnam, Leonardi and Nanetti, 1993). For example, when people are better off, people become more individualistic, where the social relationship is not strong. Poor people follow others' decision. E.g., initially one farmer decides to migrate to Dhaka to work in construction and then other farmers followed that because they saw the coping strategy of first farmer and can easily duplicate that strategy. Workers have this asset capital, but the utility of these assets are questionable. For example, workers have agricultural land but its utility is not sufficient to meet their needs. Therefore, without considering the functioning capacity of these asset's capital, a livelihood cannot be assessed. Same as, if workers lose their functional ability at work because of injury or sickness, they cannot ensure a sustainable livelihood. Research findings suggest that workers have to trade-off their other assets for regular income through employment. Employment in a

formal and informal sector is another potential indicator to focus on livelihoods. Therefore, The International Labour Organization emphasizes the generation of decent work, creating jobs, guaranteeing rights, extending social protection and promoting dialogue (Scoones, 2015). A qualitative assessment of the work, pay and conditions of work, flexibility, rights and so on, reflect another dimension on livelihoods where workers are at risk and vulnerable.

Livelihood strategies are the range of and combination of activities and choices that people make in order to achieve their livelihood goals. Based on personal goals, resources and available options, people pursue different livelihood strategies. Livelihood strategies include short-term considerations such as ways of earning a living, coping with shocks and risk, as well as long-term desires for the future. Based on livelihood strategies, Andrew Dorward and colleagues (2009) have developed a framework that differentiates between people who are stepping up, stepping out and hanging in. Stepping up refers accumulating assets and improving livelihoods based on their core livelihood activities. Stepping out refers to doing well but diversifying to new activities, including some in new locations. Hanging in refers to barely surviving, struggling and failing to accumulate and improve their lot. Consequently research findings suggest that permanent construction workers in Dhaka city can be placed in the stepping up group. And migrant construction workers belong to Stepping out and Hanging in group where farmers have moved to a new place and are involved in new activities for surviving. However, that being said, infrequently they can accumulate assets. Seasonality, employment opportunity and better income are the main contexts, conditions and trends of workers for choosing this livelihood strategy. However, construction workers trade-off their livelihood assets and choose the stepping out strategy to secure a sustainable livelihood. This means workers have the capability to function. But how they are acquiring this ability to function is questionable.

4.3. Vulnerability and Sustainable Livelihoods

The data results suggest that workers are more vulnerable in Dhaka compared with the village. Based on livelihood assets, the vulnerability index of workers in Dhaka city is moderate, but the workplace vulnerability index of workers is severe. The vulnerability contexts in the rural area are seasonality, low income, lack of employment opportunity, and family dependency. Therefore, to ensure a sustainable livelihood, workers migrate to Dhaka for employment and better income to contribute to the household income. This is a strategy to

cope and adapt with vulnerability and to secure a sustainable livelihood. The sustainable livelihood mainly focuses on coping ability and continuity of livelihood. But the question arises, how feasible is to define a sustainable livelihood, just considering the coping ability construction workers display to assure a sustainable livelihood, where they put themselves at risk working in unsafe conditions. Is it feasible to consider sustainable livelihood without dignity or rights? It is worthwhile to look at the definition of vulnerability, according to O’Riordan (2002) “Vulnerability as the incapacity to avoid danger, or to be uninformed of impending threat, or to be as politically powerless and poor as to be forced to live in conditions to danger”. Construction workers are forced to work and live in unsafe and risky workplaces because they are poor. Workers are not capable of avoiding danger in the workplace because workers are powerless. Though workers have the ability to cope with seasonality or shocks or stress in the village, they do not have the capacity to avoid danger in their workplace. On one hand, livelihood assets are the main component in a sustainable livelihood framework, where livelihood assets facilitate to formulate different strategies for coping and adapting with the vulnerability context. On the other hand, lack of livelihood assets is the main constraint that prevents people from achieving their rights, where those rights are prerequisite for promoting livelihoods. Therefore, it is import to look at workers or poor people’s rights along with livelihood assets to improve the understanding of the livelihoods and vulnerability of poor people and to set the principles to guide actions to address and overcome poverty. However, only increasing workers assets to claim their rights is one side of the coin, the other side of the coin is the duty bearers’ obligations. Research results suggest that employers as duty bearers need to protect and promote workers’ rights. For that reason, a sustainable livelihood is not only subject of coping and adapting, it is also subject to dignity. There are many people who have assets to cope with vulnerability context but they do not have rights to enjoy a life with dignity. Also there are many people who never face any shocks or stress but they do not have life with dignity. Therefore, I would say, defining a sustainable livelihoods framework without considering human rights is just like a bottomless basket because the definition of sustainable livelihoods focuses mainly on coping ability where research suggests that workers have the ability to cope with vulnerability context but they do not have rights or life with dignity. Also the sustainable livelihoods framework mainly considers the assets that poor people need in order to sustain an adequate standard of living. But research findings suggest that workers’ rights are also essential with their assets in order to sustain an adequate standard of living. Therefore, the question should be, how effective is this sustainable livelihoods framework without considering poor people’s rights?

5. Conclusion:

Livelihood in rural Bangladesh is difficult without alternative means to earn an income. Consequently, many workers migrate to Dhaka for an alternative means of income. Workers have the ability to earn, but they are not capable of earning enough to sustain their livelihoods in the village. Workers' migration strategy does provide a sustainable livelihood, for example, by working in construction that offers cash and regular income. Many invest their income in physical assets for themselves and also for their families in village or Dhaka. As economic development in urban area brings opportunity to migrate to Dhaka, workers migrate and trade-off their assets or capital to ensure a sustainable livelihood. Depending only on the variables of the quantitative survey of this research, this research suggests that workers trade-off their social, natural and physical assets in order to gain financial assets in Dhaka to ensure a sustainable livelihood. Based on their livelihood assets, workers are more vulnerable in Dhaka city compared with the village perspective, but they try to ensure a sustainable livelihood for themselves and also for their family all year. Some but not all manage this. Along with livelihood assets, vulnerability is also determined by what occupational activities people are engaged within, or their process to secure a sustainable livelihood. These occupational activities consider the safety and security of work. Quantitative survey findings suggest that workers' vulnerability index on occupational safety or workplace vulnerability is severe because the workers are placed in unsafe and risky workplaces where they do not have rights, proper safety management and welfare facilities. Lack of rights, safety management and welfare facilities has a negative impact on workers' livelihoods. The qualitative findings of this research have concluded how workers' livelihoods are vulnerable due to the violation of workers' rights and for improper safety and welfare management. Violation of workers' rights start from their working contract. Workers do not have any written contract. Therefore, a company or sub-contractor is not obliged or liable, for his responsibility. On the other hand, workers are powerless due to poverty. This poverty is more than simply 'workers are poor'; it also includes the economic deprivation or the overall poverty of the country. Workers cannot demand their rights because they are afraid of losing their jobs; as they are easily replaceable by other jobless poor workers. Workers usually receive minimum safety and welfare facilities, which mean they work in unsafe and risky conditions, making them even more vulnerable in the workplace. Workers lose their livelihoods because of work injury or death. Also workers do not or cannot claim any compensation due to the lack of a written contract. So, it is obvious that workers need

their rights protected more than their livelihood assets, in order to cope and adapt with vulnerability in the village and to secure a sustainable livelihood.

Therefore, in a practical perspective, National policies and laws need to be specific to guide the real estate companies and sub-contractors in Bangladesh. National laws need to be specific with regards to who is responsible for workers safety, who is the exact employer for workers and how a written contract has to be ensured between workers and employers. Along with this, the monitoring and the practical implementation of these policies and laws are important to establish workers' rights. Therefore, a specific and detailed guideline is needed regarding who will monitor and how these laws will put into practice. Above all, the government of Bangladesh needs to ratify Safety and Health in Construction Convention, 1988. In a theoretical perspective, sustainable livelihood framework needs to incorporate rights along with livelihood assets in order to understand the poor people's livelihoods, the complexities of poverty and to guide action to address and overcome poverty.

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Appendix

Quantitative survey questionnaire for workers

Site number: Site name: Company name:

Q1. Name:

Q2. Age:

Q3. How long you are living in Dhaka?

Ans:

Q4. Where did you live before? Was it city/town/village?

Name:

City	Town	Village
------	------	---------

Q5. What was your previous occupation?

Employed in Agriculture	Employed in non-Agriculture	Unemployed
-------------------------	-----------------------------	------------

Q6. Reason for moving to Dhaka

For employment	For better income	Lack of agricultural resources	Environmental disaster	Other
----------------	-------------------	--------------------------------	------------------------	-------

Q7. Years of schooling

Ans:

Q8. Marital status:

Single	Married
--------	---------

Q9. If married, how many children do you have?

Ans:

Q10. Do you live with your family in Dhaka?

Yes	NO
-----	----

Q11. How many members you have in your family?

Ans:

Q12. How many members are wage earners?

Ans:

Q13. Where do you live in Dhaka?

Room	House	Construction site
------	-------	-------------------

Q14. Do you have own bedroom now in Dhaka?

Yes	NO
-----	----

Q15. Do you pay rent or your own room/house?

Rent	Own	Free (on site)
------	-----	----------------

Q16. Did you live in your own/family house while you were in village?

Yes	NO
-----	----

Q17. Did you have own bedroom while you were in village?

Yes	NO
-----	----

Q18. Do you have access to clean drinking water now in Dhaka?

Yes	NO
-----	----

Q19. Did you have clean drinking water while you were in village?

Yes	NO
-----	----

Q20. Do you have proper toilet facility where you are living now?

Yes	NO
-----	----

Q21. Did you have proper toilet facility while you were in village?

Yes	NO
-----	----

Q22. Do you have electricity facility now?

Yes	NO
-----	----

Q23. Did you have electricity facility for while you were in village?

Yes	NO
-----	----

Q24. Do you have gas facility now?

Yes	NO
-----	----

Q25. Did you have gas facility while you were in village?

Yes	NO
-----	----

Q26. Cooking facility?

Present (in Dhaka)	Before (in village)
Firewood	Firewood
Gas	Gas
Electricity	Electricity
Fuel (oil)	Fuel (oil)

Q27. Do you have any land/house ownership in Dhaka at present?

Yes	NO
-----	----

Q28. Did you have land/house ownership while you were in village?

Yes	NO
-----	----

Q29. Do you still have own land or a house in your village

Yes	NO
-----	----

Q30. Do you have any kind of valuable assets? And what kind of assets are those?

	Types of assets
Yes	
NO	

Q31. Do you have access or do you use any public or communal land in Dhaka?

Yes	NO
-----	----

Q32. Did you have access to or use any public or communal land while you were in village?

Yes	NO
-----	----

Q33. Do you have any livestock in Dhaka?

Yes	NO
-----	----

Q34. If yes, what kind of livestock?

Sheep	Goat	Cattle	Buffalo	Chicken	Duck	Other
-------	------	--------	---------	---------	------	-------

Q35. Did you have any livestock while you were in village?

Yes	NO
-----	----

Q36. If yes, what kind of livestock?

Sheep	Goat	Cattle	Buffalo	Chicken	Duck	Other
-------	------	--------	---------	---------	------	-------

Q37. Do you use water from any natural water bodies (pond/lake/ river) in Dhaka?

Yes	NO
-----	----

Q38. Did you use water from any natural bodies while in your village?

Yes	NO
-----	----

Q39. Do you get/collect any foodstuff from your surrounding nature/environment in Dhaka?

Yes	NO
-----	----

Q40. Did you get/collect any foodstuff from your surrounding while you were in village?

Yes	NO
-----	----

Q41. Are you suffering any kind of health problem after starting work in construction?

Yes	NO
-----	----

Q42. Health status according to workers own perception

Now	Before starting to work in construction
Poor	Poor
Good	Good
Better	Better

Q43. Do you do any other jobs along with your construction work now?

Yes	NO
-----	----

Q44. Did you have any other income with your previous occupation while you were in village?

Yes	NO
-----	----

Q45. Do you earn money/wage in every month regularly in Dhaka?

Yes	NO
-----	----

Q46. Do you think, your income varies according to season (Summer/rain/winter) in Dhaka?

Yes	NO
-----	----

Q47. What is your average seasonal monthly income (BDT) in Dhaka?

Summer	Rain	Winter

Q48. Did you earn money/wage in every month regularly while you were in village?

Yes	NO
-----	----

Q49. What was your average seasonal monthly income (BDT) while you were in village?

Summer	Rain	Winter

Q50. Do you have any savings now?

Yes	NO
-----	----

Q51. Did you have any savings while you were in village?

Yes	NO
-----	----

Q52. Have you received any credit while you are living in Dhaka?

Yes	NO
-----	----

Q53. Did you receive any credit while you were in village?

Yes	NO
-----	----

Q54. Do you have any debt in Dhaka?

Yes	NO
-----	----

Q55. Did you have any debt in Village?

Yes	NO
-----	----

Q56. Have you received any food/money or material support from neighbour (not family member) while you are in Dhaka city?

Yes	NO
-----	----

Q57. Did you receive any food/money or material support from neighbour (not family member) while you were in your village?

Yes	NO
-----	----

Q58. Have you given any food/money or material support to neighbour while you are living in Dhaka city?

Yes	NO
-----	----

Q59. Did you give any food/money or material support to neighbour while you were in your village?

Yes	NO
-----	----

Q60. Have you received any financial or material support from government office while you are living in Dhaka?

Yes	NO
-----	----

Q61. If yes, what kind of support?

Material	Financial

Q62. Did you get any financial or material support from government office while you were living in village?

Yes	NO
-----	----

Q63. If yes, what kind of support?

Material	Financial

Q64. Are you a member of any co-operative/union that works for your betterment?

Yes	NO
-----	----

Q65. If yes, what is its' name and what does it do?

Name	Function

Q66. Were you a member of any co-operative/union while living in village?

Yes	NO
-----	----

Q67. If yes, what is its name and what does it do?

Name	Function

Questionnaire for workplace vulnerability:

Q1. How many years you working in construction?

Ans:

--- Contractual indices--

Q2. Do you have any written contract?

Yes	No
-----	----

Q3. With whom you have contract (Sub-Contractor/ developer)?

Sub-Contractor	Developer
----------------	-----------

Q4. Do you get your wages daily, weekly or monthly?

Daily	Weekly	Monthly
-------	--------	---------

Q5. Do you get your wage on time?

Yes	No
-----	----

---Work stress indices--

Q6. How many hours do you work in a normal day?

Ans:

Q7. Do you get break while you work?

Yes	No
-----	----

Q8. Break time

0hour	1 hour	2 hour
-------	--------	--------

Q9. How you experience the work stress?

No stress	Average Stress	Very stress
-----------	----------------	-------------

Q10. Have you ever been forced to work longer hourby your sub-contractors or colleague?

Yes	No
-----	----

-- Workplace safety indices--

Q11. Did you get any work training before you started work in construction?

Yes	No
-----	----

Q12. Did you get any first aid training?

Yes	No
-----	----

Q13. Did you get any safety training or safety manual?

Yes	No
-----	----

Q14. Do you have any safety observation committee?

Yes	No
-----	----

Q15. If the answer is yes, how often safety observation committee do safety inspections?

Daily	Weekly	Monthly
-------	--------	---------

Q16. Do you take any safety measure while you work on height?

Yes	No
-----	----

Q17. Do you get any safety clothes/helmet/ gloves from company while you work?

Yes	No
-----	----

Q18. Do you use safety clothes/helmet/ gloves while you work?

Yes	No
-----	----

Q19. Do you have any problem to carry heavy weight?

Yes	No
-----	----

Q20. What is the highest weight in kilogram you usually carry alone?

1-7	8-13	14-20	20--
-----	------	-------	------

Q21. Have you ever got injured while working?

Yes	No
-----	----

Q22. How many times you got injured in last one year?

Ans:

Q23. Did you get any medical treatment for your injury from the company?

Yes	No
-----	----

Q24. Did you get any compensation?

Yes	No
-----	----

Q25. (if Yes) How much (BDT) you got the compensation?

Ans:

Q26. How many days you were out of your work for that injury in last one year?

Ans:

Q27. Do you use defective tools while you work?

Yes	No
-----	----

Q28. How long time company/contractor takes to fix any problem or danger in workplace?

Immediate	Within 4 hour	Within a day	More than a day
-----------	---------------	--------------	-----------------

--- **Hygienic indices** ---

Q29. Do you have pure drinking water supply?

Yes	No
-----	----

Q30. Do you have washing facilities?

Yes	No
-----	----

Q31. Do you have proper toilet facility in your construction site?

Yes	No
-----	----

Q32. Does this sanitation facility separate for man and woman?

Yes	No
-----	----

Q33. Do you use the same clothes at work that you use home?

Yes	No
-----	----

Q34. Do the authority supply you the working cloth?

Yes	No
-----	----

Q35. Do you have proper bedding facilities if you stay at workplace at night?

Yes	No
-----	----

Semi-structured interview with company officials:

Personal Info:

Name:

Age:

Designation/position:

Years of experience in this position:

Years of experience in real estate sector:

Education level:

Interview:

Questions	Notes
How will you express the present construction sector and its future?	
What types of project do this company usually execute? How many projects are running and how many construction workers are working (Approximately) now?	
Does this company's Human resource department deal with workers? If not, which department deals with workers?	
How is the recruitment or hiring process of workers? (Recruitment criteria/ contract system/salary structure/payment method and incentives)? How do you maintain relationship with workers?	
Do you think real estate companies are playing a vital role for improving the living standards of workers? And how?	
What kinds of support or help do your company provide to workers?	
Do you have any team/management to maintain workplace safety? Or how your company ensures workplace safety?	
Do you provide any kind of training (First aid/safety training) to your workers? If yes, what kind of training? If no, why not?	
How you deal with workers' injury? Do you have any insurance policy or fund for injuries? Have you spent any money?	
As a company, how do you follow BNBC or ILO convention to ensure workers safety and rights?	

Semi-structured interview with Sub-contractors:

Personal Info:

Name:

Age:

Educational qualification:

Years of experience as a contractor:

Number of projects you have completed:

Interview:

Questions	Note
How you get project from Companies or how you collect or select project or do companies hire you?	
How many workers you usually hire for a project? Where do you go to hire workers and how/ what characteristics you look for when you select workers?	
What are your roles or functions after hiring workers or while the project is running?	
Do you pay wages to workers or how do you pay? Does company provide money to you to pay workers while the project is running?	
How do you get paid? Is it just to supply of workers or for finishing a project?	
Do you do any written contract with company and workers? What do these contracts say? And what kind of problems you face when you do contract?	
How you maintain relationship between company and workers?	
Do you have any training like workplace safety/first aid/ management? How you ensure workplace safety for workers? How you deal when workers get injured?	
Do you get any guidelines from construction companies regarding how you should treat workers/ maintain workplace/ workplace safety?	

Semi-structure interview with workers:

Personal info:

Name	Age	Years of schooling	No. of Year Working in construction	No. of Year living in Dhaka	Where you came from? (village/city/town)

Interview:

Questions	Notes
Why did you come to Dhaka? And why are you working in construction?	
Do you like working in construction? What kind of problem you face in your workplace? How you overcome these problems? (including sick leave/wage/water and sanitation/ break time/ working hours)	
How company or contractor treats with you (starting from contract-workplace-out of workplace and after finishing your job)? Do you feel safe and secure in your workplace?	
Do you think company or contractor provides you everything that you need or deserve? (Including working tools/ safety equipment/ timely salary) if not, why not?	
How you can relate these problems with your personal life or living? And What kind of health problem you facing after starting work in construction?	
Do you think your life/living standards in Dhaka is better than you life/living standard in your village?	
Which is mostly needed in your workplace or what is most important that might improve your living standard in Dhaka	

Do you know about workers' rights? And do you feel that if your rights are insured than you could have better living standards?	
Do you feel that government is doing well enough for your better living standards? If yes, how? And if no, why not?	
Did you or do you get support from any INGOs or NGOs as a construction workers?	



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