

Overseas Fieldwork Report 2018:

Kampong Chhnang Province, Cambodia



**Graduate School of International Development
Nagoya University**

Overseas Fieldwork Report 2018

Kampong Chhnang Province, Cambodia

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Graduate School of International Development

Nagoya University

Nagoya, Japan

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Kampong Chhnang Province, Cambodia
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Acknowledgments

Like all the previous years, Overseas Fieldwork 2018 could not have been realized without the kind and heartfelt support from many people and offices. It is my honour, on behalf of the Overseas Fieldwork Project faculty and students of the Graduate School of International Development, Nagoya University, to express our sincerest gratitude to all the people who supported us by making kind arrangements and sharing their knowledge.

We are indebted to the Governor of Kampong Chhnang Province and his staff for accepting our fieldwork project, making the necessary arrangements with local stakeholders and patiently listening and giving useful advice to students regarding their preliminary findings. We are also grateful to the village chiefs, staff members of government offices, and all the people who generously shared their time and knowledge to help with our fieldwork.

We are also heavily indebted to the faculty and students of the Royal University of Phnom Penh (RUPP). Without hesitation, our biggest “thank you” goes to Prof. Sam Ath Chin. Without his support, OFW 2018 would not have been as smooth as it was. Our warm appreciation, of course, goes to the faculty members of RUPP, Prof. Youhan Hor and Prof. Vin Spoann who, despite their busy schedules, made time to come with us to Kampong Chhnang and gave valuable advice and support to our students. Our gratitude also goes to the three students from RUPP, Mr. Vichara Lay, Mr. Seyha Kry, and Mr. Chanthol Soth, who assisted OFW 2018. Last but not least, I would like to express warm appreciation to Dr. Penghuy Ngov. His warm support and joyous company always lifted up our spirits, and his thoughtful tips enabled us to navigate a safer path.

Takeshi Higashimura
Professor
Chair of OFW 2018 Committee
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Introduction

The twenty-sixth Overseas Fieldwork (OFW 2018) of the Graduate School of International Development (GSID), Nagoya University, was carried out in Kampong Chhnang Province, Cambodia, from September 16 to September 30, 2018. OFW is an important part of GSID's curriculum, designed to provide students with exposure to the "real world" development issues of a developing country. This experience will help students seeking future careers in international development obtain practical insights to complement their theoretical orientation. OFW also enables students to understand the importance of an inter-disciplinary/comprehensive approach when tackling practical development issues that often arise among stakeholders with conflicting interests. Such an approach is particularly important to make the development process fully participatory and sustainable in practice, and its importance can only be well learnt in the field.

Each year, GSID carries out OFW in a developing country in Asia in cooperation with a local partner university of GSID. This year, the Royal University of Phnom Penh (RUPP) once again kindly accepted to host the OFW, adding to the past successful collaborations in 2005, 2006, 2007, 2012, 2013, 2014 and 2017. Building on many years of cherished relationships between the two universities, OFW 2018 was managed smoothly and it contributed to further strengthening GSID's ties of academic exchange and collaboration with this prestigious university in Cambodia.

Considering the relevance of topics to Kampong Chhnang's local development context, we divided 13 graduate students into three thematic working groups: Economics (WG1), Governance (WG2), and Education (WG3), to study and observe various dimensions of development in that area in a holistic manner. Students conducted their research in Khong Rang Commune communities of Baribour District and Kampong Chhnang City, Kampong Chhnang Province. On September 27, the teams of OFW 2018 had the honour to present their preliminary research findings to the provincial governor and local officials. On September 28, before departure from Phnom Penh, they shared their findings at RUPP to receive feedback from faculty and students. On October 31, we also held a presentation session at GSID.

This report is the outcome of all the efforts mentioned above. Students of all working groups worked very hard, polishing their analyses and incorporating the comments and advice received at the presentations and in the course of their fieldwork. It is my hope that the entire experience of OFW made the students draw closer to the complexity of reality and made them realize the excitement of working with people. I also would like to thank Prof. Adam Smith for the English editing of this volume.

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Program of OFW 2018

Preparatory Seminar at GSID

Date	Time	Title of the Lecture	Lecturer
Apr. 25 (Wed)	14:45-16:15	Introduction & Teambuilding OFW2017 presentations	OFW Committee
May. 2 (Wed)	14:45-16:15	About Cambodia and Kampong Chhnang Province	Prof. Sam Ath Chin, RUPP
May. 9 (Wed)	14:45-16:15	An Introduction to Cambodian Community	Prof. Satoru Kobayashi, Kyoto University
May. 23 (Wed)	14:45-16:15	Education Development in Cambodia	Prof. Sam Ath Chin, RUPP
May. 30 (Wed)	14:45-16:15	Contemporary History and Administration System of Cambodia	Prof. Kuong Teilee, Nagoya University
	16:30-18:00	Research Methodology (Joint session with DFW seminar)	Prof. Satoru Kobayashi, Kyoto University
Jun. 6 (Wed)	14:45-16:15	Interim Presentation	OFW Committee
Jun. 13 (Wed)	14:45-16:15	How to Make Research Proposal (Joint session with DFW seminar)	Prof. Robert Croker, Nanzan University
Jun. 20 (Wed)	16:30-18:00	Research Ethics (Joint session with DFW seminar)	Prof. Wataru Kusaka, Nagoya University
Jun. 27 (Wed)	14:45-16:15	Community Development in Cambodia: Issues and Challenges	Prof. Ayako Ido, Nagoya University
Jul. 4 (Wed)	14:45-16:15	Consultation/Group Discussion	OFW Committee
Jul. 11 (Wed)	14:45-16:15	Presentation on Research Proposal	OFW Committee
Jul. 18 (Wed)	14:45-16:15	Risk Management	Prof. Akinari Hoshino, Prof. Takashi Sakai, Nagoya University
Jul. 25 (Wed)	14:45-16:15	Khmer Language	Mr. Vannpoly Chhay, Nagoya University
Sept. 14 (Fri)	13:00-14:00	Pre-departure Orientation	OFW Committee

Schedule of Fieldwork in Cambodia

Date	Time	Activity
Sept. 16 (Sun)	10:00-13:40	Nagoya – Ho Chi Minh City (VN341)
	15:55-16:50	Ho Chi Minh City – Phnom Penh (VN920)
Sept. 17 (Mon)	10:00-11:30	Lecture by Dr. Sok Soth at RUPP
	13:30-	Move to Kampong Chhnang Province
	18:00-20:00	Get to know each other party
Sept. 18 (Tue)	9:00-11:30	Courtesy visit at Provincial governor's office
	13:00-	Group work (planning)
Sept. 19 (Wed)		Group work (data collection & data analysis)
Sept. 20 (Thu)		Group work (data collection & data analysis)
Sept. 21 (Fri)		Group work (data collection & data analysis)
Sept. 22 (Sat)		Free time / Group work (data collection & data analysis)
Sept. 23 (Sun)		Free time
Sept. 24 (Mon)		Group work (data collection & data analysis)
Sept. 25 (Tue)		Group work (data collection & data analysis)
Sept. 26 (Wed)		Group work (presentation preparation)
Sept. 27 (Thu)	15:00-17:00	Interim Presentation of Research Findings
	17:30-19:30	Thank you party
Sept. 28 (Fri)	10:00-	Move to Phnom Penh
	14:00-16:00	Presentation at RUPP
Sept. 29 (Sat)	10:00-	City tour with group members
	21:10-22:10	Phnom Penh – Ho Chi Minh City (VN3850)
Sept. 30 (Sun)	0:05-7:30	Ho Chi Minh City – Nagoya (VN340)

Interim Presentations of Research Findings

The interim presentation of research findings was held at Kampong Chhnang province on September 27th, 2018. Based on the comments received in Kampong Chhnang, participants made another interim presentation in the Royal University of Phnom Penh on September 28th, 2018. Each working group presented for 20 minutes and followed by Q&A session by the participants.

Presentation of Research Findings at GSID

The presentation of research findings was held at GSID by each working group to disseminate and to collect feedback from colleagues on October 31st, 2018.

Kampong Chhnang Province of Cambodia

Sam Ath Chin



Geographical Area and Demographic Situation:

Kampong Chhnang is a province of Cambodia which is located on National Road 5 about 91 km from the capital city, Phnom Penh. This province is bordered by Kampong Thom to the north, Kampong Cham to the east, Kampong Speu to the south and Pursat to the west. The total population of this province is 538,945 with an annual population growth rate of 0.27 in 2015.

Situation next to the great Tonle Sap Lake, the province is renowned for its irrigation system consisting of rivers, canals and streams that is used

for paddy rice plantations, livestock, and agro-industry crops. Further development of this irrigation system will contribute to the further development of these industries.

Economic:

Kampong Chhnang is also famous for making fine clay pottery; the meaning of the province name in the Khmer language is the Port of Pottery. Traditionally, the people of this province spend time making pots, vases and numerous other types of ceramics during the off-harvest seasons. Pottery craft products is a specialized industry in this province which contributes to economic growth for the local people.



Tourism development in this province has great potential, particularly as regards eco-tourism around Tonle Sap Lake, as many local and international visitors are attracted by the floating villages and the legendary Kong Rei Mountain.

Education:

Within the past decade, the education sector in Kampong Chhnang Province has grown noticeably both in terms of quantity and quality. As shown in the Table 1, the gross enrollment rate is 104.6%, 60.3% and 26.7% in primary, lower secondary and upper secondary level respectively.

Table 1: Number of schools, students and teachers in Kampong Chhnang Province

Education level	Number of Schools	Number of Students	Number of Teachers	Enrollment Rates
Pre-school	105	6160	140	
Primary school	273	74059	1803	104.6
Lower secondary school	60	24120	591	60.3
Upper secondary school	16	10,963	976	26.7
Total	454	115302	3510	

Source: (MoEYS, 2017)

References

- Kampong Chhnang Provincial Office. (2016). Situational Information, Economic, Social, Scoring and Poverty Rate in 2016 for Local Development and Management based on the village, commune data in 2015. Kampong Chhnang Planning Department.
- MoEYS. (2017). Education Statistics and indicators 2016-2017. MoEYS, Department of Education Management Information System, Phnom Penh.

Working Group 1

Economics

Income Diversification in Rural Area: A Case Study in Khon Rang Commune in Kampong Chhnang Province

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1. Introduction

Cambodia, one of the poorest countries in Southeast Asia, has been praised for its astonishing economic growth (Economics and Research Department, 2014). The share of the population below the national poverty line has declined from 45% to 21%, with most of the remaining poor found in the countryside. This decline in poverty is due to at least two reasons: an increase in both farm and nonfarm income, and the growth of the agricultural economy. Tong et al. (2013) assert that Cambodia has experienced relatively even economic growth in both rural and urban areas. Although rural households still depend mainly on the agricultural sector, its share of household income has declined significantly. Whether a household will become dependent on nonfarm income generating activities, depends on household economic levels. The relatively rich in a rural area have more nonfarm income sources; meanwhile the relatively poor still depend mainly on agriculture.

Although the population below the national poverty line has dramatically declined, most of these individuals are still close to poverty. This means that these individuals are still vulnerable; if they experience a crisis, they will suffer a huge loss, via being deprived of their assets or means of income, and eventually will return to poverty (World Bank, 2014). Various risks surround life in rural areas, such as climate change, natural disasters, lack of access to financing, and lack of clean water supply. Natural disasters, in particular, pose a major threat.

From the experience of reducing poverty, two lessons can be learned. One is that poverty reduction needs to reach rural areas, and the other is that in order for measurement to be effective, it should be focused on the activities the poor are currently engaged in (World Bank, 2014). Because income coming from agriculture is too volatile, more and more rural citizens try to combine agricultural activities with non-agricultural activities.

The diversification of income in developing countries plays an important role in livelihood strategies, especially in rural areas. By diversifying their income sources, rural households can mitigate the risks deriving from both foreseen and unforeseen impacts. Since non-agricultural activities are less affected by adverse natural conditions than agricultural activities, non-agricultural activities have the potential to play a crucial role in improving livelihoods.

This paper examines the impact of income diversification on the lives of various people in Knon Rang Commune, a rural area in Cambodia. Types of income sources, expenses, and the challenges these individuals face will be measured to assess the impact of income diversification.

2. Literature Review

Income diversification is a strategy of employment commonly found in developing countries. Usually, by specializing in one income source, a person can attain high efficiency and earn a high income. But life in developing countries, especially in rural areas, contains multiple risks, such as natural disasters, lack of capital, animal diseases, climate issues, etc. These risks may damage income sources and harm products, therefore individuals tend to have multiple of income means to hedge the risks.

There are several forms of income diversification. Some studies define it as an increase in the number of income-generating activities or the balance among them. A second definition concentrates on the diversification of income-generating activities from farming into non-farming activities. Barrett et al. (2001)

states that the more non-farming income sources a family depends on, the better-off and more stable the life of the family will be. A third definition refers to income diversification as a change in the income-generating activities from ones which generate low returns to ones which generate high returns. For example, in agriculture, people stop cultivating staple food crops and start cultivating commercial crops.

In summary, income diversification has two roles: One is livelihood distress, also called push factors, and the other is progressive success, also called pull factors (Martin and Lorenzen, 2016). In the theory of push factors, people select a wide portfolio in order to stabilize their income sources and decrease the risk coming from unpredictable threats. Even though some of the jobs in the portfolio can be low-reward, they contribute to fulfill the overall purpose.

According to this theory, people in a rural area who get richer should decrease their level of diversification, because their lives would be less vulnerable and they should concentrate on fewer jobs which are high-reward in order to attain efficiency in their jobs. However, diversification is found amongst the rich in rural areas and urban areas. This situation can be explained by the theory of pull factors. Because the relatively rich have more financial capacity, skills, or capacities, they tend to try multiple jobs which contain some risks but have a large reward. Therefore, the jobs in pull factor income diversification have different characteristics to ones in push factor income diversification.

Pull factor theory suggests that the income disparity in rural areas is wider than in urban areas. Those who have physical and non-physical endowments have more access to economic activities which are lucrative. On the other hand, people who are initially poor will face entry barriers due to lack of capital. In Cambodia, income diversification is mainly motivated by accumulation rather than by survival; this suggests that richer households are better off (than poor households) seizing the advantages provided by a diversified income portfolio (Tong and Phay, 2013).

Jiao, Pouliot, and Waleign (2017) studied income diversification in rural Cambodia. They asserted that several factors, such as education, physical assets, and access to infrastructure, are the entry barriers for highly remunerative activities.

3. Problem Statement

A variety of income generating activities can reduce the possibility of falling into poverty while achieving a sustainable income. Furthermore, the income diversification coming from pull factors will give rural people higher income. In order for this income diversification to contribute to poverty reduction in rural areas, however, it should be changed from being push-factor driven to being pull-factor driven. In other words, even though jobs in the portfolio are low-reward, for risk prevention and to achieve poverty reduction, they need to be changed to jobs of high-reward.

However, people will be stuck in poverty if some obstacle hinders the change to a high-reward means of income. The obstacle can be lack of education, infrastructure, or endowments; or crises coming from adverse natural conditions. Also, some people in a commune will be left behind from development, and economic disparity will be large if there is an unbalance of such factors in a community. In order to prevent such problems, proper policy and aid from international organizations are needed.

Picture 1: Typical household of our interviewees



4. Research Objectives

The primary research objective is to outline the variety of income generating activities in rural Kampong Chhnang, Baribour District, Khon Rang Commune. A variety of income generating activities reduces the possibility of falling into poverty while generating an increase in income, because the variety will offset the risk and vulnerability. However, some factors are considered to hinder the process of income diversification. Therefore, in this research, we aim to comprehensively observe the lives of rural people as relates to income diversification. The following are three specific research objectives:

1. To understand whether or not income diversification happens, and if so, explain how it contributes to creating better-off, more sustainable lives for the people in Khon Rang Commune.
2. To determine the barriers to achieving further income diversification.
3. To discover different characteristics or tendencies between low and high-income households.

5. Research Questions

Our research questions pertain to the income generating activities in Khon Rang Commune. Even if there are several income generating activities, people have to select what kind of activities are the most suitable. The process is the same as when choosing one's job. However, conditions such as the number of jobs, required capital for doing the activity, and social background may affect expectations. Therefore, it is necessary to understand what types of income-generating activities already exist in the Commune. Furthermore, it is necessary to outline the possible activities for villages, as different activities may be subject to limitations by geological, financial, or social conditions. Finally, it is necessary to analyze the difference in income generating activities between rich and poor families, and find characteristics of these activities as well as solutions—namely, removing barriers to the addition of new income generating activities for poor households. Therefore, the following four research questions are raised in this research:

1. What are the income-generating activities in Khon Rang Commune?
2. Do poor and better-off households have different income-generating activities?
3. What are the barriers to achieving further income diversification?
4. What are the different characteristics or tendencies between low and high-income households?

6. Research Significance

This research is significant in two main ways. First, this research will clarify the picture of and bottlenecks to income diversification in a rural area in Cambodia. The results can be used as implications for policy making by the government and structure making by international organizations. Eventually, we hope this will contribute to poverty reduction in the area. Second, this research will contribute to the improvement of people's lives in the area. Income generating means are closely relevant to other factors in people's lives such as relationships with neighbors, educational achievement, health conditions, and so on. Therefore the target of our research is the whole lives of the people, and the research will shed light on real problems. We hope the findings of this research will serve as a resource for others engaged in rural development strategy.

This research may also give other communes located in Cambodia, which share similar situations with Khon Rang Commune, some ideas about how to increase economic levels and reduce the vulnerability of livelihoods.

7. Hypothesis

There are two types of income diversification in Khon Rang Commune: one related to push factors and one related to pull factors. The poor employ these factors because of risk aversion; on the other hand, the relatively rich employ these factors in order to expand their business.

8. Methodology

8.1 Basic information of the field workplace

Our research was conducted in Khon Rang Commune, Baribour District, in Kampong Chhnang Province. This province is located north of the capital city, Phnom Penh, and faces Cambodia's biggest lake, Tonle Sap Lake. The province had a population of 512,667 in 2011, with a total agricultural land of 47,123 hectares, and most workers are involved in agricultural activities such as farming, fishery, and livestock raising. Annually, there are two seasons: the wet season and dry season (National Institute of Statistics, 2013).

In the fieldwork, we conducted interviews with households from all ten villages of Khon Rang Commune. Nine of them are land villages and one is a floating village, which is an aggregate of houses floating on the Tonle Sap Lake.

8.2 Before the interviews -discussion with the commune's and the villages' chiefs-

On September 18th, the first day of our research, we visited the provincial office and attended a lecture on basic information about the district from the commune chief. After that, we had a small meeting with the commune chief. On the next day, we had a meeting with the commune chief and all ten village chiefs before starting the fieldwork. Here is the conclusion of the meetings.

- The biggest problems for the development in this commune are the low income of the households and a lack of health care support.
- Khon Rang Commune has 8,427 people of whom 4,444 are female. There are 2,096 families, of which 541 families are classified as poor. There are official standards for poor in this commune, but they are not on the basis of the economic level; instead, they are based on detail conditions of the household assets, like how many livestock the household has, etc.
- Average income per year per household is not clear, but if the income of the household less than 1,000 USD, life is very difficult.
- The main income sources are farming and remittance from migrants. Rice is the main agricultural product.
- In the dry season (from November to April), many villagers deal with farming. In the rainy season (from May to October), some still do farming but fishery and other activities are also common.
- The chiefs listed three major factors which can cause people to become poor: natural factors (droughts, floods, and typhoons), insects damaging crops, and imperfect irrigation systems.
- Regarding migrants, there is domestic migration and international migration. International migration usually pays higher but contains more risks. Migrants may be forced to work illegally or be deceived by employers.
- An irrigation system has been developed by the support of Asian Development Bank (ADB). But it is not perfect and doesn't cover all villages.
- Microfinance exists in the commune, but about 40% of people have difficulty to get financed. In order to use microfinance, people need to use land, a house, or a car as mortgage or collateral. Some rich households use the system to invest in their businesses or to expand existing businesses.
- There is no health care center in the commune. The health care center is located 2-9 km away and is hard to access especially in the rainy season.
- There is no market in the commune, and the nearest market is about 3 km far away from the commune.

8.3 Description of interviews

We visited the ten villages in Khon Rang Commune, and conducted interviews for six days, from September 19th to 24th, 2018. Each day we interviewed from 4 to 12 households which amounted to 59 households in total. We made two groups and each group visited different households at the same time for time efficiency. In selecting the interviewees, we tried to capture a variety of income levels. We also tried to interview the head of each household if possible, to gather the most accurate information regarding their livelihoods. We employed semi-structured interviews, which proceeded according to the questionnaire we prepared. Below is a detailed description of how we implemented the interviews and the questions.

We used three devices for recording our interview, an audio recorder, notes, and a camera. The audio recorder was used for listening to an interview again in order to make a detailed analysis, and answers from interviewees were noted in the structured and prepared papers. Pictures taken by camera also contributed to reviewing the households.

The factors to ask the interviewee were name, gender, age, family structure, academic achievement, income generating activities, annual income, amount and variety of agricultural products, main expenditures, access

to financial services, and challenges related to their lives. These factors were necessary to understand the family structure and household finances in each household. In addition, we asked about the challenges they faced in daily lives, especially related to income generating activities, in order to analyze the problems which prevented implementing additional income generating activities.

During the interview, we took pictures with which we could use to visually review the household environments and income generating means. At the end of each fieldwork day, we had a meeting and shared ideas and impressions with the group members.

Picture 2: Every day's discussion after interviews



8.4 Analyzing the data and limitations of this research

After the interviews, we employed thematic analysis, finding out key factors of the interviewees which were relevant to income diversification. In regards to the limitations of this research, there were two main factors: the brevity of the observations and possible inaccuracy of the information. First, only about 30 minutes to one hour was spent on each household's interview. Many households mentioned that they changed one of their jobs recently, which implied that they kept changing jobs to find better ones. Therefore, further long-term research is needed to verify this fact. Second, many of the results of the interviews, especially ones relating to numerical figures, seemed to be inaccurate. Many of the villagers could not calculate their incomes and expenditures probably because an inadequate education system which meant many of the interviewees had dropped out of school. This fact made us feel some uncertainty when we judged the economic level of the interviewees.

9. Findings

9.1 Economic level and income diversification

We interviewed 59 households in all. Regarding income, we mainly asked about income sources and annual income. The average number of income activities was 2.98, and none of the households engaged in just a single activity. We divided participants into two groups according to their economic level, using the Cambodian national poverty line (4080.75 riel /day per capita). To simplify, we use 1 USD/day as the poverty line. The

group below the poverty line, we call the low-income group, while the group above the poverty line, we call the high-income group. In Table 1, we compared the income sources by group.

Table 1: Comparison between Low Income Group and High Income Group

	Low Income Group	High Income Group
Number of households	21	38
Average income source number	3.14	2.89
Variety of jobs	*farmer (rice, vegetable), *bicycle repairer, *retailer (daily goods, food), *livestock, *plantation worker, *rice miller, *seller, *middleman, *event planner, *fisherman, *driver (motor taxi, Tuk Tuk), *factory worker, *construction worker, water supply, noodle maker, palm tree climber, tray maker, restaurant waiter	*farmer (rice, vegetable), *bicycle repairer, *retailer (daily goods, food), *livestock, *plantation worker, *rice miller, *seller, *middleman, *event planner, *fisherman, *driver (motor taxi, Tuk Tuk), *factory worker, *construction worker, knit products, animal doctor, bamboo trading, fruits growing, organization worker, wine maker, teacher (community preschool, kindergarten, primary), candy maker, carpenter, bean sprout grower, house constructor, tractor driver, truck driver, Compo-fertilizer seller

Note: * Denotes activities which were found in both groups; Compo-fertilizer refers to natural fertilizer

Source: Authors

In all, out of 59 households, 21 were classified in the low-income group and 38 were in the high-income group. Although income diversification was seen in both groups, the average number of income sources for the low-income group was 3.14, while it was 2.89 for the high-income group. This showed that the low-income group had a larger number of income sources in comparison to the high-income group. In regards to the variety of income sources, many types were found in both groups, but some different characteristics belonged to each group. Water supply, noodle maker, palm tree climber, tray maker, and restaurant waiter were specific to the low-income group. Such activities are related to traditional products making, or folk crafts, and have the characteristic of low value-added. On the other hand, activities which were specific to a high-income group were ones requiring high educational achievement, advanced technology, or high initial investment. The examples include veterinarian, organization worker, and teacher. Some investment was required for activities such as knitting products (sewing machines) and tractor/truck driver (automobiles).

9.1.1 Job choices between different groups

According to the interviews with each household, as a whole, there were several tendencies when they choose jobs. One was that they tended to participate in jobs which were already familiar to them. The reason was as they mentioned, "I have been doing this since I was young." The majority of their income-generating activities were learned from their parents, and they had been doing them for many years. This tendency was found mainly in the jobs which seemed to be traditional, such as farming or making folk-crafts. Another tendency was that they had no other choice or no information on other possible jobs. This can be deduced from responses in which the interviewees often mentioned, "this is the only thing I know how to do". The little information of possible choices affected the profitability of some jobs. Many households replied that they started small wholesale shops these days, and some households which ran a business for a long time stated that the profit got smaller and smaller because of severe competition. Actually, we saw many shops during the fieldwork in each village.

Also, there was little to no chance to acquire skills related to jobs in the villages, which made it hard for them to find desirable jobs. Some interviewees got paid training, for example, learning how to fix automobiles and bikes, from their neighbors. But it seemed that the majority could not afford the fee to acquire any skill or had no access to learning skills. There seemed to be no formal system to learn new skills. Because they did not know what kind of skills would contribute to earning a high income, many interviewees were uncertain of skills they needed.

On the other hand, some income diversification driven by push factors was found. First, carpenter and constructing jobs were popular among male workers. Some of the interviewees said "We can sing and work outside, and no one will scold us when we make a mistake. There is even a chance to earn more by being promoted to be a manager." One interviewee had an experience of being a garment factory worker, and there he got scolded several times. This case shows that not only the income but also the environment affects job choice. Second, many interviewees mentioned their entrepreneurship to open up a small business. But there was severe competition because as mentioned above, the only small business they could open in the villages were confined to having a small grocery shop near one's house. Other interviewees expressed their ideas on expanding their current business, but lack the capital to do so.

9.1.2 Cases in which income diversification contributes to a stable and better life

Even though income diversification was found in both of the two groups, we still could find some differences in the reason for implementing the diversification. In the high-income group, they were eager more to know how to make money, and they kept thinking about what they can do to increase their income. Below are several cases of income diversification with high entrepreneurship.

(a) Bamboo trading household

This household that did bamboo trading had started as a bamboo cutter for a trader, and then went on to start his own bamboo trading business. After acquiring enough start-up funds, he decided to start buying bamboo from the villagers and transporting the bamboo close to the river to sell, where it was in high demand.

(b) Farmer household

One farmer household expanded their business efficiently. They saved some of the income and invested it to acquire additional farming land. They also mentioned that they coordinated the irrigation system by themselves.

(c) Compostfertilizer seller

One interviewee in the Chhum Doneng Village had a large entrepreneurship. He grew rice and raised livestock, and owned a tractor, several trucks, and rice millers. He cultivated farmland of neighbors and did the rice milling of neighbors as his business. He also dealt with logistic business by hiring several employees and letting them drive his trucks. He had many bags of "compostfertilizer" (natural fertilizer) in his storehouse. According to him, this fertilizer was better for the health of farmers and was eco-friendly. He not only used the fertilizer for himself but sold it to his neighbors as an employed seller of an agricultural company.

(d) Motor, Tuk-Tuk and taxi driver

One interviewee who was a Tuk-Tuk driver had great ideas on how to make money. He said that he started his business as a motor-vehicle driver. He earned a certain amount of money, and then started to work as a Tuk-Tuk driver. He also desired to become a Taxi-driver in the future. The driver business also required capital for vehicles; his step-up policy was aimed at achieving a stable and better life. By becoming a taxi driver, he would get more money in a safe environment compared to being a Tuk-Tuk or motorbike driver, which contributes a lot to having stable and better life.

(e) Fruits, vegetables, and daily essentials vendor

This interviewee previously migrated to Malaysia and worked as a domestic helper; after coming back to Cambodia she was able to successfully get a loan from the bank and bought a car. She drove to a market in Phnom Penh to buy various fruits and vegetables and sold them in the village market at a lower price in comparison to other vendors. Her husband also sold essential daily needs products which were imported from Malaysia; this was possible due to her previous migration which gave her a connection for importing items. When asked where she got the idea for such income generating activities as well as her financing knowledge, she credited all success to her mother who has helped her throughout the years. It was also clear to see that her knowledge, understanding, and connections can be accredited to her years as a migrant worker in Malaysia.

People having these mindsets seemed to have more chances in expanding or starting a new business. And as a result, they were able to have higher incomes and better lives. By contrast, those in the low-income group, from our interview, could not save or invest some money as they continued to survive on a day-to-day basis. The success could also be dependent on a households' ability and drive to overcome limitations and improve their livelihood.

9.2 Challenges for both groups

Challenges being faced by both low- and high-income households had similarities in regards to their income-generating activities. The majority of both low- and high-income households participated in

agricultural and animal-raising activities, hence challenges relating to the activities, such as natural disasters (rain, wind, drought, etc.), animal diseases, insects, constraints relating to fishing (broken or stolen fishing net, fishing ban, etc.), and irrigation, were often discussed.

Some households solved the problems of animal disease and insects with the proper use of immunization and pesticides. On the other hand, many others were in trouble due to ignorance about the proper use of immunization and pesticides. Many of our interviewees replied that although the local government provided staff to instruct them how to use immunization and pesticides properly, the staff rarely came. Therefore the interviewees did not know the proper usage even though they could buy these products. As an illustrative example, a husband of one household suffered from a disease which resulted from using pesticides and chemical fertilizer without gloves and high boots. His disease could have been easily prevented by the proper usage of such chemicals.

Other common challenges for both groups were lack of capital, intensive work, and unstable income. Quite a few households said they lacked the capital to expand their business or to start a new business, which hinders their ability to increase income and make life more stable. Regarding finance, many households depended on relatives or neighbors when they needed money, and also they did not have bank accounts. The system of microfinance did not seem to have prevailed; some interviewees could not differentiate public financial systems and private microfinance systems. The households with factory or immigrant workers often mentioned that the jobs were hard, which seemed to be one factor as to why they preferred jobs at their home. Another reason as to why working from home was highly favorable was that people can watch over their aging parents and children.

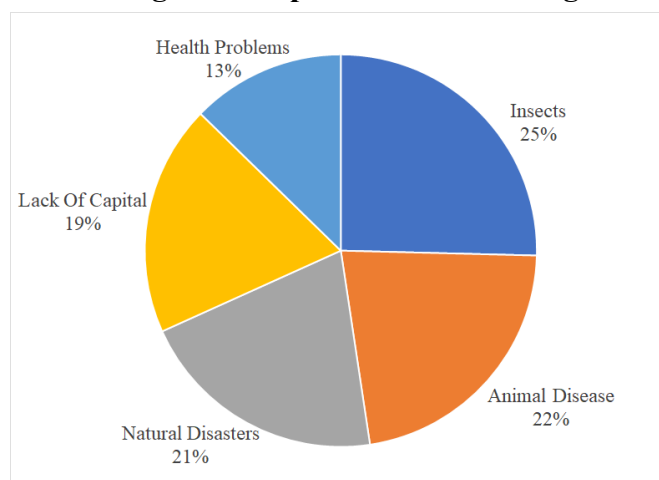
On the other hand, a challenge which was found mostly in low-income households was health problems, even though the problem was common for both groups. Five households in the low-income group (26.3%) and three households in the high-income group (6.4%) mentioned health problems as severe. The fact that almost all households, from both low- and high-income groups, of the interviewees had members with some diseases is evidence that the health problem is severe. These household spent much on medicines and doctors. One reason for this health problem was low consciousness of hygiene. Although bathrooms were found in almost all the households, there were many areas for improving sanitation. Some diseases the interviewees had were quite serious, requiring medical referral outside the country—which was a huge expense to the households.

Of note, being arrested for a misdemeanor was found only in low-income households. This was mainly due to catching fish in a prohibited area in a prohibited season. Many of them could not help fishing even though it was prohibited; they needed the first in order to keep their livelihood. Meanwhile some individuals did not know why they were arrested.

Challenges faced specifically by high-income households included lack of technical knowledge, time-consuming income-generating activities, agricultural growing problems, being cheated by other villagers, fuel price increases, shortage of animal feed, aging, lack of labor, and no customers. Some of these high-income households wanted to expand their skills in order to grow and improve their business while others described their income generating activities as time-consuming which left them little time to do other activities. In all, these challenges specific to high-income households seemed to be relevant to expanding business or improving economic conditions, while the challenges specific to low-income households were relevant to basic life.

Among both groups, the top 5 challenges being faced were: insects, animal disease, natural disasters, lack of capital, and health problems (see Figure 1).

Figure 1: Top 5 common challenges



Source: Authors

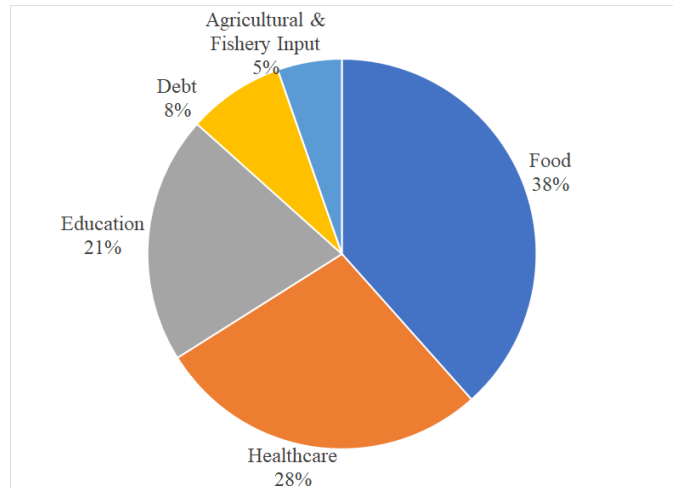
9.3 Expenditure traits for different groups

There are many common expenditure traits when comparing both low- and high-income groups, which come from the fact that the villagers faced common challenges such as health problems or problems relating to their agricultural income generating means. These common challenges caused them to spend much money on healthcare, food, education, repairing or maintenance of capital assets, fuel, debt, animal feed, and agricultural or fishery inputs (pesticides, fertilizer, grass killer, nets, etc.).

It was natural that high-income households spent more than low-income households. But another difference in their expenditures was the variety of spending. High-income households spent money on animal medicine, business capital, ceremonies, electricity, milk for a babies, transportation, salary for temporary helpers, and the building of new houses. By contrast, low-income households seemed to spend money only to fulfill their basic needs. For example, they could only afford an animal doctor but not the medicine for the animals, while the high-income households are wealthy enough to afford both. This caused the low-income households livestock to be vulnerable to diseases and therefore put their livelihood at risk. Another expense that was exclusive to high-income households was paying salary for temporary helpers. High-income households were able to hire people to help them in the time of harvest or for any labor-intensive work. Because they already had some capital, high-income households had big fields and enough money to invest, and they could yield and produce more; therefore, they could earn more.

Finally, another tendency associated with high-income households was that they tended to spend more when building a house as well as for ceremonies. This fact showed that the relatively rich in the villages had more cash to make their lives better and more comfortable. This was also true for electricity expenses. Only high-income households mentioned this expense as a major factor. In many of their houses, there were many electric devices such as TVs. Some low-income households seemed to have neither electric devices nor electricity.

Figure 2: Top 5 factors cited as large expenditures by households

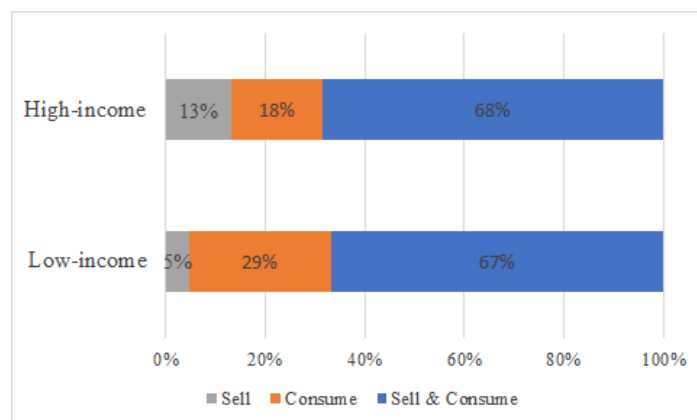


Source: Authors

9.4 Agricultural products

In regards to agricultural productions, 70-80% of both income groups consumed some or all of their own agricultural products. This fact showed that people sustained their lives by the agricultural products even after they started earning extra money. However, there were more high-income households selling their products because of three reasons. First, efficiency was higher than in the lower-income households. This was supported by proper and efficient use of agricultural products such as fertilizer, pesticides, and animal immunizations, as well due to having more land. The second reason was that high-income households produced several agricultural products. They produced commercial crops such as lemongrass to sell them at the market or through a middleman. Third, high-income households had transportation to go directly to the market themselves and sell their products. This enabled them to go to the market anytime without waiting for others. On the other hand, the relatively poor households mainly produced only rice in order to feed themselves; only if they have a small amount of surplus are they able to sell it.

Figure 3: Economic class and how to deal with agricultural products



Source: Authors

10. Discussion

Although income diversification was common in both groups, the number of income activities was larger in a low-income group than in the high-income group. This fact implies that the push factor affected the villagers more strongly than the pull factor. It can be inferred that lives in the commune contain multiple barriers to economic activities and many risks. All of the households we interviewed still lived close to the natural environment even after they started using money and modern electric devices. Villagers relied on agricultural products for subsistence and to earn money. Also, social development in the commune, such as infrastructure or education system, had much room for improvement. Finally, being highly susceptible to natural conditions, lives were unstable. In this situation, many people are trying to expand their portfolios of the income generating means to mitigate risk, but many new income sources are low value added. The efficiency of these activities is worsened by several factors:

- The efficiency of agricultural activity was low due to the lack or misuse of fertilizer and animal immunization
- Financial issues
- Poor understanding of the financial system, which constrains people from investing in new business
- Lack of information, which limits job possibilities
- No or little access to a market
- No or an insufficient system to provide the villagers with specific skills to get new jobs

The fact that the households, especially in the low-income groups, kept attempting new and different income generating activities supports the conclusion that the efficiency of the attempts is low. In our interviews, many of the households mentioned that they started new jobs recently but that they stopped the job because of some reason. It can be supposed that these villagers kept trying new and different jobs to find one that was sustainable; if they found the right job, they would stick to it and finished the search, and it would make the lives sustainable and better off. But if the job was not suitable, they quit the job and tried another one. Further research is expected to identify the process in which a household would find the most appropriate and suitable job.

On the other hand, some cases showed that households diversified their portfolios to expand their businesses, like a man who dealt with agriculture, sells compofertilizer and so on. Another example is a woman who obtained various fruits and vegetables in the city and sold them at the local market at a cheaper price in comparison to other vendors. Both of these households succeeded to use the financial system efficiently to invest in their businesses, so each of these income generating means were high value added and the lives of the households seemed to be improved.

The households in the low-income group consumed more and sold less of their agricultural products compared with those in high-income group. This suggests two possible problems: lack of the access to the market and low productivity. In order to sell agricultural products, some households relied on other villagers for transportation to go to the market, requiring a fee to be paid. Others use middlemen, while others simply do business in their respective village. Especially for households depending on elder house heads, there is a

lack of access to a market; therefore, they are forced to sell at low prices. Second, the agricultural productivity was low due to several reasons: lack or misuse of inputs, and lack or unavailability of finance to invest.

The problem of misuse of inputs appears to result mainly from insufficient training. Most of our interviewees mentioned they had little information on the proper use of pesticides and fertilizer, and no or little chance to get trained. This problem eventually hinders productivity and yield. Also, many households seemed not to understand the definition and rules of a financial system. This was one of the reasons these households avoided using microfinance, and instead were financed by their neighbors and relatives, which leads to insufficient investment. In our interviews, some households did not know the difference between government lending and private banking. Considering this lack of information, the households could not use the existing systems to invest properly; furthermore, these uninformed households could easily fall into debt or serious financial problems. Ignorance of financial systems appears to make people vulnerable.

Lack of proper training systems was not only an obstacle for high efficiency, but also posed a risk to the villagers. Health problems were serious in the villages, for example, one interviewee was in bad health because of the misuse of pesticides. If a household head or other family members got sick, the healthcare expenditure would easily become one of the biggest expenditures for the whole family. Also, the bad health would deprive the household of labor force and income, which would make the household vulnerable. Almost all the households had sick members, spending lots of money on medication. Proper instructions/training could prevent some of this suffering.

11. Conclusion

Despite being in a low or high-income household, both types of households share common challenges as the majority of households participate in rice farming and livestock raising. In doing so, they are vulnerable to natural disasters as well as agricultural and livestock related problems. These problems included but are not limited to insects and animal diseases. Both low and high-income households also identified the lack of capital as a major challenge, as many households had plans to start or expand their business but suffered from lack of capital. However, the purpose of using capital was different for each type of household: poor households needed capital to support their daily life, while rich households invest in capital to acquire better lives. Also, the poor households had almost no access to the financial systems. On the other hand, some of the rich in the villages used financial systems to properly invest in their businesses. In the commune, not only is enhancement of the financial system needed, instruction on its proper use is also needed.

Besides the financial system, there are two solutions the problem of lacking capital: reduce expenses and increase income. First, for reducing expenses, we can consider some solutions from health care. In our research, when someone in a family got sick, health care fees would become one of the biggest expenditures. One of the reasons was that people didn't go for checkups when they were sick; they just asked for medicine from the doctor but did not try to cure their diseases. In addition, local people in rural areas of Khon Rang Commune didn't have awareness of the importance of hygiene as well as knowledge of disease prevention. For example, they used the water from the well without boiling it, which made them vulnerable to roundworms. Another example was that when the carpenter makes the materials for building houses, they usually didn't wear any mask; this enabled wood-dust to enter the lungs. If more attention was observed to these preventive measures,

they would have a higher possibility of disease prevention. If household members get healthy, the labor productivity in the family will increase, which leads to the second solution-increase in income. Considering the situation mentioned above, the effect of avoiding diseases could prove to be quite an important factor in solving the lack of capital and financial problems.

It was observed that households which were high-income with a diversified income generating base understood the financial system better. This understanding allowed them to acquire capital to expand their business or start a new business. An example of this would be one interviewee who migrated to Malaysia. After coming back, she was able to get a loan and expand her income generating activities. With the understanding of the financial system, she was able to get a loan and buy a car; this allowed her to buy fruits and vegetables in the city at a low price and sell them at the local village market at a markup which was still cheaper than other vendors. Owning a car also enabled her to transport her products directly to the market at any time she pleased. She even made connections in Malaysia which allowed her to import various items such as essentials, nutritious foods, etc. This gave her an advantage in the market as she was able to sell various items in addition to fruits and vegetables.

Considering their various conditions, the contribution of income generating activities varied among each household even when engaging in the same activity. For example, almost all of the households did farming; some had huge plots of land while others had very small plots which could not support their family. The amount of rice harvested from farming was essentially proportional to the size of the land. Therefore even if villagers put a lot of effort to produce more rice, the amount of increase would be limited. In a sense, it can be said that the size of land determined the amount of rice cultivated. Therefore, households which had larger sizes of land could produce more surplus rice and earn income, while households which had only small land had to compensate for the insufficient amount of rice by going to the market to supplement their food intake. This is evident from Figure 3; the poor income group consumed more rice, sold less.

To conclude, the following are our suggestions to each respective entity:

- For local government, they can take a more active role in supporting the villagers by providing useful and needed training programs that give the villagers a set of specific skills that will help improve their lives. For instance, the government held a training program on feeding chickens instead of providing training on what the villagers want and need, which was curing chickens. The local government needs to make sure that the training programs are indeed what the villagers want and need.
- For financing entities, promoting income-generating projects through financial support is recommended. Making it easier for villagers to borrow money should also be considered. Additionally, it is important to provide information and make sure the villagers are fully informed and ready before becoming tied down financially.
- For villagers, having a more diversified income base and attending more skill training programs to learn new skills or expand existing skills is advised.

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Appendix: Questionnaire

Demographics

1. Name
2. Gender
3. Age
4. Education level
5. Occupation
6. Marital Status
7. Household members
8. Village name
9. Migration household member

How to earn the money/ Income

1. What do you do?
2. Aside from your job, what do you do to earn money?
3. Could you tell me how much is your income?
4. What is your major source(s) of income?
5. What family assets does the household have?
6. What are the main agricultural products?
 - 6-a. How do you distribute your products (use/sell)?
 - 6-b. Where do you sell the products?
7. What kinds of challenges are you facing in your income generating activities? (markets, capital, skills, etc.)
8. Why did you choose this job/ what determines your choice(s) of income generating activities (weather, location, etc.)?

Usage of Money/ Expenditure

1. How do you use the money/ what are your top expenditures per month/day (savings, daily life, ceremony, medical, education, transportation, agricultural input, etc.)?
2. Who/where do you go for financial assistance in case of emergency?
3. Are you familiar with the banking system/ community financing group?
4. Do you know how to use money in a wise way such as banking and investing (Money Management)?

Other

1. What challenges/fears are you facing in your daily life (lack of skills, ageing, health problems)?
2. Do you want to get another job or enhance your skill? If so, what job or skills?

Working Group 2

Governance

Solid Waste Management in Kampong Chhnang, Cambodia: The Collaborative Roles of the Local Government and the Private Sector

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1. Introduction

Insufficient Solid Waste Management (SWM) causes air pollution, water pollution and soil contamination by leaking toxins. The increasing population and consumption make SWM difficult and this affects the environment and human health.

Some studies have mentioned that open dumping sites cannot be controlled and monitored by people because anyone can throw away waste into a river or road, and people burn it by themselves. It is difficult to collect and transport waste properly (Sharholly, Ahmad, Mahmood, & Trivedi, 2008). Moreover, waste collecting agencies in developing countries usually dump non-biodegradable and inert waste without separation into dump sites. This is one of the factors of soil pollution, environmental pollution, and a damaged ecosystem.

Much as with other developing countries, Cambodia also faces SWM problems. Cambodia has been receiving assistance for development from other countries after the Khmer Rouge government collapsed in 1996. Since this support began, Cambodia continues to grow its economy, education and industries. The GDP of Cambodia has increased rapidly in recent years, from \$3,648 billion in 2000 to \$22,158 billion in 2017 (The World Bank, 2018). Also, with a rising trend since 1980 (Ibid), the country's population has reached approximately 16 million in 2017. The rapid growth of the economy and people of Cambodia also leads to higher consumption, and at the same time, a huge amount of waste is produced. However, the country does not adequately meet the demand for waste management. In 2015, most of Cambodia's dumpsites do not have proper separation of decaying and non-decaying waste (Phnom Penh Post, 2015). According to the Revision of World Population Prospects report (2015), Cambodia's population will grow by 22 percent to almost 19 million by 2030, and the waste generation rate will rise along with the growing population number. The Phnom Penh City Hall plans to build two new waste management sites in Chroy Changva and Chbar Ampov districts. However, it did not mention when the projects would start (Phnom Penh Post, 2015).

The Cambodian government set up three sub-decrees: sub-decree on solid waste management (1999); sub-decree on the management of garbage and solid waste in urban areas (2015); and sub-decree on electronic waste management (2015). Based on these three sub-decrees SWM in Cambodia has been decentralized, and these decrees stipulate that SWM in provinces and cities are the responsibility of the local authority. According to The Asian Development Bank (n.d.), Kampong Chhnang has two service providers and one driver, and they can operate only three trucks in total. Therefore, only 400 households receive the collection services. This situation encourages local people to throw their waste into open and illegal dumping sites.

With this background, we conducted research focusing on Kampong Chhnang Municipality, Kampong Chhnang Province of Cambodia, to identify the current SWM situation and the collaborative role of the local government, as well as the private sector in SWM.

2. Literature Review

2.1 Approaches

To understand how to achieve these goals, we begin with the review of approaches regarding SWM. Chatri and Aziz (2012) distinguished three approaches to deal with SWM in developing countries. First, a

decentralized approach focuses on enhancing community participation. In this approach, civil society actors such as Non-Governmental Organizations (NGOs) and citizen groups cooperate with like-minded officials within local governments. Also, small-scale private enterprises have the opportunities to work in SWM. Second, a centralized approach is initiated by the government. This approach focuses on constructing a large infrastructure. The government cooperates with the companies dealing with SWM, but informal waste management agencies act as competitors with the formal sectors. Third, a hybrid approach is the mixture of the decentralized and centralized approach. In this approach, collection, segregation and composting of waste are initiated in a decentralized manner. The design and implementation of these schemes are to be undertaken by the government. The hybrid approach is said to be the theoretically best model to settle the disputes between the formal and informal sectors. Also, public-private partnerships (PPPs) play an essential role in this approach, helping to overcome the disputes among the stakeholders (Chaturvedi, Arora, and Salujia, 2015, pp.8-9).

However, some studies have criticized that these approaches are not always successful in developing countries. A case study in Addis Ababa, Ethiopia indicated that the decentralized approach could not improve SWM because the city administration ruined the existing collaboration with informal actors in waste collection and disposal services (Teshager, 2017). Moreover, Okot-Okumu and Nyenje (2011) claimed that the strategy focused on the decentralized approach was not successful in Uganda because of the lack of the revenue and insufficient participation of the local stakeholders.

2.2 SWM and Governance

Governance plays an essential role in providing appropriate SWM services. Rodic-Wiersma and Wilson (2017) identify three critical aspects of governance (direct regulation, economic instruments, and social instruments) and factors which must be considered to achieve goals (waste collection for all, and controlled disposal) as the Table 1.

Table 1: Key governance aspects of extending waste collection to all controlled securing disposal

Class of Policy Instruments	Goal 1: Waste Collection to All	Goal 2: Controlled Disposal	Necessary Condition	Enabling/Facilitating Factor
Direct regulation	The legal framework for inclusion of both public and private, and informal, service providers	Strong regulations requiring controls to protect the environment, <i>and</i> credible and consistent enforcement	Construction of facilities in parallel to the regulations	Institutional capacities to <i>both</i> enforce the law <i>and</i> to work with various service providers
Economic instruments	Sustainable financing—securing funding for collection services, including some contribution from direct charges	Sustainable financing—securing funding for facilities, <i>both</i> capital costs <i>and</i> the continuing costs of operation	Affordability for service users	Availability of national and/or international fund, including Extended Producer Responsibility
Social instruments	Awareness raising for behavior change and clear instructions on new services, to avoid dumping and be willing to pay	Awareness raising for behavior change, to prevent dumping	Collaboration with civil society including media	Authorities engaging with the public and leading by example

Source: Rodic-Wiersma and Wilson (2017), p.15.

The researchers stated that the local government plays essential roles in changing the behaviour of the citizens for the new SWM services, and concluded that the government should implement "a combination of complementary and well-coordinated measures from each of these three categories" for sustainable waste collection (Ibid. p.14).

A case study in Bangladesh indicated that absence of good governance has negative effects on the performance of the strategies or entities which initiate the SWM. This problem contributed to inadequate and unsatisfactory service delivery and the claims from the citizens (Bhuiyan, 2010). Also, a case study in Malaysia argued that a policy on SWM failed because of weak government even though various stakeholders were involved in the administration (Wee, Abas, Mohamed, Chen, & Zainal, 2017). Therefore, weak governance or lack of governance makes the issues of providing appropriate SWM services difficult even when other stakeholders are cooperative.

Many studies emphasized that collaboration between the local government and other stakeholders is necessary for successful SWM in developing countries. A case study in Lucknow, a metropolitan city in India, found revealed that community participation plays the critical role to overcome threats to and weakness of SWM (Srivastava, Kulshreshtha, Mohanty, Pushpangadan, & Singh, 2005). Another case study criticized that SWM systems are under the control of the government and affiliated actors, and most stakeholders are out of the decision-making processes. Also, informal actors, even if they have the potential to play a role in the SWM system, are excluded in the decision-making by the local government (Teshager, 2017). A case study in Delhi showed that private sectors' participation in SWM such as through dialogue and debating is critical and PPP initiated by the local government could enable the provision of effective SWM in developing countries (Chaturvedi, Arora, & Salujia, 2015). Bhuiyan (2010) suggested that PPP contributes to solving the problems related to weak governance and inadequate SWM, and ensures adequate SWM and good governance. As these case studies show, it can be said that collaboration, especially participating in the decision-making process, between local governments and other stakeholders is essential to provide proper SWM services in developing countries.

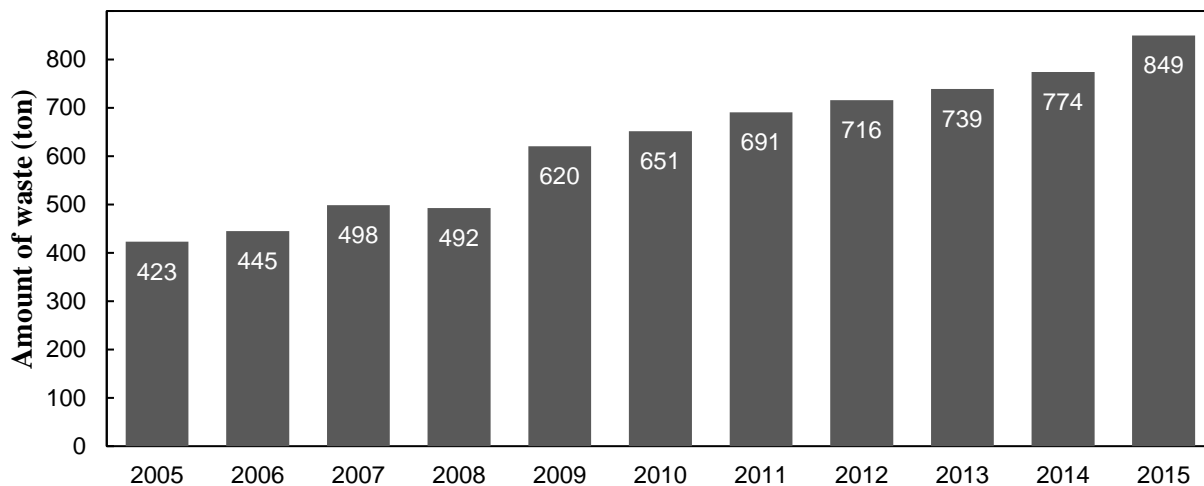
3. Problem Statement

Poor SWM has negative effects on human health and the environment. However, many developing countries are facing difficulties in dealing with SWM. This problem might become more serious without any intervention. In developing countries, an increasingly larger amount of solid waste (SW) is generated because of increases in the population and consumption. To improve this problem, many countries are applying the decentralized approach. However, these countries often fail to overcome the situation because of poor collaboration between the stakeholders.

In the case of Kampong Chhnang Province in Cambodia, where local government has responsibilities for SWM, a large number of people do not pay the fees for SW collection services. Nevertheless, 27 tons of SW is generated in a day. Also, according to a report published by the Asian Development Bank, there were only three trucks for collecting SW, and the service is not provided every day (The Asian Development Bank, n.d., pp.2-3). Therefore, the factors that lead to the poor SWM and insufficient collaboration between stakeholders, as well as solutions to improve SWM, should be considered.

Furthermore, the formal sector provides waste services irregularly and often ignores the rules contracted with the government. Moreover, informal sectors are ignored and excluded from the whole management system by the local government and the formal sector. Informal sectors are willing and able to collect a considerable amount of waste which may also make a contribution to SWM, however, according to the data we found, there is no evidence showing collaboration between the local governments and private sectors in Kampong Chhnang.

Figure 1: Amount of waste per 1,000 households per year in Kampong Chhnang Municipality



Source: Kampong Chhnang Municipal Administration (2018)

4. Research Objectives

This research aims to:

- 1) Identify the SWM system in Kampong Chhnang Municipality;
 - a) Identify the way that service providers deal with SW and collect fees from service receivers;
 - b) Identify the way that the local government contracts with and supports service providers; and
- 2) Examine what impedes service providers and the local government from cooperating with each other to provide sufficient waste collection services;
 - a) Examine what kind of difficulties service receivers have regarding waste collection;
 - b) Examine what impedes service providers from providing service receivers with high-quality waste collection services;
 - c) Examine what impedes the local government from solving the problems between service receivers and service providers.

5. Research Questions

To achieve these research objectives, this research seeks to answer the following research questions.

- 1) How does the SWM system work in Kampong Chhnang Municipality?
 - a) How do service providers deal with SW and collect fees from service receivers?
 - b) How does the local government support service providers in collecting SW?
- 2) What impedes service providers and the local government from cooperating to provide sufficient waste collection services?
 - a) What kind of difficulties do service receivers have regarding waste collection?
 - b) What impedes service providers from providing service receivers with high-quality waste collection services?
 - c) What impedes the local government from solving the problems between service receivers and service providers?

6. Hypotheses

Based on previous research, the following two hypotheses are developed.

First, poor collaboration among the different stakeholders contributes to the limited waste collection delivery. The lack of coordination by the government causes conflicts between the service providers and customers about the price of fees, quality of services, and rules.

Second, the local government has difficulties in promoting collaboration with the formal sectors due to limited financial and human resources. Also, improper recognition and understanding of the importance of collaboration has led to this situation.

7. Methodology

To answer the research questions, the following methodologies were applied.

7.1 Data Collection Method

The primary data was collected by in-depth semi-structured interviews (see Appendix) in Kampong Chhnang Municipality, from the 19th to 25th of September 2018. The interviews were designed to assess the amount and sort of SW collection services delivery, complaints or challenges regarding waste collection, and the relationships with other stakeholders.

All interviews were conducted in a face-to-face setting using interpreters who belong to the Royal University of Phnom Penh (RUPP). We firstly visited the local government: Provincial Department of Environment (PDoE) and the Municipal Administrative Office (MAO). Then, we conducted the interviews with formal actors, informal actors, and commercial actors (hotel owners, a restaurant owner, the head of a local market and a boat shop owner). An officer of MAO made appointments for us and granted us permission for the interviews with these commercial actors.

Respondents are categorized into four sectors: local governments, formal and informal service providers,

and service receivers.

Local governments: we held interviews with Vice director of PDoE in Kampong Chhnang Province, and the Deputy Mayor in Kampong Chhnang Municipality in order to assess the current situation of SW collection in Kampong Chhnang Municipality, roles of the local governments, and the collaboration between the local governments and both formal and informal providers.

Formal and informal service providers: We interviewed two managers of private waste collection companies (formal providers) contracted with MAO and three informal providers (two junkshop owners and one scavenger), the questions were mainly about SW collection service and collaborations with other stakeholders which include the local government and different service providers in Kampong Chhnang Municipality.

Service receivers: We visited four hotels, one restaurant, one boat shop, and two households. The purpose of the interviews were to understand the general situation of SWM practices, relationships with both formal and informal service providers and MAO in waste collection. The Deputy City Governor in Kampong Chhnang Municipality selected respondents.

Our secondary data is based on official publications from the Cambodian government, reports published by NGOs, and academic papers that we reviewed in the Introduction and Literature Review sections.

7.2 Scope and Limitation

This research focused only on kitchen waste generation and management because it accounts for ninety percent of the total waste generated by ordinary households in Kampong Chhnang Province (The Asian Development Bank, n.d., pp.10-11). Therefore, a further study on other kinds of SW, such as industrial waste, should be conducted.

Kampong Chhnang Province has approximately 8,000 households, however, this study has a limited sample size because of time constraints. More samples should be studied to provide a more comprehensive analysis.

8. Significance of the Study

Along with the development of global industrialization and urbanization, environmental issues and issues related to human health have attracted the global attention. The rapid economic growth in developing countries has enhanced the living standards and increased the consumption of goods, which has also increased the quantity of the generated waste. Similar to other developing countries, Cambodia is not prosperous enough to effectively manage SW. This study explores how the collaboration of stakeholders is related to the quality of SWM.

9. Findings

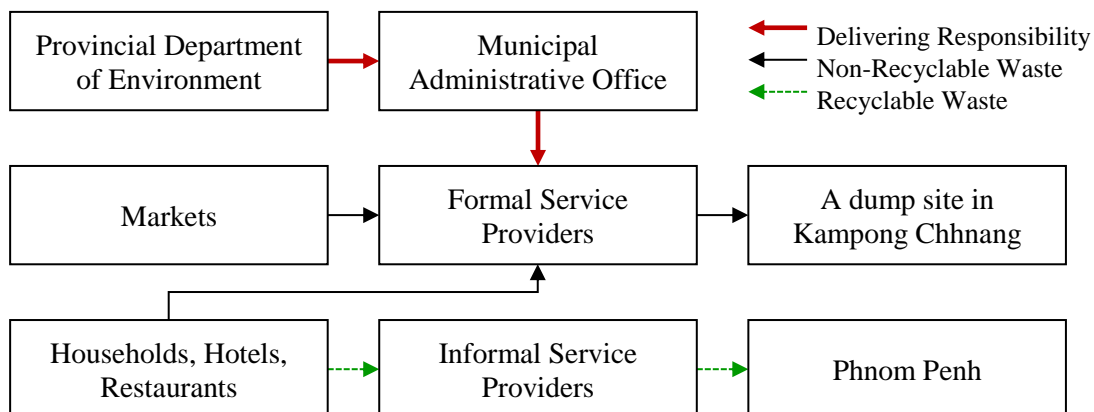
9.1 General SWM System

Figure 2 illustrates the general SWM system and waste flow in Kampong Chhnang Municipality. It shows the waste flow of the general SWM system. Primary stakeholders include the Provincial Department of Environment (PDoE), the Municipal Administrative Office (MAO), formal service providers, and informal service providers.

In the ideal situation, non-recyclable waste such as kitchen waste, toxic waste, and plastic bags, were mainly generated from hotels, restaurants, households, and markets; then, formal service providers collected this waste and transported it to an official dump site. But in fact, only 2,015 out of 8,280 households were receiving the waste collection service, and most of them lived in the center of Kampong Chhnang Municipality. According to the contract with MAO, formal service providers were supposed to collect waste from all households. Nevertheless, the formal service providers could not get profit or even lost money if they obeyed all the requirements of the contract. That is why they only collect waste from households who paid for the service fee. Those households which did not or could not pay collection fee consequently disposed of garbage by themselves in different ways, for example, by burning waste in their backyards, or illegal dumping in rivers and on roads. As nobody was dealing with this illegal behavior, more and more waste has accumulated, which has led to the current situation in Kampong Chhnang Municipality.

Nevertheless, hotels, restaurants, and households mainly generated recyclable waste which was composed of plastic bottles, cans, metals, and paper. This type of waste was collected by informal service providers such as junk shops and scavengers who sell the recyclables to big junk shops in Phnom Penh. After that, these recyclables were exported to neighboring countries like Vietnam and Thailand to be recycled.

Figure 2: Waste flow chart of general SWM system



Source: The authors

9.2 The Roles and Challenges of the Stakeholders

9.2.1 Service Receivers

As explained in the methodology part, data was collected from four hotels, one restaurant, one boat shop, and two households which did not receive the services from formal providers. Table 2 shows the amount of waste, the frequency of the service and satisfaction with the service. As can be seen in Table 2, most of the service receivers mainly generated kitchen waste and recyclable waste such as plastic bottles and cans.

Table 2: Amount of waste generation and service provided by formal providers

	Hotel	Restaurant	Boat Shop	Household
The quantity of waste (per day)	10 kg	30-40 kg	50 kg	0.5 kg
Main Waste	Kitchen, Recyclable	Kitchen, Recyclable	Kitchen, Cans	Kitchen, Recyclable
Collection Frequency (per week)	1-3 time(s)	4-5 times	No service	No service

Source: The authors

According to the interviews, interviewees had some troubles or made complaints to the formal provider. The hotels received the services once to three times from formal providers per week on average. However, most of them criticized the frequency and irregularity of the services. Since interviewees left waste to be collected in front of their doorways, bad smells spread into their houses unless workers came to collect it. Also, some of them complained that the workers of formal providers did not collect all the waste. Many hotel owners thought the collection fee was reasonable and they were willing to pay more if the service could be provided more frequently. As with the hotel owners, one restaurant owner preferred the service of the informal service providers. He put an end to a contract with one of the formal providers and made a new contract with another formal provider because insufficient and irregular service was problematic for him. After contracting with another informal provider, he received the service every day and was satisfied with it.

Furthermore, the owner of a boat shop also stopped the contract with the formal provider for the same reason as the abovementioned restaurant owner. After giving up the deal, he needed to manage waste by himself, so he brought his waste to the dump site by himself. He also complained that some workers of the formal providers were not polite to him and that their trucks smell bad.

On the other hand, most of the service receivers, even small households, separated the recyclables from non-recyclable waste to sell to informal providers. They did not seem to have any troubles with informal providers.

Three-quarters of the households did not receive services from a formal provider. Two households which did not face to the main road did not have a contract with a formal provider. They do not think waste collection service is necessary because they generate little kitchen waste. They usually fed their animals, such as dogs and chickens, with their kitchen waste. Also, they burned their non-recyclable waste in their gardens. However,

some households threw the garbage directly into the river thinking that they did not need to pay for the service fee, unaware that collecting waste protects their environment.

9.2.2 Formal Service Providers

In Kampong Chhnang Municipality, four formal service providers were working in SWM. In this research, we interviewed two of them.

The Formal Provider 1¹ was responsible for collecting and disposing of SW generated by those who lived in the center of Kampong Chhnang Municipality. This formal service provider owned eight workers and two trucks which were not for waste collection (See Figure 3). It provided the service three times a week, but the frequency was irregular because of the lack of workers, problems of trucks, and weather conditions. The head of that company managed fee collection, and he made contracts with almost 2,000 households. However, he did not get contracts with other nearly 6,000 households as of our interview. The Formal Provider 1 followed the contract with MAO. When it had some troubles with or complains from citizens, the manager of the Formal Provider 1 and a municipal officer talked on the phone. This formal provider wanted MAO to support them more, especially in the financial aspect like infrastructure.

Formal Provider 1 had some difficulties in collecting all waste in its territory. In the first place, two trucks were not adequate to cover all service recipients and to provide them with frequent service. It was also very challenging to reach those who lived far from the center of Kampong Chhnang Municipality because of poor roads. During holidays, for instance, Independence Day, National Day, or Spring Festival, almost all workers went back to their hometown to celebrate, and they did not worry that the company might fire them because the law protected their vacation. On the other hand, as there was nobody who did the job, people might complain about the service of Formal Provider 1. The provider contacted the MAO for advice on what to do in an emergency such as flooded streets and scattered waste on the roads during national festivals. But all a municipal official said was "we will take care of it." Nevertheless, the owner of Formal Provider 1 had to collect and dispose of waste without help from the MAO at the time of emergencies, and he did hope the citizens can understand his difficulties.

Another problem was about a dump site. Formal Provider 1 needs to pay \$1,500 per year for the use of it. The manager estimated that the dump site was to be used for three to four years based on the capacity. Formal Provider 1 transported gathered waste directly there without any processing such as compressing, collecting recyclable stuff or separating toxic materials (See Figure 4). Also, there is no protection so that toxic or chemicals are not came out.

Another formal provider, Formal Provider 2, was supposed to collect waste from the Phar Chhnang Market every morning because it contracted with three restaurants there. It has three drivers: two for trucks and one motorbike.

Whereas the service recipients of Formal Provider 2 were satisfied with its waste collecting service, it had two main problems or complaints about its operation. First, Formal Provider 2 had more significant expenditure than income, and it did not have a dump site. Therefore, it needed to pay 400,000 riel per month instead of

¹ Actually, the formal waste providers who contract with MAO do not have names yet. We name them as Formal Provider 1 and Formal Provider 2 in this report for convenience.

getting permission to dump its waste from the owner of the private dump site. Plus, the monthly payroll of the provider amounted to 5,280,000 riel. In total, it cost 5,680,000 riel every month. However, their collection fee depended on the amount of SW. For example, a restaurant payed 20,000 riel at maximum.

Second, according to the interview with this company's managers, they said the municipality did not collaborate with the formal provider companies. Only when some emergency happened with service receivers, did the municipality come and meet the formal providers.

9.2.3 Informal Service Providers

Informal service providers were categorized into three main types: (1) waste pickers, (2) waste buyers, and (3) junk shops. The term “waste pickers” is used interchangeably with “scavengers”. The waste pickers mainly picked up waste which was fit for sale from dump sites or public spaces like roads. Then they brought such waste to junk shops to sell it. Similarly, waste buyers visited households and commercial actors, and bought recyclable waste. After collecting, they brought the recyclables to the junk shop to sell. The role of junk shops was to buy waste from waste pickers and waste buyers. Once a certain amount of recyclables was accumulated, they took them to a large junk shop in Phnom Penh to sell. The recyclable waste was finally sent to other countries such as Vietnam and Thailand for recycling. We had opportunities to interview a waste picker and two junk shop owners in Kampong Chhnang Municipality.

Some of the respondents claimed that their business did not pay a lot. According to one of the junk shop owners, one kilogram of cans was equal to 5,000 riels. One waste picker explained that she was doing waste picking because she had none of the skills which required to work at a company, and her husband could not work because of a traffic accident. While all of the respondents did not have any troubles with service receivers, junk shops, in particular, had some troubles with police officers about the way of storage of recyclable waste. A regulation in Kampong Chhnang Municipality prohibited individuals from obstructing passersby. However, the pile of the recyclables often overflowed into a walkway. In that case, the junk shop had to pay a fine to the police. What is worse was that police officers sometimes asked the junk shop owners for bribes when they tried to transport the collected waste to Phnom Penh. Therefore, the junk shop owners wanted the local governments to better understand their businesses.

9.2.4 The Provincial Department of Environment

In accordance with the Sub-decree 113, the Ministry of Environment (MoE) delegated responsibility for SWM to the PDoE in Kampong Chhnang Province. The PDoE set up a committee and monitors the situation of waste collection in Sangkat and Commune in Kampong Chhnang Province. Based on reports, the PDoE determined the amount of subsidies and what kind of technical advice to give to each municipality. The local government officials usually held meetings 4 to 5 times per month, depending on whether the problem is emergent or serious. In the rainy season, for instance, they tended to hold more meetings because of heavy rain, which always made road conditions terrible, which hampered the waste collection trucks from reaching some households.

Another important task for the PDoE pertains to budget allocation. Since 2015, the MoE and the Ministry

of Economic and Finance had given 266 million riels to the PDoE every three years, for the purpose of waste management in the province. That means the subsidy was used not only for SWM but also for liquid waste management. PDoE transferred the money to the MAO, but it had some difficulties, for instance, the lack of awareness from households regarding environmental protection especially in Sangkat/Communes. One reason was that the waste collection companies were unable to provide service regularly, and the bad odor from waste was unacceptable to both waste producers and their neighbors. Another reason was because of bad road conditions, which made it difficult for drivers from waste collection companies to get to some faraway payers.

Lastly, there was an issue about the final disposal place. The PDoE did not have its own land, and it had a difficulty in finding a good place to construct a landfill. Once they found that there is no enough space in the current dumping site, they then made contracts with some private landowners. However, this was not a long-term contract, and would cause the dump site to be filled to full capacity again in just a few years. Also, because of lack of technical skills and good management, waste was disposed in the open air after simple processing, so that waste in these open dumping sites does harm to the environment and people living around the dumpsite.

9.2.5 The Municipal Administrative Office

The MAO controlled SW in Kampong Chhnang and it mainly had four responsibilities. First, they recognized the formal service providers' status. As only one-fourth of households were receiving the service, they set up meetings, discussing the local government's policies and appropriate price of charge from the company. The municipality had the responsibility for monitoring the formal company routinely, and they checked the relationship between the company and households. When the company and households had conflicts about SW collection, especially about payment of collection fees, the municipality tried to play a role as coordinator in the conflict.

Second, the MAO contacts with informal sectors like scavengers (See Figure 5). It talked with them, gave them food, and asked about their living condition and details about waste collection services. But compared with formal service providers, it did not consider them as having an important role in SWM.

Third, the MAO published and distributed SW guidelines to residents in order to raise awareness and encourage them to participate in SWM. For example, it held a commune campaign including high school students, and it conducted a cleaning up campaign with residents. The municipality also propagated the importance of environmental protection by mass media and radio broadcasts every week. While the municipal office held campaigns, it additionally set up penalties for the people who did not obey the rules. When local residents illegally threw away garbage, these residents had to pay fines in the amount of at least 20,000 riels.

Lastly, the municipality obeyed the executive order from the PDoE, because the provincial office was the superior authority and it was they who organized the issues of SWM at the provincial level.

10. Discussion

10.1 Explanation of Findings

Up to this point, we explored how SW was collected from households and what difficulties the stakeholders, namely service receivers, service providers and the local governments, had. To sum up our findings, informal

providers buy recyclable waste from service receivers, such as hotels, restaurants, and households, and sell it to large junk shops. Although the local governments supervised these activities, they still felt the governments should accept them. On the contrary, the formal providers were supposed to visit service receivers' places and collect non-recyclable waste door-to-door. The formal providers, however, totally lacked not only technical, financial and human resources but also infrastructure such as wide roads and dumping sites. Despite the local governments' efforts, some of the service receivers disposed of waste in public spaces or burned it in their backyards.

Why does such a problem-filled situation still exist? From the perspective of governance, ineffective SWM in Kampong Chhnang can be attributed to weak coordination among service receivers, service providers and the local government. Coordination here means to solve the problems among stakeholders by allocating proper resources in proper ways. Even though the local governments are expected to lead SWM, all of the stakeholders related to SWM must participate in it and fulfill their responsibilities; that the governments cannot afford to do so is generally known. The local governments seek to cooperate with different level of stakeholders conforming to the Sub-decree 113. Indeed, the main problem we observed is that each stakeholder has issues which cannot be solved on their own, and they criticize each other (See Table 3). We identify the main disputes among them as follows.

First, service receivers and service providers often make trouble. As previously mentioned, most of the hotel or restaurant owners are unsatisfied with the waste collection service in terms of frequency and regularity. One hotel owner and factory owner additionally testified that some of the workers behave impolitely toward them and do not collect all the waste. In addition, although the government set up three receptacles in the central park and on the main road, the staffs of the formal service providers ignored the classification of boxes; they mixed the waste from the three garbage boxes even if residents separated the waste correctly. Service receivers are also displeased at the effluvia wafting from service providers' trucks. But the formal providers are not able to deal with these problems because of scarce resources to purchase trucks and hire workers. The service providers furthermore claim that some of the wide roads which provider's trucks can pass along are still under construction so that they cannot go to all households in the area. This situation might give job seekers an image that service providers do not pay enough.

Service providers, on the contrary, confute service receivers, pointing out the fact of nonpayment of waste collection fee. And to make matters worse, service receivers scatter waste on roads during the time of national festivals when most of the workers leave their work. This may be because the local governments fail to inform residents of the formal providers' inability to collect waste after these events.

The second divarication is seen between formal providers and local governments. While Formal Providers 1 needs further assistance, the local governments are in severe trouble in terms of being able to provide this assistance. Though they receive a budget for SWM from the MoE, the budget is insufficient. This year's budget was supposed to be used for wide road construction and purchase of trash bins in public areas. As a result, they cannot afford to allocate any subsidy to service providers. Another possible cause of divarication is temporal communication. It is essential for a sustainable service provision to focus on the prevention, which requires an in-depth analysis based on the latest and accurate data. However, there seems to be no such suitable place to share information with one another. According to a manager of Formal Provider 1, he has no meeting with the

municipal office in practice. In case Formal Provider 1 has some trouble collecting waste, it often calls to the MAO for pieces of advice. But this may not be enough because this is no more than symptomatic treatment. Consequently, the root causes of the problems are untouched and left.

Table 3: Complaints and challenges each stakeholder encounters

	To service receivers	To service providers	To local governments
From service receivers	—	<ul style="list-style-type: none"> • Infrequency • Irregularity • Workers' impoliteness • Smell from trucks 	<ul style="list-style-type: none"> • Representations about service providers
From service providers	<ul style="list-style-type: none"> • Nonpayment • Disposal of waste during the festival 	—	<ul style="list-style-type: none"> • Inadequate support • Seasonal problems • Unscheduled meetings • Absence of punishment • Uncontrolled dump sites
From local governments	<ul style="list-style-type: none"> • Low environmental awareness • Illegal dumping 	<ul style="list-style-type: none"> • Small coverage area • Low-quality services 	—

Source: The authors

It cannot be assumed that the municipal office can maintain strict control over the dump site and illegal dumping. The dumpsite is approximately five kilometers away from the center of the municipality, where it is wholly sequestered. This is not surprising because untreated smelling waste cannot be stored around residential streets. At the same time, however, this means the dumpsite is out of the range of for constant monitoring by officials. Similarly, the MAO cannot keep an eye on waste burning in households' backyards because such families live so far away from wide roads such that a formal waste provider cannot visit them. Moreover, to take what an informal provider said into account, some of the police officers seem to be involved in bribery. Though the MAO hopes to get help from the UNDP to get a piece of land 12 hectares in size. However, now, these factors are likely to impede the local governments from punishing illegal dumping.

The last parties to a dispute are service receivers and local governments. Service receivers, by and large, apparently do not have complaints about work of the MAO. They ask officers to mediate disputes with service providers mainly on waste collection fees. In contrast, the MAO is worried about illegal dumping and the low environmental awareness of residents. Although the MAO holds environmental campaigns, they seem to have a certain, not high, level of environmental awareness. In this sense, there is room for improvement in the campaigns. As the Deputy City Governor said, the large number of participants in the campaigns is outstanding. But not all of the participants always notice the importance of environmental protection through such programs because many participants may join the campaigns merely to receive the free food which is provided to participants. Evaluation of the effectiveness of the campaigns might improve the situation.

10.2 References to Previous Research

10.2.1 Approaches

According to relevant laws and regulations, an approach to SWM in Kampong Chhnang should be categorized using the hybrid approach. On the one hand, Article 5 of the Sub-decree 113 says MoE holds leadership and promotes the implementation of urban SWM. On the other, the Provincial Government has to support, facilitate, and enhance the implementation of urban SWM (Article 7). Furthermore, Municipal authorities have duties to manage SWM in their administrative boundaries (Article 9).

In light of the present situation, the MAO in Kampong Chhnang cannot afford to take care of SWM by itself, that is to say, a complete decentralized approach is unreasonable. For this reason, the existing SWM system is promising.

10.2.2 Governance

Here we apply the three aspects suggested by Rodic-Wiersma and Willson (2017): 1) direct regulation, 2) economic instruments, and 3) social instruments, to the situation of Kampong Chhnang. As long as we can observe, a legal framework for SWM will be relatively well prepared. In contrast, enforcement of the regulations seems to be insufficient. To borrow their words, "construction of facilities in parallel to the regulations is essential" (Rodic-Wiersma & Willson, 2017, p.15).

Concerning economic instruments, the sustainability of financing must be achieved. Judging from the interview with the formal service providers, their income is almost the same as their expenditures or less. Also, the PDoE can receive a subsidy from the MoE only once in three years. Meanwhile, most of the hotels and restaurants owners are willing to pay more fee if the quality of the service is improved. This difference reflects the attitudes of the majority of residents in developing countries. This difference might have something to do with rapid economic development and tourism. Ultimately, direct charges will contribute to sustainable finance.

Regarding social instruments, the MAO makes positive efforts to raise awareness through environmental campaigns, involving various actors: students, scavengers, NGOs and UN officials. The problem is that it will be some time before the effect, particularly for households, becomes apparent. The role of advertisement via media is also essential.

10.2.3 Public-Private Partnerships

Many scholars including Chaturvedi et al. (2015) and Bhuiyan (2010), emphasized the necessity of Public-Private Partnerships (PPPs) to provide effective SWM. PPPs are defined by PPP Knowledge Lab as "[a] long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility and remuneration are linked to performance" (PPP Knowledge Lab, 2017, p.1). Cooperation between the local governments and formal providers looks like PPPs. If we follow this definition, however, it is not right in the strict sense of the words because the official document shows that the local governments do not give remuneration to the formal providers, who are just decided by tender. A formal provider suggested the MAO should participate in waste

collection.

Whereas the majority of researchers are claiming the need for private sectors' participation in the decision-making process on SWM, our research revealed that the suggestions from the formal providers are seldom heard. In the interview with the manager of a formal provider, for instance, he said a part of the residents disposes of waste during national festivals, claiming that the government should notice that formal providers have difficulty in collecting waste during the festival. Moreover, advocating did not change anything.

10.3 Lessons

We can learn two lessons from this case study. First, just delegating responsibilities to the local authorities cannot make SWM better. The lower authorities have responsibilities for SWM, the fewer resources they have. Also, some of the service receivers, particularly hotels and restaurants, receive instruction from the Provincial Department of Tourism, not that of the Environment. A comprehensive policy is essential for effective SWM.

Second, the residents are not always willing to pay more money. We assume that the higher the economy in an area grows, the more residents, in particular hotels and restaurants, can afford to pay for the waste collection fee. The amount of waste they generate outweighs than that ordinary households do. Besides, they must keep their places clean to attract customers and tourists. Undoubtedly, it is important to achieve frequent and regular SW services, but these findings may be unique because most of the service recipients usually refuse the rise in price.

11. Conclusion

This research tried to identify the SWM system in Kampong Chhnang Municipality. Based on the literature review, the study set up questions and hypotheses that suggest the lack of cooperation among stakeholders led to the failure of SWM.

This research found that some service receivers did not pay for the collection fee because they saw it as unnecessary. Also, they were generally dissatisfied with the quality of service. There were complaints about the frequency and irregularity of the formal providers. Thus, there was no obvious improvement even if some hotels and restaurants owners paid more. Formal providers had problems such as insufficient manpower, cheap collection fee, and government's inaction. In addition, the informal providers' role is despised. As for the local government, they did not do well in choosing responsible companies, and did not fulfil the duty as a coordinator.

In addition, we conclude that the municipality had four main problems. First, the quality of the formal service providers' collection service was low. The second issue was the lack of awareness of environment protection. The third problem was the difficulty to find a long-term landfill. Lastly, the MAO set up a garbage classification system.

As the study hypothesized, the case study of Kampong Chhnang has shown SWM was not successful due to the lack of cooperation among stakeholders. We conclude that the clean environment of Cambodia requires cooperation among all stakeholders, but the government should play the central role among them, from the aspect of enacting laws and regulations, to technical, medical and financial support, as well as to long-term

education. With the fact that the environment is getting worse and worse, the government must make more effort to deal with the problem, because it cannot be solved in a short time, even if all stakeholders make efforts and cooperate with each other from now on. However, we are still full of hope and confidence regarding the situation in Kampong Chhnang, and in Cambodia, too. As there are already so many developing countries doing well in solid waste management, with hard work and cooperation among all stakeholders, we do believe that Cambodia will be an environmentally clean country in the future.

12. Recommendation

Compared to the situation of SWM in Japan, for instance, it is obvious that SWM of Kampong Chhnang runs short of almost everything necessary for advanced SWM, namely funds, infrastructure, technical assistance, human resources, and social capital. But this does not mean SWM in Kampong Chhnang is hopeless. Given the result of the interviews and discussions, we would like to suggest five recommendations as follows.

- (1) Promote communication with other stakeholders
- (2) Review of the use of resources to prioritize how to use financial and human resources, to provide more financial and technical support for formal providers, and to invest in infrastructure including landfills, wide roads, and incineration facilities.
- (3) Enact frequent and regular collection service and raise the price of collection fees. As commercial actors need frequent services, they can afford to pay more compared to ordinary households. This could be a fundamental solution for sustainable services. Please note that these changes must be done in parallel.
- (4) Law enforcement should make regulations, monitor the situation, and strictly punish illegal dumping.
- (5) Develop PPPs to build relationships of equality between the local governments and the formal providers, and to promote their participation in policymaking and implementation.

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Appendices

Appendix A

The following tables are the guides we used in the interview. Tables 4, 5, 6, 7, and 8 present the details of the questionnaire to the Provincial Department of Environment in Kampong Chhnang, the Municipal Administrative Office in Kampong Chhnang, the formal service providers, the informal service providers, and service receivers, respectively.

Table 4: The interview guide for the Provincial Department of Environment

Categories	Questions
1) General situations on SWM in Kampong Chhnang Province	How many / what percentage of households in the province receive waste collection services? (both % and actual amount)
	When do you want to provide the service with all waste generators?
	What should be done to do to achieve the goal?
	In which municipality in the province does SWM make progress?
	Which municipality has the highest coverage of waste collection services per person/households?
	How much / what percentage of the budget is used for SWM in the province?
	What is the fiscal source of SWM in the province? (e.g., tax, a subsidy from the state) / How much percent does each source account for?
	Does each district make a contract with a private company?
	How many private companies in the province make contracts with each municipal office?
	What are the problems you are facing to on SW collection?
2) The roles and the responsibilities of PDoE	What are your duties to MAO, the formal providers, and informal providers in SWM?
3) Relationships with the formal providers	Have there ever been any conflicts or difficulties with the formal providers?
	How many times does PDoE have meetings with the formal providers in a year?
	If you could not agree on a contract, how would you handle with it?

Table 5: The interview guide for the Municipal Administrative Office

Categories	Questions
1) General situations on SWM in Kampong Chhnang Municipality	How much waste is collected in a year in the municipality?
	How many households receive SW collection services?
	What are the problems you face on SW collection, budget, awareness, and capacity?
	What is the fiscal source of the SW collection (e.g., tax, a subsidy from the provincial office), and what is its proportion?
2) The roles and the responsibilities of MAO	Do you supervise the formal and informal providers? And how?
	Do you plan to make contracts with other companies to expand the scope of collecting services?
	Do you have a guideline for residents? If yes, please explain the detail.
	How do you establish the guideline? Do you explain the guideline to the residents?
	What are your responsibilities in the SW collection?
	How do you work with the following sectors in formulating policies on SWM: waste generators; formal providers; informal providers; and PDoE?

3) Relationships with the formal providers	Do you supervise the formal and informal providers? And how?
	Do you plan to make contracts with other companies to expand the scope of collecting services?
	Do you have a guideline for residents? If yes, please explain the detail.
	How do you establish the guideline? Do you explain the guideline to the residents?
	What are your responsibilities in the SW collection?
	How do you work with the following sectors in formulating policies on SWM: waste generators; formal providers; informal providers; and PDoE?

Table 6: The interview guide for the formal providers

Categories	Questions
1) General situations of the formal providers	What are your responsibilities in SWM in the municipality? (e.g., collection, dumping, processing, and recycling)
	How many workers engage in SWM and SW collection?
	What kind of facilities or equipment do you have?
	How do you collect SW?
	How much fee do you collect from waste generators?
	Are there any problems in collecting waste from waste generators?
	How do you make a contract with waste generators?
2) Relationship with MAO	How does MAO support you in SWM?
	Do you have a chance to advocate your opinions to MAO?
	Do you have any problems to collaborate with MAO?
	Do you have any suggestions or requests to MAO?
3) Relationships with other formal providers and informal providers	Do you collaborate with other formal or informal providers in SW collection?
	What is your expectancy about cooperating with informal sectors in the future?

Table 7: The interview guide for the informal providers

Categories	Questions
1) General situations of the informal providers	How do you collect SW from waste generators?
	How many benefits can you gain?
	What are the difficulties in collecting SW?
	How do you handle those collected SW?
2) Relationships with other stakeholders	How do local governments support or involve into your business?
	What are the difficulties in working with local governments or formal providers?
	Are there any collaborations or competitions with formal providers or other informal providers?
3) Future collaboration in SWM	Do you think it possible to make future collaboration in SWM (e.g., formal contracts) with the local governments?
	What do you think is necessary for informal providers to improve the situation? (e.g., have a chance to participate in the decision-making process of relevant SWM rules)

Table 8: The interview guide for the waste generators

Categories	Questions
1) General situations of the waste generators	How much waste do you generate in a day?
	What kind of waste do the formal/informal sectors collect?
	How do you manage your waste which is collected neither by formal providers nor by informal ones?
	When and how do they collect waste?
	How much do you pay for the formal providers?
	Do you need to pay some tax for the government?
2) Relationship with MAO	Do you have a chance to advocate your opinion to MAO?
	Are you satisfied with the municipality's policy? (Using Likert scale [1 to 5])
	What are your suggestions to MAO?
3) Relationships with formal and other informal providers	How do you contract with formal providers?
	Are you satisfied with the formal and informal providers' services? (Using Likert scale [1 to 5])
	What are your suggestions for the formal and informal providers?

Appendix B

The following pictures are related to findings we mentioned. Formal waste providers use this truck (Figure 3). Formal Provider 1 and 2 and the boat shop owner go to this dump site (Figure 4). MAO makes contacts with informal sector scavengers (Figure 5).

Figure 3: One formal waste provider's truck



Figure 4: The dump site in Kampong Chhnang Municipality



Figure 5: The Municipal Administrative Officers and scavengers



Working Group 3

Education

The Evaluation of Program Organization and Parental Support of Early Childhood Education: A case study of Kampong Chhnang City

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1. Introduction

1.1 What is Early Childhood Education

Early childhood education (ECE) can be explained as any educational programs that are designed for children in their preschooling years. ECE can consist of a number of activities and experiences designed to aid in the cognitive and social development of preschoolers before their entry into primary school.

The delivery of ECE can vary in different areas and regions, or even within preschools in the same area. ECE programs are primarily designed for 3, 4 and 5 year-olds. The school setting of ECE can be situated as childcare, day-care or nursery school as well as the more conventional preschool and pre-kindergarten classrooms. Some settings can include children younger than 3 years old such as day cares. These programs can be situated in a specified children's centre, home-based, or within a public or private primary school. The program for children can be offered on a part-day basis or full day basis, even on a year-round schedule.

ECE programs also differ in terms of funding and sponsorship. They can be privately run, operated by a local school system or community, or operated through a centralized public funded program (PreSchoolTeacher.org, 2018)

1.2 International situation of ECE

UNESCO defines the period of early childhood as the time from birth to eight years of age. This is recognized as a time of remarkable growth with cognitive development being at its peak. As such, ECE is more than just preparation for entry into primary schooling, it encompasses the holistic development of a child. This constitutes the development of the child's social, emotional, and cognitive abilities in order to build a foundation for lifelong learning and wellbeing. The investment into the development and expansion of ECE programs is vital to a country's promotion of human resource development, gender equality and to reduce the costs for later remedial programmes. This may also be a large contributing factor as to why target 4.2 of SDG 4 is: 'By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education' (UNESCO, 2018).

All children have the right to education as called for in the Universal Declaration of Human Rights and the UN Convention on the Rights of the Child. In low-income countries, where education for all is far from becoming a reality, the provision of ECE is still very limited. Often, it is provided on a private basis and is therefore only available to children from more affluent families resulting in inequality in access to basic education for children from poorer families (Education International, 2017). Even in developing countries where ECE is available through public funding, quality and access issues are still present and affect learner's accessibility and progression quite varyingly when comparing urban, rural and remote areas.

1.3 Situation of ECE in Cambodia

ECE is also interchangeably known as ECCE (Early Childhood Care and Education) or ECCD (Early Childhood Care and Development) in official Cambodian government documents. Cambodia as a member of the UN and party to the SDGs has agreed to and adopted strategies for achieving SDG 4.2. The Cambodian constitution ensures

specified attention to child care and education of children.

According to the National Strategic Plan, there are mainly two purposes for ECE in Cambodia. One, the reduction of poverty especially in rural areas and two, to decrease the dropout rate and repetition rate of students. To achieve these goals, Cambodia has four types of preschools to deliver ECE. The four schooling types generally target 3-5 years old children, while some may receive younger and older children. The four types are State Preschools (SPS), Community Preschools (CPS), Home-based Preschools (HBS) and Private Preschools (PPS). SPS is funded by the government and may be attached to local primary schools. CPS is financed by local community groups. HBS are home-based programs run by mothers' groups across the villages in local communities. The final type, PPS are privately owned and run preschools. These preschools have a user pay system and generally charge much higher fees than other types of preschooling, making it usually only accessible by more affluent families.

SPSs are standardly equipped (one may say even poorly equipped if compared to other countries) and are not as well equipped/resourced as PPSs which have a larger pool of funding to provide services and a smaller customer base. CPSs and HBSs depend on the community and other sponsors such as NGOs, and work with minimal budgets. They are commonly not well resourced and neither have effective teachers to conduct effective teaching and learning. These home-based and community-based preschools are run more like daycare centres. Therefore, there is a gap in terms of teaching quality, affordability and facilities (Rao & Pearson, 2009).

2. Literature Review

2.1 What is the importance of ECE

Wylie et al. (2009) and Myers (1992) have stated that the period of early childhood development has a positive and strong impact on a child's further development and later age learning. Sending preschool-age children to ECE programs has a positive impact, by giving such children a head start towards a brighter future. The capacity of a child's brain to soak up new learning peaks when they are three years old. At this point, a child has the highest potential to learn new things. Attending ECE programs provides preschool aged children the opportunity to learn and improve their language and psycho-motor skills. It also develops their learning and cognitive skills necessary to move on to primary school.

ECE programs are also beneficial to the welfare of children's health. Studies have shown children provided with quality care in ECE programs results in positively influenced child learning and development. Attending ECE programs also makes children more emotionally developed and less likely to require behavioural or mental health care assistance once they enter into primary school.

Another key benefit of children receiving ECE is the opportunity for preschool aged children to be exposed to screening programs, setting daily schedules and establishing work patterns that will allow these children to inhibit a better learning routine both at school and home (OECD, 2010).

2.2 Program organization

Program organization under ECE can be defined as a system containing programs and services for young children and families plus the policies and administrative infrastructure that support those programs. The primary function of an ECE system is to create greater opportunities for families and children to have better access to high-

quality ECE programs. ECE systems typically have several elements: regulations articulating minimum requirements for safety and health; professional development supports for ECE professionals; financing; accountability measures ensuring programs meet fiscal and quality benchmarks; outreach to and engagement with families and communities; standards for early learning and development, programming and professional preparation; and a coordinated approach to governance to manage each of the other six elements (Gomez, 2016).

2.3 Parental support

Parental support can be defined as the participation and involvement of parents in activities related to the educational development of children both at school and home. Parent involvement helps extend teaching outside the classroom. This creates a more positive experience for children helping them perform better when in school. It is vital for parents to support the learning that occurs in the preschool setting as well as at home. Parents in sync with the happenings of the classroom form better connections between what is learned at school and what needs to take place at home to further their child's learning experience (Hulpia, 2018).

This connection is a key component of a child's development and greatly boosts further learning. Parental involvement not only helps extend teaching outside the classroom but it also creates a more positive experience for children, helping them perform better when they are in school. Parental support extends the experiences of a child from the classroom to real-world activities which happen in the home. Parents who understand what their children work on at preschool tend to have a better sense of their child's competency and the areas requiring improvement, such as ability and confidence.

One of the most difficult challenges for early childhood educators is figuring out how to better engage parents in their child's learning. Establishing good lines of communication between preschools and parents as well as involving parents as a partner can make a positive impact on children's learning ability (Spreeuwenberg, 2015).

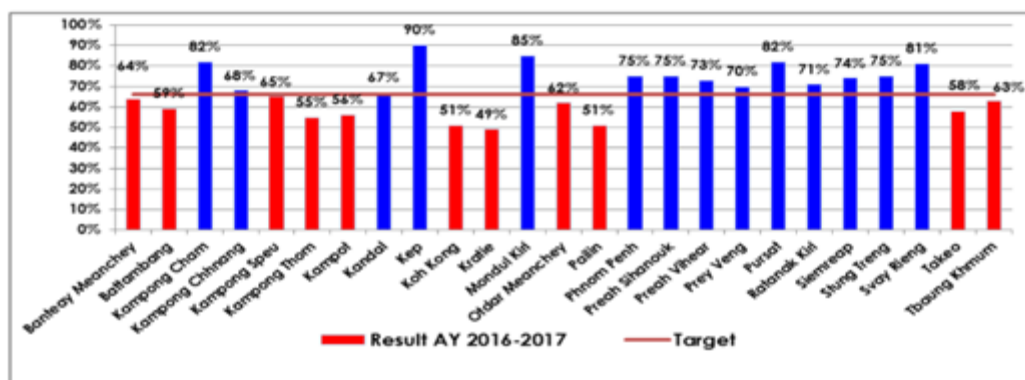
The literature reviewed resonates to the fact that organized programs in ECE and parental support are vital to the optimal development of preschool aged children and for their future successes. It also highlights that while ECE programs have strong benefits for children, it does not fully materialize without enough parental support and involvement. Parents are key stakeholders in the education of their children, especially for children between the ages of 3-5 years old where cognitive development is at its peak. Parents of children at that age, are the primary drivers of how children's perceptions and attitudes towards learning forms. Also, ECE programs should gradually align its methods of learning towards primary education so children can seamlessly transition into the next stage of education without difficulty and progress more easily.

3. Problem Statement

In Cambodia, the investment in ECE started in the 1990s. The Cambodian Education Strategic Plan (ESP) 2014-2018 stated that ECE in Cambodia was faced with challenges such as low quality, low demand, scarcity of resources, limited capacity and geographical reasons. Therefore, the Cambodian government shifted its focus to vulnerable people such as people in rural Cambodia. Also, the gap is not just in the enrolment rate, it's in the quality of preschool which will be influenced by the facility, curriculum, teacher-pupil ratio, and so on. However, in the case of Kampong Chhnang, they achieved the goal of enrolment rate for 5 years old in 2016-17. The data (figure 1) shows that the

average enrolment is over 60%. However, average data cannot show clearly if vulnerable children are getting access to preschool, particularly the gap in access between urban and rural areas.

Figure 1: % of Five-year-old Children Accessing Education in Cambodian Provinces



Source: ECED

Kampong Chhnang achieved the 2016-17 academic year’s educational access target, and the enrolment rate was ranked 13th out of the 25 Capital/Provinces. However, there are only 188 classrooms for ECE in the province and 6160 students (3069 girls). meaning on average there were around 33 children in one class. Should there be a greater concentration of students in urban areas, then the student/classroom/teacher ratio would be much higher in urban areas. Through the literature reviewed it can be understood that even though the enrolment rate is increasing, the quality of education such as curricula, infrastructure and teacher education is lagging. Thus, educational resourcing is not progressing at an adequate pace as student enrolment increases.

Despite Kampong Chhnang achieving its enrollment target for children aged five in 2017, the improvement in access for vulnerable children to preschooling is not stated and the quality of preschooling is not determined. Thus, an investigation into the organized program and the level of parental support is required to evaluate the effectiveness of the ECE program in Kampong Chhnang.

4. Research Objectives and Questions

There were two objectives for this research. One was to investigate how ECE is organized in an urban and suburban preschool in Kampong Chhnang City. The other was to determine how parents support their children in ECE in an urban and suburban preschool in Kampong Chhnang City. The research questions and sub-questions are:

- 1: How is ECE organized in the two SPSs (urban and suburban) in Kampong Chhang?
 - What are the differences in the organized program of the two SPSs?
- 2: How do parents support their children’s learning in ECE in the two SPSs (urban and suburban) in Kampong Chhnang?
 - What are the factors and reasons which differentiate parental support between the urban SPS and suburban SPS?

5. Methodology

To achieve our research objectives, we conducted fieldwork in Kampong Chhnang City, Kampong Chhnang Province, Cambodia. We visited two State Preschools and the District Office of Education (DOE). One State Preschool is in the centre of Kampong Chhnang City called Mittaheap State Preschool. The other one is in a suburban area of Kampong Chhnang City called Kasaam State-Preschool.

Mitaapheap SPS, established in 1987 as a nursing school (18 months to 3-year-olds), is located in the urban area of the city. From 1992, the school started to accept preschool age children (3-year-olds to 5-year-olds), and until 1995 it offered a whole day session with lunch provided by its kitchen. However, the situation changed from 1995. Due to lack of budget, the preschool shut down the kitchen and only offered a half day of school. As can be seen in Figure 2, because of budget, the wall crack is not well fixed. Mitaapheap SPS has experienced a long history, which is long enough to have educated both the parents' and children's generations. There are 11 classes in the school including three lower level, four middle level and four upper level. Eleven teachers are responsible for 11 classes, and there is also one principal, one deputy principal and one office secretary. Teaching and administrative works are well divided in this bureaucratic system. Four hundred fifty students are currently studying in the preschool with 30 students in the classroom for lower level, 40 for middle level and 45 for the higher level. The school building is unchanged since its initial construction back in 1987; some parts have been closed out of safety concerns.

Figure 2: The wall crack in Mitaapheap SPS



Kasaam SPS is located in the suburban area, and it is inside a primary school which was founded in 1951. The preschool section started in 2001. There is only one class for a higher level of preschool and only one teacher currently responsible for it. There are 26 registered students (12 female) from 7 villages which are assigned to the "school map" and several underaged students who are either related to the students in the preschool or primary school. The preschool is directly under the management of the District Office of Education which made a teacher the acting principal of the school. The school has been under construction since 2016. After tearing down the old building, they started to build a new block on that with the financial assistance of the Cambodian People's Party. However, due to a decline in funds to complete the work, the building is yet to be completed. The principal stated that they expect the new building to be completed by 2019 (the construction is quite slow). Therefore, space for classrooms is rather limited. The entrance of the building with roof and one side of the wall is used as classroom for

preschool since the construction started (see Figure 3). Even though there will be enough classrooms after the new building is done, the principal of the primary school said they would not consider adding one more class unless there are more than 50 students in one classroom.

Figure 3: The place used as classroom in K-SPS



At M-SPS, we conducted a semi-structured interview individually with one principal. As for the teachers, we divided ten teachers into two groups and did a focus group interview. We conducted semi-structured interviews and questionnaires with eight parents. At K-SPS, we conducted a semi-structured interview with one primary school acting principal. We conducted semi-structured interviews and questionnaires with one teacher and ten parents. Lastly, we conducted a semi-structured interview with one officer at the District Office of Education.

To find out the differences in evaluations on SPS and to know the perspectives of each different stakeholder, we prepared four types of interview guides and questionnaires. Through the interviews with principals, we assessed basic information about the schools, what kind of organized programs they had such as curriculum and school activities, their perception on the importance of ECE and improvements for the school. For teachers, we asked about teacher training and school activities, how they feel about and what kind of parental support they have, and the status of the achievement of students. Through the interviews with parents, we tried to find out how they think about the importance of ECE, how they feel about the changes in their children, and how much they contribute to and cooperate with the schools. For the officer of the DOE, we tried to make sure and to get more concrete, or deep, knowledge about the SPS situation at system levels such as teacher training, monitoring and evaluation.

6. Findings

6.1 Expectation for ECE

We tried to figure out what all stakeholder thinks about ECE and what they expect for ECE. From the interviews with principals, we found that the preparation for primary education is the most crucial role of ECE and principals believe that ECE leads to better achievement in primary education. Additionally, at M-SPS, the principal answered

that ECE is vital for a better attitude, basic knowledge/cognitive skills and keeping children safe at school. Thus, based on this result, we found that there are three types of roles. The first is for academic knowledge, the second is for the better attitude of children, and the third is to give more time for work to parents.

According to the results of questionnaires for teachers, teachers at both schools think that ECE is vital, not only for cognitive skills but also for communication skills. Also, children can learn good manners such as how to be polite and respect others. At M-SPS, teachers answered that children could learn initiative, as well as how to be creative for further study, how to prepare for primary education and improve their language ability. At K-SPS, the teacher told us that ECE let children have more knowledge about their lives and opportunities to stay in school. Thus, in addition to what the principal answered, teachers mentioned various kinds of skills such as communication, initiative and creativity; they also mentioned gaining further skills for the future in addition to basic skills such as writing. Also, through ECE, children can gain practical knowledge about their life such as hygiene and eating. We found that teachers expect ECE to provide not only knowledge for studying, but also skills for everyday life and the future.

It was found that there is a substantial difference in expectations for ECE between parents at M-SPS and K-SPS compared to teachers and principals. Parents at both schools mentioned that ECE is preparation for primary education and that ECE let children have a better attitude. However, their answers are more various than the answers from principal and teachers. At M-SPS, the top answer for the expectation was that parents expect to keep children safe at preschools because they have to work or have other jobs to do. They also mention better achievement at primary schools and an expectation for children to gain knowledge for children's growth and development.

In the case of K-SPS, they expect more of education itself. This is because one of their top answers is that ECE is for children to be more educated for achieving better lives. We have two important cases from our interview. One parent said that she wants the kids to be smarter and to get a better education to find better job, unlike her, because her job is hard but pay little. This parent sends one of her children to an English class offered by a neighbour who can speak a little English. We can tell how much she expects of education, not only of ECE. Another example is by a father who thinks education can change the destiny of the child. He expects that at least his child can have a better job than him and his wife. They are working so hard but they are still poor. As we can see from these two examples, the parents in the suburban area expect education to provide for their children's better future. They also mention basic skills such as writing and numeracy and getting ready for further school education. Thus, some answers about what they expect for ECE are similar at both preschools, but some are strongly affected by the parents' situation.

In the case of M-SPS, they want to keep their children at preschool because they have work and they are busy. This could be a geographical characteristic as they live in the center of the city. On the other hand, at K-SPS, parents want to give more opportunities to their children not only for preparation for primary school but also for further study and their lives. This means that the parents in the suburban area believe in the power and future payoffs of education itself, and this is sometimes because of the parents' experiences.

Thus, as for the expectation for ECE, the answers from principals and teachers are similar, but parents' responses are different and are affected by their experience. Principals and teachers expect ECE to assist with the preparation for primary school and that children can gain basic knowledge and skills for their cognitive development. However, parents expect different things from ECE based on their experiences and life situation. In general, parents at M-SPS want to keep children at preschool because of their busy jobs, while K-SPS parents expect education itself to

improve their children's future.

6.2 Evaluation and satisfaction of SPS from parents' perspectives

We have shown what each stakeholder expects from ECE, and parents seem to have especially different expectations. In this part, we will see what exactly parents think about the achievement by schools and how they feel about their children's change before and after they started to go to preschool. Through the questionnaires, we asked parents if they felt any change in children's behaviour after their children started going to school and how much they are satisfied with the school. Even though parents' expectations are different, how the children's change due to ECE is similar at both schools. However, in the case of their satisfaction with ECE, we received various answers from each parent. After we mention the evaluation and satisfaction from parents' perspectives, we will look into the reasons for this evaluation and satisfaction based on two categories: program organization and parental support.

At both preschools, all parents answered that they felt a change in children's behaviour because of ECE. The specific cases of their children's changes are also similar. There are mainly three top answers from parents at both schools: the attitude of children, communication skills, and basic skills for learning such as writing and reading. As for the attitude, parents feel that children became more polite and respectful to others, parents and teachers. Additionally, both sets of parents mention life skills such as cleaning up or helping parents as examples of things that children learn at ECE. In the case of M-SPS, some parents said that children improved in terms of responsibility and curiosity.

However, according to the scale of our questionnaire, how much parents are satisfied with the schools is different depending on the school. We asked parents to answer on a five-point scale such that if they are totally satisfied with the school they answer 5 but if they are not satisfied at all they answer 1. Table 1 shows the answer from parents, which is about how much they are satisfied with each school. At M-SPS, three parents answered 4 and six parents answered 5. Overall, the parents are satisfied with the facility of the school and the teachers, that is, the parents are confident in the teaching way and materials. M-SPS was established in 1987, so the school has been open for over 30 years. Depending on the family, both parents and children go to the same preschool, so the parents also know the teachers well. Thanks to good facilities and trustworthy teachers, parents feel that their children become smarter and get ready for primary education.

On the other hand, parents at M-SPS also gave negative responses. For example, one parent said that studying environment and material could be better and that the playground facilities are too old and dangerous for children. Also, some parents are worried that children just play more than study, and another parent thinks that the teachers could focus more on teaching by themselves without the aid of older children.

In the case of K-SPS, there are more various answers on how much they are satisfied with the school based on the scale. One parent answered 2.5, three parents answered 3, three parents answered 4, and the other three parents answered 5. They thank the teacher because she takes good care of her students, prepares good materials, and teaches well. However, the parents are not satisfied with the facilities. Also, interestingly, answer one parent could not assess how well the teacher teaches at school because the parent has to help with the student's homework. The parent appears to mean here that if the teacher teaches enough at school, he shouldn't need to help with his child's homework.

Table 1: Parents' answers about the satisfaction

	1 (not satisfied at all)	2	3	4	5 (totally satisfied)	Total
M-SPS	0	0	0	3	6	9
K-SPS	0	1 (answered 2.5)	3	3	3	10

6.3 Program organization

6.3.1 Facility

Classroom and playground. In the interview with M-SPS's teachers, one of the most often mentioned issues is the classroom. As introduced before, the M-SPS has 11 classrooms, but because the school building itself is not originally built for preschool, the lower level classes can only have classroom space of around 9 square meters. Within the 9 square meters, around 30 students study. Related to this, the principal mentioned that 25 students in one classroom would be the best, but in fact, the average is 40 students for one classroom. According to the principal, six more rooms are needed. M-SPS has a playground with some playing facilities, but those facilities are also old and not well maintained. From the parent's interview, some parents mentioned that this playground is not big enough for students to play there, since there are 450 students. Also, some parents mentioned the old play facilities; they are not safe enough for students (see Figure 4). In fact, there one student injured a leg while using the play facilities.

Figure 4: The playground of M-SPS



When we visited K-SPS, we found that the situation of K-SPS is much worse than M-SPS because of the school construction which started from 2016. Actually, there are no finished classrooms. The teacher of K-SPS told us when it came to the cold season, because of the temperature, they had to study in a place with sunshine to keep students warm. K-SPS shares the playground with the primary school (see Figure 5). Benefits from this, are that students can have a wide open place to play, but on the other hand, since the playground is not designed for preschool students, there are not many appropriate playground equipment. Some parents also mentioned this; they thought it would be better to have more equipment for their children.

Figure 5: The playground of K-SPS



Equipment inside the classroom. Based on Knopf & Welsh's research about the necessary equipment for a preschool classroom (2010), we can sum up some general requirements, for example, clean water, lights, tables, chairs and fans or AC to keep the classroom at a suitable temperature and of course, teaching materials. All classrooms in M-SPS do not have lights, meaning that once there is not enough natural light, the classroom will get dark, and students have to study in the dark. When we visited M-SPS, even it was sunny outside, inside the classroom was not bright enough. Also, because of the hot weather in Cambodia, it is better to have fans to make it more comfortable for students to study. However, in fact, for big classrooms, there are just two fans, for small classrooms, only one, and none of the classrooms have AC. When it comes to K-SPS, because they do not have a fixed classroom, it is impossible to count the number of lights or fans. The illumination and temperature adjustment K-SPS only use natural sources.

Inside the classroom for M-SPS, it is easy to find many teaching materials, nearly all of them handmade by teachers. During the interview with teachers, the teachers mentioned that they have to make these materials by themselves because of a lack of budget. Of note, lower level classrooms did not have enough tables. Sometimes, the children had to take turns to use toys or teaching materials. The Dean of M-SPS complained to us that if she could get a higher budget, she would like to improve this situation. At the same time, in the K-SPS, they have only five small tables, and one is broken. Additionally, not all chairs are working well. In the interview with parents, their words also suggested this. About teaching materials, one teacher of K-SPS contributed a lot, making many daily teaching materials by herself. Also, an NGO named the KAP organisation helped a lot with teaching materials; otherwise there would be insufficient teaching materials.

Overall, based on the interviews with the two principals of the two schools, the budget they can get from the government for one student is 8000 Riel per year. That means the school with more students will obtain a relatively larger budget. This could be one of the reasons that M-SPS can develop better than K-SPS. However, still, these two schools are lacking a sufficient budget. Even in M-SPS, there are chairs donated by parents, while 3 million Riel in support from the Swedish government and an NGO support K-SPS. These external sources of support combined with the hard work of the teachers allow the two schools to operate correctly.

6.3.2 Curriculum

Based on the guidelines from the Ministry of Education, these two schools only have a class for half a day in the morning. Both schools have similar teaching contents, for example, Pre-writing, Math, Science, Art and so on. However, these two schools have a different situation in practice. For example, in M-SPS, the teachers will make pictures of different animals and let students get familiar with them. Teachers will also take students to the pagoda to learn more about traditional culture. Many parents give a high rating for this kind of teaching. Still, from the interview with the teachers, we can feel that the number of students in each class does have some adverse effect on teachers. Teachers cannot take care of each student while making teaching plan.

In K-SPS, with a smaller number of higher level students than M-SPS, the teacher can manage the teaching a little bit easier than M-SPS. The teacher in K-SPS gave us an example that when she teaches students about fruits like bananas, she will bring banana in green colour and yellow colour and let them try the taste, so the students can know which will be better. Same thing is hard to practice in M-SPS because of the student number of the class.

An interview to the district office of education was also conducted. In the interview, she told us that there is a new curriculum under testing now. The M-SPS is the only pilot school. The new curriculum is being piloted for three months until October 2018 after which it shall be finalised. There will then be a workshop to evaluate the implementation of the piloting. The formalisation and launch of the new curriculum will be from November in the new academic year. The old curriculum was quite standardised whereas the new one has flexibility. For example, in M-SPS, teachers can take students to pagoda to help them learn local culture, instead of only learning from textbooks. ECE teachers will have the flexibility to teach things more relevant and applicable to learners in each distinct setting. As part of the new curriculum, students can practice and experience things by themselves. The goal of the new curriculum is the holistic development of the child, focusing on both the cognitive and physical development of the child at ECE levels. During the pilot phase, the new curriculum appears to be effective because the students have shown better academic performance. The old curriculum will not be completely phased out, but rather it will be used to compliment the new one.

6.3.3 Teachers training

In Cambodia, the situation of not enough teachers is dire, especially with the development of the country, where more and more children need to go to school. There are 11 teachers in M-SPS; all of them received teacher training before starting, but they have different levels of training. For those who trained in the teacher training centre in Phnom Penh, three of them trained for one year, and two of them for half a year. The other teachers were trained at the Kampong Chunnag Teacher Training Center, which does not exist now. Moreover, the training period is from one and a half month to two years. This year, all teachers get 15 days of in-service training in 2 provinces. There was no in-service training for the last ten years, but for the new pilot curriculum, this type of training started again. It seems the teachers we interviewed are not as highly trained as teachers from the new teacher training centre. However, in fact, the feedback from the parents showed that most of the parents are quite satisfied with these teachers. The parents thought they have much experience with child care work, which is also a reason why some of the parents choose to send their children to these schools. For the K-SPS, only one teacher completed a 2-3 day course training. In the last two years, she got some training about how to test children and how to mix with students

with disabilities from NGO KAP. Because of the hard work of this teacher, all students in K-SPS were are well cared for. The parents are quite satisfied with this teacher.

There is one more problem we have to mention, the age of teachers in M-SPS and K-SPS. For M-SPS, 10 of 11 teachers are in their 40s, whereas only one teacher in K-SPS is in their 40s. It is easy to imagine, in some years, these teachers will retire, meaning there should be new, younger teachers coming soon. However, the fact is, the district officer of education told us the number of new teachers graduated from the only teacher training centre in Phnom Penh and deployed to Kampong Chunnag Province is less than 10. Who will pick up the job after those teachers retire is another big problem that should be discussed in the future.

6.4 Parental support

As already stated in the previous paragraph, parental support is one of the vital elements that influences the quality of Early Childhood Education.

6.4.1 Parent-teacher contact system

Activities or chances provided by the school help parents get involved in ECE to a larger extent. So this can be one of the indicators for evaluating the quality of ECE. The table 2 shows the means of parent-teacher contact provided by the two preschools.

Table 2: Parent-Teacher contact system

Mittapheap School	Kasaam School
<ul style="list-style-type: none"> - Opening day of school - Follow-up book: Monthly - Parents association: 5 members - Special activities: <ul style="list-style-type: none"> • Special day before Children’s day every year • Celebrate Khmer New Year with all the mothers 	<ul style="list-style-type: none"> - Opening day of school - Teacher visit every student's house 1 to 2 times a year - Special activities <ul style="list-style-type: none"> • Religious activities

Opening day of the school:

Both schools have this event. Parents are taught to pay more attention to their kids’ studies and life in school, and to help them with their homework. Some basic knowledge about how to take care of children is also taught. K-SPS also uses the chance to appeal to parents to donate resource to the class; some plastic chairs are always appreciated.

Special activities:

M-SPS holds annual celebrations for Children’s Day and Khmer New Year. The celebrations are in the forms of tea parties, where parents and teachers use the occasion to get to know or deepen the bonds with each other.

K-SPS is inside a pagoda area; the teacher will sometimes invite parents to take part in some religious activities.

The event might not be directly related to ECE, but it works as a tool to strengthen the trust of parents in teachers, and thus helps parents become more cooperative with their children's studies.

87.5% of the sampled parents of M-SPS and 40% of parents of K-SPS attended at least one kind of special activity. Just two parents from K-SPS answered that they have never been to school before and didn't even join the opening day. One of the parents said they just let the kid go to school by himself. Moreover, the other one said the kid seldom goes to school. Both parents rated the school at 3 points, stating that they do not know the situation in school. However, since we surveyed M-SPS inside the campus and interviewed parents who came to pick up their kids, this may have led us to select respondents who more tend to be actively involved in their children's education. Nevertheless, the sample might not be large enough to draw the conclusion that parents from M-SPS are more actively attending school events than parents of K-SPS. M-SPS is located in the middle of the city, and the school district covers a much wider area so that parents have to pick up and drop off the kid because of safety reasons. So, if considering the fact that most of the parents come to pick up their children even though they might not care about ECE, the number could still show that parents from M-SPS are more involved in school activities than parents from K-SPS.

Follow-up book (M-SPS):

The follow-up book is a notebook that is passed by students to parents monthly to inform about the performance of the kids during the previous month. A daily and weekly evaluation system also exists in the school. The participation and performance of the kids during the class and break times is assessed. "The kid of the day" is reward with one small flower shaped sticker. A bigger flower shaped sticker is given to "The kid of the week". The follow-up book documents weekly flowers along with teacher's comments. Parents are asked to write some feedback or at least sign the book to show that they are monitoring the kid's progress in school. All the sample parents claimed that they are using the follow-up book as a way to monitor their children's performance.

Parents Association (M-SPS):

M-SPS has a Parents Association with five parent members. The main function of the association is to spread information about events like the cancellation of the school or special activities. There are 450 students in the school, so approximately 90 parents are consigned to one association member. Information is designed to be spread in snowball fashion whereby parents notify all the parents they know and those parents pass on the information in the same way. According to the principal, some parents do not have smart phone or cannot read or write; though the method of information delivery is not efficient, it is expedient under the current condition. On the other hand, we cannot say that the association mainly is fully functioning as an informative mechanism.

Small conclusion:

The teacher of the K-SPS sample does home visiting one or two times a year. She knows the composition of the households quite well and talks to them like friends. Some parents and kids also know the teacher, and some of them are even worried that due to the teacher's mother's illness there might be too much burden on her.

For the question "How often do you contact the teacher?" 62.5% of the sample parents answered once a month through the Follow-up book; 25% contact with the teacher once a week; and only 12.5% make contact every day

through talking with teacher in person while picking up and dropping off the kid.

Regarding teacher contact at M-SPS, only 12.5% of the parents talk with teacher every day, 25% of them do so once a week, while 62.5% of them contact school through follow-up book once a month. Because of the high pupil-teacher ratio of M-SPS, most of the parents are satisfied with only using the Follow-up book rather than talking face to face with the teachers.

M-SPS has a more well-established system for parent-teacher contacting including a follow-up book and Parent Association. At K-SPS, while the follow-up book works well, the Parent Association does not to work quite so well. However, even though there seems to be an insufficient parent-teacher contacting channel, the teachers of K-SPS have more flexibility to decide what to do and they have a close relationship with parents. All in all, parents' involvement with the school and teachers could be better for both schools.

6.4.2 Help children with homework

According to the teachers, both schools give homework every day. For each school, one parent said that there is no homework from school. More than half of the parents of M-SPS help their kids with homework more than three times a week, and half of them do so every day. 30% of the K-SPS's parents help children with homework every day, 30% of them help with homework a few times week, and 30% of them help only several times a month. Parents of M-SPS are more willing to help their kids with homework and more frequently than parents of K-SPS. However, children are getting extra help from other people like elder cousins and siblings. This situation is more common in the suburban area as there are more extended families. They help children with reading and writing in Khmer or by listening to/watching their singing and dancing.

One parent of K-SPS complained about helping kids with homework, stating that school is not doing their job well enough as the kid could not finish homework all by himself. Because of the reason, he rated the school 2.5.

It seems that the parents' participation is somehow related to the ratings of the school. One of the two parents that rated M-SPS as 4 points, is the only parent who had never taken part in any kind of school activities. As for K-SPS, one parent rated 2.5, and three parents rated 3; all of them had never been to any kind of school events. Two out of three parents that rated 4 had never attended any events.

The situation of parental support at M-SPS is better than that of K-SPS. Parents at M-SPS are generally more involved in school activities and more willing to help the kids with homework than K-SPS. This might be one of the reasons that caused the low ratings of K-SPS.

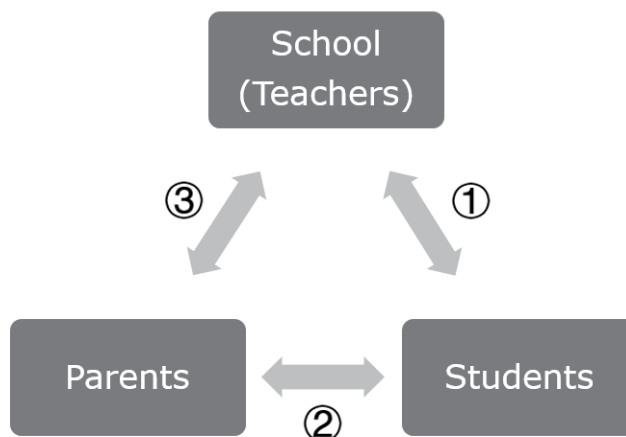
7. Conclusion

ECE is imperative for the cognitive and social development of children. Preschools are the primary basis to provide ECE geared towards three-, four- and five-year children. ECE not only prepares children for primary education but also should encompass the holistic development of the children. The global value and importance associated to ECE is recognized through target 4.2 of SDG 4.

The two purposes of ECE are to reduce poverty especially in rural areas, and the other is to decrease the dropout rate and repetition rate of students. To achieve these goals, Cambodia has four types of ECE. In our research, we focus on SPS. SPS is standardly equipped but is not at the level of PPS.

In order to achieve the aforementioned purposes of ECE, two factors primarily influencing ECE must be realized. The two key factors are program organization and parental support. Program organization means the appropriate organization of the environment to suit the study program. Parental support is the involvement and participation of parents in activities related to the educational development of children both in the home and at school.

Figure 6: The relation between School, Parents and Students in ECE.



- 1) Teachers teach students, and get feedback from students during class time.
- 2) Parents support, for example, by helping with homework; Students give feedback to parents.
- 3) Parents support, for example, parents join the school events or through communication, parents can know more about their children's behavior in school; the school (teacher) can get feedback from parents.

The relationship between school, parents and children can be summarized as in Figure 6 above. The school, parents and students are connected to each other by program organization and parental support. In the whole teaching cycle, the school educates students through daily learning. Then, with the support from parents, children are aided with their homework or other school-related things; this way, the parents know the situation about their children in school more clearly. The feedback from students to their parents was not exhaustively discussed through the course of interviews, however it does play role in this cycle. Third, via parents' communication, the school can get feedback from the parents; the parents also can give their suggestions to the school in order to help the school teach their children better. This cycle can help explain the relationship between all the indicators used to evaluate the quality of the two schools.

In the previous section based on our field survey, we mentioned that proper program organization consisted of facilities, curriculum and teacher training. Overall, we found that the teacher's hardworking and support from outside leads to the good achievement of children and good evaluations from parents. We identified three types of program organization. One is a facility. Both schools need to improve the learning environment and the number of chairs and desks. In that case, they need to ask the parents for support. Regarding teaching materials, teachers at both schools are doing very well. However, they have to make many materials by themselves, and it takes time a lot. The government can support the teachers in terms of teaching materials. Second is curriculum. The teachers at both schools have some flexibility regarding what to teach. The teachers can teach things that they think children need to learn. The third is teacher training. The schools have problem with a lack of teachers. Each year, the number

of the teachers who can graduate from the teacher training centre in Phnom Penn is fixed. Therefore, an insufficient number of teachers can come to Kampong Chhnang. Therefore, it is necessary to find a new method for distribution of teachers. Thus, the organized program consists of facility, curriculum and teacher training. The situation is different at the two schools especially for the facilities, but the problems are similar. Even though parents are satisfied with the teachers and their teaching way, teachers need more budget for faculty and teaching materials. For now, support from the outside such as by parents or NGOs and the hardworking of teachers compensate for the problems caused by the lack of budget. However, they say that the facilities and the distribution of teachers needs to be improved, so the government needs to consider these problems.

As discussed in the previous sectors, parental support was evaluated through assessing their assistance with homework, attendance of school events and their opinions of the school and ECE. M-SPS is basically superior to K-SPS in all these areas. The parents of M-SPS are more willing to attend school events, frequently help kids with homework and give higher ratings of the school. Both school side and parent side are connected to this situation. From the school aspect, K-SPS is just a preschool classroom inside a primary school, while M-SPS is well-developed and organized with a long history. Aside from the government budget, M-SPS are receiving an extra monetary donation from Switzerland. All these factors make it possible for M-SPS to have a better system for parent-teacher contact and have a deeper relationship with some of the parents who also went to the same preschool when they were young. M-SPS has an advantage in a more systematic way, while K-SPS is unique as its teachers can operate the school in a more flexible way. From the parents' aspect, although almost all the parents regarded preschool as vital to their kids' future development, not all of them understand the role of preschool. Some of them hold the view that after they send the kid to school, there is nothing left for them to support. In other words, they believe the school should be fully responsible for the kid's education. This opinion is more common among parents from K-SPS. In general, parents from M-SPS seem to have a better understanding of ECE than parents from K-SPS. Overall, we can see some good points from both of the two schools. Also, we can see the government's effort to improve ECE, but still, there are many points that can be improved. For this research, because of limited time, we could not visit more preschools; collecting more data in the future should help us make a clearer conclusion. We hope our research can be of some help for ECE development in Cambodia.

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