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CHAPTER 7

A Discussion and Survey on Worker's Safety in Cambodia's Construction Industry

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Abstract

By its nature, the construction industry includes some of the most dangerous jobs for those who are employed in the sector. It is well known that construction projects have many work-related accidents and injuries. Therefore, attention to ensuring effective safety protocol is vital. In Cambodia, there is a high incidence of informal employment, with workers absent a ratified contract and provided with little training on occupational health and safety. Accordingly, this paper explores worker safety in the Cambodian construction sector and identifies policy recommendations to address shortcomings. In addition, it identified the role played by different parties in the development of safety programs and policies, taking into consideration cost and time effectiveness. It utilizes a qualitative methodology of semi-structured interviews with key informants to gather information that relates to construction workers, alongside field observations at the various sites in Phnom Penh city. Results indicate that construction workers in Cambodia still face a lack of enforceable and adequate safety standards. In particular, the use of sub-contractors contributes to issues for the governance and accountability for safety procedures. This paper recommends that Cambodia should establish health and safety protocol around international standards to ensure adequate working conditions for workers. This includes regulations for 1) high-rise construction workers, 2) construction equipment safety, 3) shelter for the workers and 4) social services.

Keywords: Construction safety and health, Workers, Hazardous, Accidents

Cambodian Construction and Safety: An Overview

Investment in Cambodia's construction sector has increased by over \$3 billion for the first six months of 2019 (Khmer Times, 2019), resulting in a higher demand for labor. However, labor protection has not kept pace with investment, particularly in the areas of Occupational Safety and Health (OSH). Rapid construction has been accompanied by instances of poor standards enforcement. For example, on June 22, 2019, a building under construction in Sihanoukville collapsed resulting in 28 deaths and 26 injuries. It was found that the building had been constructed without the relevant permits from authorities. Most construction workers are seasonal, low skilled and have limited education (Stricker & Pau, 2019). Also, they have limited understanding of labor rights and have limited capacity to negotiate with employers.

The construction industry has become one of the main areas of economic growth in Cambodia, according to the National Bank of Cambodia (NBC, 2019), however, investment in construction (specifically in the real estate sector), dropped by 15.3 percent, from approximately \$6.8 billion in 2017, to \$5.8 billion in 2018. The same report notes that the number of construction projects approved by the Ministry of Land Management Urban Planning and Construction (MLMUPC) decreased by 3.6 percent over the same time period, from 3,418 in 2017 to 3,294 in 2018. According to Global Construction forecasts, construction output will grow by 85 percent to 15.5 trillion dollars worldwide by 2030, primarily in three countries - China, the United States and India (Global construction 2030, 2015). Between 2000 and 2018, Cambodia's Ministry of Land Management, Urban Planning and Construction (MLMUPC) authorized 43,136 construction projects representing estimated investment capital of more than US\$43.3 billion (Open Development Cambodia, 2019).

The booming construction industry affects most workers, exposing them to unsafe working conditions. Many, especially those working on high rise buildings, have

been injured or lost their lives (Teung, 2019). With variable working conditions and workers moving frequently between sites, it is difficult to estimate the number of injuries and fatal accidents (Teung, 2019). Workers may not know when they need to use specific personal protective equipment or take required training. Construction was considered to be one of the most hazardous and dangerous industries, even before the recent boom. In 2009 the International Labor Organization(ILO) estimated that more than 1,500 people in Cambodia were killed in occupational accidents(ILO, 2019). Furthermore, there is an absence of OSH laws and regulations for labor inspections on construction sites, weak labor inspections, lack of equipment needed to enforce the standards, scant or no worker insurance, unsatisfactory statistics and no reporting system of the relevant dates of work-related accidents (ILO, 2019). As well, the lack of training and site management in the industry is a major cause of accidents. According to the ILO, safety and health conditions and legal standards are poor for the estimated 200,000 construction workers many of whom are unskilled and paid by the day, making them particularly vulnerable to death, injury and illness (ILO, 2019). Construction workers are considered a vulnerable sector. Workers face more accidents than in other industries. Furthermore, the rate of construction workers' cases continues to increase because Cambodia does not apply the OSH standards in the construction industry. Most of the accidents are falls from a great height, of either workers, materials or other objects, representing the most serious safety risks in the construction industry. A high proportion of deaths are caused by falls (ILO,1995). Accordingly, this study is focused on construction workers, who are currently employed at buildings higher than five-stories. Furthermore, it focuses on identifying the factors that have contributed to serious accidents or injuries of workers. Moreover, it will discuss policy solutions for addressing the issues at hand.

Labor Employment

Cambodia is well-known for labor employment in the informal economy (Heinonen, 2008). A large proportion of the workforce in Cambodia remains

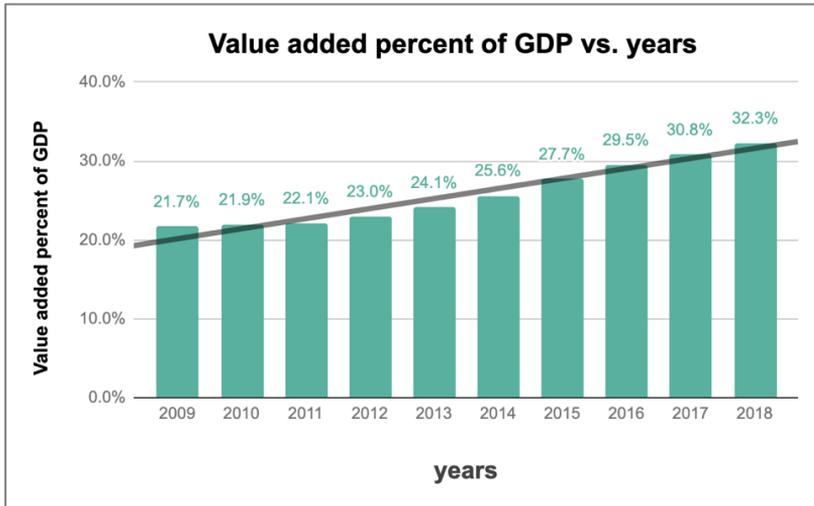
engaged in informal employment (Dike, 2019). Approximately 85 percent of Cambodia's labor force is not covered by labor law (Arnold, 2008). The informal economy is unregistered, and not recognized with no regulations in such varied workplaces as domestic workers' activities, and the construction industry (KAWAKAMI, 2006). The existence of an unorganized, unregulated, and mostly legal but unregistered informal sector was recognized in the 1970s. Following observation in several developing countries, massive additions to the urban labor force failed to show up in formal modern sector unemployment statistics (Smith, 2015). Moreover, the limited availability of formal sector jobs and the absence of unemployment insurance benefits puts strong pressure on workers to accept whatever jobs are available. Workers in the informal sector often work in substandard conditions and are exposed to hazards in the workplace.

Economic Growth

The percentage of the informal economy is still high in developing countries: it is around 60 percent in South Asia (World Bank, 2019). It is estimated that transactions in the informal economy equate to 31.2 percent of global Gross Domestic Product (GDP). In the European Union (EU), the informal economy is equivalent to an average 18.3 per of the GDP of member states. Cambodia is a developing country and still depends much on the informal economy. Around 17 percent of employment may be considered as formal employment (Sann, 2012). The country has maintained steady growth, averaging 7.7 percent annually, with tourism, agriculture, the garment and construction sectors being the main drivers of economic growth (Soy, 2018). The informal economy plays a vital role in helping the urban poor find more opportunities but, in the future,, young people will face increasing difficulty with job prospects because of human capital. Construction has been considered as an important indicator in supporting the Cambodia economy. The value of approved construction projects was 6.42 billion USD consisting of more than 3,0552 new construction projects equalling 10.74 million square meters

in the year (Kaya Ting, 2019). Likewise, World Bank figures show similar results as seen in the chart below.

Figure 1 Construction Industry's Contribution to Cambodia's GDP



¹Source World Bank Data

Occupational Health and Safety

Construction workers need proper health and safety management to reduce accidents and fatalities in their industry. This vital information is a necessary aspect. Aside from that, safety management must be a part of the overall management system that facilitates the occupational safety and health risks associated with business organizations (Muhammad Fikri Hasmori, 2018). Currently, Cambodia does not have sufficient laws protecting the rights of construction workers, (Soy, 2018); The application of international labor standards could help to protect potentially vulnerable workers since Cambodia has not ratified the Safety and Health in Construction Convention, 1988 No.167. Instead the Ministry of Labor and Vocational training (MOLVT) cooperated with the ILO to

¹ "Cambodia - World Bank Data - World Bank Group."
<https://data.worldbank.org/country/cambodia>. Accessed 28 Nov. 2019.

develop new strategies for the construction industry and established the first OSH Master Plan 2009-2013, which was officially launched on 28 April 2009. The OSH standard strengthens labor inspections on construction sites as a high priority to extend WISCON training programs to include more construction workers in applying ILO safety and health rules in the construction convention, No 167 (Ministry of Labor and Vocational Training, 2009). Additionally, Prakas No. 32 dated 20 March 2001 concerning the Administration of construction sites, was issued to keep public order, security and safety on the construction sites (Minister of Labor and Vocational Training, 2011). Such Health and Safety issues are very important and must be considered in all branches of industry especially in the construction industry (Sing-Sing Wong, 2019).

According to (Dardjev, 2017) five principle construction safety variables were extracted from the thirty in the SPSS based analysis of the feedback from a survey of the industry's safety authorities. The five principles factors, management and organization, resources, site management, cosmetic and workforce were estimated to be 21%, 18%,15%,11%, and 6% respectively of the variance that described poor construction safety performance in the industry. In the resources factor, the most influential safety items were lack of experienced project managers and lack of personal protective equipment. From the same report, it may be inferred that the forefront construction professionals (the top management and government authorities) are responsible for safety performance on project sites.

Research Design

The initial phase of data collection comprised of document analysis, and the documents or secondary data derived from academic publications, policy papers, working papers, reports, newspapers, and pertinent local and international legal instruments. Qualitative methodology: semi structured guides were used to engage project stakeholders on various aspects of the project's intervention especially as regards to understand the factors that contribute to safety risks on

construction sites and the legal and policy responses required to improve worker safety.

Sampling Selection

Participants from ministries, non-governmental organizations, and researchers were selected through purposeful sampling in order to exchange and discuss on ensuring safety and health for construction workers in Cambodia; in addition to understanding the demography of construction workers and root cause of accidents on construction sites by providing policy recommendations that can help to reduce the number of injuries and fatalities in the construction industry. The identity of the participants of this study is protected. The researcher chose 10 construction workers, two Mekars/Sub-constructors, and two engineers {staff at construction sites}, in Phnom Penh city on buildings with more than 5 floors.

Data Collected

Qualitative methods: semi-structured guides were used to engage project stakeholders in reflecting on various aspects of the project's interventions such as government offices in Cambodia, Union, IGOs, Workers, and experts in the construction sector. Key-informant sampling was employed to gain access to the target informant groups. Most of the interviews were conducted in Khmer and later translated into English. Within the interview, probing questions were asked to clarify certain information or to gain more relevant insights.

Table 1 List of Respondents

Respondents	Number
Ministry of Labour Vocation and Training (MLoVT)	1
Ministry of Land Management Urban Planning and Construction (MLMUPC)	2
National Social Security Fund (NSSF)	1
International Labour Organization (ILO)	1

Building Woodworkers Trade Union Federation of Cambodia (BWTUC)	1
Researcher	1
Construction Workers	10
Mekars (foreman)	2
Construction Engineering	1
Total	22

Empirical Findings and Analysis

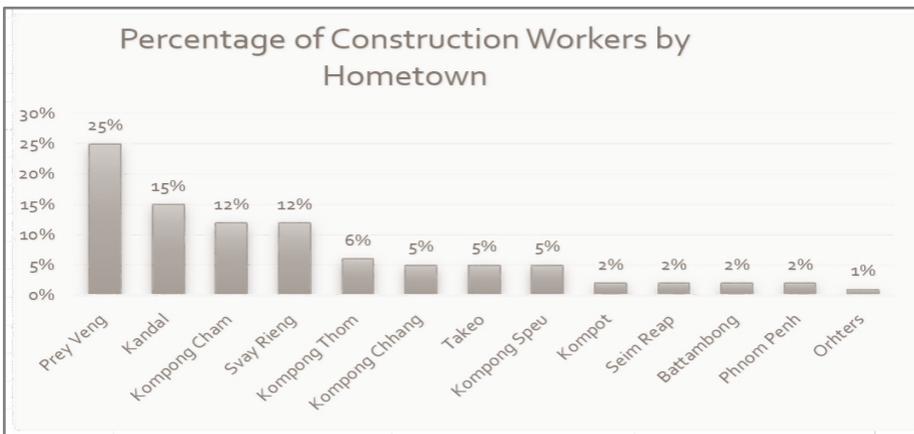
Overall Situation of Construction Workers

Place of Birth (domestic) of Construction Workers

In an interview with a construction worker, Sopeah said that she and her family have been working in the construction sector for more than ten years by moving to different sites. She comes from Kompong Cham Province and works in construction because the family is low-income, and they did not own any property in her hometown. Their income depends entirely on construction work. As evidence, one reported study on females in the construction sector found that most come from the provinces (Strickler & Pau, 2019). An estimated 20-40 percent of the construction workers are female: (many women have migrated from rural areas to work in the capital city of Phnom Penh). They come in a group or with family members and live at the construction sites. They migrate to work in the urban area because of job unavailability in the home villages. Not much income can be derived from farming. In addition to the lack of job opportunities, there is a lack of creativity and education in creating their own jobs, and a lack of market access for their agricultural products that pushes them to do construction work. Likewise, the construction field is the biggest job-generating industry in Cambodia needing more labor to work in this sector. Overall, construction workers come from multiple provinces, including Prey Veng and Kompong Cham. Secondary data of

the Building Woodworker Trade Union Federation of Cambodia survey in 2017, shows the percentages of workers from different provinces.

Figure 2 The percentage of Workers Come from Provinces



²Sources BWTUC 2017

Daily Activities of the Workers

Generally, construction workers come from the provinces and are living at construction sites. According to field observations at three sites in Phnom Penh, most construction workers stay on the ground floor of construction sites, underneath the building being constructed. This poses a considerable risk to workers' safety in the event of a building collapse or objects falling from higher floors. The government acknowledges that this is a safety risk. However, they perceive that building owners have limited options to provide accommodation for workers and that this action is not in breach of the labor or construction law. "Because the owner of the building has small land that will be fully constructed, they do not have any space for workers to stay while working." -interviewed on 31st October 2019. A draft Prakas on accommodation for workers is currently being examined by sector stakeholders including unions, NGOs, the ILO and the

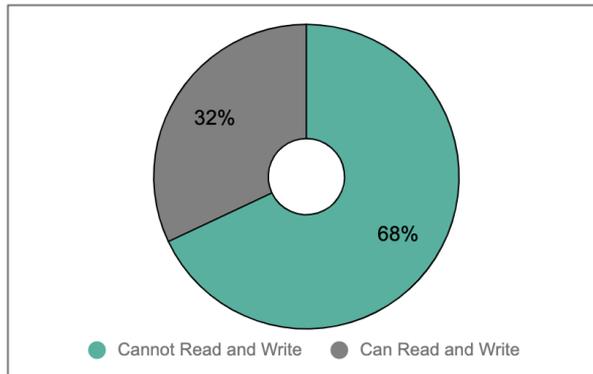
² BWTUC. (2017). The Primary Finding from the Survey on Construction Workers in Phnom-Penh, Phnom Penh: BWTUC.

government. However, this law is currently in draft form and has been under discussion since 2018. On Thursday, 04th July 2019, Mr. Sophara's speech stated that construction companies must make necessary arrangements for their workers to sleep off the sites of their employers. He added, *"There will be no shelters for workers in the under-construction building"* (Taing V., 2019). "This will be not allowed to happen anymore, and nobody will be allowed to live inside a building under construction". Most of the workers lived in company housing (68 percent) and (28 percent) lived in under construction buildings or near the building, in temporary shelters nearby, on the site, or in the actual building under construction, free of charge (Strickler & Pou, 2019). The most temporary structure is divided into small rooms, with two-thirds of workers living with 1-3 persons, typically family members. Field observation on construction sites, found most of the construction workers living in under-construction buildings. Furthermore, they need to use public bathing facilities and share toilets. Additionally, construction sites are dangerous, and the living conditions of workers are deplorable. Construction sites have many materials that can cause accidents if workers and safety management is not properly organized.

Literacy of Construction Workers

The level of education of the workers is still limited (Durdyev, Modamed, Lay, & Ismail, 2017) as most are uneducated. According to the survey, of women in the construction sector 79 per cent (female) had only primary school or less (Carol Strickler & Pou, 2019). In an interview with construction workers at a public building on 28 August 2019, *"she mentioned never having the chance to attend school because of family conditions so she did not have the chance to study. Besides that, they have one child who is seven years of age, but she does not go to school either because the parents need to move to other sites after finishing work"*. Of ten construction workers who were interviewed, all only had primary school or less. Likewise, the chart below shows the level of literacy of the workers.

Figure 3 Level of Literacy of Workers



³Source BWTUC 2017

Furthermore, the Royal Government of Cambodia (RGC, 2015) & (Durdyev & Mbachu, 2017) identified low labor productivity as a significant challenge in Cambodia's Construction industry due to inadequate skills, training and the use of obsolete technology.

Economic Features of Construction Workers

Generally, workers get low pay according to the in-depth interviews with construction workers in Phnom Penh. Moreover, the payment gap between men and women still exists (Strickler & Pau, 2019) because as yet there are no clear definitions of minimum wages for the construction sector. Based on an interview with a female construction worker at a public building in Phnom, a "After more than 10 years, on 28 August 2019 she said she gets only 30 000(\$7.5) riel per day, and her husband get 400000 riel" and "she needs to carry heavy material and work on a high building with them". Although they do the same work as men the pay gap still exists. Currently, she works with the tie rods (carry/collect) and the team has 15 people. Payment of workers depends on the tasks required. Besides that,

³ BWTUC. (2017). The Primary Finding from the Survey on Construction Workers in Phnom-Penh, Phnom Penh: BWTUC.

Mekars (foreman) will pay one week or one month depending on the individual practices of the Mekar.

In the same report, most workers chose the construction sector because they have debt (70 percent of female construction workers). The reason that workers do not focus much on safety and health is because they only consider earning money. Based on the interviews with ten construction workers in Phnom Penh at different sites, it was found that minimum wages are 25,000-35,000 riel per day. According to the BWTUC, in 2017 the minimum wage of construction workers was \$7.50 per day (BWTUC, 2017). Reports by the Ministry of Land Management Urban Planning and Construction in 2019 found that workers get minimum payments (Department of Construction, 2019). The estimated payment for workers without skills is 35,000 Riels to 40,000 Riels per day.

Although the Cambodian economy also depends on the direct investment of the construction sector workers, they mentioned that sometimes they do not get paid by the Mekar if they need to change their workplace or if they ask for more wages. For example, a family who is currently working on construction sites, added, *"The Mekar did not pay their money (thirty thousand riel) when they decided to work at new construction sites."* As a consequence of working without a written contract they did not have the power to ask for the money. Moreover, Mr. Sok Kin said during an interview on the 11th of September 2019. *"Workers do not understand their rights to complain to the boss/Mekar."* Many workers are unskilled and work informally as day labor.

In the meantime, looking at the working conditions of workers, it does not seem to improve in the same way as economic growth. Concern has also been raised in academic research in Cambodia about health and safety standards (Dike, 2019). The construction industry is considered to be one of the most hazardous sectors, even in advanced economies. An interview with government officials on 10 October 2019, stated that, *"They have provided the training to construction workers, but some companies do not cooperate by providing training to their workers"*. Additionally, most do not know the company's name where they are currently working because they

work with the subcontractor/Mekars with the skills that they have. Workers without formal education or training do not have access to safety information. The chart below shows seasonal workers and those moving from site to site using unwritten contracts as opposed to those with more formal contracts.

Figure 4 Types of Contract for Construction Workers



⁴Source BWTUC. (2017)

Experience of Exposure to Accidents

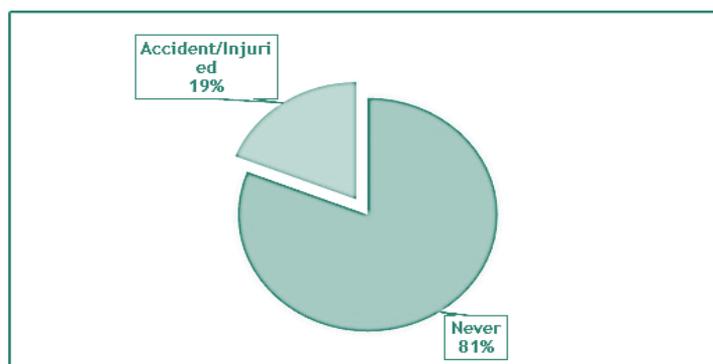
In the field visiting construction sites in the capital city on the 23rd of September 2019 (condo building) from informal conversations with workers (who work and live at an unfinished building). One worker was found injured during working hours because of a concrete frame falling on his back. *"He cannot work more than one week and spent his own money (\$150) for treatment without any responsibility from the Mekar and construction company owner"*. He was afraid of being interviewed about his accident and the working conditions because people were looking around. Most of his co-workers said he did not say much because it could impact his job.

Notwithstanding the growth of the construction industry, Cambodia is still facing high rates of accidents in this sector. According to a survey of construction workers

⁴ BWTUC. (2017). The Primary Finding from the Survey on Construction Workers in Phnom-Penh, Phnom Penh : BWTUC .

in Phnom Penh in 2017 (BWTUC, 2017) it was found that 19 percent had been involved in accidents and injured. During an interview, Mr. Sok Kin mentioned, *"the case of the concrete roof which collapsed on the 23rd floor at the Mekong View Tower in Sangkat Chroy Changvar."* Ten workers had been concreting the roof when suddenly it collapsed. Five workers were injured and taken to the hospital, while two workers remained missing. As a result, only a few Media sources published information about this accident, such as (CEOCambodiaNews,2018) & (David, 2018) & (Kongkea, 2018). In the case of the Building Collapse in Sihanoukville killing 28 people and injuring 26 the workers were living in the under-construction buildings (Narin, 2019). This incident has been published by many local and international social media. In fact, on 11, September 2019, Mr. Sok said, "Most construction workers do not know about their rights or the law of the workplace accidents" because they are using verbal contracts that are easy for employers to disrespect or not respond to the case of any accidents of the workers. Also, they will hide the accident if they can. According to a Video: the life of Cambodian Construction Workers, he mentioned, *"If I am not careful, I can be hurt or fall down from a building and I have to carry heavy material. I fell a few times from the scaffold, also the manager blamed me so I couldn't argue with him or he would just walk away"* (RFA, 2016).

Figure 5 Number of Construction Workers in accidents



⁵Sources BWTUC, 2017

⁵ BWTUC. (2017). The Primary Finding from the Survey on Construction Workers in Phnom-

The scaffolding on the 16th floor collapsed on a Saturday night at a construction site located in Phnom Penh (Long, 2019). It was discovered on Sunday night, and bodies were extricated from a pile of collapsed material on Monday. He said the incident was an accident caused by negligence, and the family members of the victims have already received compensation from the construction site manager. He added, "What led to this incident was not intentional, but was a technical issue which was not [the responsibility of] the construction site". According to Sok Kin, if construction sites follow technical standards and measure the property, accidents can be reduced. In his research in 2017 he found that: 19 out of 100 workers face the risk of being hurt in an accident. For instance, recently, (Sovuthy, 2019), three construction workers died, and each family was given \$3000 in compensation by the builders, not the owners of the land. Moreover, 'He said it was the fault of the workers, that they were careless, and it was their fault.' According to, Chapter IX: On work-related accidents, article 248:

- An accident is considered to be work related, regardless of cause, if it happens to a worker working or during the working hours, whether or not the worker was at fault; it is the accident inflicted on the body of the worker or on an apprentice with or without wage, who is working in whatever capacity or whatever place for an employer or a manager of an enterprise.
- Equally, accidents happening to the worker during the direct commute from his residence to the workplace and home are also considered to be work-related accidents as long as the trips were not interrupted, nor a detour made for a personal or non-work-related reason.
- All occupational illness, as defined by law, shall be considered a work-related accident and shall be remedied in the same manner.

What have been the main causes of hazardous construction-related Accidents?

Most construction companies in Cambodia use subcontractors for a certain percentage of the profit. This is the leading cause of accidents in this sector because there is no coordinated safety planning, allocation of safety responsibility, and communication with the workers. Mr. Sok Kin said, *"Cambodia construction companies need to register with the MLMUPC for a license to run the companies; on the other hand, sub-contractors do not register with the MLMUPC. When the workers have accidents or injuries while working, there will be nobody responsible or they will run away because the worker does not know the boss or the construction company's name to challenge them to resolve the problem."*

Lack of Safety practices on construction sites

The safety of workers is a complex phenomenon. Construction is always risky because outdoor operations work at great heights, at complicated on-site plants, and equipment operation coupled with worker's attitudes and certain behavior toward safety. Moreover, accidents are unforeseen events, which cause damage/injuries unintentionally and unexpectedly (Ranasinghe, 2015). The majority of construction workers, especially for the small firms or sub-contractors, do not use the proper protection during working hours. For instance, construction workers can be twenty feet in the air, wearing flip flops and no hat. Based on an interview with a male construction worker at a public building on 28 August, 2019, *"he said, he works on a high building, the Mekar only provided him Head protection and a safety-belt, but he was still wearing flip flops. He added that he needs shoes to protect himself"*. Construction accidents occasionally result from workers not effectively using the safety equipment provided for their use (Toole, 2002). (Millar, 2019) According to Ath Thorn, *"They are under subcontractors or lack a transparent contract with their employers Right now, only a few companies are registered. More have subcontracts, and I can imagine that around 70-80 of workers are under precarious work and sub-constructs rather than under the responsibility of their employer."* This is the situation of the workers. For instance, the sub constructor's priority is one of

low costs so that safety practices remain the second priority. Safety is considered a waste of money by most contractors since they remain unaware of the effectiveness of safety prevention programs in reducing costs and increasing productivity (N.A. Kartam, 2000). Additionally, because of low education, a government officer on 31st October 2019, added that *"There is a problem of workers drinking alcohol at night or before working which can cause more accidents."*

Lack of Safety Management

As well there exists the complexity of sub-contracting. Construction management is not well known in Cambodia, but people working in the industry agreed that it is essential. An interview with a construction engineering student at a private school on 05th October 2019, revealed that a building under-construction had only three engineering students overseeing the work in progress. Furthermore, they did not yet complete their bachelor's degrees in construction engineering. He added, *Specifically, this building does not have a safety engineer to check safety practices or train about safety practices during working hours"*. Most buildings under construction in Cambodia only put safety signs in front of the building. Quality management in construction has a significant impact on workers' health and safety (Tonmoy Kumar Brahmachary, 2018).

Figure 6 Education level of Construction Management in Cambodia

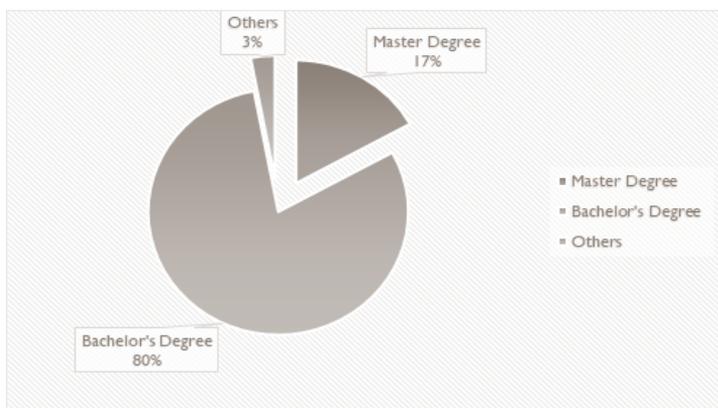
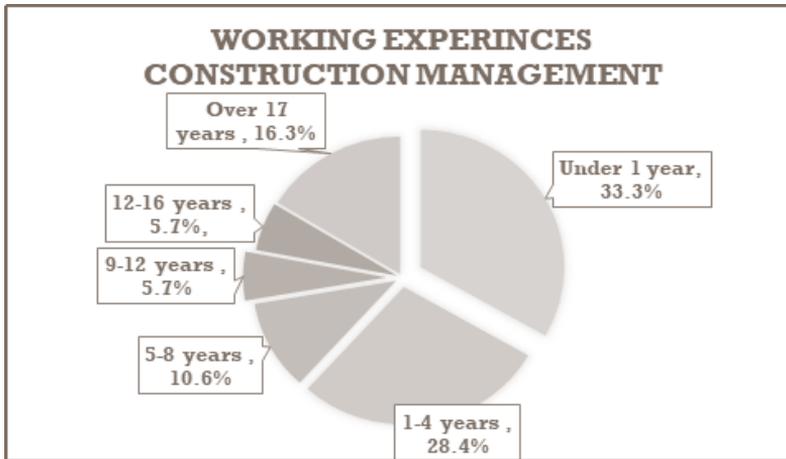


Figure 7 Experience of Construction Management

Source (Kang, Jin, Hyun & Park, 2018)⁶

The implementation of construction site management leadership at both the operational and the strategic level is related to their own direct reports and construction workers employed with subcontractors. Cross-sectional studies have shown that leadership practices of construction site managers seem to be necessary for construction site safety performance in terms of occupational injuries, safety-related work behavior among employees and construction site workers (Nielseh, 2019).

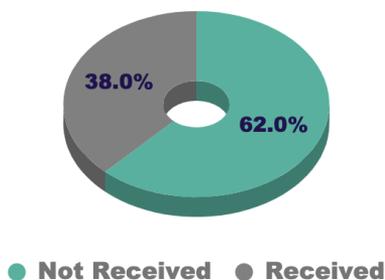
Lack of information about Safety and Health in Construction Sector

Therefore, it is evident that the main cause of poor construction safety performance mentioned above are applicable in the Cambodian construction industry context (Sopheana, 2012). The workers do not access sufficient safety equipment or being exposed to the knowledge of the culture (Muhammad Fikri Hasmori. Sasitharan Nagapan, 2018). Safety equipment is very necessary for

⁶ Kang, Y., Jin, Z., Hyun, C., & Park, H. (2018). Construction Management Functions for Developing Countries: The Case of Cambodia. *Journal Of Management In Engineering*, 34(3), 05018004. doi: 10.1061/(asce)me.1943-5479.0000609.

construction workers at construction sites. The number of inspectors for the construction industry still has limitations. According to an interview, the government office of Occupational Health and Safety in Cambodia, "*The number of inspectors who trained for safety and health was 304 persons in 2018-2019,*", and "*Of a total number of 274 supervisors and Workers, 29 were females*". That the small number of trainee's accounts for the shortage of workers receiving information. According to the BWTUC, a survey in 2017, only a few workers received safety and health information. The results are in the chart below.

Figure 8 Workers That Received Training or Information on OSH



Source:BWTUC 2017 ⁷

Standard Construction Industry (Technical issues)/ material standard

The construction industry is booming, but it does not seem that improvements have been made in the technical standards as most companies are still using old materials. That will cause more accidents for construction workers. In one case, falling elevator scaffolding killed three construction workers. An interview with government officials on 31st October 2019 noted, "*They mentioned it happened because of a technical standard*" and "*if the law of construction is implemented things will be getting better.*" Moreover, the new law had been implemented already, on the 18th of October 2019, in chapter 4: Technical Construction Sector.

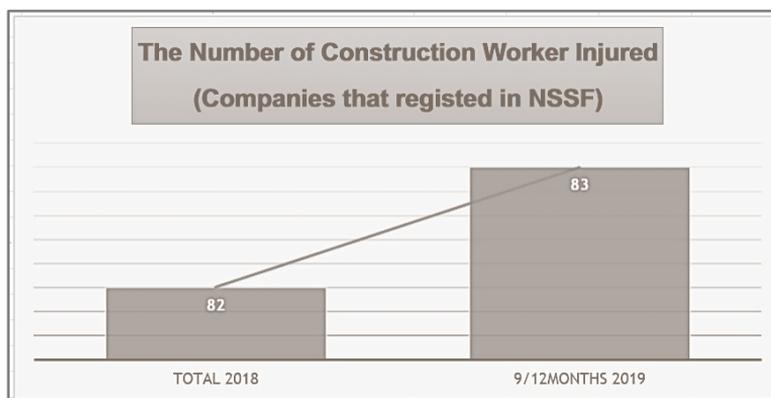
⁷ BWTUC. (2017). The Primary Finding from the Survey on Construction Workers in Phnom-Penh, Phnom Penh: BWTUC.

Furthermore, in the case of a tower crane which collapsed on a building on 16th November 2019, in Sihanoukville, 'according to the technical office, it said that the handle of the tower crane broke when the shaft of the crane's handle was released. The release of the shaft was technically wrong'. Moreover, Yann Thy secretary-general of BWTUC said, '*Normally, the tower crane will not easily break if it is used following proper standards. Technical tool quality needs to be properly checked.*' He said, but in this case, we understand it was part of the negligence of the technical working group and the supervisor (Chakrya, 2019). Additionally, the case of falling metal halted construction work on Gold Tower 42 on 20th November 2019. The vice-president of BWTUC, 'It was common for metal and other construction materials to fall from Cambodia construction sites due to a lack of inspection and carelessness of the site owners.' All the technical matters in construction are still the main issue to address accidents in the construction industry in Cambodia. Furthermore, on the same day, the Ministry of Land Management Urban and Planning had banned the companies from stopping investigations.

Poor accident record keeping and reporting system

Approximately 70 percent of the workforce is employed as informal/vulnerable workers; more than 33 percent of the population are still poor despite recent progress; 28 percent are vulnerable to the impact of climate change and low levels of social protection among poor households, and indigenous populations (ILO,2019). Besides that, it is difficult to estimate the number of accidents, injuries, and fatalities in these sectors. The chart below shows the only construction workers covered by the NSSF.

Figure 9 Number of Construction Workers Injured



⁸Sources NSSF 2018 & 2019

The root cause of accidents is lack of proper training, inadequate enforcement of safety, not providing safe equipment, not using proper safety equipment, poor attitude towards safety of the workers, and isolated sudden deviation from the prescribed behavior of the worker. Further, most construction workers are living under-construction buildings like the case of a building collapsed in Sihanoukville. In addition, (ILO, 1988) on Article 30 of Safety and Health in Construction Convention, 1988 Personal Protective Equipment and Protective Clothing

1. Where adequate protection against risk of accident or injury to health, including exposure to adverse conditions, cannot be ensured by other means, suitable personal protective equipment and protective clothing, having regard to the type of work and risks, shall be provided and maintained by the employer, without cost to the workers, as may be prescribed by national laws or regulations.
2. The employer shall provide the workers with the appropriate means to enable them to use the individual protective equipment and shall ensure is proper use.

⁸ NSSF report 2018 & first nine months,2019

3. Protective equipment and protective clothing shall comply with standards set by the competent authority taking into account as far as possible ergonomic principles.
4. Workers shall be required to make proper use of and to take good care of the personal protective equipment and protective clothing provided for their use.

The construction sector is a complex industry that is not well regulated, has limited standard and compliance mechanism enforcement and regulations. That the cause of issues in the report about the number of accidents in construction sites.

Lack of social protection/ poor legislation codes and standards of building

Cambodia has ratified eight fundamental International Labor Organization (ILO). Nevertheless, (Soy, 2018). Cambodia does not have sufficient laws protecting the rights of construction workers; therefore, there will not depend on the international labor standard that could help protect vulnerable workers because Cambodia does not ratify Occupational Safety and Health in Construction Convention 1988 No.167. The issues on construction accident/injuries and safety standards that still problem should be a priority. Based on the informal and interview with construction workers, Mekars (Subcontractor) and Engineers in the construction sites, "Construction workers do not receive any benefit from National Security Fund." Moreover, who is working for the government officials, on 12th October 2018, "Most of the big construction companies have registered in the national social security fund, but the problem on the sub-constructors do not register MLMUPC because they do not want to spend the money."

Different problems of construction companies do not register into the National Social security fund. Based on an interview with Mr. Sok Bora, Chief Bureau of Benefit Division, on 21st October 2019, "If the companies register into NSSF, the workers will be covered 24 hours by the national social security fund". He stated that since the implementation of NSSF, "The number of construction companies register in NSSF was 251 companies, and of the total number of 15,763 workers,

3,107 were females". Although, the public holiday is still the issue for construction workers because they are paid by the day and employment informal without a written contract. Especially for the female construction workers, 90 days before giving birth and get pay 50 per cent, but construction does not get. The law is good; correctly the obligation is not applying for informal employment, Sok Kin mentioned during an interview. On the overview of the Occupational Safety and Health in Cambodia had collaborated with Ministry of Labor and Vocational Training (MoLVT , 2009)As a result of the Master Plan, a number of ministerial regulations relating to OSH have been issued under MoLVT, four of which specifically focus on OSH standards on construction sites, such as on the table,

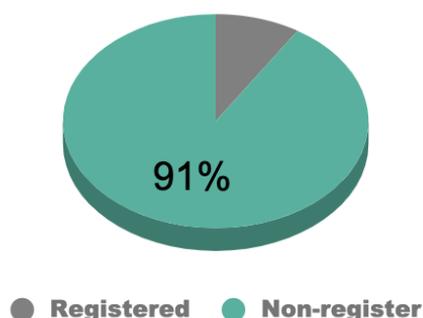
Table 2 Outcome of Occupational Safety and Health in Cambodia

Prakas No.	Date	Outcome
077	30 March 2011	concerning information at the construction site
075	30 March 2011	concerning sanitation at the construction sites
076	30 March 2011	concerning the prevention of risks associated with changing weather conditions at the construction site
078	30 March 2011	March concerning storage, waste management and cleanliness at the construction site.

Table 3 Work-Implement Program in Cambodia

	Trainers	Workshops	Trainees
WISCON	100	49	1,230

Source ILO, 2009

Figure 10 Workers registered to National Social Security Fund Cambodia

Sources BWTUC 2017⁹

Discussion and Conclusion

The overall objective of this paper is to contribute to the safety standard of construction workers in Cambodia through the study of the construction sector in Phnom Penh. In line with the discussion insights and empirical overview it is apparent that Cambodia oversees sub-optimal conditions for domestic construction workers. Accordingly, this paper makes two priority recommendations to address the issue of construction worker safety in the kingdom.

First priority, the national adoption of a Prakas covering:

- **Personal Protective equipment.** Employers must enforce the consistent use of PPE.
- **Living quarters.** Construction workers must be provided adequate housing for their duration on the project. It must not be in the development.

⁹ BWTUC. (2017). The Primary Finding from the Survey on Construction Workers in Phnom-Penh, Phnom Penh : BWTUC .

- **Social Protection.** Employees must be protected by social protection mechanisms such as the **National Social Security Fund (NSSF).**

Second priority, Owners and supervisors to enforce safety standards and regulations.

Safety training and safety management have existed for years; however, the models for effective training remain a question because the model is divided into components: materials, methods, equipment, and media as well as the environment, teachers/instructors, and assessments of learning outcomes. A question therefore remains as to the agents responsible for the cause of accidents (Kartam, Flood & Koushki, 2000). Based on the study the owner of the building plays an essential role in reducing construction rates of accidents occurring. Recommendations around compliance and owner liability recommend:

- Keeping an accident record. Accident reports must be done by the constructor or management, reviewed, and channeled back for corrective action. If we track on the number of the accident, it will help to reduce the number of injuries and fatalities. Moreover, (ILO,1995). Safety and health records must be kept, which facilitate the identification and resolution of safety and health problems on the sites. That an obligation of the site managers to control it. Because the occurrence of accidents is essentially evidence that owner/ construction companies have good control of their processes. The issues, Occurrence of accidents are essentially evidence that a business does not have good control of their processes. Accidents are valuable sources of information about defects in business (Saharanim, et al 2017),"
- All the workers should be receiving safety training before working (workplace safety standards and the hazards that they are facing on their task). That education and training are dynamic problems to obtain a construction safety culture in the construction sector, and all employees (Endroyo, Yuwono, Mardapi & Soenarto, 2015), including the top management, must undergo safety and health-related training with the

sole purpose of creating safety awareness and safety consciousness. New workers must be adequately orientated to their job environment because they are usually most vulnerable to accidents on job sites due to unfamiliarity with potential hazards and problems of a construction project that is new to them (Kartam, Flood & Koushki, 2000). But the workers are not training on safety at the workplace.

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