

**Study on Community-led Approach in Social Housing  
Development for Low-income People in Yangon City, Myanmar**

FY 2022

Graduate School of Global Environmental Studies  
Kyoto University

Doctoral Program in Global Environmental Studies

**Yin Mon Naing**

# **Study on Community-led Approach in Social Housing Development for Low-income People in Yangon City, Myanmar**

ミャンマー・ヤンゴン市域の低所得者を対象とするコミュニティ主導の  
ソーシャルハウジング開発に関する研究

A Thesis Submitted for the Fulfillment of the  
Doctoral Degree in Global Environmental Studies

FY 2022

Graduate School of Global Environmental Studies  
Kyoto University

Doctoral Program in Global Environmental Studies

**Yin Mon Naing**

## ACKNOWLEDGEMENTS

First of all, I would like to express my gratitude to my academic supervisor Prof. Hirohide Kobayashi, for his inspiring guidance and constructive comments throughout the research works. A special appreciation and thanks to Assoc. Prof. Chiho Ochiai who kindly served as a co-supervisor and provided valuable suggestion and comments. I also would like to thank and sincere respect to Prof. Izuru Saizen who provided broader perspectives and useful advice in shaping this research. Without the support of them, it would not have been possible to fulfill the requirements of my doctoral dissertation.

I am very much grateful to The Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan and Kyoto University for providing an opportunity and financial supports to pursue the doctoral study in Japan.

My gratitude to Mrs. Van Lizar, the Founder of Women for the World (WfW), for giving permission and supporting the research activities in the case study areas. Special thanks to Mrs. Khine Khine Win from Pan Thazin Housing Mrs. Myat Mon from Pyit Tine Taung Housing for not only providing the useful information but also accompanying me to during the site visits and survey in Yangon. I also wish to acknowledge the support of all the community members from the housing sites who kindly cooperated in measurement survey and providing the data required for the study. In addition, I deeply appreciate the support and collaboration from Department of Urban and Housing Development (DUHD), Yangon.

Furthermore, I would like to extend sincere thanks to all the laboratory members for making my life in Kyoto more worthwhile and also to the staffs of Graduate School of Global Environmental Studies for their support and assistance. I also would like to extend my heartfelt gratitude to my parents and my sister for their encouragement and unconditional support during this journey. Lastly, my special thanks to my friends Lynn Le' Lwin, and Mya Soe Htet for helping me with my fieldworks in Yangon and Nandi Linn Thant, and Jimin Park for their continuous help and motivation to complete this doctoral study.

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	i
TABLE OF CONTENTS.....	ii
LIST OF FIGURES .....	v
LIST OF TABLES.....	vii
LIST OF ABBREVIATIONS.....	viii
EXECUTIVE SUMMARY .....	ix
CHAPTER 1. INTRODUCTION .....	1
1.1 Research Background .....	1
1.2 Problems Statement .....	3
1.3 Research Questions.....	5
1.4 Significance of Study.....	7
1.5 Research Methodology .....	7
1.5.1 Data collection and analysis methods .....	7
1.5.2 Research framework and thesis structure .....	10
References.....	13
CHAPTER 2. LITERATURE REVIEW .....	15
2.1 Urbanization and Housing Issues in Developing Countries .....	15
2.2 Theories and Concepts Related to Community-led Housing .....	16
2.2.1 Defining community-led housing .....	16
2.2.2 Different forms of community-led housing .....	17
2.2.3 Elements of community-led housing .....	18
2.2.4 Theory on housing self-modifications .....	21
2.2.5 Theory on residents' satisfaction .....	21
2.2.6 Stakeholder collaboration and their roles .....	22
2.2.7 Benefits to the dwellers and community development.....	23
2.2.8 Challenges in implementation .....	24
References.....	25
CHAPTER 3. SOCIAL HOUSING DEVELOPMENT IN YANGON.....	29
3.1 Overview of Urban Development in Yangon .....	29
3.1.1 Urban development process.....	29
3.1.2 Informal settlements .....	33
3.1.3 Socio-economic profile.....	36
3.1.4 House types and materials .....	39
3.1.5 Physical aspect of traditional Bamar (Myanmar) house.....	41
3.2 Overview of Social Housing Provision .....	42



3.2.1 Public housing strategies and approaches (1948-2020) .....	42
3.2.2 Laws and regulations .....	44
3.2.3 Administration structure .....	47
3.3 Current Situation of Social Housing Programs .....	48
3.3.1 Housing demands in Yangon.....	48
3.3.2 Housing supplies in Yangon.....	49
3.4 Limitations in Current Social Housings Implementation .....	56
3.4.1 Top-down approach - One Million Housing program .....	56
3.4.2 Grassroot approach – Community-led housing program .....	58
References.....	58
CHAPTER 4. IMPLEMENTATION PROCESS OF COMMUNITY-LED HOUSING.....	61
4.1 Research Methods.....	61
4.2 Implementation Process.....	62
4.3 Differences in Implementation Process Between Sites .....	68
4.4 Stakeholders’ Network and Their Roles.....	69
4.5 Discussions .....	73
4.5.1 Lessons learnt: Enabling elements.....	73
4.5.2 Lessons learnt: Constraints .....	76
References.....	77
CHAPTER 5. PHYSICAL CHARACTERISTICS OF COMMUNITY-LED HOUSING.....	79
5.1 Research Methods.....	79
5.2 Initial Design of Community-led Housing .....	81
5.3 Housing Self-modifications by Residents and Underlying Factors.....	81
5.3.1 Different types of housing self-modification .....	81
5.3.2 Underlying factors for self-modifications.....	88
5.4 Classification and Analysis of Housing Types.....	93
5.4.1 Type 1: One-storied stilt house with front porch .....	93
5.4.2 Type 2: One-storied house without front porch .....	95
5.4.3 Type 3: Two-storied stilt house with front porch .....	97
5.4.4 Type 4: Two-storied steel structure brick nogging house.....	97
5.5 Characteristics and Functions of Spaces.....	98
5.5.1. Indoor spaces.....	98
5.5.2 Semi-outdoor spaces.....	102
5.5.3 Outdoor and communal spaces .....	103
5.6 Discussions .....	104
5.6.1 Related to spatial characteristics .....	104
5.6.2 Problems and opportunities presented by housing modifications.....	107

References.....	108
<b>CHAPTER 6. POST-OCCUPANCY EVALUATION OF COMMUNITY-LED HOUSING ..</b>	<b>110</b>
6.1 Research Methods.....	110
6.2 Identification of Assessment Criteria .....	111
6.3 Post-occupancy Evaluation Based on Residents' Perception .....	119
6.3.1 Background information of the participants .....	119
6.3.2 Analysis of residents' satisfaction assessment .....	121
6.4 Discussions .....	126
6.4.1 Strengths and weaknesses of CLH.....	126
6.4.2 Factors influencing the residents' satisfaction .....	128
References.....	129
<b>CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>131</b>
7.1 Conclusions.....	131
7.2 Recommendations.....	134
7.2.1 Implementation framework for CLH development .....	135
7.2.2 Proposed model for CLH task force .....	135
7.2.3 Proposed working platform for housing activities .....	137
7.2.4 Proposed working group for monitoring and evaluation .....	137
7.2.5 Proposed financial mechanism.....	137
7.2.6 Suggestions for design development.....	139
7.2.7 Possible strategies for land tenure security .....	141
<b>APPENDICES .....</b>	<b>143</b>
Appendix 1. Household questionnaire survey form .....	144
Appendix 2. Information on housing modifications .....	152
Appendix 3. Site layout, floor plan and photographs .....	166
Appendix 4. Residents' perceptions about community-led housing .....	176

## LIST OF FIGURES

Figure 1.1 Trends in the proportion and number of urban slum population 2000-2018 .....	1
Figure 1.2 Global housing affordability challenge .....	2
Figure 1.3 Location map of the community-led housings .....	6
Figure 1.4 Research methodological framework and thesis structure .....	12
Figure 2.1 Housing supply spectrum .....	16
Figure 3.1 Yangon boundary under the British administration .....	29
Figure 3.2 Yangon city's townships under YCDC .....	30
Figure 3.3 Spatial growth of Yangon city.....	31
Figure 3.4 Master plan of Yangon developed by JICA .....	32
Figure 3.5 Conditions of informal settlement inside Hlaing Thar Yar township .....	34
Figure 3.6 Location of urban slum pockets in Yangon.....	34
Figure 3.7 Some of informal single room rental house in Hlaing Thar Yar township .....	36
Figure 3.8 Population forecast for Yangon under three scenarios.....	37
Figure 3.9 Population density by township in 2014 and 2040.....	38
Figure 3.10 Typical traditional Bamar (Myanmar) house .....	42
Figure 3.11 Overview of public housing strategies in Yangon (1948-2020) .....	43
Figure 3.12 Administration structure in public housing delivery .....	48
Figure 3.13 Layout plan of six units four storeyed building (Yuzana Housing) .....	51
Figure 3.14 Layout plan of eight units four storeyed building (Yuzana Housing).....	51
Figure 3.15 Yuzana low-cost housing – eight units (left), six units (right) .....	51
Figure 3.16 Location map of completed community-led housings .....	51
Figure 3.17 Housing finance access pyramid .....	57
Figure 4.1 Analytical framework for analysing implementation mechanism.....	62
Figure 4.2 Common implementation process of 11 sites.....	63
Figure 4.3 Typical initial housing design (Site 1: Pan Thazin Housing).....	66
Figure 4.4 Initial housing conditions (Site 1: Pan Thazin Housing).....	66
Figure 4.5 Changes in the community-led housing implementation process in sites 1-11.....	68
Figure 4.6 Stakeholders' network in community-led housing implementation.....	70
Figure 5.1 Location map of community-led housing.....	79
Figure 5.2 Initial housing layout and design of Site 1 and Site 2 .....	81
Figure 5.3 Front and side expansion (House no.4, Site 1).....	83
Figure 5.4 Interior perspective of House no. 4, Site 1 .....	83
Figure 5.5 Front and side expansion (House no.62 and 63, Site 2) .....	84
Figure 5.6 Interior perspective of horizontal extension in Site 2.....	84

Figure 5.7 Addition of 2nd floor (House no.18 at Site 1).....	85
Figure 5.8 Exterior and interior of House 18.....	85
Figure 5.9 Interior of modified two-storeyed house (House 18, Site 1).....	87
Figure 5.10 Changes in building elements.....	88
Figure 5.11 Correlation between household size and housing extension in Sites 1 and 2 .....	91
Figure 5.12 Housing type 1 and its related floor plans .....	94
Figure 5.13 House type 2 and its related floor plans .....	96
Figure 5.14 House type 3 and its related floor plan.....	97
Figure 5.15 House type 4 and its related floor plan.....	98
Figure 5.16 Examples of multi-functional living space.....	99
Figure 5.17 Temporary sleeping space in living room and separate sleeping space .....	100
Figure 5.18 Kitchen at the back of house .....	100
Figure 5.19 Kitchen along the corridor, at the foot of sleeping space .....	100
Figure 5.20 Dishes washing at the outdoor shower space .....	100
Figure 5.21 Squat toilet type with cover.....	101
Figure 5.22 Indoor and outdoor shower space with water storage tub.....	101
Figure 5.23 Example of front extended space used for home business activities in Site 2 .....	102
Figure 5.24 Front porch used for relaxation (left); front porch with multi-functions (middle); front porch with fence (right).....	103
Figure 5.25 Community center at Site 1 (left) and Site 2 (Right).....	103
Figure 5.26 Organization of space configurations based on field survey.....	104
Figure 6.1 Search results for literature reviews and coding.....	110
Figure 6.2 Residents' overall satisfaction scores on current community-led housing .....	122
Figure 6.3 Residents' satisfaction scores on site features .....	123
Figure 6.4 Residents' satisfaction scores on house conditions.....	124
Figure 6.5 Water flooded on walking pathway (Left) and under the houses (Right).....	124
Figure 6.6 Water logging under the houses (Left) and drain in front of houses (Right) .....	124
Figure 6.7 Residents' satisfaction scores on financial and social aspects .....	125
Figure 6.8 Residents' perceptions on housing impacts .....	126
Figure 7.1 Proposed implementation framework of CLH process .....	135
Figure 7.2 CLH task force and the activities .....	136
Figure 7.3 Proposed working platform for housing activities .....	137
Figure 7.4 Proposed working group for monitoring housing and community development.....	138
Figure 7.5 Proposed financial mechanism developed based on existing model.....	139
Figure 7.6 Proposed housing incremental development process .....	141
Figure 7.7 Proposed model of community land trust.....	142

## LIST OF TABLES

Table 1.1 List of research questions for this study .....	5
Table 1.2 Data collection and analysis matrix .....	9
Table 3.1 Distribution of informal settlement population in Yangon (as of 2016 survey).....	33
Table 3.2 Comparison of household monthly income with classification group .....	39
Table 3.3 House typologies found in urban areas of Yangon.....	40
Table 3.4 Household building materials in Yangon .....	41
Table 3.5 List of policies related to housing development .....	44
Table 3.6 Total Housing Demand for Yangon.....	49
Table 3.7 Targeted plan for One Million Housing program.....	50
Table 3.8 Size and unit price for different categories of DUHD .....	51
Table 3.9 Basic information of completed community-led housings .....	54
Table 4.1 Mortgage loan for Sites 1- 11 .....	67
Table 4.2 Roles of stakeholders involved in the process .....	72
Table 5.1 Information on the housing extension in Site 1 .....	82
Table 5.2 Information on the housing extension in Site 2 .....	82
Table 5.3 Changes of materials in Site 1 and Site 2 .....	86
Table 5.4 Modifications of building elements in Site 1 and Site 2.....	87
Table 5.5 Factors that motivate the housing modifications .....	89
Table 6.1 List of residents' satisfaction assessment criteria.....	112
Table 6.2 Residents' profile in Site 1 and Site 2 .....	120
Table 6.3 Strengths and weaknesses of current CLH practice.....	126
Table 7.1 Issues to be consider for the design of community-led housing (household level)....	140

## LIST OF ABBREVIATIONS

ACCA	Asian Coalition for Community Action
ACHR	Asian Coalition for Housing Rights
AMA	Association of Myanmar Architects
CAN	Community Architects Network
CBD	Central Business District
CBO	Community-based Organization
CDD	Community-driven Development
CHID	Construction, Housing and Infrastructure Bank
CGI	Corrugated Galvanized Iron
CLD	Community-led Development
CLH	Community-led Housing
CLT	Community Land Trust
Co-op	Cooperative
DHSHD	Department of Human Settlement and Housing Development
DPU	Department of Planning Unit
DUHD	Department of Urban and Housing Development
EPC	Electrical Power Cooperation
GDP	Gross Development Profit
JICA	Japan International Cooperation Agency
KEMF	KEB Hana Microfinance
LIG	Low Income Group
MCEA	Myanmar Construction Interrupters Association
MMK	Myanmar Kyat
NGO	Non-governmental Organization
NHB	National Housing Board
ODA	Official Development Assistance
PPP	Public Private Partnership
PVC	Polyvinyl Chloride
TOD	Transit Oriented Development
USD	U.S Dollar
WfW	Women for the World
WSG	Women Saving Group
WSDN	Women Saving and Development Network
YCDC	Yangon City Development Committee
YRG	Yangon Region Government
YTU	Yangon Technological University

## EXECUTIVE SUMMARY

Due to the urbanization and migration, Yangon city has been experiencing a shortage of affordable housing particularly for low-income people where the community-led housing has been an alternative strategy for the poor. However, as it is still in early phase, the practice was small scale, single case and not incorporated in formal planning and institution, despite have a great demand. Therefore, to upscaling the implementation, a proper understanding of current practice is required. However, little attention has paid on how the process can be involved, with which factors make a good practice work in specific context and fail in another. Therefore, it aims to study the current CLH practice for a better understanding to develop the guidelines and its specific objectives includes -

- (1) To understand the political, urban and policy contexts in social housing development of Yangon city in Myanmar
- (2) To investigate the implementation process and stakeholder analysis in CLH development
- (3) To conduct the physical study of post-occupancy stage of CLH for a better understanding of the living culture of low-income communities
- (4) To evaluate the community-led housing based on the residents' perceptions to understand the strengths and weaknesses in the current approach

In this context, the study was conducted in the community-led housings supported by local NGO, Women for the World (WfW) which is the first local NGO that implemented the community-led approach in social housing development for low-income people in Yangon. The research mainly applied the case study approach, supported with the thematic method. Data were collected using different methods such as focused-group discussion to understand the implementation mechanism, household survey to check the modification patterns, their under-lying factors and the residents' perceptions on the current housing approach and the architectural measurement survey to document the current situation of the housing units.

The results show that all the community-led housings in the case study area were developed from collective saving activities and implemented according to the principles of self-help. Overall, the procedures of the implementation process of 11 sites were remained similar but different in the stakeholders' participation that improved the financial mechanism and design development. During the implementation, the housing community played the key role while their power of control was improved from low-to-medium degree to high degree in latter projects. Other key stakeholders in the process were the Women for the World (NGO), Women Saving and Development Network and Women Saving Group. Key elements found from case study were the collective actions, flexible and localized financial tools, co-production mechanism where community control over the process and networking and self-help group that represents the community. On the other hand, it has weakness in land tenure insecurity, limited participation from government and technical experts and budget. This calls for government and technical groups to involve and highlights the need for an integrated pro-poor policy framework to ensure the community participation.

The results of physical study show that there is a wide range of modification activities that have been taking place in terms of extensions, material changes and alterations to the house

elements. The reasons behind the modifications was related to the initial limited space, deteriorating conditions and environmental factors, while it is also related to the households' changing in lifestyles and preferences. Through this modification process, new house types are emerged where the average space required for one family at initial stage was 30 sqm which could be increased up to 67 sqm after modifications. The problems found through the modifications included limited flexibility, poor indoor environmental quality and materials and decrease of outdoor space while the positive aspects are those providing better living conditions along with the social status while also creating job opportunities and a sense of ownership. The findings provides that housings are likely to be modified once the households become increased in income where the housing design should consider flexibility and adaptability for both the current conditions and future modifications.

Based on the residents' satisfaction survey, the current practice has met the satisfactions in terms of social-economic aspects and improved the communities' livelihood. On the other hand, the dissatisfactions mainly came from the lack of green space, drainage system and poor indoor environmental quality. This showed that the communities were satisfied with the current socio-economic values but not with the physical qualities even there had modified their houses. Therefore, in order to have a better housing design with current financial value, design co-production with the technical experts is necessary that optimizes on housing performance, cost, and needs.

The study shows that the community-led approach enabled the capacities and unlocked the potential of community to construct their own houses and made changes. The findings could be used as inputs for developing guidelines and frameworks for better CLH development. Such small-scale good practice can contribute to upscaling and later lead towards policy development of CLH in future.

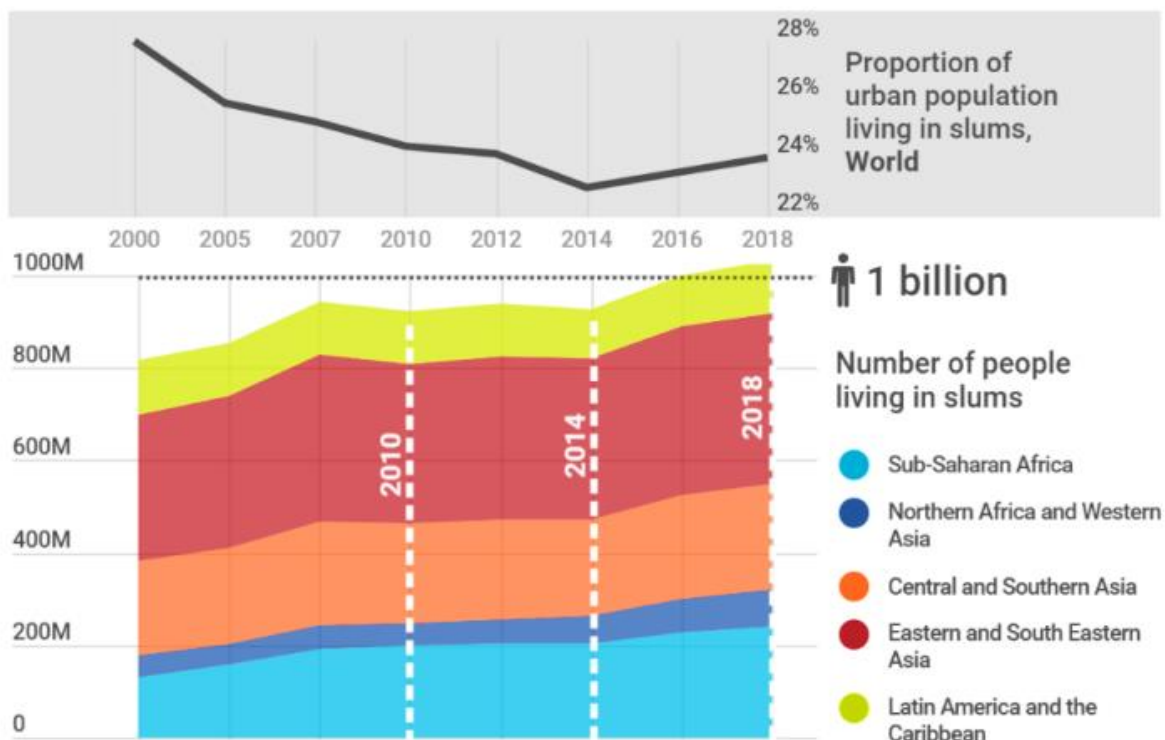


## CHAPTER 1. INTRODUCTION

This chapter provides the overview of the dissertation and covers the background and problem statement to define research originality and objective. It presents the research questions, methodology along with the introduction of case study area and how primary and secondary data were gathered. Additionally, it provides the significance of the study and a brief introduction of each thesis chapter.

### 1.1 Research Background

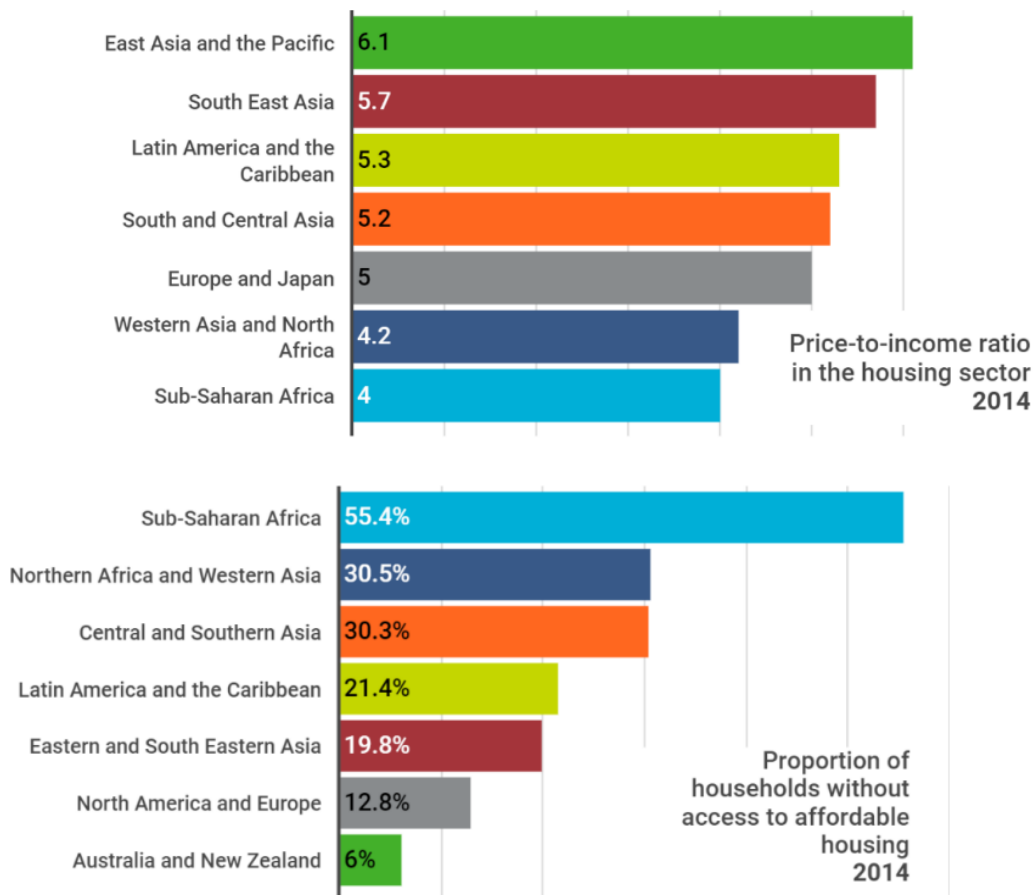
Housing is the right to everyone. It is stated in the Article 25 of the Universal Declaration of Human Rights as “Everyone has the right to a standard of living adequate for the health and well-being, of himself and of his household, including food, clothing and shelter”. Yet, there is an increase in the numbers of urban households which cannot afford even the minimal dwelling that the formal or state has to offer (UN-Habitat and UNESCAP, 2008). As of 2018, the global population living in slums exceeded 1 billion where over two-thirds of all slum dwellers live in Asian, particularly in East and Southeast Asia (Shulla and Koszeghy, 2021). According to Figure 1.1, nearly 1 out every 4 urban residents – 24% of the urban population – live in slum like housing conditions, while this figure is estimated to increase up to 50% by 2030 (UN Habitat, 2020).



Source: UN Habitat, 2020 as cited by Shulla and Koszeghy, 2021

Figure 1.1 Trends in the proportion and number of urban slum population 2000-2018

One of the reasons behind the growth of slums and informal settlements is related to the affordability of housing. According to UN-Habitat, housing is considered unaffordable if a median-priced dwelling costs more than three years of median annual income as well as if monthly housing costs exceed 30% of the household’s monthly income. Most of the countries are challenging to provide the affordable house and the average price to purchase a home could reach as high as nearly six years of average household income. As shown in Figure 1.2, the low-income countries more tend to suffer housing unaffordability where nearly one-third of the households in North Africa and Asia except East Asia faced affordability problems. Moreover, the household income is not always that leads to inaccessibility but housing supply is limited and hence expensive and in other cases, the political unrest and economic crises (UN-Habitat, 2011). Thus, access to adequate and affordable housing has become a growing concern for majorities of the cities and many are calling for the need to establish social housing to address the affordable housing shortage for urban poor.



Source: UN Habitat, 2020 as cited by Shulla and Koszeghy, 2021

Figure 1.2 Global housing affordability challenge

In this regard, the provision of complete apartment buildings – conventional social housing has been a common solution that is widely adopted in the North, the developed countries. However, this solution did not work in the South, the developing countries as effectively as the North. The reason is that these conventional social housing relied on heavily subsidized blocks of public housing flats with high standards of construction and infrastructure, zoning and

building code regulations which were rarely found in the developing countries while these apartments were not affordable for the poor as well (Mayo and Gross, 1987). In South, these housings are expensive and usually lack in flexibility and adaptability (Satterthwaite, 2001 and King et al, 2017). Turner (1972) argued that these conventionally constructed low-income housing both failed to provide the need of targeted beneficiary, urban poor, and utilize the users' own potential initiative and resources therefore, imposed a significant societal cost. Considering the above points, conventional social housing has failed to meet the demands of the poor and this calls for a paradigm shift in housing policies and design practices so that to address the growing urgency of adequate and affordable housing (Carrasco and H. Shah, 2018).

Given that conventional social housing has failed to meet the needs of a rapidly growing demands, the community-led slum upgrading alternatives have proven to be more effective. The community-led housing is a bottom-up approach that builds on the own effort and mutual help of the urban poor, and technical assistance is provided by non-governmental organizations (NGOs) or community-based organizations (CBOs) for planning, designing, self-building and self-managing permanent housing. It is a powerful tool for resource mobilization and as a learning tool for poverty alleviation because it contributes to enhance the capabilities and skills of the community (Arroyo and Astrand, 2013). Moreover, the community-led housing project are beneficial for the poor not only because of the lower investment costs than conventional housing but also build both housing and community. Therefore, the process of community-led housing is not only developing a physical space but also a positive impact on people with a better living environment and quality of life which may lead to new improvement actions and escape the poverty (Boonyabanha et al., 2012).

Sustainable urbanization needs affordable, adequate and livable housing options to respond the global rapid population, particularly in low-income housing areas of countries. To response this problem, the practices should be inclusive, holistic and empowerment while acknowledging the local culture, context and capabilities (UN-Habitat, 2015). Within this context, the research studies on the community-led housing from two perspectives – the implementation process and their physical development. It highlights the importance of community-led housing as an enabling shelter and development strategy for overcoming both housing shortage and poverty whilst contributing to building resilient communities through the lessons-learnt on the case studies.

## **1.2 Problems Statement**

The urban crisis in the developing countries is strongly connected to urban poverty and poor housing conditions (Bredenoord et al., 2010). While most people desire for the adequate housing, the conventional housing approach as well as the finance system and the policies are not adjusted to the affordability of low-income dwellers (Wallaum et al., 2012). Similar to the economic contribution through their informality, the role of urban poor is rarely recognized in urban development and they remain invisible in decision-making and planning (Rahman et al., 2016). That is why the informal settlements upgrading schemes hardly have the successful results and the problems of slum formation and upgrading have been there for many years. Thus, the housing delivery approach should be more socially inclusive and responsible by

including the urban poor, along with the experts, private organizations and the government (Salzer et al., 2016). By recognizing the urban poor and appreciating their knowledge and capabilities, such housing development interventions can lead to different forms to both home ownership and escaping the poverty (Boonyabanha et al., 2012).

Yet, there were many sceptics with respect to this self-help or community-led housing approach. Many of these community-led housing schemes remained in small scale project and rarely went beyond the rank of symbolic schemes (Bredenoord and van Lindert, 2010). One of reasons behind is the lack of pro-poor institutions where this kind of approach is never incorporated with the mainstream of planning and only regarded as the humanitarian program exercised by the international development agencies (Rahman et al., 2016). In this context, the practices of community-led housing were scattered across different NGOs and CBOs, where not every practice has the same successful results which can negatively affect the learning process by different stakeholders. Therefore, it is important to study the current practices on community-led housing to provide the lessons learnt so that can improve planning and housing practices (Baquero, 2013). Despite having an enormous potential, the community-led housing is usually overlooked and little attention has paid on how the process can be involved, with which factors make a good practice work in specific context and fail in another (Smets and Salman, 2008). These key elements or factors are important and play a crucial role in incorporating the community-led practices into formal housing institutions since local practices cannot be easily integrated from being very diverse by reflecting the housing conditions for all. This implies that a process approach is increasingly needed for community-led housing that reflect the issues like housing production, housing qualities and local knowledge of the community and professionals (Bredenoord and van Lindert, 2010).

In the city of Yangon, Myanmar, there is an urgent need of affordable housing particularly for the middle and low-income households. Due to the rapid urbanization in the city and climate change impacts to the agricultural sector, many rural dwellers have moved to the city for jobs which in turn, create a great housing shortage (Kyed, 2019). Thus, the authorities have launched the affordable and low-cost housing program in collaboration with private sector. According to the report of Asian Development Bank (2019), the program could provide only approximate 10% of annual demand, results in increasing housing prices which affects to the most vulnerable population groups and force them to live in mostly informal settlement. In the recent years, the numbers of slums in Yangon have been increasing due to large internal migration but lack of cheap housing; estimated to be more than 500,000 people, affecting to the social security and city image. Thus, in order to address these constraints and provide the urgent need of affordable housing for low-income household, inhere the informal dwellers, the local NGO, Women for the World (WfW), initiated the community-led housing (CLH) through Women Saving Group (WSG) with the women for the informal households. Though there is a great demand for CLH from increasing informal dwellers, it constitutes only a small share in the city since housing is usually regarded as the government responsibility while the prolonged embedded centralized governance system lags the use of participatory and collaborative actions in development project. However, this condition could be improved by recognizing the results of actual building practices based on the lessons of good practices and mistakes (Bredenoord, van Lindert and Smets, 2010).

In this context, there is limited knowledge available on the community-led housing implementation, its design quality and the sustainability issues specific to the case study area. Therefore, this study focuses on how the community has organized the activities together with NGO and other stakeholders in development of CLH, in the face of dismissive institutional framework. This also includes the study of physical and functional characteristics of the housing built by the occupiers, without government support. Housings like CLHs are likely to transform and these housing transformations are part of the progressive development according to Turner’s self-help housing theory. This study of transformation process provides an understanding of the way people intervene in the housing process and the relationship between spatial organization and the developmental factors of house design, that contributes to the improvement of living conditions for the residents in CLH towards sustainable development (Nguluma, 2003).

### 1.3 Research Questions

The main objective of this study is to develop a better understanding of community-led housing (CLH) that can be further develop as guidelines for improving the current practice of CLH as a development strategy to overcome poverty and build more resilient communities. Table 1.1 shows the research questions of the study. The study addresses the community-led housing from two perspectives namely (i) the implementation process and (ii) the outcomes of the process in terms of physical aspect of housing.

Table 1.1 List of research questions for this study

Themes	Research Questions
Context of social housing in Yangon	What are the <i>current situations of social housing</i> provision system for low-income households in Yangon?
Implementation process of CLH	How the <i>CLH process was implemented</i> in the cases in Yangon? Who were the <i>stakeholders involved</i> and how did they organize and control over the process? What are the <i>lessons learnt (strengths and weaknesses)</i> of CLH for scaling up?
Self-modifications and physical features of CLH	How the <i>housing units have been changed</i> so far and what were the <i>reasons</i> behind the modifications? What are the <i>spatial characteristics</i> of CLH that are reflected to the living styles of the residents?
Assessment of residents’ satisfaction	What are the <i>residents’ perceptions and satisfactions</i> on the community-led housing? What are the <i>factors that influence the residents’ satisfactions</i> on the housing qualities and performances?

Based on the research questions, the first part of the study documented the implementation process of the CLHs in Yangon which were implemented under WfW with the communities. This included whom and how the communities had worked together in the development of CLHs and examined the changes in the process between the different housing sites to provide the lessons learnt on the strengths and weaknesses of the current practice. In the second part, the physical issue was addressed by means of the study of physical characteristics and

conditions of current housing, the analysis of self-modification patterns along with their motivations and reasons and the evaluation of residential satisfaction and design preferences. This aimed to understand the housing needs and preferences of the low-income residents, including the progressive nature of the housing development. Lastly, it addressed the current practices of implementation process with the housing quality, process of housing transformation and the development of residents and communities based on the findings from previous steps to further develop the guidelines for improving the current practices in case study (Myanmar) and developing countries.

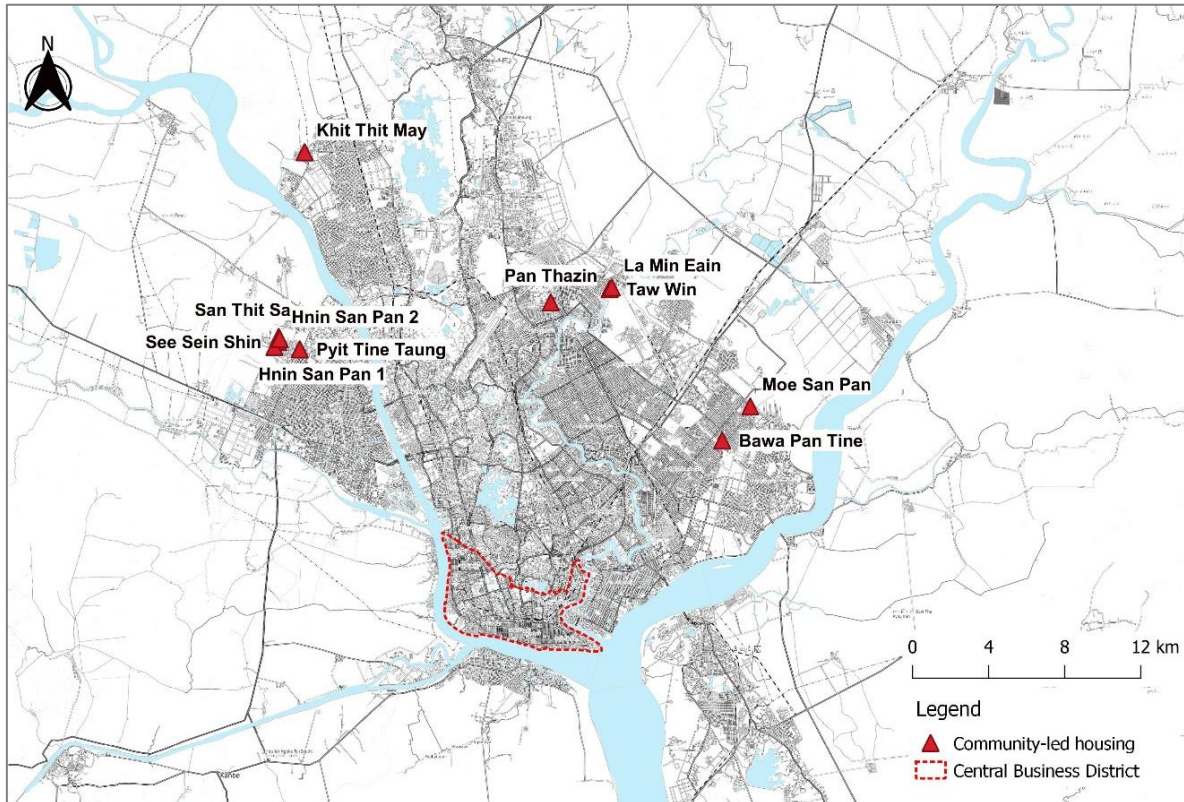


Figure 1.3 Location map of the community-led housings

First, the review of housing policies, regulations and laws were conducted at national level while the provision of public housing methods and the challenges in the system were looked at regional scale in Yangon city. Then, the study was scoped down into micro perspective as project case study level. The case study was conducted at the community-led housings, supported by WfW in Yangon, Myanmar. As shown in Figure 1.3, the housings are located at the suburban areas of Yangon namely North Okkalapar, Hlaing Thar yar, Dagon Seikkan, Shwe Pyi Thar and Shwe Paukkan townships. Regarding to Theme 1 as mentioned in Table 1.1, the study covered all the 11 community-led housings constructed between 2009-2019 under WfW without the government support. On the other hand, for the study of physical characteristics and satisfactions and preferences assessment, Site 1 (Pan Thazin Housing) and Site 2 (Pyit Tine Taung Housing) were included. These two sites are the earliest project implemented therefore, have the most cases of modifications and transformations while the

residents are more likely to provide their experiences with housing compared to other sites which were completed less than three years at the time of this research was conducted.

#### **1.4 Significance of Study**

Accomplishing this research can have potential practical and academic contributions. Firstly, the dataset of social housing on supply, demand, and policies and practices establishes the baseline information, addressing the limited academic literature on social housing in Yangon city. The objective of this study, the proposed design of sustainable social housing unit, could serve as the prototype for future self-help social housing in Myanmar, which not only reflects the sustainability, local context and budget but also adapts to future needs of extension and feasibility. This pursuant to the government aim to develop 1 million new housing units by 2030 and the development of the environmentally sustainable cities initiative was also included in the government's Twelve Point Economic Policy with the vision of establishing an economic framework that supports national reconciliation, through the balancing of sustainable natural resource mobilization and allocation across states and regions.

A better understanding of these different delivery approaches and design practices of social housing with advantages and disadvantages can provide better planning, design and management for decision-makers, designers and engineers. Moreover, including the local stakeholders, this research will offer more insight of local context and needs while improve their understanding on safe and sustainable housing and offers them a way to reach a quality but affordable house in practice. Lastly, the findings of this study contribute to the body of knowledge on the existing design practices of social housing by centering on sustainability as the combination of qualitative and quantitative factors and metrics reflecting the case study area's socio-cultural practices, its economic conditions and the region's environmental and climatic limitations.

#### **1.5 Research Methodology**

##### **1.5.1 Data collection and analysis methods**

Based on the nature of the research questions, the study employed the case-study exploratory and thematic content approaches as it aims to discover and understand the phenomenon of housing development by community themselves and the transformation process of housing by the residents over the time. Table 1.2 presents the data collection and analysis matrix for this study. Data collection methods included literature review for secondary data collection while primary data were collected through in-depth semi-structured interview, household questionnaire survey and field observation and architectural measurement as described below.

##### **(a) Secondary data review**

Secondary data are collected by obtaining and reviewing relevant documents, records, files and related studies. Through secondary data collection, the concepts and theories related to community-led housing such as self-help theory, housing transformation and residents' satisfaction are reviewed for a better understanding to develop research theme, questions and



analytical framework. Moreover, both qualitative and quantitative data of social housing policies, approaches, and their challenges were collected through the records from Department of Urban Housing and Development, Yangon and other relevant articles and reports.

Regarding to case study information, the qualitative data on the housing implementation was obtained from the technical reports from Women for the World (WfW) and Department of Planning Unit (DPU) and the information were used for background information of CLH and also in refining interview guides. Additionally, a list of satisfaction assessment criteria was collected through a systematic literature review of various peer-reviewed articles on the study of residents' satisfaction. The criteria were collected using data mining method based on physical, economic, social and impacts factors categories regarding to the residential satisfaction. These criteria are used for analysis of the residents' perceptions on the community-led housing, discussed in Chapter 6.

#### (b) In-depth semi-structured interview

In this study, in-depth semi-structured interviews were conducted to collect the data regarding to (A) current community-led housing implementation processes and practices; (B) their respective roles in the process; (C) opportunities and challenges in current system; (D) their perceptions regarding to the lessons-learned from the participation experiences and lastly (E) clarify the contents of secondary data reviewed. For the interview, the interview questions were prepared beforehand but only used for the guidance as the interviews were designed in free-dialogue form to cover the whole story of the community experiences and understand their motivation, challenges and opinions of the housing. For the sample selection, it applied a purposive sampling method and here two female community representatives from 11 sites were selected as they were more likely to recall the experience and also higher degree of participation. Other interviewees were two responsible persons from WfW to clarify the information from community representatives, where altogether 24 people were included for in-depth semi-structure interview.

#### (c) Household questionnaire survey

Questionnaire survey in this study included household survey and it was carried out together with architectural measurement. The main purpose of this household survey is to collect the data on (A) socio-economic profile; (B) to clarify the modification in the house and the reasons related to such modifications; (C) their design preferences regarding to the housing; and (D) their satisfaction or perception regarding to the housing implementation process and housing quality. The survey questionnaires were prepared in the form of a mix of closed- and open-ended form to collect data A to C as aforementioned which shown in Appendix A, while the residents' satisfaction was examined based on the physical, economic, social and impact variables, using a five-point Likert scale ranging from very dissatisfied (rated as 1) to very satisfied (rated as 5). Household questionnaire survey was conducted at Sites 1 and 2 shown in Figure 1.3 as they are the very first projects which have longer periods of stay and more cases of housing self-modifications. Regarding the sample size, the survey initially intended to cover all the housing units, however as some of the households temporarily leaving their houses from pandemic, and other personal reasons, these housing units were excluded for household



questionnaire survey. Therefore, for dataset A to C, 29 out of 30 households in Site 1 and all households were included in survey while for satisfaction assessment, only 24 out of 30 households from Site 1 and 43 out of 65 units from Site 2 could be involved due to the political situation in the country.

(d) Field observation and architectural measurement

A field observation was done to visually inspect the existing condition of social housing, features of site and its surrounding environment, and socio-economic processes in the study area. Photo documentation and field notes were also aided in this step of data collection. In addition to field observation, architectural measurement was undertaken at Sites 1 and 2 to record the architectural design, features and elements in existing community-led housing, which were later used in Chapter 5 for the analysis of spatial organization, modification patterns and changes over the years. This produced the graphic presentation of (selected) social housing in terms of site plan and floor plan of before and after modification. All housing units were observed and included in the architectural measurement survey except one unit from Site 1 due to renovation during site visit.

For data analysis, it mainly applied the descriptive analysis in which the qualitative analysis for the description and analysis of implementation process and the mixed-method analysis for the investigation of the physical features and residents’ satisfaction perception on the CLH. The detailed description on data collection and the analytical framework for each research theme/objective was described later in their own related Chapters 4, 5, and 6.

Table 1.2 Data collection and analysis matrix

<b>Theme</b>	<b>Data to be collected</b>	<b>Sources</b>	<b>Collection method</b>	<b>Analysis method</b>
Context of social housing in Yangon	<ul style="list-style-type: none"> <li>• Background urban development and formation of informal settlements</li> <li>• Housing needs in Yangon</li> <li>• Policies, approaches, and practices of social housing in Yangon</li> <li>• Challenges regarding to current social housing system</li> </ul>	<ul style="list-style-type: none"> <li>• DUHD</li> <li>• WfW</li> <li>• Published articles, reports, and dissertations</li> </ul>	<ul style="list-style-type: none"> <li>• Literature review</li> </ul>	<ul style="list-style-type: none"> <li>• Descriptive qualitative analysis</li> </ul>
Implementation process of CLH	<ul style="list-style-type: none"> <li>• Procedure and activities of community and NGO in developing CLH between different project sites</li> <li>• List of stakeholders involved and their roles and responsibilities</li> <li>• Lessons learnt and the challenges during the implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Community representatives of CLH</li> <li>• WfW</li> </ul>	<ul style="list-style-type: none"> <li>• Semi-structured interviews</li> <li>• Field observation</li> <li>• Literature review</li> </ul>	<ul style="list-style-type: none"> <li>• Descriptive thematic content method</li> </ul>

Physical features, residents, and self-modifications in CLH	<ul style="list-style-type: none"> <li>• Household profile</li> <li>• Architectural and physical characteristics of the housing</li> <li>• Self-modifications in housing and their related reasons</li> <li>• Design preferences of the residents</li> </ul>	<ul style="list-style-type: none"> <li>• Community members from housing</li> </ul>	<ul style="list-style-type: none"> <li>• Field observation</li> <li>• Architectural measurement survey</li> <li>• Household questionnaire survey</li> </ul>	<ul style="list-style-type: none"> <li>• Descriptive mixed-method analysis</li> <li>• Graphic/Drawing analysis</li> </ul>
Assessment of residents' satisfaction	<ul style="list-style-type: none"> <li>• Residents' satisfaction assessment criteria</li> <li>• Residents' satisfactions on CLH</li> </ul>	<ul style="list-style-type: none"> <li>• Published articles</li> <li>• Community members from housing</li> </ul>	<ul style="list-style-type: none"> <li>• Literature review</li> <li>• Household questionnaire survey</li> </ul>	<ul style="list-style-type: none"> <li>• Descriptive mixed-method analysis</li> </ul>

### 1.5.2 Research framework and thesis structure

Based on the research objectives and questions in Table 1.1, the framework for research methodology is developed in Figure 1.4. The research begun at the macro level by reviewing the policies and context of social housing provision in Yangon and then narrowed down by focusing on the case studies of community-led housing. As shown in Figure 1.4, the study first conducted the literature review on the emergence of community-led housing and its related concepts and theories, following with the overview of social housing development, providing the policies, regulations, housing needs and different provision approaches to understand the context of social housing development in the city. Then, the case study was conducted at the community-led housing sites to gather the information regarding the implementation process, the physical conditions and its relationship with the dwellers and the residents' perceptions on the housing. The final output is to support that the community-led housing as an enabling housing and development strategy and to provide the guidelines for the better housing development.

For this thesis, it is divided into four sections and seven chapters where each section and chapter are described as follows:

➤ Section I: Introduction and overview of social housing development

Section I contains Chapters 1, 2 and 3 where an overview of the thesis, the concepts to be applied in this study and public housing development both formal housing and community-led housing approaches are discussed.

Chapter 1: This chapter presents the background of this study including the research objectives, questions, scope and the background of case study with the research methodology.

Chapter 2: This chapter provides the literature review of the general concepts related to the community-led housing development which included the emergence and characteristics of the community-led housing from the process perspective and for product perspective, theories of housing self-modifications and residential satisfaction assessment are discussed.

Chapter 3: It first takes an overview of the urban development process and the formation of informal settlements in Yangon city. Then, it presents the social housing development with its related laws and regulations, housing needs and different approaches of social housing provision in Yangon and their challenges.

➤ Section II: Implementation of community-led housing

Chapter 4: This chapter focuses on the implementation process of community-led housing between 2009 and 2019. It detailed analyzes how the low-income households, especially the informal dwellers, organized themselves for the housing development, the relationships between stakeholders and the changes in process between different project sites. The discussion focused on the lessons learnt in terms of the practices identified as critical for successful implementation as well as the hindrance to the process.

➤ Section III: Physical characteristics of community-led housing

Chapter 5: This chapter presents the physical features of the community-led housings that carried out in earliest two project sites. This covers the initial housing design characteristics, the types of modification done by the residents and the reasons behind these self-modifications. Taken into account the modifications, it analyzes the housing typologies, materials usage, construction process and the residents' behaviors of how the houses are occupied and used for their daily activities. The design preferences of the residents are also discussed in this chapter. This aims to provide an understanding of the process of spatial growth and the relation between housing and its occupants about the changing needs and preferences.

➤ Section IV: Post-occupancy evaluation, conclusions and recommendations

Chapter 6: This chapter provides the list of evaluation criteria to assess the residents' satisfactions through a systematic literature review. Using the criteria, the satisfaction perceptions of residents from the same sites for physical studies were analyzed. This presents the strengths and weaknesses of the housing implementation in terms of physical, social, economic perspectives. Additionally, this chapter provides the discussion covering the implementation process and its impact to the housing quality, housing progressive development and lastly to the household and community development.

Chapter 7: The last chapter summarizes the findings of the entire thesis and provides recommendations for the government to improve the social housing provision, the enhanced implementation process with the roles of community, NGO, government and other support professionals and the design guidelines for the improvement of the living conditions of the residents with a safe and better built environment.

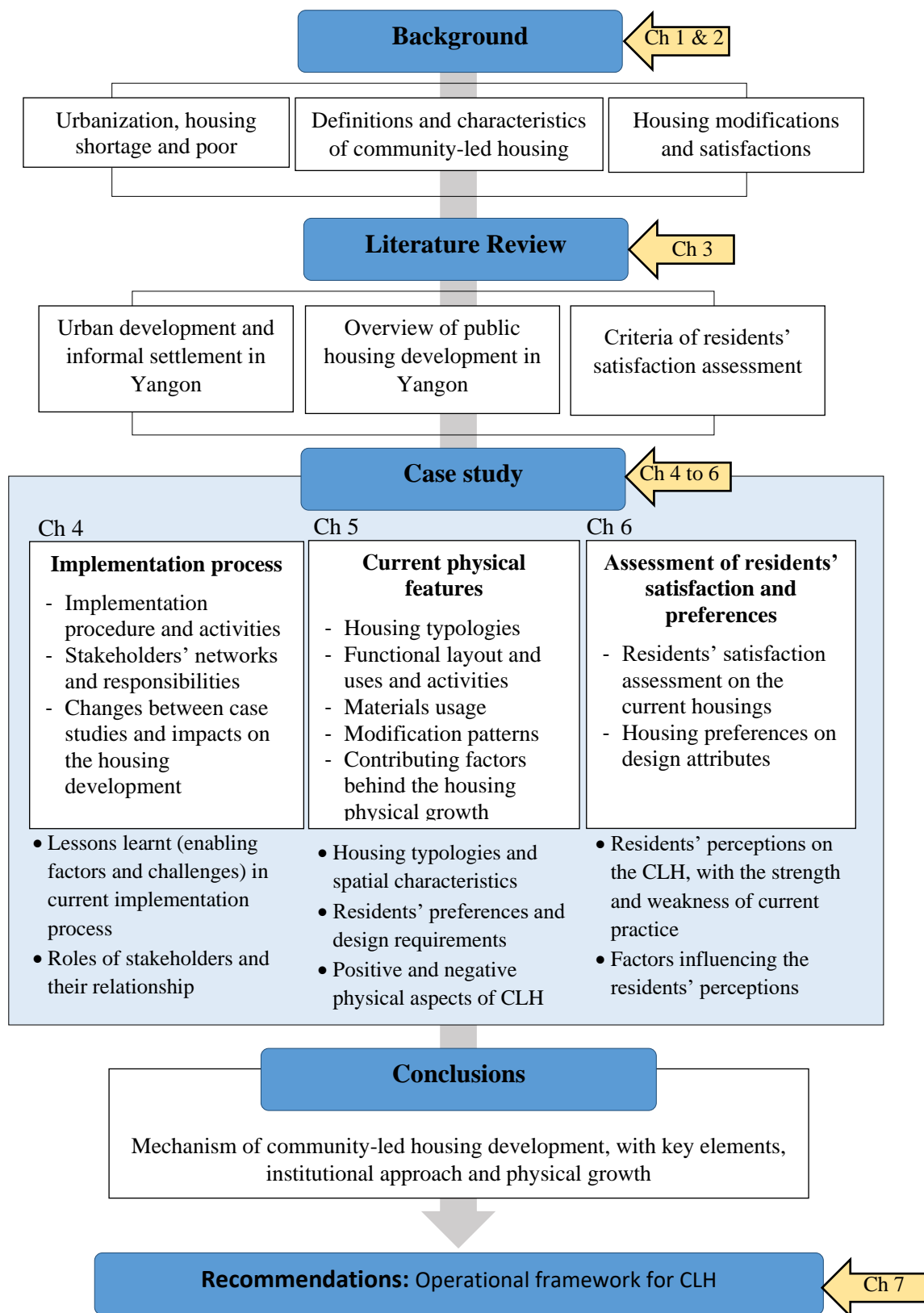


Figure 1.4 Research methodological framework and thesis structure

## References

- Arroyo, I., & Astrand, J. (2013). Organized self-help housing: lessons from practice with an international perspective. In S. Kajewski, K. Manley, & K. Hampson (Eds.), *19th International CIB World Building Congress*. [https://www.irbnet.de/daten/iconda/CIB\\_DC27382.pdf](https://www.irbnet.de/daten/iconda/CIB_DC27382.pdf)
- Asian Development Bank (ADB). (2019). Financing affordable housing in Yangon. Manila: Asian Development Bank.
- Baquero, I. A. (2013). *Organized self-help housing as an enabling shelter development strategy: Lessons from current practice, institutional approaches and projects in development countries*. Thesis submitted to Lund University. [https://www.hdm.lth.se/fileadmin/hdm/Publications/9\\_Organized\\_self-help\\_housing\\_as\\_an\\_enabling\\_shelter\\_\\_\\_development\\_strategy.pdf](https://www.hdm.lth.se/fileadmin/hdm/Publications/9_Organized_self-help_housing_as_an_enabling_shelter___development_strategy.pdf)
- Boonyabancha, S., Carcellar, F. N., & Kerr, T. (2012). How poor communities are paving their own pathways to freedom. *Environment and Urbanization*, 24(2), 441–462.
- Bredenoord, J., & van Lindert, P. (2010). Pro-poor housing policies: Rethinking the potential of assisted self-help housing. *Habitat International*, 34(3), 278–287.
- Bredenoord, J., van Lindert, P., & Smets, P. (2010). Equal access to shelter: Coping with the urban crisis by supporting self-help housing. *Habitat International*, 34(3), 274–277.
- Carrasco, B., & H. Shah, S. A. (2018, February). How to address the lack of affordable housing in Asia. Retrieved from <https://blogs.adb.org/print/blog/how-address-lack-affordable-housing-asia>
- King, R., et al. (2017). Confronting the urban housing crisis in the Global South: Adequate, secure, and affordable housing (Working paper). Washington DC: World Resources Institute. Accessed from <https://www.wri.org/research/confronting-urban-housing-crisis-global-south-adequate-secure-and-affordable-housing>
- Kyed, H. M. (2019). Informal settlements and migrant challenges in Yangon. *Moussons*, 33, 65-94.
- Mayo, S.K., & Gross, D.J. (1987). Sites and services - and subsidies: the economics of low-cost housing in developing countries. *The World Bank Economic Review*, 1, 301-335.
- Nguluma, H.M. (2003). Housing themselves: Transformations, modernization and spatial qualities in informal Settlements in Dar es Salaam, Tanzania. Doctoral thesis submitted to KTH Royal Institute of Technology, Stockholm, Sweden.
- Rahman, M. A. U., Hossain, M. Z., & Kabir, M. E. (2016). Operationalizing community-led housing in practice: Lessons from Bangkok, Thailand and Mumbai, India. *International Journal of Sustainable Built Environment*, 5(2), 564–578. <https://doi.org/10.1016/j.ijbsbe.2016.05.002>
- Smets, P., & Salman, T. (2008). Countering urban segregation: theoretical and policy innovations from around the globe. *Urban Studies*, 45(7), 1307e1332.

- Salzer, C., Wallbaum, H., López, L.F., & Kouyoumji, J. (2016). Sustainability of social housing in Asia: A holistic multi-perspective development process for bamboo-based construction in the Philippines. *Sustainability*, 8, 151.
- Satterthwaite, D. (2001). From professionally driven to people-driven poverty reduction: Reflections on the role of Shack/Slum Dwellers International. *Environment & Urbanization*, 13(2), 135–138. <https://doi.org/10.1177/095624780101300210>
- Shulla, K., and Koszeghy, L. (2021). Progress report: Sustainable development goal 11 (Target 11.1). Washington DC: Habitat for Humanity International. Accessed from [https://www.habitat.org/sites/default/files/documents/SDG%20Progress%20Report\\_0.pdf](https://www.habitat.org/sites/default/files/documents/SDG%20Progress%20Report_0.pdf)
- Turner, J. (1972). Housing as a verb. In Turner, J., and Fichter, R. (Eds). *Freedom to Build: Dweller Control of the Housing Process*. New York: Collier-Macmillan.
- UN-Habitat and UNESCAP. (2008). Quick guides for policy makers: Housing the poor in Asian cities. Thailand: United Nations Economic and Social Commission for Asia and the Pacific and Kenya: United Nations Human Settlements Programme.
- UN-Habitat. (2011). Affordable land and housing in Asia. Nairobi, Kenya: United Nations Human Settlements Programme.
- UN-Habitat. (2015). Green building interventions for social housing. Nairobi, Kenya: United Nations Human Settlements Programme.
- UN-Habitat. (2020). World cities report 2020: The value of sustainable urbanization. Nairobi, Kenya: United Nations Human Settlements Programme.
- Wallaum, H., Ostermeyer, Y., Salzer, C., and Zea Escamilla, E. (2012). Indicator based sustainability assessment tool for affordable housing construction technologies. *Ecological Indicators*, 18, 353-364.

## CHAPTER 2. LITERATURE REVIEW

This chapter provides the literature review of the concepts and theories related to community-led housing production and post-occupancy process. It begun with the impacts of urbanization on the housing of urban poor to the evolution of community-led housing with its key elements and characteristics. Additionally, it discusses on the theories of housing self-modifications and residents' satisfactions of housing.

### 2.1 Urbanization and Housing Issues in Developing Countries

Housing is critical for physical and financial security, economic productivity, healthy communities, and human well-being; however, the housing gap is enormous and expanding. In the global South, nearly one-third of the urban population lives in informal settlements, where people often lack access to essential utilities like power, running water, and sanitation (Gilbert, 2000a). The global affordable housing shortage is estimated to be 330 million urban families, with this number expected to rise to 440 million households, or 1.6 billion people, by 2025. Many cities have tried to handle the problem by enticing or forcing citizens to relocate to the outskirts, but this method has often backfired because people are cut off from social networks and job prospects (King et al., 2017).

It is critical to address the lack of appropriate, secure, and affordable housing in and around the city in order to improve equity, economic productivity, and environmental sustainability. This translates to a higher standard of living and better equality of opportunity, resulting in a more dynamic and just community. Failure to provide enough water, transportation, solid waste collection, and sewerage systems endangers the health of all urban residents, particularly the poor, and lowers business activity (King et al., 2017).

If there are not enough inexpensive housing options in well-served places, more impoverished people will be compelled to reside in remote areas far from infrastructure, social networks, and current jobs, resulting in longer commute times and higher costs (King et al., 2017). As long as there is widespread poverty, decent housing for all will never be assured. Simultaneously, sensible policies can aid in the alleviation of housing issues. It is critical to eliminate biases in official policy, such as redirecting incentives from the wealthy to the poor and eliminating needless land-use and building laws. More should be done to boost disadvantaged families' prospects of contributing to their own housing solutions. It would be beneficial to make land more accessible, ensure that building supplies are not overpriced, and that the land is equipped with essential utilities (Gilbert, 2000b).

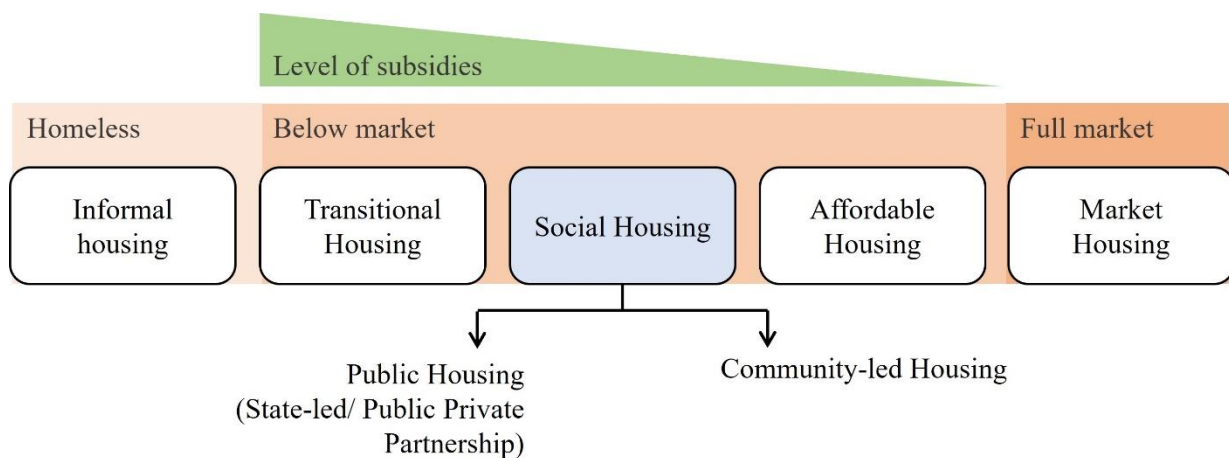
The solution to the housing crisis lies in allowing all stakeholders to participate in housing provision, including the government, non-governmental organizations, multilateral agencies, and the general public. The engagement of the urban poor in the provision of housing for the poor, where they are essential actors in creating housing programs that best serve the urban poor, is critical in the entire process (Average, 2019). In order to ensure housing supply in a large section of the developing world, public housing policies and execution have relied on a top-to-bottom strategy. However, state institutions, occasionally aided by international NGOs, have failed to meet the housing demand, particularly for low-income residents. Even when

users are participating, such as in a slum dwellers association, the process is largely controlled by the government. While the government and public institutions have had limited success in providing housing for the poorest members of society, the people have fared better in housing production (Jaiyeoba and Asojo, 2020).

## 2.2 Theories and Concepts Related to Community-led Housing

### 2.2.1 Defining community-led housing

One of key strategy to address the affordable housing shortage for low-income household is providing the social housing. According to Hansson and Lundgren (2019), social housing is defined as “social housing if and only if it is a system providing long-term housing to a group of households specified only by their limited financial resources, by means of a distribution system and subsidies”. According to the definition, social housing is non-market housing that is provided to households with limited financial resources at below-market rate, with some form of public or private financial support. Under social housing, there are generally two types of housing depending on the level of community participation namely - public housing which is state-led and community-led housing. State-led public housing is the conventional delivery approach where the local government, sometimes in collaboration with private sector, constructed and provided to the certain households at low cost and subsidies, for example – Singapore Housing and Development Board (HDB) Flat. Figure 2.1 shows the housing supply spectrum – from informal settlements to full market housing.



Source: Modified from European Construction Sector Observatory, 2019

Figure 2.1 Housing supply spectrum

The first step of the community-led housing was begun from the idea of self-help housing by John Turner in 1970s. In his theory, he proposed to provide the power of control to the people that included the self-management, organization, and collaboration that people practiced in their development of informal settlements while also reflecting their values, cultures, and everyday practices of lives (Turner, 1968). Though it was criticized for the reliance on subsidies and exclusion of private sector, it had changed the government’s role as an enabler rather than provider while community was included in development process (Ward, 2012; Harris, 2003). Around 1980s, this process was modified as a right-based approach with the



collective intent of urban poor and new community tools were developed to encourage community involvement and capacities, contributing to the community-led approach in housing (Rahman et al., 2016; Jenkins et al., 2007).

Though there is no common definition of CLH, it is generally bottom-up approach that makes use of community existing capacities, along with assistances from NGO and other stakeholders. As the concept can be different depending on the context and organization, its core principles lie on the community-led development that places citizens at the center of process to make the changes in the way in which a community functions (Torjman and Makhoul, 2012). This approach uses the practices of empowerment, mutual learning and consensus building to create bottom-up citizen-driven change. A large and diverse number of community members are involved in the process while holding the power and making key decisions for the work conducted by themselves (Wessells, 2018). In this context, the power of organizations, either non-profit or state, is shifted and they act as catalysts or intermediaries to initiate community-led approaches (Attygalle, 2020).

By applying community-led approach in housing development, it can provide affordable, and socially cohesive housing that can strengthen communities and provide substance to the localism agenda centered on equality and fairness through building social capital and active citizen engagement (Lang, Chatterton and Mullins, 2019).

### 2.2.2 Different forms of community-led housing

Based on the CLH approach in UK, USA, Australia, Germany, France, Netherlands, Denmark, and Sweden, it is found that the CLH can be in different forms that include as cohousing, community land trusts (CLTs), housing cooperatives, and other self-help and self-build housing (Lang, Chatterton and Mullins, 2019).

- **Cohousing** is a way of making a community. Cohousing is when a group of people work together to build a community that follows a set of rules. Most of the time, these values are linked to a shared idea of how to live in a certain way. Most of the time, the principles are about living in a way that brings people together, makes them care about each other, and is good for the environment. Even though cohousing is about living together, residents live in their own homes, which are surrounded by places where they can get together, eat, and share resources.
- A **community land trust (CLT)** is a non-profit group made up of residents of the neighborhood. CLTs can be used by communities to build, renovate, or protect important infrastructure and services. Despite the fact that community land trusts can be used for a number of purposes, they are most frequently used to guarantee long-term housing affordability. The trust purchases the land and maintains perpetual ownership of it to do this and engages into a long-term, renewable lease with potential homeowners. However, the family only gets a portion of the home's increased worth when it's sold, while the rest is held by the trust to make it affordable for upcoming low- to middle-income families.
- A **housing cooperative**, sometimes referred to as a "co-op," is a form of residential housing alternative wherein the owners do not own their properties outright. Instead, each resident is

a stakeholder in the corporation, with their share of ownership dependent in part on the size of the unit they live in. Instead of owning their unit entirely as in a condominium, co-op owners hold shares in the cooperative. Certain co-ops permit owners to sell their co-op shares on the open market, subject to the co-op board's permission, based on the market pricing for co-ops in that locality.

Co-ops must follow fair housing standards; however ownership restrictions may be stricter than other housing options. Partners set the criteria for buying partnership shares because there is no landlord or renter. Prospective buyers may need to meet net worth or debt-to-income ratio standards in addition to proving they can afford the co-op purchase. Verification may be required. Some co-ops are aimed at elders or other groups. These higher ownership conditions add security and exclusivity to co-op ownership. Co-ops are more restrictive than condos because of their exclusivity. Luxury condos may ban subleasing. Each partner pays operating costs.

- **Self-help** has been used to refer to low-income households that participate in the construction of their own dwellings. The primary distinction between self-help and conventional housing is that self-help dwellings can be occupied prior to completion. Self-help housing has the benefit of being adaptable, allowing the poor to grow their homes over time. The urban poor may progressively improve their homes since they will incur cheaper labour expenses than with traditional housing, as they will spend their own labour in the development process. Additionally, it has been recognized for its potential for social and communal development.

### 2.2.3 Elements of community-led housing

Following the establishment of an enabling strategy to housing the urban poor, government and international agency programs have met with limited success. Perhaps the reason for this low success rate is a result of the urban poor's lack of control over several variables such as idea, location, design, resource mobilization, finance, implementation and administration, and assessment (Satterthwaite, 2001). To solve the issues, many connected approaches for implementing community-led housing programs are used. In reality, these methods are viewed as the primary components of community-led housing, which may be roughly classified as follows but not limited to collective actions, community participation and dweller control, progressive development, representativeness and networking, common savings and financing, participatory design, communal ownership, and participatory monitoring and assessment.

- Representation and networking

In the literature on community engagement in development, a 'community is defined as a collection of individuals who share broad development goals; their behaviour and relationships are structured by rules designed to foster solidarity; and those who do not belong are excluded' (Kumar, 2003). Community representation is critical for community-led housing programs. But for this to happen, urban poor groups must acquire the skills and political support needed to create representative organizations that can function both locally and nationally as well as internationally (Satterthwaite, 2001). The self-help group is the most basic form of community

representation. It is linked to a local, national, and international network of analogous groups of people working on related issues in various settings. Such self-help group can create the opportunity to raise the voices of community members to the legal authority (Satterthwaite, 2001). Additionally, the network of self-help organizations on a national and international scale offers a learning opportunity for finding more innovative and sustainable approaches to change the housing process (see Boonyabancha, 2005, Burra, 2005, Hasan, 2006). Moreover, community's representativeness and networking can foster the ability to form "bonds" within one's own group and "bridges" to other groups in order to work collaboratively for the mutual benefit of both individuals and groups and helps build the social capital (Mansuri and Rao, 2004).

- Community participation and dweller control

Participation in a community refers to involvement by both the community as a whole and its individual individuals. In the latter scenario, the phrases "public involvement" or "people's participation" appear more correct but lack the positive connotation of "community." Active community engagement is essential for the development of an empowered community. Participation of the community in housing procedures may help to promote and preserve local culture, custom, expertise, and skill, as well as instil pride in the community's legacy (Lacy et al., 2002). It is one of the procedures used to enable people to participate in home building. Increased involvement is a way of achieving development in order to alleviate the housing problem, which is a huge challenge for the majority of the globe, particularly emerging countries.

Because time and money in development projects are strongly correlated, using participation as a means to a goal creates a time-consuming process that can drive up the cost of project as a whole (Moatasim, 2005). Moreover, governments are also reluctant to change their paternalistic approach to decision-making by their fear of uncontrolled empowerment of people and a lack of faith in their capacity to make educated decisions. The only way to get around this is to consider involvement in a larger context and balance its benefits and disadvantages.

- Collective actions

Collective action is described as a "...wide spectrum of social phenomena in which social actors participate in shared actions to seek and/or provide collective goods" (Friedmann, 1987). Based on the cases, the collective actions in CLH could be found in the form of financial model, design development and land ownership.

Collective savings and financial mixing: Community-managed collective savings is fundamental in developing a resource basis for community-led housing, while connecting it with financial institutions can expand the capital for long-term growth. Through collective saving activities, individuals can build a community and learn to make collective decisions. The main financial sources of community-led housing projects come from collective savings and other includes government grants and subsidies, commercial loans, and international aid and contributions. In here, representation and networking are key to growing to expand the diversities of financing tools (Boonyabancha, 2001).

Design co-production: Housing provides livelihood chances for the urban poor in most emerging nations. From the cases of Boonyabanha (2005), Burra (2005) and Hasan (2006), community-led housing allows communities to participate and design their own housing design and construction. When a community takes part in the design process, it increases human capital where people feel more in control of their lives, all while having more opportunities to earn money (Arnstein, 1969). The participatory design method uses the practical research to provide mutual learning and the community training that impacts knowledge capital. Moreover, participatory design processes ensure the affordability and gender inclusive (Boonyabanha, 2008). However, it is hindered by a lack of building standards and authorities' consent for the construction approval. Such conflicting regulations and common standards can limit the participation and housing costs.

Shared ownership: To secure the land is one of the key challenges for the urban poor and inhere, collective land tenure functions as a crucial mechanism that ties together poor households in a community, hence discouraging the influx of more affluent buyers and providing a buffer against the disruptive effects of market forces (Boonyabanha, 2008). Community-led housing ensures official entitlement while opens other opportunities towards creating enabling policy environment and upscaling (Payne, 2002). With community-led housing, collective entitlement gives a sense of citizenship as people's housing becomes more formalized, putting slum dwellers into the forefront. Another important aspect of collective ownership is the ability to prevent house sales, as subsidized housing bonds community members. Community ownership is criticized for not ensuring long-term steady capital investment, however individual titling can overcome this limitation after shared debt repayment (Rahman et al., 2016).

- Monitoring and evaluation with participation

Participatory monitoring and evaluation mechanisms consider the community's different needs. This is the most effective technique to engage individuals in revitalizing the community's managerial capabilities. Participatory monitoring and evaluation fosters community engagement with government agencies in order to improve service delivery in the housing process. Participatory monitoring and evaluation improve the efficiency and accountability of community-led housing projects and programs. The major components of participatory monitoring and evaluation include conducting an observatory survey, collecting and organizing data, forming groups, and communicating with the many agencies engaged in the housing process. A critical component of such a participatory process is the incorporation of intermediaries for influencing government entities and the capacity building of a community to conduct surveys and analyze results. Thus, NGOs play a critical role in the majority of community-led housing programs and initiatives (see Boonyabanha, 2005, Burra, 2005, Hasan, 2006). However, participatory monitoring and evaluation mechanisms are increasing the urban poor's social and institutional power.

#### 2.2.4 Theory on housing self-modifications

A home's transformation is described as “change or extension involving building activities and utilising local materials and technology” (Tipple, 1991). His analysis excludes several acts that may be deemed change. Repainting, altering door and window frames, hanging curtains to partition rooms, and rearranging furniture are examples. A family's happiness and affiliation with their home is enhanced when these changes occur. However, alterations are described as “internal adjustments to the unit layout without affecting the total net floor area” (Tipple, 1991). According to Kallus and Dychtwald (2010), the budget limitation from initial housing design conditions lead to the residents to invest in modifications and extensions later.

According to a research of user-initiated house additions and modifications, low-income families may create extra rooms and services to improve their own living conditions and provide family members free or cheap housing (Tipple, 2004). Most of the time, the quality of these modifications is the same as or better than that of the old ones (Salama, 1995). Some of the reasons behind such self-modifications are the need to adapt to changing family structures, socioeconomic situations, new technologies, and new ways of living.

On the other hand, homeowner-initiated house extensions that are not subject to any form of design oversight may have an effect on the urban environment and may potentially limit the freedom of movement or usage. Therefore, user-initiated housing extensions should be planned carefully with the design control for the ratio of private, public and communal spaces as the residents always want to maximize their area of housing unit (Kallus and Dychtwald, 2010). Understanding potential limitations on an individual's ability to construct his or her own domain can be aided by the perspective that users take with regard to the effect that their personal renovations have on the urban environment.

#### 2.2.5 Theory on residents' satisfaction

Residential satisfaction evaluations are used for a variety of purposes, including evaluating residents' current housing conditions, needs, preferences, as well as their quality of life and the success or failure of housing projects and project quality. It also provide how residents adapt and transform to their houses and mobility behaviours (Ibem and Aduwo, 2013; Mohit and Azim, 2012).

Despite the fact that the other stakeholders may have different opinions about the housing satisfactions, the assessment provides a better understanding of residents' perceptions on how and what conditions and factors make both the satisfactions and dissatisfactions. Such information of this sort is crucial in guiding housing policy and development initiatives (Ibem and Aduwo, 2013).

Most house satisfaction studies employ the purposive or actual-aspiration gap methods. In the purposive approach, residents are considered as having goals and particular aims, and the amount which the house facilitates such goals is seen as an indicator of residential satisfaction. People buy property with the notion that it would help them achieve their objectives. They consider their houses as an asset that may help them realize their life's purpose. In actual-

aspiration method, the satisfaction is done based on the “standards” by referring to their needs, experiences, and aspirations. People tend to evaluate their living situations based on their "ideal standard" and if their housing condition is similar to or better than the reference state, they are happier. The actual-aspiration gap approach measures home satisfaction by comparing what people desire and aspire to have with what they have (Ibem and Aduwo, 2013; Mohit and Azim, 2012).

#### 2.2.6 Stakeholder collaboration and their roles

Community involvement has often been overlooked when it comes to the urban poor. Public participation in housing planning and design is often the outcome of importing western planning laws or international organisations sponsoring programs and initiatives. Policies aimed at providing shelter for higher and middle-income people by boosting housing stock in places where affordability is a key issue have impacted the majority of state initiatives (Jenkins et al., 2007). Urban poor housing is often limited to site-and-service plans under the program of slum upgrading, with service provision taking precedence over built environment, tenure security, and home quality. However, the resources are often limited, and decisions are always impacted by disputed indirect variables like the community's power relations with the local elected representative and the elected representative's standing within the administrative system. In fact, it is common that the community participation is often neglected in housing planning.

Recognizing the need for community engagement, community-led housing which is based on Turner's self-help theory, encourages the community participation and involvement in the housing process. This changes the role of community as the key actors in decision-making while the state become an enabler rather than a provider. This experience of community participation builds the community organizations, that are connected under city-wide community network help to assist and connect other stakeholders in their cities or districts (Boonyabancha, 2008). It is also to note that the level of community participation in the process depends upon the capacities of urban poor and political space necessary to form representative organisations capable of operating at the national and international levels, as well as inside their own communities (Mitlin, 2008).

Numerous studies emphasize the significance of participation, democracy, and local governance to extend and continue the community activities in the place-based community development initiatives (Engelsman et al., 2018). Incorporating the ideas of social capital theory into the community-led approach can add a better understanding of the varied nature of relationships between individuals in the scaling-up the initiative (Canils and Romijn 2008). Despite the absence of a standardized definition, academics believe that, on a broad level, social capital refers to resources held in networks that may be mobilized through social interactions and may result in potential benefits for players (Brunie, 2009). A synthesis of the bonding, bridging, and linking parts of social capital can give a fuller picture of grassroots niche creation and effective niche expansion (Osborne et al., 2016). In contrast to overly individualistic and localized approaches to social innovation (Gibbs and O'Neill, 2014), a social capital approach that considers the larger institutional context helps to avoid overlooking

the multiple factors at work in socio-technical transitions and incorporates the role of stakeholders and intermediaries at the national, local, and niche levels.

Mullins (2018) emphasises the focus of self-help housing initiatives on responding to local communities' housing, job, and training requirements through housing-led action to provide a wide range of community benefits. Self-help housing groups were successful in areas where they could create resources through external collaborations, notably with local governments and socially conscious investors. Czischke (2018) expands on the idea of collaborative partnership by describing the essence of collaborative housing forms as co-production via multi-stakeholder cooperation.' Her paper details the patterns of co-production between state, market, and civil society actors, using case studies to identify primary and secondary stakeholders – often acting on the boundaries between the market and civil society – without whom community-led and self-help projects may have struggled to succeed. State encouragement, financial assistance, and preferential treatment are crucial to the creation, development, and sustainability of various types of housing supply. Access to capital and land are the most crucial challenges that self-organised housing faces, especially in the early phases of development, and these barriers can be compounded when there is no legal or regulatory recognition for these sorts of organizations. As a result, sector promotion tactics frequently rely on winning state assistance, with varying degrees of success, as Mullins (2018) shows in the example of recent financing programs in England for self-help housing (2012-15) and the Community Housing Fund (2016-21).

#### 2.2.7 Benefits to the dwellers and community development

Community-led development is a holistic approach to development that emphasises participation, empowerment, and social capital. The majority of empirical research demonstrates that community-led housing programs are beneficial for long-term sustainability because they consider impoverished people's potential through institutional capacity, social networking, and collective and attitude change (Boonyabanha, 2005, Burra, 2005, Hasan, 2006). Community-led programs can improve sustainability, efficiency, and effectiveness while also ensuring that disadvantaged and vulnerable groups are included, positive social capital is built, and they have a stronger voice in their communities and with government bodies (Dongier et al., 2002).

Poor communities have been able to organise more sophisticatedly as a result of community-led housing, exchanging information, experience, and resources previously unavailable to individuals without political or socioeconomic status (Lemanski, 2008). Community-led housing, on the other hand, fosters collaboration among the various actors participating in a city's housing process by providing a voice for the voiceless. The housing process improves the community's technical skill, which has a multiplier impact in terms of social and technical capital for increased livelihood options. However, via the federated engagement of the urban poor, community-led housing is a movement that makes the invisible visible and will reshape future policy frameworks to be far more pro-poor (Boonyabanha, 2008).

Community-led programs are frequently chastised for a lack of local technical expertise and the difficulty of scaling up. Furthermore, the community's struggle to establish itself collectively

over time ties pre-development community diversity to subsequent exclusion from the development process, as well as ongoing post-development community consolidation issues (Lemanski, 2008). However, social networking and institutional links at the local, national, and international levels can help scale up technical competence while also providing financial aid in the form of blending finance (additional financial assistance combined with community savings). The issue of community-diversity is the power of decision-making since it permits stakeholders to explain cooperative conflict. The diversity problem emerges in community-driven programs where the programs and initiatives are subsidized from outside, whereas in community-led programs, diversity is crucial for community trade-off. As a consequence, community-led development will ensure equity in the formulation of a long-term solution.

#### 2.2.8 Challenges in implementation

The main issue encountered in the process of providing housing for the urban poor was the issue of legality. Slum dwellers are frequently labelled as "illegal" and their settlements as "informal," and this legal definition of a group of people obstructs development efforts (Rahman et al., 2016). Despite the fact that informal housing plays an essential part in urban economies, there is little acknowledgement or action for assuring access to services and infrastructure, including housing and land rights (Balbo, 1993). Furthermore, the shift toward informality reduces the political representation of the urban poor, which has an impact on the democratic feature of development as a political process (Balbo, 1993).

Participation has been incorporated as an ingredient in most of the programs for housing the urban poor on a program and project basis to support local initiatives on a micro scale to promote greater coordination and sustainability in projects (Hamdi and Goethert, 1997). The willingness and commitment of the many actors participating in such processes is viewed as the key difficulty affecting the participation of the urban poor in various pro-poor housing programs (Balbo, 1993). Aside from this issue, the institutional framework is a significant predictor of the amount of engagement of the urban poor (Levy, 2007). Because the 'power of control' is often foreign to the urban poor, participation potentials are hampered by a lack of mobilisation and awareness-raising initiatives (Lemanski, 2008). Thus, the discourse of community participation has a two-fold nature: on the one hand, at the institutional level, where the institutional framework and eagerness of the actors ascertain the level of participation; and on the other hand, at the level of representation, where the capabilities of the urban poor determine their representation.

Another key issue for housing the urban poor is the scarcity and escalating price of land in metropolitan regions. In all developing countries, competition for safe, maintained land is increasing as a result of rapid urbanisation, putting undue on existing tenure systems and mandating governments to develop policies that encourage efficient land use and improve access to it, particularly for the urban poor (Payne, 2002). Individual, disadvantaged households in a community are said to be held together as a group by collective land tenure, which can slow down the penetration of better-off buyers and act as a protective buffer against market forces (Boonyabanha, 2008).



## References

- Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Planning Association*, 35(4), 216–224.
- Attygalle, L. (2020). *Understanding community-led approaches to community change*. Canada: Tamarack Institute. <https://www.tamarackcommunity.ca/hubfs/Resources/Publications/2020%20PAPER%20%7C%20Understanding%20Community-Led%20Approaches.pdf?hsCtaTracking=15a5334b-43c5-4723-8e97-8e3553f0e40a%7Cc3943068-2f66-42fc-841c-04112489389e>
- Average, C. (2019). Low-income housing problems and low-income housing solutions: Opportunities and challenges in Bulawayo. *Journal of Housing and the Built Environment*, 34(3), 927–938.
- Balbo, M. (1993). Urban planning and the fragmented city of developing countries. *Third World Planning Review*, 15(1), 23-35.
- Boonyabancha, S. (2001). Savings and loans: Drawing lessons from some experiences in Asia. *Environment and Urbanization*, 13(2), 9–21.
- Boonyabancha, S. (2005). Baan Mankong: Going to scale with “slum” and squatter upgrading in Thailand. *Environment and Urbanization*, 17(1), 21–46.
- Boonyabancha, S. (2008). Upgrading Thailand’s urban settlements: A community-driven process of social development. In A. A. Dani & C. Moser (Eds.), *Assets, Livelihoods, and Social policy*. Washington DC: World Bank.
- Brunie, A. (2009). Meaningful distinctions within a concept: Relational, collective, and generalized social capital. *Social Science Research*, 38(2), 251–265.
- Burra, S. (2005). Towards a pro-poor framework for slum upgrading in Mumbai, India. *Environment and Urbanization*, 17(1), 67–88.
- Caniëls, M. C. J., & Romijn, H. A. (2008). Strategic niche management: towards a policy tool for sustainable development. *Technology Analysis & Strategic Management*, 20(2), 245 – 266.
- Czischke, D. (2018). Collaborative housing and housing providers: Towards an analytical framework of multi-stakeholder collaboration in housing co-production. *International Journal of Housing Policy*, 18(1), 55–81.
- Dongier, P., et al. (2002). Community-driven development. In J. Klugman, (Ed.), *A Sourcebook for Poverty Reduction Strategies*. Washington DC: World Bank. [https://web.worldbank.org/archive/website00518/WEB/PDF/CDD\\_CHAP.PDF](https://web.worldbank.org/archive/website00518/WEB/PDF/CDD_CHAP.PDF)
- Engelsman, U., Rowe, M., & Southern, A. (2018). Community land trusts, affordable housing and community organising in low-income neighbourhoods. *International Journal of Housing Policy*, 18(1), 103–123.

- European Construction Sector Observatory. (2019). *Housing affordability and sustainability in the EU*. PricewaterhouseCoopers Société cooperative.
- Friedmann, J. (1987). Planning in the Public Domain: From Knowledge to Action. *Princeton University Press*, 3–85.
- Gibbs, D., & O'Neill, K. (2014). Rethinking sociotechnical transitions and green entrepreneurship: The potential for transformative change in the green building sector. *Environment and Planning A*, 46(5), 1088–1107.
- Gilbert, A. (2000a). Financing self-help housing: Evidence from Bogota, Colombia. *International Planning Studies*, 5(2), 165–190.
- Gilbert, A. (2000b). Housing in third world cities: The critical issues. *Geography*, 85(2), 145–155.
- Hamdi, N., & Goethert, R. (1997). *Action planning for cities: A guide to community practice*. John Wiley.
- Hansson, A. G., and Lundgren, B. (2019). Defining social housing: A discussion on the sustainable criteria. *Housing, Theory and Society*, 36(2). 149-166.
- Hasan, A. (2006). Orangi Pilot Project: The expansion of work beyond Orangi and the mapping of informal settlements and infrastructure. *Environment and Urbanization*, 18(2), 451-480.
- Smith, L. (January 2022). *Housing cooperatives: A unique type of home ownership*. <https://www.investopedia.com/articles/pf/08/housingco-op.asp>
- Ibem, E. O., & Aduwo, E. B. (2013). Assessment of residential satisfaction in public housing in Ogun State, Nigeria. *Habitat International*, 40, 163–175.
- Jaiyeoba, E. B., & Asojo, A. O. (2020). A people-centred social totality approach to low-income housing in the developing world. In (Ed.), *Sustainability Concept in Developing Countries*. IntechOpen.
- Jenkins, P., Smith, H., & Wang, Y. P. (2007). *Planning and Housing in the Rapidly Urbanising World*. United Kingdom: Routledge. <http://www.stellenboschheritage.co.za/wp-content/uploads/Planning-and-Housing-in-the-Rapidly-Urbanising-World.pdf>
- Kallus, R., & Dychtwald, S. (2010). Effects of user-initiated extensions in government-built housing on the urban space: The case of the Rambam neighbourhood in Tirat Carmel, Israel. *Journal of Urban Design*, 15(1), 69–90.
- King, R., Orloff, M., Virsilas, T., & Pande, T. (2017). *Confronting the urban housing crisis in the Global South: Adequate, secure, and affordable housing*. Washington DC: World Resources Institute. <https://www.wri.org/research/confronting-urban-housing-crisis-global-south-adequate-secure-and-affordable-housing>
- Kumar, N. (2003). *Community-Driven Development: Lessons from the Sahel: An Analytical Review*. Washington DC: World Bank. <https://documents1.worldbank.org/curated/en/757811468006644217/pdf/11130278070Sahel.pdf>

- Lacy, T. D., Battig, M., Moore, S., & Noakes, S. (2002). Public/private partnerships for sustainable tourism: Delivering a Sustainability Strategy for Tourism Destinations. Singapore: APEC Secretariat. [https://www.apec.org/docs/default-source/publications/2002/7/publicprivate-partnership-for-sustainable-tourism-delivering-a-sustainable-strategy-for-tourism-des/02\\_twg\\_partnerships.pdf?sfvrsn=4d51c51e\\_1](https://www.apec.org/docs/default-source/publications/2002/7/publicprivate-partnership-for-sustainable-tourism-delivering-a-sustainable-strategy-for-tourism-des/02_twg_partnerships.pdf?sfvrsn=4d51c51e_1)
- Lang, R., Chatterton, P., & Mullins, D. (2020). Grassroots innovations in community-led housing in England: The role and evolution of intermediaries. *International Journal of Urban Sustainable Development*, 12(1), 52–72.
- Lemanski, C. (2008). Houses without community: Problems of community (in) capacity in Cape Town, South Africa. *Environment and Urbanization*, 20(2), 393–410.
- Levy, C. (2008). Defining strategic action planning led by civil society organisations: The case of CLIFF, India. Paper presented at the 8<sup>th</sup> N-AERUS Conference, London, 6-8 September.
- Mansuri, G., & Rao, V. (2004). *Community-based and driven development: A critical review*. Policy Research Working Paper, No.3209. Washington DC: World Bank. <https://openknowledge.worldbank.org/bitstream/handle/10986/14310/wps3209community.pdf?sequence=1&isAllowed=y>
- Michigan Community Resources. (2017). *Community land trust manual: Legal considerations for 501(c)(3) tax-exempt organization*. <https://community-wealth.org/sites/clone.community-wealth.org/files/downloads/CLT.pdf>
- Mitlin, D. (2018). With and beyond the state – co-production as a route to political influence, power and transformation for grassroots organizations. *Environment and Urbanization*, 20(2), 339-360.
- Moatasim, F. (2005). *Practice of community architecture: A case study of zone of opportunity housing co-operative*. Montreal: McGill University. <https://www.mcgill.ca/mchg/student/community>
- Mohit, M. A., & Azim, M. (2012). Assessment of residential satisfaction with public housing in Hulhumale', Maldives. *Procedia - Social and Behavioral Sciences*, 50, 756–770.
- Mullins, D. (2018). Achieving policy recognition for community-based housing solutions: The case of self-help housing in England. *International Journal of Housing Policy*, 18(1), 143–155.
- Osborne, S. P., Radnor, Z., & Stokosch, K. (2016). Co-production and the co-creation of value in public services: A suitable case for treatment? *Public Management Review*, 18(5), 639–653.
- Payne, G. K. (Ed.). (2002). *Land, rights and innovation: Improving tenure security for the urban poor*. London: ITDG.
- Rahman, M. A. U., Hossain, M. Z., & Kabir, M. E. (2016). Operationalizing community-led housing in practice: Lessons from Bangkok, Thailand and Mumbai, India. *International Journal of Sustainable Built Environment*, 5(2), 564–578.

- Salama, R. (1995). *User transformation of government housing projects: Case study, Egypt*. Master thesis submitted to McGill University. <https://escholarship.mcgill.ca/concern/theses/9s1618272>
- Satterthwaite, D. (2001). From professionally driven to people-driven poverty reduction: Reflections on the role of Shack/slum Dwellers International. *Environment & Urbanization*, 13(2), 135–138.
- Tipple, A. G., & Willis, K. G. (Eds.). (1991). *Housing the poor in the developing world: Methods of analysis, case studies and policy*. Routledge.
- Tipple, G. (2004). Settlement upgrading and home-based enterprises: Discussions from empirical data. *Cities*, 21(5), 371–379.
- Torjman, S., & Makhoul, A. (2012). *Community-led development*. Canada: Caledon Institute of Social Policy. <https://maytree.com/publications/community-led-development/>
- Turner, J. C. (1968). Housing priorities, settlement patterns, and urban development in modernizing countries. *Journal of the American Planning Association*, 34(6), 354–363.
- Wessells, M. G. (2018). *A guide for supporting community-led child protection processes*. New York: Child Resilience Alliance.

## CHAPTER 3. SOCIAL HOUSING DEVELOPMENT IN YANGON

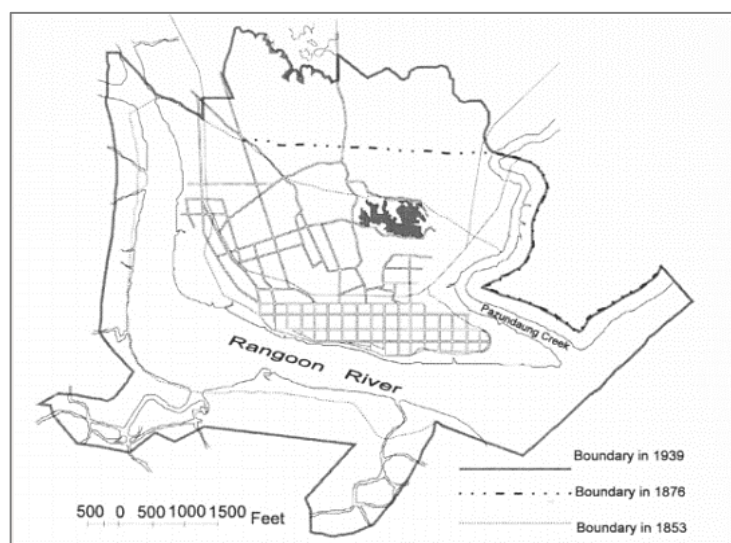
The chapter discusses about the political and urban context of Yangon, relating to the development of social housing provisions system in the city. It includes the study of policies, regulations and laws of social housing development for low-income people, along with the housing governance system. Additionally, it provides the overview on the housing demands, supplies – the current housing provision system, together with the challenges in the approach.

### 3.1 Overview of Urban Development in Yangon

#### 3.1.1 Urban development process

Yangon, which was originally called Dagon, was once a small fishing village, founded in the 11<sup>th</sup> century. Its name was changed into Yangon from Dagon in 1775 by King Alaungpaya and then anglicized into Rangoon in 1852 during British colonial period. Since then, the city had served as the nation's political capital until 2005 as the capital was moved to Nay Pyi Taw which is 320 km to the north. Despite that, Yangon still remains as the commercial and cultural capital and a series of new construction projects could be seen since the beginning of the democratic transition and economic liberalization in 2011.

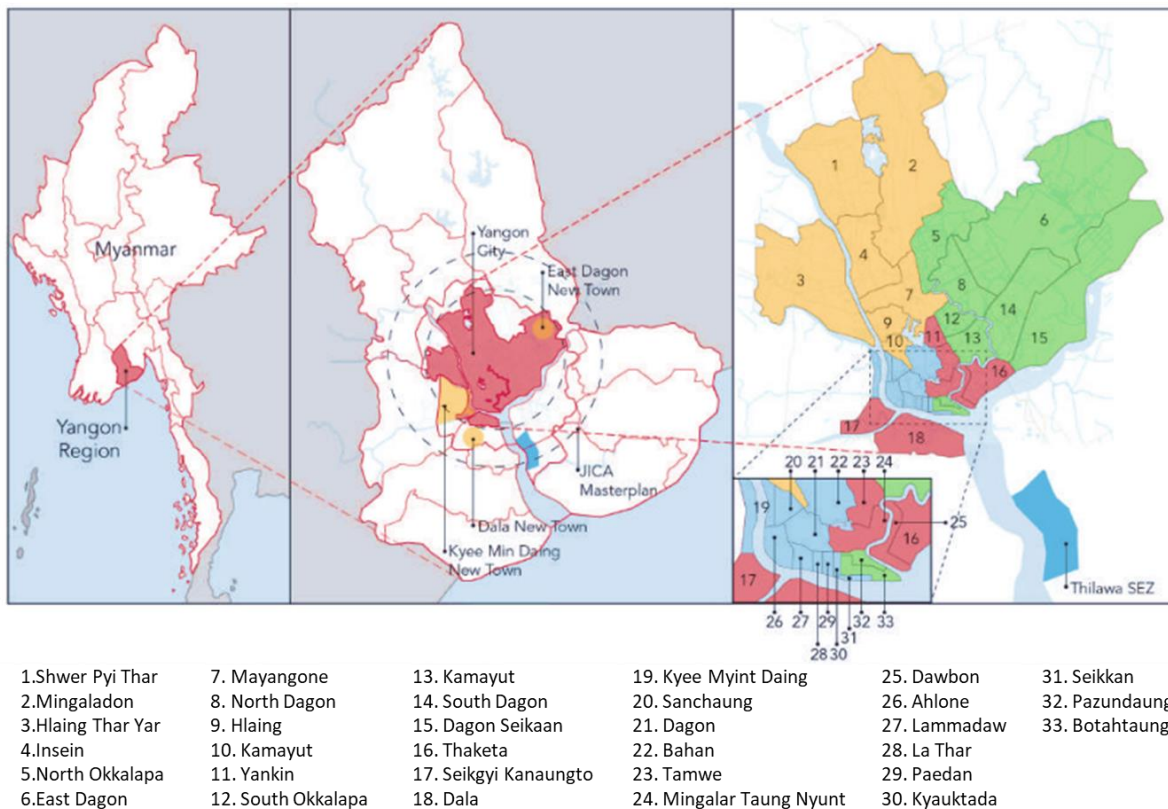
As the city was completely destroyed during the war, it was rebuilt through the British facilitation. The plan of the city center was based on a grid pattern of east-west main roads running parallel to the general direction of Yangon River and minor north-south roads perpendicular to the east-west roads (Nwe, 1998). As shown in Figure 3.1, the city had an approximate area of 2 km<sup>2</sup> in 1853 (Heeck et al., 2017), but later expanded to 29 km<sup>2</sup> in 1876 to response the population increase and the economic conditions and trade growth under British rule. In 1921, the town planning committee was formed and under the committee, the city was expanded almost 80 km<sup>2</sup> (Nwe, 1998).



Source: Nwe, 1998

Figure 3.1 Yangon boundary under the British administration

Following the independence from British rule in January 1948, Myanmar was embroiled in turmoil and political instability. This led the influx of refugees from countryside into Yangon, resulting a dramatic increase in Yangon’s population, reaching to 650,000 in 1950 where one third was the refugees. Overcrowding was clearly evident, and squatters were scattered along the busy roads, railways and even in the city centers. The city became congested and unsightly, thus the government set up the National Housing Board and launched many housing projects in different parts of the city. The board was responsible not only for new construction but also for slum clearance as well. In late 1950, the military government developed three new satellite towns called North Okkala, South Okkala and Thaketa which accommodated the population of over 150,000 (Nwe, 1998). The city was expanded again between 1975-1985 and the rapid growth was seen in late 1998. Under Yangon City Development Committee (YCDC), Yangon city was comprised with 33 townships under four districts and had total approximate area of 612.12 km<sup>2</sup> in 1995 (Heeck et al., 2017) and later increased to total area of 829 km<sup>2</sup> in 2016 from suburban growth (YCDC, 2016). Currently, these 33 townships are known as the Yangon Administrative Region as shown in Figure 3.3, while Japan International Cooperation Agency (JICA) defined the unofficial metropolitan region that includes neighboring townships with a total land area of 1,535 km<sup>2</sup> and 46 townships (Heeck et al., 2017).

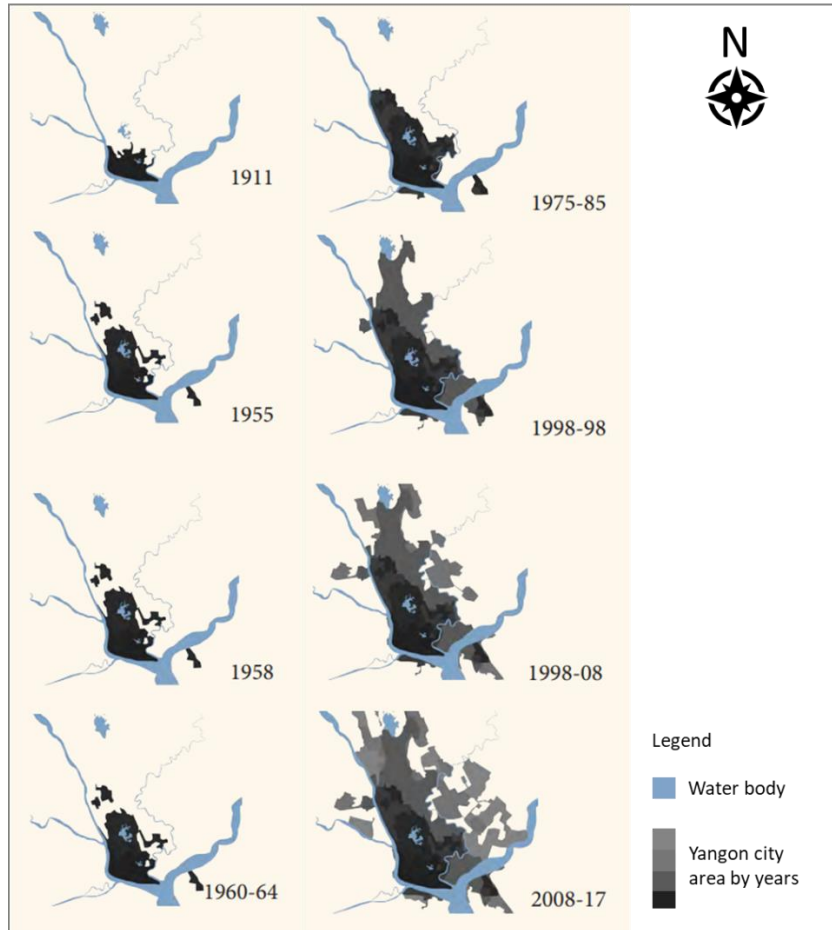


Source: Thura, Win and Hlaing, 2014

Figure 3.2 Yangon city’s townships under YCDC

Therefore, according to Figure 3.3, the city’s spatial growth direction of initial years took place more towards North compared to other directions as the city was physically limited in the south and west by Hlaing and Yangon rivers and on the east by the Pazaundaung creek and Bago

River which put the physical constraints that needed high cost and technical skills. However, since 1980s, the city was expanded both north and east-west, creating a stretching tail on the city with the grid-patterned central business district (CBD) far removed from the geographic center (JICA, 2013).



Source: Smith et al., 2017

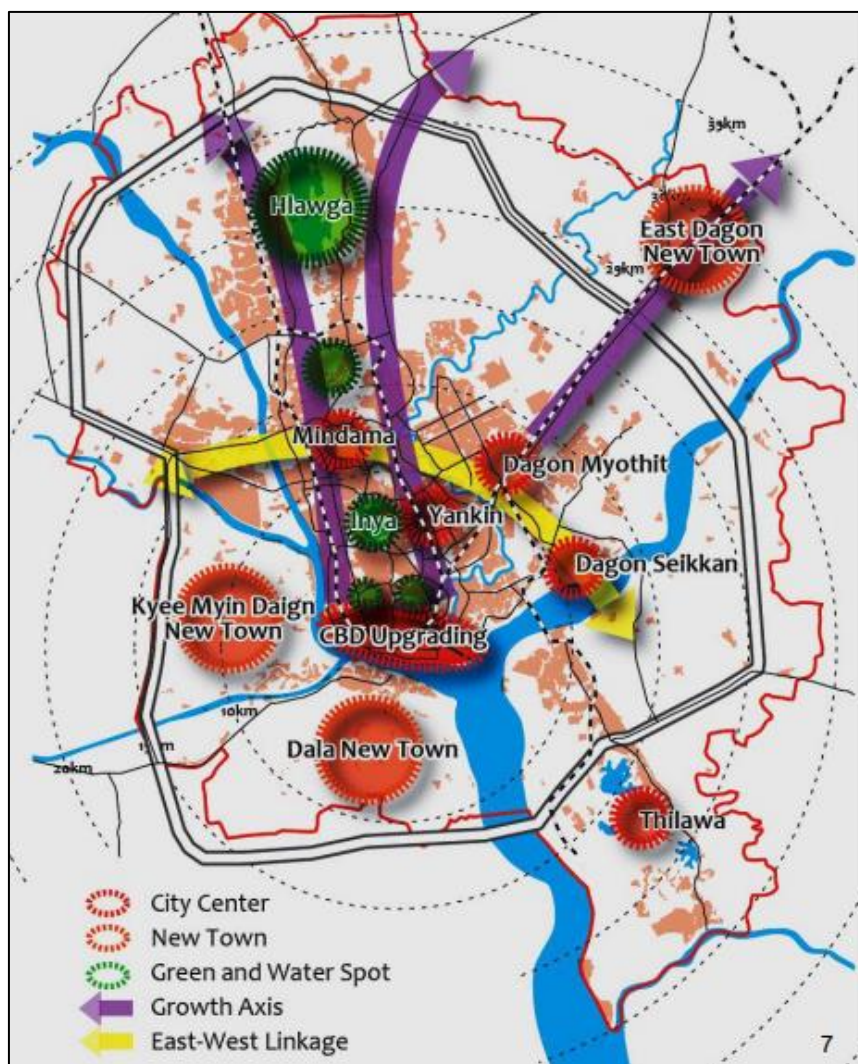
Figure 3.3 Spatial growth of Yangon city

Due to the need for the comprehensive plan after the political change to democracy, YCDC in collaboration with JICA and Department of Urban and Housing Development (DUHD) had developed the “Strategic Urban Development Plan for the Greater Yangon Area” (SUDPGY) during the period of 2013-2014, which was later approved by the Parliament of the Yangon region in 2015. The plan was revised again in 2019 and it includes the strategies for better transport system, built-heritage preservation, protecting environment and establishing resilience with regard to the challenges posed by Climate Change. The strategic plan devises a structural concept for a population roughly doubling from 5.2 million in 2014 to 10 million in 2040. The plan aims to develop and control the future spatial growth as presented in Figure 3.4 and its key strategies include (JICA, 2013) –

- Compact – Urban expansion shall be basically limited inside of the outer ring growth belt, which roughly parallels the inner growth belt and runs approximately 25 km to 30 km from the central business district (CBD).



- Decentralization – Urban center function shall be dispersed to outer areas by developing five major sub-centers located along a semicircle called sub-center growth belt, which is 15 km radius from the center of current CBD.
- Three growth axis – Three axis along trunk roads and railways shall be strengthened through transit oriented development (TOD) approach.
- Three new cities – To ease the congestion in CBD, three new towns of suburb shall be developed in large scale where they can be independent from existing built-up and function for stand-alone with workplace and residence in close connection and rich green and water bodies.
- CBD renovation – Current CBD shall be renovated as more pedestrian, cultural- and ecological-friendly infrastructures.
- Transport linkage – Bus, railway, waterway and other public ways shall be improved.



Source: JICA, 2013

Figure 3.4 Master plan of Yangon developed by JICA



### 3.1.2 Informal settlements

Yangon has been struggling with the issue of informal settlement for many years since 19<sup>th</sup> century. Under the transition era of Myanmar along with economic growth in cities, the numbers of informal settlements have been increasing rapidly with a nearly half million of squatter population is registered in Yangon in 2016 survey as shown in Table 3.1. It is the fourth remarkable squatter formation, and the most tremendous formation which can be compared about 200,000 population as second squatter formation in 1950s and about 250,000 population as third squatter formation in 1980s (Naing and Nitivattananon, 2020). Otherwise, this pointed the mismatch of housing demand and supply, and loophole of residential issue for middle income, low-income and urban poor who could not afford to enter formal housing supply. Other factors behind the growth of informal settlements include a more stable and year-round employment in Yangon and a frequent event of droughts or environmental disasters and more farmers being landless.

Table 3.1 Distribution of informal settlement population in Yangon (as of 2016 survey)

No	District	No. of squatter households	No. of population in slum	Total slum in district (%)	Comparison of slum by district (%)
1	East	50,786	168,130	35.4	6.4
2	West	1,420	4,736	1.0	0.2
3	South	28,771	83,401	17.6	5.9
4	North	74,617	218,764	46.1	22.6
	Total	155,594	475,031	100	6.5

Source: Pe, 2019

In Yangon, the informal settlements can be generally found in three forms – (i) slums and squatters, (ii) informal sub-division and (iii) informal cell rental housing.

(i) Slums and squatters: Despite multiple attempts by succeeding governments to eradicate them, slums and squatters have been forming and expanding in Yangon city since the mid-19<sup>th</sup> century under the British Colonization. Similar to any other developing countries, urbanization, internal migration, and urban poverty, along with government incompetence and law enforcement failure, have contributed to the rise of slums and squatters in Yangon. The regional administration reported in 2016 that 470,000 urban poor, mostly internal migrants, squatted on government land and road pavement in Yangon (Figure 3.5), particularly in Hlaing Thar Yar and Dagon Myothit (Seikkan) Townships (Yangon Region Government, 2017). UN Habitat experts estimated the slum and squatter population in Yangon to be approximately one million, or 20% of the total population.

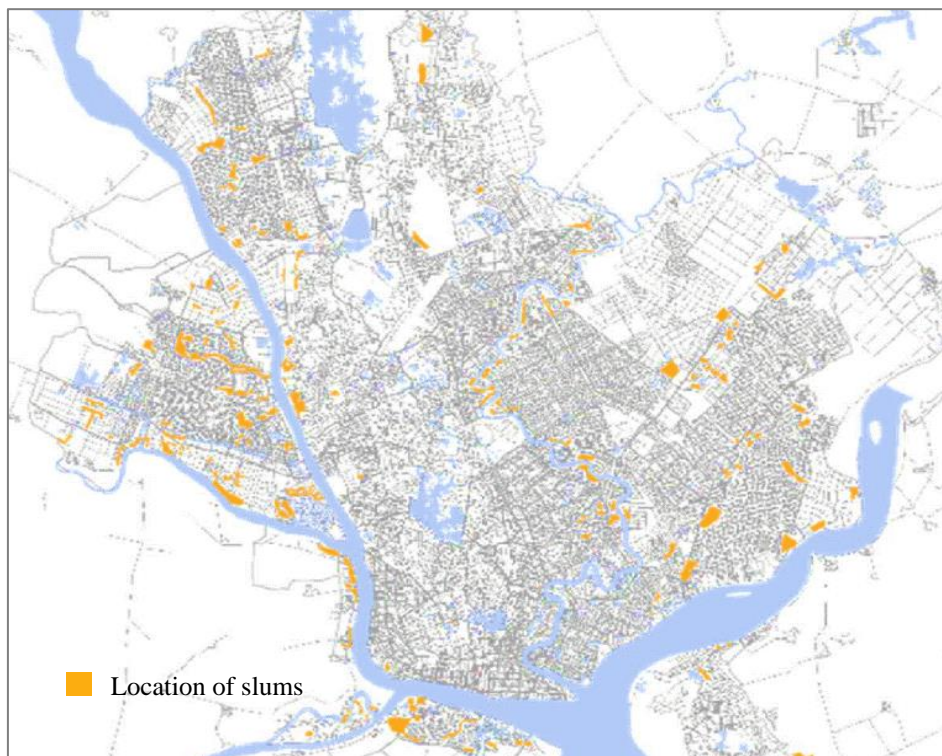
Figure 3.6 shows the 62 pockets of informal settlements in Yangon using Google Earth satellite images of 2013. As shown in Figure 3.6, the slums and squatters are scattered around the periphery of Yangon city and they are like the ‘cities with the city’ with its own informal economy. Since the households do not have access to formal services, the residents themselves make the business and work as water distributors, money lenders and informal

real estate brokers were at work, and vendors sold produce and goods to other squatters in neighborhood markets. In fact, the financially better-off squatters engaged in precisely these activities. They owned the wells and pumps and enjoyed a local monopoly on water. They lent money to other squatters, a service for which there was continuous demand. Therefore, though the industrial zones may attract the migrants seeking regular employments, households in actual mostly work in informal sector, possibly due to the minimum educational requirement to work at the factories (Forbes, 2019).



Source: Than, 2015; Macdonald, 2016

Figure 3.5 Conditions of informal settlement inside Hlaing Thar Yar township



Source: URDI, 2013

Figure 3.6 Location of urban slum pockets in Yangon

(ii) Informal sub-division: As self-help policy throughout the 1970s, DUHD provided different sizes of land plots of newly developed satellite towns to the public, notably government personnel and slum resettlements. The 40 ft x 40 ft land plots were given to middle-income group especially government officials and 20 ft x 60 ft land plots to low-income group under slum resettlement schemes. Initially, landowners tried to build detached houses with self-help programmes and received housing loans and building materials. However, these government-sponsored plans did not cover all land plots, and many new cities are still currently vacant. Moreover, due to a rapid growth of land price during 1990s, many of these landowners divided and rent or sold out unofficially to others particularly urban poor, which gradually transformed into slum pockets without proper basic infrastructure. Between 1990 and 1996, the government forcibly relocated slum dwellers from inner city to new towns such as Dagon Myothit (South), Dagon Myothit (North), and Dagon Myothit (Seikkan) and were given land plots under 'sites and services' scheme. But several of them sold out their land and re-squatted on another government-owned land, near their workplace. Throughout the 2000s, and particularly following 2008 Nagis disaster, similar informal behaviours extended to other urban edge areas, most notably South Okkalapa, Tharkayta, and Dawbon (Naing, 2019).

(iii) Informal cell-rental housing: The cell-rental housings are emerged recently due to a rapid growth of rural migrants in the city and the changes in the social behaviours with increasing newlywed couples who are starting to live by themselves and a single person renters. These housings are owned by private owner and rent out to potential tenants and built in a row of single units in either one or two stories. The size of the cell is usually between 10-14 sq.m in average. Figure 3.7 shows example of informal cell-rental housing in Hlaing Thar Yar township and here most of these cell units allow only for living and sleeping where cooking is banned and bathroom and toilet are common use for all tenants. In addition, there are cases where the owners deny the potential tenants with children. Usually, these housings are informal since the buildings are built without engineer and not following the building regulations while they do not have the license to operate such rental business. Though the housing barely fulfilling the minimum requirements, they are expanding due to the demand from limited affordable formal housing in Yangon. Although expansion for informal housing is one of the most critical issues in Yangon city, it is overlooked and there is no particular rule, regulation and law enforcement particularly for the safety and security. And most of the tenants in such informal cell-rental housing felt more satisfactions than residing in squatter due to the emotional safety of eviction (Naing, 2021).



Source: Naing, 2021

Figure 3.7 Some of informal single room rental house in Hlaing Thar Yar township

### 3.1.3 Socio-economic profile

The socio-economic profile describes the population growth and the level of household income in the city.

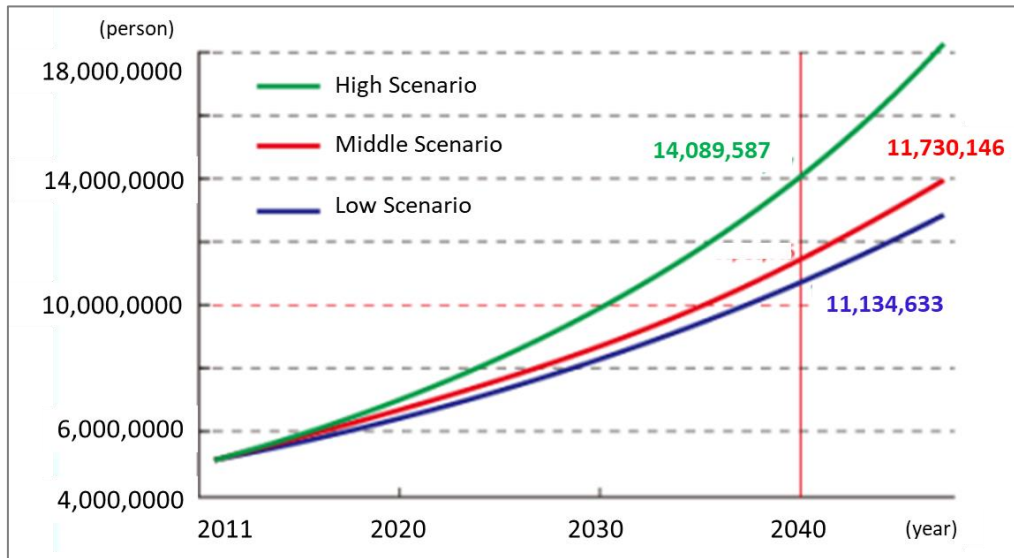
- Demography

As per 2014 census, the population in the Greater Yangon which includes periphery areas was 7.3 million while the UN estimated that around 5 million in the Yangon city under YCDC. Nearly 70% of the population was urban population and based on 7.3 million capita, the population density at that time was 716.3 capita per sq.m (Department of Population, 2015).

Looking at the history of population growth in Yangon, it was started since the British time when the city was set up as a capital for lower Myanmar then the capital for the nation. Due to the economic opportunities by the British administration, a large number of migrants from India and lower Myanmar moved to Yangon, resulted the average annual population growth of 4.78% between 1856 and 1870. The ground-breaking growth rate was experienced during post-war period, between 1953 and 1965, from the internal migrants from rural areas from the political instability. During these periods, the average annual growth rate was 5.7% and the highest was 6% (Nwe, 1998). After 1970, the population growth in the city became stable due to the sluggish state of economy; within the range between 2.0-2.6% and the drivers behind were the natural increase and the boundary expansion but between 2010 and 2014, the main factor of the growth was internal migration (JICA, 2013 and Heeckt et al., 2017 and ADB, 2019).



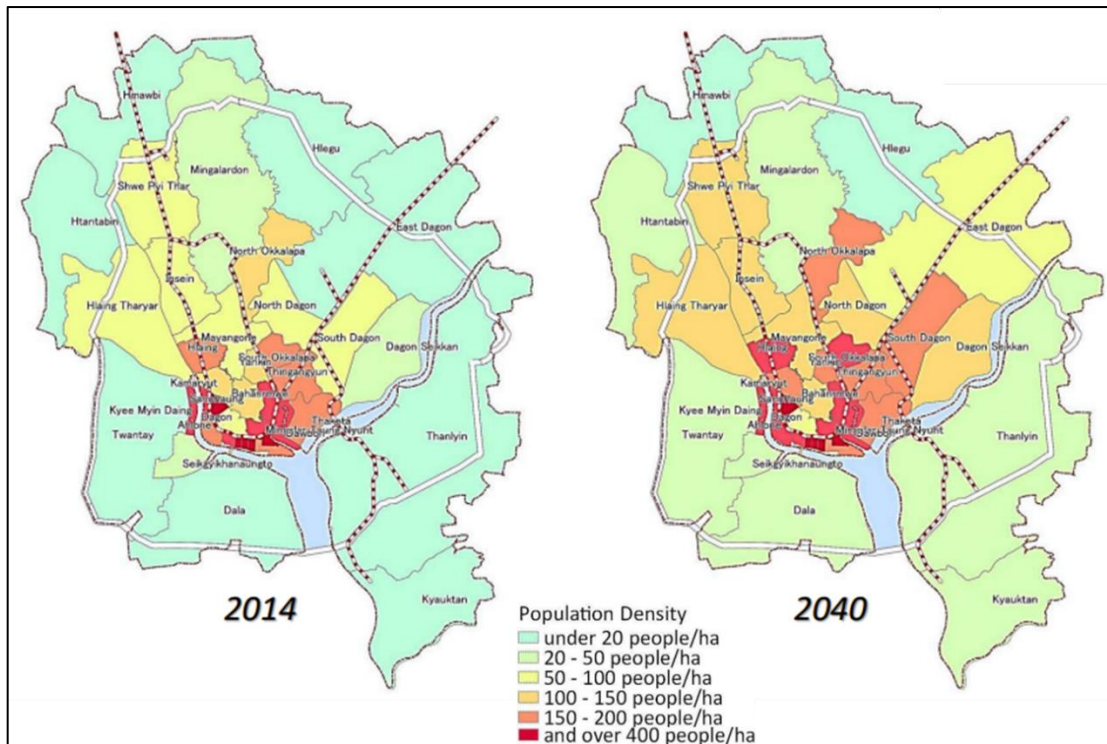
The nation urban population growth rate over the past 30 years is 1.72%, however, due to immigration, the growth pace in Yangon could be higher than the national rate. Thus, according to Lat (2018), the city’s population growth rate is forecasted under three scenarios – annual growth rate of 2.3% under low scenario, 2.6% for middle and 3% for high. Based on these trends, Yangon’s population will reach between 13 million at low scenario and 16 million at high scenario by the middle of this century as shown in Figure 3.8.



Source: JICA, 2013

Figure 3.8 Population forecast for Yangon under three scenarios

According to the survey from Department of Population and JICA, as shown in Figure 3.9, even though the population in each township will be increased, the most significant growth will be in the peripheral areas within the administrative boundaries under the control of YCDC. It is estimated that most of townships in suburban areas will have total population of more or less than 1 million while the population in urban center (downtown areas) will be not more than 500,000. Thus, the population in those 10 townships in Yangon’s periphery accounted for 53% of the city’s total population along with seven of the ten at least doubling in size (Heeckt et al., 2017).



Source: JICA, 2013

Figure 3.9 Population density by township in 2014 and 2040

- Household classification and income

Myanmar currently does not have a clear definition or benchmark regarding the classification of the household income group. As there is no specific study on household income, Naing (2019) estimated the household incomes and their classification by using and comparing the data from different sources such as ADB, Birdsall, and salary categories of government officials and private firms' employees. In this regard, the ADB method considered the average consumption rate per person per day while the Birdsall method applied GDP per capita of Yangon. Table 3.2 shows the estimated average monthly income of the households in Yangon with assuming an average household size of 4.4 and 1 USD roughly equivalent to 1,250 Myanmar Kyats. Based on Table 3.2, it is generally assumed that the household which has the monthly income of less than 300,000 MMK (240 USD) is said to be in the low-income group while households earning more than 1,000,000 MMK (> 800 USD) would fall into the high-income category. And households earning between 300,000 and 1,000,000 MMK are classified as middle-income. Moreover, according to AEON, it is estimated that the high-income group comprised 27% of Yangon's total population while the middle-income group constituted 67% and the low-income group for 6%.

Table 3.2 Comparison of household monthly income with classification group

Income group	Monthly Income (Myanmar Kyats)				
	ADB method (2010)	Birdsall method (2010)	Government official salary <sup>1</sup> (2016)	Private employee salary (2015)	AEON estimation (HH %) (2020)
<b>High income</b>	> 2,640,000		300,000 – 500,000	700,000 – 2,000,000	> 1,250,000 (27%)
<b>Upper-middle income</b>	1,320,000 – 2,640,000	331,000 – 552,000	180,000 – 300,000	400,000 – 700,000	625,000 – 1,250,000 (35%)
<b>Mid-middle income</b>	528,000 - 1,320,000				375,000 – 625,000 (32%)
<b>Lower-middle income</b>	264,000 - 528,000				
<b>Low income</b>	< 264,000	< 331,000	< 180,000	Min 200,000	< 375,000 (6%)







Source: Naing, 2019

Note: <sup>1</sup> Figure represents only the salary and this does not include the facilities provided to government officials such as accommodation, transportation, etc.

#### 3.1.4 House types and materials

According to the 2014 Myanmar Population and Housing Census (Department of Population, 2017), the Yangon region had approximately 1.6 million housing units for nearly 7.3 million people. Among them, the standard housing units such as condominiums, apartments and brickhouse only comprised 25% while the rest 75% are semipermanent or temporary structures which are built with sub-standard materials that would require frequent upgrades and retrofitting. Table 3.3 shows the types of houses usually found in Yangon and the most common type is the wooden house, followed by the bamboo dwelling where the low middle-income and low-income households are often resided in respectively. Generally, middle-income families stay in the apartment where high-income households live in the condominium or single-unit house on individual plot.

Table 3.3 House typologies found in urban areas of Yangon

<p>1. Condominium/apartment - 266,864</p> 	<p>2. Brick house - 117,047</p> 
<p>3. Semi-pucca house - 150,641</p> 	<p>3. Wooden house - 659,423</p> 
<p>5. Mix of bamboo weaving mat and timber house - 344,419</p> 	<p>6. Thatch house (hut) – 28,904</p> 
<p>7. Others - 15,646</p>	
<p><b>Total number of houses in Yangon - 1,582,944</b></p>	

Source: Department of Population, 2017

Usually, the quality of housing materials varies depending on the economic status and climate condition, which can be found as (i) quality materials and (ii) sub-standard materials. The quality materials are generally defined as those of which the life span is between three to five years while sub-standard materials are natural materials with short life span. Table 3.4 provides the materials for roof, wall, and floor, generally found in Yangon, along with the percentage on total housing units of 1.6 million.



Table 3.4 Household building materials in Yangon

No.	Materials		Roof	Wall	Floor
1	Quality materials	Corrugated sheets	76%	31.97%	-
2		Tiles/ Brick/ Concrete	5.19%	1.53%	30.75%
3	Sub-standard materials	Wood	0.17%	23.96%	52.01%
4		Bamboo	0.17%	31.84%	15.57%
5		Thatch and Dhani in Leaf	18%	9.15%	-
6		Earth	-	0.05%	0.51%
7	Other	Other	29.46%	1.51%	1.16%

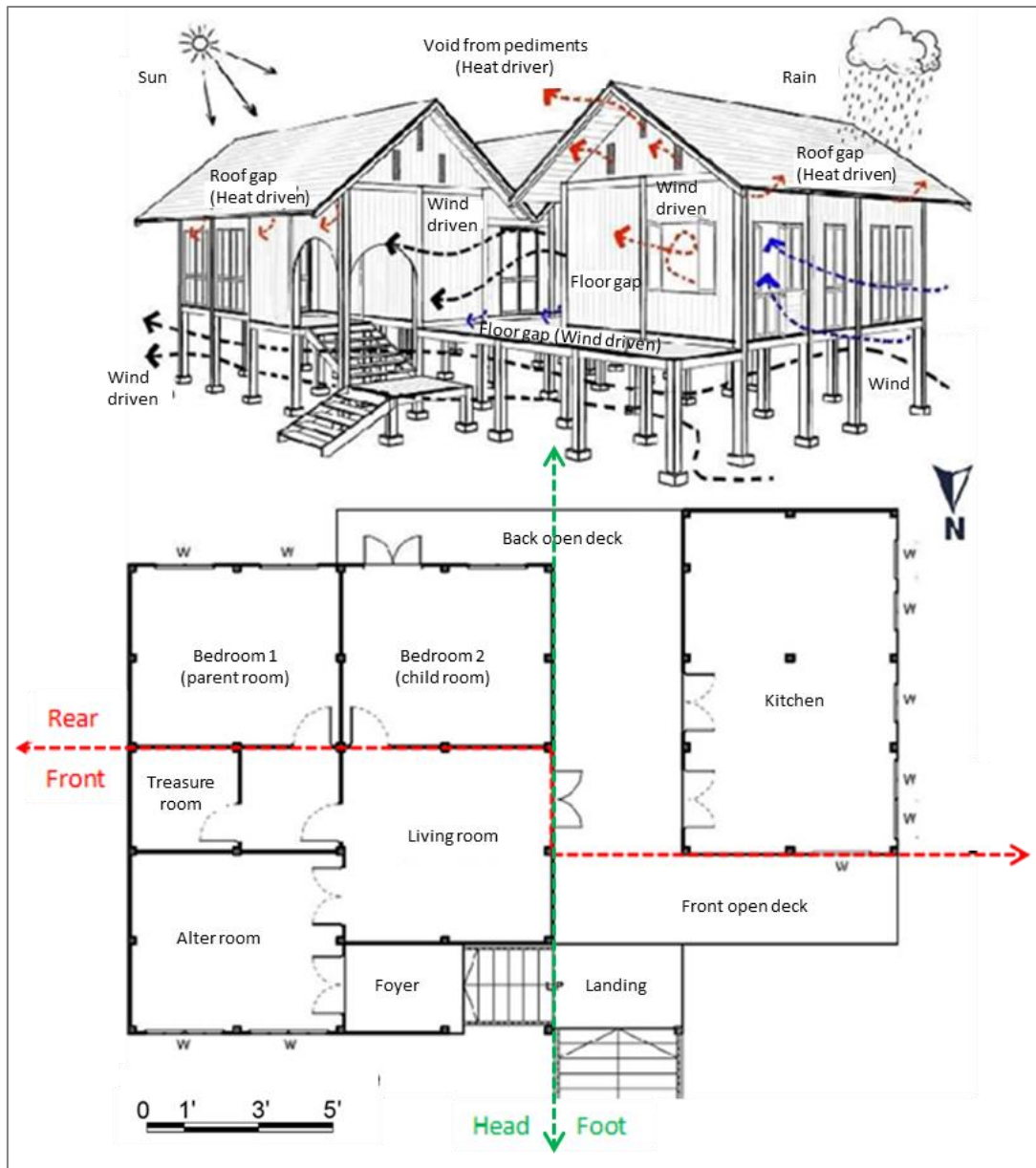
Source: Central Statistical Organization (CSO), UNDP and World Bank, 2018; Department of Population, 2017

### 3.1.5 Physical aspect of traditional Bamar (Myanmar) house

Figure 3.10 shows the typical traditional Bamar house, usually found in central and lower parts of Myanmar. The traditional houses are built in the stilt form and with timbers. As shown in Figure 3.11, the spatial composition of traditional Bamar house is simple, expressing the residents' simple way of living. The floor plan of the house is usually in open planning with minimum use of walls for the flexible interior planning and minimum of personal privacy in planning as the reflection kinship and lifestyle. Semi-open interior spaces are also usually found for a sense of transparency between outdoor and indoor spaces and it is common to use the front part of the house for multi-purposes. Moreover, the families also like to change the floor level to emphasize the functional value.

According to the study by Linn (2018), the spatial organization of traditional Bamar house can be seen in two methods as follows -

- Cultural division: Front and Rear – In this method, the spaces are divided according to the functions namely semi-private and private spaces. The Front part (Ein Shae) of the house is for the semi-private spaces such as shrine, living room and open deck while the private spaces as of bedrooms, treasure room and kitchen are located at the Rear part (Ein Nout).
- Cosmological division: Head and Foot – According to cosmological division, the house is divided into Head (Gaung Yinn) and Foot (Chay Yinn) based on the orientation of the house. Along the East-West axis, the eastern part is known as Hear part and the western part is Foot part. Usually, shrine, men's bedroom and living room are placed in the Head part and women's bedroom, store and kitchen are to be in Foot part.



Source: Zune, Rodrigues and Gillott, 2020

Figure 3.10 Typical traditional Bamar (Myanmar) house

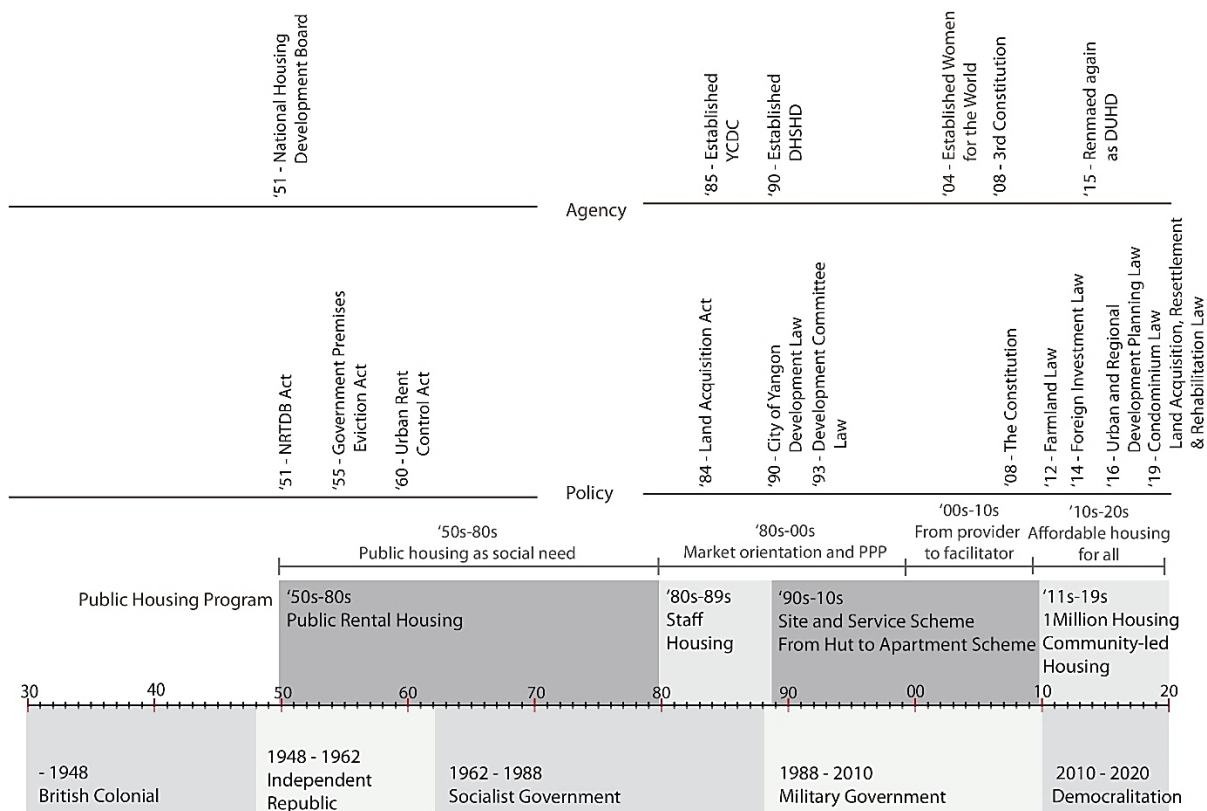
### 3.2 Overview of Social Housing Provision

#### 3.2.1 Public housing strategies and approaches (1948-2020)

Myanmar public housing strategies have evolved through three discernible periods, based on the political systems of the country (Figure 3.12). The first period of housing was started in 1950 after the independence until 1988 which was the end of the socialist government. The National Housing Board (NHB) was established in 1951 to carry out the housing provision in the country and completed over 10,000 units under public rental housing scheme (Naing, 2018). These housings were built with the subsidies from government, aimed only at a limited target group, with the concept of “No profit – No lose”. As a result, only middle-income households benefited from this scheme and could not implemented effectively. Thus, in 1958,

the government introduced new satellite town development and shifted the emphasis from direct construction to the provision of residential land and plots in new suburb area, including slums upgrading. During this phase, most of the relevant housing polices and acts placed emphasis on property rights and rent control in order to protect the rights from development and provided a degree of tenure security for residents by restricting forced evictions (ADB, 2019; Naing, 2018).

The second phase of housing policy and development (1988-2010) witnessed the private sector involvement in housing market while it was also adversely affected by the military governance system. NHB was reorganized as Department of Human Settlement and Housing Development (DHSHD) under the Ministry of Construction. Although the name and title of organization was changed, its goal of providing affordable housing for urban poor and government employees was remained the same. However, the department had to stop the provision of public rental housing due to the prolonged budget constraint (Kraas, Faese and Kyi, 2006). The government practically funded housing for government employees only and changed its role from provider to facilitator, letting the private sector lead the market. During this period, satellite town development then became the main focus of government and completed through public-private partnership (PPP) in which the government allocated or tendered the land to the private developers to construct the high-rise apartments and housing estates for the population.



Source: modified from Lall, Mitra and Sakuma, 2018

Figure 3.11 Overview of public housing strategies in Yangon (1948-2020)

However, as there was no policy or law for private sector to control at that time, the housing market during this period was unstable and largely monopolized. Being unaffordable, it

resulted in the appearance of groups of informal settlements in different areas of the cities. Thus, DHSHD initiated a “site and service scheme” and a “from hut to apartment scheme” to upgrade the slums (Naing, 2018). However, most of the slum dwellers sold their permits or properties to middle-income households. Instead, they stayed in cheaper houses on the city outskirts or in informal settlements near industrial areas. Therefore, during this second period, private developers and rich homebuyers had benefited more than low-income groups while the developments were not distributed equally but largely focused on urbanized cities like Yangon and Mandalay.

The third policy strand (2010-to date), under the democratic government, has focused on the placement of new policies (such as Foreign Investment Law, 2012 and Condominium Law, 2016) to stimulate private sector investment and the revision of old building codes and national land use policy to reflect the current conditions. The government is currently initiating the One Million Housing Program to address the housing shortage for low-income people and also preparing the National Housing Development Law to provide a regulatory framework and strategies for the implementation agency for affordable and low-cost housing development (Naing, 2018).

Overall, housing development in the country has adversely affected by the political instability while at the same time, has never been the priority issue for the government. Until now, there is no specific policy for housing but rather mentioned in different policy documents of land use and city planning. Consequently, there have been weaknesses in the housing policies and activities regarding low-income households and public housing, neither of which has received much attention in the housing sector and have addressed in reactive way rather than proactive.

### 3.2.2 Laws and regulations

Though the public housing system in Yangon still using the very old laws and regulations, the Democratic government is gradually updating and established the new ones that would be relevant to the current housing conditions. The 2008 Constitution provides guarantee to the right to settle and reside in any place in Myanmar while new Land Acquisition Act provides the acquisition of land for public purpose. Table 3.5 shows some of the relevant laws and regulations that affect to the housing development.

Table 3.5 List of policies related to housing development

Laws/ Policies	Contents
Land Acquisition Act (1894)	This act empowers the state to acquire land where it is needed for any public purpose. The act provides for the relevant procedures, including the required notice to be given, procedures for objections to acquisition, the method of valuation of land, the process for taking possession of land, court processes and appeals, procedures for the temporary occupation of land and the acquisition of land for corporations. The act requires the authorities to provide compensation to the original owners of the land, however, in practice, compensation often falls far short of basic minimum standards.

Lower Myanmar Town and Village Act (1899)	The act provides that the following rights to land accrue for hereditary land: the right to keep under occupant control (to live and to dwell on the land), the right to cultivate, the right to mortgage, the right to sell, and the right to inherit. t. For government lands, people have rights to keep under occupant control, cultivate, and inherit. The act states that “no rights against the Government shall be deemed to have been or shall hereafter be, acquired by any person over any land in any town or village, except as provided under this Act.” Similar to the act on land and revenue, land ownership is mostly based on possession, again normally attached to a calculated period of possession. The act provides that landholder’s rights cease after 2 years of abandonment, and also covers eviction procedures from any unauthorized possession and use of state land.
Towns Act (1907)	The act provides for the administrative governance of towns; for example, the division of towns into wards and blocks; and the election, duties, and powers of ward headmen and elders of a block, including the obligation on residents to announce the arrival and departure of non-residents to a town.
City of Yangon Municipal Act (1922)	This act provides the permission of building occupy or use, mentioned in Chapter XI, Sections 153-159. According to the act, it is not allowed to construct the buildings without YCDC’s permission and the power of corporation for direct removal of persons from buildings in which works are being unlawfully carried out or which are unlawfully occupied.
Land Nationalization Act (1953)	Under this Act, the state nationalized all agricultural lands (with certain exceptions) and abolished all lease, rental and share-cropping agreements. The act did not recognize private ownership of land, but only different categories of land use rights -contingent on the land being used productively, as defined by the state. The sale and transfer of ownership were restricted and size limits were established on agricultural holdings.
Government Premises (Eviction) Act (1955)	It covers government-owned buildings, houses, and premises, including housing units provided by the Department of Urban and Housing Development (DUHD). In these government-owned buildings, houses, and premises, the dwellers are not the owners of premises. They have no right to sell or transfer government-owned apartments.
Urban Rent Control Act (1960)	In this act, the definition of landlord, tenant, rent controller, and premises are provided in Section 2. Section 12 provides a degree of security of tenure for residents by restricting forced evictions to a series of prescribed acts and omissions by tenants. Section 27 outlines the rules on rent.
City of Yangon	This law mainly deals with the urban redevelopment and mandatory

Development Law (1990)	relocation processes. Under this law, Yangon City Development Committee (YCDC) is vested with the authority to “convert Yangon with the characteristics of a city of international standards,” including the official role of relocating informal settlers on the orders of the state.
Development Committee Law (1993)	Under this amendment law, the Ministry of Border Affairs, except within the limits of the City of Yangon and the City of Mandalay development areas, may form development committees in the remaining areas with suitable citizens to carry out the duties and functions of the committee. One of the duties and functions of the committee is “granting permission for construction of private buildings within the Development Committee boundary limit and supervision.”
Constitution (2008)	Under Myanmar law the state owns virtually all land in the country. Article 37 states: The Union (a) is the ultimate owner of all lands and all natural resources above and below the ground, above and beneath the water and in the atmosphere in the Union [and] (b) shall enact necessary law to supervise extraction and utilization of state-owned natural resources.
Vacant, Fallow and Virgin Land Management Law (2012)	This law allows leases of state-owned land vaguely classified as ‘vacant, fallow or virgin for 30-year periods. Both nationals of Myanmar and foreign entities can lease land under this law subject to approval from the Myanmar Investment Commission and then the Land Allotment Commission. Some have claimed that 50% of the land in the country could be classified as technically ‘fallow’, which, if correct, provides an indication that large-scale displacement and land disputes may occur as the new law is implemented.
Farmland Law (2012)	This law establishes a system of land registration for farmers that ostensibly provides land use certificates (LUCs) that, once secured, create rights to sell, exchange, access credit, inherit and lease the land over which they hold rights. Tenure rights under the Farmland Law are not secure because Government retains the power to revoke the LUCs if any of the strict conditions of use are not complied with in full.
Yangon Region Development Law (2013)	Under Section 4 of this law, the Ministry of Yangon Region Development shall form development committees in regions, townships, and sub-townships, outside of the city boundary within the region. In Section 24, the Township Committee is empowered to issue permits for the construction of buildings, extension of buildings, or repair of buildings.
Special Economic Zone Law (2014)	Law (2014) This law governs land issues within the special economic zones, addresses the question of land acquisition and places the responsibility on developers and investors to transfer and pay for

	compensation costs associated with land-based investments.
Urban and Regional Development Planning Law (2016)	This law is in accordance with the 2008 Constitution, which does not mention a separate municipal tier of self-governance. It assigns the plan-related activities to the Union and state/region levels and addresses the municipal level in particular the Development Affairs Organization (DMAs) in a fairly limited manner. This provides the comprehensive work programs for various types of spatial plans and allocates administrative and political responsibilities for preparation and approval.
New City of Yangon Development Law (2018)	It covers 31 sectors and has 337 sections, which also cover various topics such as informal settlers, shortage of freshwater, traffic, electricity, illegal construction, pollution, and the rule of law for the growing population of Yangon. It was hoped that the new law will draw the way toward further economic and social development in Yangon City.
Condominium Law (2019)	Condominium Law provides the framework for condominium development in Myanmar, which targets only to six and above stories building built on collective land at least 20,000 square feet wide. The law adds the collectively-owned land type and opportunity for foreign investment in real estate sector up to 40% of the total investment.
Land Acquisition, Resettlement and Rehabilitation Law (2019)	This Law in 2019 replaced the colonial era 1894 Land Acquisition Act. It sets out a new legal framework for most of compulsory land acquisitions, for instance, by the government for public purposes. This is expected to improve the land acquisition for public housing development through a clearer process for which land can be expropriated and protecting land-owner and land-user rights. But this new Law could not reflect the complexity of Myanmar's land tenure which is governed by over 50 different laws, overlaid with customary land tenure systems and practices.

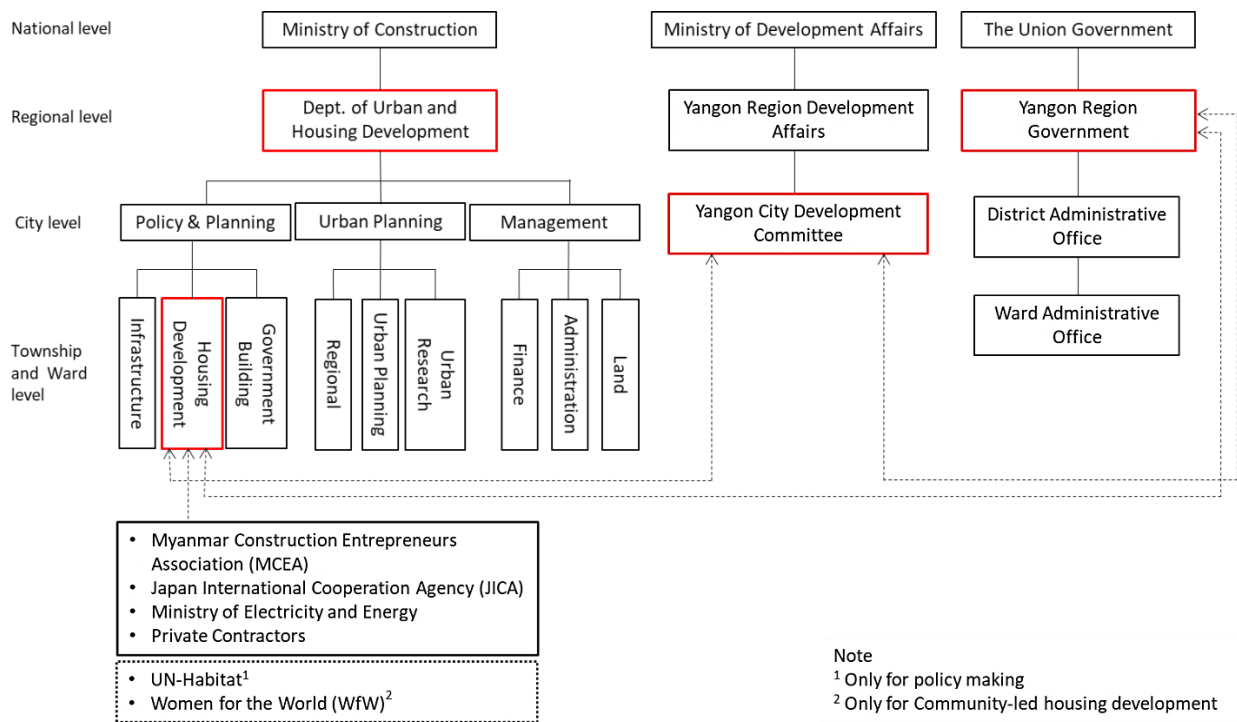
Source: ADB, 2019; Kouri, Hofer, Sallam, and Amalsyah, 2019; UN-Habitat, 2020; Wachenfeld, et al, 2020

### 3.2.3 Administration structure

The governance system in Myanmar has been centralized for a long time and this applies to the governance structure in Yangon in particular where top-down system and a complex governance system is in place. Generally, the administration structure consisted of three levels as national, region and state and city level as shown in Figure 3.12. The regional and state parliament can independently enact law, regulations for their own department at city level. Currently, Ministry of Construction is responsible at national level which has Department of Urban and Housing Development (DUHD) at regional level which is the main agency to carry out the public housing development. Another regional key stakeholder in housing provision is Yangon Region Government (YRG), responsible for rule of law and investment support for developments in Yangon and is arguably the most influential governmental body in the

country. Yangon City Development Committee (YCDC) is municipal government included in housing delivery to provide construction permits and delivery of basic urban services (ADB, 2019). Other related actors in public housing development included Electrical Power Cooperation (EPC) to supply electricity and the private organizations and individuals such as Japan International Cooperation Agency (JICA) for financial support, Myanmar Construction Interrupters Association (MCEA) and other private contractors as supplier partnership. Inhere, UN-Habitat Myanmar is also supporting the DUHD and YRG in developing National Housing Policy and other road map for slum upgrading. Women for the World (WfW) is the key stakeholder in community-led housing in communicating with the government to the local community.

It shall be noted that public housing development is one of the less developed areas especially in terms of policy and does not hold a key place in the priorities of central authorities, thus leaving many gaps in the system.



Source: Modified from Naing, 2018; Kouri, Hofer, Sallam, and Amalsyah, 2019

Figure 3.12 Administration structure in public housing delivery

### 3.3 Current Situation of Social Housing Programs

#### 3.3.1 Housing demands in Yangon

In Yangon, the demand for housing units, particularly affordable and low-cost housing, are in rise due to the following factors. One of the main factors is the demographic trends and migration. Due to the economic reforms and less job opportunities in rural areas from climate change results in increased inflows of migrants to Yangon. Generally, the housing needs arising from internal migration tend to overlap with the housing needs generated through demographic trends leading to new household formation. It is forecasted that the population in



Yangon would be increased to 8 million in 2030 and to accommodate all of them, nearly 600,000 of housing units are required (ADB, 2019).

Another factor is the deteriorating or low quality of housing units which would need for replacement, reconstruction and/or retrofitting. As per 2014 Census, barely 25% of the households are living in the formal housing units such as condominiums, apartments and brick houses which can be categorized as permanent while the rest 75% are staying in semi-permanent or temporary structures in which parts of structures are constructed with non-permanent materials such as thatch, bamboo, and wood etc (Department of Population, 2017). Another is the demand from renters; in Yangon, nearly 25% of the household are renters and a large proportion of them would like to have ownership, but the limitation for such households is the affordability and in need of affordable housing or housing micro-finance program. It is usually the migrants or middle-low or low-income households staying in the rental houses, there are still many of the migrants living in squatters in peripheral areas of the city (Pe, 2019). According to the survey conducted by General Administration Department in 2017, there were approximately 475,000 (155,000 households) living in informal settlements, occupying total land area of over 2,000 acres (World Bank, 2019).

Based on such factors, ADB estimated the aggregate housing need by the year 2030, as shown in Table 3.6. The demand was estimated at 1.3 million units by 2030 in which over 100,000 affordable and low-cost housing units need to be developed annually for the next 10-20 years. In this regard, based on the household income in Table 3.6, nearly 40% of these housing needs should be the non-market housings (affordable and low-cost housing) for low-income and lower middle-income households for next 10 years. This makes the non-market housing needs of approximately 6,000 units for low-income household and 32,000 units for lower middle-income households annually.

Table 3.6 Total Housing Demand for Yangon

	<b>Demand</b>	<b>Source</b>
Demographic trends, urbanization and migration (until 2030)	593,000	UN World Urbanization Prospects (2014)
Quality of housing stock, tenure and ownership	520,000	2014 Census
Expansion of informal settlements (current population of 475,000)	155,000	DUHD
Homelessness (currently estimated at 2.16% of Yangon population)	34,000	2014 Census
<b>Total housing demand for Yangon (2018-2030)</b>	<b>1,302,000</b>	

Source: ADB, 2019

### 3.3.2 Housing supplies in Yangon

In order to address the demands, the current housing delivery includes (a) government-led One Million Housing program, and (b) community-led housing. One Million Housing program is planned and implemented by the government, targeting to provide affordable and low-cost

housing units to middle- and low-income households. However, due to the high construction costs and unfavourable eligibility criteria for low-income group, these housing units received little attentions from the poor and are mostly accessed by middle-income groups. Therefore, community-led housings are emerged to solve the housing issues of low-income families. It is initiated by the local NGO and applied the alternative bottom-up community-led approach which can create enabling conditions for poor to develop the housing.

a) Top-down approach - One Million Housing program

In order to meet the demand of the housing shortage, the government has developed a million homes plan, aiming to develop one million new housing units by 2030 nationwide. In response to the one million housing plan, Department of Urban Housing and Development (DUHD) formulated the four phases, five years housing supply plan which the department will supply 20% of the total one million where 90% will be low-cost housing units (for low-income households) and 10% will be affordable housing units (lower middle-income households) (JICA, 2018). Table 3.7 provides the breakdown of five-year plan and according to this, DUHD have to supply 10,000 units per year. In this regard, as of February 2018, DUHD completed only 11,588 units of low-cost housing and 3,529 units of affordable housing. It is planned to complete 56,000 units out of 200,000 units by 2020 but according to the data in 2018, the government could provide only half of the targeted units on the department-owned land (Kouri et al, 2019). Thus, the government is facing difficulty to achieve the target, and it is assumed to be more challenging for the upcoming two phases as they have more targeted units to complete. Moreover, the rest 80% is assumed to be provided by the private sector which could pose a challenge to the program to reach its targets, as the capacity of the private sector is questionable while it has little interest in affordable housing development due to its low-profit return.

Table 3.7 Targeted plan for One Million Housing program

No	Plan	Year	Total Units	Units provided by DUHD
1	The 1 <sup>st</sup> five-year plan	2011-2015	100,000	20,000
2	The 2 <sup>nd</sup> five-year plan	2016-2020	180,000	36,000
3	The 3 <sup>rd</sup> five-year plan	2021-2025	300,000	60,000
4	The 4 <sup>th</sup> five-year plan	2026-2030	420,000	84,000
	Total		1,000,000	200,000

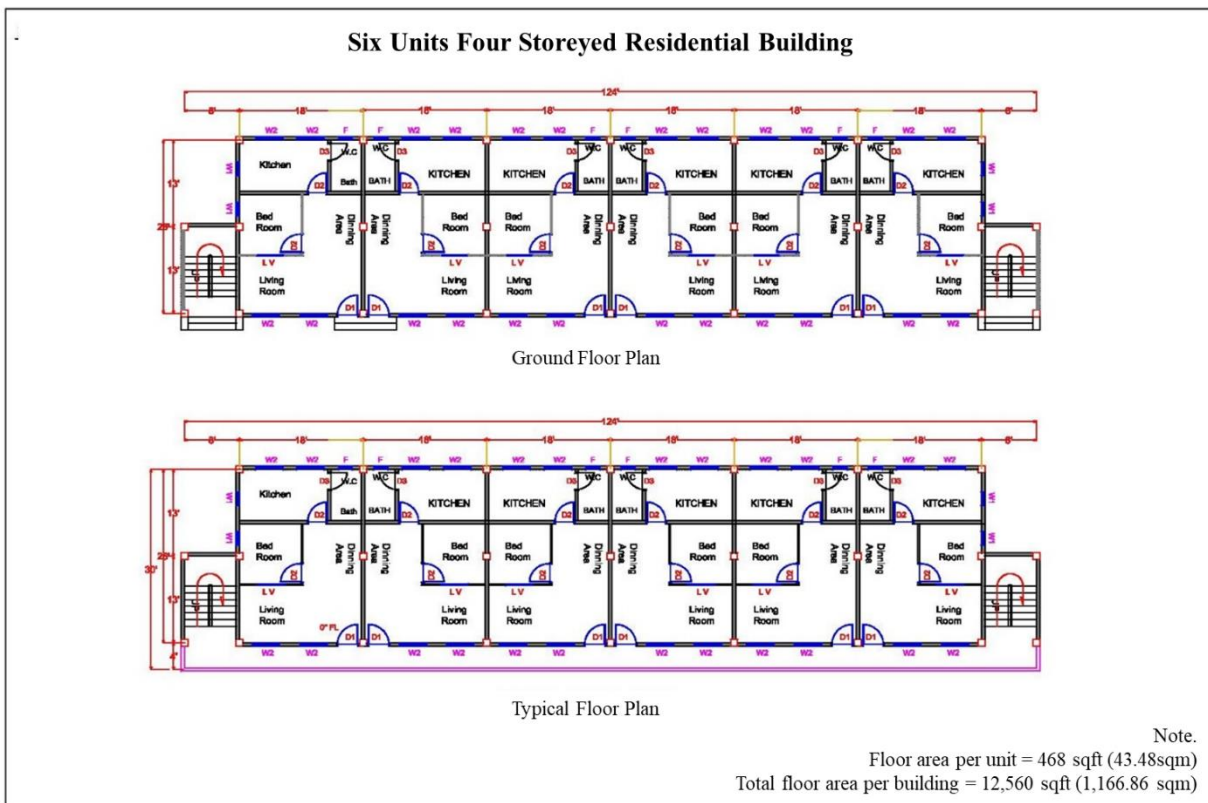
Source: Nwal and Panuwatwanich, 2018

DUHD is providing two types of housing – low cost housing for low-income household whose household income is less than 300,000 MMK and affordable housing for lower middle-income households with the income between 300,000 – 500,000 MMK. Table 3.8 provides the size of those two housing types and their related unit price and income eligibility. Figures 3.13 and 3.14 shows the floor plan layout of six and eight units’ apartment and Figure 3.15 for their exterior completed conditions of Yuzana low-cost housing at Dagon Seiken Township, which is one of the project sites of One Million housing program.

Table 3.8 Size and unit price for different categories of DUHD

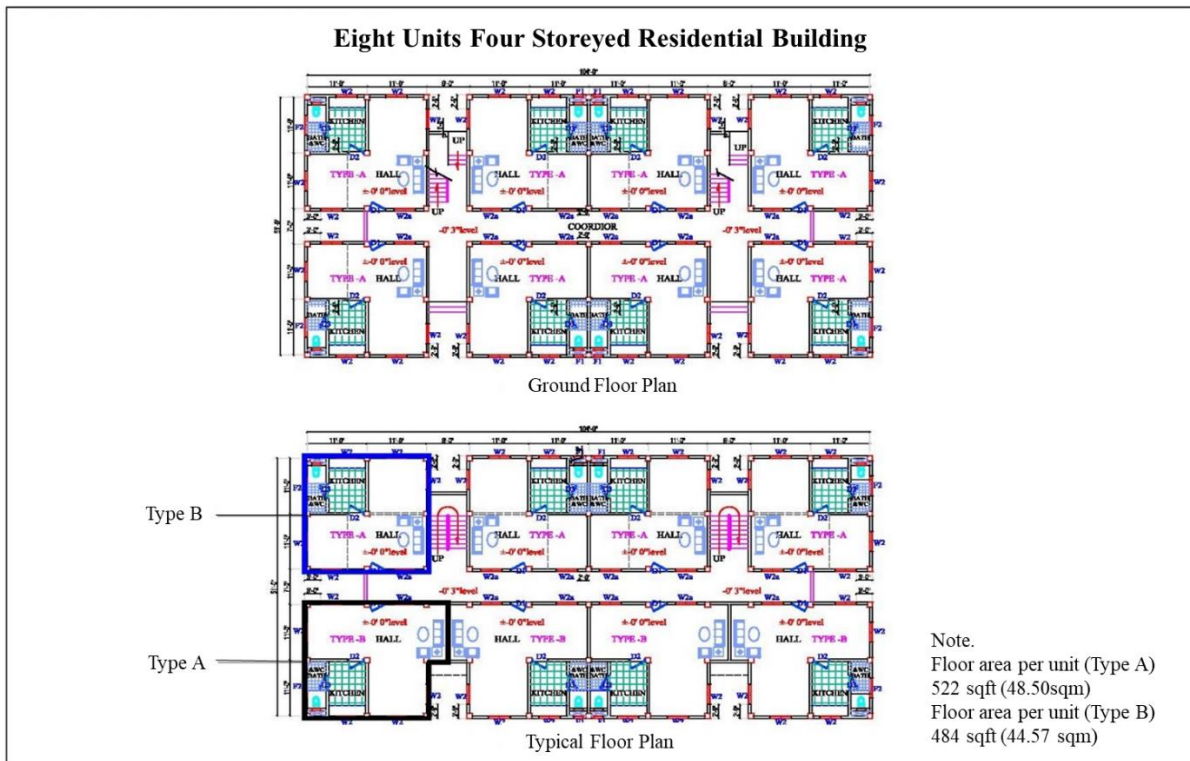
Housing type	Size per housing unit		Unit price (USD)	Income eligibility (gross HH income per month)
	Sq.ft	Sq.m		
Low-cost house	300 – 800	27.87-74.32	6,500 - 8,000 USD	< 350 USD
Affordable house	800 – 1,200	74.32-111.49	Up to 30,000 USD	350 - 800 USD

Source: ADB, 2019 and DUHD, 2019



Source: Field survey from DUHD, 2019

Figure 3.13 Layout plan of six units four storeyed building (Yuzana Housing)



Source: Field survey from DUHD, 2019

Figure 3.14 Layout plan of eight units four storeyed building (Yuzana Housing)



Source: Field survey from DUHD, 2019

Figure 3.15 Yuzana low-cost housing - eight units (left), six units (right)

Currently, the DUHD is the sole provider of low-cost housing, along with the Yangon City Development Committee (YCDC) for building permission and water supply; the Electricity Supply Cooperation for power supply and Construction, Housing and Infrastructure (CHID) Bank for housing mortgage loans for buyers. Regarding the financial mechanism, DUHD receives financial capital from its own revolving fund (72 million USD) while the national budget is only for the infrastructure development. It is, therefore, important for DUHD to avoid deficits and sell-out their completed housing units before starting next construction works. This has resulted in the authority to establish an income threshold for the buyers at a gross monthly

income of between 300,000 MMK to 500,000 MMK and purchase system of 30% down payment and 70% mortgage loan, which is unaffordable for average low-income and poor families (Nwal and Panuwatwanich, 2018). Thus, most of these housing units are owned by lower-middle- or middle-income families and DUHD is expecting to ease the budget constraint through the 2019 official development assistance (ODA) loan from the Japan International Cooperation Agency (JICA).

b) Grassroot approach - Community-led housing program

In Yangon, the community-led housing (CLH) was introduced by the local NGO, Women for the World (WfW). This CLH program is the country's first social housing program to use a community-led approach to housing the urban poor. This project emerged from WfW's initiative of collective saving group, which was an extended project from post-disaster reconstruction and rehabilitation after Cyclone Nargis struck Myanmar in 2008. The post-disaster reconstruction project adopted people-centered methods in a collaborative fashion to increase recovery efficiency. The project's success led WfW to expand saving group actions and implement them throughout several low-income communities in Yangon. Although it was aimed to empower women and enhance their families' living conditions, housing was one of the biggest aspirations of these women. Therefore, with the first group of 30 members, the first CLH project was developed as a pilot project in North Okkalar Township in 2009 with the help of small funds provided by Asian Coalition for Housing Rights (ACHR)'s Asian Coalition for Community Action (ACCA) Program (Kouri, Hofer, Sallam, and Amalsyah, 2019).

Since then, ten more community-led housing projects emerged in Yangon with the support of WfW, local architects and CAN members that assisted with the housing designs and settlement layouts. Today, these housing projects are spread in the townships Hlaingtharyar, Shwepyithar, North Okkalapa, Dagon Seikkan and Shwepaukkan (Figure 3.16 and Table 3.9), and combined, they accommodate just under 4,000 dwellers. The cost of building a single house (including the cost of land) is around US\$1,500 to 2,000. After one to two years of collective saving, each household receives a small loan from micro-finance institutions, which is then paid off at a monthly rate of US\$20-25 over a period of 5 to 8 years. Considering the typical costs associated with renting a house in a squatter settlement -amounting to 20,000 MMK (USD 13) per month as well as the quality of the housing, and all kinds of restrictions imposed by landlords, saving groups members can be released from these pressures and end up with owning their own house. A further benefit is the security of financial resources through their membership in the saving groups (Kouri, Hofer, Sallam, and Amalsyah, 2019).

Through the CLH program, WfW aims to (i) increase accessibility to affordable housing for the urban poor, (ii) upgrade the living conditions of poor households, and (iii) promote sustainable urban development that is inclusive of the poor. Therefore, the community themselves did the planning, found and purchased lands, negotiated, constructed at a low cost, formulated rules and manage the housing project. Even after the completion of the construction works, they continue the upgradation and consolidation of their settlement, and maintain the organization of their community through weekly meetings, learning exchanges and visits to



other housing projects. It is through these activities that the housing project also becomes a space that serves as an invaluable resource of skills, techniques and stories.

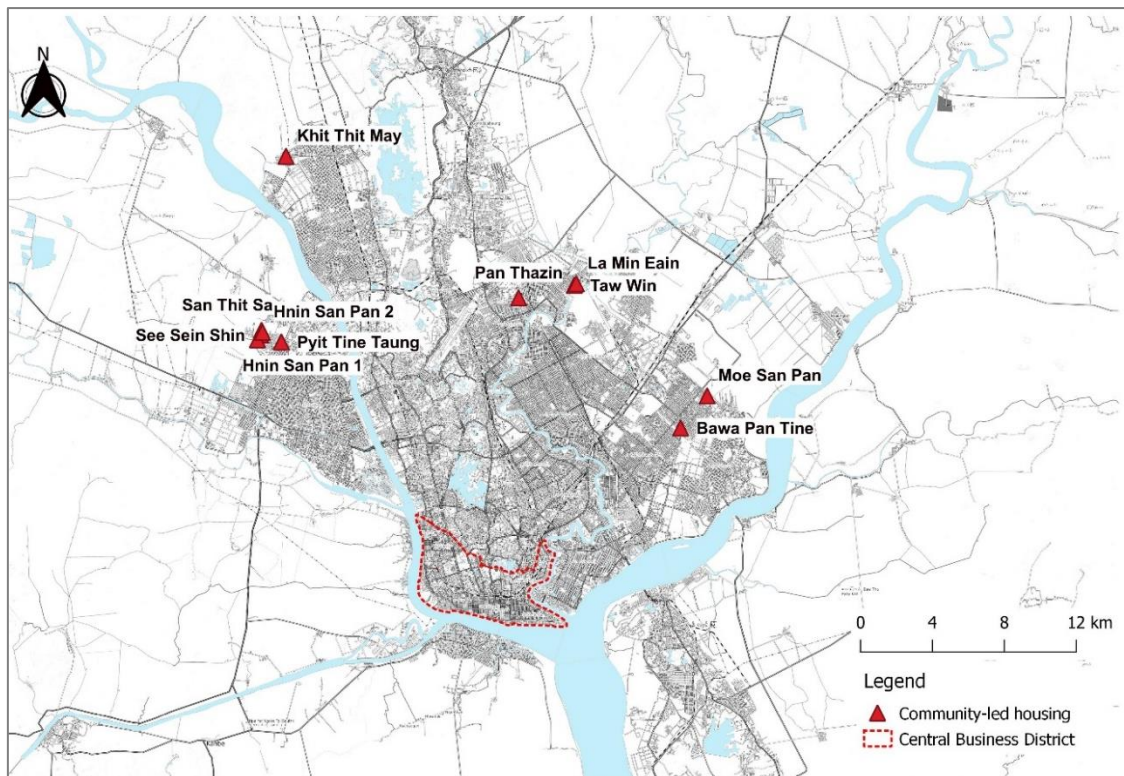


Figure 3.16 Location map of completed community-led housings

Table 3.9 Basic information of completed community-led housings

**1. PAN THAZIN HOUSING, NORTH OAKKALAR**

Location: No. 208 Dawna Str., Khine Shwe War Rd, Dhawonbel Ward, North Oakkalar Township, Yangon  
 Land Title: Community Land  
 Land Size: 200' x 100'  
 Plot Size: 14' x 30'  
 Number of Households: 30  
 Population: 61 (M) 54 (F)  
 House Size: 10' x 24.5'  
 Cost per House\*: 1,300,000 MMK  
 Total Budget: 40,000,000 MMK  
 Established in: 2009



**2. PYIT TINE TAUNG HOUSING, HLAINGTHARYAR**

Location: Myint Zu 1st St., Yakhine Yoelay Village, Htan Ta Pin Township, Yangon  
 Land Title: Community Land  
 Land Size: 220' x 210'  
 Plot Size: 15' x 36'  
 Number of Households: 64  
 Population: 291  
 House Size: 10' x 21'  
 Cost per House\*: 1,500,000 MMK  
 Total Budget: 97,500,000 MMK  
 Established in: 2009



**3. SEE SEIN SHIN HOUSING, HLAINGTHARYAR**

Location: Myittar Shin Rd., Nin Kyan Aye Village, Yoe Gyi Village, Htan Ta Pin Township, Yangon  
 Land Title: Community Land  
 Land Size: 1,725 acres  
 Plot Size: 13' x 36'  
 Number of Households: 140  
 Population: 673  
 House Size: 10' x 28'  
 Cost per House\*: 1,770,000 MMK  
 Total Budget: 248,000,000 MMK  
 Established in: March 2017



**4. BAWA PAN TINE HOUSING, DAGON DEIKKAN**

Location: No.448, Myanandar St., 85 Ward, Dagon Seikkan Township, Yangon  
 Land Title: Community Land  
 Land Size: 0,935 acres  
 Plot Size: 13' x 30'  
 Number of Households: 83  
 Population: 147 (M) 145 (F)  
 House Size: 10' x 15'  
 Cost per House\*: 1,250,000 MMK  
 Total Budget: 103,750,000 MMK  
 Established in: April 2017



## 5. MOE SAN PAN HOUSING, DAGON DEIKKAN

**Location:** No.449, Hla Theingi St., 89 Ward, Dagon Seikkan Township, Yangon  
**Land Title:** Community Land  
**Land Size:** 0,629 acres  
**Plot Size:** 13' x 30'  
**Number of Households:** 59  
**Population:** 99 (M) 103 (F)  
**House Size:** 10' x 15'  
**Cost per House\*:** 1,250,000 MMK  
**Total Budget:** 73,750,000 MMK  
**Established in:** April 2017



## 6. TAW WIN HOUSING, SHWE PAUK KAN

**Location:** No.468/78, Aung Mingalar St. and Taw Win St., 11th Ward, Shwe Pauk Kan, North Oakkalar Township, Yangon  
**Land Title:** Community Land  
**Land Size:** 300' x 300'  
**Plot Size:** 15' x 30'  
**Number of Households:** 120  
**Population:** 629  
**House Size:** 10' x 21'  
**Cost per House\*:** 2,200,000 MMK  
**Total Budget:** 264,000,000 MMK  
**Established in:** July 2017



## 7. KHIT THIT MAY HOUSING, SHWE PYI THAR

**Location:** 21 Ward, Lain Gone Village, War Tayar Rd., Shwe Pyi Thar Tsp., Yangon  
**Land Title:** Community Land  
**Land Size:** 100' X 680'  
**Plot Size:** 14' x 36'  
**Number of Households:** 88  
**Population:** 410  
**House Size:** 12' x 24'  
**Cost per House\*:** 2,276,655 MMK  
**Total Budget:** 200,345,616 MMK  
**Established in:** August 2017



## 8. SAN THIT SA HOUSING, HLAING THAR YAR

**Location:** Yakhine Yoegy Village, Htan Ta Pin Township, Yangon  
**Land Title:** Community Land  
**Land Size:** 2,026 acres  
**Plot Size:** 15' x 30'  
**Number of Households:** 96  
**Population:** 480  
**House Size:** 10' x 18'  
**Cost per House\*:** 3,000,000 MMK  
**Total Budget:** 2,880,000 MMK  
**Established in:** January 2018



## 9. HNIN SAN PAN HOUSING (I), HLAINGTHARYAR

**Location:** Yakhine Yoegy Village, Htan Ta Pin Township, Yangon

**Land Title:** Community Land  
**Land Size:** 1,526 acres  
**Plot Size:** 14' x 35'  
**Number of Households:** 69  
**Population:** 276  
**House Size:** 10' x 25'  
**Cost per House\*:** 3,000,000 MMK  
**Total Budget:** 207,000,000 MMK  
**Established in:** April 2018



## 10. HNIN SAN PAN HOUSING (II), HLAINGTHARYAR

**Location:** Yakhine Yoegy Village, Htan Ta Pin Township, Yangon

**Land Title:** Community Land  
**Land Size:** 0,628 acres  
**Plot Size:** 14' x 35'  
**Number of Households:** 29  
**Population:** 145  
**House Size:** 10' x 25'  
**Cost per House\*:** 3,000,000 MMK  
**Total Budget:** 87,000,000 MMK  
**Established in:** April 2018



## 11. LA MIN EAIN HOUSING, SHWE PAUK KAN

**Location:** Tawwin St., 11th Ward, Shwe Pauk Kan New Town, Yangon  
**Land Title:** Community Land  
**Land Size:** 1,04 acres  
**Plot Size:** 14' x 38', 13' x 42'  
**Number of Households:** 58  
**Population:** 290  
**House Size:** 10' x 26'  
**Cost per House\*:** 3,000,000 MMK  
**Total Budget:** 174,000,000 MMK  
**Established in:** December 2018



Source: Field survey from WfW, 2019

### **3.4 Limitations in Current Social Housings Implementation**

#### **3.4.1 Top-down approach - One Million Housing program**

Due to the financial requirement such as high cost with initial down-payment amount and the documentation process which needs formal registrations, current housings from DUHD could access by the middle income households who have stable income, instead of low-income group (LIG). While the project has missed the initial targeted population group, it is also left behind the targeted units by 2030. Therefore, in order to achieve the targeted housing units in the timeframe and be able to deliver to the targeted population group, the program should be addressed the challenges listed as below.

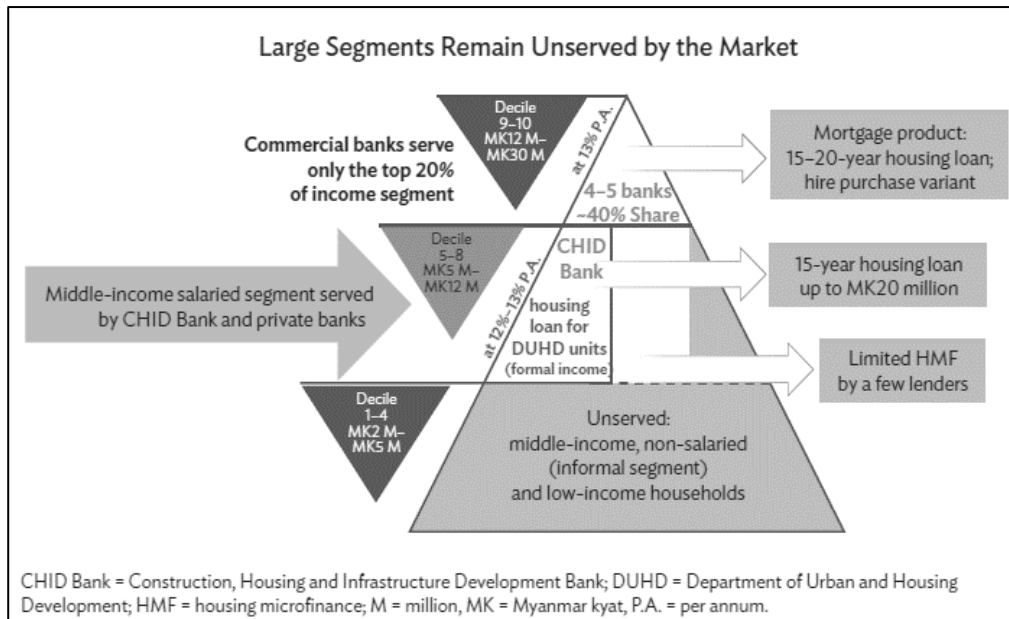
##### **a) Laws and regulations**

During the long period of a socialist and, later on, military regime, many of the institutions, laws and actors relating to housing and urban development were largely neglected. The conducted actions were more concentrated in getting power for the state and the rich developers, while little attention was paid for the social activities such as low-cost and affordable housing development, including the informal settlement upgrading. There is no clear policy or regulations for housing development particularly for public housings, and few details are offered on such programs in the current planning and development policies. During implementation, the authorities often experience overlaps or gaps in responsibilities with no clear guidance as to who should oversee specific procedures and outcomes. This oversight also affects private sector investment (from local developers and foreign investors) in affordable housing. Unclear policies and an unstable market are confusing them and giving them doubts (Nwal and Panuwatwanich, 2018). Moreover, the lack of different stakeholders' engagement in policymaking and implementation means some laws, such as land acquisition and high construction taxes, present barriers for implementation agencies and developers, respectively.

##### **b) Financial mechanism**

On the supply side, the DUHD, which is responsible for social housing development, has a limited budget for project financing. As of 2018, 17 billion MMK was used to construct one apartment building with 24 units. A total of 141 billion MMK is required to reach the target of 200,000 units by 2030 (Naing, 2018). However, if the only financial source is the revolving fund of the DUHD, there could be a funding shortage in the financing of future housing supply. There may be a need for an additional budget from other sources as the revolving fund only has 100 billion MMK. According to JICA (2018), the funding shortage could become more serious if the sales rate of housing units decreases. Thus, a better plan for the housing finance system is urgently needed to correct the funding shortage and avoid reducing the housing supply. Moreover, the high construction tax (30% of the total building construction cost) places stress on private developers who invest in the social housing sector. On the demand side, the housing specific CHID bank and microfinance banks have been established, and commercial banks are starting to provide housing mortgage loans. However, many households are still underserved due to the small number of banks compared to the large demand, as shown in Figure 3.17.





Source: ADB, 2019

Figure 3.14 Housing finance access pyramid

Due to an inability to lower the construction cost and the high-interest rate of mortgage loans, the unit price places the housing stress on potential buyers, especially low-income households. This high cost put most of LIG unable to make a down payment and/or to make monthly installments for a long time. In addition, lower low-income groups who usually live in informal settlements are grappling with their accommodation rental fees, and, therefore, cannot save 30% for the down payment (Nwal and Panuwatwanich, 2018).

c) Capacities of human resources

From the interview with DUHD, it is found that limited human resources are another issue that must be addressed. The lack of a separate task force for running the public housing program means the staff often have to share workloads and responsibilities, such as area development and urban regeneration, affecting the efficiency and quality of the work. This issue is also found in the loan application process at the CHID bank. There are limited working staff members at the bank, which receives hundreds of loan applicants. The work process takes longer and results in the withdrawal of applications and loss of buyers. In addition, little to no coordination between the local authorities such as the Yangon City Development Committee (YCDC) and Yangon Electricity Supply Corporation (YESC), and an inefficient management system are apparent in the delayed schedule of project implementation. One project took three years to be completed, while other completed housing units did not have access to electricity even though they were already sold. Other challenges include a lack of laborers skilled in modern construction techniques and the high cost of imported building materials. The lack of skilled laborers results in the application of conventional construction methods instead of prefabrication. It takes longer and affects the labor and overall costs. As local industries cannot manufacture the construction materials for domestic demand, most of the materials are imported, leading to a higher upfront cost in construction. In addition, the materials are

imported on a small scale as per necessity. They should be imported in bulk to reduce delivery costs. Another factor is the scarcity of land, experts, and technology.

d) Resources limitation

Next to the human resources issue, the absence of networked services in large parts of the city also poses an obstacle to the establishment of affordable housing in Yangon, and other parts of the country. The lack of infrastructure creates unfavorable conditions for the state and disincentivizes the private sector from developing low-cost and affordable housing solutions, leaving the production of houses at a much lower rate than what would be needed to keep up with the urban growth. Even where governmental solutions are in place, these are often not affordable. Instead, the target group of most so far developed housing projects has been middle or upper class residents, and even what is cast as ‘affordable’ by real estate providers is not measured against the capacities of the large numbers of low-income population. Adding to that, it lacks variety in the dwellings produced, so that the units often do not cater to the needs of traditional extended families, do not support the continuation of people’s lifestyles and jeopardize their livelihood opportunities.

### 3.4.2 Grassroot approach – Community-led housing program

Since the community-led housing is still in early developmental stage, there are also certain challenges associated with this model of housing provision. Within this community-led model, land is purchased collectively in an ‘informal’ manner since in all cases the plots are classified as agricultural or farmlands, generally not allowing their use for residential purposes unless the land is reclassified in a different category. What is more, in the current legislative system, collective land ownership is not stipulated. This can evidently create unstable conditions, uncertainty over the longevity of the housing projects, and might cause internal disputes within the communities. This insecurity can be resolved with solid structural and institutional reforms that allow informal processes to be eventually recognized and established. However, none of the WfW housing projects have received any threats of eviction, and the organization has been advocating since the beginning to the authorities for the full recognition of these settlements and for the integration of alternative models for the allocation of land for housing development into governmental policies and schemes (Kouri, Hofer, Sallam, and Amalsyah, 2019).

Despite the abovementioned challenges, compared to the formally provided low-cost housing, the community-led model is much more affordable translating to a significantly reduced financial burden for the government; both for construction and maintenance of housing. The model is furthermore more flexible since people can plan and manage their settlement by themselves, adjusting it to their needs and lifestyles. Compared to the imposition of certain apartment typologies typically observed in public housing, community-led housing respects the residents’ freedom of choice, while increasing problem-solving skills among the community.

## References

Asian Development Bank (ADB). (2019). *Financing affordable housing in Yangon*. Manila: Asian Development Bank.

- Department of Population. (2015). *The 2014 Myanmar population and housing census, Yangon Region, Census report volume 3-L*. Nay Pyi Taw: Ministry of Immigration and Population.
- Department of Population. (2017). *The 2014 Myanmar population and housing census, Thematic report on housing conditions and household amenities, Census report volume 4-I*. Nay Pyi Taw: Ministry of Labour, Immigration and Population.
- Forbes, E. (2019). Migration, informal settlement, and government response: The cases of four townships in Yangon, Myanmar. *Moussons*, 33, 95-117. <https://doi.org/10.4000/moussons.4943>
- Heeckt, C., Gomes, A., Ney, D., Phanthuwongpakdee, N., & Sabrié, M. (2017). *Towards urban growth analytics for Yangon: A comparative information base for strategic spatial development*. London: LSE Cities. <https://www.theigc.org/wp-content/uploads/2016/09/LSE-Cities-YUGA-Final.pdf>
- Japan International Cooperation Agency (JICA). (2013). *A strategic urban development plan of greater Yangon, Final Report I, Part I: The current conditions*. Myanmar: Japan International Cooperation Agency.
- Kouri, M. K., Hofer, K., Sallam, N., and Amalsyah, A. B. A. (2020). *Grounded learning: People-centered approaches to housing in Yangon and Yogyakarta*. London: the Bartlett Development Planning Unit.
- Kraas, F., Faese, H., and Kyi, M. M. (2006). *Megacity Yangon: Transformation processes and modern developments: Second German - Myanmar workshop in Yangon/ Myanmar 2005*. Germany: Lit Verlag.
- Lall, R., Mitra, S., and Sakuma, S. (2018). *Grounded development: Reflections on community-based practices in Sri Lanka and Myanmar*. London: the Bartlett Development Planning Unit.
- Lat, K. (July 2018). *Specter of Yangon as a Mega City Casts Shadow Over Whole Country's Future*. Accessed from <https://www.irrawaddy.com/opinion/guest-column/specter-yangon-mega-city-casts-shadow-whole-countrys-future.html>
- Linn, N. (2018). *Integration of traditional architectural identities with contemporary Myanmar houses in Central Myanmar*. Doctoral thesis submitted at Kyoto University, Japan.
- Macdonald, C. (2016, February 27). ကျူးကျော်ရပ်ကွက်နဲ့ သူဌေးရပ်ကွက် ကပ်လျက်ရှိနေတာ ရန်ကုန်ရဲ့ အနာဂတ်ပုံစံလား: [Is it Yangon's future where slums and high-end neighborhood next to each other?]. *Myanmar Now*. <https://www.myanmar-now.org/mm/news/656>
- Naing, M. (2019). *Key constraints of private house builders' role in the middle-income group (MIG) market segment in Yangon, Myanmar*. Doctoral thesis submitted at Asian Institute of Technology, Thailand.
- Naing, M. (2021). Influencing factors for the growth of informal rental housing in Yangon, Myanmar. *Current Urban Studies*, 9, 40-65. <https://doi.org/10.4236/cus.2021.91004>

- Naing, M., & Nitivattananon, V. (2020). Comparison of issues and countermeasures among previous and current squatter formations in Yangon, Myanmar. *Urban Current Studies*, 8, 396-416.
- Naing, W. (2018). *Development of affordable housing program of Department of Urban and Housing Development (DUHD), Myanmar: A case study in Yuzana low cost housing in Dagon new town*. A project report submitted to Asian Institute of Technology, Thailand.
- Nwal, S. S., and Panuwatwanich, K. (2018). Social housing in Myanmar: Issues and way forward. In the proceeding of *2018 Joint Asia-Pacific Network for Housing Research and Australian Housing Researchers Conference*. Griffith University, Gold Coast, Australia.
- Nwe, T. (1998). Yangon: The emergence of a new spatial order in Myanmar's capital city. *Journal of Social Issues in Southeast Asia*, 13(1), 86-113.
- Pe, A. Z. (2019). *A study on housing provision for low income households in Yangon city (A case study of "Yoma Housing" and "Maharbandoola Rental Housing")*. Master thesis submitted to Yangon University of Economics, Yangon, Myanmar.
- Smith, A. K., et al. (2017). *Building the city as a home – Yangon, Myanmar: Transformation in a time of transition*. Department of Planning Unit, University College London. [https://www.ucl.ac.uk/bartlett/development/sites/bartlett/files/group\\_2.pdf](https://www.ucl.ac.uk/bartlett/development/sites/bartlett/files/group_2.pdf)
- Than, T. M. (2021, November 17). ရန်ကုန်တိုင်းတွင်းမြို့နယ်တချို့မှာ ကျူးကျော်အိမ်ရာတွေ ဆက်တိုက် ရှင်းလင်းနေ [Informal settlements located in some townships in Yangon are being removed]. *VOA New*. <https://burmese.voanews.com/a/hlaing-thayar-slums-cleaning-projects-military-coup-voa-burmese-/6316537.html>
- Thura, A., Win, W., and Hlaing, M. (2014). Studies of the status of transportation condition (TC) in Yangon, Myanmar. *International Journal of Emerging Technology and Advanced Engineering*, 4(5).
- URDI. (2013). *Interim report*. Yangon: DUHD.
- UN Habitat. (2020). *Rapid urban diagnostic report*. Prepared for Department of Urban and Housing Development, Ministry of Construction.
- Wachenfeld, M. G., Yee, H. W., Oo, M. B., Bowman, V., & Guest, D. E. (2020). *Myanmar's land acquisition, resettlement and rehabilitation law 2019 – One step forward, two steps back?*. <https://www.myanmar-responsiblebusiness.org/pdf/2020-01-MEAA-Submission-MCRB-LAARL.pdf>
- World Bank. (2019). *Myanmar's urbanization: Creating opportunities for all*. Washington DC: World Bank. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/807471559656318146/creating-opportunities-for-all-full-report>
- Yangon Region Government (YRG). (2017). *Report on squatter registration project*. Yangon: Yangon Region Government.
- Zune, M., Rodrigues, L., and Gillott, M. (2020). Vernacular passive design in Myanmar housing for thermal comfort. *Sustainable Cities and Society*, 54, 101992.

## **CHAPTER 4. IMPLEMENTATION PROCESS OF COMMUNITY-LED HOUSING**

Chapter four presents the implementation process of community-led housing by the community members, together with NGO and other stakeholders. It describes the implementation practices based on the completed 11 projects and identifies the changes in the process and the stakeholders' roles and networks to draw the key enabling elements and the gaps in the current process.

### **4.1 Research Methods**

This chapter aims to respond the theme 1 which is to study the implementation process of community-led housing by the community with other stakeholders and analyze the lessons learnt for the success factors and barriers in the current practice. The case study was conducted at 11 CLH project sites under WfW that were implemented between 2009-2019 in Yangon as shown in Figure 3.16. All case study sites were implemented with the capabilities of the communities particularly women, with the WfW's support, where the government's financial and institutional support were absent. This situation provides relevance to the case study to extract the lessons that will contribute to the practices of NGOs and local communities regarding CLH.

The data collection was mainly conducted through in-depth semi-structured interviews, which were accompanied by site visits and literature reviews of the technical reports related to the case study sites. The interviews were conducted in two rounds, where the first preliminary survey was conducted to understand the overview of the case study sites so that the researchers could develop interview questions for the main survey. Both rounds of interview surveys included all 11 project sites and WfW, where the participants remained the same for data consistency. A purposive sampling method was used to select the participants which included two community members from each site and two staff members from WfW, resulting in a total of 24 participants for each round of the survey. The selected community members were female representatives who actively participated in the implementation of housing since they were more likely to be involved in the whole process and could better recall their experiences in detail. The interview survey was conducted in dialogue form under the guiding topics and subsequent follow-up questions from the interviewer. The interviews aimed to identify (a) the procedure of housing implementation, (b) the participation of the community, and relation to NGOs and other stakeholders, (c) the relationship of NGOs to the communities, and the activities and efforts over the years, (d) financial mechanism, (e) land management, (f) community management, and (g) lessons learned from the process.

For data analysis, a thematic approach was used and the analysis process included (i) transcribing the interview data from each case, (ii) sorting the transcripts and identifying the activities the communities and NGO carried out, (iii) fitting the activities into different categories, which are steps; and (iv) assigning the names of the steps based on the interviewees' words. This analysis revealed the CLH process carried out at each study site and was compared with each case to identify the changes between the sites and their impacts to the process. Stakeholder analysis was conducted based on the analytical framework developed by Czischke (2018) to identify the stakeholders involved in the process and their

interrelationships. In addition, it also classified the stakeholders' responsibilities and roles as primary, secondary, and tertiary stakeholders while this, along with relationships, revealed stakeholders' control or power over the process.

Following the analysis of implementation process and stakeholders, the study examined the lessons learnt in terms of the practices identified as critical in developing and nurturing the capabilities of communities as well as those identified as impediments to the process. The discussions was based on different concepts from John Turner (1976), Sen (1999), Awan, Schneider and Till (2011), Boonyabancha et al (2012), Rahman et al (2016), and Czischke (2018), Boonyabancha and Kerr (2018), Siame and Watson (2022) - the power of collective action and freedom to control as shown in Figure 4.1. It is argued that given power of control (dweller control) to the community through collective actions, a household can gain capabilities and this empowerment develop the collective agency and spatial agency which remove the barriers and allow them to make changes in the built environment.

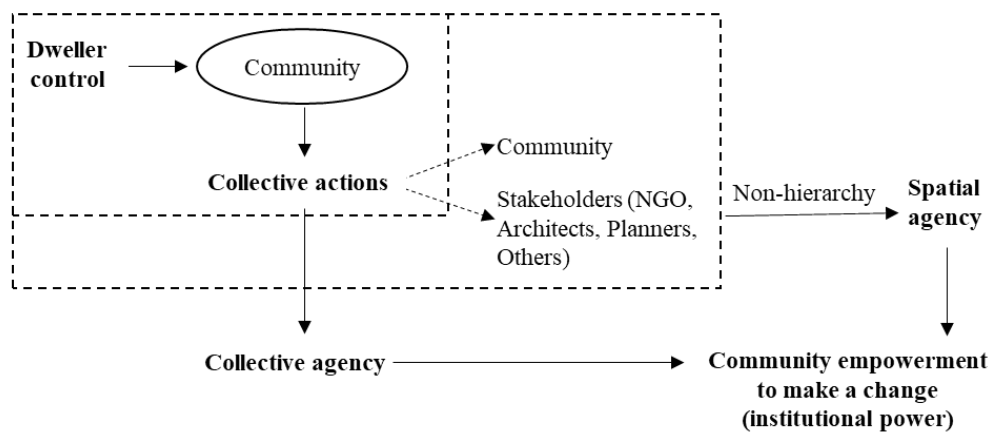


Figure 4.1 Analytical framework for analysing implementation mechanism

## 4.2 Implementation Process

The program is initiated by the local NGO, Women for the World (WfW) along with its aim to empower the women and to improve the living conditions of urban poor. Targeting to the female members of the low-income households, WfW initiated the collective saving system and built the social capital and network which contributed to the community empowerment for housing implementation. Based on the idea of women collective saving, collective purchase of land and self-construction, the first generation of community-led housing projects emerged as the pilot project in suburban areas of Yangon region in 2009 with small funds made available from ACHR's Asian Coalition for Community Action (ACCA) Program. Since then, the activities have been continued under the lead of WfW and successfully constructed 836 houses, 11 project sites in four different townships in Yangon.

Based on the analysis of the interview transcripts, it is found that the procedure of the process was similar to between sites but different in the stakeholders' involvement and the roles between earlier and latter sites that affected to the financial mechanism and design development of the process, later contributing to the overall implementation process.

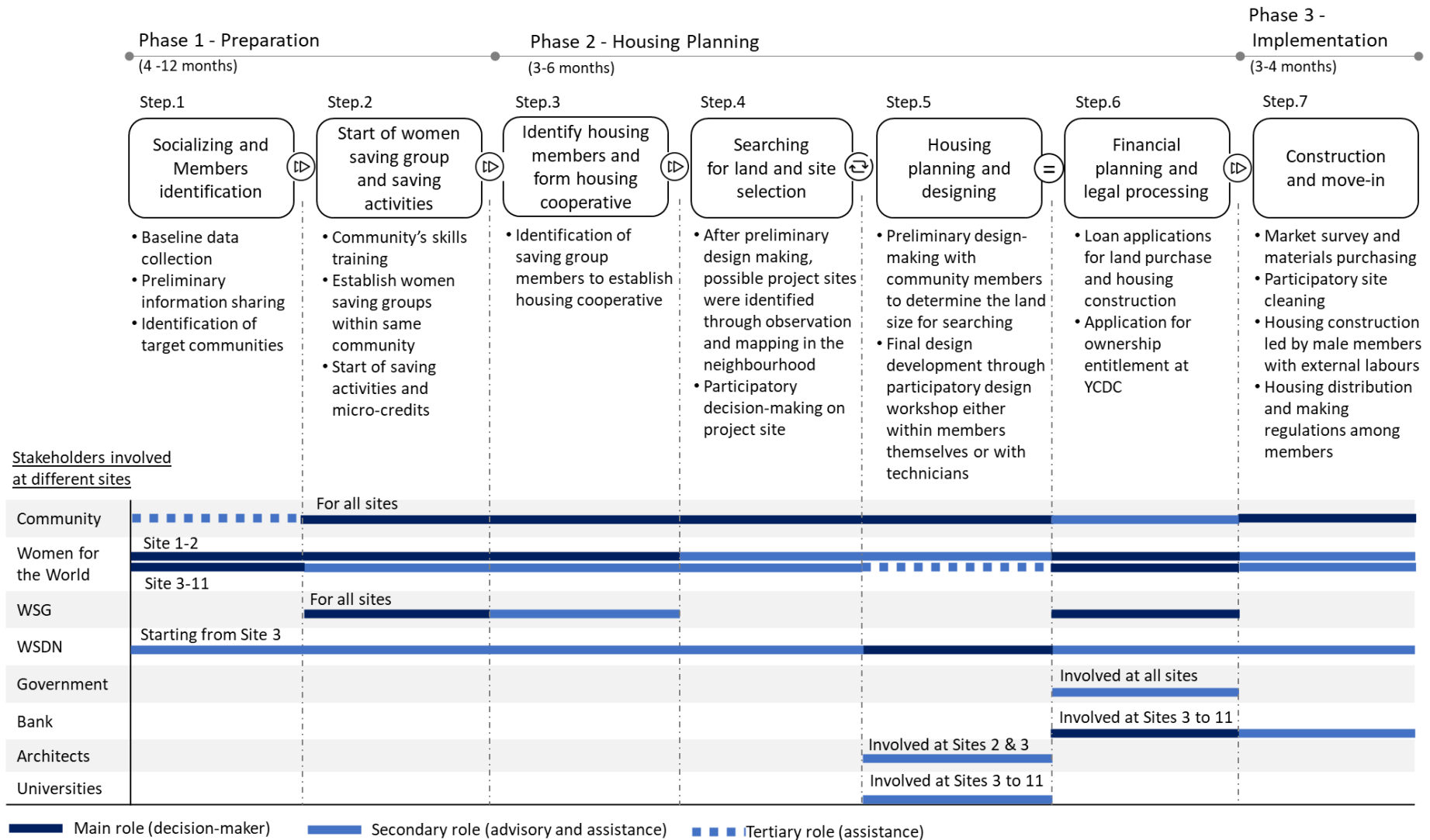


Figure 4.2 Common implementation process of 11 sites

Figure 4.2 provides the process of CLH implementation with each step as well as the stakeholders who were involved in these steps with their roles in different sites. The process of the CLH generally consisted of seven steps under three phases as common practices in 11 sites while the differences and stakeholders' analysis are discussed in sections 4.3 and 4.4 respectively.

#### Step 1 – Socialization and members identification

As of first step, WfW visited to different sites in suburban areas where the informal dwellers are located to understand the community structure and create the relationship between WfW and local community members. During the visit, WfW collected the socio-economic data of the local community while as well share the information on the WSG. The information provided the selection of the targeted communities in which the members must be informal dwellers and facing common problems such as lack of basic services.

#### Step 2 – Starting of women saving group and saving activities

In this stage, WfW firstly held the workshop with the female community members whom they got contact from the field visit. During the workshop, WfW provided the information and knowledge required to establish the saving groups. Starting from Site.3, the senior members from Women Saving Group (WSG) also joined the workshop and shared their experiences to establish the bond between existing and potential members. The participants who attended the workshop later shared the information of women saving groups to the neighbors in their communities, and saving group was formed with those who were interested in it. The saving group only allowed the membership for females as they are viewed to have more possibility to save money than males, thus named as Women Saving Group and WSG is formed with people from same community for safety and trust issue.

Usually, the saving groups consist of 20-50 people each; a size that has proven to maximize participation and maintain efficiency. Together, the members draft the regulations, decide on the saving amount, and frequency of the meetings. In each group, five individuals are selected to fulfill three roles – accountants, cashier and checkers. These roles are rotating and pass to all group members in turn. Each group becomes a self-help saving group and credit union while WfW has to provide several training workshops to the group members regarding savings and skills of accounting and financial management. Such all individual saving groups have connected each other under the Women's Saving and Development Network (WSDN), an umbrella group.

The members had to attend the weekly meeting regularly and save 200 MMK (0.14 USD) as community funding and at least 700 MMK (0.50 USD) as personal saving weekly. Each member had their own account book to record and the representatives had to manage the overall account management, book-keeping and saving money. The interest rate is between 3-5% per month which is lower than market rate of 10-15%. This collective saving act provided the foundation for the housing development and an act to gradually build trust amongst community.



### Step 3 – Identify members for housing project and establish housing cooperative

In the time being of saving, the groups started to conduct the survey among themselves to identify the numbers and members who would like to join for the housing project. This step contained some period of time from six months to two years at most as the members had been changing from moving to other cities or leaving the saving group. To join for housing project, the household should be a member of WSG where the membership period was at least one year with minimum personal saving amount of 100,000 MMK (71 USD) in saving group and also had the capability to save more than previous weekly saving amount to repay the loan for house. Once the certain numbers of members had reached and confirmed, the group established the housing cooperative themselves to initiate the community-led housing activities. Each housing site contain between 30-200 families and its housing cooperative has four to eight individuals to represent the whole community and manage the housing activities and all of housing cooperatives worked in network under WSDN and WfW.

### Step 4 – Find possible sites for community-led housing

The first activity of the housing cooperative was to search for land and it usually took for months. The housing representatives went to different possible locations in the same township and made the records of land price, size, and surrounding conditions. The information was then shared with the community members during weekly meeting and with the help from WfW, they made draft layout plans on different potential sites to see which sites suit them the best. The decision of land largely depended on the land price and the availability of individual plot size that the community wanted while other factor also included the accessibility to the employment, market, school, and bus stop. In this context, even though the group members initially targeted to residential land, it was unsuccessful due to high price thus had to purchase the agricultural land instead for all project sites. Even though there is a risk from eviction due to establishing on agricultural land, such land plots were the only that are affordable for the community as they were in low price from being located in peri-urban areas with almost no infrastructures presented.

### Step 5 – Housing planning and design

This step was carried out in parallel with step 5 along with financial planning. After the land was decided, the group made the final decision on the design of site layout and individual housing unit based on the draft design and plan from the first round and the process of design production varied to sites from earlier and later project sites. Initially, the groups from sites 1 and 2 planned and designed by themselves with little help from WfW which also had a little experience on house planning at that time. Without the guidance from the technicians, the groups could not develop the proper plan due to limited knowledge. This resulted the disputes among the members in site 2 in terms of infrastructure accessibility from improper site layout.

Therefore, in 2010, WfW organized the participatory design workshop with architects for site 2 as more members had joined the housing group while the site layout and houses were in need of renovation. During the workshop, the group members provided their expectations and explored the designs using some simple tools such as paper models. The final housing design based on the community suggestions and technical details such as shared septic tanks were

proposed by the architects. The members from site 1 were also invited to workshop to come and learn so that they could also apply in their site and share the experiences to other communities. Compared to sites 1 and 2, the projects implemented in 2017 and later had more systematic planning in terms of layout and consideration for future infrastructure development even in the initial stage. Even though, there was not a proper participatory planning workshop with architects, new members from later projects were led under the senior groups and the architectural students who were volunteering at WfW helped them to produce the architectural drawings and technical consultation if necessary.

Figures 4.3 and 4.4 show the typical floor plan for the housing projects and although the communities had received the technical support, the final design of housing units had not improved much due to limited budget. The differences between earlier and later projects were found in more systematic site layout that considers the equal accessibility to the basic services, drainage system, and the use of individual septic tank from previous share type that needs frequent maintenance.

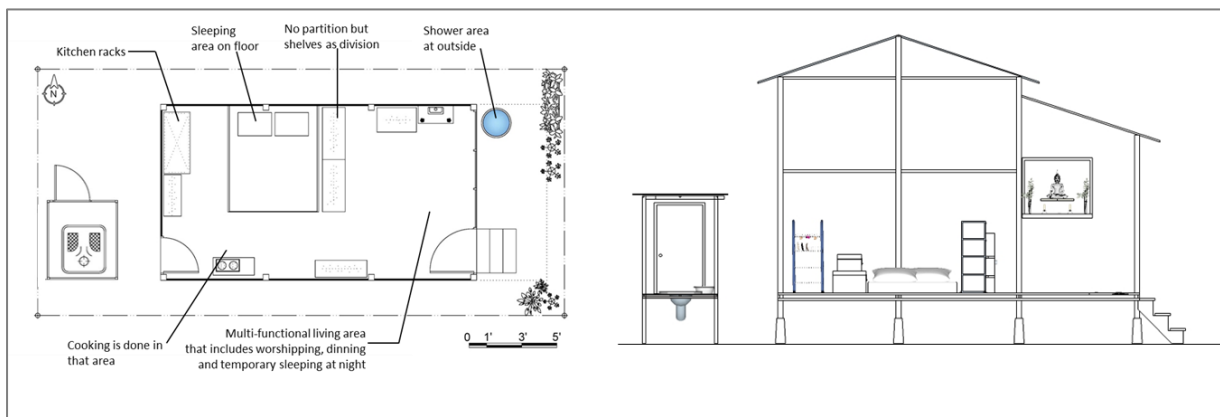


Figure 4.3 Typical initial housing design (Site 1: Pan Thazin Housing)



Source: Field survey from Women for the World, 2019

Figure 4.4 Initial housing conditions (Site 1: Pan Thazin Housing)

#### Step 6 – Legal processing and financial management

This stage is largely led by WfW for the community. The step included the negotiation with landowner for the purchase, financial planning, and the application for loan from the bank and the ownership entitlement. Firstly, the community negotiated with the landowner and

once there was an agreement between, the community members started working on the financial planning with WfW and the microfinance institution. In here, WfW acted as a collateral for the loan application and the loan amount and terms were decided based on the return capability of the community members. Table 4.1 showed the mortgage loan for sites 1-11 and the loan provided the communities for land purchase and initial housing construction.

Table 4.1 Mortgage loan for Sites 1- 11

Site <sup>a</sup>	1	2	3	4	5	6	7	8	9	10	11
Loan <sup>1</sup>	1.3 M	1.5 M	1.8 M	1.25M	1.25M	2.2 M	2.28M	3 M	3 M	3 M	3 M
Repay <sup>b</sup>	20 K	20 K	50 K	50 K	50 K	55 K	55 K	80 K	80 K	80 K	80 K
Period	5 yrs	5 yrs	5 yrs	5 yrs	5 yrs	5 yrs	5 yrs	3 yrs	3 yrs	3 yrs	3 yrs

Note: (a) For sites 1 and 2, the communities received the loan from WfW through ACHR while sites 3-11 got the loan from micro-finance bank called KEB Hana Microfinance (KEMF).

(b) Average income for households 100-300K MMK (70-220 USD) where monthly loan repaid amount was 20-26% of their income which was less than 30% of housing affordability rule of thumb.

After the community received the loans from the bank, the purchase was done and ownership entitlement was processed at the YCDC, with the guidance from the NGO and WSDN. The land for all project sites is entitled as ‘collective land’ in order to prevent selling or pawning the property. The community have to inform the ward authority for construction and resident permission as well.

#### Step 7 – Construction and move-in

The construction activities had to be begun within two weeks once the housing loan was granted. Before the construction was carried out, the housing representatives took the responsibility of market-surveying and purchasing of the building materials. The purchase was usually done in bulk to save money. Firstly, site clearance was carried out together with the female members, followed by the self-construction which was mainly carried out by the male community members and the external construction labors. For the construction process, the community followed the traditional beliefs which were watering the structural columns with Eugenia leaves and putting the frontmost columns which were tied with banana and Eugenia leaves on the ground first, followed by the suites. Infrastructure development (pavement, drain, water and electricity) were not usually included in this stage but later implemented based on the budget availability after they were settled down in their communities.

At the same time, the housing committee set up the regulations for the fellow members in the housing community, with the support from WSDG and WfW. The regulations included the eligibility criteria, the activities that they had to participate and other housing related issues. The distribution of the housing units was done by drawing lots and the members could move in once the house construction is completed.

<sup>1</sup> 1 USD = 1,410.07 MMK (currency rate in February 2021)

### 4.3 Differences in Implementation Process Between Sites

Though similar procedure was applied in all project sites, there were differences in certain activities as shown in Figure 4.5. These activities were the stakeholders, financial mechanisms, design making, and degree of dweller control, all of which affected the overall delivery strategy of the project.

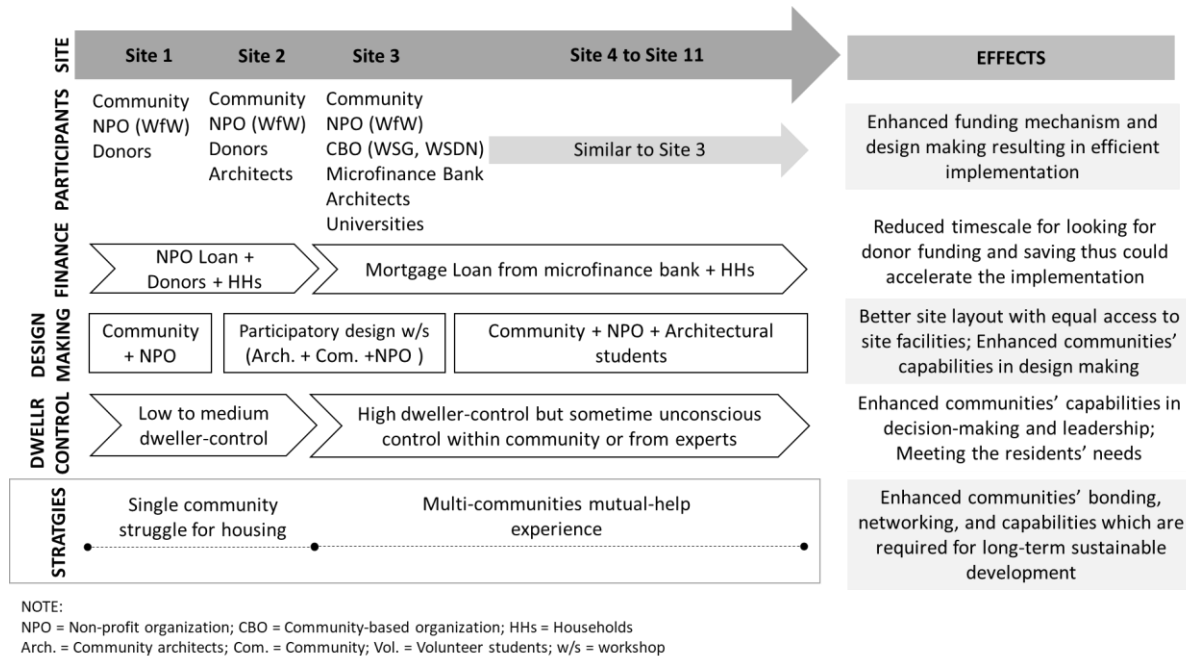


Figure 4.5 Changes in the community-led housing implementation process in sites 1-11

**Participants:** WfW was able to widen the network of stakeholders involved in the implementation process. Only WfW and the community were involved in the implementation of Site 1 and the first phase of Site 2. Then, in 2010, WfW made a connection with the Community Architects Network (CAN) through the ACHR conference. Along with CAN, WfW held the first participatory design workshop for planning phase 2 of Site 2 and enhanced the community site planning. The program was later put on hold to start new sites due to political changes in the country, but this brought an opportunity to widen the stakeholders' network through WfW's participation in various conferences. WfW was able to include the micro-finance bank, academic institutions and other support organizations and professionals into the process, resulting in a more productive and efficient implementation process.

**Financial mechanism:** Since the WSG's savings alone could not support housing development, the communities had to rely on other financial sources. When WfW started supporting CLH in 2009, it was with funding from ACCA program due to the lack of loan program that could provide to grassroots level households. But, to avoid dependency on external resources and have more flexibility in scaling up the process, WfW decided to turn to private sector and able to reach to foreign microfinance bank in 2017. The financial mechanism was improved into a mix of collective financing approach with five years loan program, channeled through WfW and WSDN. This localized financial mechanism

significantly accelerated the implementation process in terms of time and scale and resulted in nine new project sites within two years.

**Design-making:** Initially, housing design planning was done only by the families themselves. However, disputes at Site 2 led to the co-production of site planning and house design. The participatory design workshop was held for phase 2 of Site 2 and for Site 3; meanwhile, the latter project sites were developed with the community members and the volunteer students. Although house design did not improve significantly due to the affordability concerns of the communities, co-production provided the communities more confidence in design development and improved their knowledge on community planning, building materials, and the need for basic infrastructures.

**Dweller control:** Even though Sites 1 and 2 were mostly led by WfW, the families were encouraged to make decisions by themselves in the operation of saving groups, land search, design development, and construction. This helped families in Sites 1 and 2 in developing the ability to make decisions, including housing planning and design, which were relevant for the community to develop spatial agency and collective actions for further housing growth as a process. The kind of dweller-control at Sites 1 and 2 was transferred to latter project sites and starting from Site 3, the old housing community were given the responsibilities to lead the newcomers, with the help of WfW. This not only improved the old members' leadership skill but also allowed the new families to speak out their needs more comfortably and enhanced their capabilities through peer learning, leading to a better autonomy for further community development.

Therefore, overall, the community implementation strategies evolved from “single community struggle for housing” to a “multi-community mutual-help experience”. The project was first started from community saving groups which continued towards housing development with members who had similar intentions. The struggle for housing was mainly a single community in earlier Sites 1 and 2, as the families first needed to collaborate with each other within their own community. However, this strategy was shifted to the inter-community mutual help experience by helping and learning from each other in a collective manner to achieve their own housing.

#### **4.4 Stakeholders' Network and Their Roles**

The findings from the interviews with the representatives from WfW and 11 sites are shown in Table 4.2 for the stakeholders involved in the process along with their roles and Figure 4.7 for their relationship between each other at different levels. As depicted in Figure 4.7, the community and WfW are the key stakeholders and have relationship not only among themselves but also with other secondary and tertiary stakeholders at different levels. Among two types of relationship, strong collaboration interrelationship is found among the primary stakeholders such as the community, WfW, WSGs and WSDN. They are mutually interdependent and are related to each other for day-to-day operations such as the community communication with WSG for saving activities and with WfW and WSDN for management and decision-making process.

For earlier projects that were implemented in 2009, the community has ad-hoc relationship with only the private material suppliers for materials purchase and the ward authorities for construction and resident permits but the relationship and network are later expanded with the hard work of WfW and more stakeholders were starting to participate in the process. For technical aspect, in 2010, the first participatory design workshop was held by Community Architects Network (CAN) with WfW and the community members from sites 1 and 2 to improve the capacities of the community. Following this event was the DPU annual field trip workshop, which was organized in 2017 until 2019, leading the relationship between WfW and academic institutions and organizations. Practiced directly in the community facilitated by WfW, the annual workshop involved students from UCL with architectural students from YTU. AMA and CAN were also involved in providing related trainings and also a room for the students to work on their projects. However, it is to note that DPU annual field trip workshop had not directly involved in design development of CLH but rather letting the community members participate in their workshops to understand the participatory design approach and sharing technical knowledge and advisory for site and house planning. For finance, two microfinance institutions were reached out to WfW for collaboration and started working with KEB Hana Microfinance (KEMF) in 2017. This serves as an alternative financial scheme for both community and KEMF. As WSDN and WSGs were unregistered formally for some sorts, they were not included in the KEMF's regular loan scheme. But the saving groups' long records of weekly savings and loans, the rigid yet flexible scheme of groups, significant numbers of members and WfW as collateral made the KEMF agreed to collaborate, starting from Site 3.

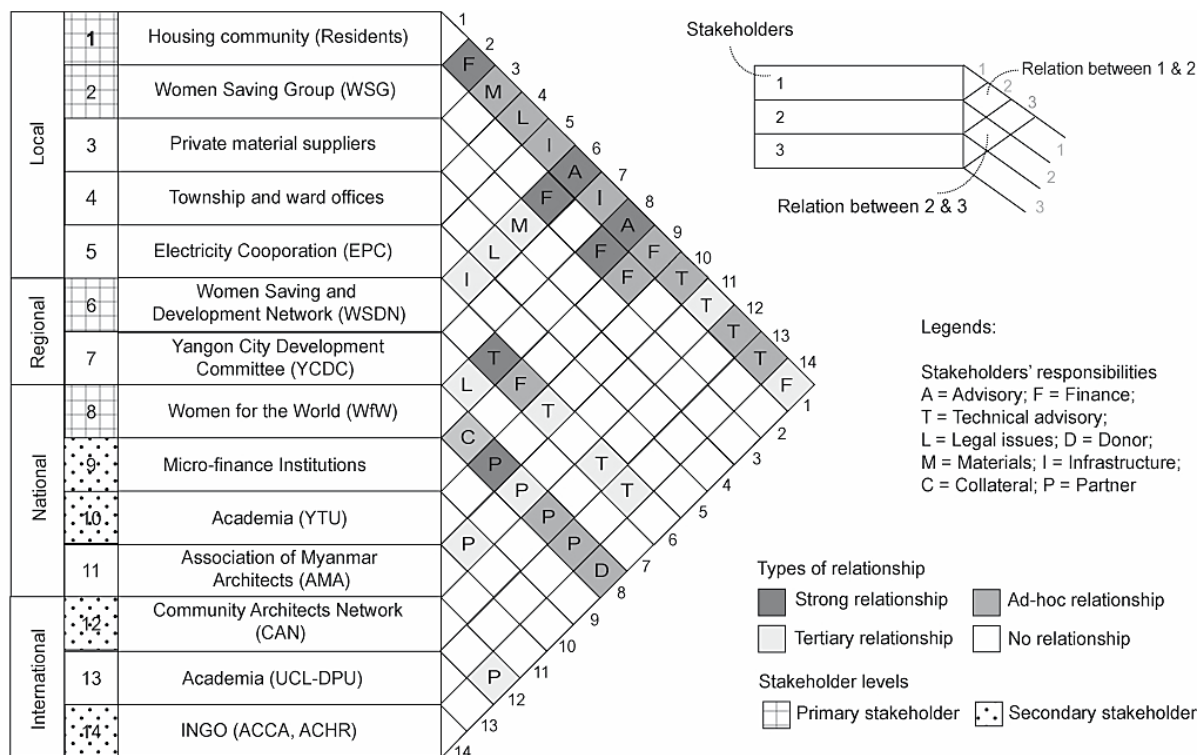


Figure 4.6 Stakeholders' network in community-led housing implementation

On the other hand, even though there has been an increased participation from social organizations and academic institutions, the involvement from public sector is still limited. Since 2009, the government agencies that have relationship with the community are township and ward authorities for permission, YCDC for land ownership entitlement and EPC for power supply and main housing implementing agencies as DUHD and even Yangon city government are in limited collaboration.

As shown in Table 4.2, the degree of stakeholders' participation and power could be categorized into three types as per Czisehke (2018) - level 1: primary stakeholders are those who have significant influence in the CLH or stakeholders with strong legitimacy and/or strong control over essential resources; level 2: secondary stakeholders are those who still have an important role but are not involved in day-to-day operations unlike primary stakeholders and their legitimacy may vary from medium to high while level 3: tertiary stakeholders are individuals or organizations that are indirectly affected to the CLH.

The primary stakeholders in this program are those who have significant influence in the project and this includes the community (resident group), Women for the world (WfW), Women's Saving Group (WSG) and Women's Saving and Development Network (WSDN). They held the strong collaboration among them to carry out day-to-day operations and interrelated with each other for saving loan activities and planning and design of housing. As shown in Table 2, the communities were the implementers and owners of the project. As WfW encouraged them to act themselves and keep the community as same hierarchy, their degree of influence on decision-making matter is high even in developing housing design and plan without much control from the technicians. WSGs and WSDN are the self-organized community network that could alter the decision-making of the communities since they are to manage and provide advice on the saving loan activities and other housing management activities on behalf of WfW. For WfW, the NPO played a variety of roles including the initiator, intermediary and facilitator by helping to bring stakeholders together and also advisor on technical matters to the communities, WSG and WSDN.

Secondary stakeholders inhere are those who are involved in the implementation through primary actors for certain purposes such as technical and financial support and have less influence on the process. In this study, the secondary stakeholders varied from public agencies namely township and ward authorities, Electrical Power Cooperation (EPC) and Yangon City Development Committee (YCDC) to the private agencies such as micro-finance institutions, Community Architects Network (CAN) and material suppliers and lastly academic institutions like University College London (UCL) and Yangon Technological University (YTU). All these actors hold ad-hoc form of interrelationships with primary stakeholders particularly, the local community and WfW except the governmental agencies. The community held the relationship with the local government only for document processing and there is a lack of active participation from the government in implementation of CLH.

On the other hand, ACHR and AMA lay at tertiary level stakeholders as they were only indirectly affected to the CLH development. ACHR had been involved only in site 1 development as a loan provider to the housing community through WfW. Similarly, AMA

also contacted through WfW as the technical advisory for the housing development in later projects in 2017. Unlike the abovementioned stakeholders, Yangon city government and DUHD had no relation with primary stakeholders even though they are the main public implementing agencies regarding housing development.

Table 4.2 Roles of stakeholders involved in the process

<b>Primary stakeholders</b>	<b>Roles</b>
Community/ residents	<ul style="list-style-type: none"> <li>• Implementor of project</li> <li>• Recruiter, planning, co-design</li> <li>• Daily management</li> </ul>
Women for the World (WfW)	<ul style="list-style-type: none"> <li>• Initiator, intermediary to reach other stakeholders</li> <li>• Legal, organizational, and financial advisor</li> <li>• Skills trainer</li> <li>• Advocacy, lobby to government agencies</li> <li>• Guarantor to micro-finance institution</li> </ul>
Women's Saving Group	<ul style="list-style-type: none"> <li>• Financial manager</li> </ul>
Women's Saving and Development Network	<ul style="list-style-type: none"> <li>• Legal, organizational, and financial facilitators</li> </ul>
<b>Secondary stakeholders</b>	<b>Roles</b>
Micro-finance institution	<ul style="list-style-type: none"> <li>• Lender</li> </ul>
University students (UCL, YTU)	<ul style="list-style-type: none"> <li>• Technical expertise in design development</li> <li>• Architectural design in close collaboration with community/residents' group</li> </ul>
Architectural organization (CAN, AMA)	<ul style="list-style-type: none"> <li>• Technical expertise in design development</li> <li>• Providing trainings to the students for the collaboration with community/residents' group</li> </ul>
Material suppliers	<ul style="list-style-type: none"> <li>• Material suppliers to the community/residents' group</li> </ul>
Ward authorities	<ul style="list-style-type: none"> <li>• Residents' registration</li> <li>• Approval for construction activities</li> </ul>
Township authorities	<ul style="list-style-type: none"> <li>• Residents' registration</li> <li>• NRC registration</li> </ul>
Electricity City Cooperation (EPC)	<ul style="list-style-type: none"> <li>• Local power supply provider</li> </ul>
Yangon City Development Committee (YCDC)	<ul style="list-style-type: none"> <li>• Local planning regulations</li> <li>• Land ownership entitlement</li> </ul>
<b>Tertiary stakeholders</b>	<b>Roles</b>
INGO/ CSO (ACHR, DPU, etc.)	<ul style="list-style-type: none"> <li>• ACHR – Additional financial support to the project</li> <li>• DPU interns – Technical expertise in design development</li> </ul>
Department of Urban and Housing Development (DUHD)	<ul style="list-style-type: none"> <li>• Link to the government agencies at regional level</li> <li>• Political supporter, decision-maker, regional planning authority</li> </ul>
Yangon City Government	<ul style="list-style-type: none"> <li>• Political supporter, decision-maker</li> <li>• Land and infrastructure supporter</li> </ul>



## 4.5 Discussions

Based on the findings from case study, the following section discussed about the lessons-learnt and provided the practices that strengthen the capabilities and organization of communities, enabling the implementation and letting people making change which is securing the home ownership.

### 4.5.1 Lessons learnt: Enabling elements

#### **(a) Make the financial mechanism flexible, localized, and diverse**

The Women's Saving Groups (WSGs) served as the foundation and were the first step to enable the housing development. WfW supported and allowed all the saving groups to control the funds themselves, creating a free and equal environment. Given the freedom to manage the savings and give loans, the members were not only able to enhance their financial skills but also able to build their participation and trust among each other gradually. When the members had access to funds, they were able to overcome the daily economic limitations and this motivated them to continue the saving activities. At the same time, it let them see and find their goal of having their own houses by working together with the members of the saving group. The evidence of the first saving group, combined with flexibility, resulted in the development of many WSGs in Yangon, which were later linked into the city-wide network under WSDN. This kind of collective saving that came from and was managed by the communities represented the power of those communities. The finance developed its own legitimacy while the system created institutionalization and thus unlocking the new possibilities (Archer, 2012).

Another lesson learned regarding the financial practice was the locality of the loan terms. The micro-finance loan was introduced starting from Site 3, and with the help from WfW, the loan terms were able to be set up after several negotiations according to the different economic needs and capabilities of the different communities. Though the loan amount was small by taking into account the community's capacity, it alleviated the financial burden of the households and allowed them to pay back on time during the return period. Concurrently, it is as also discovered that a combination of financial sources made the project implementation process more efficient by filling the financial gap left by the saving group alone, and this aided in scaling up the implementation to keep up with the city's growing informal population.

#### **(b) Activate collective actions to enhance the capacities and make the changes**

Due to the limited conditions, the poor people have difficulties procuring the minimum requirements by themselves alone. However, the poor themselves can overcome the problems through a collective process where each individual is supported in networks and operated systematically on the principle of mutual help. According to Siame and Watson (2022) and Beard (2018), the collective process addresses the limitations and enables the people to be the implementers and decision-makers for their needs. The collective actions in this study were found in various forms, and these included - sharing the same problems and collective

commitments, collective savings, design co-production, collective construction activities, and collective land ownership.

First, the shared problem of lack of tenure security from living in informal settlements led the community members to have the same commitments and willingness to have their own houses. Having the same issue and goal resulted in the bonding between the members and served as the impetus for the start of the housing process. Second, WfW supported the establishment of saving groups and helped link across the city. The collective action of the saving group provided the experience of working together and built the bond and trust among each other to move forward. It helped opening up the opportunities through collective power, for example. Generating the financial resources to purchase the land, which they could not afford as an individual. In addition, the city-wise saving group network strengthened and empowered the communities as a whole and provided better financial opportunities for efficient implementation.

Another collective action, design co-production, addressed the technical gaps of the community members in design development. It also enhanced the capacities of the communities and enabled them to perform concrete and transformative actions for the improvement of the spatial qualities. Moreover, the self-construction carried out by the community together provided them the flexibility in the selection of building materials and construction while also contributed to the social cohesion in the community for the long-term sustainability of the environment through collaborative work and assistance. Lastly, WfW introduced collective land tenure to all the projects. Though the communal land type has limitations due to the complex land regulation system of Myanmar, the system made the land affordable for the poor and protected the community from the market and forced eviction to a certain extent.

**(c) Develop the cooperatives that can represent the community to create networking, negotiating and knowledge exchange**

In this context, the cooperative refers to self-organized community-based groups such as the Women's Saving Group (WSG) at the local level and the Women's Saving and Development Network (WSDN) at the city level. The WSG was the first group formed by the community to mobilize financial resources for the group members. As aforementioned, it gave the community firsthand experience of working together, and through WSG, the community was able to maintain their freedom while also demonstrating their collective capacities. This resulted in institutionalization and motivated them to continue working toward their common goal of obtaining home ownership.

Following the implementation of Site 2, WfW established the Women Saving and Development Network, a community-based network that linked all members from WSGs and housing communities (WSDN). WfW allowed the WSDN in managing internal conflicts within existing communities as well as leading new projects. Though it was the first experience for most of the members to be given such kind of power, the survey found that the members were thrilled and energized through the actions. WSDN represented the whole community by bringing everyone together and this created the social cohesion and the

collective power through community-to-community helping and learning experience. WSDN represented the entire community by bringing everyone together, resulting in social cohesion and collective power through community-to-community helping and learning. This collective power enhanced the strengths and representation of existing communities in the neighborhood, and it served as a model for inviting other communities to join the network. Concurrently, the WSDN's collective power was critical in attracting new partnerships to strengthen activities for financial mobilization and land negotiation. Though the projects were small on an individual scale, their capabilities became apparent when the activities were combined as a whole and were noticed by the private sector, organizations, and even local government. WfW and WSDN were able to negotiate with the Yangon Region Government (YRG) in 2019 to provide vacant land for new housing projects and also opened up the opportunity to discuss the land tenure issue of existing housings. Therefore, these small individual projects are the stepping-stones and strengthening them together make it possible to make changes like securing land and house ownership.

#### **(d) Build collaboration and partnership with stakeholders at all levels**

In the CLH development, the co-production with various stakeholders contributes to the implementation process by addressing the needs of the poor communities and creating learning opportunities. The implementation of earlier Sites 1 and 2 included the community members and WfW and thus experienced the financial and technical constraints. To address the need, WfW first expanded the network to other international organization and then to local partners because community-led housing development was not popular in the earlier periods, limiting the willingness of local stakeholders to collaborate. After WfW was able to find the partners to provide the finance and the technical assistance, the CLH development could be accelerated to the city-wide implementation. Even with the limited participation, the partnership alleviated the challenges of budget limitation and poor quality of site layout and house design. This unlocked the possibility to get noticed by potential communities and opened up more collaborations with other key developmental stakeholders and agencies at local and national levels.

#### **(e) Make the process participatory, autonomous and empowerment**

While networking with the stakeholders is important, it is necessary for all the stakeholders to be in the same hierarchy with the community in decision-making (Ruiu, 2016). During the whole housing process, women were the key players, and WfW focused on community self-management capabilities. The communities learned by working together on their own first and provided the assistances as necessary. They were positioned as the owners and implementors of the project, while WfW and other stakeholders were the supporters, providing training and technical assistance to improve the development. This allowed community participation with the power to control the decision-making and mutual-learning experiences between the community and professionals, making the community semi-autonomous in its growth. However, the limited participation from the government as well as the project's small scale and the self-financing of the whole process could also be the contributing factors to maintaining such a high degree of dweller-control. Nevertheless, it is found that a high degree of dweller-control over the process helped developing the spatial

agency, the collective efficacy, and the capabilities regarding self-management, leadership, and decision-making that empowered the community for its own representation and legitimacy, which is also stated in studies by Baquero (2013) and Turner (1976).

#### 4.5.2 Lessons learnt: Constraints

As the CLH development is still in its early stage, limitations can also be found in the current process by reflecting it with the other relevant studies such as Boonyabancha and Kerr (2018), Rahman et al. (2016), and Papeleras, Bagotlo, and Boonyabanch (2012). Despite the fact that current practice has unlocked the capabilities of the poor, there are still budget constraints and other institutional arrangements to sustain both existing and new housing project. The following are the areas that need to be improved for the current practice.

##### **(a) Limited involvement of city and local government**

Based on the case studies, it can be seen that the role of the government was significantly constrained. Though the local governments are aware of the need for housing for the poor, the embedded centralized system in government institutions could possibly be a reason behind the limited interest in the community-led approach in housing development, while there was no city committee or mechanism to enable that. At the same time, the communities were also reluctant to work with local governments and build partnerships because of the complicated process with many steps and were afraid of losing their freedom. As a result, the communities must bear all financial expenses on their own, resulting in substandard housing quality and construction on agricultural land. Though it is possible to convert it into residential land, the process is complex and beyond the community's limit. Therefore, to deal with all those complex issues and secure the housing legally, all these urban and housing agencies are required. However, Papeleras, Bagotlo, and Boonyabancha (2012) remarked that the greater involvement of the government could alter community participation and control as well as change the organizational structure into vertical, rather than horizontal, decision-making.

##### **(b) Organization structure and power of control**

Although WfW had supported the community in making decisions by themselves, there were cases of unconscious control or influence, particularly on the new members from either the old members or WfW and other support professionals. This kind of control was found especially during the design development, as most of the new members were unfamiliar with the process and thus more likely to follow the suggestions from the old members and other stakeholders. In this regard, Boonyabancha et al. (2012) advocated participatory planning with good training and facilitation from architects as a way for people to participate while limiting their influence. This shows that there is the gap in current design development practice and needs for more technical professionals' involvement to maintain the members' relationships.

### (c) Housing progressive growth after post-occupancy

As Turner mentioned in his theory about progressive development, CLHs are likely to undergo the changes when households' socioeconomic conditions improve. These improvements to better housing conditions increased the value of the property and the community's social representation in the neighborhood. Though there were weekly community meeting and capacity trainings for livelihood improvement, the current implementation process did not clearly define the physical growth. As the initial house design had little consideration for the future growth, the households found difficulties in making modifications, slowing the housing growth progress and there were no controls and technical supervisions in place to ensure the safety of these modifications. This situation led to have varying stages of housing conditions and growth owing to the financial capacities, motivations and preferences of each household and the community, affecting to process of progressive development and may cause the social fragmentation and individualism.

### References

- Archer, D. (2012). Finance as the key to unlocking community potential: Savings, funds and the ACCA programme. *Environment and Urbanization*, 24(2), 423–440.
- Awan, N., Schneider, T., & Till, J. (2011). *Spatial agency: Other ways of doing architecture*. London: Routledge.
- Baquero, I. A. (2013). *Organized self-help housing as an enabling shelter development strategy: Lessons from current practice, institutional approaches and projects in development countries*. Thesis submitted to Lund University. [https://www.hdm.lth.se/fileadmin/hdm/Publications/9\\_Organized\\_self-help\\_housing\\_as\\_an\\_enabling\\_shelter\\_\\_\\_development\\_strategy.pdf](https://www.hdm.lth.se/fileadmin/hdm/Publications/9_Organized_self-help_housing_as_an_enabling_shelter___development_strategy.pdf)
- Beard, V. (2018). Community-based planning, collective action and the challenges of confronting urban poverty in Southeast Asia. *Environment and Urbanization*, 31(2), 575-596.
- Boonyabancha, S., Carcellar, F. N., & Kerr, T. (2012). How poor communities are paving their own pathways to freedom. *Environment and Urbanization*, 24(2), 441–462.
- Boonyabancha, S., & Kerr, T. (2018). Lessons from CODI on co-production. *Environment and Urbanization*, 30(2), 444-460.
- Czischke, D. (2018). Collaborative housing and housing providers: towards an analytical framework of multi-stakeholder collaboration in housing co-production. *International Journal of Housing Policy*, 18(1), 55–81.
- Papeleras, R., Bagotlo, O., & Boonyabancha, S. (2012). A conservation about change-making by communities: some experiences from ACCA. *Environment and Urbanization*, 24(2), 463–480.
- Rahman, M. A. U., Hossain, M. Z., & Kabir, M. E. (2016). Operationalizing community-led housing in practice: Lessons from Bangkok, Thailand and Mumbai, India. *International Journal of Sustainable Built Environment*, 5(2), 564–578.

Sen, A. (1999). *Development as freedom*. Oxford: Oxford University Press.

Siame, G., & Watson, V. (2022). Insights into relations in community-led urban interventions in the global South: Civil society and co-production in Kampala. *Environment and Urbanization*, 1-19.

Turner, J. F. C. (1976). *Housing by people: Towards autonomy in building environments*. London: Boyars.

## CHAPTER 5. PHYSICAL CHARACTERISTICS OF COMMUNITY-LED HOUSING

This chapter provides the findings from the observations of community-led housing after 10 years of stay. Based on initial housing design, it explores the different modification patterns and the reasons behind such self-modifications. Taken into the modifications, housing typologies are classified depending on the building forms and the space uses are explained. This provides the discussions on the spatial characteristics of low-income communities and opportunities and challenges presented by the modifications.

### 5.1 Research Methods

This chapter focuses on the study of the spatial characteristics and how the community-led housings have been transformed by the residents themselves as part of the housing process. This also seeks to understand the under-lying factors for the transformation and the people's attitudes to how they use space. Based on the nature of the study, the case study method was applied as it is exploratory and descriptive as “an empirical inquiry that seeks to understand a contemporary phenomenon and context are evidently clear and in which multiple sources of evidence are used” (Yin, 1989). As shown in Figure 5.1 with the basic housing information, the study was conducted at Site 1 (Pan Thazin Housing) and Site 2 (Pyit Tine Htaung Housing) since both of them are the earliest project sites so that they are rich in information by having more cases of transformation patterns and the experience of residents' longer period of staying in the houses and the community. Moreover, since the housing implementation process, the initial house design and contextual factors are similar for all sites, it is assumed that the results are likely to be similar thus taken Site 1 and Site 2 as the representative cases for other nine remaining sites that are implemented between 2017-2019.

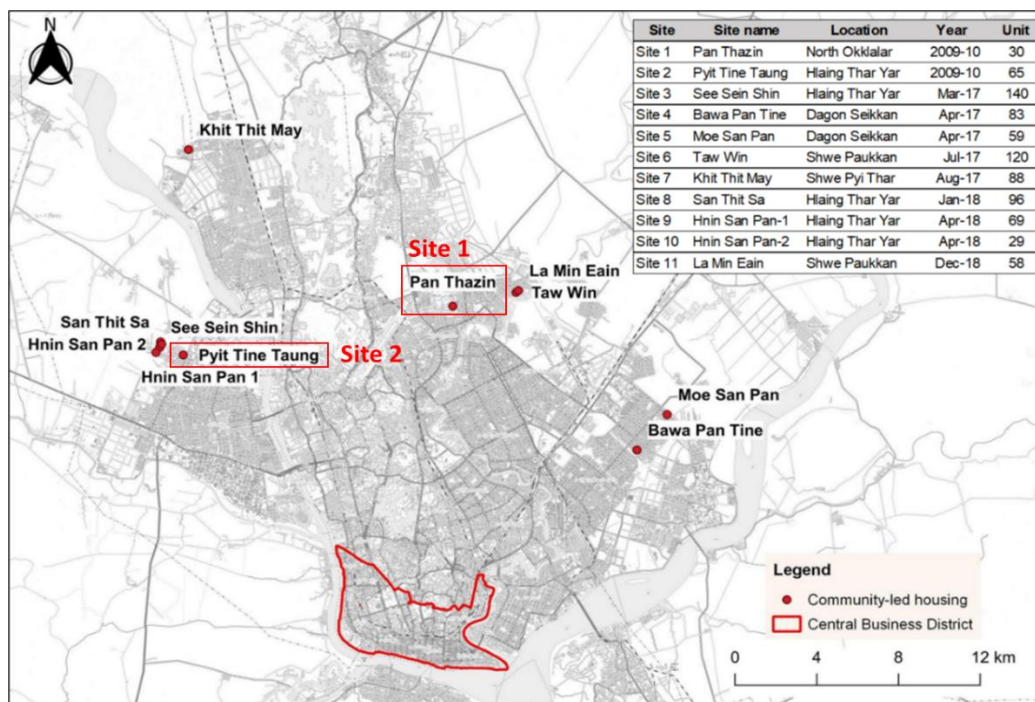


Figure 5.1 Location map of community-led housing

In this study, the data were collected through methods stated below -

- **Architectural measurement** for documenting the spatial organization and identifying the modifications or transformations of the housing units
- **Household questionnaire survey** for collecting the households' profiles and housing characteristics, and clarifying the before and after conditions of houses after the modifications and the reasons behind modifications
- **Observation and photography** to support the architectural measurement survey and the examinations of the site and conditions of the houses.

As aforementioned, Site 1 and Site 2 were selected for case study areas and the field survey intended to include all the housing units in both sites. However, some houses could not be involved since the families were away during the field survey, thus a total of 93 houses (Site 1 = 29 out of 30 houses; Site 2 = 64 out of 65 houses) were included in this study for both architectural measurement and household questionnaire survey. During the survey, the drawing of original floor plan was prepared beforehand, and the modified parts were recorded on the same drawing during the survey. For the household questionnaire, the survey form was in the form of a mix of open- and close-ended questions which the residents were asked to indicate (1) the households' socio-economic profiles; (2) the current house physical or spatial characteristics; (3) the modification parts and the under-lying factors; and (4) the residents' preferences on for future house.

For data analysis, the study applied on different theories such as classification of house types, housing transformations and use of space to answer the research question on physical characteristics and housing transformation.

- According to Lawrence (1994), the classification of house types was done through an analysis of architectural plans, followed by site visits. In this study, housing typologies were classified two levels – first by the building form (exterior perspective), in which houses were categorized again by the spatial organization of the floor plan (interior perspective).
- Housing modification is defined as “an alteration or extension involving construction activity and using materials and technology in use in the locality” in order to contribute household's overall well-being (Tippie, 1991). As per Salama, transformations, in this study, included (1) exterior transformation – from extension of an existing structure to addition of the building elements and making new windows and doors; (2) interior transformation – from any internal changes to the layout of the units to alterations to interior walls to repositioning of inside doors and using partitions to separate space to create privacy. Other transformations consisted of the changes in building materials or technologies to adjust the changing needs or for better quality housing environments.
- For use of space, the spaces can be divided regarding private and public character. Space use for this study applied the theory of Correa (1985) in which it could be categorized into four levels of space such as (1) space needed by the family for exclusively private use, such as cooking, sleeping and storage which can be regarded as private; (2) semi-private spaces like front doorstep or front porch where children can play or dwellers can rest or chat with neighbour; (3) neighbourhood meeting places where one becomes part of the community; and (4) open space or green space.



## 5.2 Initial Design of Community-led Housing

Implemented in 2009, Site 1 has 30 housing units with plot size of 420 ft<sup>2</sup> (39 m<sup>2</sup>) and initial floor area of 180 ft<sup>2</sup> (16.72 m<sup>2</sup>) while Site 2 has 6 units with plot and initial floor area of 540 ft<sup>2</sup> (50.17 m<sup>2</sup>) and 180 ft<sup>2</sup> (16.27 m<sup>2</sup>) respectively. As implemented under same NGO, WfW, the physical features of the houses were similar between two sites and the house design was decided mainly by the residents themselves according to their available budget, culture, and lifestyles. Figure 5.2 shows the initial floor plan of house unit in both sites. It is a single storeyed house built on stilts and had the traditional roof type called ‘Eain Pasit Tote’. The main building structure or core house was constructed without interior partition and had semi-private space like multi-functional living space which was at front of private spaces such as sleeping area and kitchen. The toilet was placed separately, behind the core house while the shower space was usually in front of the core house. Here, the external walls were constructed using bamboo weaving sheets while corrugated galvanised iron (CGI) sheets for roofing and bamboo or timber for flooring. For the structural system, the community used timber structure and the concrete stilt footing for the foundation.

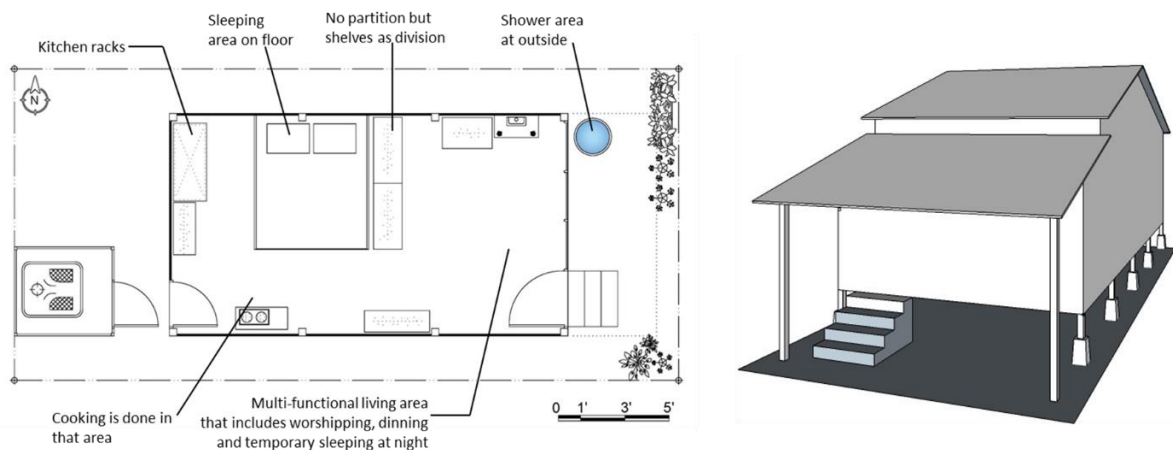


Figure 5.2 Initial housing layout and design of Site 1 and Site 2

## 5.3 Housing Self-modifications by Residents and Underlying Factors

### 5.3.1 Different types of housing self-modification

Although the residents lived in the originally constructed houses for around 10 years, modifications were mainly carried out in the later 2018 after they have fully paid back the bank loans. Modifications in both sites were done by the residents, with the help of the community members. The residents financed the modifications either from their savings or applied loans from the community saving group and the microfinance bank. Based on the initial housing design, the houses in Sites 1 and 2 had found several types of modification patterns, where all the houses have undergone one or more patterns of transformations, which could be mainly categorized into three forms as follows -

- Horizontal and/or vertical extension
- Changes in building materials

- Changes in building elements

### 5.3.1.1 Horizontal and/or vertical extension

Housing extensions in this study can be classified into (i) horizontal extension – either at back, front or side of the existing structure and (ii) vertical extension which is an additional floor to the existing structure. All the houses in both sites had extended at the back side and it was the very first transformation that took place within first one year of the stay in the initial house. Except back extension, Table 5.1 shows the data regarding the housing extensions at front, side or both where in Site 1, 48% of houses were extended out of 27 units while Site 2 had 35% based on total 63 units.

Table 5.1 Information on the housing extension in Site 1

<b>Modifications</b>					
Sample size (n)	Horizontal extension			Vertical extension	Horizontal + Vertical extension
	Back	Front	Front + Side		
27 out of 30	27 (100%)	3 (11%)	7 (26%)	1 (4%)	2 (7%)
<b>Uses</b>					
Multi-functional living space		3	6		2
Sleeping space			1	1	
Toilet + Kitchen	27				

Table 5.2 Information on the housing extension in Site 2

<b>Modifications</b>					
Sample size (n)	Horizontal extension				Mezzanine
	Back	Front	Side	Front + Side	
63 out of 65	63 (100%)	12 (19%)	9 (14%)	1 (2%)	28 (44%)
<b>Uses</b>					
Home business		5			4
Sleeping space					
Common space		5		1 (Front)	14
Storage space		2	8		
Toilet + Kitchen	63				10
Storage/ Sleeping					
Store + Shower			1	1 (Side)	

Regarding the horizontal extension, the house are usually extended at the back from the very beginning when a core structure was completed. Nearly all the houses underwent back extension at both sites and the space were used for various purposes such as kitchen, store, toilet, shower and/or bathroom. For other types of horizontal extension, the houses were found with only front extension or sometimes a combination of front and side extension. Regarding to front and side extensions, such extensions were done starting in 2018 where Site 1 had more cases compared to Site 2 as it had smaller area of back extended space due to

smaller plot size. According to Table 5.1 and Table 5.2, in Site 1, 10 house units underwent horizontal extension where 11% for front extension and 26% for a combination of front and side extension. For Site 2, there are 12 houses that extended front only while side extensions was found in nine houses and only one house with a combination of front and side extensions. In Site 1, the extension was built by extending an existing room as shown in Figures 5.3 and 5.4 while in Site 2, the residents extended by adding a completely new structure without making changes to original structure (Figure 5.5 and 5.6). For Site 1, the front extended spaces were mostly used for extension of multi-functional space while in Site 2, the usages were varied from business use to store or guest receiving.

Regarding the vertical extension, it was only found in Site 1 and there were only three houses for this transformation. In this context, in order to transform into two-storeyed house, the original structure had to be demolished since the initial structural system was not strong enough to bear the additional floor on above. The renovation was wholly done by the residents themselves and during the period, the household usually stayed at the community centre and moved in when the first floor and roof construction were completed. Such additional space are used for bedroom for either family members or guests (Figure 5.7 and 5.8). Unlike Site 1, no cases of vertical extension was found in Site 2.

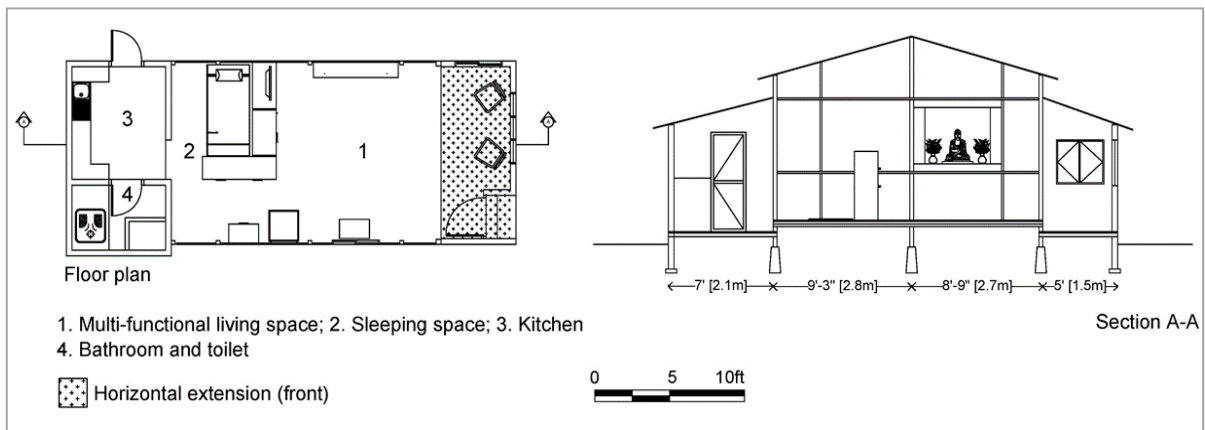
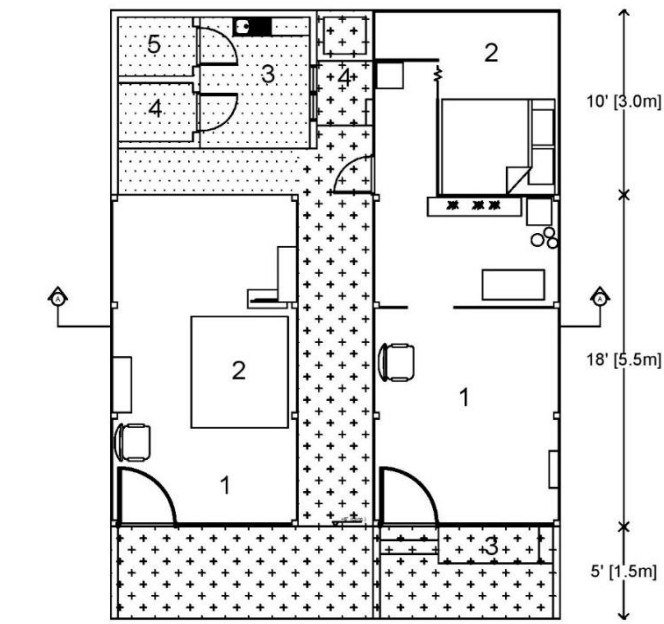


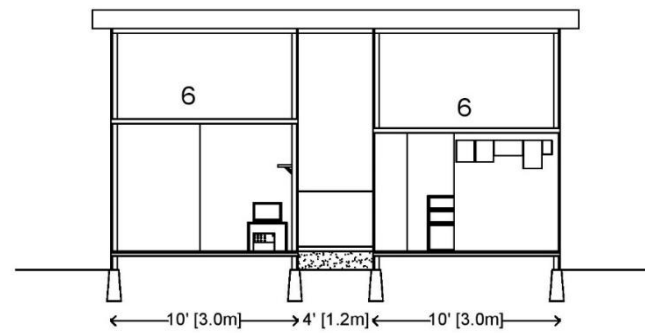
Figure 5.3 Front and side expansion (House no.4, Site 1)



Figure 5.4 Interior perspective of House no. 4, Site 1



Floor plan



Section A-A

- 1. Multi-functional living space; 2. Bedroom; 3. Kitchen
- 4. Bathroom; 5. Toilet; 6. Mezzanine

 Horizontal extension

 Material change

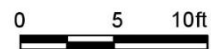


Figure 5.5 Front and side expansion (House no.62 and 63, Site 2)



Figure 5.6 Interior perspective of horizontal extension in Site 2

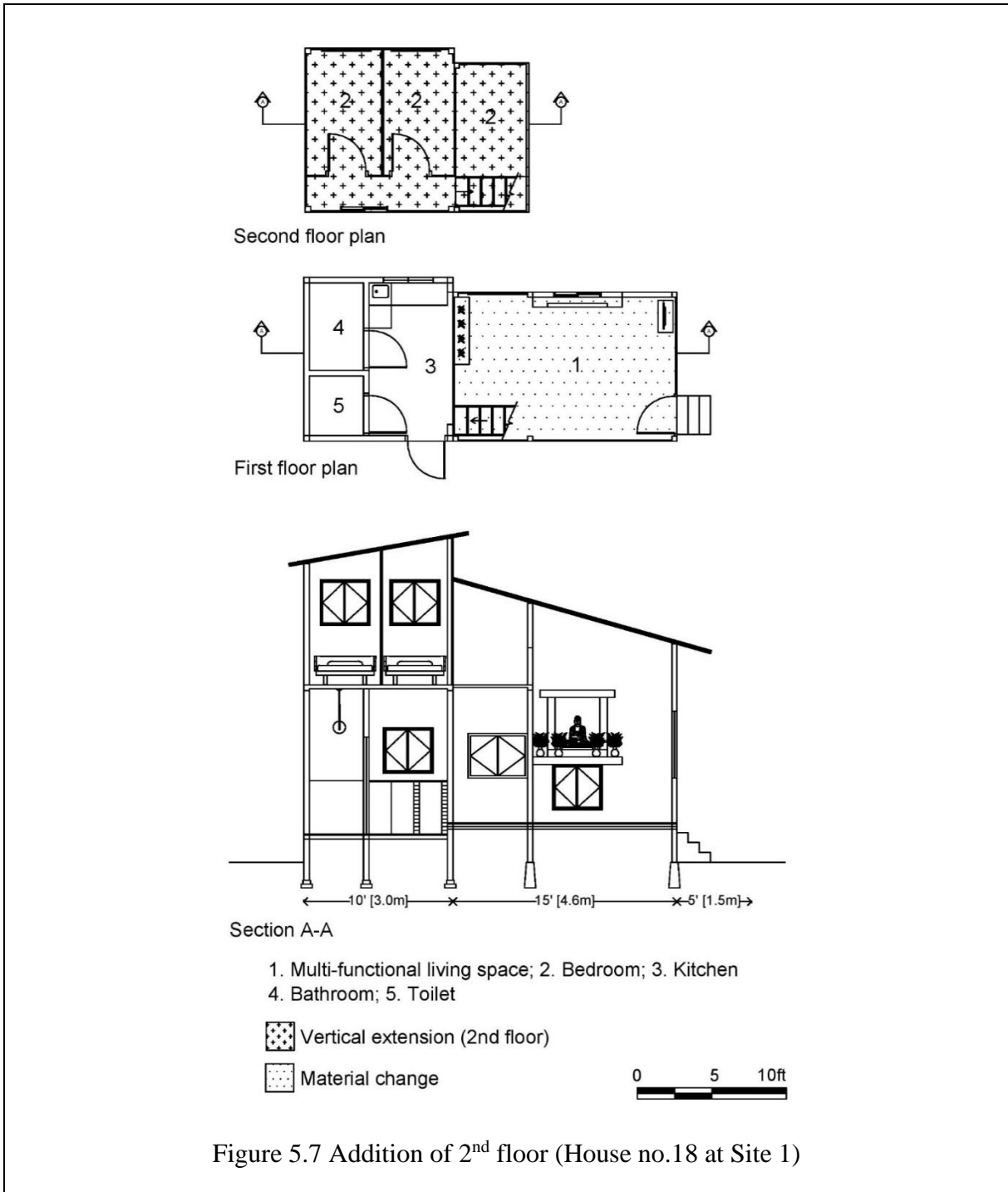


Figure 5.8 Exterior and interior of House 18

### 5.3.1.2 Changes of building materials

It is found that the previous indigenous building materials were replaced with more durable and modern materials to signify the change in preferences. At the same time, these changes show that the residents learned the importance of using durable materials for long-lasting houses. Overall, 19 houses from Site 1 and 24 houses from Site 2 had changed the building materials and the building elements that have done the changes were external wall, floor, window, entrance door and the structural system (Table 5.3).

Among different elements, the external walls had the most changes in which 19 houses in Site 1 and 11 houses in Site 2 replaced their initial bamboo external walls with more durable and rainwater resistance materials. As shown in Table 5.3, cement board was the most popular material in both sites (23 units), followed by a combination of cement board and masonry (4 units), masonry (3 units) and bamboo weaving mat (2 units). In this context, cement board was commonly used for side external walls while masonry was mostly utilized in front façade (Figures 5.4) and toilet construction. For flooring, original bamboo floor was replaced in 12 houses in Site 1 and 14 houses in Site 2 due to its damaged condition. Different floor materials were found in both sites including timber (12 units), masonry (5 units), a combination of masonry and timber (3 units) and a mix of masonry and plywood (2 units). Other changes include the use of timber/PVC windows in place of metal net fixed windows and timber doors for CGI doors. Only two houses in Site 1 transformed their structural system from timber to steel structure to withstand the additional load exerted on the structure due to the addition of a second floor.

Table 5.3 Changes of materials in Site 1 and Site 2

Building elements	Building materials									
	Ma	CB	Tb	St	Ma + CB	Ma + Tb	Ma + PW	PVC	Alu	Bb mat
<b>Site 1</b>										
External wall	3	10			4					
Floor	5		1			3	2			
Structure	1			3						
Front window			3					8		
Entrance door			8						1	
<b>Site 2</b>										
External wall		13	1							2
Floor			11							
Front window			2							
Entrance door			4							

Note: Ma = Masonry; CB = Cement board; Tb = Timber; St = Steel; PW = Plywood; PVC = Polyvinyl chloride; Alu = Aluminium glass door; Ba mat = Bamboo weaving mat





Figure 5.9 Interior of modified two-storeyed house (House 18, Site 1)

### 5.3.1.3 Changes in building elements

These types of modification pattern includes various forms from interior transformations to addition of new element and adjustments to the existing elements. Table 5.4 shows the changes in building elements in both sites and these changes included the interior transformations such as bathroom modification, addition of partition, mezzanine, shading net and bathroom and toilet modification to the exterior modifications like changing of septic tank, front porch, ceiling height, window, door, and installation of tarpaulin sheet.

Table 5.4 Modifications of building elements in Site 1 and Site 2

III	Modification patterns	Site 1 (total 30 units)	Site 2 (total 64 units)
1	Modification of front porch for floor and stairs	22	39
2	Renovation of toilet and single septic tank	27	39
3	Addition of bathroom inside the house	12	1
4	Addition of fence and gate at front porch	1	12
5	Addition of mezzanine	2	28
6	Addition of side windows	8	25
7	Addition of interior partitions	10	38
8	Addition of interior stairs	3	
9	Addition of shading net at ceiling	7	
10	Addition of tarpaulin sheet at external walls	8	38
11	Addition of basement	1	
12	Increasing the ceiling height	1	

Septic tank renovation was one of the first and most common modification actions of both sites and 27 houses in Site 1 and 39 in Site 2 have done the renovation where the initial shared septic tank was changed into individual system. Regarding the front porch

modification, the households from Site 1 built it by putting the shade and modifying by the ground with concrete or brick and changing into concrete staircase (Figure 5.10a). Such front porch modification could be found in Site 2 also while at same time, had another form in which it had semi-partition or fence either at front or both front and side (Figure 5.10b). Another change observed is the installation of interior partition to divide the private (sleeping space) and semi-private space (living space) with the materials such as plywood or objects such as furniture or curtains (Figure 5.9).

In addition to the abovementioned, different environmental measures are observed in both sites. To reduce indoor heat issue, Site 1 used the shade net inside as shown in Figure 5.4 (7 units) while at Site 2, the shading net is used at walking pathway as outdoor shade (Figure 5.10e) and for indoor, mezzanine is added (28 units) which could also be used for store and sleeping space (Figure 5.10c). Moreover, windows were also added at the sides of houses (8 houses in Site 1 and 25 houses in Site 2) for better indoor ventilation. Another is the addition of tarpaulin sheets to the external walls (Figure 5.10f) to prevent direct rainwater to the bamboo walls but has blocked airflow from and affected air quality and ventilation inside the houses.

It is a custom of people from rural areas to bathe outside the house. However, due to the influence of the urban setting, a total of 13 houses from both sites renovated their bathrooms and added bathtub inside the houses (Figure 5.10d). The survey also shown that one house in Site 1 has also increased the ceiling height in order to have better ventilation.

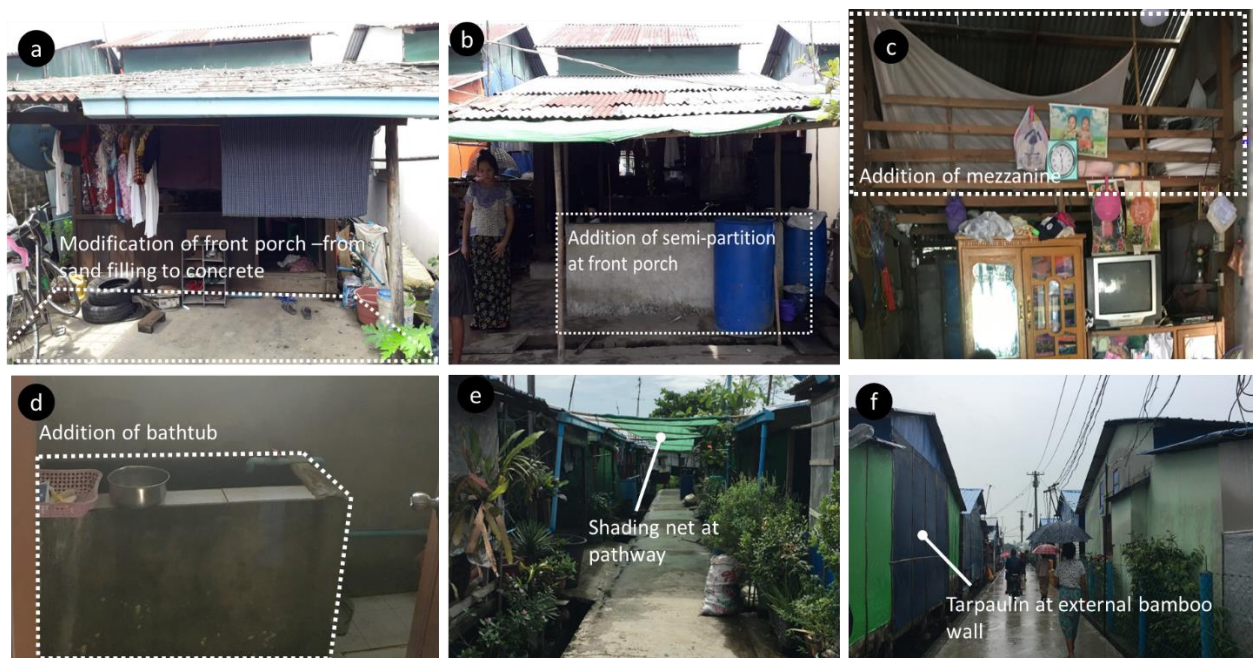


Figure 5.10 Changes in building elements

### 5.3.2 Underlying factors for self-modifications

According to Khan (2013), there have been several reasons behind housing modifications and such modifications are thought to be the expression of residents' desire to satisfy their needs



and changing of preferences. In this study also, many factors have been found which can be categorized into three groups such as physical factors, socio-economic factors and environmental factors as shown in Table 5.5.

Table 5.5 Factors that motivate the housing modifications

Underlying factors	Extension		Material change		Element modification	
	S1 (n=13)	S2 (n=22)	S1 (n=52)	S2 (n=31)	S1 (n=99)	S2 (n=208)
<b>1. Physical factors</b>						
1.1. To ease the limited indoor space	6	6*				
1.2. Wearing off	1		29	27	12	6
1.3. Support the additional load from second floor			3			
1.4. Additional storage space		7*			3	16*
<b>2. Socio-economic factors</b>						
2.1. Additional private sleeping space for grown-up children or extended family	5	4				12*
2.2. Space for income generating activities		5				
2.3. Privacy and security				4	15	50
2.4. Change of preference (Aspiration for modernization)			20		8	1
2.5. Aspiration for long-term stay or house improvement, with better household income	1	6**				
2.6. Aesthetics					22	39
2.7. Health issue					15	33
<b>3. Environmental factors</b>						
3.1. Better light and ventilation					9	25
3.2. Reduce the indoor heat					7	28**
3.3. Prevent rainwater					8	38

Note: Sample size, “n” here represents the number of modifications under each category (see Tables 5.1 to 5.4)

\* Primary factor that has another or secondary underlying factor, \*\* Secondary underlying factor

### 5.3.2.1 Physical factors

Most of the physical factors related to the modifications are due to the structure become wearing off and the limited indoor living space. One of the key reasons for extension under physical category is due to the limited indoor space which accounted 46% for Site 1 and 27% for Site 2. Due to the limited budget, the initial house was built with the bare minimum amount of living space as a core house but as time passed, the space became cluttered with furniture and other belongings and resulted in limited living space for the residents, leading to the extension.

Another major physical-related factor was the house itself became wearing off from weather conditions and after nearly 10 years of stay when it was built with temporary building elements such as bamboo mat and CGI sheet. According to Table 5.5, materials wearing off

led to 29 cases of material changes in Site 1 and 27 cases in Site 2, including three cases of structural system retrofitting due to the vertical extension. Additionally, the modification of septic tank and toilet under modification category 3 was also due to wearing off which made unpleasant smell coming out from the tank. Under this condition, there were 12 units and 6 units from Site 1 and Site 2 respectively, that made such renovations.

#### 5.3.2.2 Socio-economic factors

The socio-economic factors related to modification, in this study, included changes in family structure, home-based economic activities, aspiration for modernization and security and privacy. The need of additional sleeping space for grown-up children in the household is one of the major factors influencing housing extension under socio-economic aspect. In Myanmar, young children usually sleep together with their parents especially in low-income families and this happened as the same when Site 1 and Site 2 were first constructed 10 years ago when the households had young children and considered to have only one space for sleeping together. However, as children grown up, the parents felt that the children need additional space for sleeping. Of total 13 extended houses from Sites 1, five households stated that they transformed the house to accommodate the additional space for sleeping at the multi-functional living room which serve as temporary sleeping space at night. But in Site 2, it was usually done by adding mezzanine to the existing structure to create additional sleeping space.

Similarly, some of the households expanded their houses in order to accommodate the extended family members. It is common knowledge that married children usually stay together with the parents and their siblings or in other cases, some households prepared the additional space for their relatives from rural area who frequently come to Yangon. In this context, additional separate sleeping space or bedroom was built unlike temporary sleeping space for grown-up children in multi-functional living room. Such cases were found two houses out of 13 extended houses in Site 1 and 4 out of 22 units in Site 2. Though growing teens and extended family drove the housing extension, Figure 5.11 of the correlation analysis between the household size and the housing extension showed no significant relationship since the R values are lower than “1”. Therefore, based on the findings from the case studies, it is found that the low-income households would tolerate the uncomfortable condition and modifications like extension are likely to occur when they can no longer bear the situation or achieve the certain household incomes.

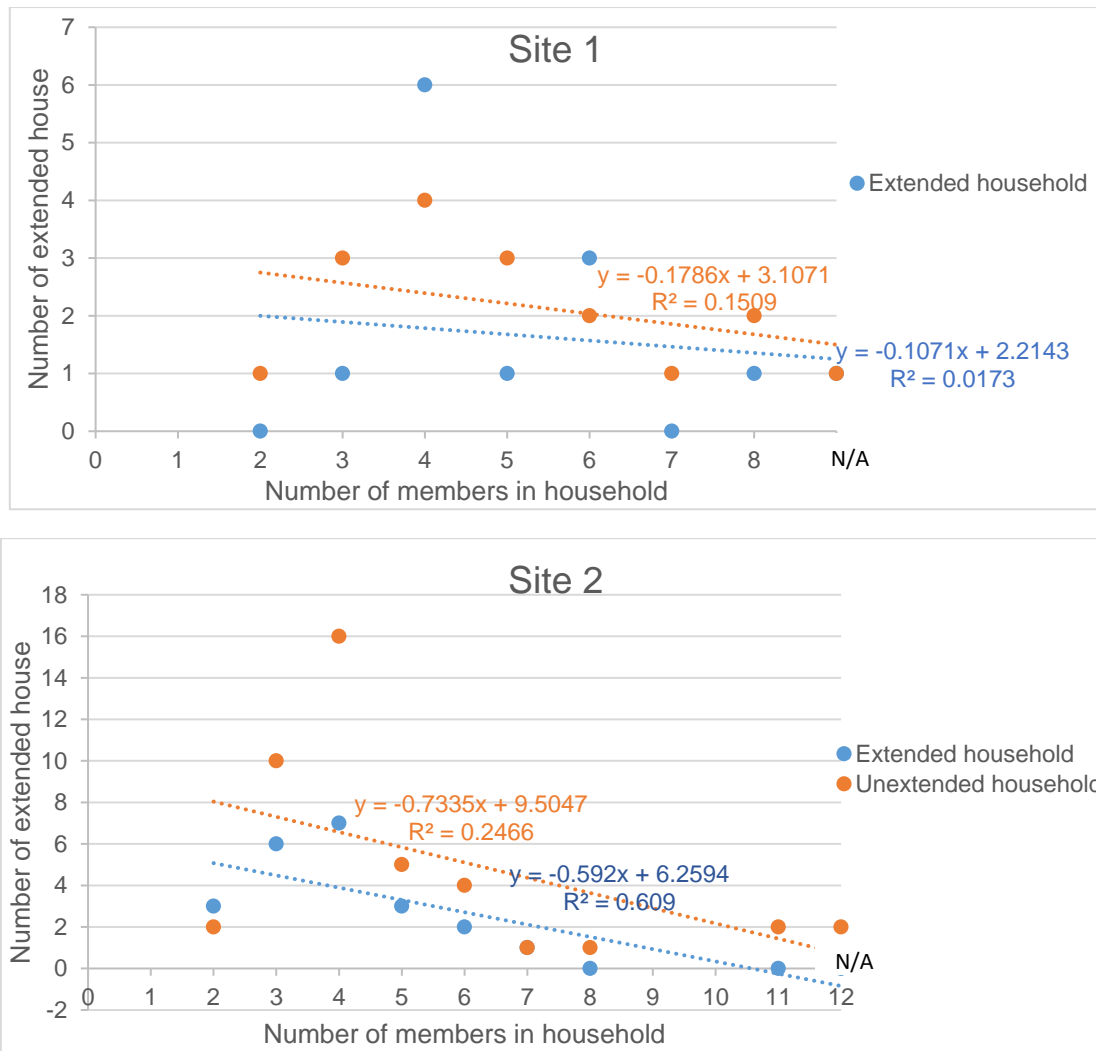


Figure 5.11 Correlation between household size and housing extension in Sites 1 and 2

Availability of space for income generating activities was another motive for transforming housing units. But the transformation under this reason was found only in Site 2 and out of 22 extended houses, five houses made front extension to conduct home-based business activities which varied from small grocery shops to rice shop to tailoring. Unlike other front extension for living, the extended part for this purpose was in semi-open space where they usually built the front façade with the full opening such as folding door and usually the business was served to the community members and neighboring households.

Another socio-economic factor that motivated transformation was to improve the privacy and security. The need of security and privacy led the modifications such as the addition of shower area inside the house and putting the fences and change of windows and doors. Initially, the bathing and washing clothes took place outdoors but later put inside of the house as a bathroom when renovating toilet in order to secure privacy. In this case, it is noted that the modernization was also a secondary driver behind some of the households put the bathroom inside during the renovation of their houses. Another transformation pattern to secure privacy was constructing the fences which also serves as plot boundary. There was only one household from Site 2 who change the initial net windows and CGI door to a more

secured timber window and door while other cases of window and door replacements were due to the residents' change of preference under the aspiration for modernization, associated with the socio-economic status of the household.

Though wearing off was key reason behind the material changes, the modernization largely influenced the household's choice of materials, including even the design and materials of extended sub-structures. By the look of material changes and interview findings, the majority of the residents prefer not to live in their initial house design built of bamboo weaving mat or net window as they felt that those materials were temporary and often associated with poverty as the representation of low social status. Therefore, during the replacement of the original materials, the households selected modernized materials which are also more durable such as cement board, brick, Polyvinyl Chloride (PVC) or steel etc. As shown in Table 5.3, more than 60% of replaced or new materials were modernized materials, usually applied in external walling and window and the flooring is the only element where initial material was replaced which was timber. Similarly, this phenomenon of using modernized materials was also found in the extend sub-structures, particularly at front, where people can easily find and see the conditions of house. Figure 5.4 represents the example where the extended front facade constructed with brick and timber window and wall with concrete floor while the rest of external wall were built with cement board.

Other socio-economic factor is the intention to stay for long term along with an increase in household income. Firstly, it made the residents to invest their houses for better conditions for long term. In addition, an increase in income changed the perceptions and standards which made people that they needed to modify their houses. The housing units that changed under this reason have different image from initial houses, with concrete house with a sense of urban setting.

#### 5.3.2.3 Environmental factors

Climatic comfort also plays an important factor in housing modifications. Out of total 95 house units from Sites 1 and 2, 33 units have added windows at the side walls to facilitate cross ventilation and adequate lighting. However, it does not necessarily follow that the house become cooler since houses have been constructed too close to each other blocking cross-ventilation. In the circumstances, people are forced to use fans and other measures to bring down the room temperature. Therefore, in Site 1, a number of households (seven units) added the shading net in the house near the roof to reduce the heat transfer from CGI roof. On the other hand, in Site 2, the households (26 units) built the mezzanine to reduce the indoor heat which can also be used as extra storage or sleeping space.

Moreover, for a hot and humid climate like Yangon, outdoor shading is also important. Due to the limited land availability, green space was limited and there are not many big trees providing shades. Therefore, in order create the shade, the households have installed shading net along the pathway in Site 2 as the community infrastructure while the households from both sites understood that the front porch also help to bring down the direct heat to the living area by providing shade. However, extensions lead into the maximum utilization of plots resulted in the loss of such front porch.

Another environmental measure is the installation of tarpaulin sheet to the external wall. As bamboo weaving mats are easy to wear off when exposed to rainwater, the walls are covered with such tarpaulin sheets while it also helps less rainwater leaking inside of the house through the wall. However, such installation brings down the penetration of cool air and lighting into the house affecting to the indoor comfort.

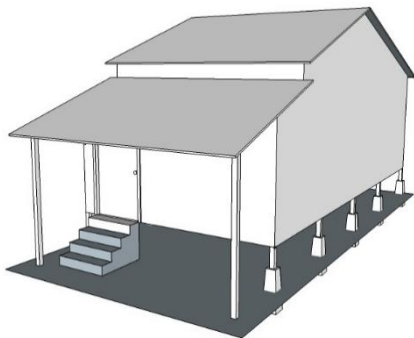
#### 5.4 Classification and Analysis of Housing Types

There are different criteria for classification of house types and in this study, the house types are classified on two criteria. The first criterion is the form of building from exterior perspective and the second one is the spatial organization of the floor plans according to the building form. By applying these criteria, the following house types have been discerned in both sites. Due to the narrow width but elongated land plot, it is found that all the spatial organization of the floor plan are arranged in line being single banked house consisting of four to six rooms.

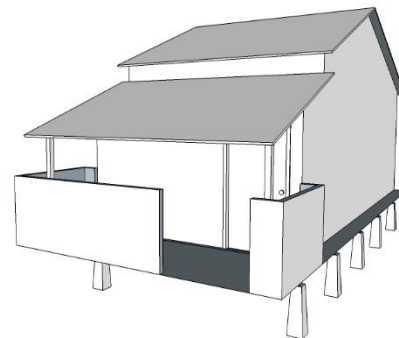
##### 5.4.1 Type 1: One-storied stilt house with front porch

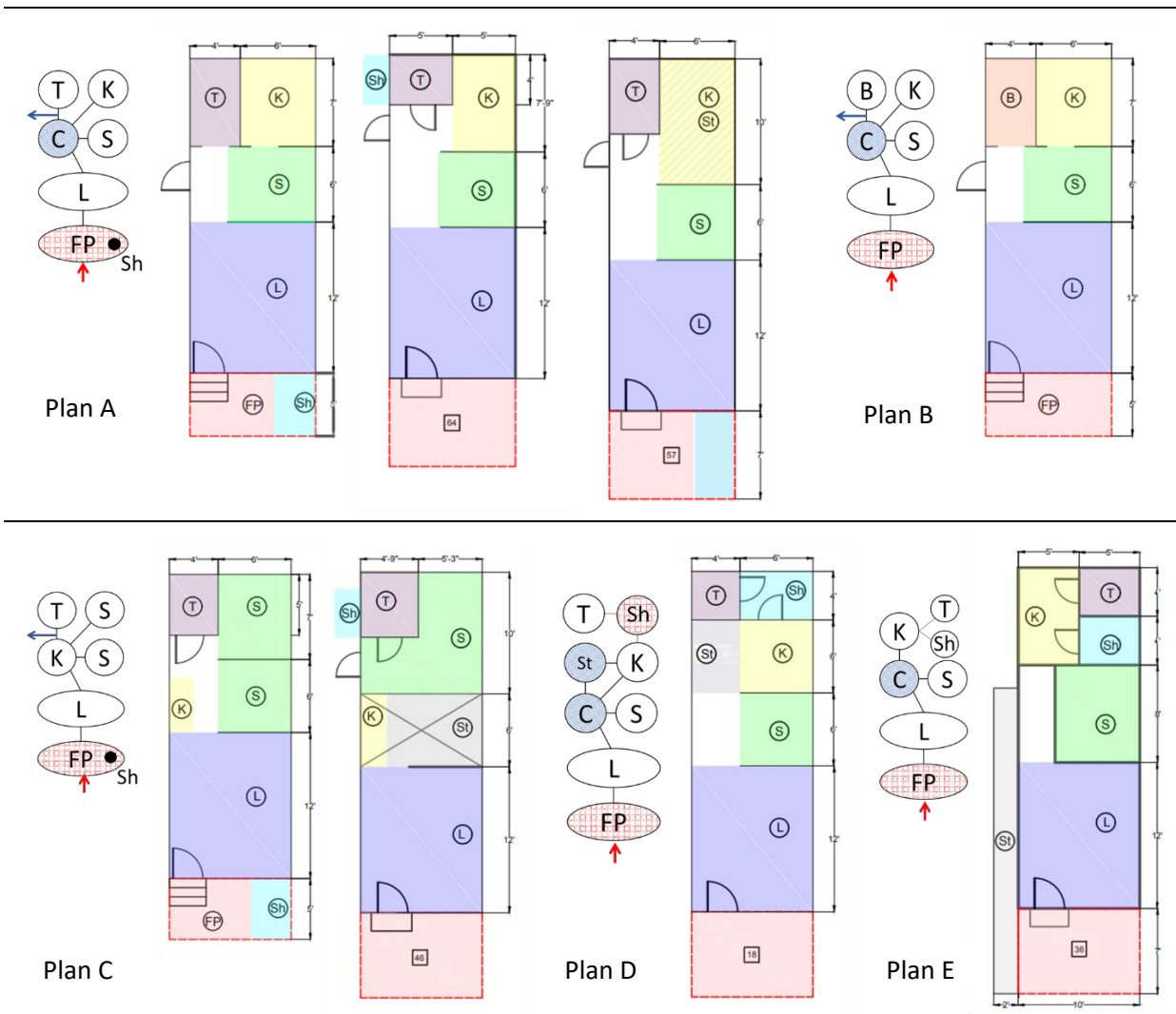
House Type 1 is a one-storied stilt house, with staged roof and consists of rooms arranged in single line consisted of four to five different spaces with porch at the front. This type is the most similar to the initial house design and the form was the result after the back renovation and extension. It is the most common house type and the most significant feature of this type is having the front porch without fence (Type 1A) and with fences and gate (Type 1B) as shown in Figure 5.12. Compared to other types, this one has more outdoor space until when the extension will be built in the place of front porch.

Type 1A (without fence)



Type 1B (with fence)





Note: FP = Front porch; L = Multi-functional living space; C = Corridor; S = Sleeping space; K = Kitchen; T = Toilet; Sh = Shower space; B = Bathroom (Toilet + Shower space)

Figure 5.12 Housing type 1 and its related floor plans

Under this house form, there are five varieties of floor plan organization. Generally, all of these floor plans had the similar patterns where the frontmost part consists of semi-private spaces such as front porch with and without shower space. Through the front porch, multi-functional living room can be accessed while sleeping space, kitchen and toilet are connected with the common corridor. Such spatial organization (Plan A in Figure 5.12) is usually found when shower space is placed outside. There are also houses where both bathroom with attached toilet is placed inside, taken in the place of initial toilet space (Plan B in Figure 5.12). In the case of the house with two bedrooms (Plan C), the corridor space is also served for cooking activity since the initial kitchen is replaced with additional sleeping space for extended family members. Moreover, some of the houses also have the back door that is directly opened to corridor but can accessible only for the tenants. Floor Plans D and E are similar to Plan B, but with separate toilet and bathroom.

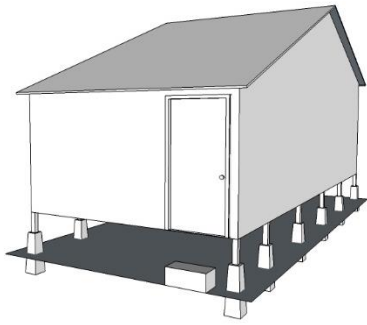
The advantage of this house type is that it still has outdoor space where the tenants can relax and enjoy talking with the neighbors while staying outside when the indoor is quite hot during the daytime in summer. However, this also creates the drawback where there is a shortage of indoor space, particularly the sleeping area that the some of the household members have to sleep in the living room or at the mezzanine.

#### 5.4.2 Type 2: One-storied house without front porch

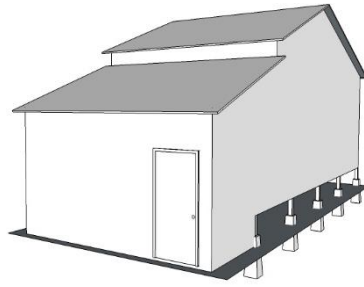
This house type is emerged from the extension of both front and back sides and it is the second most common house type, following Type 1. It has three different forms based on the exterior perspective with six different types of floor plan. Among three house forms as shown in Figure 5.13, Type 2A is closest to the initial structure with stilt foundation and double-staged roof but without front porch from the extension of multi-functional living space for additional indoor space. This type is usually in found in low ground level of the site where more water is usually logged and thus need the stilts. Type 2B also has similar form with Type 2A but built with brick nogging structure for the front extended part. This type is found either at the front row of the site or at higher ground or for better well-off households. In addition, Type 2B is more prone to be found in Site 2 since they have drains around the site and thus water logging is not as deep as Site 1. For Type 2C, it has similar foundation system as Type 2B but different appearance with gable roof and L-shaped front elevation. Though it is not as common as the other two types, it is found at the households who want to extend their houses but also would like to keep small front porch at the same time.

For the spatial organization, all types of floor plan have the spaces lined in single row. Plan A is the most common floor plan under Type 2 which consists of multi-functional living space at front, directly accessible from the front door while the rest of sleeping space, bathroom and kitchen are connected with corridor and also has back door. Floor plan B has same layout with Plan A for living and sleeping spaces but the back side consists of kitchen, store, toilet and shower room. It is also found that Plan D is also similar to the Plan B and the differences lies in the extended front space which is separated with the wall of living space and the arrangement of sleeping space, kitchen, store and corridor. For Plans E and F, they are only found in Site 2 where the extended front part is used for business activities, separated from the living space. The difference between Plan E and Plan F is the arrangement of kitchen, toilet and bathroom where in Plan E, these uses are arranged front and back while in Plan F, they are placed side by side. Floor plan C is found only in Site 2 where both front and side extension is taken place and shower space outdoor, can be accessed from back door near kitchen and storage.

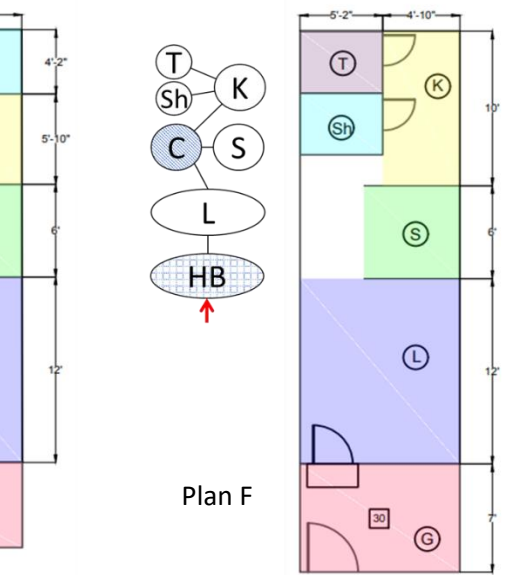
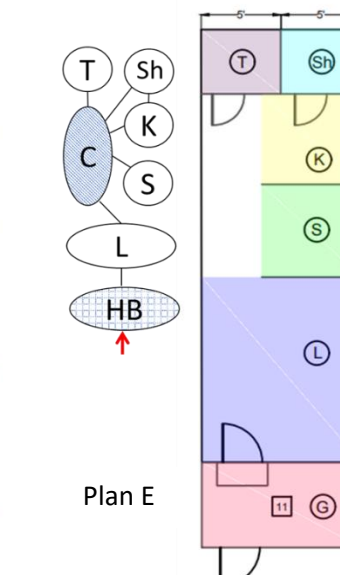
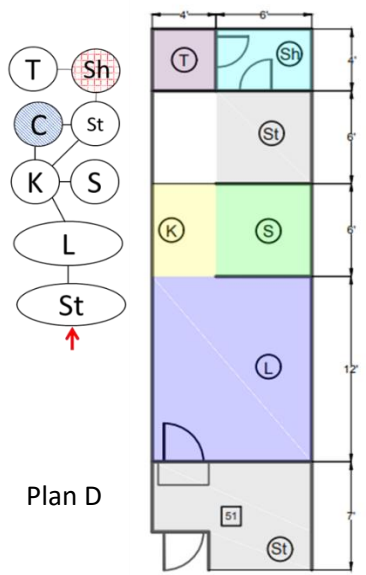
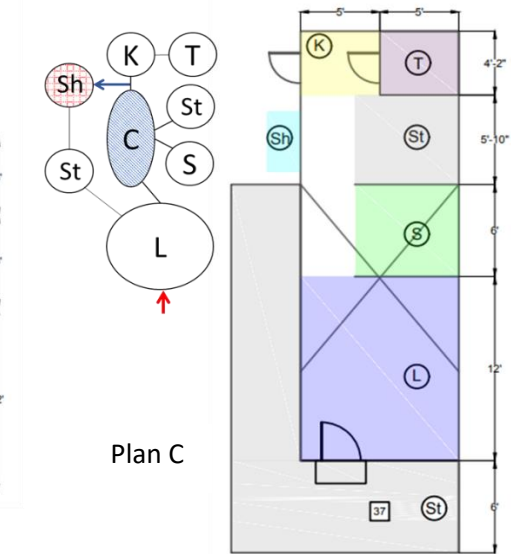
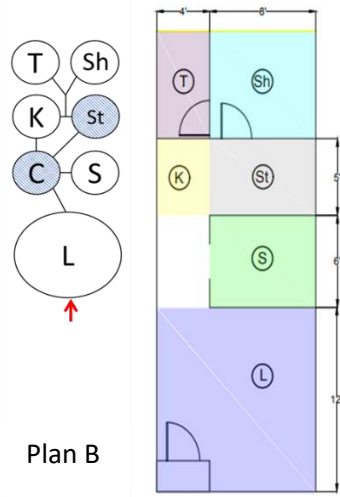
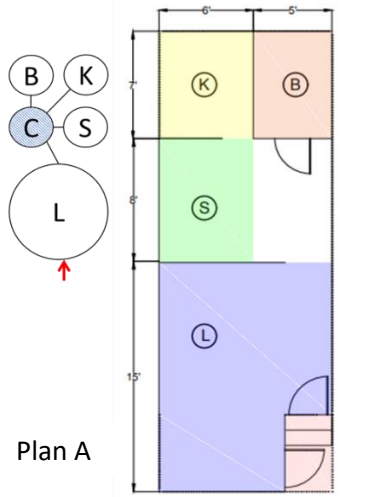
Type 2A (on stilt foundation)



Type 2B (combination of stilt and brick nogging)



Type 2C (L-shaped front elevation, stilt, and brick nogging)



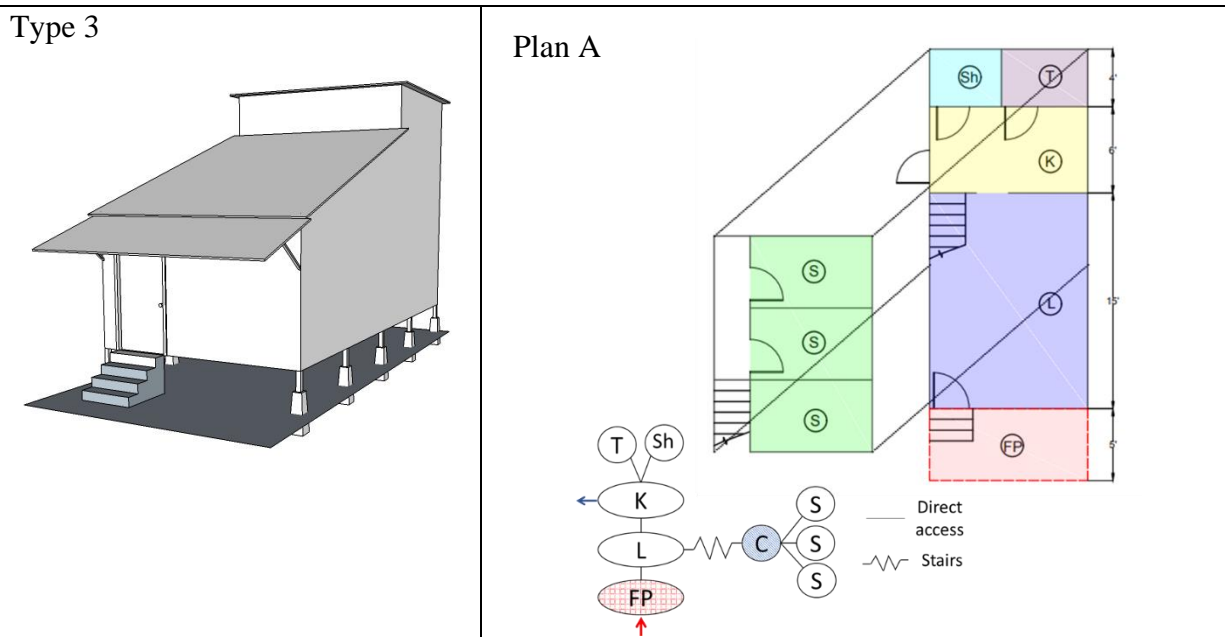
Note: L = Multi-functional living space; HB = Home business space; S = Sleeping space; C = Corridor; K = Kitchen; T = Toilet; Sh = Shower space; St = Store

Figure 5.13 House type 2 and its related floor plans



### 5.4.3 Type 3: Two-storied stilt house with front porch

This type 3 is the one where the occupants extended their house vertically but still keep the original structure at the most. As shown in Figure 5.14, the foundation system and the front section of semi-private spaces are remained the small while the back part is renovated and extended into two stories. In this context, due to the weak initial structure system, the occupants have to use the lightweight building elements such as plyboard and hollow steel structure. In this type, the bedrooms are placed at the second floor while the other spaces are located at the first floor. Compared to Type 4, Type 3 is less costly since it is only partially renovated while also keeping the front porch as the outdoor space. However, there is only one unit with this house type in Site 1 since most of the houses are of already weak structural system and need the whole structure replacement in the case of vertical extension.



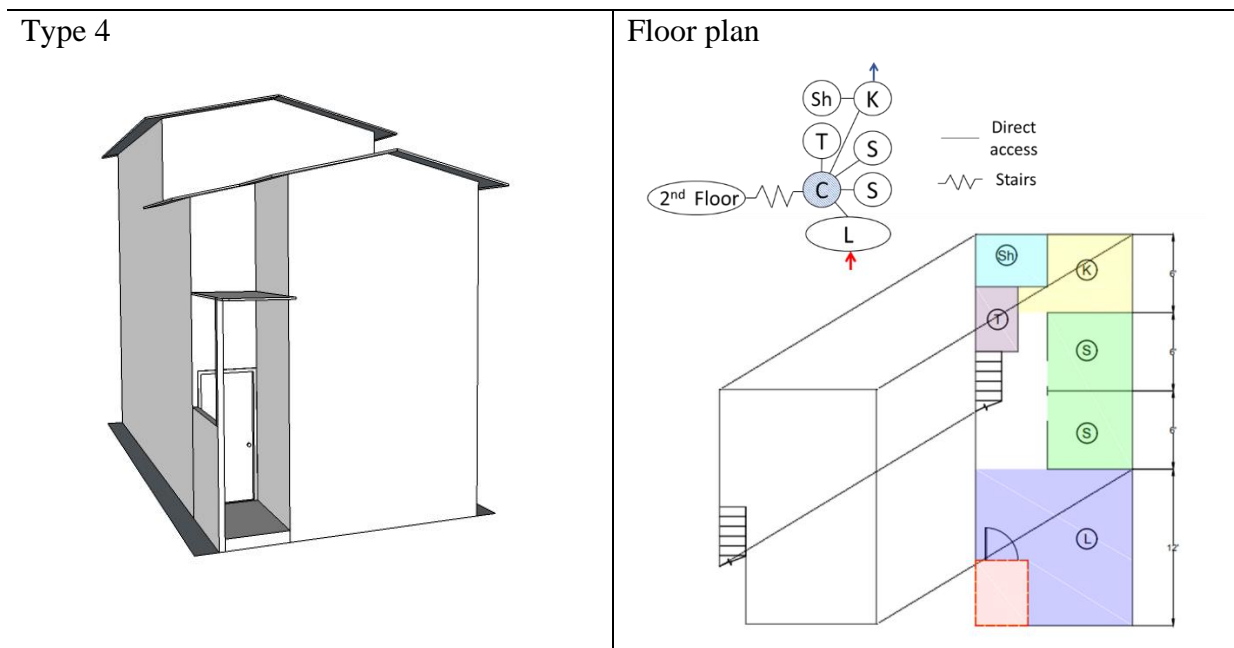
Note: FP = Front porch; L = Multi-functional living space; C = Corridor; S = Sleeping space; K = Kitchen; T = Toilet; Sh = Shower room

Figure 5.14 House type 3 and its related floor plan

### 5.4.4 Type 4: Two-storied steel structure brick nogging house

This type 4 is the completely different from the original house design since the occupants demolished the whole original structure and rebuilt it for the purpose of durability for long-term stay. Since it is costly to rebuild the new steel structural system with brick nogging house, this type is found with the households who have a better income or alternative financial sources. As shown in Figure 5.15, it is two-storied brick nogging house with a small porch to have a privacy from direct access to inside of house and also to take off the shoes. At the time of field survey, the family have all the required functional spaces at the first floor and keep vacant at the second floor which will be used as per needs. Similar to other spatial organization, the living room comes first from outside then comes two bedrooms, followed by kitchen, toilet and shower room. All the rooms are connected and accessible from the common corridor, including to the second floor, except the shower room which is accessible

from kitchen. In Type 4, the back door is placed at the kitchen. Though it is costly, this type provides better indoor environmental conditions with durable structure while providing an appearance of modern house. Due to the cost, there has been only two units, found in Site 1.



Note: FP = Front porch; L = Multi-functional living space; C = Corridor; S = Sleeping space; K = Kitchen; T = Toilet; Sh = Shower room

Figure 5.15 House type 4 and its related floor plan

## 5.5 Characteristics and Functions of Spaces

### 5.5.1. Indoor spaces

#### (a) Multi-functional living space

The multi-functional living room is the most crucial space of the house. It is a semi-private space that can be directly accessed either from the front porch or from the outside, connecting outside and inside. As shown in Figure 5.16a, a variety of furniture were found and there are usually a TV, some chairs, display shelves and wardrobes, pictures decorated on the walls and importantly, the altar for Buddha worship. Residents use this space most of their time at house for guest receiving, eating, relaxing, watching TV, sleeping, worshipping and studying as well. Therefore, it serves different purposes and residents explained this space by expressing their activities carried out here such as “sort of living room we can do everything”, “guest room where we can eat and sleep”. Regarding the guest receiving, the visitors are welcomed in this space and sit around and have conversations while sitting on the traditional weaving mat on the floor. For those who are staying overnight, they usually have to sleep either in the guest room if available or in the living room together with the tenants. Since the originally-allocated sleeping space is not adequate enough to accommodate all the family members, this living space is turned into sleeping space at nighttime, for both tenant family and even the guests. In addition to those purpose, the residents are also found having meals in the living space. Residents use the foldable round table while eating and the table is

unfolded and stored after having meals to give space in the living area. Other important activity is for the Buddha worshipping and for this purpose, the altar is mounted on the wall and the worship is done sitting on the floor. According to the cultural belief, the Buddha altar as shown in Figure 5.16b should place at the higher place and based on the survey, the altar is usually in the form by a separate dominating roof or a prominent protruding loggia from outside. The importance of the altar can be seen by reflecting the fact that it is often more elaborately carved and decorated than the house itself. According to the religious customs, the placement of the Buddha statue or image should always face towards either the west or north direction thus the altar is usually placed at the east or south side of the wall. Given the multifunctional space, it has the largest floor area in the house ranged from minimum 9.3 sq.m (100 sq.ft) to maximum 20 sq.m (216 sq.ft). Moreover, it has been brought most cases of extensions by the residents in order to accommodate the additional living and sleeping spaces.



Figure 5.16 Examples of multi-functional living space

(b) Sleeping area

The sleeping space is a private space, placed in-between of the multi-functional living space at front and the kitchen and toilet at back. In both study sites, the sleeping area is separated either with temporary structures such as plyboard, curtains or furniture like shelves and wardrobe. As shown in Figure 5.17, the residents sleep on the floor with weaving mat but two of the households in Site 1 were found with bed. Generally, there is only one separated sleeping space and it is a common practice that the young children share the same sleeping space with the parents. However, due to the small space, they also have sleep in the living space particularly the grown-up children or the elderly person. It is clearly seen that the initial sleeping space is inadequate for all the household members and need more than one room for both livability and privacy. The additional sleeping area is created by space expansion at front in the multi-functional living space, or at mezzanine, or at extended second floor or at back extension by taking in the place of kitchen. The size of sleeping is varied from 2.2 sq.m (24 sq.ft) to 7.1 sq.m (76.5 sq.ft) for single bedroom.





Figure 5.17 Temporary sleeping space in living room (left) and separate sleeping space (right)

(c) Kitchen

The purpose of the kitchen is for cooking activity and it takes place mostly at the back side of the house or along the corridor at the foot of sleeping space and sometimes at the front porch. The kitchen is generally equipped with the shelves for the cooking utensils (Figure 5.18) and the cooking is mostly done by using the electric pot as the use of charcoal stove is inconvenience in limited indoor space with poor ventilation. In Site 1, it is seen that the cleaning is done at the sink in the kitchen but in Site 2, the kitchen sink is rarely found and dish cleaning is done outside, on the floor by using the water tub stored for showering (Figure 5.20). Though the kitchen was usually placed at the back or front of the house to ventilate the smell from cooking, there are households who had to put along the corridor at the foot of sleeping space (Figure 5.19) without the partition due to the need of additional sleeping area for extended family. In this context, the space and facilities for cooking become limited creating unhygienic way of cooking as well as poor indoor air quality.



Figure 5.18 Kitchen at the back of house



Figure 5.19 Kitchen along the corridor, at the foot of sleeping space



Figure 5.20 Dishes washing at the outdoor shower space

(d) Storage

There is no specific separate space for the storage, and in this context, it focuses on how the residents have kept their belongings. Usually, personal belongings like clothes are stored in

plastic boxes or wardrobes placed at the sleeping space. For cooking utensils, the daily uses are placed on the shelves in the kitchen while the rarely-used items like big pots are stored in the cupboards placed in the living space which are also served as the divider between the living and sleeping spaces. The bulky items that need storage space for example bicycles and motorcycles are put at the front porch while other unnecessary items are stored either at the front porch or the mezzanine. As the occupants usually stored their valuable or personal items in the wardrobes or cupboards in the living room, the space is congested when mixed together with other furniture like TV, chairs and tables, etc. making movement difficult.

(e) Toilet and shower space

Initially, both toilet and shower space were located outside, separate from the core house. But the house transformation made the toilet accessible directly accessible from inside and become one with the core house structure. The toilets are squat latherin with individual concrete septic tank and they usually have an area of 2.3 sq.m (25 sq.ft). Usually, it does not have the flush system where they pour water into from plastic buckets placed inside to clean the facility. Most of the toilets are reconstructed with brick floor to prevent leakage while the walls could be either brick or CGI sheets or cement board. The observation also revealed that one household some households have used the cover (as shown in Figure 5.21) to block the smell.



Figure 5.21 Squat toilet type with cover



Figure 5.22 Indoor and outdoor shower space with water storage tub

Showering and washing clothes share the same space and it is generally located outdoors either in the front porch or beside the house at the back. As they do not have access the water supply from the government, both sites use ground water and in Site 1, the water is stored either in plastic or brick or cement tub (Figure 5.22). On the other hand, after the housing transformation, 4% of household in Site 1 and 1.4% from Site 2 had brought the shower space inside of the house where households are preferred to keep toilet and shower room separately. For indoor shower space, it usually has a similar area as toilet and usually built with brick tub and brick floor. In both sites, there is no specific space to drain the grey water but directly to the ground. In this context, since the drainage system is not constructed properly, the water is logged under the houses.

(f) Home business space

The home-based business space was found only in Site 2 and it is located in the place of front porch, which is extended from multi-functional living room, but without removing the front wall of the living room to provide the privacy from the business activity. The space is built in the form of semi-outdoor space, the front façade is usually constructed with openings such as net window or fully foldable door while the side façades are built with non-removable materials for example brick (Figure 5.23). Based on the observation, the business operating are home-based activities such as grocery store, tailoring and rice store. The activity provides the additional income to the household but this has made the loss of semi-open space at front.



Figure 5.23 Example of front extended space used for home business activities in Site 2

### 5.5.2 Semi-outdoor spaces

(a) Front porch (with and without fence)

This semi-outdoor living space is another space that provides multi-functions for the occupants. Usually, the front porches are built by attaching to front exterior wall of the house, with a CGI roof. From the survey, only one house in Site 1 has built fence and gate while xx units in Site 2 have fences, either by using permanent materials like brick or temporary materials like bamboo, metal net and used CGI sheets. According to the residents, putting the fence provides them both privacy and security as it is not easy for anyone to go straight to the door while the fence demarcates the plot boundary as well. For tropical city like Yangon, the front porch is crucial building element, firstly, it provides a sense of friendliness and welcome while the transition between indoor and outdoor area to keep the privacy from direct access to the living area. Moreover, due to the hot indoor condition during the daytime, the front porch creates the space for relaxing as well as socializing with the family members or with the neighbors. In addition, due to the shortage of indoor space, front porch also serves as the storage area, outdoor shower and clothes washing, clothes drying and sometime even for cooking. Though, it is common practice to keep the front porch as vacant, some of the household place bed or chairs for people sitting and talking and some of the plantings (Figure 5.24). Lastly, this front porch helps to cool down the indoor temperature by decreasing the direct sunlight from the shading as well as the rainwater.



However, due to the front extension, the front porch has been disappearing especially in Site 1. Though the occupants wanted to keep the front porch, the limited indoor space forced them to make expansion to ease the congested indoor condition.



Figure 5.24 Front porch used for relaxation (left); front porch with multi-functions (middle); front porch with fence (right)

### 5.5.3 Outdoor and communal spaces

#### (a) Communal and public spaces

Due to limited land availability, all the housing sites do not have separate green space or open space for relaxing and playing in the housing community. But each housing community has its own community center, built with the community funds, after three-four years of stay in the housing community. The location of the community center was selected by the community themselves and usually at the front or back of the site. The community center serves the meeting place for the community members to conduct communal activities such as weekly meeting, cultural festivals and even provided the place to conduct the trainings and the design workshops with WfW, other actors and new housing members. In addition, the center is used as the temporary living place for the household members when the whole housing transformation is taken place and need the space to live and sleep in during the renovation period. Figure 5.25 shows the community center at Site 1 which is located at the front of site while Site 2's community center is placed at the back.



Figure 5.25 Community center at Site 1 (left) and Site 2 (Right)

## 5.6 Discussions

### 5.6.1 Related to spatial characteristics

- Spatial organization

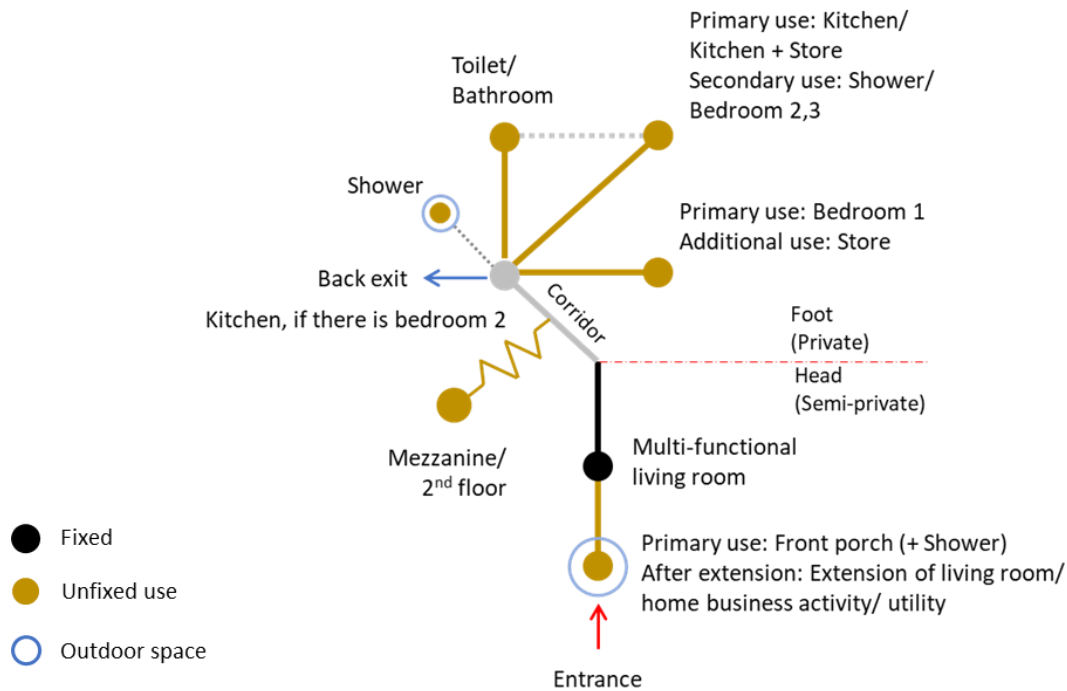


Figure 5.26 Organization of space configurations based on field survey

Taken into account of different floor plans, Figure 5.26 shows the general spatial organization of the house unit. It is found that the space articulation has been driven by available land area or shape of the plot instead of space usability which resulted all the floor plans consist of four to six rooms arranged in single line. The layout can be divided into two parts namely the head part where the semi-private spaces such as multi-functional living room, home business space and front porch are located and the foot part for private spaces like bedroom, kitchen, store, toilet and shower. The indoor can be accessed from two ways either from the front as the main entrance which is accessible for everyone or at backside of the house for the household members only. In this context, the multi-functional living room can be accessed either from front porch or business space or directly from outside while the rest of the other functions can be accessed through the common corridor that connected to the multi-functional living room.

As shown in Figure 5.26, either the front porch with shower space or business space is usually found at the frontmost part of the house, followed by the multi-functional living room which remained at the fixed position in all the housing units. Closed to the living room is the bedroom 1, which is separated from other functions with temporary dividers like plywood partition, curtains or furniture. At the foot of the bedroom 1 is the common corridor which is connected to other functions. At the back side of the house are kitchen and toilet in most of the cases but in some of the houses, the position of kitchen is replaced with bedroom 2 for extended family or shower space in which the kitchen is placed to the common corridor.



Similarly, though the position of toilet is fixed, some households also added the shower space together with the toilet. For outdoor shower space, it can either be at front or back side of the house depending on the land availability and preferences of the residents.

Following the spatial organization, the self-modifications shows that there has been a mismatch in the housing needs and preferences among the residents after nearly 10 years of stay. Table 5.6 provides the physical issues of housing that need to be considered in the future design development both at initial and modification stages.

Table 5.6 Findings related to the spatial characteristics

<b>Functions</b>	<b>Findings on design characteristics</b>
Building materials	<ul style="list-style-type: none"> <li>• By the look of the material changes, more durable and modern materials are preferred compared to the traditional materials.</li> <li>• Although some of the households still preferred net windows, more and more people are changing to timber or PVC windows.</li> </ul>
Front porch	<ul style="list-style-type: none"> <li>• Though front porch area has been lost due to the extension, the households would like to have it as it is of great importance to the basic comforts and social activity of their lives.</li> <li>• Front porch can be built with short fences, chairs and plants also.</li> </ul>
Multi-functional living room	<ul style="list-style-type: none"> <li>• As people mostly spend their time in living room while it provides various functions, a larger space (at least 120 sq.ft) is preferred with additional functions such as working, studying and dining.</li> <li>• Dining and temporary sleeping spaces can be combined with living room space to save space.</li> <li>• It also shares space for worship corner where the Buddha statue should be placed on high platform, facing either North or West according to the religion.</li> </ul>
Sleeping space	<ul style="list-style-type: none"> <li>• Minimum two bedrooms is preferred for growing children or extended family members and second bedroom can be minimized to save space for the other functional activity space.</li> <li>• Since relationship among family members tend to be equal, so no distinction between the bedrooms is necessary.</li> </ul>
Kitchen	<ul style="list-style-type: none"> <li>• Kitchen to be equipped with shelves and washing basin.</li> <li>• It should be at the back of house, separated from other functions and have openings to ventilate the smoke and smell when cooking.</li> </ul>
Toilet	<ul style="list-style-type: none"> <li>• Individual septic tank is preferred.</li> <li>• Toilet is more likely to be built with permanent materials to prevent smell and damage and direct access from the inside of the house.</li> </ul>
Shower	<ul style="list-style-type: none"> <li>• Indoor shower room is wanted and in case of limited space, it could share the same space with toilet.</li> </ul>
Storage	<ul style="list-style-type: none"> <li>• Additional storage area is desired and it can be in the form of mezzanine to save space for other activity spaces such as living and sleeping rooms.</li> </ul>

- Size of activity spaces

Table 5.7 Proposed dimensions of activity spaces

Major activity spaces								
		Functions	Multi-functional living room	Sleeping space 1	Kitchen	Kitchen + Store	Toilet	Shower (Indoor)
<b>Field survey</b>	Site 1	L (ft)	10-12	6-8.5	4-10		3.2-5	5-8
		W (ft)	10-17	4-9	4-8.5		4-7	4-7
	Site 2	L (ft)	10	6-10	5-10	5-10	4-5	5
		W (ft)	10-18	6-8	3-8	4-10	4-5	4
<b>Average</b>	Site 1	L (ft)	10.6	7.2	6.3		4.1	6.2
		W (ft)	13.1	6.4	6.5		6.4	5
	Site 2	L (ft)	10	6	8	5.8	4.3	5
		W (ft)	12	6	6.2	9	4.7	4
<b>Standard Deviation</b>	Site 1	L (ft)	0.9	0.6	1.1		0.4	1.6
		W (ft)	1.9	1.1	1.1		1.2	1.7
	Site 2	L (ft)	0	0.5	2.3	1.8	0.4	0
		W (ft)	0.7	0.3	2.3	1.7	0.5	0
<b>Proposed Dimensions (in feet)</b>	L (ft)	10	7 (± 1)	7 (± 2)	6 (± 2)	4	6 (± 1)	
	W (ft)	13 (± 1)	6 (± 1)	6 (± 2)	9 (± 2)	6 (± 1)	5 (± 1)	
	A (sq ft)	130	42	42	54	24	30	
<b>Proposed Dimensions (in meter)</b>	L (m)	3	2 (± 0.3)	2 (± 0.6)	2 (± 0.6)	1	2 (± 0.3)	
	W (m)	4 (± 0.3)	1.8 (± 0.3)	1.8 (± 0.6)	2.7 (± 0.6)	1.8 (± 0.3)	1.5 (± 0.3)	
	A (sq.m)	12	4	4	5	2	3	
<b>Total area for major activity spaces</b>							322 sq.ft	30 sq.m
Secondary activity spaces								
		Functions	Sleeping space 2	Sleeping space 3	Bathroom	Utility	Home business space	Front porch
<b>Field survey</b>	Site 1	L (ft)	6-8.5	8.5	4-5	8		10
		W (ft)	3.5-7	5	6-7	5		5
	Site 2	L (ft)	6.5			2-20	10-15	10
		W (ft)	10			4-28	7	7
<b>Average</b>	Site 1	L (ft)	7.3	8.5	4.6	8		10
		W (ft)	5.4	5	6.7	5		5
	Site 2	L (ft)	6.5			7.6	11.5	10
		W (ft)	10			13	7	7
<b>Standard Deviation</b>	Site 1	L (ft)	1.2	0	0.4	0		0
		W (ft)	1.5	0	0.5	0		0
	Site 2	L (ft)	0			5.4	2	0
		W (ft)	0			9	0	0
<b>Proposed Dimensions (in feet)</b>	L (ft)	7 (± 1)	9	5 (± 0.4)	8 (± 3)	12 (± 2)	10	
	W (ft)	8 (± 1)	5	7 (± 0.5)	9 (± 5)	7	6	
	A (sq ft)	56	45	35	72	84	60	
<b>Proposed Dimensions (in meter)</b>	L (m)	2 (± 0.3)	2.7	1.5 (± 0.1)	2.4 (± 0.3)	3.7 (± 0.3)	3	
	W (m)	2.4 (± 0.3)	1.5	2.1 (± 0.2)	2.7 (± 0.3)	2.1 (± 0.3)	1.8	
	A (sq.m)	4.9	4.2	3.3	6.5	7.8	5.6	
<b>Total area for secondary activity spaces</b>							352 sq.ft	32.3 sq.m
<b>Total (Major + Secondary activity spaces)</b>							674 sq.ft	62.1 sq.m

In addition to the spatial organization, the average dimensions of activity spaces for further design development were calculated as shown in Table 5.7. It is estimated based on the different dimensions of existing housing units from the field survey. These data were calculated into average and standard deviation values and the proposed sizes were taken from the average values of the two selected sites. The estimated total areas can be divided into the major activity spaces which were the essential needs of the residents at the initial stage and the secondary activity spaces which can be developed in the later stage of the residential stay, i.e., at modification stage. According to Table 5.7, the total area for major activity spaces was estimated to be 322 sq.ft (30 sq.m) and that for secondary spaces could be up to 352 sq.ft (32.3 sq.m), depending on the needs and preferences of residents. To sum up, the total space requirement for one household would be approximately 674 sq.ft (62 sq.m).

#### 5.6.2 Problems and opportunities presented by housing modifications

- Problems presented by housing modification

The process of transformation in the housing presents the problems faced by the occupants. Based on the survey on the transformation patterns and the under-lying reasons, the problems found in the housings are – the limited space and lack of flexibility, decrease of outdoor space and poor indoor and outdoor environmental conditions of the houses.

- (a) Lack of design flexibility and technical guidance of housing modification:** One of the key factors behind those self-modifications was the shortage of indoor space and the temporary building materials. This indicates the sub-standard conditions of initial housing where extensions and modifications are expected after post-occupancy, given the limited resources of the community. But the challenge here is that the initial site and house design have poor performance in the flexibility and adaptability to the needs and changing preferences. Because of the limited land availability from high cost, housing units are placed close to each other which makes horizontal extension difficult. On the other hand, the vertical extension also needs to renovate the whole weak structural system to withstand the additional loads which is costly for the households. These conditions should be considered at the planning stage, that calls for the need of technicians to involve at design development, along with a better financial model to support. In addition, it is found that the residents carried out the modifications by themselves, without any technical guidance and control from NGO or authorities. Such unsupervised self-modifications could affect to the design safety as well as to the overall development community in the neighborhood as mentioned by Kallus and Dychtwald (2010).
- (b) Decrease in outdoor space:** While transformation increases the indoor space, outdoor space has been decreasing gradually. Due to limited land availability, both sites do not have the specific green spaces and the families usually plant trees and flowers at front or side of the houses. However, most households tend to extend and this utilize almost of their own outdoor space thus creating the view of narrow concrete lane without plants while also losing the space for relaxation and difficult to carry out other outdoor household activities such as washing clothes and drying.

(c) **Indoor environmental conditions:** Another drawback observed in the housing transformation process is poor environmental conditions of both indoor and outdoor of the houses. Since the housing units are small in width and long in length, they need a better cross-ventilation and lighting inside. However, as the units are placed close to each other, it creates the shading and prevent the wind flow, resulting in the poor indoor ventilation and lightning inside. Moreover, unlike other roofing materials, CGI roof that the families use has low thermal properties and increase the previously high indoor temperature particularly during the daytime in summer. Additionally, the tarpaulin sheet installed to prevent rainwater to bamboo weaving walls leads to the blockage of ventilation and natural light and in the hot and humid climate, the rooms are uncomfortable when the cross-ventilation is absent. Regarding the outdoor environmental condition, it is found that not only the selected Sites 1 and 2, the rest of sites from 3 to 11 have the same issue where the used water is logged under the houses from the lack of proper drainage system. It is found the communities have limited capacity for infrastructure development as it requires the expertise to guide them while the communication between the experts and the communities is limited.

- Opportunities

(a) **Modification as livelihood strategy:** It can be seen that the house modification is part of a livelihood strategy from which livelihood outcomes are derived to improve the well-being of household members. It addresses the basic needs of households for a better living condition for example, the housing extension created an additional space to accommodate the expand household member, security purposes by changing better materials or building fences and the need for internal house services such as toilets and bathroom. Moreover, modification is contributing tremendously to creating jobs and supplying housing to meet housing needs which are non-existence in the formal economy. Through modifying their dwellings, households can conduct home-based enterprises or business activities such as tailoring, grocery store, etc. and this generates part of income for the household. Also, the modification or reconstruction of house created the jobs for the community members who are skilled in construction sector and who working in material supply market.

Furthermore, the modification of houses has made it possible for some people to differentiate their houses from others as a symbol of prosperity and providing a sense of belonging. Before, the design of all houses remained similar but after transformation, some houses are decorated with different building materials, with different front elevations and with different building heights from one to two storied-house. According to some of the occupants, house transformation also has improved the social status of the owners where the ability to transform from bamboo-weaved house to modern house, the household is seen as improved in income and make owners and tenants feel confident and proud of their residences.

## References

Correa, C. (1985). *The New Landscape*. Bombay, The Book Society of India.

- Kallus, R., & Dychtwald, S. (2010). Effects of user-initiated extensions in government-built housing on the urban space: The case of the Rambam neighbourhood in Tirat Carmel, Israel. *Journal of Urban Design*, 15(1), 69–90.
- Lawrence, R. (1994). Type as analytical tool: Reinterpretation and application. In Franck, K, A., and Scheekloth, L, H. (Eds.) *Ordering Space: Types in Architecture and Design*. US: Van Nostrand Reinhold.
- Tipple, G. (1991). *Self-help transformations of low cost housing: An introductory study*. Newcastle: Centre for Architectural Research and Development Overseas (CARDO) of the University of Newcastle Upon Tyne.
- Yin, R. K. (1994). *Case study research: Design and methods*. Beverly Hills: Sage.

## CHAPTER 6. POST-OCCUPANCY EVALUATION OF COMMUNITY-LED HOUSING

This chapter analyzes the residents' perceptions on the current community-led housing based on four perspectives such as physical, financial, social and well-being aspects. This provides the strengths and weaknesses in the current housing systems as well as the factors that influence the households' satisfactions of the housing.

### 6.1 Research Methods

This section evaluates the implementation of community-led housing based on the residents' perceptions to identify the practices that satisfy the requirements of residents, including the critical areas that need to be improved to address the housing inequality in the city. The methodological process of this study mainly consists of two parts: the identification of evaluation criteria and the analysis of CLH based on user perceptions.

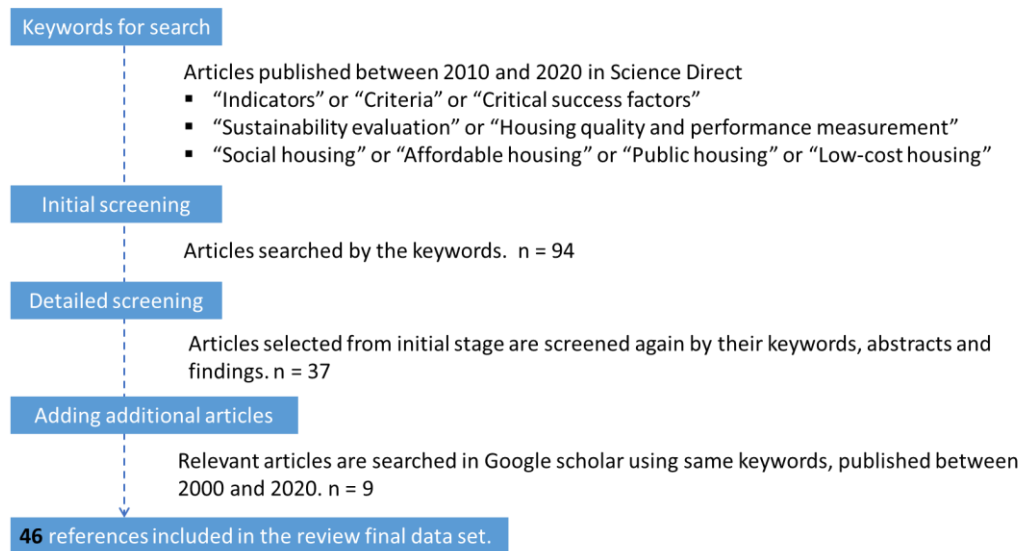


Figure 6.1 Search results for literature reviews and coding

The evaluation criteria for user satisfaction were identified through a systematic literature review as per the following steps. First, the objective is set up which was to identify and categorize the criteria to analyze the sustainability of housing to assess the quality and performance of community-led housing. Then, the keywords or codes for assessment criteria from the selected literatures were identified through reviewing the principles of sustainability in the housing development, which was followed by the literature searches. In this study, the literatures or articles were collected by both machine searches and manually reading the keywords, abstracts and their findings and a total of 46 academic papers were identified from Science Direct and Google Scholar based on search terms as shown in Figure 6.1. After the articles were collected, the evaluation criteria which were in the form of criteria as of environmental, socio-cultural, economic aspects, were identified and coded according to the codes from previous step. Text processing and data coding were done with MAXQDA software. The criteria were identified by coding based on the words found in the articles

according to the following - parent code for main criteria categories, 1<sup>st</sup> level sub-code for assessment criteria, 2<sup>nd</sup> level sub-code for sub-criteria of 1st level sub-code.

After the identification of evaluation criteria was done, the household survey was conducted at Sites 1 and 2 out of 11 sites as shown in Figure 1.3. as they are the earliest projects that were completed in 2009-2010. Therefore, they have a longer post-occupancy period where the residents have a better understanding of needs and preferences, along with more cases of housing self-modifications. The survey initially aimed to include all households in both sites; however, some of the houses were temporarily unoccupied from the residents returning to their hometowns due to the pandemic and political situations in the city. Therefore, a total of 67 households were included in the survey; 24 of 30 households (80%) were from Site 1 and 43 of 60 households (72%) were from Site 2. The participants were given the questionnaire form and asked about their perceptions on their houses based on the identified criteria. The questionnaire form was in close-ended form and consisted of five sections. Section 1 comprised the items related to socio-economic and demographic characteristics of the residents while Sections 2-5 had the evaluation items related to site and housing environment, housing finance system, socio-cultural aspect during housing acquisition process and lastly the impacts of housing to the households, where they have to put their satisfaction scale that ranged from '1' for dissatisfied, '2' for neutral, and '3' for satisfied. Such data was then processed and analyzed in Microsoft Excel, and the satisfaction score 'x' was calculated using the following Equation (1):

$$x = \{R1(i) + R2(i) + R3(i)\} / (R - r) \quad (1)$$

where R1 = residents who responded satisfied, R2 = residents who responded neutral, R3 = residents who responded dissatisfied, r = residents who did not answer, R = total number of respondents, and i = satisfaction scale or scoring index. Based on the evaluation results, it discussed about the level of residential satisfaction of the current community-led housing system to analyze the positive and negative aspects, along with the factors that influence the residents' satisfaction.

## 6.2 Identification of Assessment Criteria

Table 6.1 shows a list of satisfaction assessment criteria for CLH identified from the systematic literature review. There were altogether 44 criteria under four main categories: (1) physical criteria that measure residents' perceptions of the site and housing quality; (2) financial criteria that evaluate affordability and the availability of alternative financial sources and their terms; (3) social criteria to measure the CLH process in terms of tenure security, safety, community participation and control over the process; and (4) the last criteria group to evaluate the impacts of the project to the residential households to understand the potential of the current approach

Table 6.1 List of residents' satisfaction assessment criteria

Parent code: Physical criteria			
1 <sup>st</sup> code	2 <sup>nd</sup> code	Descriptions	Sources
<b>Site quality</b> (This assesses the satisfaction level of residents regarding to the condition of the site and whether it provides the basic services and facilities.)	P1. Housing layout and numbers of units	It determines with the level of compactness of housing development (density of housing) for optimization and conservation of land.	Lazar and Chithra, 2020
	P2. Plot area	It evaluates whether there is adequate plot size for each household.	Lazar and Chithra, 2020
	P3. Setback distance	It evaluates with the benchmark of international or national setback distance between two housing units in same land parcel.	Pullen, et al., 2010; Lazar and Chithra, 2020
	P4. Street width and accessibility	<ul style="list-style-type: none"> <li>• Level of communal activities and network within the housing community</li> <li>• Width and whether presence of pedestrian path</li> <li>• Condition of the street (paved or not; good or bad)</li> <li>• How is it easily access to the exit and fire truck accessibility?</li> </ul>	Mohit, Ibrahim and Rashid, 2010; Ibem and Aduwo, 2013
	P5. Accessibility to community centre	It evaluates whether the community has the common space for socializing and other community activities.	Mohit, Ibrahim and Rashid, 2010
	P6. Green space	<ul style="list-style-type: none"> <li>• Whether the accessibility to the open space</li> <li>• Ratio of users to the available open space area</li> </ul>	Muhammad, Aremu, and Akande, 2018; Rizai and Emami, 2018; Díaz López, et al., 2019; Mulliner, Smallbone and Maliene, 2013; Qtaishat, Emmitt and



			Adeyeye, 2020; Chiamaka and Auduwo, 2019; Lazar and Chithra, 2020; Gan, et al., 2017; Guangdong, et al., 2017
	P7. Recreation area	It evaluates whether there is playground presence within or near (10 minutes' walk) the housing.	Mohit, Ibrahim and Rashid, 2010; Rizai and Emami, 2018
	P8. Site sanitation	It evaluates how clean the housing and it relates to the drainage flow, garbage and debris, shrubs and building itself.	Ibem and Aduwo, 2013; Muhammad, Aremu, and Akande, 2018; Mulliner, Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014; Qtaishat, Emmitt and Adeyeye, 2020
	P9. Drainage system	<ul style="list-style-type: none"> <li>• Whether there is any drainage system within the housing</li> <li>• Whether the drainage has enough capacity of flow</li> </ul>	Saidu and Yeom, 2020; Lazar and Chithra, 2020; Gan, et al., 2017
	P10. Availability of solid waste management	<ul style="list-style-type: none"> <li>• Any access point within or near the housing for solid waste?</li> <li>• If not, how do they manage it and whether they satisfy or not?</li> </ul>	Saidu and Yeom, 2020; Mulliner, Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014; Qtaishat, Emmitt and Adeyeye, 2020; Lazar and Chithra, 2020; Gan, et al., 2017; Ismail, et al., 2015
	P11. Access to public water supply	<ul style="list-style-type: none"> <li>• Whether the household has accessed to the public water supply</li> <li>• If not, alternative sources of water supply</li> <li>• Quality of service and unit price affordability</li> </ul>	Ibem and Aduwo, 2013; Ikgopoleng and Cavric, 2007; Lazar and Chithra, 2020; Chiamaka and Auduwo, 2019

	P12. Access to public power supply	<ul style="list-style-type: none"> <li>• Whether the household has accessed to the public water supply</li> <li>• If not, alternative sources of water supply</li> <li>• Quality of service and unit price affordability</li> </ul>	Ibem and Aduwo, 2013; Ikgopoleng and Cavric, 2007; Lazar and Chithra, 2020; Chiamaka and Aduwo, 2019
	P13. Location with non-disaster-prone area	<ul style="list-style-type: none"> <li>• Whether the site experience any disaster such as (flash)flood, fire, earthquake</li> <li>• Any adaptation measures to the site for disaster risk reduction or prevention</li> </ul>	Esruq-Labin, et al., 2014; Gan, et al., 2017
	P14. Location with accessibility to facilities	The satisfaction determines whether the site location is close enough to school, hospital, market, transportation, etc	Chiamaka and Aduwo, 2019; Esruq-Labin, et al., 2014; Gan, et al., 2017; Ibem and Aduwo, 2013; Ismail, et al., 2015; Mohit, Ibrahim and Rashid, 2010; Oyebanji, Liyanage, and Akintoye, 2017; Rizai and Emami, 2018; Mulliner, Smallbone and Maliene, 2013; Pullen, et al., 2010
<b>House quality</b> (This assesses the satisfaction level of residents regarding to the condition of the house.)	P15. Quality of workmanship	This determines whether the residents satisfy with quality of housing construction.	Rizai and Emami, 2018; Ismail, et al., 2015
	P16. Quality of materials	This determines whether the residents satisfy the quality of building materials.	Ismail, et al., 2015
	P17. Aesthetics	<ul style="list-style-type: none"> <li>• Whether satisfy on the aesthetics of house</li> <li>• Contribution of housing to the aesthetics of urban landscape and</li> </ul>	Ibem and Aduwo, 2013; Muhammad, Aremu, and Akande, 2018; Saidu and Yeom, 2020; Lazar

		morphology	and Chithra, 2020; Guangdong, et al., 2017
P18. Strength of housing	This evaluates whether the house would be resilient to flood, fire, earthquake, storm		Mohit, Ibrahim and Rashid, 2010; Qtaishat, Emmitt and Adeyeye, 2020; Chiamaka and Aduwo, 2019, Gan et al., 2017
P19. Ratio of beds and residents	This determines whether there are adequate sleeping space or bedroom for all the household members.		Rizai and Emami, 2018; Chiamaka and Aduwo, 2019; Abastante, et al., 2018
P20. Adequate living spaces	<ul style="list-style-type: none"> <li>• Do you think the dwelling size is enough for your household?</li> <li>• Habitability indices of each room (living area, dining, bedroom, etc size satisfaction)</li> </ul>		Mohit, Ibrahim and Rashid, 2010; Ibem and Aduwo, 2013; Muhammad, Aremu, and Akande, 2018; Pullen, et al., 2010; Lazar and Chithra, 2020; Gan et al., 2017; Ismail, et al., 2015
P21. Barriers-free housing features	Whether the design of house is barrier free for elderly, children and disable persons or easy to move around		Mulliner, Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014; Qtaishat, Emmitt and Adeyeye, 2020
P22. Culture compatible design	Whether the design of house reflects the needs, cultures and beliefs of the resident family		Qtaishat, Emmitt and Adeyeye, 2020
P23. Indoor living quality	<p>This determines whether the indoor of the house has the comfortable conditions regarding to the following items</p> <ul style="list-style-type: none"> <li>• Noise</li> <li>• Natural lighting condition inside</li> <li>• Air quality</li> <li>• Ventilation</li> </ul>		Chiamaka and Aduwo, 2019; Díaz López, et al., 2019; Gan, et al., 2017; Ismail, et al., 2015; Ibem and Aduwo, 2013; Lazar and Chithra, 2020; Muhammad, Aremu, and Akande, 2018; Mohit, Ibrahim and Rashid, 2010; Qtaishat,

			Emmitt and Adeyeye, 2020; Saidu and Yeom, 2020
Parent code: Financial criteria			
1 <sup>st</sup> code	2 <sup>nd</sup> code	Descriptions	Sources
<b>Affordability</b> (This measures whether the price of house bring cost-burden to the community residents.)	F1. Ratio of housing price to incomes	This determines whether the price of house (cost of land and house construction) is affordable enough for household total income. Note/ Rule of thumb: Housing price = not more than 30% of income	Ibem and Aduwo, 2013; Saidu and Yeom, 2020; Díaz López, et al., 2019; Gan, et al., 2017; Mulliner, Smallbone and Maliene, 2013; Qtaishat, Emmitt and Adeyeye, 2020; Guangdong, et al., 2017; Gan et al., 2017; Dezhi et al., 2016; Esruq-Labin, et al., 2014; Pullen, et al., 2010; Oyebanji, Liyanage, and Akintoye, 2017; Rizai and Emami, 2018
<b>Availability</b> (This deals with the different financial options and models. The more the choices, the better the financial sustainability that result in the high satisfaction rate.)	F2. Variability of financial models	It evaluates whether there are alternative sources of finance or financial options or policies for housing construction and transformation. Examples of financial options are tax exemption, rent subsidies, land subsidies, micro-credits, community saving, etc.	Oyebanji, Liyanage, and Akintoye, 2017; Saidu and Yeom, 2020
	F3. Interest rates and mortgage	<ul style="list-style-type: none"> <li>Any loan mortgage available for the residents?</li> <li>Whether interest rate is affordable for the residents?</li> </ul>	Oyebanji, Liyanage, and Akintoye, 2017; Mulliner, Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014; Ikgopoleng and Cavric, 2007
	F4. Adequate funding and	It determines whether source of finance or	Oyebanji, Liyanage, and Akintoye, 2017;

	provisions	funding has adequate budget or adequate provision.	Saidu and Yeom, 2020
	F5. Availability of low-cost house ownership scheme	Any housing policies, programs or schemes targeting to the low-income household?	Esruq-Labin, et al., 2014
<b>Parent code: Social criteria</b>			
<b>1<sup>st</sup> code</b>	<b>2<sup>nd</sup> code</b>	<b>Descriptions</b>	<b>Sources</b>
<b>Tenure</b> (This evaluates the current tenure system that the NGO and community have practiced whether it is effective mechanism in house ownership.)	S1. Tenure security	<ul style="list-style-type: none"> <li>• Current condition of land tenure and whether there is any problem with it</li> <li>• Whether the registration process easy or any complexities and challenges</li> </ul>	Ikgopoleng and Cavric, 2007; Lazar and Chithra, 2020; Gan et al., 2017
	S2. House ownership	This measures whether the residents are satisfied with the current house ownership model such as collective ownership, individual ownership etc.	Rizai and Emami, 2018; Lazar and Chithra, 2020; Aziz and Ahmad, 2012
<b>Safety</b> (This accesses whether the housing have enough protection from danger while providing a sense of privacy and security to the residents.)	S3. Safety	Whether the current housing condition/ design could provide the family enough sense of safety from the crimes	Esruq-Labin, et al., 2014; Mohit, Ibrahim and Rashid, 2010; Mulliner, Smallbone and Maliene, 2013; Muhammad, Aremu, and Akande, 2018; Pullen, et al., 2010; Qtaishat, Emmitt and Adeyeye, 2020; Rizai and Emami, 2018; Ibem and Aduwo, 2013
	S4. Security	Whether the current housing condition/design is secured enough for the family from the outsiders into the community	Chiamaka and Aduwo, 2019; Dezhi et al., 2016; Díaz López, et al., 2019; Ibem and Aduwo, 2013; Mohit, Ibrahim and Rashid, 2010; Muhammad, Aremu,

			and Akande, 2018; Oyebanji, Liyanage, and Akintoye, 2017; Rizai and Emami, 2018; Saidu and Yeom, 2020;
	S5. Privacy	Whether the current housing condition/ design could provide the adequate privacy within the household members and also from the neighbours	Chiamaka and Auduwo, 2019; Díaz López, et al., 2019; Rizai and Emami, 2018; Ismail, et al., 2015
<b>Participation</b> (This assesses the level of community participation during the process and how much it has equality regarding distribution, choosing beneficiaries.)	S6. Community participation and user control	This evaluates whether there is a chance to participate in every activity of housing and whether the household is satisfied with the level of participation and able to make decisions.	Gan, et al., 2017; Guangdong, et al., 2017; Oyebanji, Liyanage, and Akintoye, 2017; Saidu and Yeom, 2020
	S7. Equality in housing distribution	It assesses the distribution process of housing allocation if it is transparency and fair within the members.	Oyebanji, Liyanage, and Akintoye, 2017; Saidu and Yeom, 2020; Gan, et al., 2017
	S8. Activities of social support	Whether there is any knowledge or capacity training or job creation through the housing association	Oyebanji, Liyanage, and Akintoye, 2017; Abastante, et al., 2018
<b>Parent code: Wellbeing impacts criteria</b>			
<b>1<sup>st</sup> code</b>	<b>2<sup>nd</sup> code</b>	<b>Indicators</b>	<b>Sources</b>
<b>Wellbeing Impacts</b> (This study the impact of housing project from the perspective of socio-economic aspect.)	I1. (Increased) Household incomes	<ul style="list-style-type: none"> <li>Household income has increased after living in CLH</li> <li>Better access to health, education, food and other necessity</li> </ul>	Mulliner, Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014
	I2. (Improved) Economic security	<ul style="list-style-type: none"> <li>Better opportunities for job and getting stable job</li> </ul>	Mulliner, Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014
	I3. (Improved) Health and living	<ul style="list-style-type: none"> <li>Improved in</li> </ul>	Saidu and Yeom, 2020; Mulliner,

	conditions	<p>development in children</p> <ul style="list-style-type: none"> <li>• Reduced stress and diseases probabilities such as asthma, diaherra, dengue fever etc.</li> <li>• Comfortable living conditions</li> </ul>	Smallbone and Maliene, 2013; Esruq-Labin, et al., 2014; Guangdong, et al., 2017
	I4. (Improved) Education	<ul style="list-style-type: none"> <li>• Better education performance of children</li> </ul>	Qtaishat, Emmitt and Adeyeye, 2020
	I5. (Improved) Social cohesion	<ul style="list-style-type: none"> <li>• Increased network, and enhanced trusts and attitude</li> </ul>	Aziz and Ahmad, 2012; Gan, et al., 2017; Guangdong, et al., 2017; Lazar and Chithra, 2020; Mohit, Ibrahim and Rashid, 2010; Muhammad, Aremu, and Akande, 2018; Oyebanji, Liyanage, and Akintoye, 2017; Qtaishat, Emmitt and Adeyeye, 2020; Rizai and Emami, 2018
	I6. (Improved) Local knowledge and life skills	<ul style="list-style-type: none"> <li>• Improved in livelihood skills and awareness level</li> </ul>	Oyebanji, Liyanage, and Akintoye, 2017; Gan, et al., 2017

### 6.3 Post-occupancy Evaluation Based on Residents' Perception

#### 6.3.1 Background information of the participants

From the household survey, the background information of the participants such as household size and organization, jobs and household income as shown in Table 6.2. Regarding the household size, the numbers of person per household varied from 2 to 11 people where the average size is 5 people per household in Site 1 and 4 people in Site 2. Usually, the household is organized with single family structure, consisting of two to five people where approximately 60% of households have the children (> 16 years old) and the numbers of the children ranged from minimum one child to maximum five children. In addition, there are households where main family living together with extended family, relatives, close friends and elderly parent(s) and this addition of members to the family increases the household size up to 11 people. It is also found that the gender ratio between male and female is nearly equal in both sites.

Regarding the household income, it can be seen that households from Site 2 are more well-offed than those in Site 1 where more than half of the households from Site 2 earned between

300,000 – 750,000 MMK that falls in the range of low- to mid-middle income group as per Table 3.2. On the other hand, the households in Site 1 mostly earned lower than 350,000 MMK per month and thus within the range of low-income group. Therefore, the household income is also related to the types of job, along with the numbers of working members in the family. In this context, the professions of the tenants can be categorized into two main groups which are the self-employed and the daily paid jobs. Usually, the paid jobs include working in construction sites, factories and transport services like carrier, driver, and this consists of more than 50% and 70% of the households from respective sites while the rest are working as self-employed which it varies from street vendor to tailoring, barber, etc. as shown in Table 6.2.

Table 6.2 Residents' profile in Site 1 and Site 2

	<b>Site 1</b>	<b>Site 2</b>
<b>Household size</b>	No. of household	No. of household
2	1	5
3	4	16
4	10	23
5	4	8
6	5	6
7	1	2
8	3	1
11	-	2
N/A	2	2
	Person/ Household	Person/ Household
Average	5	4
Maximum	8	11
Minimum	2	2
<b>Gender</b>		
Male: Female	1:0.91	1:1.2
<b>Number of children per household</b>	No. of household	No. of household
1	6	21
2	9	12
3	2	5
4	1	-
5	-	2
<b>Jobs</b>	Percentage	Percentage
Transportation sector (Driver/ carrier)	17%	12%
Construction worker	6%	11%
Staff (General)	22%	2%
Staff (Cleaning)	3%	4%
Factory worker	6%	43%
Foreign worker	3%	-
Home-based business	11%	10%



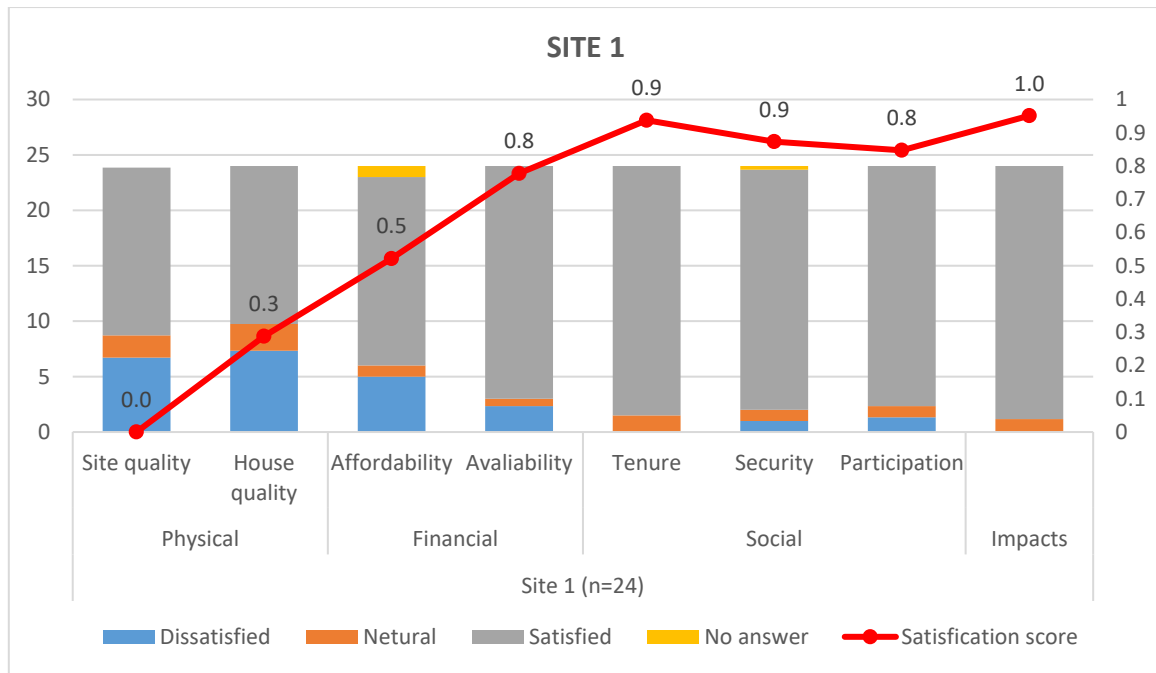
Street vendor	14%	8%
Barber shop	8%	-
Lottery selling	3%	-
Bicycle shop	3%	-
Oriental medicine shop	3%	-
Broker	-	2%
Informal worker	-	5%
Retired (Pension)	-	1%
N/A	3%	1%
<b>Income (MMK)</b>	<b>No. of household</b>	<b>No. of household</b>
Less than 150,000	2	-
150,000 to 350,000	15	8
350,001 to 550,000	5	28
550,001 to 750,000	3	18
750,001 to 1,000,000	-	9

### 6.3.2 Analysis of residents' satisfaction assessment

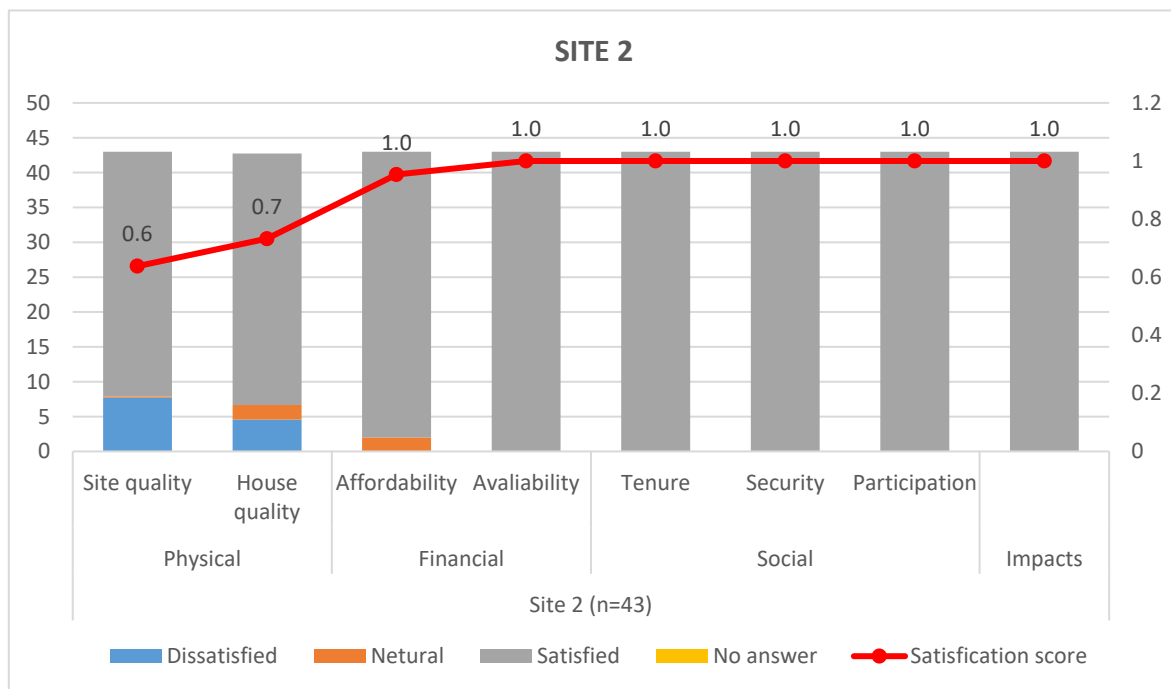
#### 6.3.2.1 Overall residents' satisfaction

Figure 6.2 shows the residents' perceptions of the current conditions of the community-led housing (Sites 1 and 2) where the survey was carried out. Regarding overall pattern, Sites 1 and 2 had generally similar results in the four main categories. It was found that both sites had lower satisfaction scores related to physical conditions compared to the financial, social, and impact criteria.

Of the 24 households from Site 1, nearly 30% of the respondents were dissatisfied with site and housing qualities in the physical category, while 21% felt that the cost of housing was high compared to their household income. Nearly 90% of them were satisfied regarding the social factors relating to the housing acquisition process and positively agreed that the housing project improved their lives in terms of financial stability, life skills knowledge, health, education, and social cohesion conditions. Compared to Site 1, Site 2 had higher satisfaction scores, particularly in housing physical category. All the households from Site 2 who participated in the survey responded positively to the financial availability, social factors, and the housing impacts on their lives. Moreover, slightly more satisfaction answers were found relating the affordability even though the unit housing cost for Site 2 was higher than that for Site 1.



Satisfaction score: Satisfied = '+1', Neutral = '0', Dissatisfied = '-1'



Satisfaction score: Satisfied = '+1', Neutral = '0', Dissatisfied = '-1'

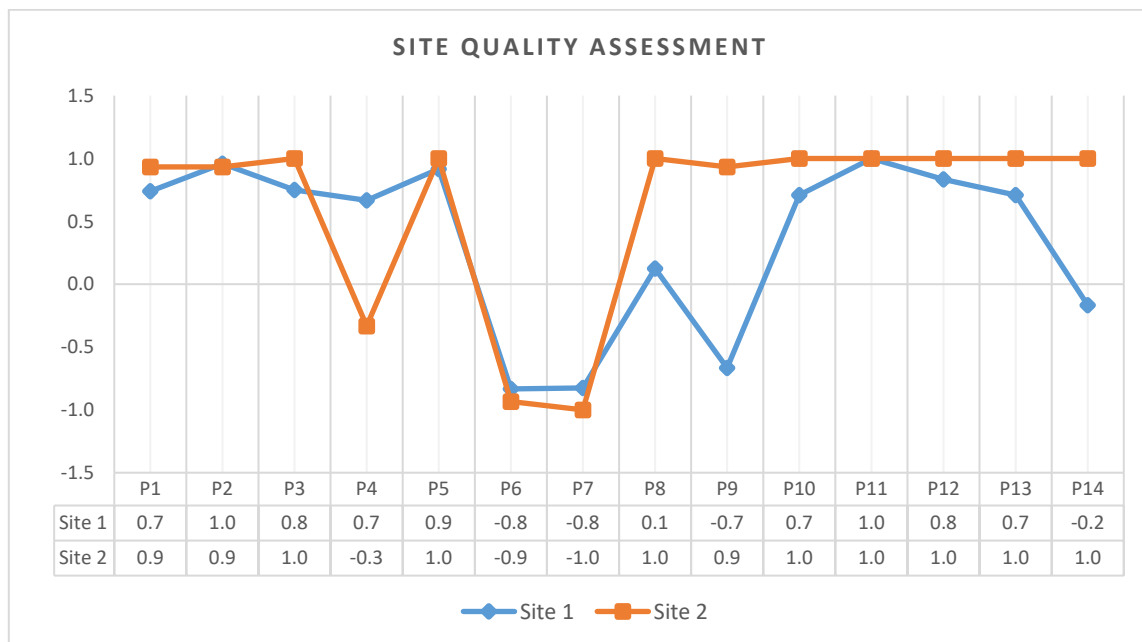
Figure 6.2 Residents' overall satisfaction scores on current community-led housing

### 6.3.2.2 Satisfaction with physical features

Figures 6.3 and 6.4 reveal the residents' satisfaction with the current housing physical conditions at Sites 1 and 2. Even though both sites had similar floor plan, building materials, and workmanship, the results show that Site 2 had higher satisfaction scores than Site 1, particularly for housing quality characteristics. The reason may be related to the location of

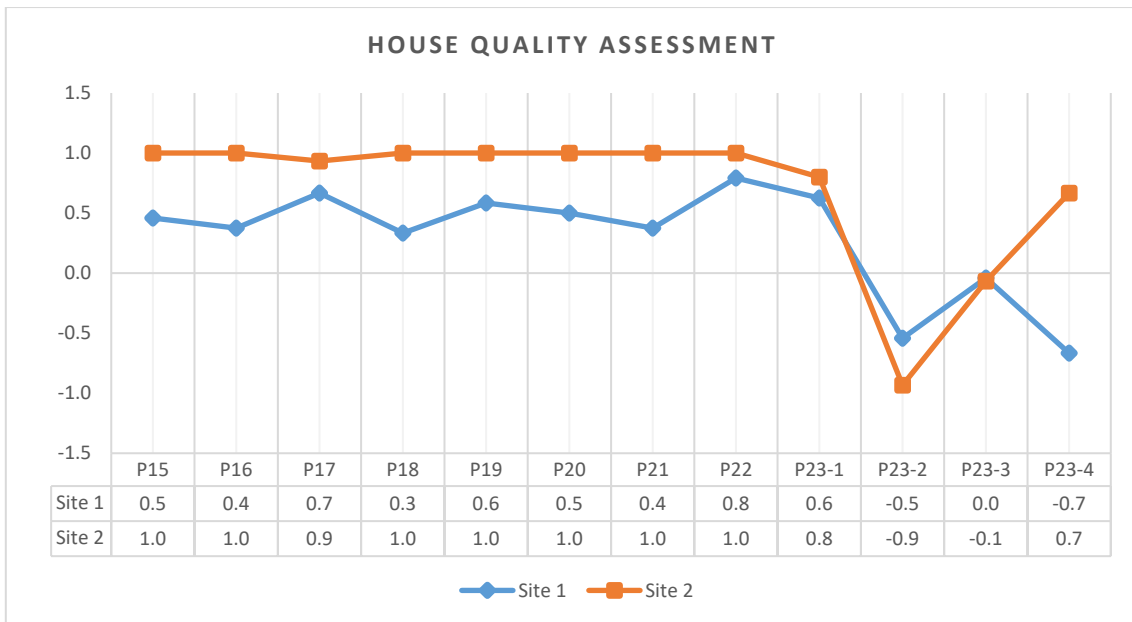
Site 1 which is near inner urban area that influenced the residents' preference to better housing conditions and more modern buildings. In addition, as Site 1 had a smaller individual land plot compared to Site 2, it is possible that they had a low satisfaction score (0.5 (Site 1) < 1.0 (Site 2)) regarding the current living space, but it is noted that satisfaction with adequate living space had little relation to household size, but rather to residents' preferences, household organization types, and lifestyles. As can be seen in Figures 1 and 2 in Appendix 3, both sites had limited green and recreational spaces for children and residents where the sites only had building structures. As a result, it has been a significant dissatisfied issue, along with the poor indoor conditions about thermal discomfort and lack of natural lighting. In addition, Site 2 largely showed dissatisfaction regarding a narrow pathway which made the residents' concern over the accessibility to fire engine during the outbreak. In this context, both Site 1 and Site 2 had narrow pathway (approximately 3m) which is impossible for fire engine to get inside the site, but Site 2 had more concern about it possibly due to larger numbers of housing units, twice more than Site 1 and the probability of occurrence of fire incidents from the nearby neighbourhood.

The residents of Site 1 reported dissatisfaction with their location of site far from basic facilities and most of the tenants complained about the need to take additional motorcycle carrier trip to reach the main road and other facilities such as market, school, and bus stop. Furthermore, due to the lack of well-developed drainage system in the Site 1, more residents from Site 1 had dissatisfaction compared to Site 2. Figures 6.5 and 6.6 showed the wastewater logging under the houses and some parts of the walking paths in Site 1. Site 2 also had wastewater under the houses, but it was in better condition than Site 1 and the water rarely reached over the walking pathway as they have built the small drain in front of the houses while the wastewater also tend to dry up during summer unlike Site 1.



Satisfaction score: Satisfied = '+1', Neutral = '0', Dissatisfied = '-1'

Figure 6.3 Residents' satisfaction scores on site features



Satisfaction score: Satisfied = '+1', Neutral = '0', Dissatisfied = '-1'

Figure 6.4 Residents' satisfaction scores on house conditions



Figure 6.5 Water flooded on walking pathway (Left) and under the houses (Right)



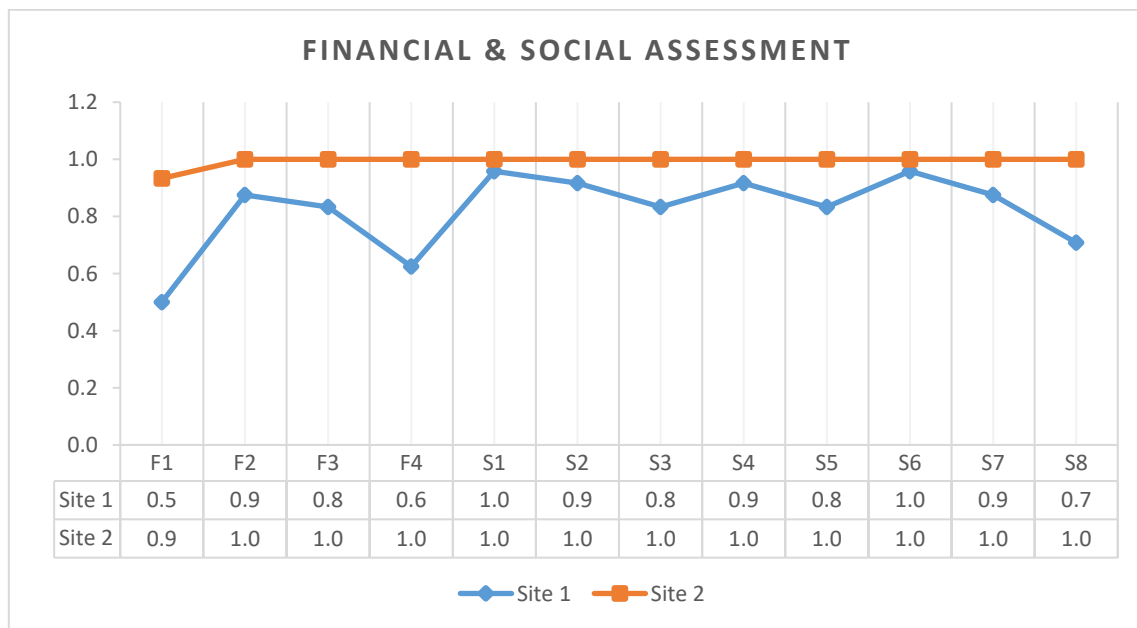
Figure 6.6 Water logging under the houses (Left) and drain in front of houses (Right)

### 6.3.2.3 Satisfaction with financial features

Residents' perceptions of financial characteristics were evaluated in two ways – affordability and availability. First, 71% of the respondents from Site 1 (satisfaction score = 0.5) and 95% from Site 2 (satisfaction score = 0.9) said that house prices were affordable with relation to their household income. Regarding financial availability, Site 2 which had access to both WSG and microfinance loans was found with higher satisfaction score than Site 1. Unlike Site 2, Site 1 firstly only had savings from WSG and took a long time to find additional financial source, due to the limited experience of WfW and community, which they later received the fundings from ACHR to continue the project.

### 6.3.2.4 Satisfaction with socio-cultural features

Social characteristics evaluated the tenure security, safety, and inclusiveness of the project. Based on Figure 6.7, only a small number of respondents (approximately 5%) from Site 1 showed dissatisfaction with social factors. The project has provided its residents with a sense of ownership and security. The high score on inclusiveness could come from WfW's encouragement of community participation in every step of housing development that let them become the key decision-makers and solve the problems collectively.



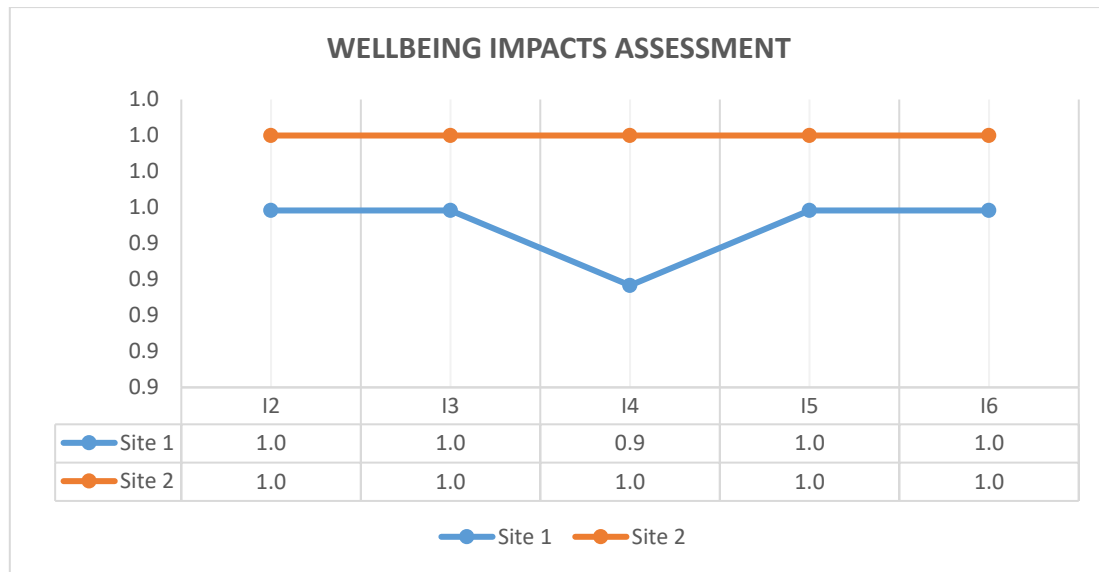
Satisfaction score: Satisfied = '+1', Neutral = '0', Dissatisfied = '-1'

Figure 6.7 Residents' satisfaction scores on financial and social aspects

### 6.3.2.5 Satisfaction on wellbeing impacts

Similar to social assessment, the housing impacts assessment showed the CLH's positive contributions to the residents' daily activities and living conditions as shown in Figure 6.8. The house ownership, along with WSG saving activities improved the residents' financial stability, accessibility to better job opportunities, education, and health services. Moreover, the participatory housing acquisition process and continuous training from WfW provided

them with life skills, augmented their capabilities, and built the social cohesion necessary to escape poverty.



Satisfaction score: Satisfied = '+1', Neutral = '0', Dissatisfied = '-1'

Figure 6.8 Residents' perceptions on housing wellbeing impacts

## 6.4 Discussions

### 6.4.1 Strengths and weaknesses of CLH

Based on the evaluation results of residents' satisfaction, a discussion on the strengths and weaknesses of current practice was conducted as shown in Table 6.3. It is found that the current CLH practice is socio-economically feasible while also improving the livelihood conditions of the community members. However, there are also the gaps in physical aspects of housing that needs more stakeholders especially technical group to participate during planning to find the optimum solutions.

Table 6.3 Strengths and weaknesses of current CLH practice

Content	Participatory designing and functionality of housing
Strength	It is found that the communities had freedom to select the site and develop the house design by themselves. Moreover, in the development of Site 2, there was the participatory design workshop with the architects and students to help community developing the site layout and initial house design. Such high level of participation contributed to the housing satisfaction which made the households accept the conditions even the house quality was substandard and self-modifications at later stage to address the needs.
Weakness	Though the communities have control over the design making, the residents were seen dissatisfied with the qualities by times went by. After nearly 10 years of stay, many of the houses have already extended and modified to satisfy the needs and changing preferences. On the other hand, these modifications, for example housing extensions resulted a decrease in already



	<p>limited outdoor space and left many more households complained about the lack of open space. This indicates the need of technical groups or community architects to participate in the process. However, it is also noted that codesigning only could not improve the housing qualities and performances significantly due to the limited budget, that needed to change the materials and reduce the floor area and plot size. Therefore, the design development should be not only participatory which allows community to raise their needs and conditions but also need optimized design solutions that based on the cost, housing performances and the residents' needs.</p>
Content	Financial mechanism
Strength	<p>High satisfaction was shown, particularly when there is a variation of tools such as collective saving groups and microfinance loans. Collective saving activities acted as the foundation for housing development and trust building while the integration with another financial sources made the development process more efficient and productive. WfW provides the community's full control over the management of WSG but this still need the skill trainings and guidance from WfW to saving group members. Furthermore, it is crucial to allow housing community members to participate in financial planning, particularly in making decisions for the loan terms with financial institution so that it is affordable for the community members which could be varied from each household and community.</p>
Weakness	<p>Though WSG has enabled the possibility of housing development, it alone cannot support the housing development but needs additional financial sources, while the capacity of saving groups depends on the saving ability of residents, which is uncertain.</p>
Content	Community participation and control
Strength	<p>The evaluation results reveal that the current practice allowed a high level of participation in and control of communities during the implementation. This is possible due to the WfW's strategy of letting the community act by itself and by limiting the participation of other stakeholders who would control decision-making.</p>
Weakness	<p>Limiting the communication with the stakeholders such as architects and technical experts sometimes could create the barrier during the design co-development workshop. A numbers of community members expressed their inability to provide feedback to the architects during the workshop due to the gaps in the technical knowledge and social norms that have long been embedded in the society.</p>
Content	Networking
Strength	<p>Networking among communities was done through the Women Saving and Development Network (WSDN,) which is the community-based organization established with all members from WSG and housing projects. In addition, WfW tried to include technicians and experts from both local and international organizations to support the technical issues of the housing after</p>

	a conflict among members occurred during the first phase of Site 2.
Weakness	Though experts were getting involved, their participation was limited and there was a gap in relation with the community members. There is also a lack of government participation due to the limited interest in this kind of grass-root practice and a lack of the political commitment from the central government. This situation hinders the registration of land ownership and possible opportunities for subsidies, which could help the community reduce the financial burden and develop better housing.
Content	Land ownership
Strength	Currently the land is owned by the resident community collectively and this practice not only provides them land ownership but also prevents the sale of the property without consent.
Weakness	Though the residents have showed satisfaction on tenure security, all the housing projects were constructed on the agricultural land due to the land affordability. Therefore, these project sites are actually vulnerable to removal by the local authority as housing construction is permitted only on the residential land.
Content	Post-occupancy management
Strength	After moving in, the community was given full control to manage their housing and also was supported by WfW and WSDN in enhancing their life skills management.
Weakness	Though completed almost simultaneously, the post-occupancy development between the two communities was different. Site 1 had more vertical extension and modification cases compared to Site 2 which opted to improve the infrastructure and site development as suggested by the NGO. It illustrates that the NGO easily influences the residents' attitudes unconsciously. On the contrary, in Site 1, due to the lack of control, different types of extensions proliferated with limited concern about safety and competition among the community members.

#### 6.4.2 Factors influencing the residents' satisfaction

Based on the above findings, it can be seen that the residential satisfactions were varied based on the housing delivery process and the physical conditions of the housing itself. On the other hand, it is found that the results could be different depending on the residents' expectations and perceptions regarding to the housing that could be varied among them. According to Ibem and Aduwo (2013), the residents tend to evaluate their housing conditions based on the standard which they have already created in their mind or other aspirations from surrounding environment. This phenomenon was found when comparing the satisfaction scores on the physical criteria of Sites 1 and 2. Though the physical conditions of both sites are not generally much different, even Site 1 with more cases of modifications, the more developed and well-off surrounding neighbourhood of Site 1 might lead to the lower satisfaction scores



contrasted to the under-developed surrounding near Site 2 which has lowered down the standard of reference condition.

Moreover, as stated by Turner (1976), dwellers can tolerate or accept a problem with their housing much more readily if it was a result of their own action or choice as opposed to that of another. Dweller control of the housing process is more likely to result in a house that fits with the household's livelihood strategy, making it more likely to be sustainable at the household level. Therefore, even though the current housing conditions in the case study areas are in need of improvements, the overall high satisfaction scores can be found from the residents since the housing itself was the effort from their hard work which they implemented from the beginning, thus are likely to accept the weakness and tolerance the sub-standard conditions. For example, despite the residents expect to have a larger living area or size of the house, most of the residents accepted that it is still liveable and contented with the fact of being able to participate as the house owner, along with a sense of belonging to the housing community and nearby neighbourhood.

## References

- Abastante, F., Corrente, S., Greco, S., Ishizaka, A., & Lami, I. M. (2018). Choice architecture for architecture choices: Evaluating social housing initiatives putting together a parsimonious AHP methodology and the Choquet integral. *Land Use Policy*, 78, 748–762.
- Aziz, A. A., & Ahmad, A. S. (2012). Home making in low-cost housing area. *Procedia - Social and Behavioral Sciences*, 49, 268–281.
- Chiamaka, U., & Aduwo, E. B. (2019). Evaluation of sustainability concepts in public housing projects in Ogun state, Nigeria. *Journal of Physics: Conference Series*, 1378(4), 042076.
- Dezhi, L., Yanchao, C., Hongxia, C., Kai, G., Chi-Man Hui, E., & Yang, J. (2016). Assessing the integrated sustainability of a public rental housing project from the perspective of complex eco-system. *Habitat International*, 53, 546–555.
- Díaz López, C., Carpio, M., Martín-Morales, M., & Zamorano, M. (2019). A comparative analysis of sustainable building assessment methods. *Sustainable Cities and Society*, 49, 101611.
- Esruq-Labin, A., Che-Ani, A., Tawil, N., Nawi, M., & Othuman Mydin, M. (2014). Criteria for affordable housing performance measurement: A review. *E3S Web of Conferences*, 3, 01003.
- Gan, X., Zuo, J., Wu, P., Wang, J., Chang, R., & Wen, T. (2017). How affordable housing becomes more sustainable? A stakeholder study. *Journal of Cleaner Production*, 162, 427–437.
- Guangdong, W., Duan, K., Zuo, J., Zhao, X., & Tang, D. (2017). Integrated sustainability assessment of public rental housing community based on a Hybrid Method of AHP-Entropy Weight and Cloud model. *Sustainability*, 9(4), 603.

- Ibem, E. O., & Aduwo, E. B. (2013). Assessment of residential satisfaction in public housing in Ogun State, Nigeria. *Habitat International*, 40, 163–175.
- Ikgopoleng, H., & Cavric, B. (2007). An evaluation of the self-help housing scheme in Botswana, case of Gaborone city. *Spatium*, 15–16, 28–36.
- Ismail, F., Jabar, I. L., Janipha, N. A. I., & Razali, R. (2015). Measuring the quality of life in low cost residential environment. *Procedia - Social and Behavioral Sciences*, 168, 270–279.
- Lazar, N., & Chithra, K. (2020). A comprehensive literature review on development of Building Sustainability Assessment Systems. *Journal of Building Engineering*, 32, 101450.
- Mohit, M. A., Ibrahim, M., & Rashid, Y. R. (2010). Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia. *Habitat International*, 34(1), 18–27.
- Muhammad, S., Aremu, R., & Akande, S. O. (2018). Comparative assessment of residential satisfaction between public and private housing estates in Federal Capital City (FCC) Abuja, Nigeria. *International Journal of Geography and Environmental Management*, 4(3), 53-62.
- Mulliner, E., Smallbone, K., & Maliene, V. (2013). An assessment of sustainable housing affordability using a multiple criteria decision making method. *Omega*, 41(2), 270–279.
- Oyebanji, A. O., Liyanage, C., & Akintoye, A. (2017). Critical success factors (CSFs) for achieving sustainable social housing (SSH). *International Journal of Sustainable Built Environment*, 6(1), 216–227.
- Pullen, S., Arman, M., Zillante, G., Zuo, J., Chileshe, N., & Wilson, L. (2010). Developing an assessment framework for affordable and sustainable housing. *Construction Economics and Building*, 10(1–2), 48–64.
- Qtaishat, Y., Emmitt, S., & Adeyeye, K. (2020). Exploring the socio-cultural sustainability of old and new housing: Two cases from Jordan. *Sustainable Cities and Society*, 61, 102250.
- Riazi, M., & Emami, A. (2018). Residential satisfaction in affordable housing: A mixed method study. *Cities*, 82, 1–9.
- Saidu, A. I., & Yeom, C. (2020). Success criteria evaluation for a sustainable and affordable housing model: A case for improving household welfare in Nigeria cities. *Sustainability*, 12(2), 656.
- Turner, J. F. C. (1976). *Housing by people: Towards autonomy in building environments*. London: Boyars.

## CHAPTER 7. CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the main findings of the research are summarized and the suggestions are made for improving the implementation and design development of the community-led housing for better development in the future.

### 7.1 Conclusions

Being the economic city in developing country as Myanmar, Yangon city has been experiencing rapid urbanization with increasing rural migrants and informality affecting low-income people and urban poor to live in informal settlements subject to eviction. Abating the issue, community-led approach has been used in the development of social housing in which the community-led housing as an enabling housing strategy for low-income people. The major challenge in this context is that the approach is still in early stage with complexes and unclear practices. Despite a great demand from growth of informal dwellers in the city, the implementation had been in small scale, single case while there is also lack of supporting policies. Therefore, to upscale the practice, it is necessary to understand the mechanism of current practice and how it can be involved in the existing policy framework, along with which factors make a good practice work in specific context and fail in another. This study attempts to explore the current community-led housing practice in Yangon and identify the lessons learnt to develop the operational framework and guidelines for CLH that empower poor communities to make decisions for their betterment and right to live in cities.

Chapter 1 provides the rationale and background of this research study and Chapter 2 about the concepts and theories related to the research study and provides the description about community-led housing which could be generally defined as the housing initiative which allows community (a group of people who have similar characteristics and interest) to lead and manage the process by making best use of their capacities, with the support from NGO and other stakeholders for resources and empowerment.

Chapter 3. Overview of social housing development in Yangon

In this chapter, it provides background information of social housing development in Yangon, Myanmar and discusses how the political and urban development have affected to the housing development, particularly for the low-income people. Though the social housing system in Myanmar has started since 1950, it was not developed properly due to the political instability. Social housing has been seen as political movement and it was developed in a leapfrog way thus resulting the private sector leading the housing market and leaving unaffordable for the low-income people. Due to the recent urbanization along with the rural migrants, it is estimated that Yangon city is in need of approximately 40,000 units of social housing units for next 10-20 years.

The current social housing system in Yangon has two approaches in which conventional top-down approach of the local government implementing One Million Housing Program for low-middle and low-income households under 20 years plan. Another one is the bottom-up approach where the communities from informal settlements are developing their own housing

through collective saving system, with the support from NGO. From the study, it can be seen that the One Million Housing Program has faced with the challenges to reach the targeted units while the high sale price left many of low-income households inaccessible to such housing units. One of the key challenges is the lack of efficient policies and laws as most of the policies are in need to be updated and not directly addressing to needs of low-income people. Another is the financial difficulties such as limited budget, affordability gaps, unreachable prices due to insufficient support of infrastructure and high taxes. On the other hand, community-led housing has become an alternative housing strategy for the low-income people and since 2019, 11 project sites have been implemented in Yangon. However, the practice is still in early stage where it is applied in single case of small scale while there is in demand from increasing informal dwellers and limited affordable housing supply.

#### Chapter 4. Implementation process of community-led housing

It specifically focuses on the implementation process on the community-led housing and it is found that all the CLHs in the case study area were developed from collective saving activities and implemented according to the principles of self-help. The community owned and implemented the project where women were the key players. For the implementation process, it is generally a three-stage process: preparation, planning, and implementation, with seven steps from saving to construction and moving-in. Though the procedure of the process remained similar over the years, it was improved in stakeholders' participation, financial mechanism, dweller-control, and, importantly, by transferring the power to the existing members to lead the new ones. This changed the collective power of the project from a single community to multiple communities.

Based on the findings, it is learnt that forming the cooperatives that represent the communities and having the collective actions is fundamental to the CLH development. The cooperatives such as WSG and WSDN brought each individual and community together into one to carry out the activities, whereas the collective actions enabled the implementation by addressing the needs together, either in the same community or with other communities and stakeholders. This provided the mutual learning experience that enhanced the capacities, social cohesion, and control to unlock the opportunities for new partnerships to mobilize the resources and to legalize their home ownership. Another important aspect of CLH is community participation and control, and the current process has been able to maintain a high level of dweller control by allowing the community to do first and decide for themselves. This could be owing to the self-sustaining financial mechanism and the government's limited involvement. However, the still uncertain land tenure implies that the government would have to deal with complicated legal issues that were beyond both WfW and the community's capabilities. In this context, a pro-poor integrated framework that focuses on housing development will be required in order to ensure the engagement of local government and the community participation and control in government intervention.

#### Chapter 5. Physical aspects of community-led housing

Chapter 5 focuses on the physical aspects of the housing units in Site 1 and Site 2 where the study included the analysis of modification patterns and their underlying reasons, housing

typologies and their characteristics, spatial organizations and the problems and opportunities presented by the modifications. From the field survey, it is found that the changes were found only in physical aspect and can be classified into three main patterns: (i) horizontal and vertical extension; (ii) changes of building materials; and (iii) changes in building elements. Firstly, it is found that there was limitation of space, particularly for sleeping area due to change of family structure, leading to the housing extension. Due to limited available land space, horizontal expansion could not solve the issue for large family with six-eight family members while vertical extension needed structural adjustment that was costly. On the other hand, wear-off was the main reason behind the material changes while the residents' willingness to upgrade the house from change of socio-economic condition, and adaptation to the urban environment are the factors that cause changes of both building materials and elements. Local environmental conditions (heat and rainwater), which were not paid attention initially, also made changes to the existing structure to improve the sub-standard indoor living condition. The problems found through the modifications included limited flexibility, decrease of outdoor space, and blockage of ventilation and light after installing tarpaulin sheets to the houses. On the other hand, modifications improved the living conditions of tenants through increased indoor space, better security and privacy, a sense of ownership and creating job opportunities through housing modification and home-based business activities.

As the results from housing modifications, new housing typologies were emerged into seven house forms with 13 different floor plans. Due to the elongated landform, the organization of all floor plans was arranged in the single line and the initial design included living room, one sleeping space and small space for cooking with outdoor shower space and toilet. At the secondary stage, the modifications had expanded the sleeping space at living room, or at mezzanine or second floor, including toilet and shower space inside of house. Though some households had lost front porch from extension, it is important for socializing, relaxing and even for making business activities.

The fact that the houses were modified gradually to the available resources indicates the residents' changes in housing needs and preferences over the time as well as their willingness to invest in their houses. By the look of different modification patterns in each house, it can be said that the families have different needs and preferences depending on their livelihood, culture and background structures. It, therefore, brings an awareness that the low-income mass housing like CLH needs an element of flexibility that could allow one to personalize his/her space and provide opportunity to make housing changes over time. Moreover, it is also learnt that the residents' housing preferences have become more urban-oriented and the need of consideration of local climate impacts to the structures and the residents for liveable housing provision.

It is therefore suggested that the initial design should consider not only current situations but also for future modifications and transformations. The flexibility of housing design should be increased accordingly with adequate land area, structural capacities, and functional needs. This states the consideration of incremental development approach in design guidelines that allows the future changes made by the residents. Moreover, passive design strategies should

be considered by reflecting the local climate for better indoor comfort and environmental quality.

## Chapter 6. Evaluation of housing based on residents' satisfaction analysis

This Chapter 6 presents residents' perceptions of their current physical conditions and socio-economic aspects of CLH practice and examined the strengths and weaknesses of the current practices based on satisfaction analysis. The results show that the current approach is satisfactory and meets the expectations of residents regarding socioeconomic aspects. This aspect represents the strength of the approach, and it includes a combination of collective saving and localized loans, collective land ownership, and the participatory approach where community as the implementer and owner of the project.

The residents were satisfied with the socio-economical aspects of current housing practice and it has also contributed to a better livelihood for the households with better job opportunities, education, health, and even social network. Regarding the physical aspects, most of the dissatisfactions were related to modifications which were the lack of design flexibility for modifications and decrease of outdoor spaces from extensions. Other issues were the indoor environmental conditions which were disregarded during initial stage. Housing modifications contributed to a higher satisfaction score regarding the house spatial quality but extension resulted the dissatisfaction. Therefore, to develop a better housing plan and design with current socio-financial value, it is necessary to include multi-stakeholders including government and technicians in the planning process and develop the flexible design based on performances, cost and needs. Lastly, it is noted that the residents' satisfactions depend not only the current conditions but also their expectations or standards that they have already in their mind which could be varied according to times, locations, and socio-economic conditions.

To conclude, this study shows that the community-led approach can unlock the potential of community members and enable them to develop their own houses and achieve house ownership. The study contributes to the field of CLH by providing the elements and gaps in the process that are necessary for a better implementation, including a better understanding on the different roles and responsibilities of stakeholders in the process. Moreover, this also provides a better understanding of living culture of low-income communities in terms of the uses, needs and changing preferences. Such information can be used in developing implementation framework and guidelines for a better CLH implementation. Such numerous small-scale successful implementations can pave the road for an institutionalization of community-led approach in housing development, possibly forming part of the state's approach to affordable housing for low-income households.

## **7.2 Recommendations**

Based on the findings and lessons learnt from the study, the recommendations were developed for the overall implementation framework, with different working model for specific purposes such as finance, land tenure and technical issues.

### 7.2.1 Implementation framework for CLH development

The proposed framework is developed based on the areas that need to be improved and the good practices from the current implementation process. It follows the current practices of coproduction with multi-stakeholders where community can make decisions of the process and activating collective actions in data collection, finance, land management and construction. By working together, the community can address the challenges they cannot do alone and these activities are expected to enhance the capabilities of community and build the trust and network to move forward. On the other hand, this framework proposes to include monitoring and evaluation phase and the multi-stakeholders, particularly local government and technical groups to solve the tenure and technical issues.

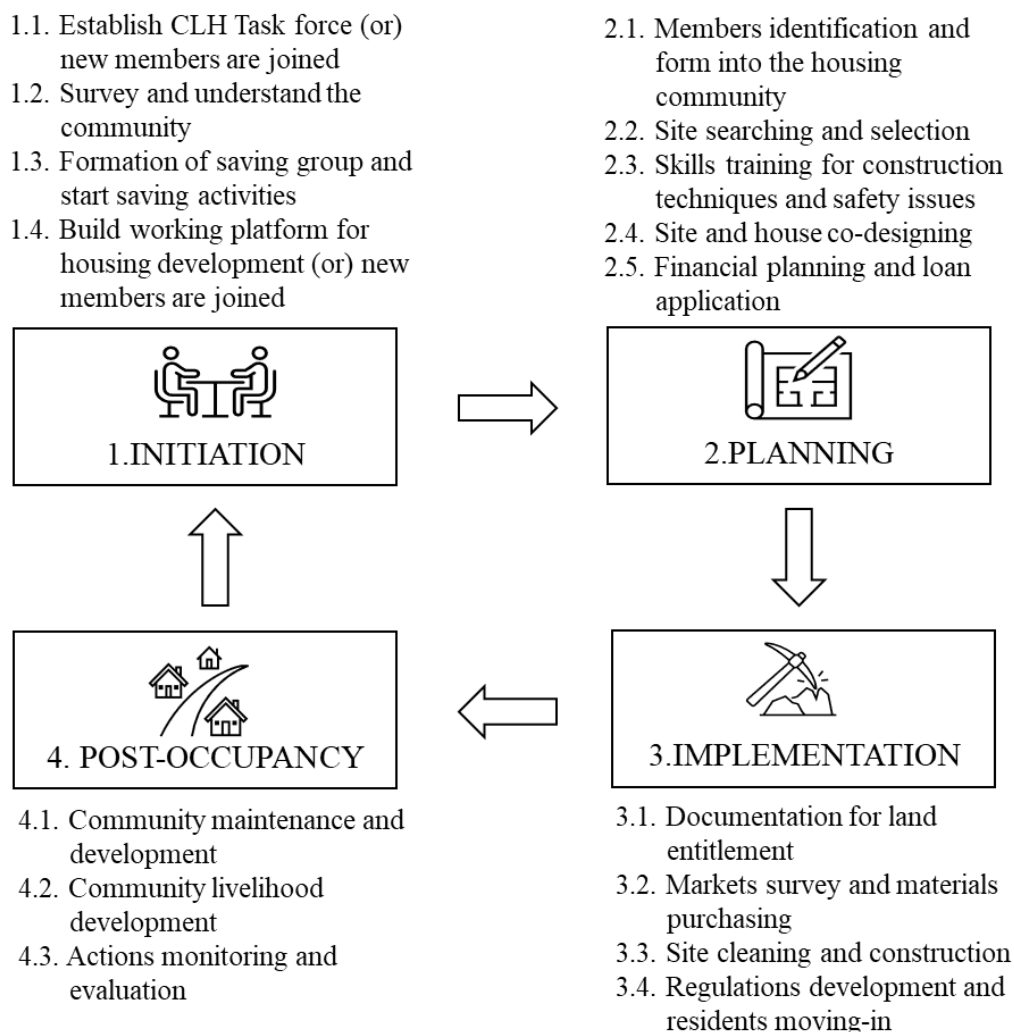


Figure 7.1 Proposed implementation framework of CLH process

As shown in Figure 7.1, the proposed framework has overall four phases in which first three phases that are similar to current approach and the last proposed phase, monitoring and evaluation (M&E). The M&E phase focuses on monitoring and management of housing and livelihood development and also evaluates the approach, contributing to improve the first three phases. Other additional actions that are suggested are to firstly establish CLH task

force at initiation phase for the local government to participate in the process and to build working platform to connect all the stakeholders and work together for the housing development activities. Once these working group and platform are built, new community members and stakeholders for further project can join in. Moreover, it is recommended to include skills training not only for the collective saving activities but also for basic construction techniques and safety management.

Overall, the first phase is initiation phase which includes establishing task force and working platform, identifying new community members and starting of collective saving group. Then, the second phase, planning, consists of all the housing planning activities including skills training, which is followed by implementation. The monitoring and evaluation phase continues once the residents start moving in and staying in the community.

### 7.2.2 Proposed model for CLH task force

As of first step, it aims to conduct field survey on the low-income or poor settlements in the city and map the common problems and needs of the community to identify the beneficiary groups. The survey is to be conducted by NGO, WSDN and local government (here CLH task force) in which WSDN can do field survey, with the support and guidance from NGO and local government. This includes mapping of local problems, community settlements, household profiles and socio-economic conditions and the findings are shared together and make decisions to identify the beneficiary group or household.

In this context, as part of local government, it is suggested to establish the task force designated for community-led housing development which applies the bottom-up approach in order to ensure the community participation during the process. The task force will have four units such as technical unit to support the policy planning and building regulations; financial unit to assist in providing loans and incentives; survey and relocation unit for field data collection of informal settlements and land availability and implementation unit to technically assist the community in design development, construction and improvement activities.

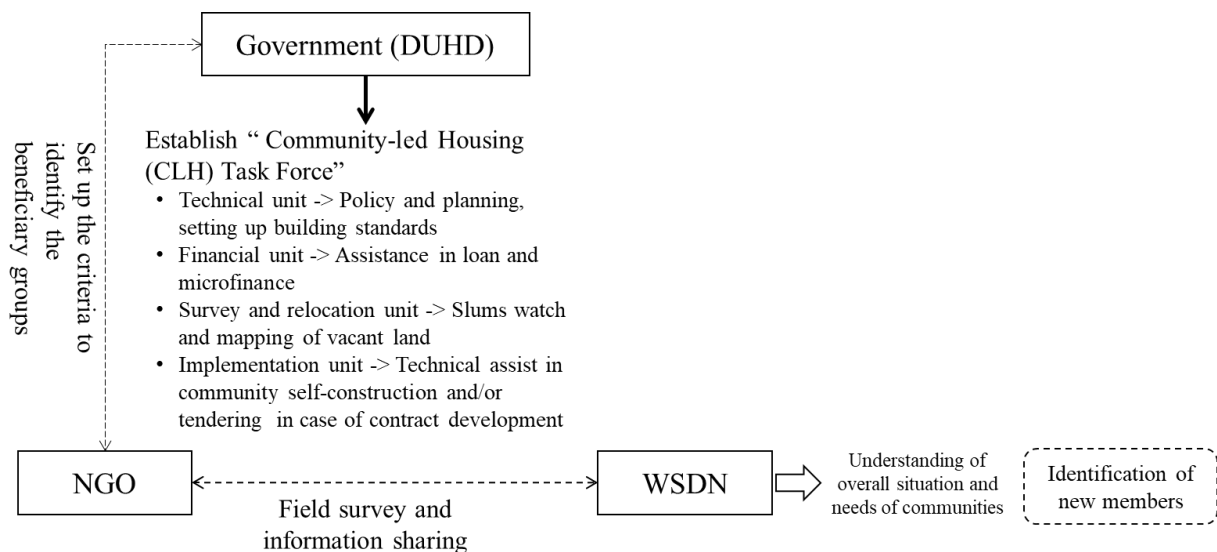


Figure 7.2 CLH task force and the activities



### 7.2.3 Proposed working platform for housing activities

Before moving to Phase 2. Planning stage, it is suggested to build the working platform that can not only represent for the community members but also bring all the stakeholders together at one place and work together. Figure 7.3 shows the working platform and it includes the housing communities, that are connected under WSDN, government agencies, different NGOs, micro-finance banks, technical groups and lastly material suppliers. The purpose of this platform is to carry out planning and implementation activities, particularly to support the needs of community and empower them, while mutually learn from each other. This platform will remain and new members are opened to join, representing both old and new community members and help to raise their voices as a whole.

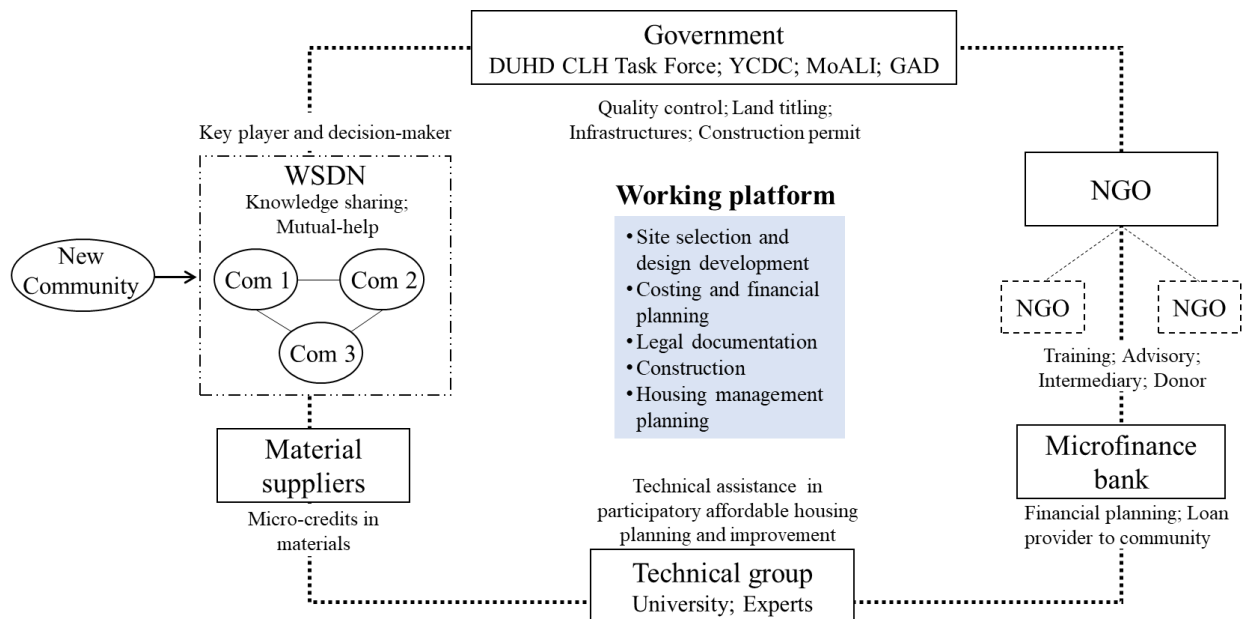


Figure 7.3 Proposed working platform for housing activities

### 7.2.4 Proposed working group for monitoring and evaluation

Figure 7.4 provides the working group for monitoring and evaluation of housing and community development at Phase 4. It includes housing community, WSDN, NGO, along with CLH task force, technical group and micro-finance bank. This working group will be responsible for not only livelihood improvement programs and activities but also operation and maintenance of housing community.

The community will have its own management committee to manage the housing and monitor the saving activities and community development activities such as infrastructure development, and other socio-economic activities. It is to recommend both NGO and government (CLH Task Force) to monitor the effectiveness of the practices and the impacts to the community and neighborhood development to update the practice in changing needs and society. Regarding the housing improvement, the residents should modify or transform their houses with the support from technical group while in alliance with the building standards to ensure with the safety and the balance in the community. For the livelihood improvement, NGO should provide the trainings and empowerment to the community

members as well as the advisory and guidance on how to start the small business to increase their household income. In this context, microfinance bank can be one of the alternative sources of funding not only for business start-up but also for housing upgrading and extension.

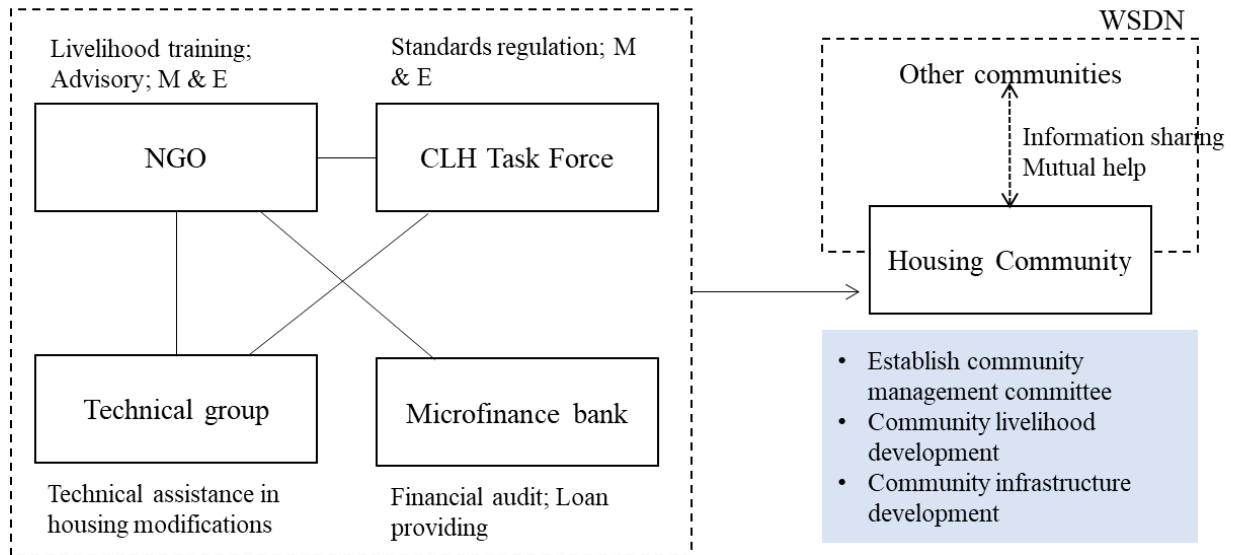


Figure 7.4 Proposed working group for monitoring housing and community development

### 7.2.5 Proposed financial mechanism

After identifying the new members at Step 1.2 at Initiation phase, they will form WSG and join to the WSDN and start the saving activities. The activities include –

- NGO will provide the training about the saving and financial management to the new members.
- New members will start forming the Women Saving Group (WSG) for starting people’s savings, income generation activities and joining to the Women Saving and Development Network (WSDN).
- After the saving has reached to certain level, the group will start deciding together on the project aims (the further activities to improve their lives) for example in this context, the CLH development.

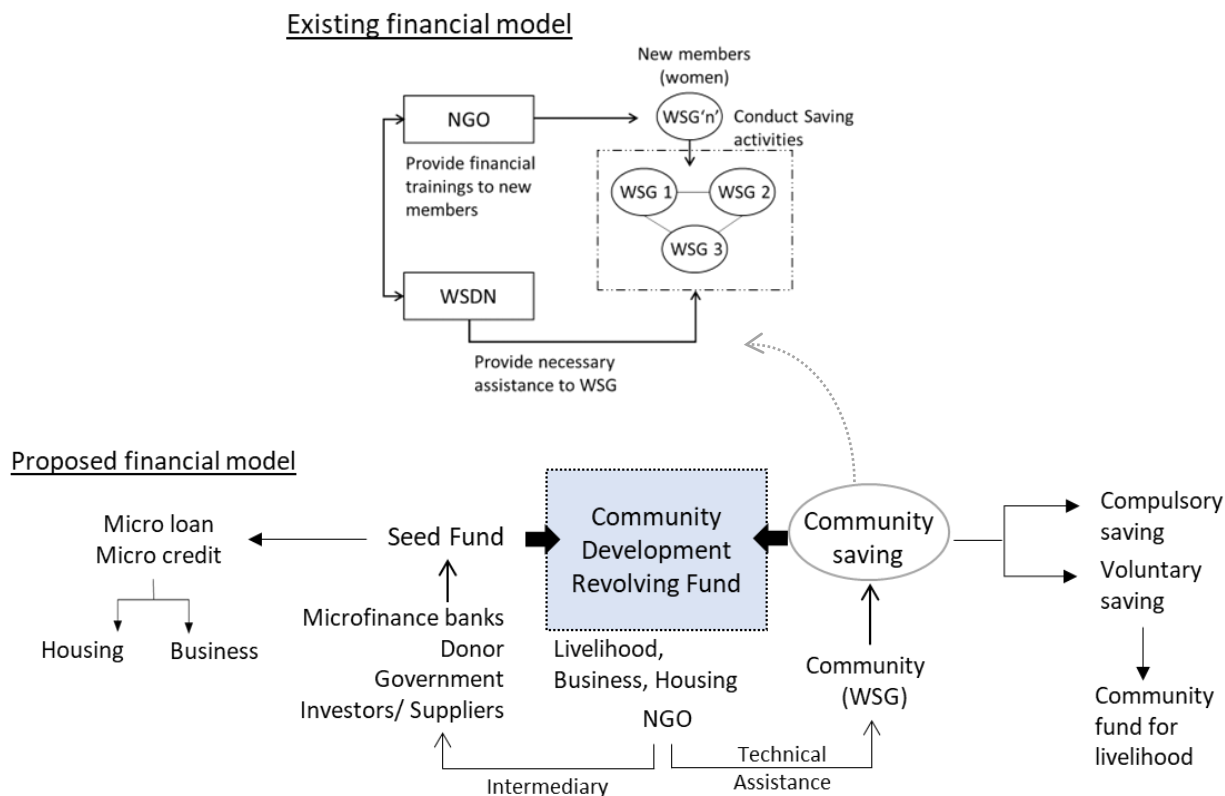


Figure 7.5 Proposed financial mechanism developed based on existing model


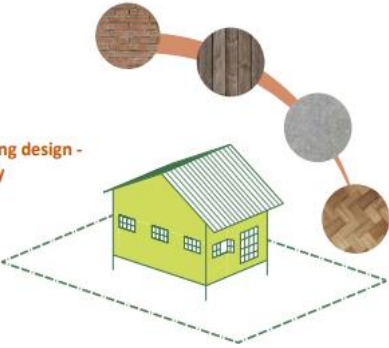

Figure 7.5 provides the proposed financial mechanism and here it is to create the revolving fund for the community for long term which they can operate and manage by the communities themselves. The fundings will be mobilized from two sources which are the community saving group (women saving group) which is the existing financial model and the other one is the seed fund. In this context, the capital for the seed fund can be from micro-finance bank, donor, government and private sector in the forms of loan or credit or both. Inhere, the interests they receive from giving loans or credits will be used as seed fund, contributing to the total revolving fund. The fundings can be used not only for housing construction and modifications but also for conducting business activities to support the households in long term. In here, at the same time, it is also important for the central government to create the enabling policy and regulation environment for the banks and private sectors to invest more in CLH development.

### 7.2.6 Suggestions for design development

Firstly, for Step 2.2. Site selection, housing community can first prepare the possible ideas on the numbers of households and the preferred plot size to search for the site with the support with the support from technical group and WSDN. Then, they can select two-three possible sites where people have to visit the sites together and measure its actual size, check all documents, ownerships, possible hazards risk and the available infrastructure and basic services. Lastly, community to decide the site together and once the decision is done, develop the community development plan with the technical team and make negotiation with the landowner.

For Step 2.5. Design development, it will be planned and designed through participatory design workshop. The workshop will be conducted with new members and other stakeholders from working platform (Figure 7.3). But before conducting the workshop, it is suggested to provide skills training to the community about the design making, construction techniques and safety issues so that they could have a better communication and feedback to the technical team. In addition, field visits to existing sites and other projects can add inputs to design development by learning good and bad points while it can encourage new members that they themselves can manage their project by working together. Table 7.1 provides the issues that need to be consider for the design of community-led housing at household level. At community level, it is necessary to include the basic infrastructures such as water supply, electricity, individual septic tank system and waste infrastructures as well as the drainage system and community center with equal accessibility. Other facilities include the green and open space for relaxation and socializing and drainage system.

Table 7.1 Issues to be consider for the design of community-led housing (household level)

<p>Plot that can accommodate housing extension</p> 	<p>Regarding the plot size, it should consider the possible future horizontal extension as well. The additional cost for larger land area could be saved through applying incremental housing design approach by providing the primary needs thus by reducing the construction cost.</p>
<p>Flexible housing design - Incrementality</p> 	<p>In this context, it is suggested to apply incremental housing approach that provides the basic needs at initial stage but also designs to be flexible enough to adapt the future modifications and transformations. Similar to spatial planning, materials selection should also be flexible depending on the budget availability.</p>
<p>Appropriate openings for ventilation</p> 	<p>Taken lessons learnt from the case study, it is recommended to consider for indoor environmental conditions, based on the local climate conditions. Due to the budget constraints, the vernacular passive design strategies could be one of the possible options to have better lighting, ventilation and liveable temperature.</p>

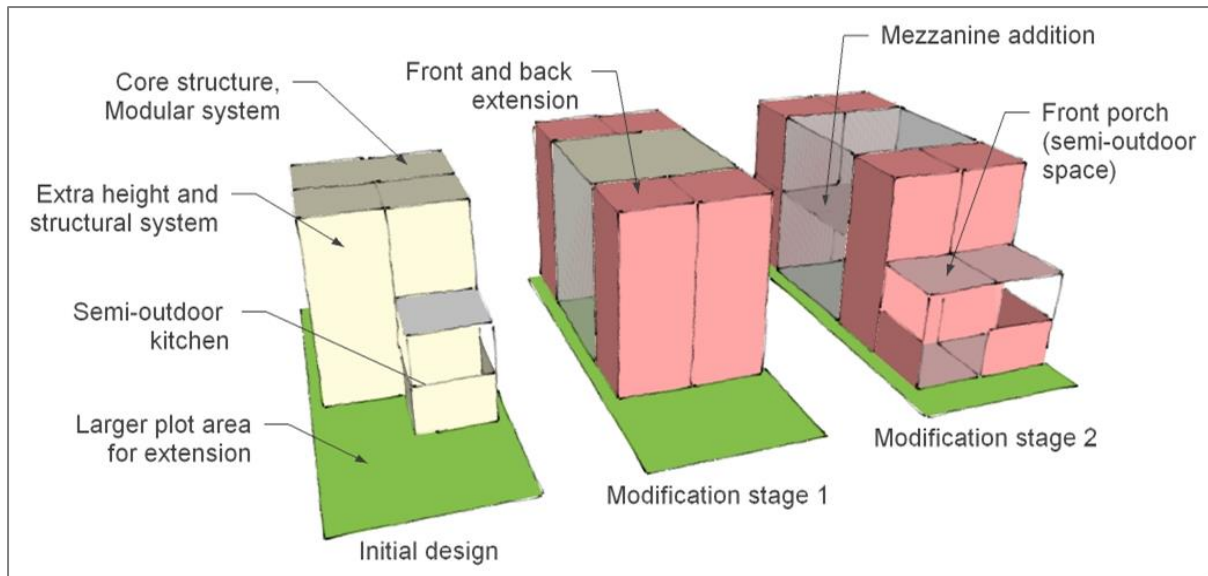


Figure 7.6 Proposed housing incremental development process

Figure 7.6 shows the process of incremental development stages of the house. Firstly, the initial design includes only the most basic needs and is constructed in modular form. In this context, a larger land plot and extra building height with structural system are proposed for both horizontal and vertical spatial flexibility. The proposed plot size can be identified based on different existing plot sizes with costs and the additional cost for a larger land and structural system is balanced by a reduced core house size. This core structure consists of a multi-functional living room with one bedroom while toilet and shower area are separately placed at back and a semi-outdoor kitchen at front according to the users' traditions found in the case study sites. Then, based on the financial capability of the household, the second stage includes the front and back extension where kitchen and bathroom are modified and put together into the core structure. At the final development stage, the mezzanine is built for additional bedroom and the front extension for porch as extra living quarter for family and social building in the community.

#### 7.2.7 Possible strategies for land tenure security

Achieving land tenure security is one of key challenges in the current implementation approach. Without incentives or supports from local government, low-income communities usually face unaffordability for residential land and force to reside on agricultural land. Although there is in theory a procedure by which land can be converted from agricultural to residential, the process is very complex and lengthy, making the change virtually impossible for economically poor dwellers. One of the possible strategies is that the WfW can try to pursue the government through advocacy and strategic partnerships. Through the local government from existing network, WfW can connect to YRG and DUHD and propose the policy development that recognizes the collective land ownership by communities. This includes the incorporation of a new land type under the name of community common land and this would enable the retroactive formalization and recognition of existing housing projects, as well as lay the groundwork for future projects to be implemented in a genuinely secure way.

Another possible strategy is that the local government can become one of the partners, in terms of CLH task force and join the working platform to support the housing project. In this context, the local government may allocate their land to the communities under the lease agreement for 20 to 60 years, where the communities can do their self-construction and stay for at least 60 years which can be extended later.

On the other hand, in order to be self-sustaining, WfW or other NGOs can implement the model of “community land trust” as shown in Figure 7.7. The proposed model can be conducted with the little participation from the government and less reliance on the subsidies or incentives. It can be implemented by WfW and its partner organizations together. Firstly, WfW can begin the initiative by creating the organization to manage the actions and the board membership is open to anyone ranging from NGOs to the individual private sectors but particularly targeting to the housing community members to ensure the community participation in decision-making and community control of the properties. Usually, the start-up funding usually comes from the participating organizations and the donors, subsidies or bank loans. Once the organization has certain amounts of fundings, they can start acquiring the privately-owned residential land and maintaining the ownership of those land parcels. Then, the land is leased to the prospective housing communities under long-term renewable lease or even sold at affordable rate, which can be decided together depending on the financial availability of the community members. This approach prevents land from the increasing market rate and remains affordable for low-income households, especially for future communities. In this way, upcoming housing communities can access to the affordable residential land, without economically burdening to the low-income households.

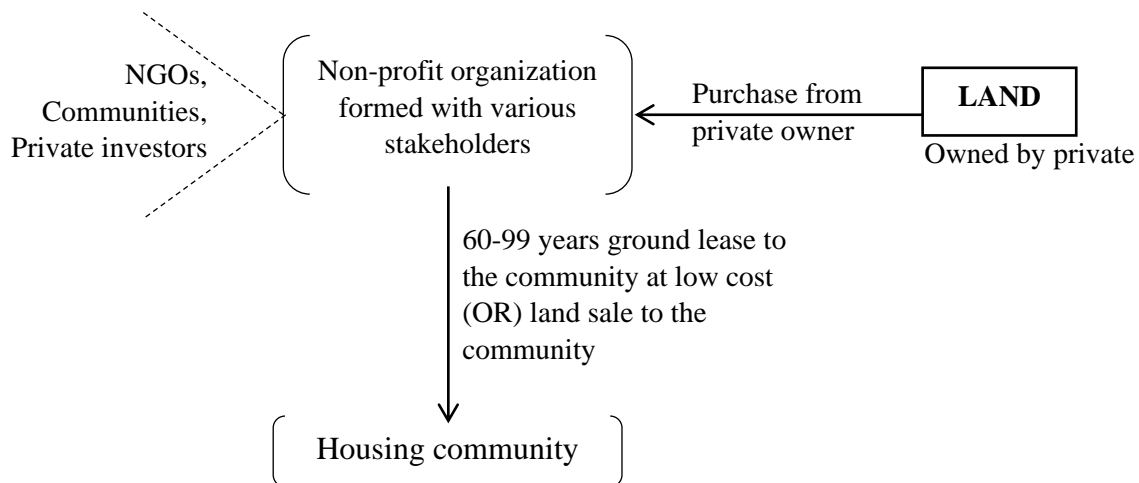


Figure 7.7 Proposed model of community land trust

## **APPENDICES**

Appendix 1: Household questionnaire survey form

Appendix 2: Information on housing modifications

Appendix 3: Site layout, floor plan and photographs

Appendix 4: Residents' perception about the community-led housing

## **Appendix 1**

### **Household questionnaire survey form**



**Questionnaire survey on housing physical characteristics and residents' perceptions on their housing environment**

This information from this survey will be used in two parts – (1) the analysis of the existing physical characteristics of the housing units and the changes in spatial, morphology and functions done by the residents and (2) the analysis of residents' perceptions on the current community-led housing approach. The findings of this survey will be input data for the next step of the development of implementation framework of the community-led housing.

All the information will be strictly used for academic purposes and kept confidential. Thank you very much for your cooperation.

**(A) General Information**

Household size	Total:	Male:	Female:
	Child: Yes / No	< 12 years old:	12 – 18 years old:
	Extended Family: Yes / No	No:	
Job		Monthly income	

Please indicate the location of your house in the below site map.

**(B) Initial housing condition**

1. When did you start joining the Women Saving Group?	
2. When did you start staying in this house?	
3. How much did you have pay for the initial house construction?	
4. Where did you get the budget for housing construction?	
<input type="checkbox"/> Micro-finance bank	Amount..... Constructed parts.....
<input type="checkbox"/> Women saving group	Amount..... Constructed parts.....
<input type="checkbox"/> Personal saving	Amount..... Constructed parts.....
<input type="checkbox"/> Others.....	Amount..... Constructed parts.....
5. Initial house design	
Plot size: Length.....Width..... House floor area: Length..... Width.....	
Materials:	Roof.....
Floor.....Wall.....Window.....Door.....	

**(C) Housing modifications**

1. Have you modified your current house?  Yes  No

2. If modified, please indicate the modifications with an  in the box and answer the following questions.

<b>Extension</b>	<b>Size (L x W)</b>	<b>Materials</b>	<b>Uses of extended spaces</b>	<b>Reasons</b>
<input type="checkbox"/> Back				
<input type="checkbox"/> Front				
<input type="checkbox"/> Side				
<input type="checkbox"/> 2 <sup>nd</sup> Floor				
<input type="checkbox"/> Mezzanine				
Total floor area after extension		1 <sup>st</sup> floor: Length =                          Width = 2 <sup>nd</sup> floor/Mezzanine: Length =                          Width =		
<b>Materials change</b>	<b>How often?</b>	<b>Initial materials</b>	<b>Replaced materials</b>	<b>Reasons</b>
<input type="checkbox"/> External wall				
<input type="checkbox"/> Floor				
<input type="checkbox"/> Structure				
<input type="checkbox"/> Windows				
<input type="checkbox"/> Door				
<b>Modifications</b>		<b>Notes</b>	<b>Reasons</b>	
<input type="checkbox"/> Front porch modifications				
<input type="checkbox"/> Septic tank and toilet modification				
<input type="checkbox"/> Interior partition				
<input type="checkbox"/> Windows additions				
<input type="checkbox"/> Shade net installation				
<input type="checkbox"/> Tarpaulin installation				
<input type="checkbox"/> Other				
<input type="checkbox"/> Other				
<input type="checkbox"/> Other				
<input type="checkbox"/> Other				
<input type="checkbox"/> Other				

3. Cost for modification

.....

4. Sources of finance:  Micro-finance bank     Women saving group     Personal     Other.....

5. Who did the modifications?

.....

6. Please indicate the timeline of the modifications that you have done.

.....

.....

7. (For those who have extended front) How do you feel after you have extended the front space which took over the front porch? Do you think the front porch is necessary?

.....

.....

8. (For those who installed shade net) How you feel after the installation of shade net? Does it effectively reduce the indoor heat transfer or temperature?

.....

.....

9. (For those who installed the tarpaulin sheets at external walls) Can tarpaulin sheet effectively prevent the rainwater and whether can it extend the durability of bamboo weaving wall? Does it have any counter effects?

.....

.....

**(D) Housing evaluation based on residents' perception**

Please indicate your perception on the following items by marking with an (✓) in the correspondent space.

-2 = Not very satisfied    -1 = Not satisfied    0 = Neutral    1 = Satisfied    2 = Satisfied

No	Housing Criteria	-2	-1	0	1	2	Comments
	SITE QUALITY						
P1	Housing layout and numbers of units						
P2	Plot area						
P3	Setback distance						
P4	Street width and accessibility						

P5	Accessibility to community centre						
P6	Green space						
P7	Recreation area						
P8	Site sanitation						
P9	Drainage system						
P10	Availability of solid waste management						
P11	Access to public water supply						
P12	Access to public power supply						
P13	Location with non-disaster-prone area						
P14	Location with accessibility to facilities						
	<b>HOUSING QUALITY</b>						
P15	Quality of workmanship						
P16	Quality of materials						
P17	Aesthetics						
P18	Strength of housing						
P19	Ratio of beds and residents						
P20	Adequate living spaces						
P21	Barriers-free housing features						
P22	Culture compatible design						
P23	A) Noise						
	B) Natural light						
	C) Air quality						
	D) Ventilation						
	<b>AFFORDABILITY</b>						
F1	Ratio of housing price to incomes						
	<b>AVALIABILITY</b>						
F2	Variability of financial models						
F3	Interest rates and mortgage						
F4	Adequate funding and provisions						
F5	Availability of low cost house ownership scheme						
	<b>TENURE SECURITY</b>						

S1	Tenure security						
S2	House ownership						
	<b>SAFETY</b>						
S3	Safety						
S4	Security						
S5	Privacy						
	<b>PARTICIPATION</b>						
S6	Community participation and user control						
S7	Equality in housing distribution						
S8	Activities of social support						
	<b>WELLBEING</b>						
I1	Household incomes						
I2	Economic security						
I3	Health and living conditions						
I4	Education						
I5	Social cohesion						
I6	Local knowledge and life skills						

(E) Current floor plan composition

### **Interview Question Guideline for NGO**

1. What is the main role/ responsibilities of your organization in the implementation of community-based housing project?
2. Process/ steps in the implementation of community-based housing
3. How long did it take to complete the project and compared to then and now?
4. Any government policy or regulations that are followed? Building regulations?
5. Any challenges related to during implementation of (the whole process)?
6. Any collaborating agencies and government offices?
7. How did you choose the participants of saving group? (Why did you decide to go to suburban areas?)
8. How did the participants decide the land, house design (related to cost) and construction process?
9. Did you find any difficulties with dealing with the beneficiaries while implementation especially during design process and construction?
10. Did the residents have any complaints regarding to the neighbours such as discrimination or from the government?
11. Any design problems/ issues of the completed projects?
12. Completed housing project – Land ownership/ tenure type; How did they apply the ownership? At which stage they start to apply for land ownership form to the government office? Any problems?
13. Operation and maintenance plan for long term of the completed housing?
14. What do you think their maximum affordability for the one housing unit?
15. Are there any requirements regarding to housing design before applying for the loan from micro finance bank? How many years they can take? Interest rate? (Max and min allowable loan amount)
16. Are there any regulations that the residents need to follow during loan period?
17. What are the differences between the past projects and current/ future projects?
18. You have implemented the projects in 2009 and then stopped for awhile then have started again in 2017. Why?
19. Future plan as your organization regarding to community-based housing? (How many units and which year?)
20. Any suggestions on the national (social) housing policy?
21. Your perspectives on the design of social housing and high-rise social housing vs single-unit social housing system?

## **Interview Question Guideline for Housing Community Leader**

1. Process/ steps of the development of community-based housing + Timeline
2. In which steps did you involve? What is your (as a member and leader) role/ responsibilities in the development of community-based housing
3. How did you determine the (1) location; (2) master plan, design and construction materials; (3) labors and their technical capacity; (4) material availability
4. How did you determine the cost of housing unit?
5. Working system of “saving group”
6. Current status of “saving group” and its impacts
7. Operation and management plan of the housing
8. Regulations to follow as residents of this housing
9. Challenges and opportunities during implementation (working group; land; cost; etc.) and other issues as of now
10. Neighbors’ perspectives on this community-based housing
11. How to get approval from the government as it is community-based project? Any difficulties?
12. If someone in the community wants to modify the house, how does it work?
13. Who did project supervision during implementation?
14. How infrastructure works in this housing?
15. Any requirements from microfinance bank while taking loan?

## **Appendix 2**

### **Information on housing modifications**





12	5	n/a	n/a	3	n/a	n/a	4	○	○	○	○	○	○	○	○	○	○	○	○	○	Limited space	For better strength and durability	For better condition	Living room; 2 Bedrooms; Toilet; Shower room; Kitchen	Bedroom	B	B	PVC	T	S		
13	8	4	4	4	Security	150,000	?	○	○	○	○	○	○	○	○	○	○	○	○	○	To expand living space	For better strength and durability	> For sunshade > ST - better strength > For better lightning inside	Living room plus temporary sleeping area	Kitchen; Bathroom		B	B	Tg	T	T	
14	6	3	3	1	Street vendor	300,000	2	○					○	○			○	○	○	○	To expand living space	For better strength and durability	> For sunshade > ST - better strength > For better lightning inside		Kitchen; Bathroom		Cb	T				
15	4	2	2	0	Govt staff	400,000	2	○					○	○			○	○	○	○	To expand living space	For better strength and durability For better lightning inside	Better strength		Kitchen; Bathroom		B	B	PVC	T	T	
16	3	2	1	0	Company staff	600,000	2	○					○				○	○	○	○	To expand living space	> For better strength > For fire resistant	For better condition		Kitchen; Bathroom		Cb					
17	6	4	2	1	Barber, Carrier	250,000	3	○	○	○			○	○			○	○	○	○	Old one wear off and nearly collapse	For better strength and durability	> For better strength > For privacy	Living room	Bathroom; Store		B	B	PVC	Ag	S	
18	3	2	1	1	Barber shop Tailor	400,000	4	○	○	○	○			○	○			○	○	To expand living space, aiming for long term	To withstand the rain and wind	> Porch to prevent rain > For better living condition > Privacy > To prevent heat transfer	Living room	Kitchen; Bathroom	Bedroom	B	B	PVC	PVC	S		
19	6	4	2	1	Barber shop Tailor	300,000	2	○					○	○			○					Material wear off thus renovated with better strength and durable materials				Kitchen; Toilet		CGI+B	B		CGI	T
20	3	1	2	1	Street vendor	100,000	2	○					○				○	○			To expand living space	Material wear off	For better strength		Kitchen; Toilet			P				
21	4	2	2	2	Highway station staff Tailor	n/a	3	○	○	○			○	○			○	○			To expand living space	For better strength and durability	> Separate bedroom for girls for privacy > Bathroom modification for privacy	Living room plus temporary sleeping area	Kitchen; Bathroom		Cb	T				
22	4	1	3	2	Staff	n/a	3	○	○	○			○	○			○	○	○		To expand living space	For better strength and durability	For better condition	Living room	Kitchen; Bathroom		B+Cb	Ti	N	CGI	B	
23	4	3	1	0	Bicycle repair and selling	240,000	2	○									○				To expand living space		> To get rid of bad smell > For health		Kitchen; Toilet							

24	4	2	2	0	Street vendor	500,000	3	○	○															To expand living space (back - kitchen; front - sleep)	For better strength and durability	> For health > Bedroom privacy > Better ventilation and light > To prevent heat transfer	Sleeping area	Kitchen; Bathroom		Cb	P	PVC			
25	5	2	3	2	Construction worker	300,000	2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	To expand living space	For better strength and durability	> For sunshade > For better condition > For privacy > For better lightning inside > To prevent heat transfer	Living room	Kitchen; Bathroom	Bedroom	B	B	PVC	T	S
26	6	3	3	1	Oriental medicine shop	600,000	3	○	○															Limited space	For better strength and durability	For better condition	Living room	Kitchen; Bathroom		Cb	B	N	T		
27																																			
28	8	2	6	2	Tailor, Vendor, Rickshaw	500,000	2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Limited space	For better strength and durability	> For sunshade > For better strength > For privacy > For better lightning inside	Living room	Kitchen; Bathroom	Bedroom	B	B	PVC	T	S
29	4	2	2	0	Delivery car driver	250,000	2	○																To make extra room	For aesthetic and prevent always windflow during cold season	To reduce heat inside		Bedroom; Toilet				PVC			
30	8	6	2	3	Foreign worker	700,000	2	○							○	○								individual septic tank + extended extra space besides WC				Kitchen; Toilet							

Table 2. Site 2 (Pyit Tine Htaung Housing): Household data and housing modifications information

House no.	HH size				Job	Income	Modifications															Reasons			Use of extended spaces			
	T	M	F	C			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Extension	Material change	Modification	Front porch	Front	Side	Mezzanine
1	2		2		Factory	300,000	<input type="radio"/>	<input type="radio"/>											<input type="radio"/>	<input type="radio"/>	For business purpose					BUSINESS		STORE
2	3	1	1	1	Factory	700,000	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>									<input type="radio"/>	To ease crowded indoor living condition and for extra space	Wearing off/ Damaged		COMMON		STORE		
3	4	1	2	1	Factory	700,000	<input type="radio"/>		<input type="radio"/>											<input type="radio"/>	To ease crowded indoor living condition and for extra space			SEMI-OUTDOOR LIVING		STORE		
4	4		3	1	Factory	1,000,000	<input type="radio"/>													<input type="radio"/>	<input type="radio"/>			> Toilet wear off and bad smell inside the house	COMMON		STORE/SLEEP	
5	5				Tailor	500,000	<input type="radio"/>													<input type="radio"/>	<input type="radio"/>			> Toilet wear off and bad smell inside the house			STORE/SLEEP	
6	4	1	3	0	Driver	400,000	<input type="radio"/>													<input type="radio"/>	<input type="radio"/>			> Toilet wear off and bad smell inside the house			STORE/SLEEP	
7	5		4	1	Factory	700,000	<input type="radio"/>	<input type="radio"/>												<input type="radio"/>	<input type="radio"/>			> To ease crowded indoor living condition and for extra space > Inspiration to live better		> Toilet wear off and bad smell inside the house > Change of lifestyle and more privacy	COMMON	
8																												
9	3	1	2	0	Car wash; Factory	800,000	<input type="radio"/>													<input type="radio"/>								
10																												
11	5	1	1	3	Car wash; Home-based store	500,000	<input type="radio"/>	<input type="radio"/>												<input type="radio"/>	<input type="radio"/>				BUSINESS		STORE/SLEEP	
12																												
13	6	3	2	1	Construction worker	700,000	<input type="radio"/>													<input type="radio"/>	<input type="radio"/>			> Toilet wear off and bad smell inside the house			STORE/SLEEP	
14																												
15	4	2	2	0	Factory	380,000	<input type="radio"/>													<input type="radio"/>	<input type="radio"/>			> Toilet wear off and bad smell inside the house				

16	4	2	2	0	Factory	300,000	○						○		○					> Toilet wear off and bad smell inside the house			
17	4	1	3	0	Driver; Factory; Vendor	650,000	○							○	○					> Toilet wear off and bad smell inside the house	COMMON		
18	7	3	4	1	Factory; Informal job	500,000	○						○										
19	2	1	1	0	Construction worker	450,000	○						○		○					> Toilet wear off and bad smell inside the house			STORE
20	3	1	1	1	Informal job	300,000	○			○			○							Wearing off/ Damaged			
21	3	2	1	1	Construction material shop	650,000	○				○	○	○							Security			
22	3	2	1	0	Factory; Informal job	600,000	○						○			○	○						STORE
23	2	2		0	Retired; Informal job	500,000	○						○				○	○					STORE
24	3	2	1		Motorcycle taxi	300,000	○						○					○	○				STORE
25	3	1	2	0	Factory; Tailor	500,000	○						○		○					> Toilet wear off and bad smell inside the house			
26	4	1	3	0	Factory	500,000	○						○										
27	4	2	2	0	Construction worker	800,000	○	○					○							> To ease crowded indoor living condition and for extra space > Better income and inspiration to live better	> Change of lifestyle and more privacy	COMMON	
28	11	2	4	5	Construction worker	800,000	○			○			○	○	○					Wearing off/ Damaged	> Toilet wear off and bad smell inside the house > Change of lifestyle and more privacy	COMMON	



42	4	1	2	1	Factor	500,000	○													Wearing off/ Damaged	> Toilet wear off and bad smell inside the house								
43	4	1	1	2	Factor	400,000	○															> Toilet wear off and bad smell inside the house > Change of lifestyle and more privacy							
44	3	1	1	1	Driver	350,000	○															> Toilet wear off and bad smell inside the house						STORE/ SLEEP	
45	3	1	1	1	Factory; Driver	500,000	○	○											○	To ease crowded indoor living condition and for extra space				COMMON					
46	5	2	2	1	Factory	500,000	○															> Toilet wear off and bad smell inside the house						STORE/ SLEEP	
47	4	2	1	1	Driver; Food vendor	800,000	○	○														> To ease crowded indoor living condition and for extra space > Better income	> Toilet wear off and bad smell inside the house		COMMON			STORE	
48	8	2	4	2	Construction worker	600,000	○															Wearing off/ Damaged	> Toilet wear off and bad smell inside the house					STORE/ SLEEP	
49																													
50	4	3	1	0	Factory	500,000	○																> Toilet wear off and bad smell inside the house						
51	3	1	2	1	Kitchen helper	500,000	○	○																	STORE				STORE
52	4	2	2	2	Saleperson	300,000	○															Wearing off/ Damaged	> Toilet wear off and bad smell inside the house						
53	4	2	2	2	Oil storage worker	300,000	○															Wearing off/ Damaged	> Toilet wear off and bad smell inside the house	COMMON					STORE
54	3	2	1	0	Factory	500,000	○																						
55	n/a	n/a	n/a	n/a	n/a	n/a	○																> Toilet wear off and bad smell inside the house						STORE
56	4	2	2	2	Driver	600,000	○	○																	STORE				STORE





Table 3. Dimension of spaces for Site 1 (Pan Thazin Housing)

House No	Living room		Bedroom 1		Bedroom 2		Bedroom 3		Kitchen		Toilet		Shower		Bathroom		Utility		Front porch	
	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)
1	10	10	7	4					7	4	5	4							10	5
2	10	12	7	6					6	7	4	7							10	5
3	12	12	6.5	6	6.5	6			6.5	6	3.2	4	5.5	4						
4	12	17	8	6					7	7					5	7				
5	12	15.5	8	7.5					7	7					5	7				
6	12	12	6	6					4	4	4	7	8	7			8	5		
7	10	12	7	6					6	7	4	7							10	5
8	10	12	7	6					6	7	4	7							10	5
9	10	12	7	6					6	7	4	7							10	5
10	10	12	7	6					6	7					4	7				
11	10	12	7	6					6	7	4	7							10	5
12	12	15	6.5	9					7.5	6					4.5	6				
13																				
14	10	12	7	6					6	7	4	7							10	5
15	10	12	7	6					6	7					4	7			10	5
16	10	12	7	6					6	7	4	7							10	5
17	12	15	8	9					7.5	6					4.5	6				
18	10	15	8.5	5	8.5	5	8.5	5	10	6	5	4	5	4					10	5
19	10	12	7	6					6	7	4	7							10	5
20	10	11	7	5.5					6	8.5	4	6.5							10	5
21	12	15	8	6.5	8	3.5			7.5	5					4.5	6				
22	11	15	8	8					6	7					5	7				
23	10	12	7	6					6	7	4	7							10	5
24	11	17	8	6					7	7					4	7				
25	10	12	7	6					6	7	4	7							10	5

26	11	15	8	8					6	7					5	7				
27	11	15	8	8					6	7					5	7				
28	10	12	7	6					6	7	4	7							10	5
29	10	12	6	6	6	7			4	4	4	5							10	5
30	10	12	7	6					6	7	4	7							10	5

Table 4. Dimension of spaces for Site 2 (Pyit Tin Taung Housing)

House No	Living room		Bedroom 1		Kitchen		Kitchen + Store		Toilet		Shower		Utility		Front porch		Home business	
	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)	W(ft)	L(ft)
1	10	12	6	6			10	6	4	4					10	7		
2	10	12	6	6			10	6	5	4					10	7		
3	10	12	6	6			5	10	4	5					10	7		
4	10	12	6	6			5	10	4	5					10	7		
5	10	12	6	6			5	10	4	5					10	7		
6	10	12	6	6			5	10	4	5					10	7		
7	10	12	6	6	10	6			5	4	5	4					10	7
8																		
9	10	12	6	6			5	10	4	5					10	7		
10																		
11	10	12	6	6	10	6			5	4	5	4					10	7
12																		
13	10	12	6	6			5	10	4	5					10	7		
14																		
15	10	12	6	6			5	10	4	5					10	7		
16	10	12	6	6			5	10	4	5					10	7		
17	10	12	6	6			10	6	4	4			10	6	10	7		
18	10	12	6	6			10	6	4	4					10	7		
19	10	12	6	6			5	10	4	5					10	7		
20	10	12	6	6			10	6	4	4					10	7		
21	10	12	6	6			10	6	4	4			10	6	10	7		
22	10	12	6	6			5	10	4	5					10	7		
23	10	12	6	6			10	6	5	4			5	4	10	7		
24	10	12	6	6			5	10	4	5					10	7		

25	10	12	6	6			5	10	4	5					10	7		
26	10	12	6	6			5	10	4	5					10	7		
27	10	12	6	6			5	8	5	4	5	4					10	7
28	10	12	6	6			5	8	5	4	5	4					10	7
29	10	12	6	6			5	10	4	5					10	7		
30	10	12	6	6			5	8	5	4	5	4					10	7
31	10	12	6	6	10	6			5	4	5	4					15	7
32	10	12	6	6			5	10	4	5							12.5	7
33	10	12	6	6			5	10	4	5					10	7		
34	10	12	6	6	5	7			5	4					10	7		
35	10	12	6	6			5	10	4	5					10	7		
36	10	12	7	8	5	8			5	4	5	4	2	25	10	7		
37	10	12	6	6			5	10	4	5			4.5	18			14.5	7
38	10	12	6	6			5	10	4	5					10	7		
39	10	12	6	6			5	10	4	5					10	7		
40	10	12	6	6			5	10	4	5					10	7		
41	10	12	6	6			5	10	4	5					10	7		
42	10	12	6	6			5	10	4	5					10	7		
43	10	12	6	6	10	6			5	4	5	4			10	7		
44	10	12	6	6			5	10	4	5					10	7		
45	10	12	6	6			5	10	4	5					10	7		
46	10	12	10	6			10	6	5	4					10	7		
47	10	12	6	6			5	10	4	5					10	7		
48	10	12	6	6			5	10	4	5					10	7		
49																		
50	10	12	6	6			5	10	4	5					10	7		
51	10	12	6	6			10	6	4	4			20	13				
52	10	12	6	6			5	10	4	5					10	7		
53	10	12	6	6			5	10	4	5					10	7		

54	10	12	6	6			5	10	4	5					10	7		
55	10	12	6	6			5	10	4	5					10	7		
56	10	12	6	6			5	10	4	5					10	7		
57	10	12	6	6			5	10	4	5					10	7		
58	10	12	6	6			5	10	4	5					10	7		
59	10	12	6	6			5	10	4	5					10	7		
60	10	12	6	6	10	6	5	4					5	4	10	7		
61	10	12	6	6			5	10	4	5					10	7		
62	10	18			6	7.5			5	4	5	4	4	28	10	7		
63	10	12	6	6	6	3									10	7		
64	10	12	6	7			5	7	5	4					10	7		
65	10	12	6	7			5	7	5	4					10	7		
66	10	12	6	7			5	7	5	4					10	7		
67	10	12	6	6			5	10	4	5					10	7		
68	10	12	6	6			5	10	4	5					10	7		
69	10	12	6	6			5	10	4	5					10	7		
70	10	12	6	6			5	10	4	5					10	7		

## **Appendix 3**

### **Site layout, floor plans and photographs**

Figure 1. Site layout of Site 1 (Pan Thazin Housing) with modification patterns



Figure 2. Site layout of Site 2 (Pyit Tin Taung Housing) with modification patterns (Left side)

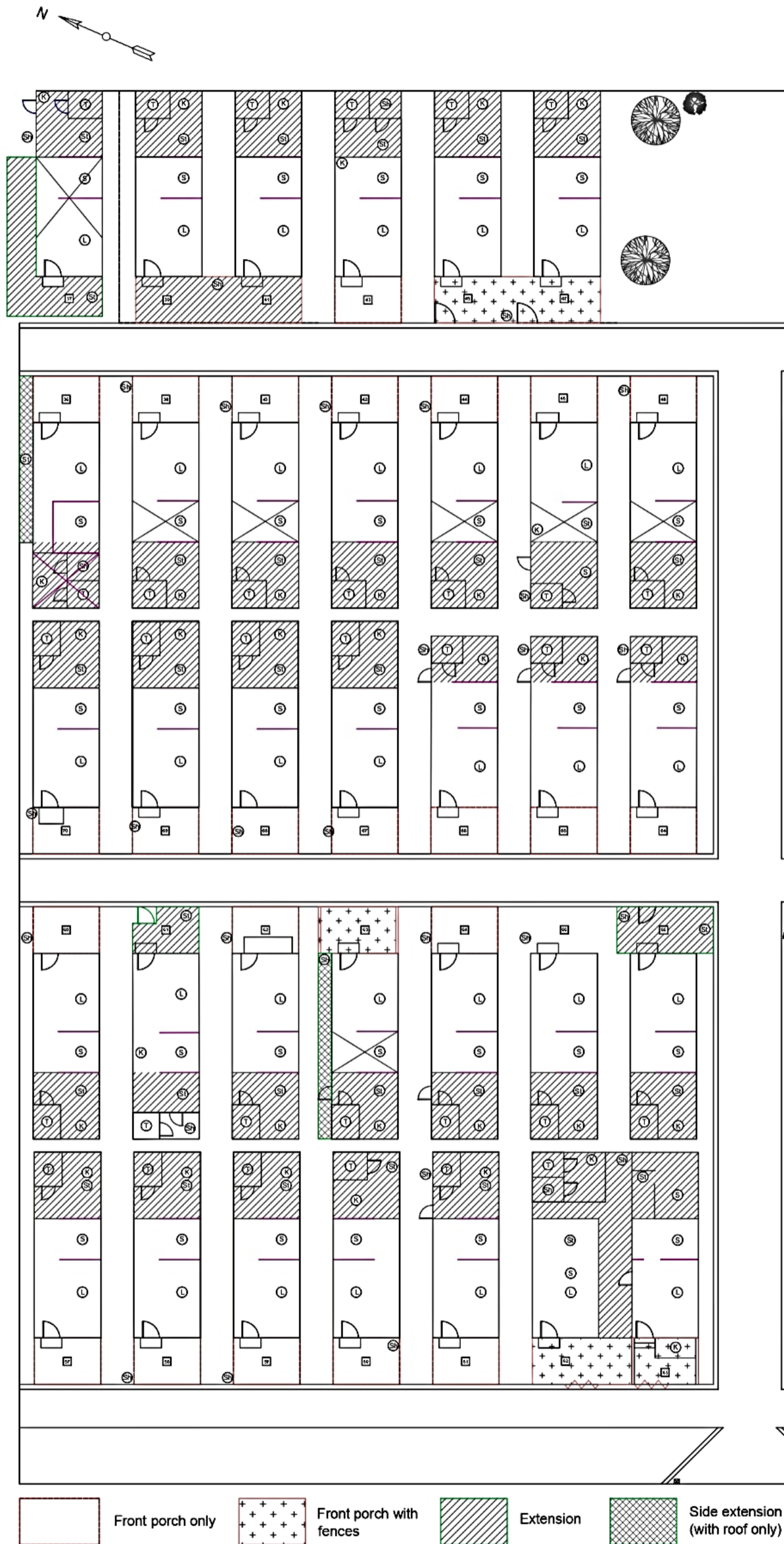




Figure 2. Site layout of Site 2 (Pyit Tin Taung Housing) with modification patterns (Right side)

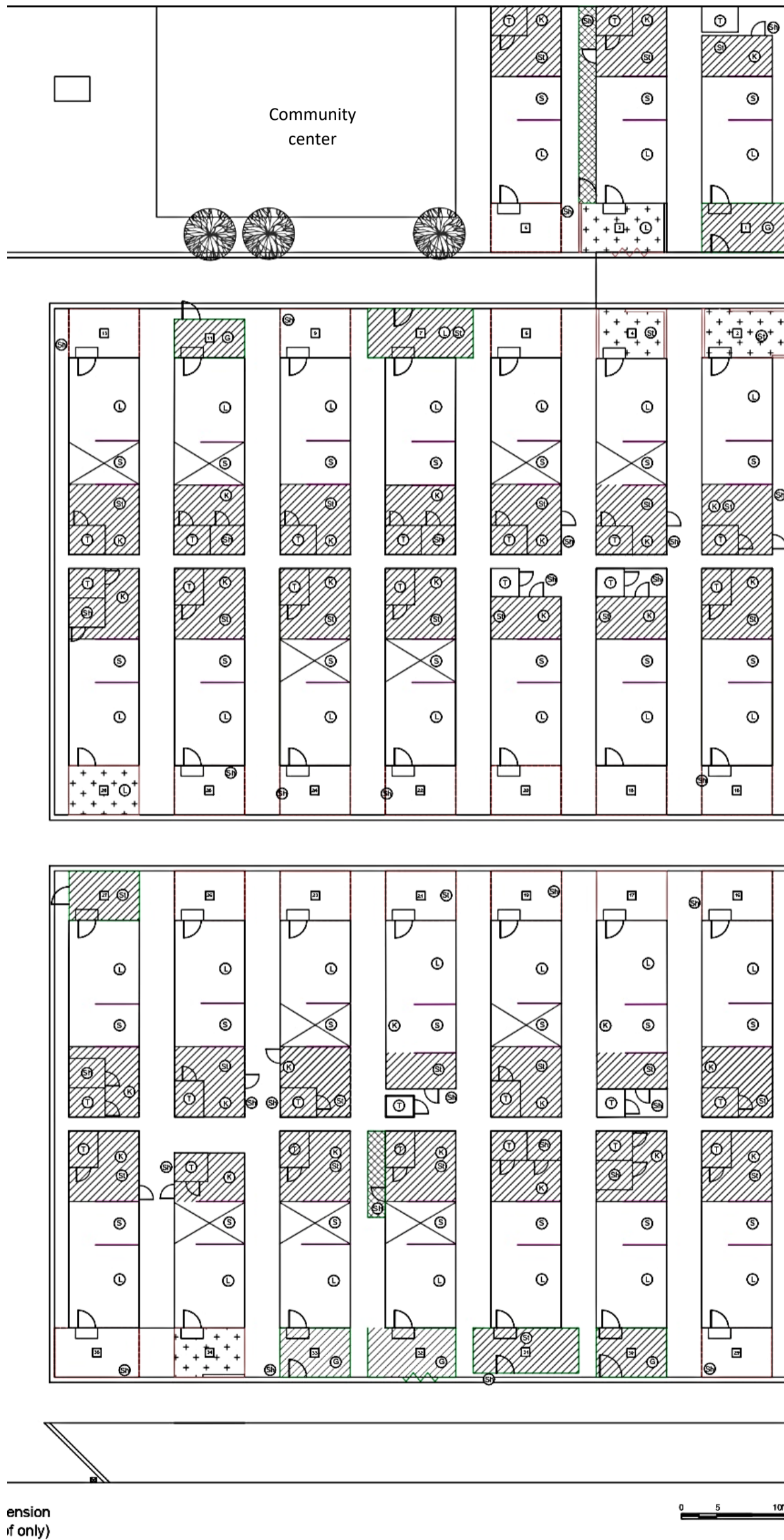
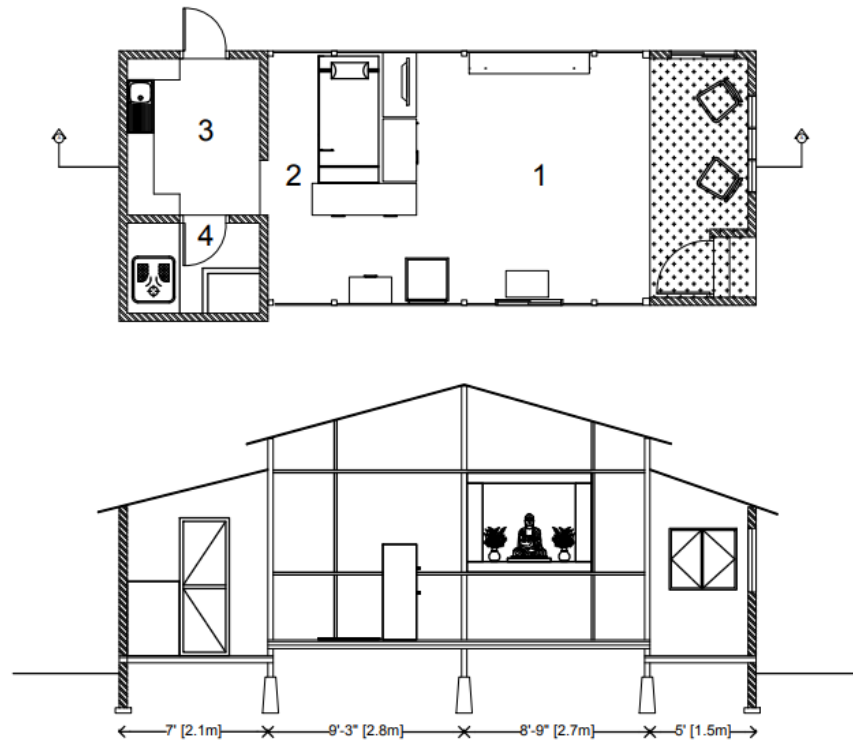



Figure 3a. Example of typical floor plan

Basic Information: House No. 4, Site 1

Floor plan and section



- 1. Multi-functional living space; 2. Sleeping space
- 3. Kitchen; 4. Bathroom and toilet

 Horizontal extension (front)

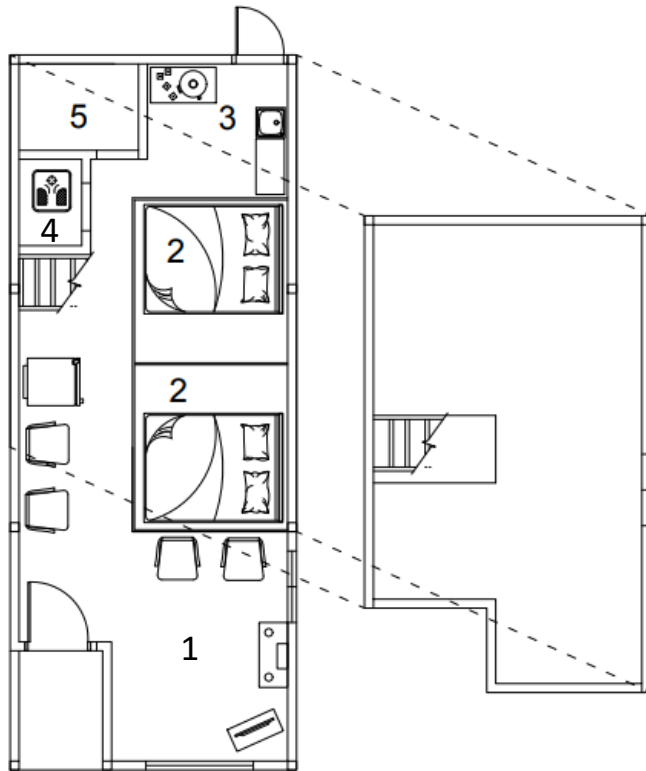
0 5ft



Figure 3b. Example of typical floor plan

Basic Information: House No. 3, Site 1

Floor plan and section



- 1. Living room
- 2. Bedroom
- 3. Kitchen
- 4. Toilet
- 5. Bathroom

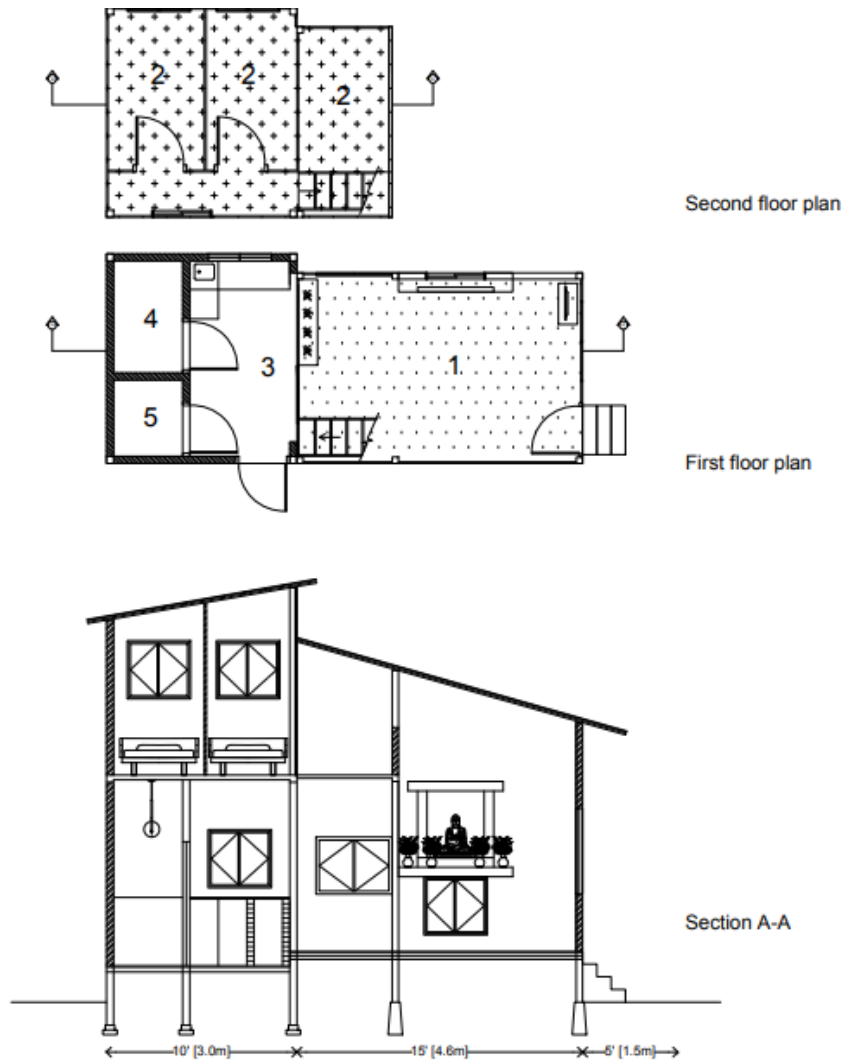




Figure 3c. Example of typical floor plan

Basic Information: House No. 18, Site 1

Floor plan and section



1. Multi-functional living space; 2. Bedroom  
3. Kitchen; 4. Bathroom; 5. Toilet

0 5ft

Vertical extension (2nd floor)

Material change

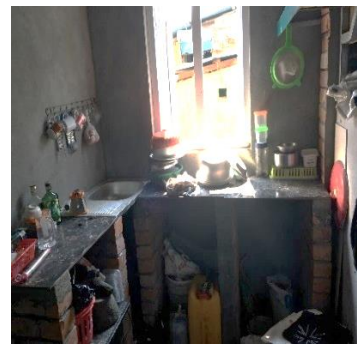


Figure 3d. Example of typical floor plan

Basic Information: House No. 29, Site 1

Floor plan



- 1. Multi-functional living room, 2. Bedroom
- 3. Kitchen, 4. Toilet, 5. Shower space
- 7. Front porch

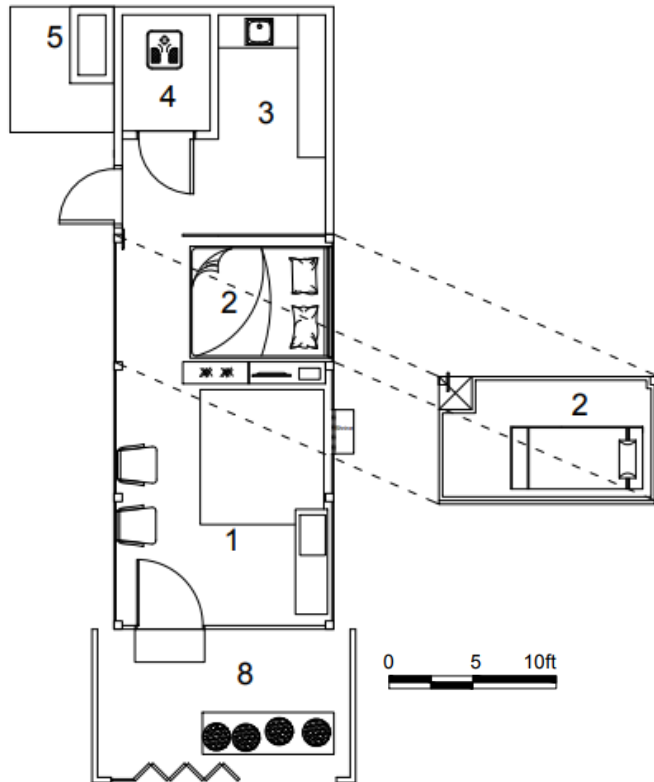




Figure 3e. Example of typical floor plan

Basic Information: House No. 34, Site 2

Floor plan and section



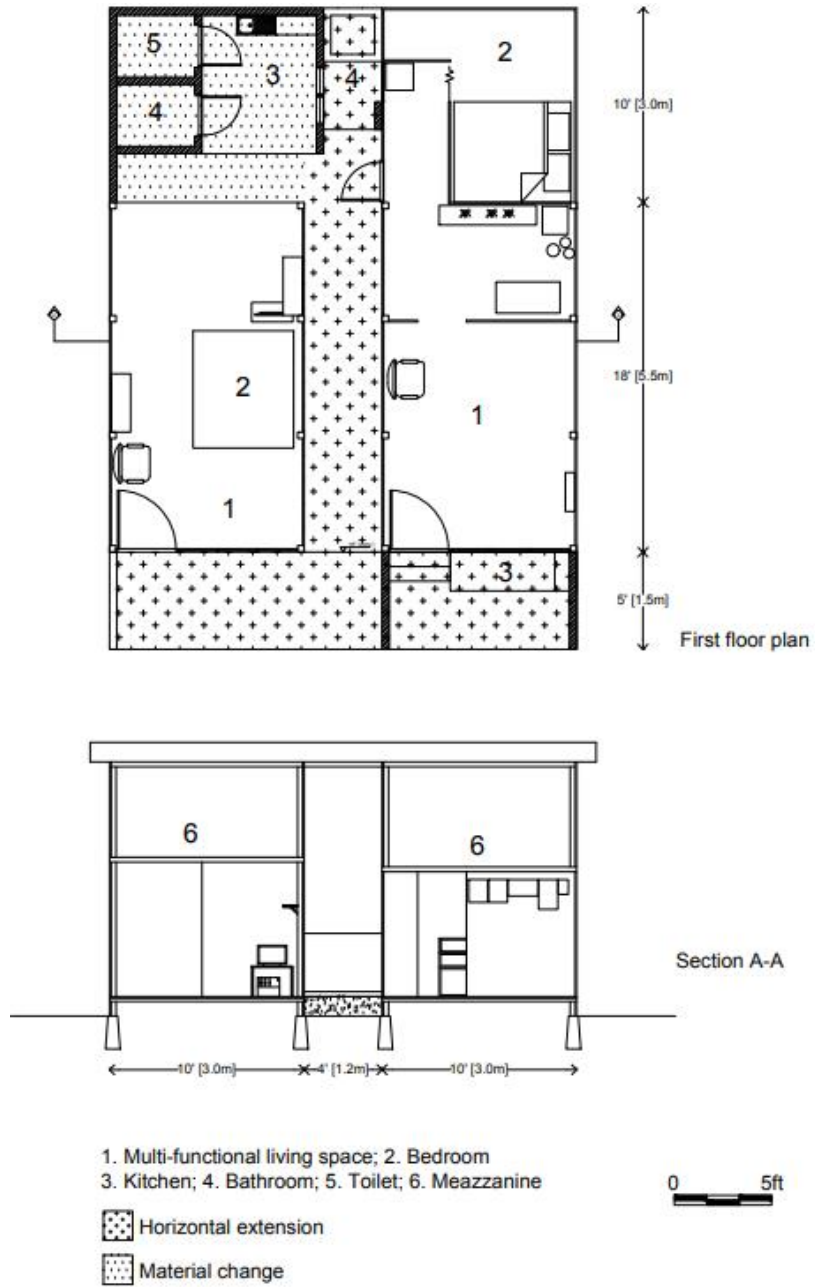
1. Multi-functional living room
2. Bedroom
3. Kitchen
4. Toilet
5. Shower space
8. Front porch with fence



Figure 3f. Example of typical floor plan

Basic Information: House No. 62 and 63, Site 2

Floor plan and section



## **Appendix 4**

### **Residents' perceptions about community-led housing**



Table 1. Residents' satisfaction assessment of CLH based on selected criteria

Criteria	Site 1 (n = 24)					Site 2 (n =43)				
	Not very satisfied “- 2”	Not satisfied “- 1”	In-between “0”	Satisfied “+1”	Very satisfied “+2”	Not very satisfied “- 2”	Not satisfied “- 1”	In-between “0”	Satisfied “+1”	Very satisfied “+2”
P1	0	1	4	18	0	0	0	2	41	0
P2	0	0	1	22	1	0	0	0	44	0
P3	2	1	0	20	1	0	29	0	14	0
P5	0	0	2	21	1	0	41	2	0	0
P6	15	6	2	1	0	5	38	0	0	0
P7	13	6	4	0	0	0	0	0	44	0
P8	0	7	7	10	0	0	0	2	41	0
P9	1	18	2	3	0	0	0	0	44	0
P11	0	0	0	20	4	0	0	0	41	2
P12	0	2	0	18	4	0	0	0	44	0
P13	1	2	1	18	2	0	0	0	44	0
P14	12	1	2	9	0	0	0	0	44	0
P15	0	4	5	14	1	0	0	0	44	0
P16	0	6	3	14	1	0	0	2	41	0
P17	0	2	4	17	1	0	0	0	44	0
P18	2	6	0	15	1	0	0	0	44	0
P21	2	5	1	16	0	0	0	0	44	0
P22	0	2	1	19	2	0	2	2	38	0
P23-1	1	3	1	17	2	0	41	2	0	0
P23-2	3	15	1	3	2	0	17	11	14	0
P23-4	12	7	2	3	0	0	0	2	41	0
F1	0	5	1	17	0	0	0	0	43	0
F2	0	1	1	21	1	0	0	0	43	0
F3	0	2	0	21	1	0	0	0	43	0
F4	0	4	1	18	1	0	0	0	43	0
S1	0	0	1	21	2	0	0	0	43	0
S2	0	0	2	21	1	0	0	0	43	0
S3	0	1	2	20	1	0	0	0	43	0
S4	1	0	0	22	1	0	0	0	43	0
S5	1	0	1	20	1	0	0	0	43	0
S6	0	0	1	22	1	0	0	0	43	0
S7	0	1	1	21	1	0	0	0	43	0
S8	0	3	1	20	0	0	0	0	43	0
I1	0	0	1	21	2	0	0	0	43	0
I2	0	0	1	21	2	0	0	0	43	0
I3	0	0	1	21	2	0	0	0	43	0
I4	0	0	2	19	3	0	0	0	43	0
I5	0	0	1	20	3	0	0	0	43	0
I6	0	0	1	22	1	0	0	0	43	0

Table 2. Satisfaction score of resident's evaluation

Criteria	Satisfaction score	
	Site 1	Site 2
P2	1.0	0.9
P3	0.8	1.0
P4	0.7	-0.3
P6	-0.8	-0.9
P7	-0.8	-1.0
P8	0.1	1.0
P9	-0.7	0.9
P10	0.7	1.0
P12	0.8	1.0
P13	0.7	1.0
P14	-0.2	1.0
P15	0.5	1.0
P16	0.4	1.0
P17	0.7	0.9
P18	0.3	1.0
P19	0.6	1.0
P22	0.8	1.0
P23-1	0.6	0.8
P23-2	-0.5	-0.9
P23-3	0.0	-0.1
F1	0.5	0.9
F2	0.9	1.0
F3	0.8	1.0
F4	0.6	1.0
S1	1.0	1.0
S2	0.9	1.0
S3	0.8	1.0
S4	0.9	1.0
S5	0.8	1.0
S6	1.0	1.0
S7	0.9	1.0
S8	0.7	1.0
I1	1.0	1.0
I2	1.0	1.0
I3	1.0	1.0
I4	0.9	1
I5	1.0	1
I6	1.0	1

**Note**

Satisfied "+1"  
 Neutral "0"  
 Not satisfied "-1"