

**A DESIGN GUIDELINE FOR
SCHOOL SHELTERS:**
Disaster-Resilient Communities
in the Lao People's Democratic Republic

S O O N M I N H O N G
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M P H I L T H E S I S
J A N U A R Y 2 0 1 9

Declaration

This thesis represents partial submission for the degree of Master of Philosophy at the Royall College of Art. I confirm that the work presented here is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Date**Signature**

A B S T R A C T

This research develops a design guide for a community shelter, taking into consideration the Lao government aim to design schools fit for functioning as shelters. Although international humanitarian agencies have published operational guidelines for shelter construction programmes, they lack consideration of spatial design, local specificity, practical knowledge of architectural design and practice, and community participation, and are therefore difficult to implement. This dissertation examines these issues and explores the participatory design principles of village schools functioning as community shelters through the lens of a design guideline. The key question of this practice-led thesis is: What are the spatial strategies for flood resilience in the context of Laos and how can these inform a new design guideline?

This practice-led research consists of four parts. The first examines existing guidelines for shelter and housing construction with a focus on the theoretical and practical contexts – i.e. local specificity, architectural design, and community participation. The second explores the current circumstances of flood risk management in Laos. Following this, the scope that an adequate design guide should include is analysed and spatial strategies investigated in the context of school community shelters in rural areas. In the third part, school construction guidelines are discussed in relation to equivalent guidelines and circumstances in Laos, particularly considering existing practice and quality of construction. Hereby indigenous knowledge and local construction skills are studied, and retrofitting architectural design and practice is explored while considering the means of community participation. Based on this, a new design guide for a community shelter in flood-prone areas in rural Laos is proposed.

This thesis is closely linked to an ongoing live project to design and build a flood shelter for a rural village in Laos, which will be conducted in 2019. It is therefore the first phase of the larger action research project. The school shelter guideline proposed will be then tested and verified by a live project, and afterwards the guidelines will be developed for publication in Laos and neighbouring nations with similar flood risks.

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I N R O D U C T I O N

INTRODUCTION

This thesis developed from an invitation by the Luminous Action Organisation (LAON) to co-operate with them on a building project in Laos.¹ The LAON project's remit is to design, construct and maintain an emergency shelter in a rural village in order to enhance the disaster-resilience of the local community, especially with regard to flood risks. This project directly relates to a recent thesis project of mine that improved the general public's capacity to deal with various risks by experiencing real-scenario hazards first hand in a 'risk theme park'.² The collaboration with the NGO offered therefore an opportunity to explore in a live context the role of architectural design and practice in actual disaster risk prevention. While the timeline of the live project and this MPhil dissertation do not fully coincide, I have conducted this research in line with the Laos' project, which is ongoing and for which I was appointed project manager.

Apart from my own design task, my main role in the building project has been to solidify the NGO's vague and abstract notion of what such a project might be, and to actualise it particularly in Laos' context. More specifically, this was necessary in order to create an official research proposal and submit it to the required governmental departments. It was also presented to central and local government authorities over several meetings. Other assignments have included identifying different administrative procedures for the project-related permits, such as visas and project and construction permits, and also arranging official and unofficial meetings with government staff.

As part of the research and live project, I first met with the Department of Disaster Management and Climate Change in Laos in November 2015. I thereafter spent approximately 130 days on fieldwork in Laos, as well as on obtaining the necessary permissions to deliver the LAON project, and studying existing guidelines on related shelter and school construction. This proved necessary as it is difficult to find written information in Laos, meaning that a significant research task was to identify a group of experts working in Laos and to meet and interview them in person.

Consequently, I met with many representatives of government departments in Laos, international aid agencies, universities and architectural firms to gather the necessary information and documents on flood risk, responses to it and shelter and school construction guidelines to conduct the research and live projects. I specifically met with authors of or contributors to disaster-related policy to better understand how to improve the existing framework. In addition, I also visited more than seven rural villages located in three different provinces in Laos in order to select a village for the LAON project and to collect site information on flood risk, its impact and responses to it. This field experience and

¹ Luminous Action Organisation (LAON) is a South Korean international non-governmental organisation founded in 2013. LAON aims to design and implement creative and innovative projects and programmes for empowering people to reduce their marginalisation and vulnerability to natural hazards and climate change.

² A risk theme park is a conceptual risk facility where the visitors (the general public) are exposed to possible hazards in daily life and where they can experience such risk. This was featured on *Dezeen* in 26 June 2015. <https://www.dezeen.com/2015/06/26/risk-theme-park-soon-min-hong-royal-college-of-art-graduate-conceptual-high-rise-floods-fires-climbing-hazards/>

local research in Laos has been critical in developing this MPhil dissertation, which is the first stage of a larger action research project with LAON that will build on and continue after this MPhil dissertation and might result later in a PhD by Project.

Problem definition

Flood response in Laos

Floods are reported to have a more serious impact on the economy and population of developing countries than any other natural hazard.³ In the case of the Lao People's Democratic Republic, flooding is the most frequent and perilous natural hazard.⁴ Laos has suffered from large-scale frequent floods as well as small-scale, but recurrent, floods since 2000.⁵ In response, the government of Laos established in 2013 the Disaster Prevention and Control Committee (DPCC) at national, provincial, district and village levels to deal with disaster-risk management in a more efficient and ameliorated manner.⁶ Disaster risk reduction has now become a national priority.⁷

According to the Lao National Assessment Report, floods not only impact the lives of an estimated 3.5 million people – almost 50% of the population of 6.59 million announced in the same report, but also cause damage to over 70,000 homes.⁸ Many scattered villages in rural areas have particularly suffered from flash floods and slow-rising floods occurring throughout tributaries of the Mekong river. The local populations often have no choice but to improvise during floods, because of the absence of appropriate flood response planning. Their general response is summarised as follows: once the village leader or the village committee are notified of a flood warning by the government, the committee alerts the villagers by phone, loud speaker or by visiting households. After this, in most cases the affected populations evacuate into the village school or temple because most of the rural villages do not have a purpose-built safe shelter. After floodwaters subside, the community work together to repair damage to their village and homes.

This financial and infrastructural impact is far worse in rural areas because of the poor construction methods used by rural communities. For instance, 86.8% of homes are inadequately constructed by unskilled labourers and unable to withstand floods.⁹ To improve the disaster resilience of vulnerable rural communities, international non-governmental organisations (INGOs) – such as Oxfam, CARE and The Asia Foundation – have supported humanitarian activities in disaster risk reduction and management in cooperation with the Disaster Prevention and Control Committees established in Laos. Their focus is mainly on training through workshops in order to inform local communities about how

³ Ben Wisner, Piers Blaikie, Terry Cannon, and Ian Davis, *At Risk: Natural hazards, people's vulnerability and disasters*, 2nd edition (London and New York: Routledge, 2004). p. 202.

⁴ National Disaster Management Office, Ministry of Labor and Social Welfare, *Lao PDR National Assessment Report on Disaster Risk Reduction* (ADPC, 2012). p.29.

⁵ World Food Programme (WFP), *Mapping of Flood Affected Villages in Lao PDR* (WFP, 2013), p. 4.

⁶ Asian Disaster Preparedness Center (ADPC), *Community-Based Disaster Risk Reduction Manuals in Lao PDR*, (ADPC, 2016). p. 19.

⁷ National Disaster Management Office, Ministry of Labor and Social Welfare, p.8.

⁸ *Ibid.*, pp. 29-30.

⁹ Asian Disaster Preparedness Center (ADPC), *Guidelines on Housing Construction in Disaster Prone Areas* (ADPC, 2014), p. 17.

to prepare and withstand disasters, but they also provide specialised professional training to build a Community Emergency Response Team. Members of the team are meant to continue the management of disaster training of local populations after the INGOs leave. However, one important problem with the INGOs' training and workshops is that they do not focus on damage to the built environment although most local communities are exposed to serious flood damage to buildings and infrastructure in their villages. Therefore, the question arises as to what efforts the Lao government and aid agencies have made to reduce the flood damage to the built environment of Laos and whether these have been successful.

Guidelines on pre- and post-disaster shelter

Two construction guidelines for housing and schools have been published with the consideration of disaster impact on buildings. One is *National School Construction Guidelines* published in 2009 and developed by the Division of Design and Construction Management, Ministry of Finance, and Ministry of Education in Laos with assistance from the Asian Disaster Preparedness Center (ADPC), the United Nations Development Programme (UNDP), and the European Commission Humanitarian Aid department (ECHO). Another is the *Guidelines on Housing Construction in Disaster Prone Areas* by the Asian Disaster Preparedness Center of 2014. These guidelines not only raise awareness of the importance of quality in construction of housing in rural areas, but also provide information on school design standards and housing construction techniques to promote better construction in disaster-prone areas. There is also a the *Community-Based Disaster Risk Reduction Manuals in Lao PDR* by the Asian Disaster Preparedness Center (2016). It is not the same as the guidelines dealing with the principles of building construction, but highlights general processes of how to undertake humanitarian activities in Laos. However, both the guidelines and the manual are not only too general to be effectively used in real situations, but also too technical to be disseminated to local populations. It is therefore necessary to explore other types of guidelines.

International aid agencies have published several operational guidelines on shelter planning to aid pre- or post-disaster construction. They generally concentrate on a broad spectrum of disasters, especially large-scale disasters. The guidelines mainly address post-disaster shelters in terms of their preparation, implementation and management. They also cover the preparation and management needed to use existing buildings or infrastructures as safe shelters. These guidelines are generally targeted at stakeholders, field practitioners and local communities. With a focus on principles of administration and management, the guidelines introduce the roles of stakeholders – i.e. the government, humanitarian agencies and donors – in preparing and conducting the shelter construction programme. In addition, the roles of participants – i.e. government staff, agencies' staff and volunteers, shelter experts and disaster-affected populations – are also addressed at each stage of the shelter programme. Furthermore, financial assistance to displaced households is discussed, and the participation of affected communities is strongly recommended for a successful result. Depending on the scenario focused on in different guidelines, shelter can be defined in two distinct ways: the first is as an individual house and the second is as a community refuge. Of considerable importance is that these types of shelter guidelines cover what the Lao guidelines do not – considerations linked to local

specificity, practical knowledge (e.g. construction methods), and means of participatory process – and this shows a direction that the Lao guidelines should take in order to rectify the shortcomings of current guidelines.

Deficiencies of current guidelines

Ajinder Walia argues that the current guidelines are not comprehensive enough to apply adequately to the implementation of a project.¹⁰ In addition, John Twigg states that the content of these guidelines varies from detailed to very simple.¹¹ Some guidelines deal with many issues from project planning, participatory processes and technical assistance, through to financial support, thereby making them less likely to be read and utilised within the field because the information given is not detailed enough. On the other hand, simpler guidelines lack practical information on design and construction. In terms of local guidelines, Ian Davis advises that they should be developed in view of the local circumstances, such as target disaster, climatic conditions and building traditions.¹² For these reasons, the local guidelines and manual in Laos are not commonly used in the housing and school construction in rural zones, which includes government agencies who operate in these areas. Derin Henderson claims in an interview with me that aid agencies sometimes prefer to use their experiential knowledge rather than follow guidelines or manuals.¹³ Moreover, they are not sufficiently disseminated to stakeholders and local communities according to an interview with Christelle Marguerite.¹⁴ Their existence is even unknown to the authorities of the Lao government.¹⁵ As the agencies' efforts to provide disaster training is limited and unable to reach every single village, the current guidelines and manual provide insufficient information to respond to flood damage to buildings in rural areas.

In this context, the question arises as to what the shelter guidelines pertinent to Laos need to address, and how they can be developed. Regarding the current situation in Laos, with its lack of both safe shelters in each village and flood response plans at village levels, the focus should be on community shelters and its related flood plans. However, due to the current capacity of the Lao government and a lack of architects working in the humanitarian sector, it is unlikely that a community shelter will be provided in every village by the Lao government and aid agencies.¹⁶ Hence, the importance to develop a new guideline for a community shelter, covering a practical knowledge of advanced construction methods, and to disseminate it throughout the humanitarian sector in Laos.

¹⁰ Ajinder Walia, 'Community Based Disaster Preparedness: need for a standardised training module', *The Australian Journal of Emergency Management*, (2008) Vol. 23 No. 2, p. 71

¹¹ John Twigg, *Disaster Risk Reduction*, (Overseas Development Institute, 2015) pp. 30 - 32

¹² Ian Davis, Paul Thomson, and Frederick Krimgold. ed, International Federation of Red Cross, *Shelter after disaster, second edition*, (IFRC and OCHA, 2015), p. 177

¹³ The interview with Derin Henderson, who is an Environment Programme Advisor from The Asia Foundation was conducted on 16 December 2016.

¹⁴ On 7 April 2017, the interview was conducted with Christelle Marguerite who is a Senior Disaster Risk Reduction Advisor from Save the Children at its office in Vientiane, Laos.

¹⁵ I had a meeting with the government officials from the Department of Disaster Management and Climate Change (DDMCC) and I asked about the manual. They surprisingly did not know about the manual at all although DDMCC is part of contributors to the manual, and I introduced the manual as a result.

¹⁶ Esther Charlesworth, *Humanitarian Architecture: 15 stories of architects working after disaster*, (Oxon and New York: Routledge, 2014), p. 2

Esther Charlesworth defines the term ‘humanitarian architecture’ as implying a concern for vulnerable communities and support of their welfare through the use of architectural design, specifically after crises of war and disasters.¹⁷ Though shelter construction guidelines fall under this definition, it should be considered that the construction project is sometimes related to regional development and is not just a relief in times of war and disaster. For this reason, it is likely that community voices are ignored, or an architect uses this opportunity to test his/her own experimental design without regard for the consequences upon communities.¹⁸ It is here that community participation in shelter construction is needed. Furthermore, the participatory process allows information and knowledge to be naturally disseminated to the participants – the local population – through its activities.

Design guide for the utilisation of a village school as a community shelter

Consequently, the design guideline for a collective shelter in villages of Laos should not be in the form of manuals for humanitarian activities that cover general processes, but as guidelines for humanitarian architecture that in particular deal with practical aspects of shelter design and construction. It should also include summarised and visualised information, and pragmatic ways to guide rural communities to construct shelters and housing by themselves. In order to develop such a new design guideline for community shelters, it is necessary to examine the current guidelines and circumstances in Laos from the architects’ perspective.

Alastair Parvin declares that architects are skilful at strategic thinking and problem solving via design.¹⁹ In addition, the architect is recurrently placed in a multifunctional role within the humanitarian sector, working with donors, stakeholders, government authorities and communities.²⁰ They are required to be negotiators and coordinators – managing multiple parties on a project at any given time.²¹ They are also designers, builders and engineers during the processes of design and construction.²² Hence, they are well aware of the process, from administrative procedures to architectural practices, while also having a conscious awareness of possible issues arising from the process and appropriate responses to these. For these reasons, the architects should intervene in the development of the local guidelines. If the multifunctional role of humanitarian architects, and their architectural and spatial strategies, are incorporated into a design guideline, and if this is used as a practical and feasible tool for architectural practices in the humanitarian sector, this design guideline will become a new alternative to existing shelter construction guidelines.

¹⁷ Ibid, p. 6

¹⁸ Ibid, p. 9

¹⁹ In TED Talk, Alastair Parvin, who is the co-founder of WikiHouse Foundation, states as follows; ‘The first thing, I think, we need to questions this idea that architecture is about making buildings. Actually a building is about the most expensive solution you can think of to almost any given problem. And fundamentally, design should be much, much, more interested in solving problems and creating new conditions.’, And ‘Architects are actually, really, really good at this kind of resourceful, strategic thinking. And problem is that, like a lot of design professions we got fixated on the idea of providing a particular kind of consumer product and I don’t think that needs to be the case anymore.’ Retrieved from https://www.ted.com/talks/alastair_parvin_architecture_for_the_people_by_the_people

²⁰ Esther Charlesworth, p. 6

²¹ Marie J. Aquilino, ed, *Beyond Shelter: Architecture for Crisis*, (London: Thames & Hudson Ltd, 2011), p.13

²² Ibid, p. 13

In this context, the new design guideline proposed in this thesis focuses on a specific hazard. As flooding is the recurrent hazard in Laos, the design guideline particularly engages with a flood scenario. It allows a more detailed identification of the circumstantial considerations towards rural communities – e.g. origin of floods, its scale, evacuation methods and destinations, post-flood recovery methods, preparatory methods for forthcoming floods, and the extent of the flood-response assistance by the Lao government and aid agencies operating in the area. In addition, the guideline concentrates on the currently improvised response to flooding, which is to use village schools as a safe shelter. With these considerations of the local context, a contextual spatial strategy can be developed.

Therefore, the new design guide elaborates the processes of designing and constructing the school building as a collective shelter, which can be applicable to different village conditions. The given processes include the construction techniques of foundations, floors, walls and roofs, in order for these methods to be applied to each and every home and achieve better construction quality. In addition, the guideline proposes a plan for a participatory process – including training and workshops – not only to inform rural communities of these construction techniques, but to also promote ownership and responsibility of the project for self-sustainability. Consequently, the new design guideline has a more distinctive resonance of design and construction for flood resilience than existing guidelines. This guideline hereby holds potential to be implemented in a wide range of similar contexts, as it covers not only the appropriate level of detailed practical information, but also a feasible method to apply it.

Research focus

The focus of this dissertation is on how the role of humanitarian architects – which bridges working with multiple stakeholders, designing, building and managing the entire duration of a build project – and their design strategies are developed through a design guideline. The research examines hereby the flood responses of government and rural communities, as well as the existing guidelines for shelter, school and housing construction, and explores the role of architects and architectural design and practice in the context of humanitarian architecture. Based on this examination, a new design guideline is proposed, which details the processes of design and building of community shelters with the participation of local populations. Flood-resilient design and its construction techniques are hereby explained and illustrated. A training and workshop plan are also elaborated and presented with illustrations.

The research therefore explores the following questions:

- What are the specific spatial design strategies needed to enhance flood resilience in Laos, and how can this be developed in the form of a design guideline?
- What are the roles of the humanitarian architect and participants from local communities in implementing a design guideline?

The aim of this research is not only to rethink a design guide utilising the disciplinary and strategic framework of humanitarian architecture – rather than being just an operational document – but also to explore the role of the architect, practitioners and local populations within its implementation as participants in building a community resilient to floods.

This practice-led research consists of four parts. The first examines existing guidelines for shelter and housing construction with a focus on theoretical and practical contexts – i.e. local specificity, architectural design and practice and community participation. The second part explores the current circumstances of flood risk management in Laos. Following from this, the scope of considerations that an adequate design guide should cover is analysed and spatial strategies are investigated, leading to the solution of utilising a village school as a community shelter in rural areas. In the third stage, school construction guidelines are critically examined in relation to the equivalent guidelines in Laos, and the current circumstances of Laos, particularly concerning the practice and quality of construction in the country. Not only are indigenous knowledge and local construction skills identified, but retrofitting architectural design and practice is also explored with a focus on community participation. The final stage develops a new design guide for a community shelter, building on the findings of the first three stages, which can be applicable to flood-prone areas in Laos.

Research methodology

This research considers the design guide as a method to investigate specific design strategies. Hence, the study is intended to rethink not only the role of the guidelines, but also its content pertinent to the local context, as well as the role played by participants – i.e. stakeholders and local populations. As mentioned in the **Introduction**, this research has been developed parallel to the preparation of the live project. The framework to verify and redeem the school shelter guideline as proposed in this thesis proceeds the live project: both research and guideline will be used when undertaking the live project as a pilot project and test. Thereafter, the proposed guideline will be revised and improved based on the result of that live project, and the conclusions will be published. Thus, this research is considered an important first stage of a larger research project that investigates theoretically and practically how design guidelines have influenced current humanitarian activities, how to react to flood risk and how village schools have been constructed.

First, it is essential to critically examine the existing guidelines about emergency shelter construction. Particular guidelines were selected from the numerous ones available in relation to disaster preparedness, responses and relief actions – as shown in Figure 13 in **Chapter One**. They especially related to 1) a general and international context; 2) the Laos' regional context; and 3) safe school construction for natural hazards. Disaster contingency plans and emergency shelter construction plans were developed by international aid agencies – such as the Red Cross and UN – so as to comprehend how developing countries have prepared for natural hazards and how they have dealt with the survivors' need for safe shelters; this is in a globally common context. In terms of Laos' zones,

investigating local guidelines, such as those relating to housing construction guidelines for rural areas, has proved necessary in order to explore the circumstances of the country's non-urban zones. The fact that village schools have been generally used as safe shelter in case of flooding necessitates the examination of school construction guidelines here. Such critical review is adopted in an integrated analysis of existing guidelines and in identifying the role of spatial strategies in humanitarian architecture.

However, in order to identify how such guidelines have been dealt with in Laos, it is necessary to speak to those who work in or have experience of flood risk prevention. The literature and the written material – relating to vernacular Lao architecture, indigenous knowledge about flood resilience, flood responses and shelter construction – are very limited. The context of construction in Laos – for instance, the procedure to obtain construction permits – requires a qualitative research approach, such as visits to rural villages, interviews and meeting with local populations, architects, academics and experts from aid agencies and the government; I selected the villages I visited from the local government's suggestions because it has identified which villages were most damaged by the recent floods and needed external assistance. In terms of the interviewees, the Lao government staff are an important resource, not just in understanding flood risks, but also common disaster responses and ideal risk scenario planning. Academics and staff from international aid communities similarly provide significant information about the usage of current guidelines within Laos and how participatory processes are conducted.

There were several short-term research and three longer-term field research sessions (Figure 1). The field research encompassed both theoretical and practical aspects, interviews and meetings with those working in the governmental departments responsible for disaster responses, the universities and the international aid agencies. In addition, I have questioned the authors of and contributors to the existing guidelines in order to understand how they were developed, published and disseminated. To comprehend the rural villages' circumstances of flood risk and flood responses, several visits to the local villages of Laos were conducted and testimonies were given by local communities. Such field research proved challenging. The government has complicated and vexatious administrative procedures when planning and permitting visits to rural villages. These, more importantly, proved to be protracted.²³ These practice-led enquiries, however, have been used to develop a new design guide pertinent to the context of the country.

This thesis and the school shelter guideline proposed here reflect well on these research methods. While in Laos, I witnessed first hand how several plans relating to disaster responses developed. One or two experts visited surprisingly few villages and conversed with a limited number of the local populations in order to understand the regional context of the country. This seems to be insufficient data on which to base any conclusions relating to the regional context of Laos. In contrast, this study

²³ An official letter requesting the visit should be sent to the central government at least a week before the scheduled date. After permission was granted, I was able to make my trip, with the proviso that at least one or two local government staff would accompany me to the villages.

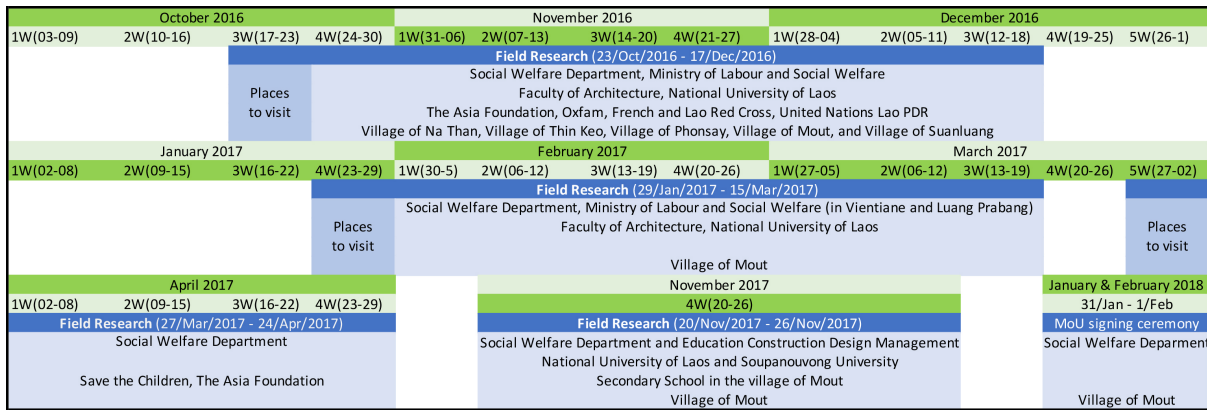


Figure 1. Timeline of the field research in Laos, illustrated by Soon Min Hong.

is based on sufficient, adequate field research, thereby reflecting the regional, cultural and practical context of Laos. The following points are proof of these reflections: the administrative procedure illustrated in the guideline is easily understandable; related cultural protocols are well concerned in the guideline; practical and technical knowledge, which existing guidelines do not deal with, are included.²⁴ Thus, the research methodology and methods mentioned above have had a positive impact on the development of this thesis.

Most of the interviews and meetings were carried out with the assistance of the NGO's local coordinator, in particular as an interpreter. Almost all of the cases were successful. This was because the local coordinator was involved in the project from the very early stages in 2015. His knowledge of the project and awareness of my research helped with interpreting the conversations and discussions between myself and the interviewees. Some questions were prepared and categorised in terms of different matters – flooding, shelter, construction policy and community participation – and they were sent to the interviewees in advance when required (see Appendix I); the local coordinator also assisted in translating the questions in Lao. All of the interviews and meetings were conducted under the RCA's ethical regulations (see Appendix II).

²⁴ On 16 September 2018, Derin Henderson from The Asia Foundation reviewed the school shelter guideline proposed in this thesis. She stated that this guideline is easy to read and makes the procedures easy to follow; therefore, it will be most useful for NGOs. In addition, said that it is unique in that it shows a participatory approach, which other technical guidelines lack.

CHAPTER ONE
DESIGN GUIDELINES
FOR SHELTER

1.1 Emergence of shelter guidelines

Shelter after Disaster, published in 1982, is commonly acknowledged as the first shelter design guideline. It reviewed the provision of emergency shelters following a request from the United Nations Disaster Relief Co-ordinator, a predecessor of the United Nations Office for the Coordination of Humanitarian Affairs.²⁵ This publication is especially concerned with the issues and questions raised by disaster relief activities following the 1976 Guatemala earthquake. The failures identified in the review are that: too much external assistance from aid agencies was provided, with a great number of houses inefficiently constructed in the form of emergency shelters; too many relief activities were undertaken under pressure and without appropriate plans or consultation, and as a result, affected populations were merely treated as spectators rather than participants.²⁶ These findings explain the guideline's focus on a better delivery of relief aid, the balance between external agencies' efforts and local self-help, the appropriate type of post-disaster housing or shelter, the means to encourage active participation of affected populations, and the role of the governments. In 2015, a second edition was released, developed by the Red Cross and the United Nations. With the first edition being widely used in training courses, the second edition was intended to improve the policy and practice of shelter and housing reconstruction.²⁷

It is generally understood that post-disaster shelter and housing reconstruction not only need large investment, but also cooperation with national governments, as well as a long-term strategic plan.²⁸ These are considered by the aid agencies as key issues or risks preventing successful reconstruction projects, and the difficulty of bringing these together has discouraged them from significantly developing the shelter sector. As a result, the burden largely remains with national governments and affected populations who have the direct responsibility to construct shelters.²⁹ While this seems reasonable, particularly as the government has a long-term responsibility for post-disaster recovery, it is not viable. Disaster-affected countries, particularly those in which the international aid agencies assist in the recovery, are often economically and skill-wise incapable of implementing disaster recovery plan themselves, and therefore need wider international support.

During the construction process of shelters, there are two important and contrasting perspectives that have to be understood: that of the government and that of the disaster victims.³⁰ From a governmental perspective, the main objective is to reconstruct the destroyed built environment,

²⁵ United Nations Disaster Relief Co-ordinator (UNDRO), *Shelter after Disaster: Guidelines for Assistance* (Geneva: UNDRO, 1982).

²⁶ Ibid, p. 1.

²⁷ Ian Davis, Paul Thompson, and Frederick Krimgold, *Shelter after Disaster: Second Edition* (IFRC and UNOCHA, 2015) p. 6.

²⁸ Ibid, p. 11.

²⁹ Ibid, p.11.

³⁰ Ian Davis and David Alexander, *Recover from Disaster* (Oxon and New York: Routledge, 2016) p. 23.

whereas victims focus on rebuilding their social and economic life. Furthermore, conflicts among project stakeholders arise during the recovery process.³¹ The local government does not always agree with aid agencies about how to manage and deliver the shelter construction. Other conflicts stem from whether to develop an understanding of the requirements and needs of the affected communities during the design or construction process, as opposed to determining them prior to all local consultation. This is essentially a question of how to develop effective guidelines for disaster relief.

A guideline is defined as a general rule, principle, or piece of advice. It deals with more specific issues than a manual, and taking the topic of this dissertation, for example with the policies and principles of shelter construction in disaster-affected areas, and the general process of implementing relief operations. In this context, the guideline *Shelter After Disaster* was published to outline a better implementation process. It is written with a greater emphasis on the local population, rather than the government and aid agencies, and places more importance on the needs and opinions of the disaster-affected people. It also covers a wider spectrum of post-disaster considerations – from disaster preparedness, through relief activities, to recovery. In particular, it focuses on disasters that give rise to immediate damage, such as floods, earthquakes, and typhoons. However, it is not a technical document about shelter design and construction, but a study of policy and principles effecting emergency shelter and post-disaster housing.

1.2 Preparedness plans and shelters

The definition of ‘shelter’ in *Shelter after Disaster* is that of an individual house: post-disaster housing in the form of an emergency shelter, transitional shelter and permanent shelter. This document discusses in particular what is necessary to successfully complete a shelter construction project. According to it, a holistic approach should include the following: well-organised interdepartmental structures between the government and aid agencies; appropriate financial and political support; short- and long-term commitment by assisting groups; active participation in the project by affected populations; enhancement of local economies; strategies to solve the issues of land tenure in areas where the shelters are built; technical expertise in the field of architecture design and practices; and environmentally sustainable shelter design, taking into consideration cultural and climatic concerns.³² In terms of disaster response activities, its principles and policy are also extensively described with regards to time sequences before and after disasters occur – i.e. pre-disaster phase, phase one (impact to day five), phase two (day five to three months), and phase three (three months onwards) (Figure 2).

³¹ Ibid, pp. 157–170.

³² Davis, Thompson, and Krimgold, p. 34

1. Recourse of survivors

The primary resource in the provision of post-disaster shelter is the grass-roots motivation of survivors, their friends and families. Assisting groups can help, but they must avoid duplicating anything best undertaken by survivors themselves

2. Allocation of roles for assisting groups

The success of a relief and rehabilitation operation depends on the correct and logical distribution of roles. Ideally, this allocation should be undertaken by the local authorities who are best qualified to decide who should do what, when and where. However, if the local administration is too weak to assume this responsibility, the priority must be to strengthen it.

3. The assessment of needs

The accurate assessment of survivors' needs in the short-term more important than a detailed assessment of damage to houses and property. Partial or inaccurate assessments of human needs by assisting groups have been a frequent cause of past failure of relief efforts.

4. Evacuation of survivors

The compulsory evacuation of disaster survivors can retard the recovery process and cause resentment. The voluntary movement of survivors, where their choice of venue and return is timed by their own needs, on the other hand, can be a positive asset. (In the normal course of events some surviving families may seek shelter for the emergency period with friends and relatives living outside the affected area.)

5. The role of emergency shelter

Assisting groups tend to attribute too high a priority to the need for imported shelter as a result of mistaken assumptions regarding the nature, and, in some cases, relevance of emergency shelter.

6. Shelter strategies

Between emergency shelter provision and permanent reconstruction lies a range of intermediate options. However, the earlier the reconstruction process begins, the lower the ultimate social, economic and capital costs of the disaster.

7. Contingency planning (preparedness)

Post-disaster needs, including shelter requirements, can be anticipated with some accuracy. Effective contingency planning can help to reduce distress and homelessness.

8. Reconstruction:**the opportunity for risk reduction and reform**

A disaster offers opportunities to reduce the risk of future disasters by introducing improved land-use planning, building methods, and building regulations. These preventive measures should be based on hazard, vulnerability and risk analyses, and should be extensively applied to all hazardous areas across the national territory.

9. Relocation of settlements

Despite frequent intentions to move entire villages, towns and cities at risk to safe locations, such plans are rarely feasible. However, at the local level a disaster will reveal the most hazardous sites (i.e. earthquakes faults, areas subject to repeated flooding, etc.). Partial relocation within the town or city may therefore be both possible and essential.

10 . Land use and land tenure

Success in reconstruction is closely linked to the question of land tenure, government land policy, and all aspects of land-use and infrastructure planning.

11. Financing shelter

One of the most important components of a post disaster shelter programme is its financing system. Outright cash grants are effective in the short-term only, and can create a dependency relationship between survivor and assisting groups. It is far more advantageous for both the individual and the community to participate in the financing or their own shelter programmes, especially permanent reconstruction.

12. Rising expectations

Apart from the tendency of prefabricated, temporary housing to become permanent because of its high initial cost, and in spite of its frequent rejection on sociocultural grounds, temporary shelter, nevertheless, frequently accelerates the desire for permanent modern housing, well beyond reasonable expectation. It is important for assisting groups not to exacerbate social and economic tensions by such provision where there are widespread and chronic housing shortages among low-income and marginal populations.

13. Accountability of donors to recipients of aid

Since the most effective relief and reconstruction policies result from the participation of survivors in determining and planning their own needs, the successful performance of assisting groups is dependent on their accountability to the recipients of their aid.

14. Guidelines for the local level

The accurate assessment of survivors' needs in the short-term more important than a detailed assessment of damage to houses and property. Partial or inaccurate assessments of human needs by assisting groups have been a frequent cause of past failure of relief efforts.

Figure 2. Principles of disaster response from *Shelter after Disaster: second edition* (2015), adapted by Soon Min Hong.

Just after disasters occur, one of the first tasks is to identify the scale of the impact and damage caused by the disaster, and also the needs of affected populations. To conduct the post-disaster needs and damage assessment better, they should be prepared during the pre-disaster phase and have particular regard for the contribution of the displaced populations, as they are the first responders to disasters. When local organisations and international aid agencies begin their work in disaster areas, usually some time has already passed. As a result, the shelter construction will be delayed if the needs assessment is conducted only by the assisting groups, e.g. local organisations, government or aid agencies. In addition, the survivors' understanding of the disaster recovery needs is much better than that by external aid agencies. As most local populations in developing countries have general experience of building their own houses, they are well aware of what is needed and available for rebuilding shelters. Accordingly, the needs assessment by survivors should be primary, and subsequently assisting agencies should mainly deal with the secondary assessment.³³

In addition, by studying the longer disaster history, it is possible to anticipate potentially risky areas and identify required disaster preparedness measures.³⁴ The demands and amount of relief supplies can be thus predicted in order to distribute them more promptly and evenly to affected populations, and determine safe places for the displaced to be evacuated to. This is often a contingency plan that many aid agencies develop. However, it is important that this preparedness plan enables poor nations and its local authorities to implement it themselves during the pre-disaster phase. Nevertheless, the preparedness plan is considered to have little impact on reducing the disaster damage.³⁵ In order for the plan to be as effective as possible, it should consider the context of the target areas, include securing safe shelters in advance, plan for evacuation routes and provide related training to the population.

Good examples for this might be community cyclone shelters – e.g. in Bangladesh (Figure 3.a) and India (Figure 3.b) – which are multi-purpose buildings that can offer a safe place to disaster victims. During non-disaster periods, they provide space for diverse community activities for nearby villages (Figure 4). However, there are some deficiencies in the operation and management of these shelters too. As there is a limit to the number of people that one shelter can accommodate, there is a serious risk of an overcrowded shelter during evacuation without an adequate large-scale evacuation plan being drawn up. As the cyclone shelters are normally located near farmlands and villages, it is inevitable that many local populations will crowd into the nearest shelter. Hence, providing a guide for how to use the shelters and including a simulation exercise during the pre-disaster planning is necessary to make community shelters work efficiently.

Alongside the community cyclone shelter model, *Shelter after Disaster* introduces other types of shelter and examines their benefits and disadvantages: tents, imported designs and units, standard designs incorporating indigenous materials, temporary housing, the distribution of materials, core

³³ Example forms of the needs and damage assessment are provided in this guideline as well, which can be modified with regards to the context of the disaster-affected region.

³⁴ Davis, Thompson, and Krimgold, p. 116.

³⁵ Ibid, p. 120.



Figure 3.a. Cyclone shelter in Gabtola, Bangladesh. Photo by Sonja Aye-Karisson.



Figure 3.b. Cyclone shelter in Bhubaneswar, India. Photo by Soon Min Hong, 2015.



Figure 4. Cyclone shelter in Bhubaneswar, India, used as extended classrooms. Photo by Soon Min Hong, 2015.



Figure 5. Igloo-style temporary housing in Port-au-Prince, Haiti. Photo by Esther Charlesworth.

housing, hazard-resistant housing, and accelerated reconstruction of permanent housing.³⁶ A tent is portable and easy to disseminate, with the result that many international aid agencies and governments prefer it. However, the tent often neither meets the survivors' demands, nor can be extended when necessary. The cost, at times, is higher than expected, and the tent sometimes fails to function as shelter due to extreme weather conditions. In many cases, an imported shelter unit or pre-fabricated shelter is inappropriate for the displaced population to stay in, because their design fails to take into consideration their surroundings or the cultural concerns of the displaced (Figure 5). In addition, if the shelter is an experimental design that requires a specific construction technique, its construction can be very challenging for locals.

Thus, there has been an increasing call for a shelter design that utilises local skills and materials. Because of a limited number of humanitarian architects and shelter experts, however, there has been little advance. The design has to consider indigenous and traditional construction knowledge, available building skills, and the availability of local building materials, with large-scale sourcing of building material representing a possible further risk of environmental damage. A modern hazard-resistant shelter also requires technical training of local builders, as they are often neither trained in construction nor able to read architectural drawings. However, this training is difficult to deliver at the right time.

Given these issues, often there is no one universal plan and design possible, i.e. a 'one size fits all' solution is not viable. The local specificity of disaster areas, e.g. the particular vulnerability to prevailing disaster and the local construction knowledge, have to be considered in order for the prepared plans and proposed design to be pertinent to the local communities and their environment. The role of architects in this is often overlooked, yet offers an opportunity to rethink the process of designing humanitarian architecture, including the related information and knowledge that has to be disseminated to local communities, and is an integral part of the design. This should include a broader participatory process to enable local populations not only to take on more responsibilities for the shelter project, but also to develop their own resilience to future disaster risks. It is therefore necessary to examine existing guidelines relating to shelter provisions to better understand what these design processes have to address.

1.3 Existing guidelines

There are a variety of shelter guidelines, but they can be categorised in terms of how shelter is defined. Broadly, this study defines shelter in two ways: one is as an individual house, and the other as a collective refuge. Post-disaster shelter guidelines deal with the former. Separate guidelines for a community shelter or collective centre with the latter. In addition to these two types of guidelines, there are local guidelines that are concerned with the context of target nations or areas.

³⁶ Ibid, pp. 93–106.

Section 1. What is Owner-Driven Housing Reconstruction?			
Defines the approach, its benefits and risks and the principles that will guide the planning and implementation of an ODHR programme			
Section 2. Programme Development	Section 3. Participatory Process	Section 4. Technical Assistance	Section 5. Financial Assistance
<ul style="list-style-type: none"> ↳ General considerations, assessments, planning and implementation in relation to: ↳ The overall programme planning, mobilization of resources, monitoring and evaluations 	<ul style="list-style-type: none"> ↳ General considerations, assessments, planning and implementation in relation to: ↳ The process of mobilizing and organizing communities, and building their capacities to plan and implement activities 	<ul style="list-style-type: none"> ↳ General considerations, assessments, planning and implementation in relation to: ↳ The process of providing construction technical support to the families and communities from design to completion of works 	<ul style="list-style-type: none"> ↳ General considerations, assessments, planning and implementation in relation to: ↳ The process of distributing grants, monitoring the flow of funds, and the receipt and use of funds

Figure 6. Brief overview of the five sections of owner-driven housing reconstruction. From *Owner-Driven Housing Reconstruction guidelines* (2010).

1.3.1 Post-disaster shelter guidelines

In terms of post-disaster shelter guidelines, there are *Transitional Shelter Guidelines* (2012) and *Owner-Driven Housing Reconstruction Guidelines* (2010).³⁷ These guidelines were published by large aid agencies – such as the Red Cross and the United Nations – and deal with anticipated circumstances after large-scale disasters. Both types of guidelines discuss a process of shelter and housing construction with community involvement. The target groups of these guidelines are rural communities and the field staff of agencies and governments. The guidelines introduce how to construct shelters and housing with various building materials, such as bamboo, timber, or brick, or how to repair damaged homes. Application and reception of financial assistance is also described in parallel with technical guidance. These kinds of guidelines are generic and can be applied anywhere.

As discussed, for a post-disaster reconstruction of shelters and housing, the Red Cross published the *Owner-Driven Housing Reconstruction Guidelines* in 2010 to aid field practitioners, project managers and construction delegates. It focuses on principles of owner-occupied housing construction, the development of the framework and its implementation, and advises on technical and financial assistance (Figure 6). It emphasises that local communities should make decisions about their own

³⁷ Shelter Centre, *Transitional Shelter Guidelines* (International Organization for Migration (IOM), 2012) and IFRC, *Owner-Driven Housing Reconstruction Guidelines* (IFRC, 2010).

housing design while led by architects, and that at least one family member is required to be involved in the construction.

Similarly, the Shelter Centre published the *Transitional Shelter Guidelines* in collaboration with the United Kingdom's Department for International Development, the International Organization of Migration, and the Swedish International Development Cooperation Agency. A programme called 'Transitional Shelter' is introduced in this guideline, whose main aim is to upgrade an emergency shelter to a permanent home. It further explains the principles of the 'transitional shelter' approach, and provides advice on planning and implementing the programme (Figure 7). In addition, the guideline provides not only the recommended building layout for minimising disaster risk, but also design considerations for different climatic conditions – such as warm-humid, hot-dry and cold climates. It also includes construction principles for foundations, floors, walls, roofs and maintenance advise based on local building techniques and materials.

In 2011, the Red Cross societies then published the *Shelter Safety Handbook* with a specific focus on shelter construction techniques.³⁸ This handbook contains basic information on construction methods to aid Red Cross staff, volunteers and beneficiaries in the building of shelters. It is also meant as a practical tool to communicate between field practitioners and local populations when planning and constructing shelters. Focusing on four types of hazards – fire, earthquakes, strong winds and floods – specific criteria for appropriate settlement locations are given, and illustrations depict the principles of housing construction – how to build foundations, walls, floors, and roofs – for each hazard. The maintaining and remodelling of homes is also briefly discussed (Figure 8).

What the guidelines agree on is that post-disaster recovery requires not only a thorough long-term plan, but also a continuous effort by the government and supporting groups. Thus, the guidelines also deal with a wide range of policies and principles. However, this general approach also makes them too broad and too technical to be easily implemented by local populations. Moreover, both of the first two guidelines encompass shelter construction programmes at national level, and are thereby not suited to countries that have suffered from small-scale disasters. Furthermore, as they still overly focus on the management of the whole process and how to develop a generic plan for shelter and housing construction, it is not guaranteed that the built shelters they advocate will be culturally and environmentally accepted by affected communities. In terms of transmitting the knowledge that these guidelines contain to the local populations, as they are mainly described in text with only few illustrations, a more efficient means of delivering such knowledge should be realised. It is here that a significant role for project experts and design practitioners in providing necessary information and knowledge to local communities arises, while enabling them to participate in the project.

³⁸ IFRC, *Shelter Safety Handbook: Some important information on how to build safer* (IFRC, 2011).

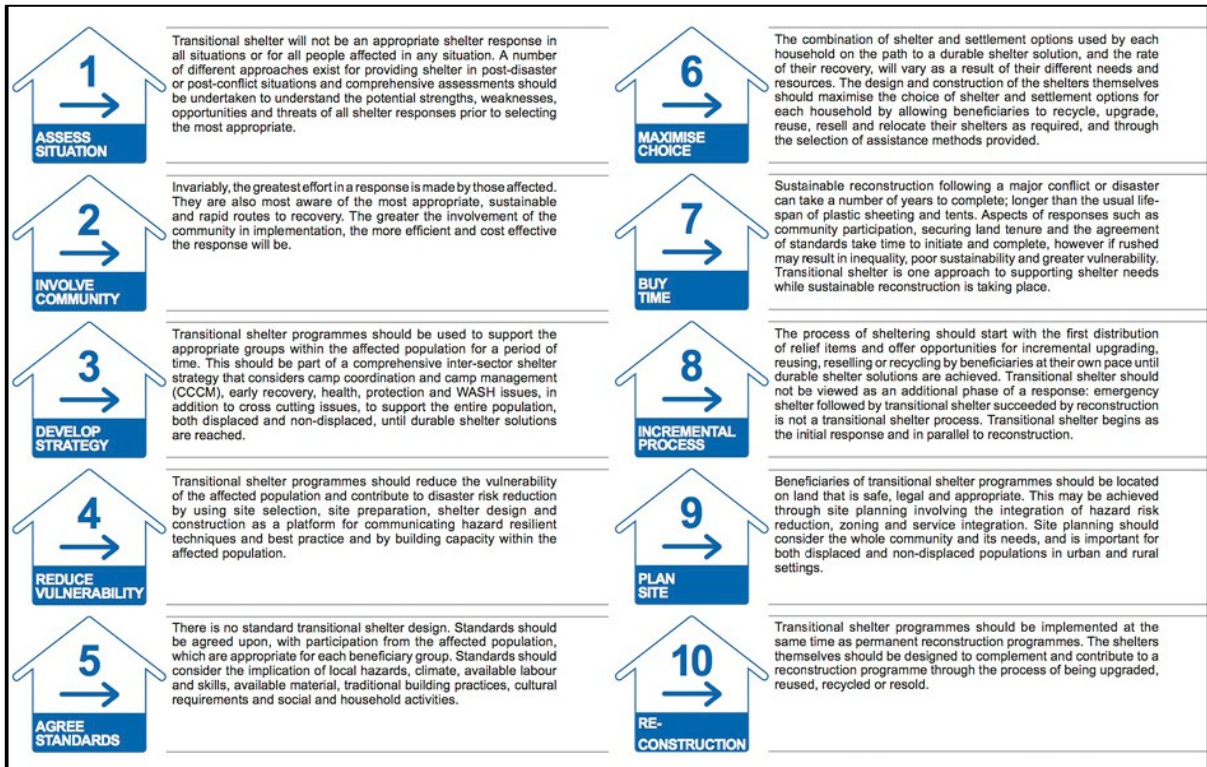


Figure 7. 10 principles of transitional shelter. From *Transitional Shelter Guidelines* (2012).

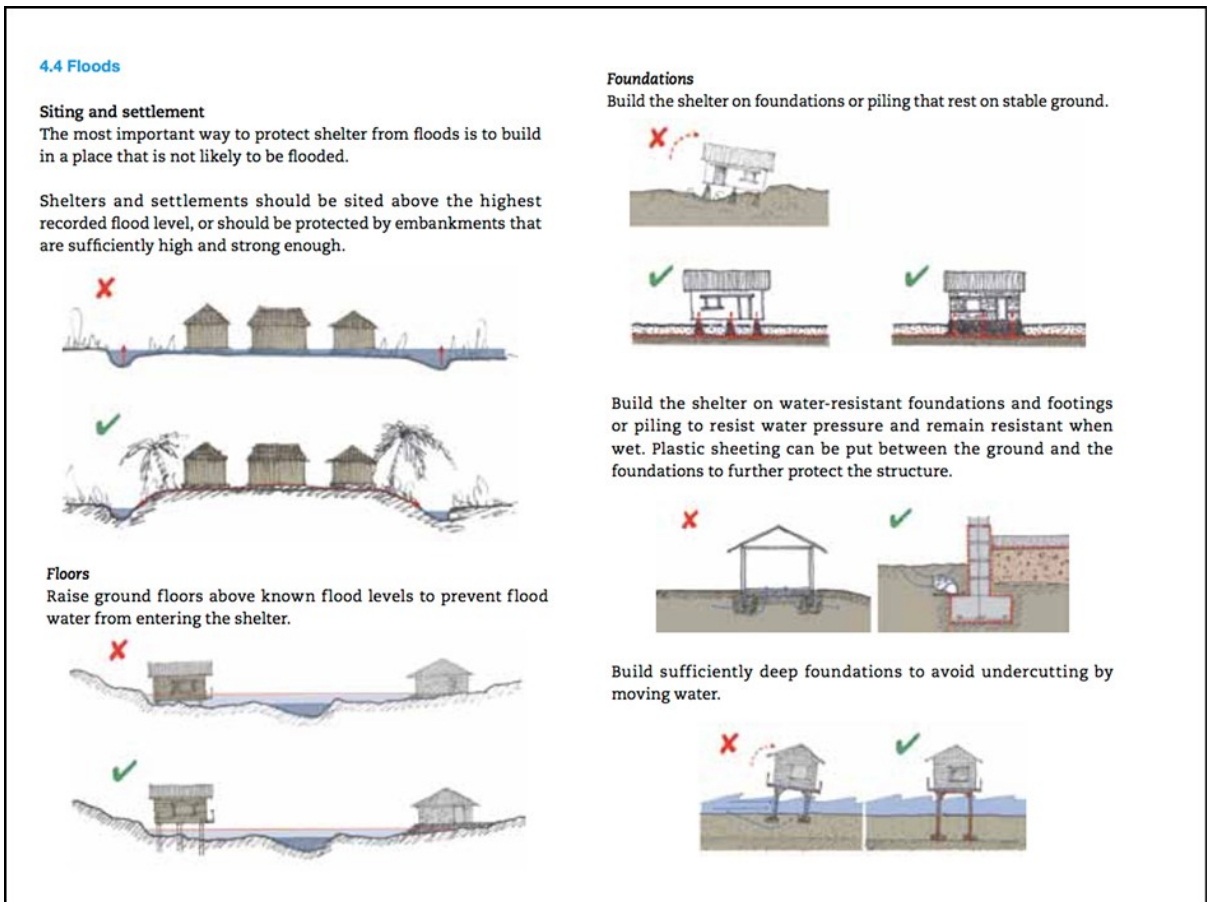


Figure 8. Illustrations of design and construction principles. From *Shelter Safety Handbooks: some important information on how to build safer* (2011).









Type of Building	Advantages	Disadvantages
Sports facility or parks 	<ul style="list-style-type: none"> - Facilities are ready for a large number of people, including sanitation. - Sport facilities and gardens are often the only open spaces in urban contexts. - Adequate access that is known by the communities. 	<ul style="list-style-type: none"> - Usually there is no ceiling or it is not completely closed. - They serve as basic shelter; in most cases can only set up tents. - This type of facilities is almost non-existent in rural contexts.
Hotels 	<ul style="list-style-type: none"> - Ready for occupancy in the short and medium term. - They provide privacy. - Management structure in place. - They offer excellent facilities for shelter in the urban context. 	<ul style="list-style-type: none"> - Hotels are a private business; people could be forced to leave at short notice. - In a rural Mozambican context, hotels and rooms are scarce, and they are likely to be far from risk areas.
Schools 	<ul style="list-style-type: none"> - Numerous. - Close to the areas inhabited by the affected people. - They provide a basic infrastructure. - There is a management structure in place. 	<ul style="list-style-type: none"> - Possible disruption of educational activities. - They cannot provide adequate privacy for affected people. - Potential risks in the protection of the students in case of functioning as educational centre and temporary shelter at the same time. - Hosted families could be forced to leave the shelter at short notice.
Community centres 	<ul style="list-style-type: none"> - Ready to receive many people. - They provide a basic infrastructure. - There is a management structure in place. 	<ul style="list-style-type: none"> - Scarce in the Mozambican context. - Not suitable to host affected people in the medium or long term. - They cannot provide adequate privacy to affected people.
Religious buildings 	<ul style="list-style-type: none"> - Close to the affected community's original area. - Depending on the size, they can host many people. - There is a management structure in place. - They have a relationship with affected persons. 	<ul style="list-style-type: none"> - In the Mozambican rural context, religious buildings are mostly small in size. - Usually there is no (or not enough) access to water and sanitation. - They do not provide privacy. - Some conflict and discrimination could be generated by favouring the provision of shelter to people of a particular religion.
Emergency refuges 	<ul style="list-style-type: none"> - Infrastructure already prepared to provide refuge to many people. - Specially constructed to be resistant to natural disasters. - They have a dual function as community centres or public school. 	<ul style="list-style-type: none"> - Limited capacity. - Minor area per person standard. - They do not offer privacy. - Only possible use as evacuation centre.
Factories and warehouses 	<ul style="list-style-type: none"> - Availability of large covered spaces. - In the Mozambican context there are a large number of abandoned factories and warehouses close to the risk areas with bigger size than any other building type described herein. 	<ul style="list-style-type: none"> - Usually there are no water and sanitation systems. - They do not provide privacy. - Being a private business, people could be forced to leave at short notice. - They could not comply with basic environmental conditions (toxic for the population or dangerous for children).
Hospitals and health centres 	<ul style="list-style-type: none"> - Enable prompt attention to the wounded and sick, and appropriate services for vulnerable people. - There is a management structure in place. - Adequate access that is known by the communities. - Usually located in a safe area. 	<ul style="list-style-type: none"> - Usually the quality and quantity of service that it provides to the community decreases at the time that is more needed. - It could give origin to conflict situations among the affected population and the host community. - Attention to patients might be overlooked because of the overstretching of services.

Figure 9. A list of possible community shelters, adapted by Soon Min Hong. From *Community Shelter Guidelines: Accommodation Centres in Existing Buildings* (2013).

1.3.2 Guidelines for a collective centre and community shelter

There is one particular guideline for collective centres, called *Collective Centre Guidelines*, published by the Camp Coordination and Camp Management Cluster (CCCM) in 2010.³⁹ It defines collective centres as ‘pre-existing buildings and structures used for the collective and communal settlement of the displaced population in the event of conflict or natural disaster’.⁴⁰ Given the fact that many collective centres often fail to function adequately as a shelter, there is a rising need for planning their operation and management long-term.⁴¹ Thus, the guideline focuses on the principles of how to prepare and manage the collective centre, but also makes suggestions on how to frame the collective centre and how to distribute relief supplies – food and non-food items – as well as the community involvement needed in the centre’s management.⁴²

In another example from Mozambique, a *Community Shelter Guidelines* was produced in 2013 to encourage better use of pre-existing buildings and infrastructures as temporary shelters during emergencies.⁴³ As in other guidelines, community shelter is understood as an infrastructure to host temporarily the affected population. It examines a general list of the possible shelters – such as stadiums, hotels, schools, community centres, religious buildings and factories – and their pros and cons, especially in the context of Mozambique (Figure 9). It analyses the vital spaces needed when existing buildings are used as community shelters, which are: a service area for use as a reception centre and for the distribution of relief supplies; sleeping areas; communal or open areas for cooking and community gathering; and sanitary areas for lavatories and shower rooms. The guidelines further categorise the management of the community shelter into three stages – preparation, utilisation, and closure – and each stage is related to the technical recommendations made by the *Humanitarian Charter and Minimum Standards in Humanitarian Response* (e.g. 1 latrine per maximum of 20 people, ramps with maximum gradient of 1:10, and doors with a minimum width of 90cm).⁴⁴ Selected buildings or public infrastructures that are to be used as community shelters, should not only be examined in terms of maintenance needs, but also have a safe location not affected by natural hazards, or be strong enough to withstand disaster impact. A maintenance scheme during the non-disaster period should be planned on the basis of a mutual cooperation between the government and local communities.

These two guidelines, analogous to the case of post-disaster shelter guidelines, focus on the establishment and management of a collective centre based on common disaster scenarios. They are effective in assisting stakeholders and potentially affected communities to have a general understanding of the necessity of these factors and how to prepare for emergency. However, in the

³⁹ Camp Coordination and Camp Management Cluster (CCCM), *Collective Centre Guidelines*, (United Nations High Commissioner for Refugees (UNHCR) and International Organization for Migration (IOM), 2010).

⁴⁰ Ibid, p. 5.

⁴¹ Ibid, p. 2.

⁴² Moreover, the possible issues arising from the operations of the centre – such as dealing with the health of survivors – are raised, and other considerations about the survivors’ education and livelihoods are discussed.

⁴³ Mozambican Red Cross, *Community Shelter Guidelines; Accommodation Centres in Existing Buildings* (Mozambican Red Cross, 2013).

⁴⁴ The Sphere Project, *Humanitarian Charter and Minimum Standards in Humanitarian Response* (Practical Action Publishing, UK, 2011). The guidelines also discuss the necessary facilities to be provided and basic rules to be followed by the displaced populations when occupying the shelter, and it provides example forms of assessment, registration and monitoring.

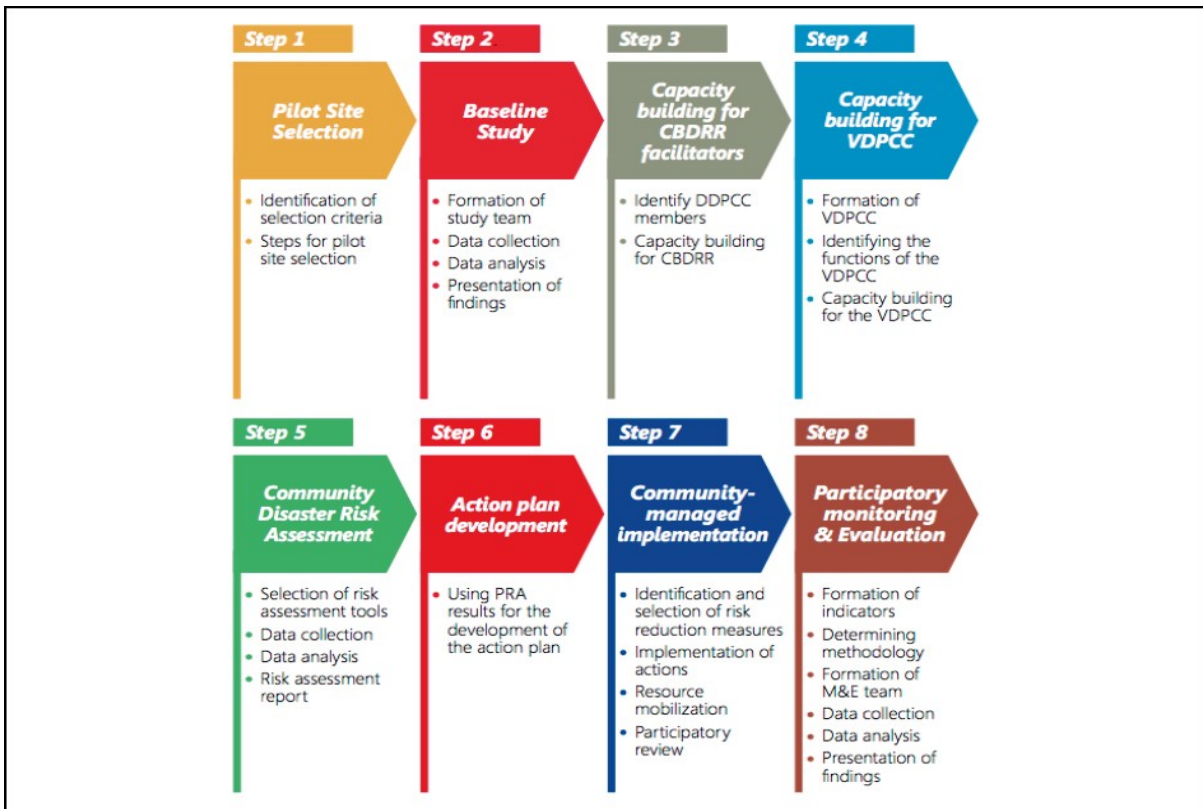


Figure 10. Process of community-based disaster risk reduction. From *Community-Based Disaster Risk Reduction (CBDRR) Manual in Lao PDR* (2016).

case of *Collective Centre Guidelines* (2010), it lacks information and principles relating to how to apply its measures to specific and local regions. In addition, *Community Shelter Guidelines* (2013) presents its information in the format of a list of recommendations, which lack in-depth description and practical advice, to the extent that it is challenging for stakeholders and local populations to utilise it in the actual field. With regards to the improved application of these guidelines, the principles and guidance on how to utilise collective centres and/or community shelters should, in particular, include material specific to the local areas where they are found.

1.3.3 Local guidelines

Local guidelines deal with specific contexts. For example, *Community-Based Disaster Risk Reduction (CBDRR) Manual in Lao PDR* was published by CARE, Oxfam, Save the Children, Red Cross societies, and Asian Disaster Preparedness Center (ADPC) in conjunction with the government of Laos PDR, with the aim to guide nationwide implementation and systematic replication of disaster response activities in Laos.⁴⁵ This is not a plan for a specific activity, but a general instruction manual to explain the process of disaster risk reduction activities inclusive of community engagement in Laos. This manual consists of two parts. Part I explains the emerging approach of community-based management in

⁴⁵ ADPC, *Community-Based Disaster Risk Reduction (CBDRR) Manual in Lao PDR* (ADPC, 2016). I had an interview with Christelle Margerite, a senior disaster risk reduction advisor of Save the Children Laos, on the 7th April 2017. She explained that this manual was created under the sponsorship of European Commission Humanitarian Aid and Civil Protection (ECHO). A consortium consisting of Save the Children, CARE, OXFAM, French and Lao Red Cross worked to produce this manual for 18 months, from July 2014 to December 2015, in collaboration with Asian Disaster Preparedness Center (ADPC) and Department of Disaster Management and Climate Change (DDMCC) of Laos.

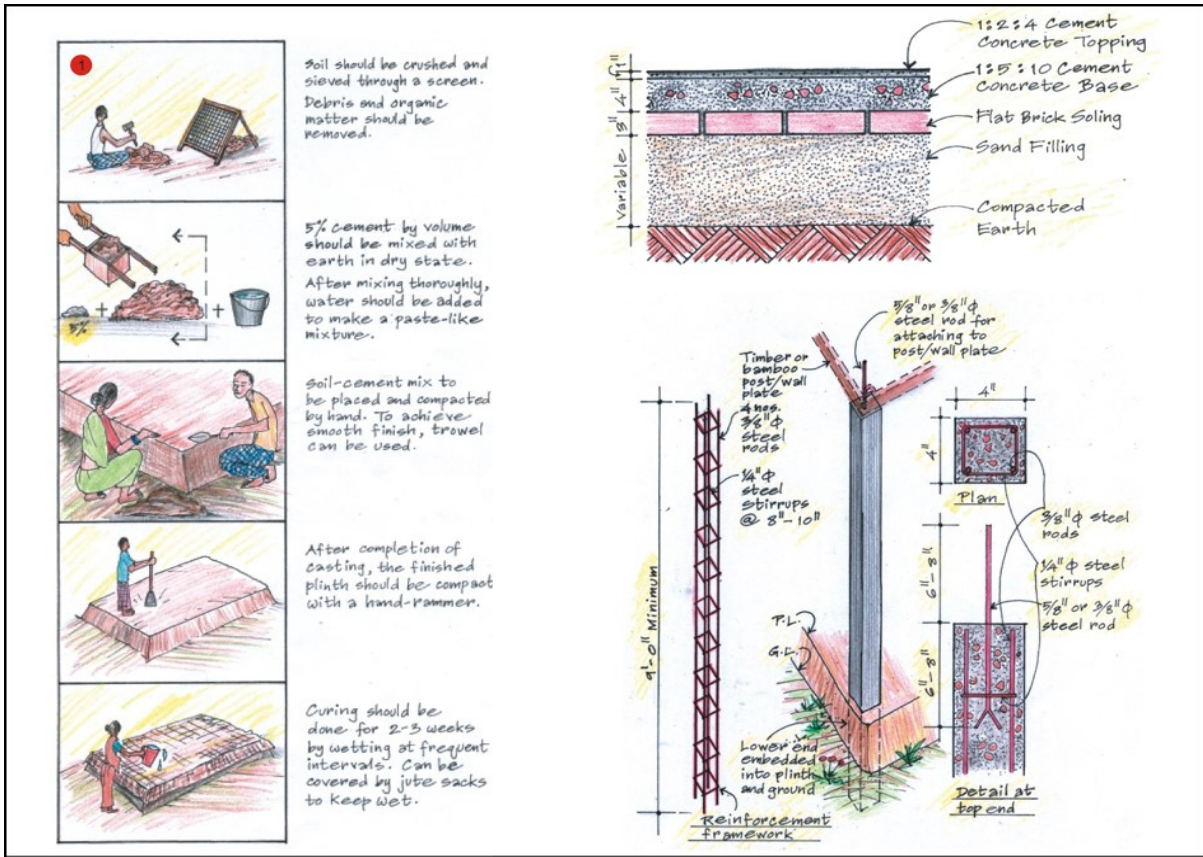


Figure 11. Illustrations of construction techniques. From *Handbook on Design and Construction of Housing for Flood-prone Rural Areas of Bangladesh (2005)*.

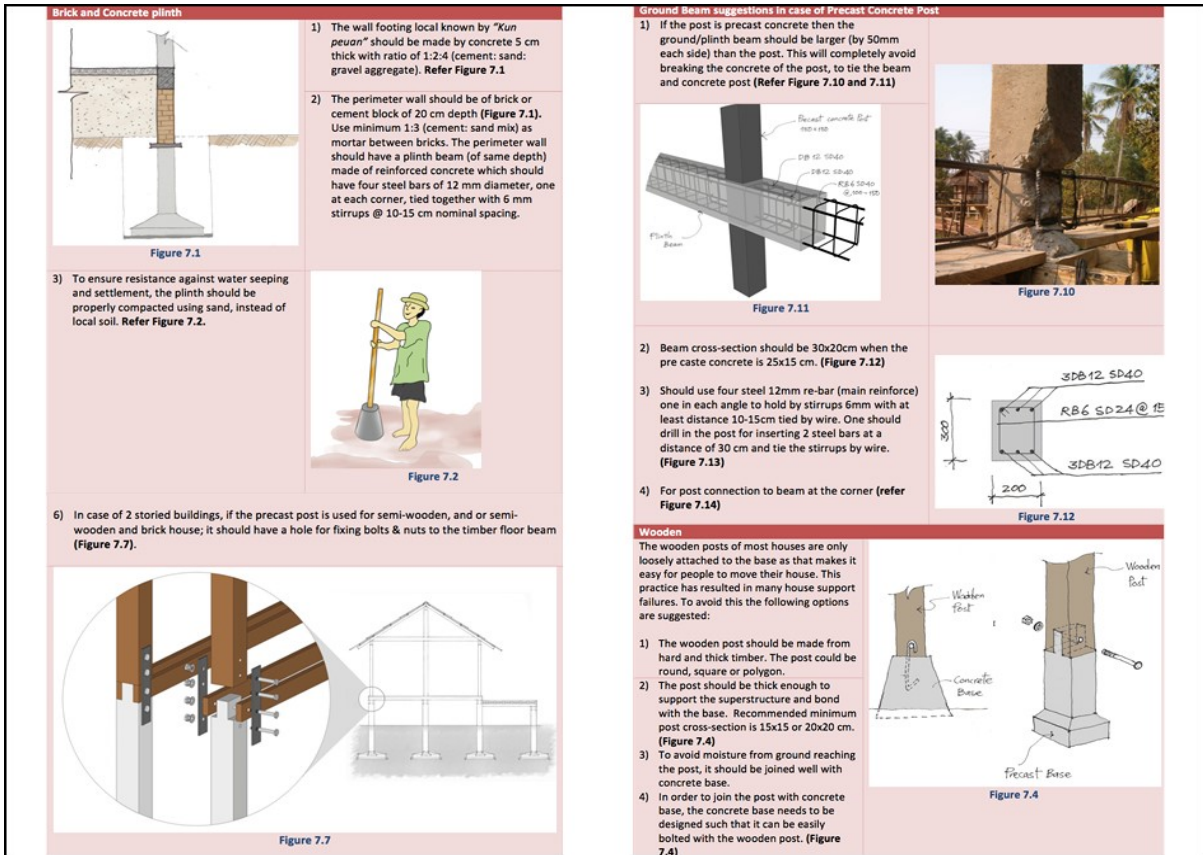


Figure 12. Information on safer construction. From *Guidelines on Housing Construction in Disaster Prone Areas (2014)*.

Laos, highlighting its importance and introducing the governmental management of disaster risk reduction. Part II deals with more practical matters on how to conduct disaster risk reduction, explaining the process in eight key stages (Figure 10). It begins with the question of selecting the project site providing suggested criteria, and explains how to identify the potential problems of a site and how to find appropriate solutions with the help of the community. In parallel, the administrative procedure of making contact with the Lao government for applications and approval is detailed.

Another example from Bangladesh, *Handbook on Design and Construction of Housing for Flood-Prone Rural Areas of Bangladesh* was published by the Asian Disaster Preparedness Center (ADPC) in 2005 in collaboration with government and aid agencies.⁴⁶ This handbook categorises local houses in three groups based on structure and building materials. It introduces not only how to use construction materials appropriately, but how to construct the plinths, posts, walls and roofs of each housing typology. In addition, it details mixing proportions for concrete, calculations for slab depth, wall width, post dimensions, as well as details of structural joints (Figure 11). Similarly, Laos has *Guidelines on Housing Construction in Disaster Prone Areas* published in 2014 by the same organisation, ADPC, which produced the guidelines for Bangladesh. The outline, contents and aims of these guidelines closely resemble one another (Figure 12). But these guidelines only take into consideration the context for which they were produced. Both of these however introduce adequate building methods – utilising local materials such as bamboo, timber, or brick – for withstanding disasters. As these guidelines focus on the specific context of a country, they cannot be used in any context, but can possibly be implemented in a region with similar conditions.

However, there are some shortcomings in these local guidelines. In terms of *Community-Based Disaster Risk Reduction Manual in Laos* (2016), it focuses overly on a generic process for launching and undertaking the construction project. It also explains the structure of the Lao government mandated to arrange and manage disaster response programmes. However, considerations of the local communities in Laos are absent from the manual, and it only suggests that a project team needs to identify problems and its solutions with community participation, without communicating the means to achieve this. Additionally, it does not go into depth regarding how to draft a feasible plan. For this reason, a second edition of the manual has been developed – acknowledging that the initial draft was insufficient – by a consortium consisting of Save the Children Laos, OXFAM, Red Cross societies, CARE and the Lao government.

In the case of *Handbook on Design and Construction of Housing for Flood-Prone Rural Areas of Bangladesh* (2005), and *Guidelines on Housing Construction in Disaster Prone Areas* (2014), they are more accessible to field practitioners and rural communities as they consider a specific context and local building techniques and materials. However, these documents are still limited practically and technically through their lack of information about construction and housing design – making external assistance inevitable. They also have difficulty conveying information to their main target group: rural

⁴⁶ ADPC, *Handbook on Design and Construction of Housing for Flood-prone Rural Areas of Bangladesh* (ADPC, 2005).

Publisher	Guideline	Target area	Aim
UNDRO	Shelter after Disaster (1982)	Developing countries	To assist disaster-prone countries and all assisting groups in solving as effectively as possible the problems of emergency shelter and post-disaster housing through the emergency and reconstruction periods.
UNOCHA & IFRC	Shelter after Disaster: second edition (2015)	Developing countries	To add new insights gained during the intervening years, provides a more updated format and where necessary, and appropriate, gives updated resources and reflects current thinking within the shelter sector.
IOM	Transitional Shelter Guidelines (201)	All over the world	To support the process of transitional shelter as part of a single coordinated strategy, plan, or policy for shelter and reconstruction for a response.
IFRC	Owner-Driven Housing Reconstruction Guidelines (2010)	All over the world	To contribute to institutionalizing the ODHR approach, in order for programme coordinators and field delegates to support participatory planning and decision-making, including the steps required to ensure quality control, appropriate technical supervision and financial management.
IFRC	Shelter Safety Handbook (2011)	All over the world	To provide guidance on choices regarding settlement planning in risky environments, as well as on the building techniques to improve individual shelters.
CCCM	Collective Centre Guidelines (2010)	All over the world	To provide practical advice on how best to coordinate and manage 'Collective Centres' and uphold the rights of displaced persons.
Mozambican Red Cross	Community Shelter Guidelines (2013)	Mozambique	To deal specifically with the use of accommodation centres in pre-existing infrastructures, generally called 'temporary shelters'.
French Red Cross & ADPC	Community-Based Disaster Risk Reduction (CBDRR) Manual in Lao PDR (2016)	Laos	To provide guidance on CBDRR and support for systematic implementation of CBDRR programmes by explaining each of the steps as well as tools used.
ADPC	Handbook on Design and Construction of Housing for Flood-prone Rural Areas of Bangladesh (2005)	Bangladesh	To support new housing projects, post-disaster reconstruction and rehabilitation projects or projects on housing strengthening/retrofitting.
ADPC	Guidelines on Housing Construction in Disaster Prone Areas (2014)	Laos	To enhance knowledge of construction practitioners to make rural housing in Laos resilient to disaster and climate change impacts.
Live & Learn Environmental Education	Discovering Healthy Living: participatory hygiene and sanitation transformation (PHAST) (2011)	Pacific regions	To improve sanitation and hygiene practices and reduce conditions such as diarrhoea.

Figure 13. A list of the guidelines discussed in Chapter 1, illustrated by Soon Min Hong.

dwellers. It is necessary to consider how to disseminate related information in an efficient way in effected communities.

Meanwhile, there are also handbooks – which are understood as documents which hold information on a particular subject.⁴⁷ They contain summaries on how to implement the subject-related activities they cover. This is likely to be used in the field to deliver useful information to rural populations, as it details processes and methods with illustrations. For example, Live & Learn Environmental Education published *Discovering Healthy Living* in 2011 to enhance sanitation and hygiene conditions in Pacific

⁴⁷ Oxford Dictionaries, <https://en.oxforddictionaries.com/definition/handbook>.

communities.⁴⁸ This handbook is a tool for project managers to provide training or workshops about hygiene matters and related good practice. There is potential for local communities to use this handbook themselves as well.

These local guidelines are generally of more practical use for the implementation of construction projects. The specificity of the cultural, societal and climatic conditions of a region enables experts and aid workers to understand the local context and conduct the activities better. Furthermore, it encourages community participation across the whole process, because these guidelines can be used directly to convey information to local populations. Such community involvement enables the local populations not only to have more responsibilities during construction, but to learn and share theoretical and practical knowledge of shelter design and construction, consequently empowering the community. As many experts warn that unilateral assistance from aid agencies can adversely affect the disaster resilience of rural communities, and increase their aid dependence, this then contributes to improving community capacity to prepare for and withstand disaster risks by themselves.⁴⁹ Hence, the role of community participation should be explained in all guidelines for shelter and housing construction. However, many existing guidelines just recommend the involvement of local people in each phase of the shelter construction project without a detailed plan of how to conduct this. Thus, guidelines should advise on the timing, arrangement and need for community meetings; agendas for each meeting; and how local people can participate in the planning, designing and building of shelters.

1.4 Deficiencies of current guidelines

As stated, the present guidelines have a wide range of content, covering not only, broadly, the management of the shelter sector, but also, simply, the practical information relating to it.⁵⁰ (Figure 13) The guidelines – developed by larger international aid agencies – tend to deal with various considerations from shelter project planning and technical assistance, through financial support to participatory monitoring and evaluation. But these guidelines are neither read nor utilised within the practical field of shelter provision due to the given information being not detailed enough. Whereas less complicated guidelines lack practical information on the project implementation, making them difficult to implement.

Ian Davis advises the development of local guidelines and stresses that they should take into consideration the circumstances of target nations or regions, such as prevailing disaster risks, climatic conditions and the current state of architectural practices — e.g. traditional construction techniques and general construction processes.⁵¹ In this sense, Ajinder Walia argues that the existing guidelines are not easily comprehended by field practitioners and local populations in order to apply them to

⁴⁸ Live & Learn Environmental Education, *Discovering Healthy Living: Participatory Hygiene and Sanitation Transformation (PHAST) in Pacific communities* (Live & Learn Environmental Education, 2011) retrieved from <http://www.livelearn.org/resources/discovering-healthy-living-flipchart>.

⁴⁹ Charlesworth, p. 125.

⁵⁰ Twigg, pp. 30–32.

⁵¹ Davis, Thomson, and Krimgold. ed, p. 177.

3. Multi-Hazard, Vulnerability and Capacity Assessment

3.1 Multi-Hazard occurring in the village

- Multi-hazards occurring in the village include:
- Multi-hazard maps:
- Hazards prioritization:

No.	Type of Hazards	Causes
1		
2		
3		
4		
5		
6		

3.2 Damage & Loss Assessment

1) Impacts of Flood

Year	No. of Loss & Damage											
	People			Livestock		Houses		Schools		Temple		
	Affected	Lose of live	Missing	Death	Missing	Partially	Totally	Partially	Totally	Partially	Totally	

Years	Rice field (Ha)	Farm (ha)	Other	Remarks

2) Impacts of Drought

Years	Rice Field (ha)	Farm (ha)	Livestock		Remarks
			Death	Death	

3) Impacts of Storm/Typhoon

Year	No. of Loss & Damage											
	People			Livestock		Houses		Schools		Temple		
	Affected	Lose of live	Missing	Death	Missing	Partially	Totally	Partially	Totally	Partially	Totally	

4) Impacts of Landslide

Year	No. of Loss & Damage											
	People			Livestock		Houses		Schools		Temple		
	Affected	Lose of live	Missing	Death	Missing	Partially	Totally	Partially	Totally	Partially	Totally	

5) Impacts of Human and Animal Outbreak

Years	People		Livestock
	Affected	Death	

3.3 Vulnerability Assessment

1) Vulnerability of the village:

Element at risk	Causes

2) Impacts of Flood

No.	Vulnerable Groups	Total
1	Women	
2	Elderly people (> 60years old)	
3	Pregnant	
4	Breast feeding	
5	Children < 8 years old	
6	Poorest	
7	Women household leading	
8	PWD	Deaf/ Dumb Blind Mental disorder Disabled
9	Illness	
10	Windowed	
11	Others	

3) List of Vulnerable People

No.	Name & Surname	Age	House No.	Tel	Remarks

3.4 Capacity Assessment

1) Village Assets:

No.	Vulnerable Groups	No.		Remarks
		Yes/No	Needs	
1	Schools			
2	Village Club/Office			
3	Temple			
4	Electricity station			
5	Tel. station			
6	Exist			
7	Shops			
8	Post Office			
9	Police station			
10	Health center			
11	TV			
12	Radio			
13	Connected roads			
14	National road			
15	Livestock areas			
16	Pumps			
17	Gasoline stations			
18	Tents			
	Others			

2) Vehicles

No.	Vehicles	Total	Owners	Tel
1				
2				
3				

Figure 14. Example of assessment form. From *Guidelines on Housing Construction in Disaster Prone Areas* (2014).

real project.⁵² Additionally, while the current guidelines provide forms of needs and damage assessment, and project monitoring and evaluation, a common criticism is that the affected populations should be involved in the implementation projects and therefore better represented in the given forms. (Figure 14) Thus, not only is there no specific means of implementing the plans suggested, but also the guidelines do not expand on how the activities can be achieved with community participation. It is evident then that these emerging issues – a lack of local specificity and practical information, and the importance of community participation – should be considered in all construction guidelines. What is needed therefore is a balanced approach to, based on cooperation with the government, a well-controlled plan of design, construction and management, and active community participation. In this respect, the guidelines discussed above will be further examined.

Local specificity

Ian Davis and David Alexander discuss a successful project of post-disaster reconstruction in their book *Recover From Disaster* (2016).⁵³ The project is located in the Malkondji village in the Maharashtra State, India, and constructed after the Latur earthquake in 1993, indicating the decisive factors for success: paying great consideration to tradition and culture that give rise to thorough and detailed design for the construction of communal spaces – i.e. the presence of community buildings, as well as large areas of trees and vegetation, for example, by providing fruit, medicine, and shade. In this regard, it is evident that guidelines should take into account the importance of local specificity and the role of design and construction practice – based on local circumstances – and should not only contain practical application methods but also convey effectively the given knowledge and information to local people.

Practical knowledge – spatial strategies and its practice

As Nathaniel Corum points out, some architects tend to use these opportunities to experiment with their design proposals, such as the design for prefabricated emergency shelters, which have no regard for a specific context.⁵⁴ He views these proposals as a risk, as the possibility of failure is likely – a failure that communities cannot cope with. For example, Charlesworth sees ‘igloo-style’ temporary shelters and emergency shelter structures as having no regard for local construction technology, having witnessed their failure in Haiti.⁵⁵ The reconstruction project of Malkondji village in India succeeds in this sense, due to the design having local specificity in mind. Strategic design solutions can enable local communities to improve their livelihoods and capacity to prepare for, withstand and recover from disasters.⁵⁶ Similarly, Shigeru Ban states that a universal solution does not exist in humanitarian architecture and that it is essential to develop ways to allow retrofitting of local building technology.⁵⁷ Hence, the guidelines should take into account the fact that this spatial-strategic approach to a specific context holds greater potential for the sustainability of disaster risk reduction – as opposed to solely providing prefabricated shelters.

⁵² Walia, p. 71.

⁵³ Davis and Alexander, pp. 2–17.

⁵⁴ Ibid. p. 9.

⁵⁵ Ibid. p. 9.

⁵⁶ Aquiliho, ed, p. 51.

⁵⁷ Charlesworth, p. 23.

Community participation

Terms, such as ‘community-based’ or ‘community participation’ are overly used in the humanitarian sector, and most guidelines related to humanitarian architecture – e.g. guidelines based upon shelter construction, collective centres, and community shelters – particularly highlight community participation in the entire process of planning and implementing activities. This is because community engagement enables field practitioners to conduct not only a more accurate assessment of the local context, such as the history of disasters within the community, but also of a community’s capacity and responses to withstanding disasters, as well as their needs. Therefore, one conclusion is that guidelines should be aware of not only the significance of the local context, but also the role of spatial strategies and its practice, and of community participation. They should also focus on specific solutions to the problem they choose to address, as when a guideline is too general it is difficult to apply. It is in particular here that architects can contribute to improving the existing guidelines for shelter construction and bring to it their expertise of design, construction, and working directly with clients.

Community participation is vital in identifying the local specificity, through tacit and empirical knowledge, and construction techniques that local populations possess. However, it is challenging to encourage local populations to participate in the project. Markus Miessen argues that there is always a conflict in any form of participation.⁵⁸ Additionally, Twigg claims that it is difficult to manage the participatory process.⁵⁹ Thus, the role of the humanitarian architects is to manage disputes that arise among participant groups and to collect valuable information about disaster responses and their related techniques. Based on the collected information, architects should develop design approaches and practices that are relevant to local communities. Moreover, they should be concerned with conveying information and skills to the communities they work with and within. It is of great importance then that the role of humanitarian architects is incorporated into the process, and that this is reflected in the guidelines. Therefore, new guidelines should take into considerations the said three elements – local specificity, practical knowledge and community participation. In addition, it should be regarded as an integrated tool to guide project managers and local populace in the construction project, rather than just being a general reference document containing unspecific information and knowledge.

⁵⁸ Markus Miessen, *The Nightmare of Participation* (Belgium:Sternberg Press, 2010) p. 53.

⁵⁹ Twigg, p. 117.

CHAPTER TWO
FLOODING IN LAOS

2.1 Flood risk management in Laos

Over the last 15 years, Laos has suffered from the intensity and severity of natural hazards, including floods, droughts and storms. As 85% of the country is part of the Mekong basin catchment area, flooding is the most frequently experienced natural problem. Since 2000, large-scale flooding, as well as small-scale, but recurrent, floods have occurred across the nation, and these events have led to an increasing number of casualties and have compromised flood security and livelihood within rural communities. It is acknowledged that floods cause more serious damage to the economy and populations of developing nations than any other natural hazards, and so it is in Laos.⁶⁰

2.1.1 Flood risk-assessment profile for Laos

The overview of the impact of floods on Laos between 1994 and 2012, as reported in *Lao PDR National Assessment Report on Disaster Risk Reduction (2012)*, notes that there were 1,205 flooding-related events during this period, involving 115 fatalities. Nearly 3.5 million people's lives were affected, 15,456 dwellings destroyed and a further 56,000 houses damaged.⁶¹

During the summer monsoon season of 2013, Laos experienced a series of 5 major storms and these caused flooding in 12 out of 17 provinces – 52 out of 145 districts – affecting a total of 395,000 people.⁶² Some 1,221 villages reported damage to their agricultural land – rice and Lao's staple food crops – it was reported that 50,247 hectares of cultivated agricultural land were lost for the 2013 harvest.⁶³ Unlike in previous years, in 2013, the small-scale flood events individually hit different locations at different points in time. According to some district officers' reports, floods have become more frequent, intense and less predictable.⁶⁴

In response, the Lao PDR today pays more attention to disaster risk reduction and preparedness at the local level, rather than post-disaster reconstruction or relief efforts. According to the National Strategic Plan on Disaster Risk Reduction, disaster preparedness is developed through public participation, and strategies for capacity building and community-based disaster risk reduction are implemented at the local and community levels through active cooperation and partnership with NGOs such as the United Nations and the Red Cross. Moreover, the 7th National Socio-economic Development Plan 2011–2015 explicitly states that reducing the rural population's vulnerabilities to disaster is vital to achieving Laos's national development goals.⁶⁵

⁶⁰ NDMO, p. 29.

⁶¹ *Ibid.*, pp. 30–31.

⁶² WFP, p. 3.

⁶³ *Ibid.*

⁶⁴ *Ibid.*, p. 7.

⁶⁵ NDMO, p. 8.

2.1.2 Flood response

Since the National Disaster Management Office was established in 1997 with support from the United Nations Development Program (UNDP), the government of Laos has set up agencies for disaster management and recovery.⁶⁶ In 1999, the National Disaster Management Committee was formed and it was given a mandate to improve disaster preparedness, emergency responses, post-disaster recovery and relief activities.⁶⁷ In 2011, the National Disaster Prevention and Control Committee replaced it at national level and was expanded in 2013 to cover sub-national levels – i.e. provincial, district and village levels. The new committees' tasks remained the same, but the institutional structure was changed to enable more efficient and ameliorated working.

The committee at the national level is chaired by the vice-prime minister and the Ministry of National Defence. It consists of five vice chairs from different ministries and eight members from representatives of government and international organisations. In terms of sub-national committees, the vice-provincial governor and the vice-district governor are the chairs of the committees at the provincial and district level respectively. Each committees' members include government staff from provincial and district departments and aid agencies' staff, e.g. from the Red Cross.⁶⁸ The Village Disaster Prevention and Control Committee is led by the village head with representatives from the village military, security, youth union, women's union, school and health organisation.⁶⁹ The administrative structure of the Lao government flows vertically down from national to provincial to district and village levels (Figure 15). These committees work with international aid agencies. At the national level, the Inter-Agency Standing Committee is tasked with the coordination of relief activities. There are ten clusters, such as health, food security, shelter and logistics, which work with assistance from UN agencies and Red Cross societies (Figure 16).⁷⁰

In addition to the relief efforts by international organisations, there have been various disaster-related activities that are individually conducted by different international aid agencies – including the United Nations, the Red Cross, Oxfam, Save the Children, and The Asia Foundation. One of the activities is to educate and train the local populace in the awareness of disaster risks and the responses to natural hazards, e.g. first-aid training, evacuation drills and early warning systems. Others are to develop transport and irrigation infrastructure for disaster resilience, e.g. that of advanced irrigation canal systems, dykes, slope stabilization structures and safe road construction. Such activities normally occur first at the provincial and district levels, and are later expanded to several selected villages. This is because, due to the bureaucratic system of and control by the Lao

⁶⁶ *Global Facility for Disaster Reduction and Recovery (GFDRR), Lao PDR, Strengthening institutional capacities for resilient recovery* (GFDRR, 2014), p. 9.

⁶⁷ *Ibid.*, p. 9.

⁶⁸ ADPC (2016), p. 19.

⁶⁹ *Ibid.*, p. 20

⁷⁰ GFDRR, p. 14.

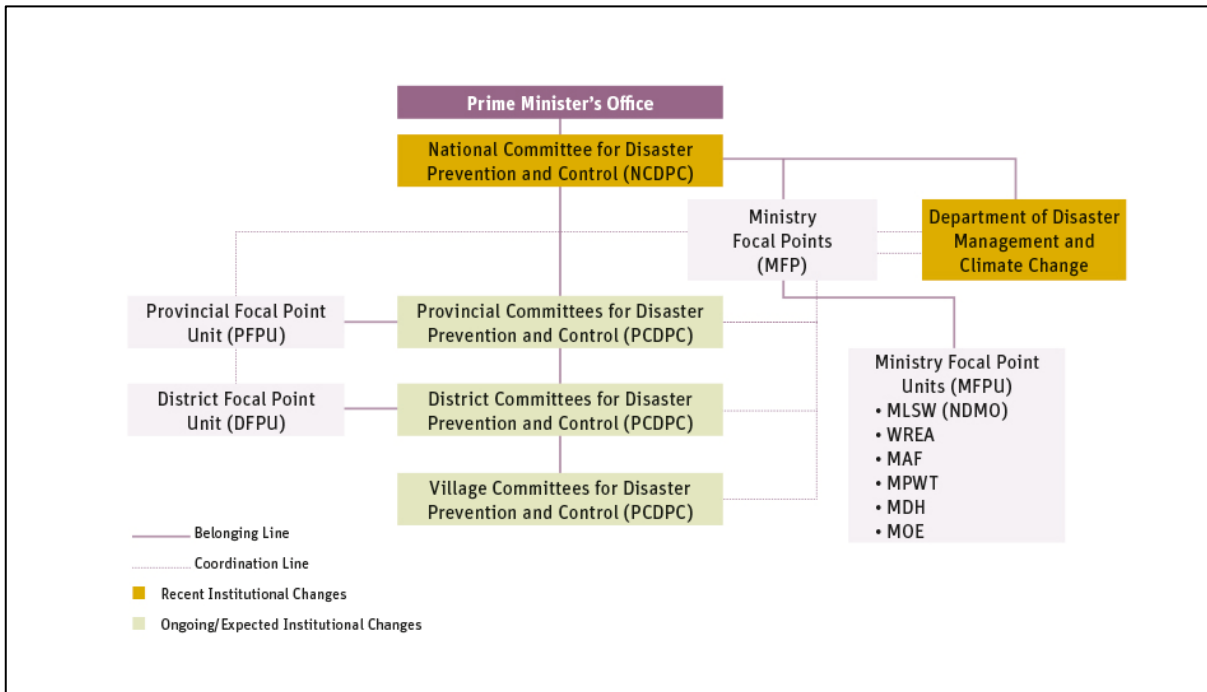


Figure 15. An organisational chart of governmental committees. From *Lao PDR, Strengthening institutional capacities for resilient recovery (2014)*.

Cluster	Cluster Lead Agency	Government Linkage
Health	World Health Organisation	Ministry of Health
Water, sanitation and hygiene	UNICEF	Ministry of Health
Food security	FAO and WFP	Ministry of Agriculture and Forestry Ministry of Labour and Social Welfare
Nutrition	UNICEF	Ministry of Health
Education	UNICEF and Save the Children	Ministry of Education
Shelter	UN Habitat/IFRC	Ministry of Public Works and Transport
Protection	UNICEF and Save the Children	Ministry of Public Works and Transportation
Early Recovery	UNDP	Ministry of Planning and Investment
Logistics	WFP	Ministry of Labour and Social Welfare
Information, communication and technology	WFP	Ministry of Post, Telecommunications and Communications

Figure 16. Ten clusters which international aid agencies cooperate on in Laos. From *Lao PDR, Strengthening institutional capacities for resilient recovery (2014)*.

government, it is impossible for aid agencies to provide these projects directly to every village; therefore, trained committees – at the provincial and district levels – deliver the related information and training to affiliated village committees.

To give an example, a flood contingency plan presently named ‘Contingency Plan, Lao PDR: floods, has been developed for Southern Laos to prepare for emergency responses to disasters.⁷¹ The plan covers the means of emergency responses and the distribution of relief supplies, and suggests a more effective management structure for the collaboration between the Lao government and aid agencies. This plan is essentially targeted at aid agencies – rather than the local populace – in order to structure how they can respond immediately and readily to emergency situations at the national level. However, at the sub-national levels, due to a lack of village contingency plans, the majority of the affected population, who are the first responders to disasters, still improvises its response to annually recurrent flooding. Once the flood alarm has been raised by the Lao government departments – the Social Welfare department (the Ministry of Labour and Social Welfare) and the Hydro-meteorology department (the Ministry of Natural Resource and Environment), rural villages are often evacuated in a disorganised manner and inhabitants tend to take refuge in village temples, schools and neighbours’ houses, where they may have to stay for three or four days until the flooding subsides because of the absence of safe shelters. For this reason, even if relief supplies are provided, these are often not effectively distributed to displaced populations, because no one knows exactly where the population might be. After the floods have subsided, all of the villagers typically work together to recover from the damage – e.g. cleaning the affected houses, sharing foodstuffs and offering housing to displaced families.

2.2 Scope of consideration

2.2.1 Flooding in rural areas of Laos

Types of floods are many. However, according to *At Risk: Natural hazards, people’s vulnerability and disasters*, there are five categories of floods: flash; riverine slow-onset; rainfall water; tropical cyclone and tsunami.⁷² In general, in the case of Laos, flash floods, which may include rainfall water and tropical cyclone floods, and riverine slow-onset floods occur frequently. Apart from long-term heavy precipitation and high-intensive rainfall in the short term, the causes of these events are acknowledged as not only infrastructural problems – e.g. due to inadequate dyke construction, dams

⁷¹ Between 7 and 8 December 2016, there was an Emergency Preparedness Response Workshop in Vientiane, Laos. The workshop was facilitated by the UNOHCA Regional Office for Asia and the Pacific and the Resident Coordinators’ Office. The Lao government and its partners, the members of the Humanitarian Country Team, INGOs, sector-lead agencies, and the Lao Red Cross were invited, and I attended the workshop. This workshop was the second of three or four such events held in order to develop the flood contingency plan for Laos. It focused on the following: refining the planning assumptions and flood scenario; streamlining coordination and management arrangements; understanding basic response tolls and services; and discussing data preparedness and coordinated assessments. The UNOCHA decided to target the Xe (or Se) Bangfai river basin (Southern Laos) based on the information from *Developing a National Risk Profile* (2010). The participatory approach was conducted so that each participant from aid agencies and the Lao government were grouped and discussed how each aid agency could provide relief supplies, and what supplies they could provide – such as foods, latrines, and tents. They were also encouraged to present and share any ideas to improve the current situation of cooperation between the Lao government and the aid agencies in relation to emergency responses. Afterwards, the UNOCHA gathered all information and compiled it as a draft report in order to share it with all participants. As one or two more workshops were planned to be conducted, these participants were also encouraged to attend the further workshops.

⁷² Wisner, Blaikie, Cannon, and Davis, p. 217.

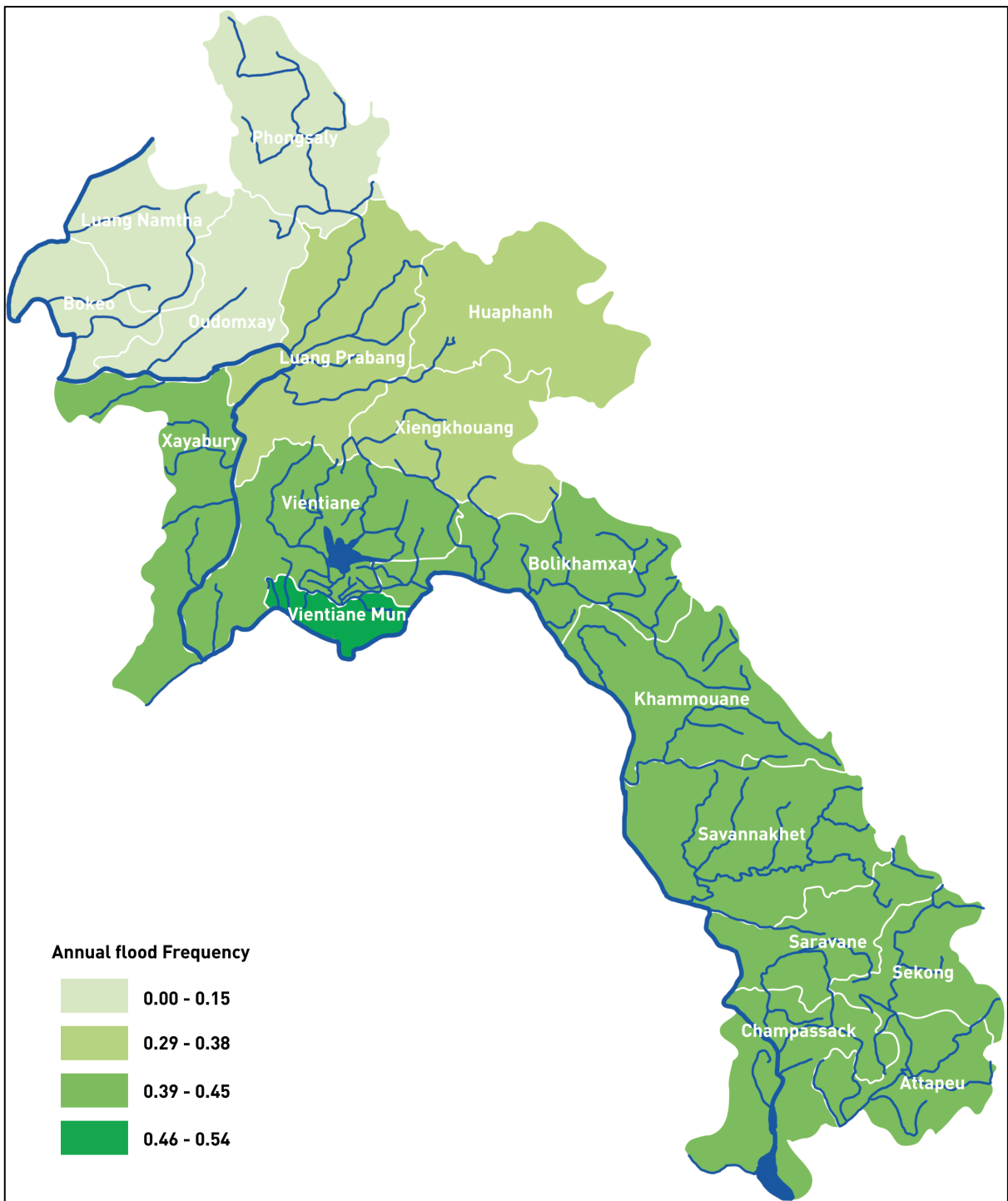


Figure 17. Flood frequency from 1980 to 2014, illustrated by Soon Min Hong.



Figure 18.a Examples of housing elements damaged by flooding. From *Guidelines on Housing Construction in Disaster Prone Areas* (2014).

inappropriately performing a role in irrigation systems and a lack of water drainage facilities and equipment – but also insufficient land-use strategies – relating to, or resulting in, deforestation, land degradation, reclamation of wetlands and straightening rivers.⁷³

Laos is, in short, both at risk of ‘flash floods’ that come on suddenly within minutes, and simultaneously ‘normal floods’ (or just ‘floods’) which can happen over several hours. It is reported that flooding occurs more frequently in central and south Laos, as shown in Figure 17.⁷⁴ Such floods have had a damaging impact on rural homes, and occasionally, houses may collapse. (Figure 18.a and 18.b) In this context, the Lao government and the aid agencies focus more attention and efforts on disaster response frameworks and schemes.

The flood contingency plan, currently named ‘Contingency Plan, Lao PDR: floods’, referred to in a previous section (**2.1.2 Flood response**), is drafted based on a large-scale flood occurring particularly in the Xe (or Se) Bangfai river basin of the Khamuane Province in Southern Laos.⁷⁵ The basis of this

⁷³ NDMO, p. 13

⁷⁴ UNESCO, *Climate Change Vulnerability Mapping for Greater Mekong Sub-region*, (UNESCO Bangkok Asia and Pacific Regional Bureau for Education, 2015). pp. 18-19.

⁷⁵ This contingency plan for Laos has been developed with a particular focus on flooding scenarios, and the tentative name of this plan seems to be a ‘Contingency Plan, Lao PDR: floods’ (on the basis of this text appearing on its front page) according to the draft following the Emergency Preparedness Response Workshop in Vientiane in December 2016.



Figure 18.b Examples of a house collapsed by flooding. Photo by Soon Min Hong.

plan is *Developing a National Risk Profile of Lao PDR* (2010), which reports that the area is one of the most vulnerable regions to natural hazards, especially flooding.⁷⁶ Although this contingency plan focuses on a flood scenario, it has been developed to be applicable to other disaster situations. It provides a framework for the government and major aid organisations to react immediately and efficiently to large-scale floods and other disaster events that might damage significant areas. However, Laos has recently suffered smaller-scale individual floods sporadically across the country and such floods are recurrent. In this respect, in fact, most parts of Laos are vulnerable to flood risks, with the exception of some mountainous regions, as well as selected districts (Figure 19.a and 19.b) in which aid agencies have worked on disaster preparedness and risk reduction.

Even though such small- and medium-scale disasters can inflict serious damage on rural villages – as much as large-scale disasters over the same period – the governments and international aid groups rarely pay attention to them according to Red de Estudios Sociales en Prevención de Desastres en América Latina (LA RED, Network of Social Studies in the Prevention of Disasters in Latin America).⁷⁷ It is therefore time to take into consideration the damage and impact all scales of disasters have on local populations. It is necessary for the Lao government and international aid agencies to pay more attention to continual damage – by small-scale floods, including flash floods and slow-onset floods – to rural villages, as this leads to a sustained destruction of livestock, crops, homes and tools.

2.2.2 Building safety

According to John Twigg, disasters are a complex mix of natural hazards and human actions.⁷⁸ As regards human actions, the impact of the disaster can be heavily influenced by the community's vulnerability to a hazard; this vulnerability is not a natural, but rather a human dimension of disasters. In other words, disasters should be understood in relation to natural events alongside the product of social, political and economic environments. As an example, poor groups have no choice but to live in flood-prone areas due to their comparatively cheaper rent and costs, and are thereby more vulnerable to flood events than those who live in safe places.⁷⁹ Similarly, Shigeru Ban states that people are not affected by natural hazards per se, but through the destruction of buildings.⁸⁰ Therefore, it is clear that improvements to the safety of buildings and their construction would reduce disaster risks and affects on populations, along with strengthening the disaster response capacity of the rural population through training.

⁷⁶ Asian Disaster Preparedness Center (ADPC), *Developing a National Risk Profile of Lao PDR*, (ADPC, 2010), pp. 47–59.

⁷⁷ Wisner, Blaikie, Cannon and Davis, pp 218–220. On 19 February, 2002, an intense rain and hail storm at the rate of 41 mm/h occurred in Bolivia. It lasted only 45 minutes, but 63 people were killed by flash floods caused by the rain and storm, and another 13 went missing. In addition, 146 people were injured and the number of the displaced was 5,000. 126 dwellings and 32 schools were damaged and 28 homes were destroyed. What is worse, after a week, there were other floods in Bolivia and 1,300 families were affected. On 5 March, 2002, flooding hit a suburb of Bolivia, and 100 families were affected and 225 people were displaced. Thus, a series of small-scale disasters can have the same long-term impact as a large-scale disaster.

⁷⁸ Twigg, p. 2

⁷⁹ Ibid, pp. 2-3.

⁸⁰ Shigeru Ban stated in a TEDxTokyo talk: 'I was very disappointed that we are not working for society, even though there are so many people who lost their houses by natural disasters. But I must say they are no longer natural disasters. For example, earthquakes never kill people, but collapse of the buildings kill people. That's the responsibility of architects.' Accessed https://www.ted.com/talks/shigeru_ban_emergency_shelters_made_from_paper (12 July 2017)

International aid agency	Project	Target area	
		Province	District
French Red Cross	Community Based Disaster Preparedness & Community Based Disaster Risk Reduction & Emergency and recovery operations	Attapeu	Phouvong Sanamxay Sanxay
		Bolikhamxay	Pakkading Pakxanh
		Khammouane	Hinboon Xebangfay Mahaxay Nongbok Bualapha
		Vientiane	Kasy Thoulakhom
		Savannakhet	Xaybuly
Save the Children International Laos	District Risk Education for Children & Establishing Disaster Information Systems & Xayabury Integrated Hazard Mitigation Project	Xayabury	Xayabury Xienghone
Health Poverty Action	Community Based Disaster Management & Provision of Emergency Humanitarian Aid	Attapeu	Phouvong Samakkhixay Sanxay
		Bolikhamxay	Bolikhanh Pakkading Pakxanh Thaphabath
		Khammouane	Mahaxay Nongbok Nhommalath
Oxfam	Several projects in relation to Disaster Preparedness	Vientiane	Feuang Kasy Met
Caritas Luxembourg	Community Disaster Risk Reduction and Management Phase I & From Vulnerability to Resilience & Strengthening Livelihood Systems Project	Xiengkhouang	Morkmay Thamthom
Lutheran World Federation	Rights Based Empowerment Project	Luang Namtha	Nalae Viengphoukha
Triangle Generation Humanitaire	Assistance to rural vulnerable populations affected by Haima	Khammouane	Hinboon

Figure 19.a. A table showing what aid agencies have worked on, and where, concerning disaster risk reduction, illustrated by Soon Min Hong.

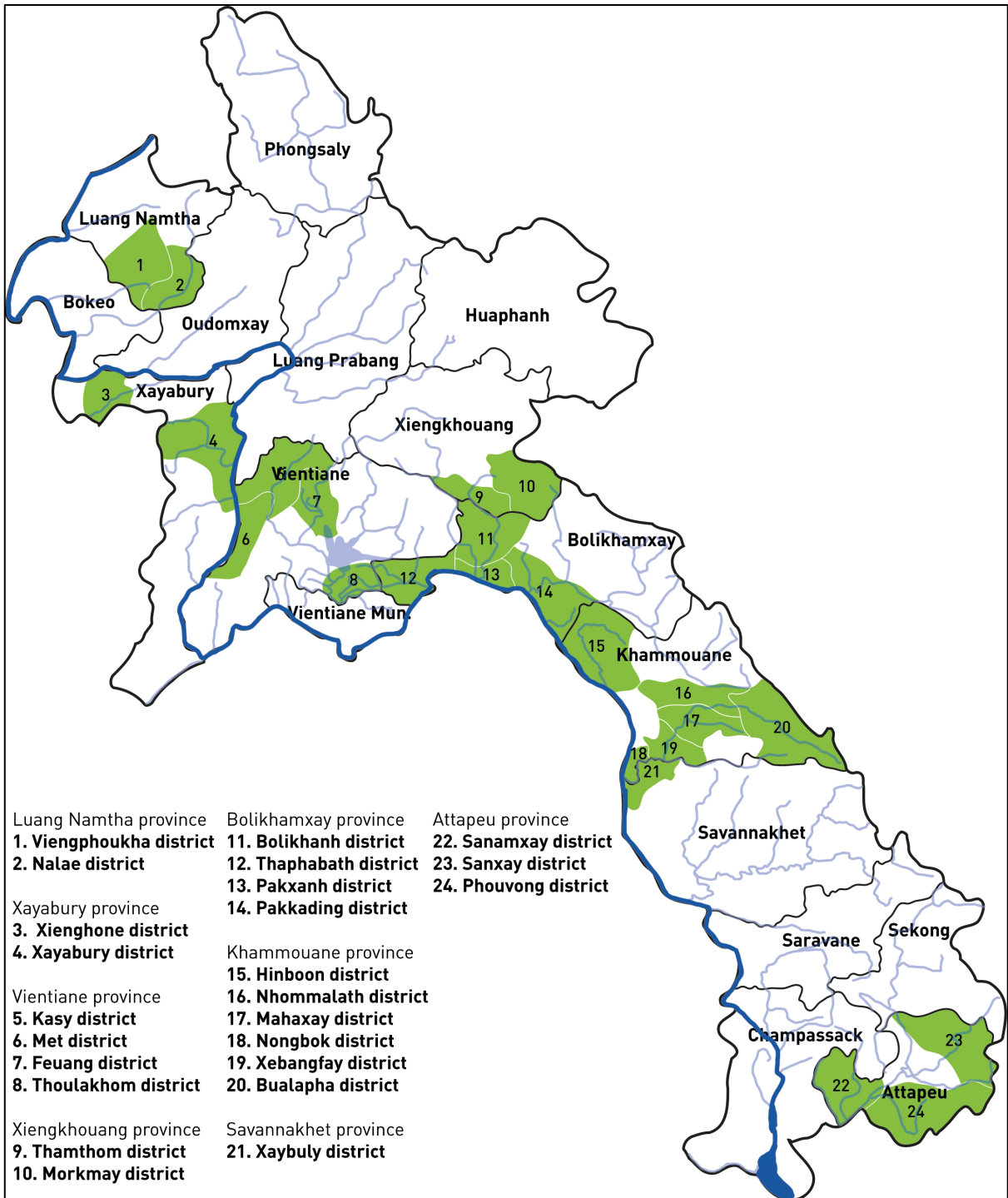


Figure 19.b. Provinces where aid agencies have worked on disaster risk reduction, illustrated by Soon Min Hong.

In the case of Laos, private housing and buildings in rural areas are broadly divided into two categories according to construction techniques and materials used. One is a permanent house made of wood, brick and concrete, and the other a temporary house made of bamboo, plywood and thatch. In rural areas, 86.8% of these types of homes are commonly constructed by unskilled builders, such as house owners, their kin, neighbours or artisans, and are thereby vulnerable to natural hazards due to poor construction.⁸¹ This is the main cause of the collapse of homes in local villages. The buildings are more easily damaged by flooding, which can cause cracking or even collapse of columns, walls, floors and roofs. Given the fact that the displaced populations often evacuate to neighbours' houses, in addition to village temples and schools, they are still exposed to potential risk, which are not a negligible hazard.

Additionally, the rehabilitation of damaged houses requires a great deal of money, time and effort – more than the prevention of damage to buildings – thus, it is more cost efficient to invest in disaster preparedness. However, compared to the high level of flood response training provided by international aid agencies in Laos, significantly less attention is paid to the risk or damage caused by the built environment. A better approach is that established by the Development Workshop France.⁸² This organisation has developed generic principles of disaster-resistant safe construction for Vietnam – instead of focusing on a specific building technology that is limited in terms of being used only for a building of a particular type, their principles of safe construction can be applied to all types of building in Vietnam. They also provide training in safer construction for local builders and community leaders. Likewise, Laos needs to pay more attention to the importance of higher-quality construction and the training of local populations in safe construction, in addition to existing disaster risk management training.

2.2.3 Flood shelters

The local population displaced by flooding are also commonly evacuated to relatively higher land within their village, e.g. upslopes or hills. In most cases, only partial areas of the village are recurrently impacted by flooding, not the whole village. This allows non-affected households to host displaced families in their homes and to support them, financially and physically by helping in cleaning and repairing affected buildings. However, some of those who shelter in the higher lying open fields are inevitably exposed to climatic conditions and have to stay in places, for several days until the waters subside, without suitable protection from cold, heat, wind and rain, and without privacy. Both the central Lao government and local communities state in meetings that they recognise the need for safe shelters, especially in rural villages.⁸³

In terms of the village temple and school, both are cultural and social centres normally placed in one of the safest areas from flood risks. They are therefore especially suitable for providing the physical

⁸¹ ADPC (2014), p. 17.

⁸² Aquilino, ed, pp. 253–63.

⁸³ Two community meetings were conducted on 11 March 2017 and on 1 February 2018 in the village of Mout in the Xieng Ngeun District of the Luang Prabang Province. In addition, there were two meetings with the Lao government authorities on 28 February 2017 and 31 January 2018. The participants from the government and the village mentioned in these meetings that they need safe shelters in local villages.

space and the emotional security for those who have to evacuate from flooding. According to an interview in Laos with Xayaphone Vongvilay, Chanthavong Moua, and Champa Lattanasouvannaphonh in November 2017 at the Soupanouvong University, as the Buddhist village temple is a sacred place, the sanctuary should be located in the highest land as a form of respect and reverence.⁸⁴ Moreover, regardless of their low- or high-construction quality, the majority of village schools are established in a location that is not flooded. While it is difficult to ascertain any clear reason for this, two reasonable explanations are given by interviewees. First, before the establishment of the village school, the village temple used to function as an educational facility; thereby, the principle – of the temple located in the higher land – is also applied to the location of the village school. Second, the village school as a communal property is built on higher ground and outskirts of the village because such areas are relatively low in price due to their relative inaccessibility. For these reasons, both the village temple and school are at low risk of flooding and offer safe places to villagers. There are still deficiencies in their functioning as safe shelters, however.

While both of these places may have the only sufficient space – indoor and outdoor – to accommodate displaced villagers, they do not offer the necessary equipment and facilities – e.g. general relief supplies and sanitary facilities. There is also a lack of an operational and management scheme for disaster situations and they therefore do not function well as safe shelters, simply providing enough space for the displaced villagers. Similarly while people tend to behave very carefully and respectfully in the temple when seeking shelter in the sanctuary, in the school some of the displaced villagers do not treat the facilities well. Khampeng Chithavone, the director of a secondary school in the village of Mout states in the interview that in one such incident, some villagers broke into the classrooms.⁸⁵ Not only were doors and windows damaged, but desks and chairs were mishandled and tossed about the room. Furthermore, as there is no strategic or contingency plan in place to manage evacuation during school term time, formal schooling is hindered. The buildings are therefore not able to cope with these two very different functions – schooling on a daily basis and safe shelter in times of emergency – at the same time. Although the *School Construction Guidelines* (2009), published in Laos, does assert that a school can be used as a safe shelter in the event of an emergency, in order to implement this as part of the local flood response, a better and more comprehensive operational plan, as well as a spatial strategy for a school used as a shelter, is necessary.⁸⁶

⁸⁴ The interview was conducted on 22 November 2017 with three teaching professionals, in the Soupanouvong University: Dr Xayaphone Vongvilay, Vice Dean of Academic Affairs in the Faculty of Architecture; Mr Chanthavong Moua, Head of Academic Affairs Office in the Faculty of Architecture; Mr Champa Lattanasouvannaphonh, former Head of Department of Tourism Management Department, Faculty of Economics–Tourism.

⁸⁵ On 22 November 2017, the interview was conducted with Ms Khampeng Chithavone who is a director of secondary school in the village of Mout in the Xieng Ngeun District of the Luang Prabang Province.

⁸⁶ Division of Design and Construction Management (ECDM), *School Construction Guidelines*, (Laos, 2009).



Figure 20.a. Community hall in the village of Phon Say, Xieng Ngeun district, Luang Prabang province, Laos. Photo by Soon Min Hong.



Figure 20.b. Community hall in the village of Mout, Xieng Ngeun district, Luang Prabang province, Laos. Photo by Soon Min Hong.



Figure 21. Example of a typical school building. Photo by Soon Min Hong.

2.3 Spatial strategy to flood responses at the village level

The direct and straightforward solution to a lack of safe shelters in Laos is to provide new shelters for each village in rural areas. However, due to the low capacity of the Lao government and the present agencies' focus on disaster risk reduction through workshops and training, it is currently unlikely that a safe shelter will be provided for each rural village. In general, every village has a community hall. (Figure 20.a and 20.b). If that is a permanent building and located in a non-flood-prone area, it can be used as a temporary shelter. Compared with a village school, the community hall is much smaller. There is an obvious limit to the number of people who can be housed; it is, thereby, insufficient for a safe shelter for the entire village. In the case of a village temple, as was mentioned in a community meeting organised in March 2017 in the village of Mout as part of this research, most villagers have a cultural reluctance to use the village temple as a safe shelter due to their religious beliefs and practice that the sanctuary is only a place for Buddhist activities.⁸⁷ Hence, the best solution to the provision of shelter is the village school, if it is planned to function as a shelter as well.

For this to work, the village school requires a better construction quality, above the current norm. As when a building is damaged or collapses, this will give rise to further casualties.⁸⁸ Spatially, the village school needs not only to conform to the standards required for a safe shelter, but also those of a teaching facility. At present, almost all schools, particularly in non-urban areas, follow the same design (Figure 21) – which is a one-storey building, with 3 to 6 classrooms arranged in a row and a single-

⁸⁷ On 11 March 2017, the community meeting was conducted in the village of Mout in the Xieng Ngeun District of the Luang Prabang Province. Flood-affected villagers were participated in the meeting, and discuss their preference for which area is good for the shelter construction. They would prefer not to use the village temple as a safe shelter.

⁸⁸ Twigg, p. 160.

loaded corridor that is open and accessible to the school grounds.⁸⁹ In order for the school to function better as a safe shelter, it has to meet basic human standards and there must be a spatial design standard that can meet both the provision of education and sheltering.

At the same time, a flood risk profile and flood risk mapping at village level is needed, as is the long-term participation of the community; and the frequently flood-affected areas, as well as the safer zones within the village need to be identified. A list of emergency response activities also must be drafted, and they should be prioritised in accordance with the village capacity and context. After the flood event, the commitments and responsibilities that have been identified should be assigned to members of the village committees. It is also necessary that evacuation drills and the allocation of shelter at the school take place prior to disasters. Thus, this strategy necessitates the implementation of a village disaster contingency plan in rural Laos.

In conclusion, it is evident that an integrated strategy will not only frame a plan of flood response at village levels, but must consider how to retrofit current schools or design new ones to function better as a community shelter. In addition, it is critical to improve the quality of school construction to make them into sound shelters and guarantee their long-term functioning. Once this integrated spatial strategy is incorporated into the school design guidelines dealing with the related standards and principles, it will enable much improved shelter construction in rural villages. This can then form a more strategic and general disaster response programme, as the guidelines can apply to a number of local villages in Laos. Thus, the new guidelines should address how to form a flood response strategy at village level, including instructions on evacuation to the shelter, as well as how to build structures of adequate quality, rather than relying on existing school prototypes.

⁸⁹ On 6 of March and 24 November 2017, interviews were conducted in Vientiane, Laos, with Thippamonh Chanthalangsy, Head of Education Construction Design Management, Ministry of Education. He is a Lao architect and also one of authors of *School Construction Guidelines* for Laos published in 2009.

CHAPTER THREE
VILLAGE SCHOOLS AS
COMMUNITY SHELTERS

CHAPTER THREE

Village Schools as Community Shelters

3.1 Construction policy and its context in Laos

Standard procedures must be followed in order to construct a building – the application for and granting of a building permit being among the most important. As in many countries, in Laos the granting of a construction permit falls broadly into two stages. First, a set of drawings and building specifications needs to be submitted to the Ministry of Public Works and Transport by an architectural firm. If successful, then a building permit is granted. This process, however, is only legally recognised in urban areas. As Sithixay Insisiengmay from the National University of Laos states in an interview conducted in 2017, there is no particular policy on housing construction in rural areas.⁹⁰ If some of the villagers need to build a new house or upgrade an existing one, the works can be undertaken without permission. Normally undertaken between November – after harvest time – and April – before Lao New Year (Pi Mai Lao), the construction of such houses is led by village artisans who assist the local populations.

In terms of school construction, the Ministry of Education is involved in determining whether proposed school designs meet the standards of the *National School Construction Guidelines*.⁹¹ There are, in general, three types of school construction projects in non-urban areas of Laos. The first is when a community erects a village school in response to its local own needs. Depending on the size and means of the village, the school building can be a temporary structure made from bamboo, bamboo mat or timber, or a permanent one using modern materials, for example, concrete and brick. The second type involves a school building project funded by domestic institutions or organisations. This type is neither launched officially nor supported financially by the Lao government. For this reason, the budget may be only be enough to build a temporary school type, and thereby there is no guarantee that the school will be a permanent structure.

The third kind is a school construction project officially approved and led by government authorities; this can be divided into two further categories. In the first, local communities, instead of taking on the building themselves, report the demand for such a structure to the district government office and the request reaches the national government via the provincial office. Afterwards, the government prioritises demands from different villages in order to provide school buildings to the village that needs it most. The second method is via external donors, such as aid agencies like Save the Children, which run the project in cooperation with the Lao government authorities. The location is decided after both parties agree on the target area. In fact this thesis is aligned with one such live

⁹⁰ Interview with Sithixay Insisiengmay, the Head of Research Section in the Faculty of Architecture, the National University of Laos, 24 November 2017. He was a contributor to the *Guidelines on Housing Construction in Disaster Prone Areas* (2014).

⁹¹ Division of Design and Construction Management (ECDM), *National School Construction Guidelines of Lao PDR*, (2009).



Figure 22. Village of Mout, Xieng Ngeun district, Luang Prabang province, Laos, illustrated by Soon Min Hong.

project in collaboration with the Luminous Action Organization.⁹² The aim of this live project is to design and build a community shelter in Ban Mout, a village in the Xieng Ngeun district of the Luang Prabang province, between November 2018 and March 2019. (Figure 22). The villagers have reached a consensus on the project site – to use one of the old primary school buildings as the construction site – and while the primary function of the building is that of a school, in emergency situations it will also function as a purpose-built safe shelter.

As briefly discussed previously, the majority of schools are of the same design. As Thippammonh Chanthalangsy asserts, this is largely due to budget constraints, which leads architects to modify only marginally a prototypical school design. These minor design modifications may involve reducing the number of columns for the long eaves, which helps reduce the construction cost, or lengthening the eaves for more shading. (Figure 23.a and 23.b) There are other acceptable design alternatives that help achieve the minimum standards for school design, but architects and architectural firms are often reluctant to challenge designs on account of potential implications on their low budgets. Thus, the current guidelines for school design and construction are necessarily explored in order to address this issue – and in particular the shortcoming that Laos’s suggested school design is still built throughout rural areas without regard to local context.

3.2 Schools functioning as safe shelters

3.2.1 Existing guidelines for safe school construction

High-quality construction allows buildings to withstand natural hazards, and this is one of the fundamental requirements for buildings to perform as a safe shelter. Bishnu Pandey reports that, in 2005, around 128 students were killed following an earthquake in Pakistan, after two schools collapsed in villages near Muzaffarabad.⁹³ Technically speaking, this tragic event was the result of inadequately built schools of low construction quality. Each time disasters occur, awareness of and the necessity for safe school buildings and their construction increases. There have been a number of related activities, such as promoting safer school construction and retrofitting old school buildings, conducted by international organisations such as Save the Children, Inter-Agency Network for Education in Emergencies and Global Facility of Disaster Reduction and Recovery. Safer school buildings are understood to mean those designed and constructed to withstand expected natural hazards and protect students and the displaced during the occurrence of such events.⁹⁴ As in the case of shelter construction, the guidelines for safe school construction have developed to stress both the importance of an adequate quality of school construction and its better implementation.

⁹² The live project is funded by Luminous Action Organization (LAON), which is a South Korea-based international non-governmental organization, with a budget of approximately US \$45,000. This project is one of the activities of community-based disaster risk reduction in partnership with The Asia Foundation, which is a non-profit international development organization based in the United States. The Memorandum of Understanding (MoU) was officially signed between the Lao government and these two organizations on 31 January 2018. See KPL News Agency: <http://kpl.gov.la/en/detail.aspx?id=31516>.

⁹³ Global Alliance for Disaster Risk Reduction in the Education Sector (GADRRES), *Safer School Construction: an overview*, n.d. <<http://saferschoolconstruction.com/videos/>> [3 March 2018]

⁹⁴ Rebekah Paci-Green, Bishnu Pandey and Julian Theberge, *Towards Safer School Construction: A community-based approach* (GADRRES, 2015), p. iv.



Figure 23.a. Examples of modified school design, provided by Thippamonh Chanthalangsy.



Figure 23.b. A rendering of modified school design, provided by Thippamonh Chanthalangsy.

The *Guidance Notes on Safer School Construction* (2009) deals with this subject matter.⁹⁵ Based on the premise that the improvement of construction is only part of making schools safe from disaster risks, the guide notes provide comprehensive principles to establish institutional infrastructures to implement this scheme as a collaboration between government and non-governmental bodies. Government authorities and professional aid agency staff are especially targeted by this publication, which focuses on the five natural hazards that cause direct damage to school buildings: earthquakes, storms, floods, landslides and wildfires. Accordingly, the book not only highlights the importance of constructing schools using adequate construction methods, but also presents the planning process for assuring that school design and construction can withstand catastrophic natural events. Furthermore, community engagement in the whole process of the project is stressed, so that a context-specific plan can be developed. As a consequence of this, school design and building codes may possibly derive from it and be introduced to target areas. In relation to this, basic design guidelines are presented with regard to the five identified natural hazards. Although the *Guide Notes* does not contain itself practical guidance of construction methods, it does provide numerous related references and links and, thereby, is useful both for understanding the issue of safer school construction and the execution of such projects.

Toward Safer School Construction: A community-based Approach (2015) aims to develop the community-based approach and provides details than *Guidance Notes*.⁹⁶ Through community participation, it proposes to build both more disaster-resilient school buildings and communities. The book regards the process of school construction as an opportunity for local populations involved not only to learn advanced construction techniques, but also to improve their sustainable livelihoods. This engagement enables such communities to enhance their knowledge and capacity to manage and maintain school facilities, and to instil a culture of safety, by themselves. The book categorises the process of school construction project into **five stages**, presenting key activities and the necessary principles for each stage. The stages in sequence are: **mobilisation, planning, design, construction** and **post-construction**. In **mobilisation**, key activities include not only forming school management committees, but also raising awareness of safer school construction – and community-based school construction – as well as conducting a diagnostic analysis of target locations. **Planning** requires assessment and investigation of the construction site, before an implementable plan is drafted. After this stage, local populations are to be involved in the school **design** from the beginning to the end. At the **construction** phase, community members can physically participate in the building process; they may hereby receive training on improved construction methods. After the school's completion, during the **post-construction** stage, a maintenance plan is developed and the school is handed over to the community. Despite a lack of practical information on improved building methods, the book contains some illustrations and examples, which efficiently explain the guiding principles and key activities in the project process. Thus, it is a good guide for architects and project stakeholders to understand the process of a community-involved approach to safer school construction.

⁹⁵ Inter-Agency Network for Education in Emergencies (INEE) and Global Facility for Disaster Reduction and Recovery (GFDRR), *Guidance Notes on Safer School Construction* (The World Bank, 2009).

⁹⁶ Paci-Green, Pandey and Theberge, p. v.

As discussed earlier, Laos has the 2009 *National School Construction Guidelines*, published by the Ministry of Education with the assistance of the Asian Disaster Preparedness Center and the United Nations Development Programme.⁹⁷ In interviews carried out in 2017 with one of the lead authors, Thippamonh Chanthalangsy, he states that these guidelines however provide only basic information on school design and construction as an official standard, and give no practical information on advanced construction techniques.⁹⁸ In terms of school design, the book presents the spatial requirements of indoor facilities – e.g. classrooms, staff rooms, storage and toilets – as well as outdoor facilities – e.g. playgrounds, flagpoles, fences and gates. (Figure 24) It also supplies standards for natural lighting – the minimum ratio of the window area of a classroom is 25% of the floor area – and natural ventilation – to minimise use of cooling and heating devices and the need to provide cross-ventilation. Besides this, the pros and cons of three types of water resources – surface water, groundwater and rainwater are briefly discussed. The basic considerations of sanitation systems, such as the location of septic tanks, are briefly discussed, too. In addition, the reference not only presents the minimal standards for school furniture, but also includes examples of floor plans to suggest layouts for classrooms and the structurally recommended forms of school buildings. (Figure 25)

With regard to the school construction, it deals with building materials and general requirements for school building components, i.e. foundations, structural frames, floors, walls, roofs and openings (doors and windows). Some of the requirements are as follows: the disuse of toxic materials and asbestos; encouraging the use of local materials; discouraging isolated footing without ground beams; the inclusion of a layer of 50 cm thick compacted sand below the ground floor; the sufficient reinforcing of walls; ensuring the connection between the walls and the structural frame, ring beam and roof; a 30 degree roof slope; the disuse of flat roofs; minimizing direct sunlight to the inside; encouraging the installation of louvers; and the disuse of fixed-glass window panes. In addition, administrative procedures for planning and implementing a school building are introduced in the book and it shows examples of various useful forms, such as a date form of targeted villages, a bid form, a checklist form for construction and a monitoring and reporting form.

The *National School Construction Guidelines* also briefly mentions the school's various possible functions, for example, as night schools for adults, community centres, temporary healthcare centres and emergency shelters. In this context, the book covers simple requirements for the school design and conventional construction principles required for a school building to function as a safe shelter in emergencies. The school design should take into consideration not merely a 1m² shelter area per person, but also a minimum 500 litre water

⁹⁷ Division of Design and Construction Management (ECDM), *National School Construction Guidelines of Lao PDR*, (2009).

⁹⁸ As briefly mentioned in the last chapter, **2.3 Spatial Strategy to flood responses at the village level**, he is a head of Education Construction Design Management, Ministry of Education. Two interviews were conducted on 6 March and 24 November 2017, respectively, in Vientiane, Laos.

School elements	Spatial requirements
Indoor facilities	
Classroom	<p>Minimum area is 1.60 m² / pupil . Include 10% extra space as provision for population growth. I.e. [(No. Of students) * 1.6] + 10%</p> <p>E.g. [(32 * 1.6)+10%] = 56.32</p> <p>Maximum 36 pupils for single grade teaching are recommended. Max. 40 pupils for multi grade teaching</p> <p>Minimum height of room 3.3 m.</p> <p>The basic classroom module has a rectangular or square ground floor shape.</p> <p>Note that even in mountainous areas where land is scarce, pupils still need the same amount of space. Thus the smaller the classroom, the fewer pupils it can accommodate.</p>
Teacher's room	Minimum area is 12 m ² . 25 m ² for 5-classroom buildings and above
Store room	3 – 4 m ² / classroom
Ceilings	Needed to provide uniform light and protection from noise and heat
Floors	Dry and clean concrete floor
Furniture	<p>Stackable, to avoid chaos in emergency cases.</p> <p>Light, so that it can be easily moved.</p> <p>Dimensions and design should allow working in groups and/or individually.</p>
Additional roofed area	25 m ² / classroom
Toilet (external)	<p>Pour flush, min. 2 units, one for boys and another one for girls.</p> <p>Each toilet/latrine should serve from 45 to a maximum of 75 pupils.</p> <p>For each additional classroom 1 additional unit.</p>
Water supply	Gravity fed system, or roof water harvesting including storage facilities, or shallow well
Outdoor facilities:	
Playground	Same area as the one occupied by the school building
Access road	To guarantee safe and proper access also in the wet season
Ramp	To provide easy access for elderly and people with disabilities 12% gradient recommended (approx. 0,5 m height every 4 m length)
Fencing and Gate	To protect compound from domestic animals
Flag post	To respond to the country's traditional morning assembly of students
Trees	To provide shade in the hot season
Information board	To display announcements and information for students and teachers
"Kila"	To provide protection for livestock (for high risk areas only)

Figure 24. Spatial requirements for school design in Laos. From *National School Construction Guidelines of Lao PDR (2009)*.

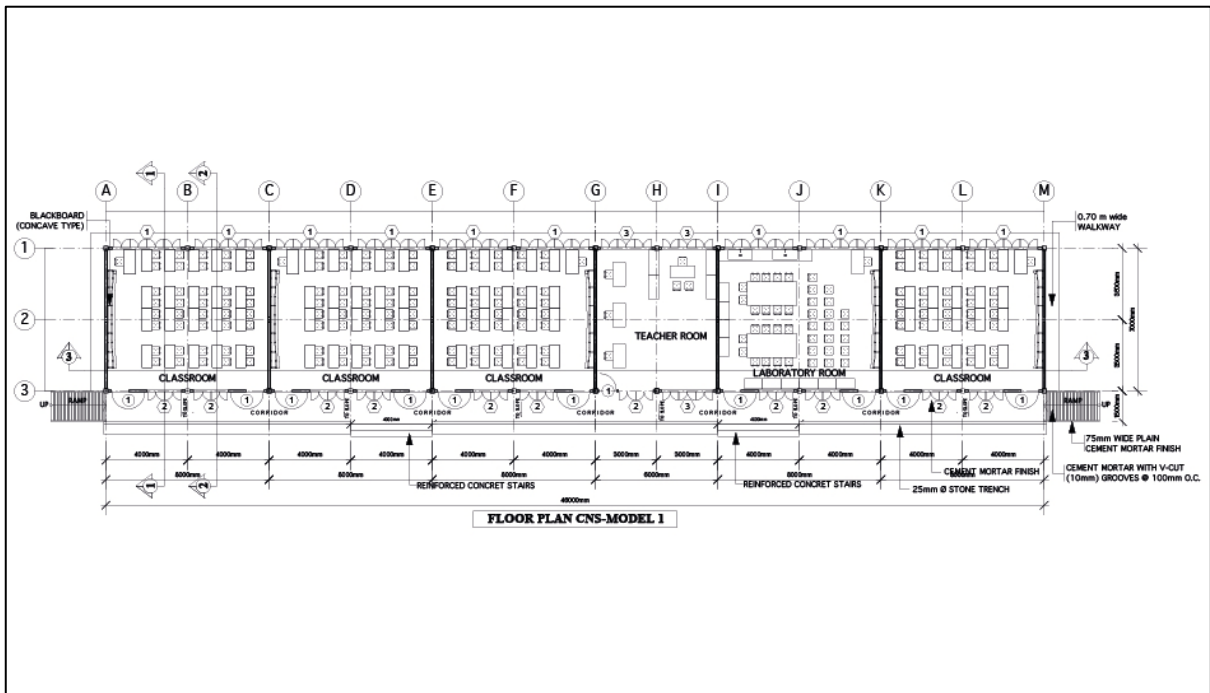


Figure 25. A typical floor plan of a school. Provided by Thippamonh Chanthalangsy.



Figure 26. Example floorplan of a temporary shelter area. From *National School Construction Guidelines of Lao PDR* (2009).

tank. The example of the flexible classroom layout – relating to the former requirement – is illustrated by a floor plan. (Figure 26) With respect to construction principles regarding typhoon and flood risks, the recommended standards for hazard resistant building are as follows: the use of trees as windbreakers; school buildings being elevated from the ground level by at least 60 cm and for them to be at least 30 cm higher than the maximum flood water height; the inclusion of 30 to 45 degree roof slopes; the avoidance of long eaves; the narrowest façades for facing the strongest winds; the encouragement of the use of diagonally braced frames; and minimizing the areas of opening in the bearing wall.

Thus, two guidelines for safe school construction focus on the basic framework of planning and implementing the project of safer school buildings and construction with community participation. The Lao school construction guidelines present fundamental standards for school design, as well as basic information about school layout, shape and construction. Even though these guidelines include advice on disaster-resistant school design and construction, they are insufficient for enabling school buildings to perform the role of community shelters, because the guidelines lack knowledge of community shelter design and adequate building technology. Hence, not only is it necessary for the guidelines to include more information about spatial standards and requirements for sheltering the displaced, but information on practical and feasible construction methods must also be provided to local communities.

3.2.2 Schools functioning as shelters – design and practice

In terms of spatial requirements of a shelter, as briefly stated in section **1.3.2 Guidelines for a collective centre and community shelter** a community centre must satisfy four distinct functions.⁹⁹ First, space is needed for a reception area, which can serve as an administrative centre for displaced populations. Relief supplies are distributed and medical help is given there. Its second function is as a sleeping area, in which the displaced populations can rest. According to The Sphere Project and Mozambican Red Cross, each person requires an area of 3.5m², rather than the 1m² suggested by the *School Construction Guidelines in Lao*.¹⁰⁰ The third function is the provision of a multi-purpose roofed or shaded space for cooking and community events. In addition, it should be a child-friendly space. A zone for hygiene and sanitation facilities is the last essential area for the community shelter. Shower and restroom facilities – separated by gender – should be located in a secure place, in accordance with some of the following requirements: 1 latrine for a maximum of 20 people and a latrine pit placed a minimum of 1.5m above the water table level.

Given the fact that one universal design strategy (a ‘one-size-fits-all’ design) cannot be applied to all different local areas, the guidelines for the provision of a community shelter has to be a framework that enables participants to contribute to the specifications of the school’s design and construction. Accordingly, it should include not only guidance on identifying the circumstantial information – e.g. the size of disaster-affected population, the needs assessment for better flood responses and

⁹⁹ Mozambican Red Cross, pp. 17–19.

¹⁰⁰ The Sphere Project, *Humanitarian Charter and Minimum Standards in Humanitarian Response: 2011 edition*, (United Kingdom: Practical Action Publishing, 2011).

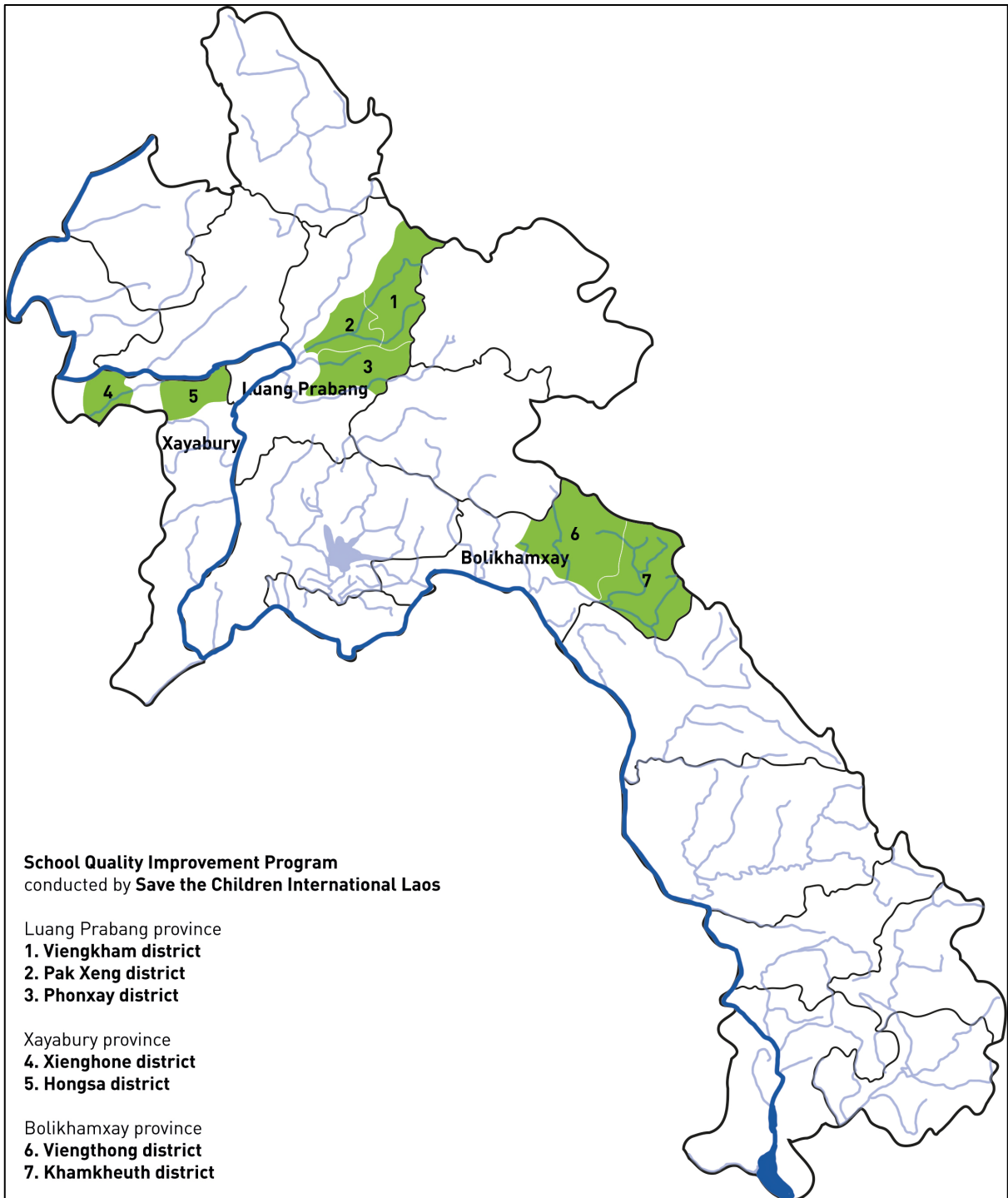


Figure 27. Provinces where the School Quality Improvement Programme was conducted by Save the Children International Laos, illustrated by Soon Min Hong.



Figure 28. Examples of construction failure and damaged building elements. From *Guidelines on Housing Construction in Disaster Prone Areas* (2014).

shelters and available building materials – but also communication tools and materials, such as sample forms of data collection, disaster history and needs assessment among others. Recommended forms should be easily amendable to reflect local context and needs. In addition, it is necessary to take into consideration that classrooms will be inevitably occupied by the displaced if flooding occur during the academic term time.

The general Laos school year consist of two terms and two holiday periods (a one-week break and the summer holiday). The first term runs from the first week of September to the end of December; the second is between the second week of January and the end of June. In the first term, the monsoon season in Laos (May/June to October/November) necessitates a strategic framework to manage the

possibility of simultaneous schooling and sheltering in buildings in emergency situations.¹⁰¹ If flood-affected villagers require only a short stay of around 1 or 2 days, a temporary school closure could be considered. However, if their stay is longer, a spatial design is needed that can meet the four areas of functions previously discussed. This should consider the fact that the need for hygiene and sanitation increases with the number of displaced persons taking shelter. With respect to the operational and management scheme, the guidelines should also cover the assignments that the members of the village committee or the key participants are responsible for and also the role of the administrators and managers of the community shelter. As stated in the *Collective Centre Guidelines*, if the community operate and manage the refuge facility themselves, their ownership and sustainability are strengthened.¹⁰² However, as they largely lack the skills to manage the shelter, education or training should be provided.

In 2013, Save the Children conducted a safety assessment of school buildings in three provinces (Bolikhambay, Luang Prabang and Sayaboury) and subsequently several schools were partially retrofitted to address the communities' needs. (Figure 27) Old roofs were replaced with new wind-resilient structures and thatched roofs – of schools particularly located in or near forests – were changed to metal or mud in order to reduce fire risk. In addition, waterproof containers were installed in high level shelves for schools in flood-prone areas, enabling school staff to keep valuable educational equipment safe from floodwater.¹⁰³ Although the positive influences of such actions were undeniable, they are not a solution to low-quality construction. It is still necessary to pay attention to construction quality and techniques.

Building techniques, particularly with regard to Laos, are explored in the *Guidelines on Housing Construction in Disaster Prone Areas*, which examines failed construction cases and damaged building elements is supported by photographic evidence. (Figure 28) The guidelines suggest, with regard to these issues, appropriate construction methods and their related, necessary technical knowledge, including the concrete-mixing rate standard and the correct position for reinforcing steel bars and their dimensions. (Figure 29) Despite providing simplified information, they also give advice on the construction of brick and cement load-bearing walls, means of enhancing bamboo walls and the treatment of bamboo for long-lasting results. Simple hand-drawn sectional diagrams illustrate the appropriate example of wind-resistant construction of roofs, although the illustrations are too diagrammatic for all local builders to understand. (Figure 30)

To improve the poor construction quality in rural villages, the Lao guidelines do not focus on advanced traditional construction methods, but rather on modern conventional ones. This might help improve poor housing and school construction, especially in light of a societal phenomenon of village house reconstruction. Xayaphone Vongvilay and Champa Lattanasouvannaphonh argued in our interviews

¹⁰¹ The rainy season is traditionally and generally acknowledged as between May and October. However, we are seeing delays in its beginning.

¹⁰² CCCM, p. 15.

¹⁰³ Paci-Green, Pandey and Theberge, p. 47.

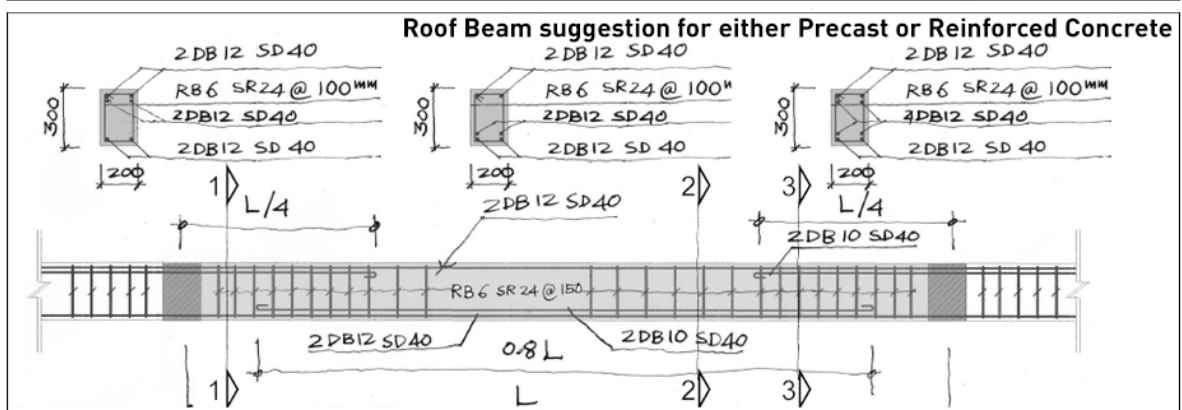
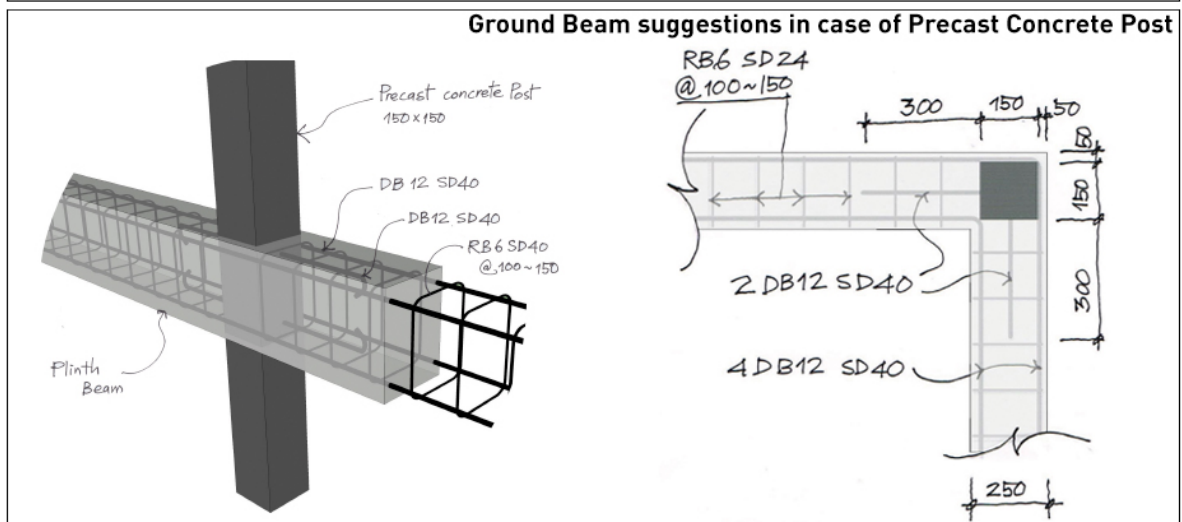
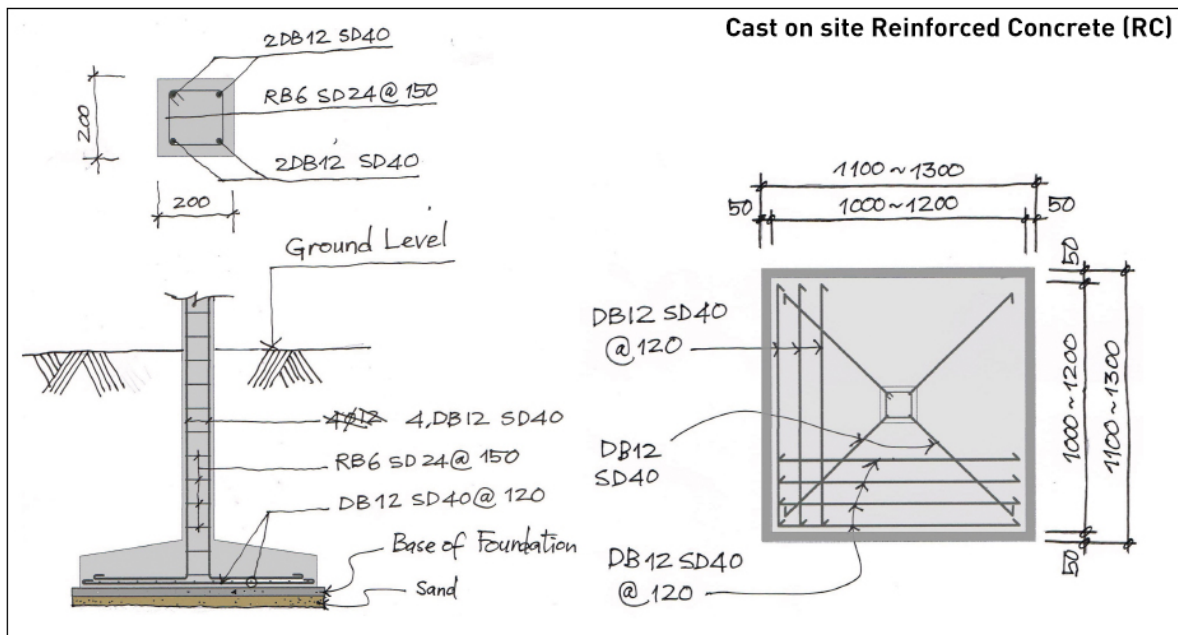


Figure 29. Examples of correct positioning of reinforcing steel bars. From *Guidelines on Housing Construction in Disaster Prone Areas* (2014).

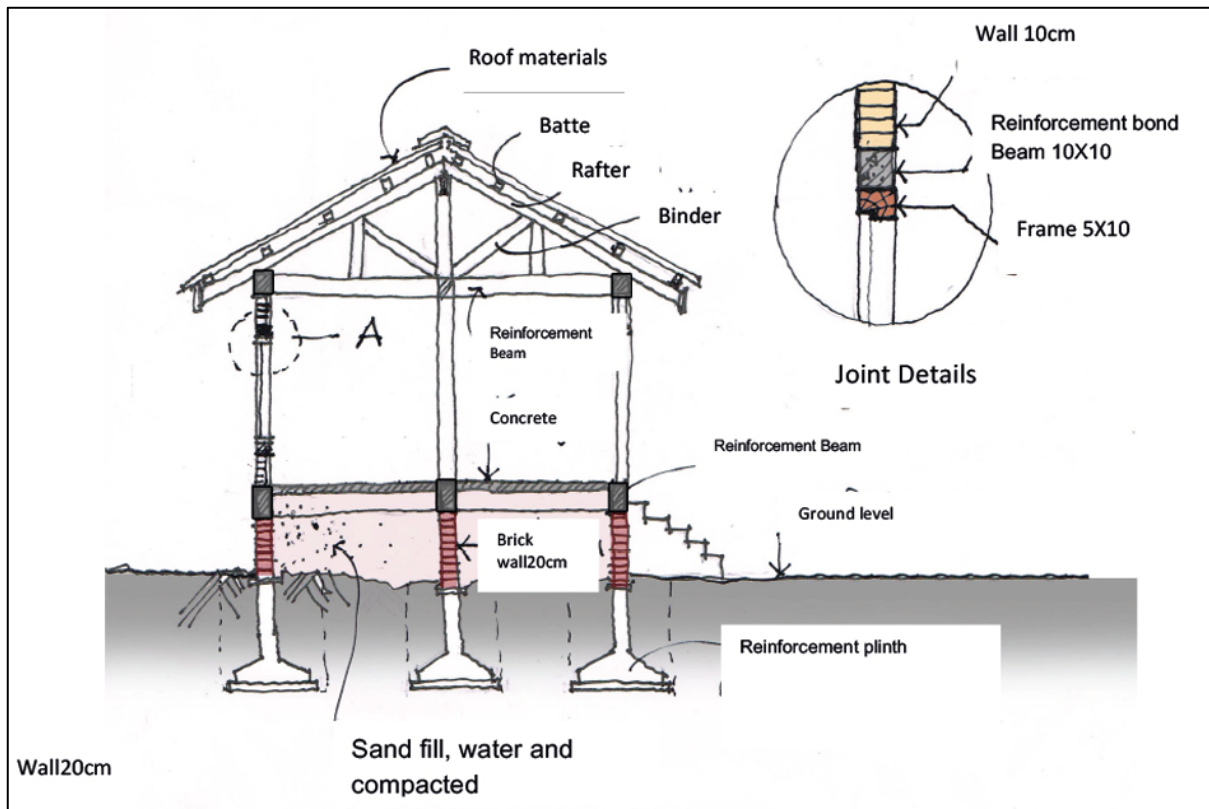


Figure 30. Hand-drawn sectional diagram of wind-resistant roof construction. From *Guidelines on Housing Construction in Disaster Prone Areas* (2014).

in 2017 that increasingly, Lao traditional houses – viewed as temporary building types – are replaced by permanent housing made of modern materials, such as cement, concrete and brick, as a result of national policy that encourages such replacement.¹⁰⁴ In rural areas, traditional houses are associated with poverty; thus if a village has large numbers of such houses, the government may be reluctant to invest in infrastructural development. For this reason, increasing numbers of the local population prefer to construct more permanent housing. Local builders, artisans and house owners are now more accustomed to conventional building techniques using modern materials, and accepted construction guidance may improve their construction methods and building quality.¹⁰⁵

However, there are a number of problems that local builders may face while using the guidelines in a construction project. One conceivable problem is when the construction methods are inadequately communicated to the local community. Some may be illiterate, uneducated or unfamiliar with professional architectural representations and are therefore unable to understand the guidelines or interpret architectural drawings. Another issue may stem from a lack of understanding the benefits of modern construction methods and skills, due to a belief in traditional building methods. Unless the local populaces are made aware that a higher construction quality has a direct influence on improved safety against the risks of natural hazards, they may not be interested. As many guidelines have

¹⁰⁴ The interview was conducted on 22 November 2017 in Soupanouvong University with: Dr Xayaphone Vongvilay, Vice Dean of Academic Affair in the Faculty of Architecture; Mr Chanthavong Moua, Head of Academic Affair Office in the Faculty of Architecture; Mr Champa Lattanasouvannaphonh, former Head Department of Tourism Management Department, Faculty of Economics–Tourism.

¹⁰⁵ Paci-Green, Pandey and Theberge, p. 77.

continually highlighted the importance of community participation in such projects, the skill development in rural areas in order to improve building construction quality should be through a participatory process. Hence, in order to improve the participation of local populations and for the participatory process to become a framework for sustained learning and knowledge, the mechanism of community participation has to be discussed.

3.3 Participation mechanism

Carole Pateman adopts the definition of 'participation' by John R. P. French, Joachim Israel and Dagfinn Aas, as 'a process in which two or more parties influence each other in making plans, policies or decisions. It is restricted to decisions that have future effects on all those making the decisions and on those represented by them.'¹⁰⁶ There are generally three groups of 'participants' who may engage in the process of architectural design practice: the client, the users of the building and the general public who are exposed or related to the building through some means or other.¹⁰⁷ If applied to cases of humanitarian architecture, such as the community shelter, the project administrators (e.g. governments and aid agencies), the disaster-affected villagers and the non-affected villagers can be seen to represent the client, the users of the building and the general public, respectively. Paul Jenkins states that forms of participation are broadly categorised into three areas: providing information, consultation and some form of shared decision-making.¹⁰⁸ It is here that making the distinction between the demands of the stakeholders and the needs of the local populations is significant, so as not to hinder the displaced population – and other villagers – from their participation and from having a voice. In addition, it is important to clarify that this framework is planning along 'with' the local population, not 'for' them.

The level of people's involvement can vary from 'token participation' to 'full control' over the whole participatory process.¹⁰⁹ In this context, Carole Pateman identifies three types of participation: **full**, **partial** and **pseudo participation**.¹¹⁰ **Full participation** is described as 'a process where each individual member of a decision-making body has equal power to determine the outcome of the decisions'.¹¹¹ According to Jeremy Till, although this is an ideal type, it is an unworkable approach in architectural design and practice.¹¹² This is because the equitable discussion on certain agenda, such as design development, among parties can be conducted only if each party has the same level of knowledge or information. As a result, a particular group with more knowledge or relevance is likely to have greater power in making a decision. This case is 'partial participation', understood as 'a process in which two or more parties influence each other in the making of decisions but the final power to decide rests with one party only'.¹¹³ Pateman has described **pseudo participation** as a situation in which participation (in decision-making) takes place 'to create a feeling of participation through the adoption

¹⁰⁶ Carole Pateman, *Participation and Democratic Theory*, (Cambridge University Press, 1970), p. 68.

¹⁰⁷ Paul Jenkins and Leslie Forsyth (eds), *Architecture, Participation and Society*, (Routledge, 2010), p. 13.

¹⁰⁸ *Ibid.*

¹⁰⁹ Peter Blundell Jones, Doina Petrescu, and Jeremy Till (eds), *Architecture & Participation*, (Spon Press, 2005), pp.25–30.

¹¹⁰ Pateman, pp. 68–71.

¹¹¹ *Ibid.*, p. 71.

¹¹² Jones, Petrescu, and Till, p. 27.

¹¹³ Pateman, p. 70.

by the leader (supervisor) of a certain approach or style' and 'to cover techniques used to persuade employees to accept decisions that have already been made by the management'.¹¹⁴ Many current guidelines either exclude the matter of community participation entirely or remain insufficient about how to effectively involve the local community. In this context, it is easy to perceive how pseudo participation may occur, either intentionally or otherwise. Thus, it is important to differentiate these types of participation and to avoid pseudo participation when outlining the guidelines.

One further fact that should be discussed is that it is not easy to undertake and manage the participatory process. Markus Miessen's publication *The Nightmare of Participation* (2010) addresses an adverse side to participation.¹¹⁵ He asserts that the overuse of the terms 'participation' and 'community' have led to a tendency to undervalue the 'principles of democratic participation'; they create a 'vener of worthiness'.¹¹⁶ Moreover, he states that 'participation is war', adding that 'any form of participation is already a form of conflict'.¹¹⁷ This refers to the fact that during participatory processes, there may be arguments and unpleasant discussions among participating groups. Besides, he argues, community involvement in construction does not always guarantee a higher quality of buildings, or in this case an enhanced disaster resilience of the community; if the pace is fast, it is difficult to achieve adequate construction skills through training and/or meetings.

Therefore, the role of community participation and the means of the participatory process should be expanded and explained within the guideline – thus differing from how current guidelines deal with the engagement of rural people in each process stage. For the project schedule, a preferred period for constructing a building should be November to June – taking into account the monsoon season and September to November harvest. The plan for a participatory process will also need revising in regard to societal and cultural aspects – taking into account their preferred timing and allowing an adequate length for each meeting. With a negotiated schedule, a series of community meetings and/or necessary (trainings) workshops can be effectively planned with the agenda and the key participants for these meetings and/or workshops being detailed.

In conjunction with this, another significant consideration is the problem of efficiently disseminating spatial design information to rural communities. It is evident that the written form – the way in which current guidelines are compiled – is not working for rural populations. Instead, visual materials, such as drawings or images, physical models, booklets and design and building workshops should be utilised to convey information about flood-resilient design and its best practice to villagers. The most effective means should be verified in order to develop good communication tools and methods. Thus, the design guidelines should include alternative communication tools pertinent to the understanding by local populations in Laos, encompassing visual resources that people with different levels of education and skills can easily comprehend.

¹¹⁴ Ibid, pp 68–9.

¹¹⁵ Markus Miessen, *The Nightmare of Participation*, (Sternberg Press, 2010).

¹¹⁶ Ibid, p. 33.

¹¹⁷ Ibid, p. 53.

CHAPTER FOUR
NEW DESIGN
GUIDELINES FOR
DISASTER RESILIENT
COMMUNITIES
IN LAOS

CHAPTER FOUR

New Design Guideline for Disaster-Resilient Communities in Laos

4.1 New design guidelines for a school shelter

The overall situation of Laos has been so far explored in relation to flood risks, flood responses and guideline documents for the construction of shelters, schools and houses. As partially discussed, small-scale floods have frequently occurred, gradually damaging many rural villages. At village level, the lack of flood response strategies, community shelters and the prevalence of poor construction have led to improvised responses to flooding by local populations. One of these responses has been to utilise village schools as emergency shelters. However, most existing schools are unsuitable of functioning as community shelters and dealing with school and shelter functions simultaneously. This is because of the lacking shelter provisions in the school design and the absence of an emergency operation plan. Moreover, in rural areas due to poor construction, many dwellings and schools built by untrained builders have not been able to meet the role of a shelter able to withstand the impact of natural hazards. In addition, present shelter and school guidelines are insufficient, as they lack consideration of Laos' specific context and practical guidance and information on the planning, construction and participatory processes required in the realisation of shelters.

In order to address some of these issues, this dissertation is particularly interested in the problem of enhancing the functionality of village schools as community shelters. There are specifically three elements that need to be considered and improved: the adequate construction quality for structurally sound buildings; the spatial requirements for community shelters; and an operational strategy for school shelters. Further consideration is needed of the involvement of the local community in the process, supporting them in gaining more responsibly in and ownership of the project, and enhancing the sustainability of the long-term operational management. Furthermore, the projects and participatory process should be designed to integrate the necessary knowledge exchange in such a way that knowledge is acquired naturally by the local population. – e.g. appropriate construction skills. This should help improve the knowledge transfer into their other related activities – e.g. private house construction. In sum, the focus is the community-based school construction and the spatial requirements and construction techniques for a community shelter. The new design guidelines should contribute to better implementation of school shelter construction in Laos in the long term. This I will call the 'school shelter guidelines'.

The objectives of these design guidelines are:

- 1) to provide project managers and facilitators with the practical knowledge of how to manage community participation in designing and building the collective shelters;
- 2) to enable the local people to acquire retrofitted construction technology through participatory processes; and

3) to empower them to overcome disaster impacts by themselves.

When the Lao government and aid agencies have a plan for school construction, the new design guidelines for school shelters aims to direct stakeholders through the whole process of designing and building schools. As it includes practical knowledge about conventional construction methods, it should be useful as a reference book in workshops or training to enhance building skills. Its objective is also to allow unskilled builders to easily follow good construction practices. Spatial requirements for the community shelter are also dealt with in these guidelines.

The guidelines support a community-based approach and there are three participant groups: government authorities, experts from the aid agencies, and villagers. The roles of their participation in the process are as follows: to collect the precise and correct information; to adjust the project to the context of the selected village; to transmit useful knowledge and information to the villagers conveniently; and to build community accountability for the project. Apart from the local populations, not only are government staff able to share the experience and gain related knowledge, but the experts from aid agencies are also likely to refine their knowledge and skills through the experience.

Within the guidelines, the role of each participant group is proposed as follows. The government authorities should act as coordinators between the experts (e.g. project managers and/or architects) and the local community, and support any required project activities. In general, an expert group is to lead the project. Their work should focus, however, on community empowerment, and the experts should mediate among the community groups when conflicts arise. It is here that the role of the professionals is significant to occasionally persuade and convince the community groups as to when the professionals' expertise is needed, rather than always advocating the community's demand.

As previously mentioned (stated in section **3.1 Construction policy and its context in Laos**), I am currently working in parallel on a live project to build a community shelter in rural Laos. As one of the old village school buildings has been allocated as the project site, with this adjustable community-shelter being used as a school during non-disaster periods, the processes relating to a shelter-adaptable school presented in the new guidelines can be utilised on this live project. In conjunction with the progress of this live project, field research – such as visits to rural villages, interviews and meetings – could be conducted and this has led to an exploration of disaster-related policies and situations that the Lao government and rural villages have both prepared for and undertaken. The aforementioned viable solution – to enhance the functionality of village schools for usage as community shelters – derived from the project and the reviews of current guidelines; this has expanded to cover the development of a new design guideline for school shelters. The processes outlined in this thesis will be used in fieldwork undertaken in the live project. This will of course contribute to further improvements to the design guideline for a school shelter.

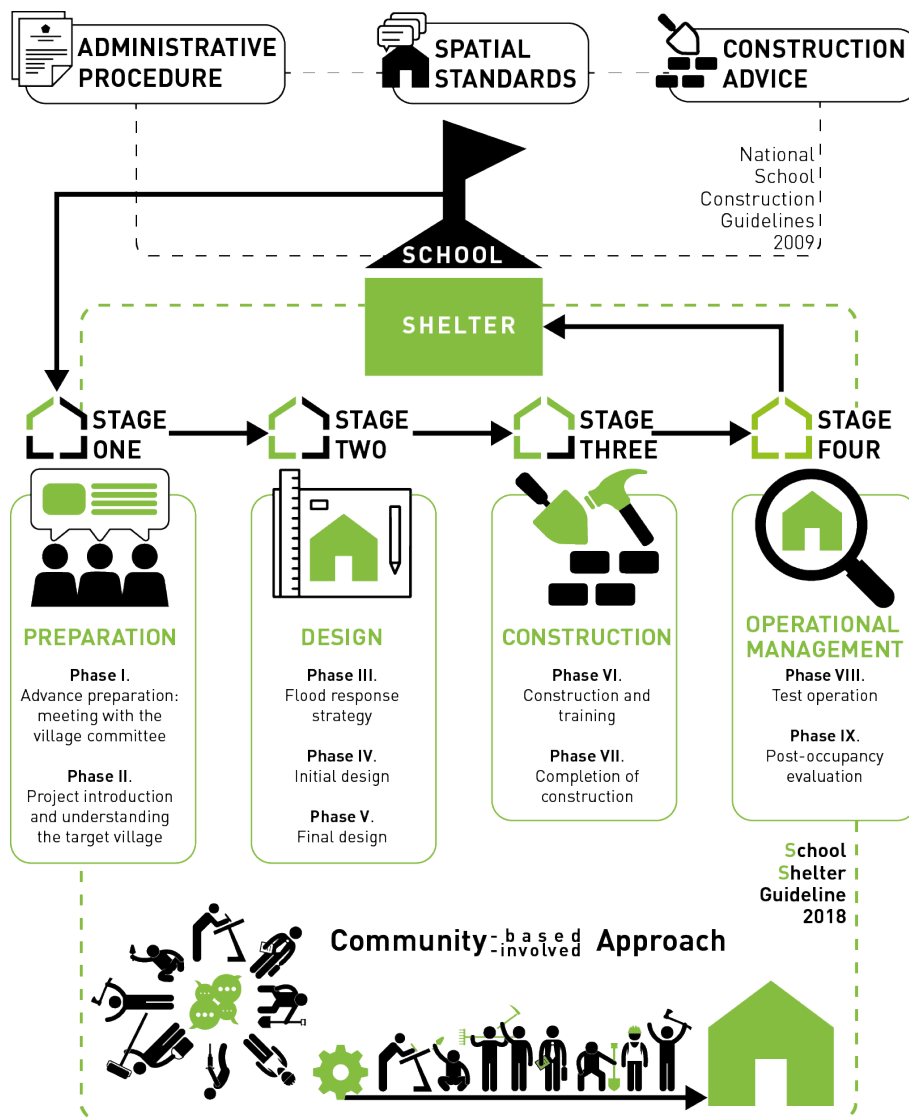


Figure 31. An overview of the project of school shelter construction, illustrated by Soon Min Hong

4.2 Content of the design guidelines

Prologue

The prologue offers an overview of the project of school shelter construction; it includes the background to the guidelines, who should use it and how. (Figure 31) These new school shelter guidelines ignore the initial stage; that is, how the school construction project commences by looking for the target village and submitting the application of construction approval, which has been addressed previously by other guidelines. Instead, the new guidelines specifically cover practical information in regards to the participatory process. They begin by explaining how to prepare and conduct the first visit to the target village. In this sense, the guidelines provide primarily necessary information, knowledge and principles related to schools functioning as shelters and their design and construction throughout different stages. There are overall four project stages: preparation, design, construction and operational management. In parallel with community-based and community-involved approaches, pragmatic information about architectural design and practice are explained by

way of instructional text and visual sources, such as illustrations. These not only enable the local populations to better understand the guidelines, but also contribute to a better transfer of knowledge to the general public.

Stage One: Preparation

The first stage consists of **Phase I and II**. It concerns the initial preparation prior to the design stage and introduces tactics for planning a visit to the target village and meeting with the villagers. One thing that needs to be addressed is the official approval required by the Lao government. Whenever a visit to the rural villages is planned to visit a site or conduct interviews and/or community meetings, an official letter must be submitted to the government department about a week prior to the scheduled visit, informing them of the purpose of the visit, the visitors and itinerary. Once the trip is sanctioned, government staff from the provincial and district offices will accompany the visitor at all times.

Phase I: Advance preparation – meeting with the village committee. (Figure 32)

This deals with initial visits to the target village to meet with stakeholders, including the village head and members of the village committee. It prepares for the next stage that requires the involvement of many villagers. This section offers meeting agendas to deal with the introduction to the project and the discussion of the next meeting with the villagers.

Phase II: Project introduction and understanding the target village. (Figure 33)

This discusses the initial meeting with the general village population as a means to gather the necessary information for the school shelter designs and construction in a specific local context. The meeting is open to all villagers, but key participants – village committee members, flood-affected families, school staff and local builders – are actively encouraged to participate because their experiences of flooding, schooling, shelters and construction are fundamental in understanding the village's needs and capacity. Following the meeting, a project team can be assembled.

The process of how a flood risk profile is created and how flood risk mapping is conducted is described in this section of the design guide. To assist the project manager and villagers, a sample questionnaire and a flood risk map are included too. (Figure 34)

Stage Two: Design

Stage Two covers the development of design, especially the process and principles of how design ideas are shared, developed and finalised. It has three phases.

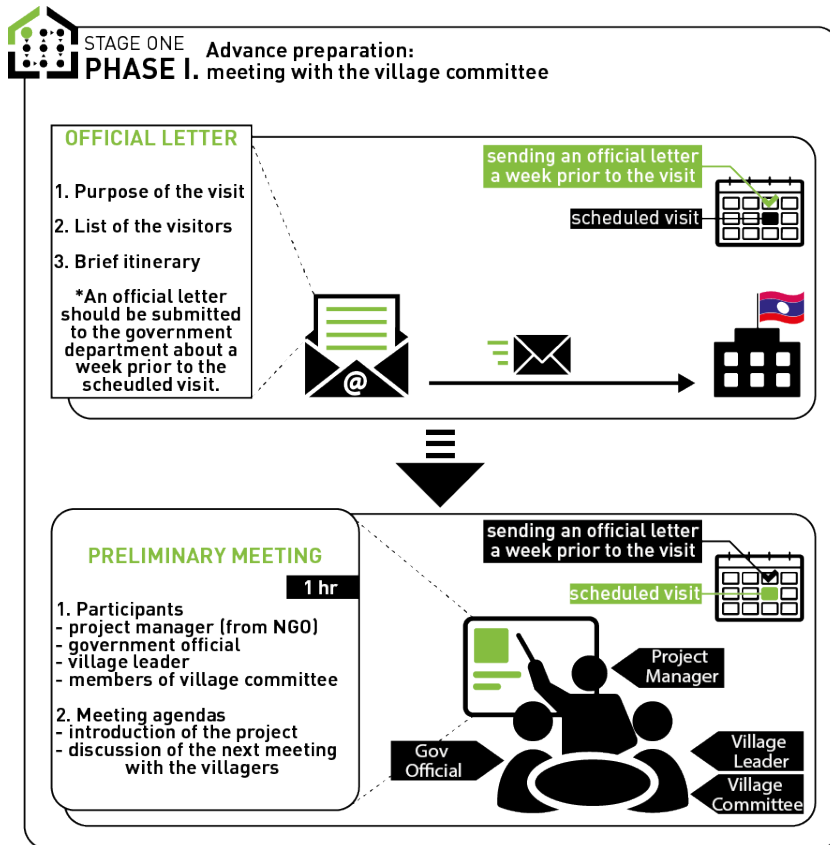


Figure 32. Diagram of Phase I of school shelter construction, illustrated by Soon Min Hong.

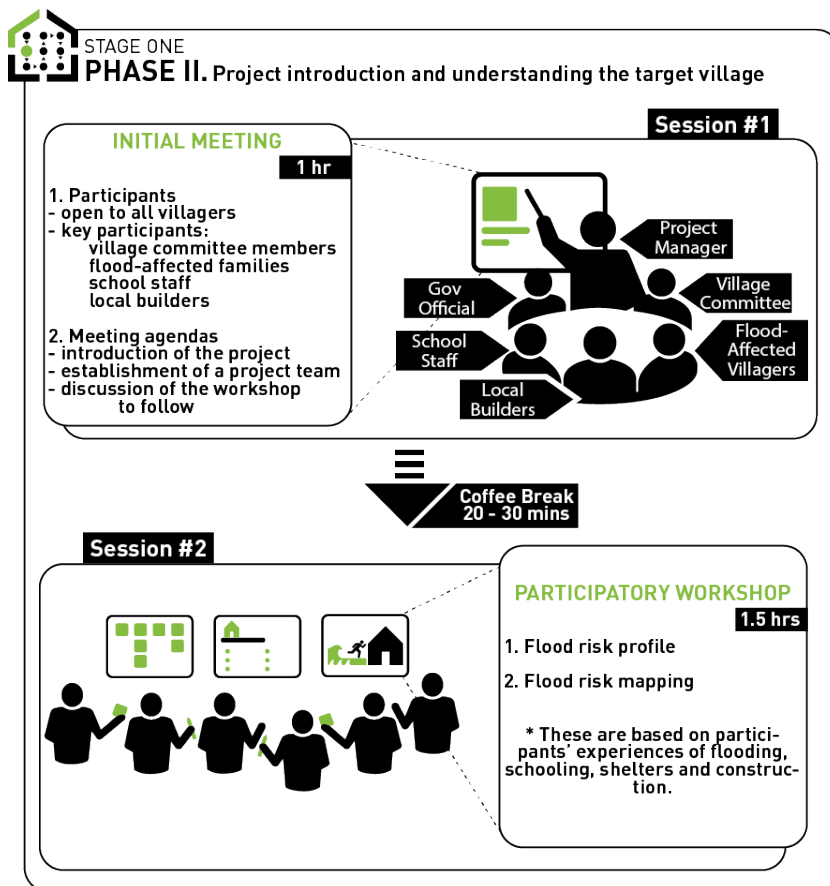


Figure 33. Diagram of Phase II, illustrated by Soon Min Hong.

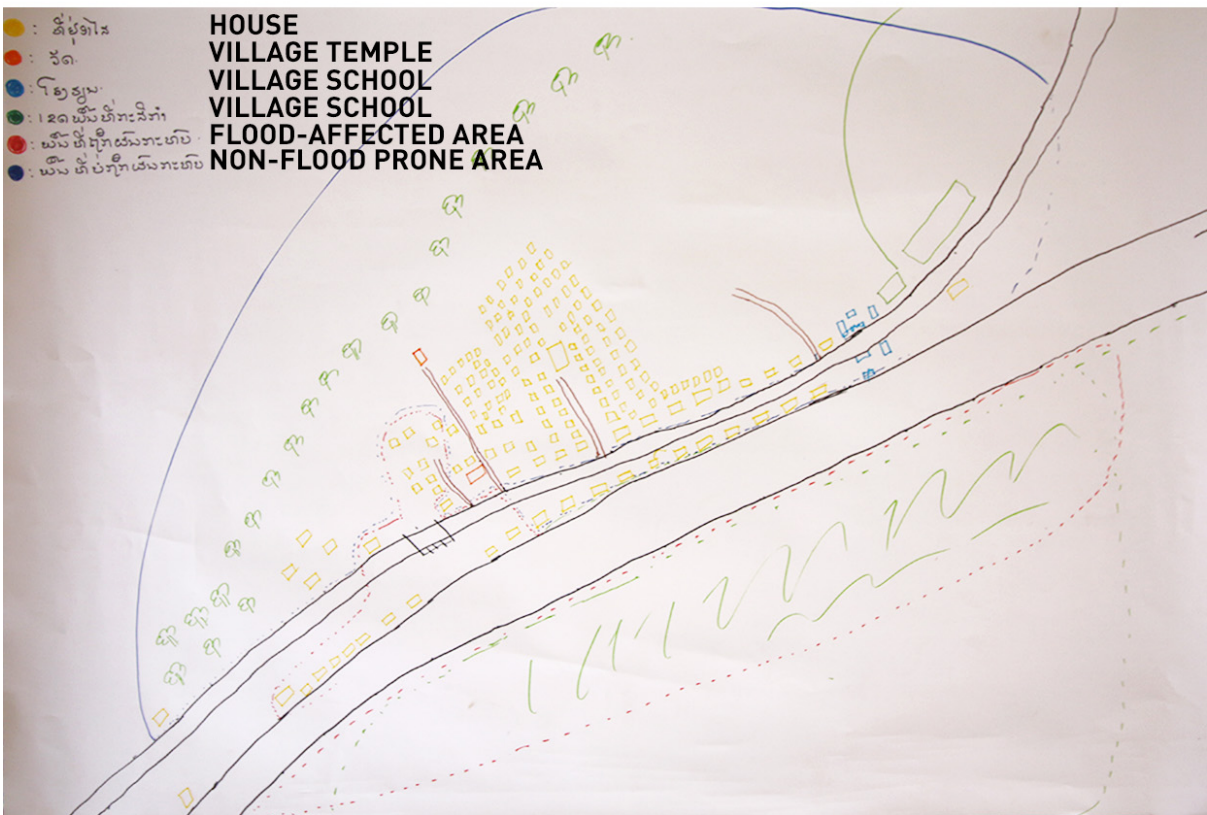


Figure 34. Example of flood risk mapping. Photos by Soon Min Hong.

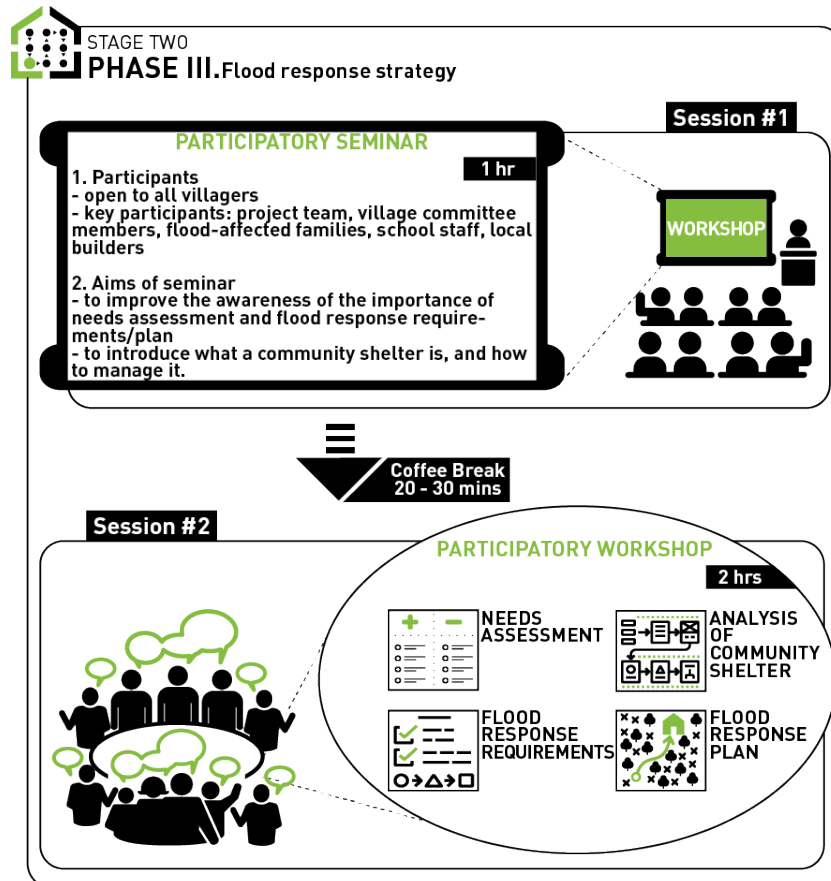


Figure 35. Diagram of Phase III, illustrated by Soon Min Hong.

Phase III: Flood response strategy (Figure 35)

This provides the criteria of a needs assessment of the village dwellers and how to conduct it. It also discusses general flood response requirements, including the evacuation to village school, how to analyse the processes and discuss flood strategies in villages. Especially the strategy outlined deals with how to take shelter in schools and how to operate them as a community shelter. These aspects of the design guide should be considered as key requirements for all school shelter design.

This phase emphasises the need for providing training through seminar or workshop to transfer skills to participants in flood response strategies.

Phase IV: Initial design (Figure 36)

This phase outlines requirements for a community shelter in addition to discussing general standards for school design, which are given in the *National School Construction Guidelines (2009)*. (Figure 37.a and 37.b) Phase IV gives details on the participatory process in the designing of school shelters.

Additionally, this section discusses the role of architects, who are not only to mediate needs and design opinions from other participants, but also to foster integrated design, as well as providing villagers with spatial and technical expertise as necessary to fully contribute to the project.

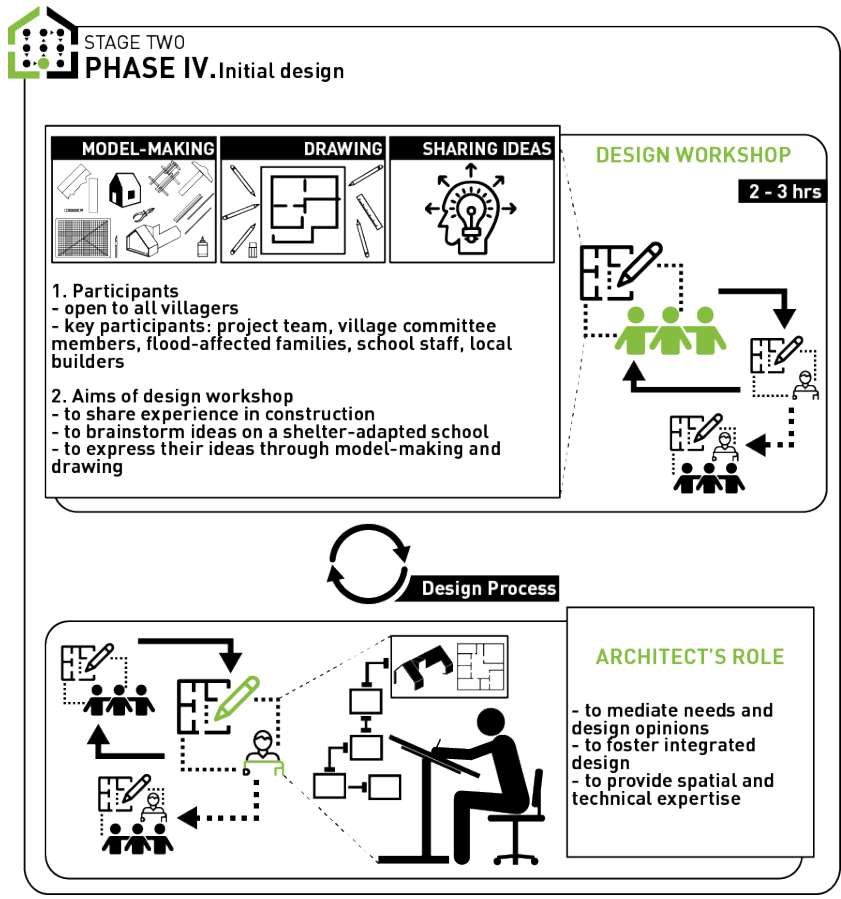


Figure 36. Diagram of Phase IV, illustrated by Soon Min Hong.

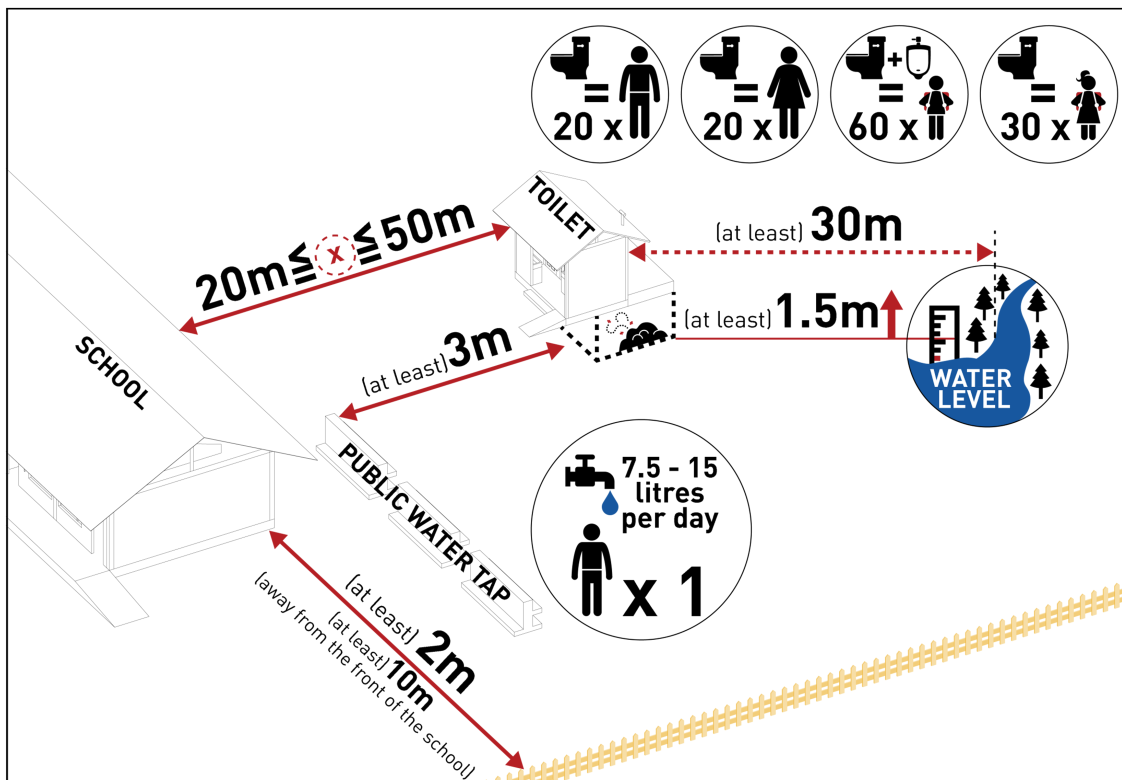


Figure 37.a. Illustrations of some requirements for a Laotian school and a community shelter, illustrated by Soon Min Hong.

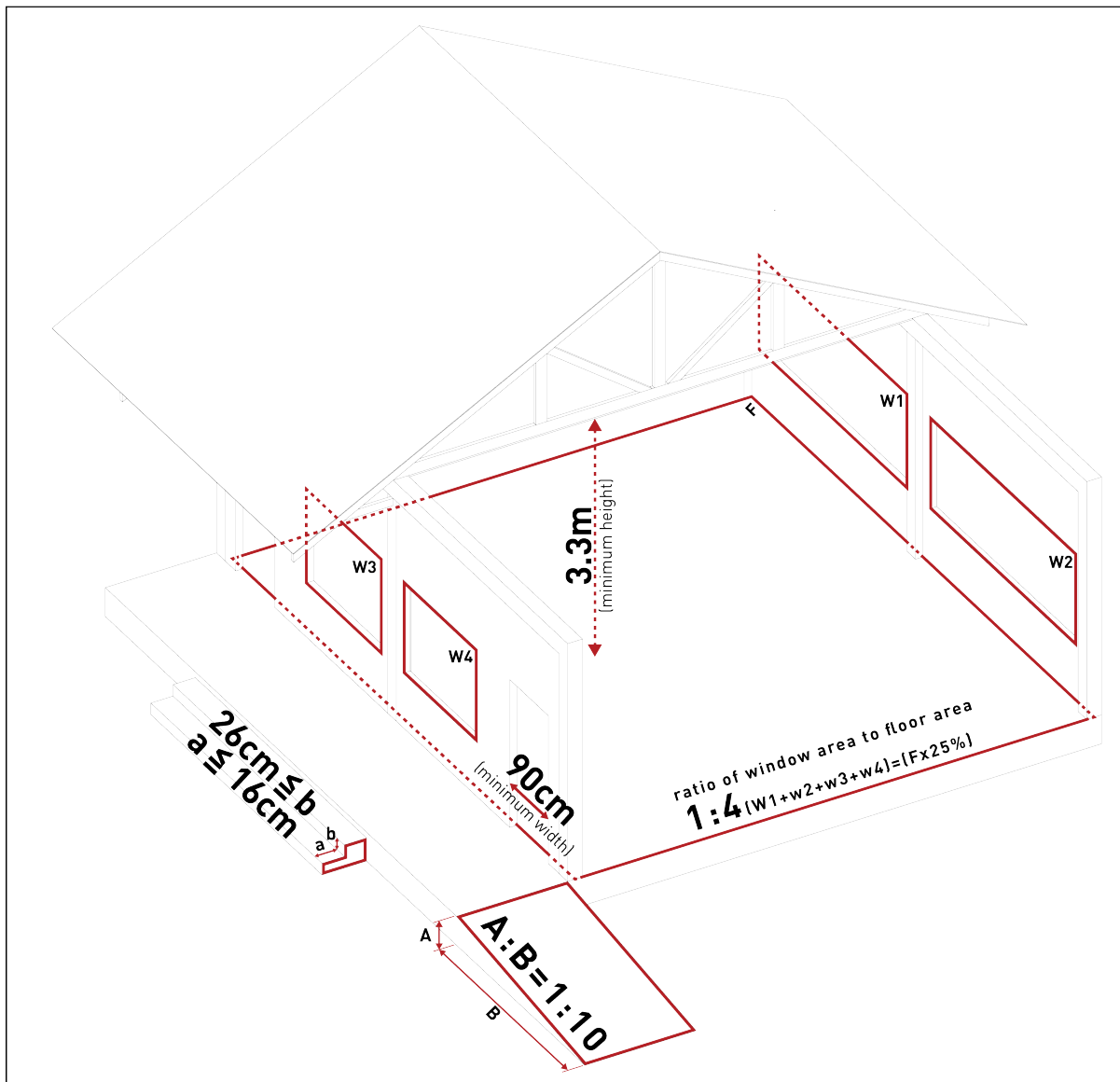
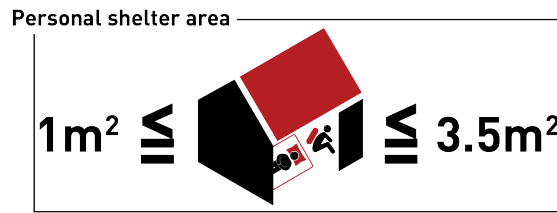
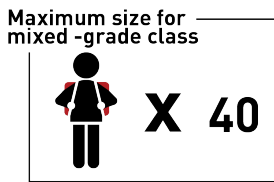
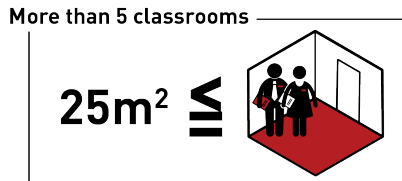
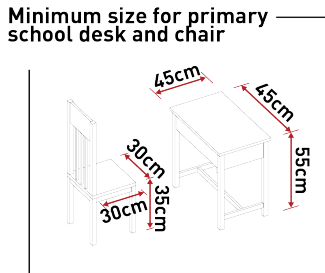
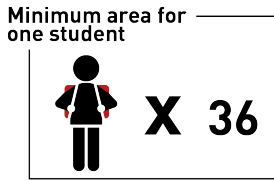
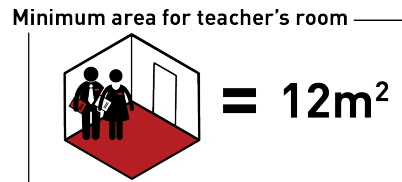
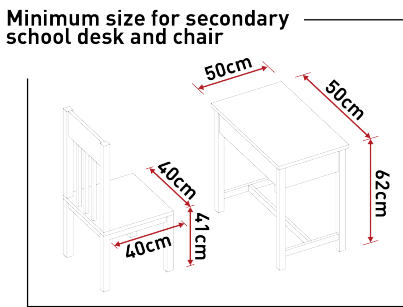
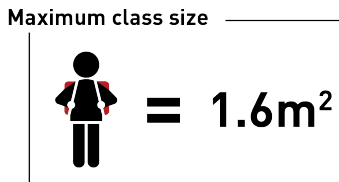


Figure 37.b. Illustrations of some requirements for a Laotian school and a community shelter, illustrated by Soon Min Hong.

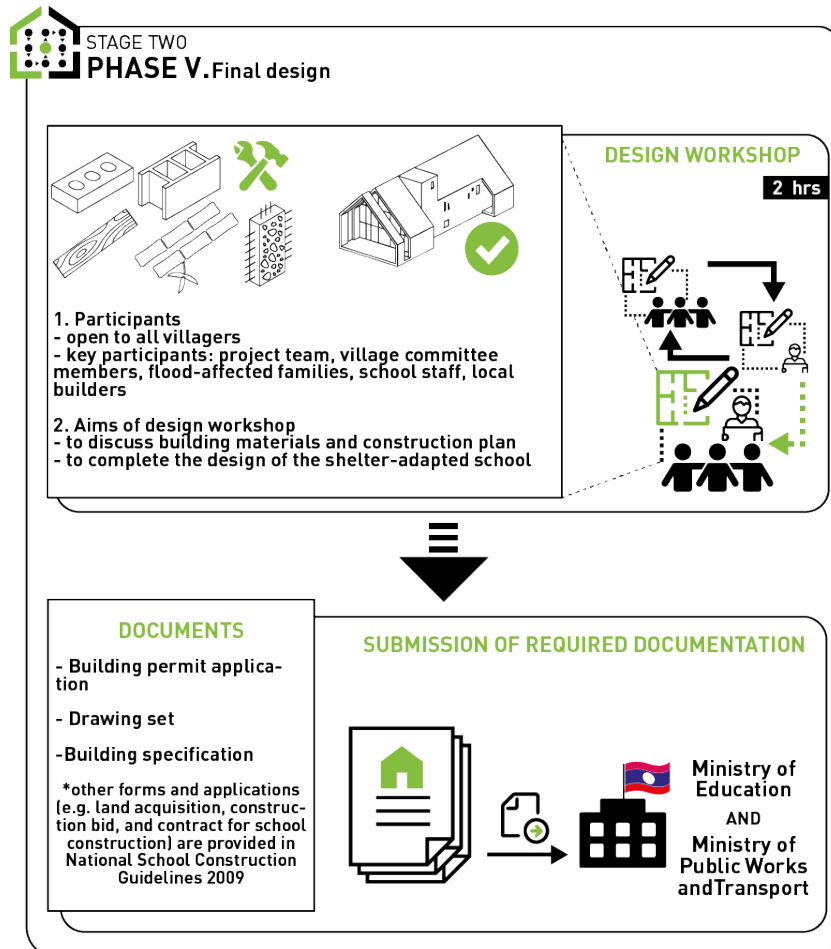


Figure 38. Diagram of Phase V, illustrated by Soon Min Hong

Phase V: Final design (Figure 38)

This phase deals with completing the design stage. It details how to finalise the design and how to submit a building permit application to the government. During this phase, building materials and a construction plan should be developed by the project team in cooperation with local builders.

Stage Three: Construction

In this two-part section, not only is the subject of appropriate construction methods introduced, but also construction training.

Phase VI: Construction and training (Figure 39)

This section outlines the overall construction process and how to transfer skills to local builders and villagers involved in building the school shelter. Such practical and technical knowledge is communicated through graphical illustrations, and ordered according to building elements, which are foundations, floors, walls and roofs. (Figure 40.a and 40.b) At this stage training and/or workshops

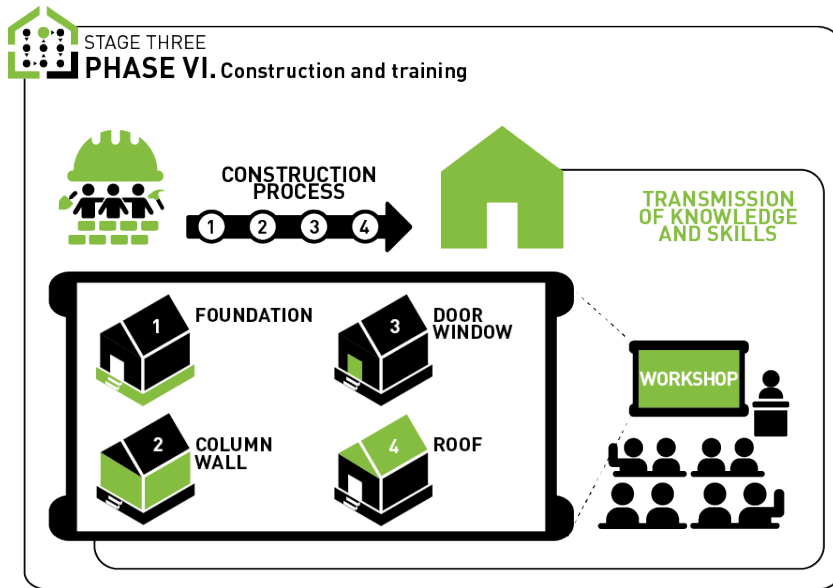


Figure 39. Diagram of Phase VI, illustrated by Soon Min Hong.

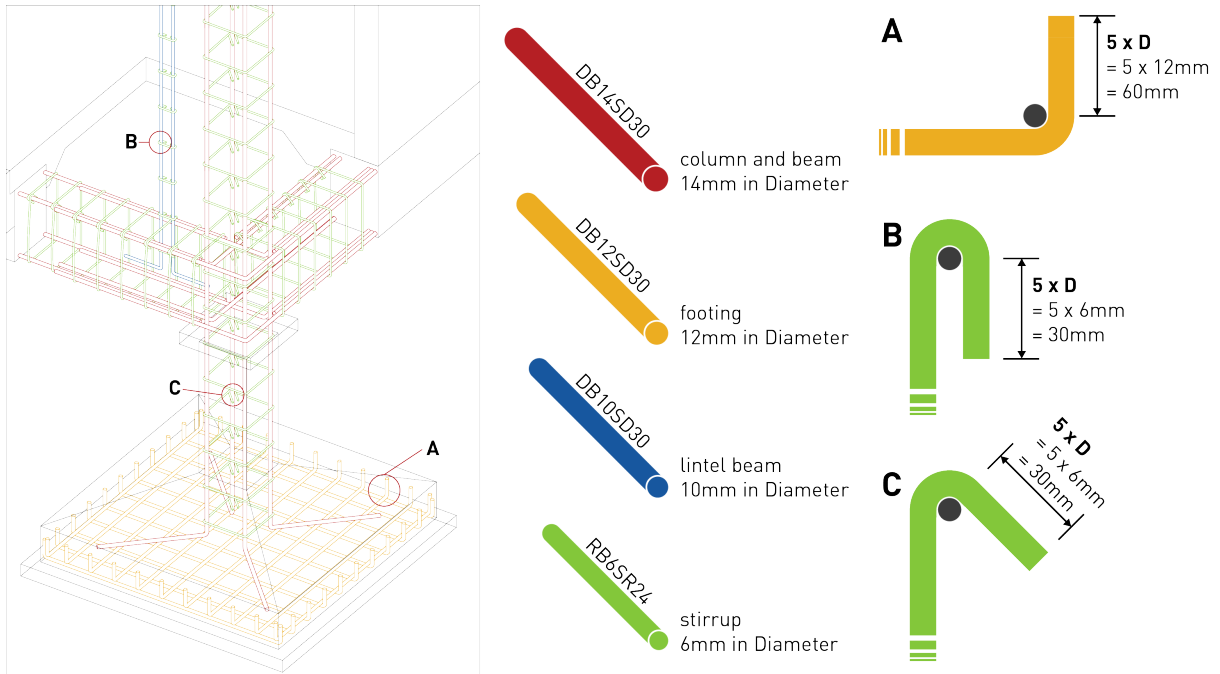


Figure 40.a. Illustration of some construction techniques, illustrated by Soon Min Hong.

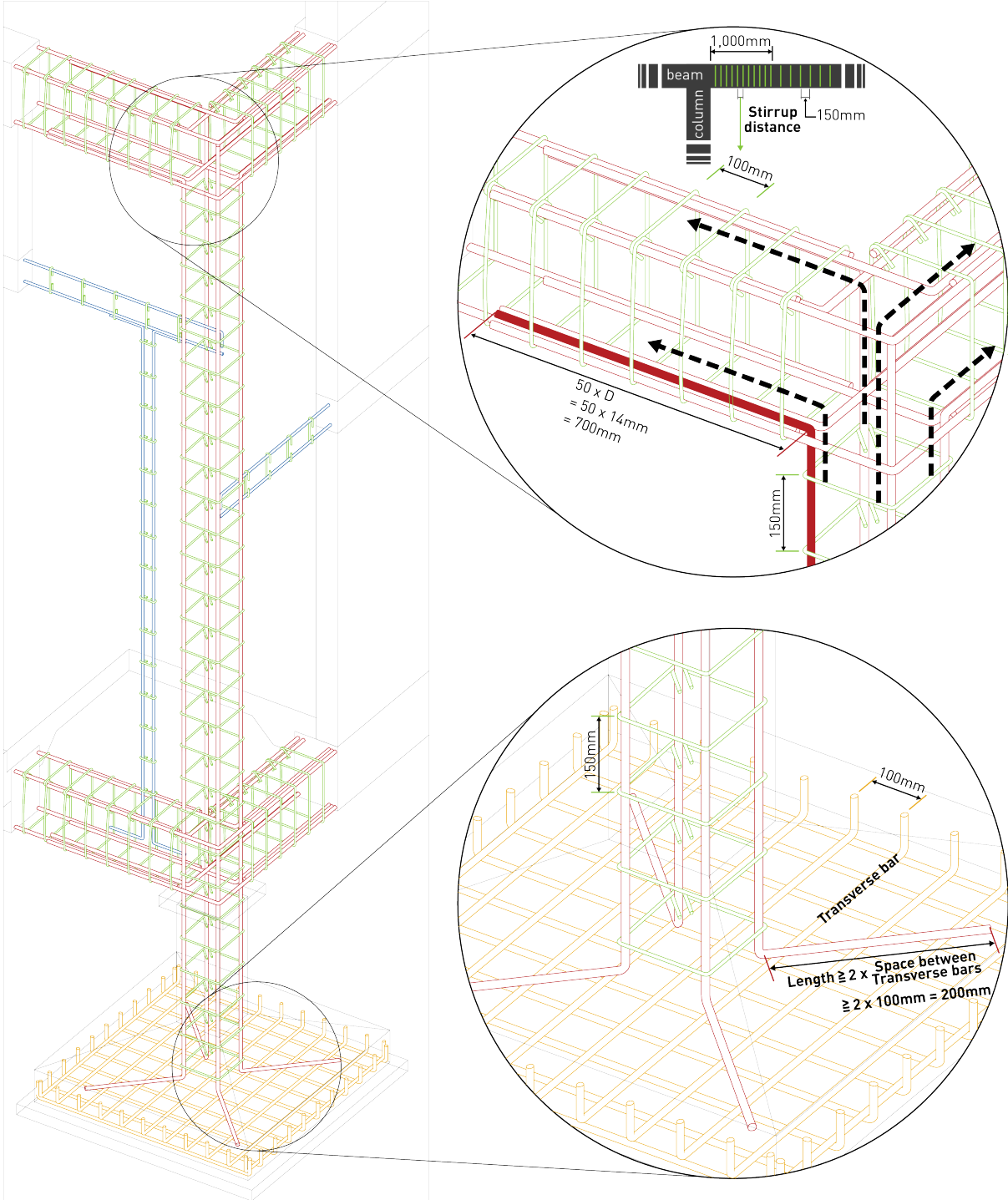


Figure 40.b. Illustration of some construction techniques, illustrated by Soon Min Hong.

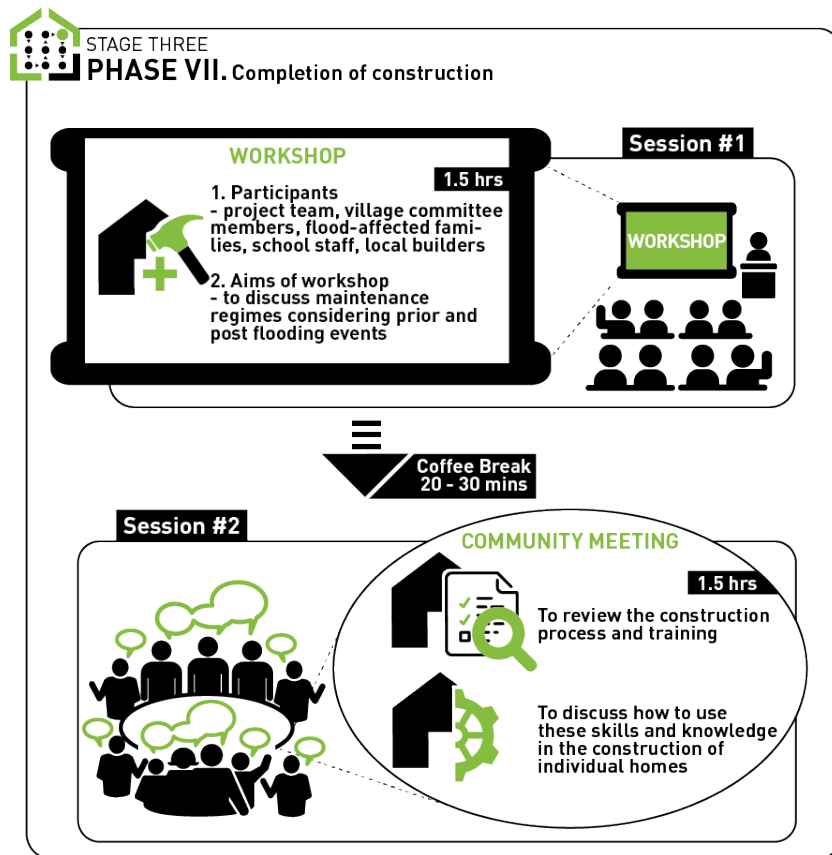


Figure 41. Diagram of Phase VII, illustrated by Soon Min Hong.

should be arranged in conjunction with each component constructed. It is here that communication tools and methods to efficiently skill local builders are dealt with.

Phase VII: Completion of construction (Figure 41)

This phase deals with the end of the project, with follow-up discussions on repair and maintenance regimes, considering prior and post flooding events in particular. It is also recommended that at this stage all participants review the construction process and training in order to determine any deficiencies in the proposed processes. Furthermore, there needs to be a discussion on how local builders can also apply these new skills and techniques to the construction of individual homes.

Stage Four: Operational management

Part Four deals with two phases: evacuation drills and participatory monitoring and evaluation.

Phase VIII: Test operation (Figure 42)

This section deals with evacuation drills, which includes disseminating flood warnings, securing evacuation routes, operating the school as the community shelter and distributing relief supplies. Prior to this drill commencing, this phase reminds villagers of a flood response strategy.

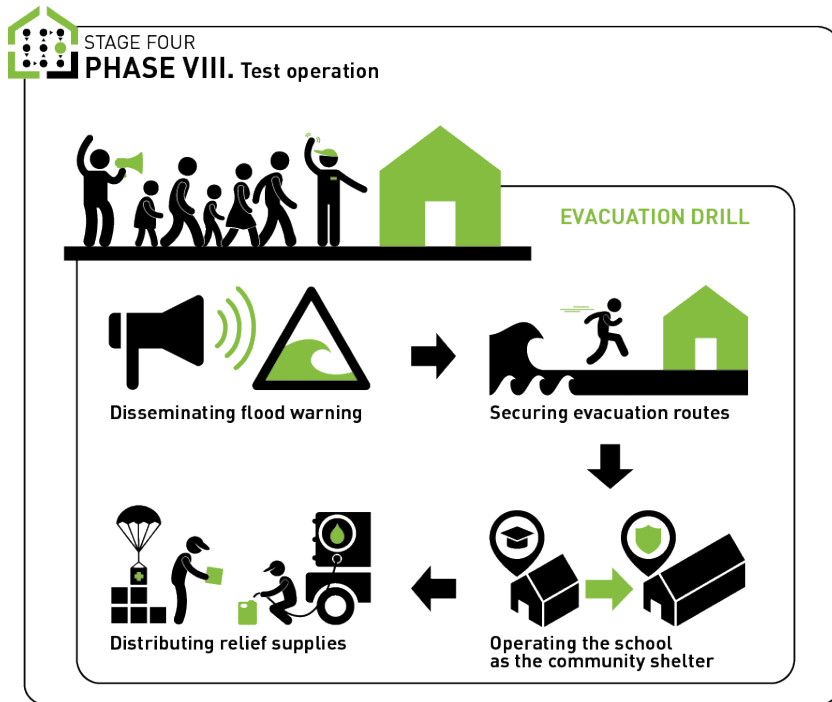


Figure 42. Diagram of Phase VIII, illustrated by Soon Min Hong.

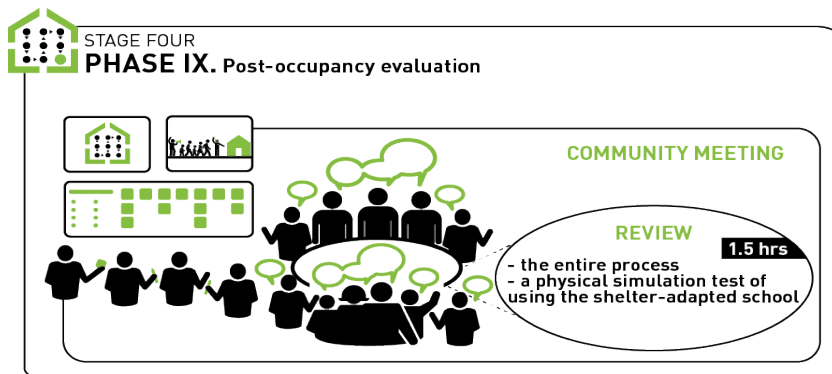


Figure 43. Diagram of Phase IX, illustrated by Soon Min Hong

Phase IX: Post-occupancy evaluation (Figure 43)

This section of the design guide discusses how to conduct a review of the entire process, as well as how to conduct a physical simulation test of using the school shelter. For better understanding, examples of the assessment forms needed for the evaluation are provided.

Epilogue

The epilogue reviews points and considerations for improvement of the proposed design guidelines. Although these new design guidelines discuss the implementation of school shelter projects and how to enhance a community’s resilience to natural hazards, the role of the government of Laos and aid agencies is still significant in promoting these aims. In addition, knowledge dissemination is as important as the implementation of the project and there needs to be continued support by the Lao government and international agencies as well as local communities.

C O N C L U S I O N

C O N C L U S I O N

With the aim of improving the disaster resilience of rural populations in Laos, this dissertation has devised a new design guideline for school shelters. To start with, the dissertation analysed the state of art in current construction guidelines for shelters, housing and schools, in order to identify their current deficiencies.

In **Chapter One**, three elements – local specificity, practical knowledge and community participation – were identified which needed to be taken into holistic consideration when developing school shelter guidelines in the context of Laos. This provided important insights into the shortcomings of existing design guides and informed a proposed design guide for school shelters.

Chapter Two investigated Laos' disaster management and response with a specific focus on floods and flood-response capability of local populations as the first responders. In addition, current efforts of the Lao government and international aid-agencies were studied. This identified deficits in three main areas: the absence of community shelters in rural villages, inadequate village flood-response plans and limited definitions of disaster risks. Aid agencies have focused on disaster response training, which meant that the risk and damage from natural hazards to the built environment have been largely overlooked and need to be addressed urgently. Therefore, this thesis discussed the present condition of construction in rural areas, in which the key problems identified are poor construction quality, unskilled builders and government policies that implicitly promote such construction. Although in response to this, the *Guidelines on Housing Construction in Disaster Prone Areas* (2014) were developed by the Lao government's Department of Housing and Urban Planning and the Asian Disaster Preparedness Center, they were not written in a manner that enables local communities to implement its instructions effectively. Chapter Two thus proposed an integrated approach to disaster resilience, in which the enhancing of flood resilience and the capacity of local populace to respond to floods themselves are seen as closely related measures.

Chapter Three discussed the need for purpose-build shelters, focusing on the optimisation of the utilisation of village schools as community shelters, suggesting improvements compared to current usage which operates with deficiencies of strategy and management. Existing school construction guidelines, including the *National School Construction Guidelines* (2009), were examined to understand how to expand Laos' school-design standards to meet the requirements of community shelters.

The proposed school shelter guidelines are presented in **Chapter Four**. The main aim of the guidelines is to enable local communities to improve their disaster resilience and self-sufficiency and to enable a participatory process. They provide a spatial strategy for flood responses at village level and introduce the processes for planning, designing and building such shelters, based on existing school buildings in

rural Laos; they also provide practical and technical knowledge for better-quality construction. In addition, they offer guidance on incorporating community participation in the process, such as how to engage local communities at each stage, and also on the management of community meetings, training and workshops.

This thesis regards the school shelter guideline as an important step towards implementing a nationwide school shelter project. Following a community-based approach, the guideline's objective is to take account of the specific project contexts in rural areas and the more general issues of building and management. The process of the school shelter construction is proposed as a form of training, enabling participants to improve their capacity to deal with disaster risks. Additionally, the role of humanitarian architects in solving strategic problems via design is developed in the guideline, which understands local populations as key clients and participants in each stage of the project.

A key contribution of this research is rethinking the role of architects in the humanitarian sector and humanitarian design guidelines by integrating a community-engagement process through which participants are empowered. However, unsolved issues, such as the uncertainty and precariousness of whether this new guideline will work or not, remain. To cope with such issues, a live project to design and build a school shelter in the village of Mout in the Xieng Ngeun District of the Luang Prabang Province (as mentioned in section **3.1 Construction policy and its context in Laos**) represents an opportunity to test and assess these school shelter guidelines in a practical setting.

The live project is financed by Luminous Action Organisation (LAON), which is a South Korea-based international non-governmental organisation (contributing approximately US \$45,000 for the school shelter construction). It has been in preparation since 2015, beginning with multiple meetings with Laos government authorities from the Ministry of Natural Resources and Environment and the Ministry of Labour and Social Welfare, which share responsibility for disaster risk and its responses. On 31 January 2018, a memorandum of understanding (MOU) was signed and the construction of the school shelter is expected to take place between November 2018 and end of March 2019. As this project will be undertaken on a community-participation basis, workshops and training related to disaster risk and its responses will be offered during the said construction period. Afterwards, on the completion of the school shelter, evacuation drills will be organised and conducted in the first half of 2019 and from the end of 2019, at which point the school shelter will have been fully handed over to the target village. As a consequence, it is envisaged that the disaster resilience of the target village will be improved.

The progress of the project has proceeded in conjunction with the development of this dissertation so that witnessing the current situation whereby guidelines published in Laos are rarely used has led me to regard this live project as a means of verifying the school shelter guidelines proposed in this thesis. In this sense, such architectural practice will ensure these school shelter guidelines avoid following the same deficiencies of present Laotian guidelines – e.g. that they contain a lack of practical knowledge and are used infrequently in the field itself – through which the guidelines can be

developed and revised with more implementable strategies that are more appropriate to the context of Laos. As the Laos government has been involved in the live project, they are able to perceive the role of architects as not just that of architectural designers, but as improving local communities' disaster resilience through architectural practice. In addition, these roles are narratively illustrated in the school shelter guidelines so that the Laos government authorities are able to understand the roles of architects and guidelines within the humanitarian sector, which in turn contributes to the dissemination and advocating of the strategies outlined in this dissertation. In this context, the implementation of the live project has meaningful significance as a practical review.

By extension, there is the possibility of undertaking further research on a prototypical design of a school shelter, which this practice-led thesis does not cover. What a prototypical school shelter should consider is stated in a 2017 interview with Sithixay Insiengmay, a lecturer in the Faculty of Architecture, National University of Laos. He states that traditional wedged-through mortise-and-tenon joints have comparatively more flexibility than contemporary structures with rigid joints. These allow the houses to go with the flow of the floodwater, rather than standing rigidly erect against it; dwellings can, for the most part, withstand the water's impact despite tilting. Afterwards, the tilted home can be straightened manually. Therefore, it is worth looking at traditional construction methods, such as timber-framing and joints. The ongoing live project mentioned in this thesis will pursue these practical construction questions. Thus, *A Design Guideline for a School Shelter: Disaster-Resilient Communities in the Lao People's Democratic Republic* can be seen as the foundation for further research into traditional, local construction practices and participatory processes.

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Appendix I. List of interviewees and questionnaires

A. List of interviewees

Author interview with Derin Henderson, Environment Program Advisor from The Asia Foundation, 16 December 2016.

Author interview with Deng Seng Aloune, Liaison and Reporting Officer from French Red Cross and Dr Kaviphone Southy, Director of Disaster Management Department from Lao Red Cross, 16 December 2016.

Author interview with Christelle Marguerite, Senior Disaster Risk Reduction Advisor from Save the Children, 7 April 2017.

Author interview with Dr Xayaphone Vongvilay, Vice Dean of Academic Affairs in the Faculty of Architecture; Mr Chanthavong Moua, Head of Academic Affairs Office in the Faculty of Architecture; and Champa Lattanasouvannaphonh, former Head of Tourism Management Department, Faculty of Economics and Tourism at the Soupanouvong University, 22 November 2017.

Author interview with Khampeng Chithavone, a director of a secondary school in the village of Mout, 22 November 2017.

Author interview with Thippamonh Chanthalangsy, Head of Education Construction Design Management, Ministry of Education and one of the authors of *National School Construction Guidelines (2009)*, 6 March and 24 November 2017.

Author interview with Sithixay Insisiengmay, the Head of Research Section in the Faculty of Architecture from the National University of Laos and a contributor to the *Guidelines on Housing Construction in Disaster Prone Areas (2014)*, 24 November 2017.

Author interview with Provash Mondal, Humanitarian and Resilience Manager from Oxfam, 2 December 2016.

Author interview with Prasong Vongkhamchan, Director General of Social Welfare Department from Ministry of Labour and Social Welfare, 24 November 2017.

Author interview with Kattiya Vanasack, Deputy Director; Changpheng Phetdala, Technical Staff; Bounthanh Khammanong, Head of Administration Office; Khamson Duangmanee, Technical Staff; and Khamvanh Vanvilay, Head of Department of Labour and Social Welfare, 21 November 2017.

B. Questionnaires

[Humanitarian architecture and community participation]

1. *What is your recent project of disaster risk reduction with community participation?*
2. *Do you know any projects related to humanitarian architecture, such as the facilitation of safe shelters, that have been conducted in Laos?*
3. *What kind of manuals do you usually refer to when undertaking projects?*
4. *Can you tell me about 'Community-Based Disaster Risk Reduction (CBDRR) Manual in Lao PDR (2016)' and 'National School Construction Guidelines of Lao PDR (2009)' in Laos?*

5. *In terms of community participation in the project, what do you think of arising conflicts between the local people and experts?*
6. *What is your opinion on the role of experts in the participatory process of projects?*
7. *What do you think are the advantages and disadvantages of community participation?*
8. *How do you think you can improve the current participatory process?*
9. *What is the difference between Laos and other countries when you lead the project?*
10. *Have you seen any projects relating to humanitarian architecture prepared or conducted in Laos?*
11. *In terms of the flood damage to local houses, what do you think of the necessity of architectural response?*
12. *As an alternative to post-disaster reconstruction, such as that of emergency shelters, what is your opinion on building safe shelters as a means of disaster preparedness?*

[Construction policy]

1. *Could you tell me about the school and housing construction policy at the local/rural level?*
2. *Could you tell me about how a school construction project proceeds?*
 - 2-1. *In terms of the governmental policy, how is the budget allocated and who designs and builds the school?*
 - 2-2. *Some financial assistance from INGOs or other institutions are given to building schools at the local level. What is the nature of the involvement of the INGO, etc., in the subsequent school-building project? Who is responsible specifically for designing and building the school?*

[Design and Construction]

1. *Could you tell me about how the village schools and individual houses are constructed in general?*
 - 1-1. *Is there an architect to design the village schools and individual housing?*
 - 1-2. *What kinds of building material are normally used?*
 - 1-3. *Who generally participates in the construction of these buildings?*
2. *From my experiences, many of the village schools are based on the same design. Could you please tell me about this?*

3. Similarly, much of the individual housing in the rural areas is similar. Could you also tell me about this please?

[Shelter]

A village school in rural areas is normally used as a safe shelter when flood occurs. The questions below are related to this situation. Could you please answer as much as you can?

1. Is there a village flood plan related to this at village level? For example, concerning how to evacuate to the village school or how to use the village school as an emergency shelter or how to distribute relief supplies etc.?

2. In general, is a village school in rural areas normally located in a safe place during floods? Or is this consideration paid heed to in the building of schools?

3. When the affected villagers evacuate to the village schools, how do they use it in general?

Appendix II. Research ethics survey consent and information forms

Survey Information Sheet in English version



Survey Information Sheet

Design Guidelines for Humanitarian Architecture: disaster-resilient communities in Lao PDR

Supervisor: *Dr. Sam Jacoby*
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MPhil student: *Soon Min Hong*
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soonmin.hong@network.rca.ac.uk
soonmin_hong@mylaon.org

/ / 2017

Dear Potential Participant,

I am a student in the School of Architecture. As part of my studies, *I am* conducting a research project entitled Design Guidelines for Humanitarian Architecture. You are invited to take part in this research project which explores manuals of disaster risk management/reduction in order to develop design guidelines for humanitarian architecture, such as a shelter, particularly regarding the context of Laos.

If you consent to participate, this will involve:

- Completion of an anonymous survey which will take approximately 10-15 minutes of your time.
- Returning the survey to Soon Min Hong
- List additional activities (*eg: having interviews*) that may be required as part of the survey process
- NOTE: If I am asking for personal information, I should require consent from the respondent.

Participation is entirely voluntary. You can withdraw at any time and there will be no disadvantage if you decide not to complete the survey. All information collected will be confidential. All information gathered from the survey will be stored securely and once the information has been analysed all questionnaires will be destroyed. At no time will any individual be identified in any reports resulting from this study.



Royal College of Art

RESEARCH & INNOVATION

If you have any concerns or would like to know the outcome of this project, please contact my supervisor, Dr. Sam Jacoby, at the above address.

Thank you for your interest,

Sincerely yours

Soon Min Hong

Complaints Clause:

This project follows the guidelines laid out by the Research Ethics Code of the Royal College of Art.

If you should have any concerns about your rights as a participant in this research, or you have a complaint about the manner in which this research is conducted, it may be given to the researcher or, if an independent person is preferred, addressed to the Research Ethics Committee of the Royal College of Art at the above address.

Survey Consent Form in English version



Survey Consent Form

Design Guidelines for Humanitarian Architecture: disaster-resilient communities in Lao PDR

Supervisor: *Dr. Sam Jacoby*

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MPhil student: Soon Min Hong

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/ / 2017

I,, have read the information on the research project, *Design Guidelines for Humanitarian Architecture: disaster-resilient communities in Lao PDR*, which is to be conducted by *Soon Min Hong* from the Royal College of Art, and all queries have been answered to my satisfaction.

I agree to voluntarily participate in this research and give my consent freely. I understand that the project will be conducted in accordance with the Information Sheet, a copy of which I have retained.

I understand that I can withdraw from the project at any time, without penalty, and do not have to give any reason for withdrawing. I understand that any stored data may be developed.

I consent to:

- Complete an anonymous survey which will take approximately *10 to 15 minutes*
- Return the survey to *Soon Min Hong*
- Give personal information if required
- *List additional activities participants may be asked to undertake as part of the survey process.*



Royal College of Art

RESEARCH & INNOVATION

I understand that all information gathered from the survey will be stored securely, my opinions will be accurately represented. Any images in which I can be clearly identified will be used in the public domain only with my consent.

Print Name:.....

Signature.....

Date:

This project will be conducted in compliance with the Research Ethics Code of the Royal College of Art.

Survey Information Sheet in Lao version



ແຜນຂໍ້​ມູນ​ສໍາ​ຫຼວດ

ຫຼັກການການອອກແບບ ສໍາລັບ ນັກອອກແບບສະຖາປັດຕິຍະກໍາສາດ: ຄວາມທົນທານຕໍ່ໄພພິບັດຂອງຊຸມຊົນໃນ ສປປ ລາວ

ຜູ້ຊີ້ນຳ: ດຣ. ແຊມ ຈາໂກບີ (Dr. Sam Jacoby)

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ຂ້າພະເຈົ້າ ເປັນນັກສຶກສາຈາກ School of Architecture. ເນື່ອງຈາກວ່າມັນເປັນສ່ວນໜຶ່ງຂອງການສຶກສາຂອງຂ້າພະເຈົ້າ, ຂ້າພະເຈົ້າກໍາລັງດໍາເນີນການຄົ້ນຄວ້າໂຄງການ ຫົວຂໍ້ ຫຼັກການການອອກແບບສໍາລັບ ນັກອອກແບບສະຖາປັດຕິຍະກໍາສາດ. ທ່ານໄດ້ຖືກເຊັນໃຫ້ມີສ່ວນຮ່ວມໃນການຄົ້ນຄວ້າໃນຄັ້ງນີ້ ເພື່ອຊອກຫາຄູ່ມືໃນການຄຸ້ມຄອງຄວາມສ່ຽງ/ຫຼຸດຜ່ອນໄພພິບັດ ເພື່ອພັດທະນາ ຫຼັກການການອອກແບບສໍາລັບ ນັກອອກແບບສະຖາປັດຕິຍະກໍາສາດ ເຊັ່ນວ່າ ສູນຫຼົບໄພ, ໂດຍສະເພາະແມ່ນກ່ຽວກັບລາວໂດຍທົ່ວໄປ.

ຖ້າທ່ານຍິນຍອມເຂົ້າຮ່ວມ ແມ່ນຈະໄດ້ຜົວພັນກັບ:

- ຕື່ມຂໍ້ມູນໃສ່ແບບຟອມຄົ້ນຄວ້າທີ່ບໍ່ລະຊື່ໃຫ້ລິມບູນ ເຊິ່ງຈະໃຊ້ເວລາປະມານ 10 -15 ນາທີ.
- ສົ່ງຄືນແບບຟອມຄົ້ນຄວ້າໃຫ້ ຊຸນ ມິນ ຮິງ (Soon Min Hong)
- ຮ່າງລາຍການກິດຈະກຳເພີ່ມເຕີມ (ຕົວຢ່າງ: ມີການສໍາພາດຕ່າງໆ) ທີ່ອາດຈະມີ ເຊິ່ງເປັນສ່ວນໜຶ່ງຂອງຂະບວນການ/ຂັ້ນຕອນຂອງການຄົ້ນຄວ້າ.



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ໝາຍເຫດ: ຖ້າຂ້າພະເຈົ້າສອບຖາມຂໍ້ມູນສ່ວນຕົວ, ຂ້າພະເຈົ້າຄວນຈະໄດ້ຮັບຄວາມຍິນຍອມຈາກຜູ້ຕອບກ່ອນ.

ການເຂົ້າຮ່ວມແມ່ນແບບສະໝັກໃຈທັງໝົດ. ທ່ານສາມາດຖອນຕົວເມື່ອໃດກໍໄດ້ ແລະ ຈະບໍ່ມີຜົນເສຍຫາຍຫຍັງ ຖ້າທ່ານຕັດສິນໃຈຈະບໍ່ຕື່ມຟອມໃຫ້ແລ້ວ. ຂໍ້ມູນທັງໝົດທີ່ໄດ້ມາຈະເປັນຄວາມລັບ, ຂໍ້ມູນທັງໝົດທີ່ລວບລວມມາຈາກແບບຟອມຄົ້ນຄວ້າ ຈະຖືກເກັບຮັກສາໄວ້ຢ່າງປອດໄພ ແລະ ເມື່ອຂໍ້ມູນຖືກນຳມາວິໃຈຄຳຖາມທັງໝົດຈະຖືກທຳລາຍ. ຂໍ້ມູນສ່ວນບຸກຄົນຈະບໍ່ຖືກລະບຸໃນຜົນຂອງບົດລາຍງານຕ່າງໆຈາກການຄົ້ນຄວ້າໃນຄັ້ງນີ້.

ຖ້າທ່ານມີຄວາມສົງໄສ ຫຼື ຕ້ອງການຮູ້ຜົນຂອງໂຄງການນີ້, ທ່ານສາມາດຕິດຕໍ່ຜູ້ຊີ້ນຳຂອງຂ້າພະເຈົ້າໄດ້ ດຣ. ແຊມ ຈາໂກບີ (Dr. Sam Jacoby) ຕາມທີ່ຢູ່ຂ້າງເທິງ.

ຂໍຂອບໃຈທີ່ທ່ານໃຫ້ຄວາມສົນໃຈ,
ຮຽນມາດ້ວຍຄວາມນັບຖື,

ຊຸນ ມິນ ຮົງ (Soon Min Hong)

ຕິດຕໍ່ຮ້ອງຮຽນ:

ໂຄງການນີ້ປະຕິບັດຕາມແບບທີ່ໄດ້ວາງໄດ້ໂດຍ Research Ethics Code ຂອງ Royal College of Art.

ຖ້າທ່ານມີຄວາມສົງໄສກ່ຽວກັບສິດທິຂອງທ່ານໃນຖານະຜູ້ເຂົ້າຮ່ວມໃນການຄົ້ນຄວ້າໃນຄັ້ງນີ້ ຫຼື ຖ້າທ່ານມີຄຳຮ້ອງກ່ຽວກັບວິທີການດຳເນີນການຄົ້ນຄວ້າຄັ້ງນີ້ ບຸກຄົນທົ່ວໄປແມ່ນໄດ້ຮັບບຸລິມະສິດ, ຕິດຕໍ່ຫາ Research Ethics Code ຂອງ Royal College of Art.



ແບບຟອມຍິນຍອມສໍາຫຼວດ

ຫຼັກການການອອກແບບ ສໍາລັບ ນັກອອກແບບສະຖາປັດຕິຍະກໍາສາດ: ຄວາມທົນທານຕໍ່ໄພພິບັດຂອງຊຸມຊົນໃນ ສປປ ລາວ

ຜູ້ຊີ້ນຳ: ດຣ. ແຊມ ຈາໂກບີ (Dr. Sam Jacoby)

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ຂ້າພະເຈົ້າ,, ໄດ້ອ່ານຂໍ້ມູນດ້ານການຄົ້ນຄວ້າຂອງໂຄງການ, ຫຼັກການການອອກແບບ ສໍາລັບ ນັກອອກແບບສະຖາປັດຕິຍະກໍາສາດ: ຄວາມທົນທານຕໍ່ໄພພິບັດຂອງຊຸມຊົນໃນ ສປປ ລາວ, ເຊິ່ງດໍາເນີນການໂດຍ ຊຸນ ມິນ ຮິງ (Soon Min Hong) ຈາກ the Royal College of Art ແລະ ຄໍາຖາມທຸກຄໍາຖາມແມ່ນໄດ້ຕອບດ້ວຍ ຄວາມພໍໃຈຂອງຂ້າພະເຈົ້າ.

ຂ້າພະເຈົ້າຕົກລົງໂດຍສະໝັກໃຈ ເຂົ້າຮ່ວມໃນການຄົ້ນຄວ້າໃນຄັ້ງນີ້ ແລະ ຍິນຍອມດ້ວຍຄວາມສະໝັກໃຈຂອງຂ້າພະເຈົ້າ. ຂ້າພະເຈົ້າເຂົ້າໃຈວ່າ ໂຄງການ ຈະດໍາເນີນການໄປຕາມແຜນຂໍ້ມູນຂ່າວສານ, ດັ່ງທີ່ຂ້າພະເຈົ້າໄດ້ມີສໍາເນົາເກັບຮັກສາໄວ້.



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ຂ້າພະເຈົ້າເຂົ້າໃຈວ່າ ຂ້າພະເຈົ້າສາມາດຖອນໂຕອອກຈາກໂຄງການໄດ້ທຸກເມື່ອ ໂດຍບາດສະຈາກການບັບໃໝ ແລະ ບໍ່ຈຳເປັນຕ້ອງແຈ້ງເຫດຜົນໃດໆສຳຫຼັບການຖອນຕົວ. ຂ້າພະເຈົ້າເຂົ້າໃຈວ່າຂໍ້ມູນໃດໆທີ່ຮັກໄວ້ສາອາດຈະນຳໄປພັດທະນາໄດ້.

ຂ້າພະເຈົ້າຍິນຍອມດັ່ງນີ້:

- ຕົ້ມແບບຟອມສຳຫຼວດແບບບໍ່ມີຕົວຕົນ ເຊິ່ງຈະໃຊ້ເວລາປະມານ 10 ຫາ 15 ນາທີ
- ສົ່ງຄືນແບບຟອມສຳຫຼວດໃຫ້ ມິນ ຮິງ
- ໃຫ້ຂໍ້ມູນສ່ວນຕົວຖ້າຕ້ອງການ
- ຮ່າງລາຍການຜູ້ເຂົ້າຮ່ວມກິດຈະກຳເພີ່ມເຕີມທີ່ອາດຈະຖືກຖາມໃນການດຳເນີນການ ເຊິ່ງເປັນສ່ວນໜຶ່ງຂອງການສຳຫຼວດ.

ຂ້າພະເຈົ້າເຂົ້າໃຈວ່າຂໍ້ມູນລວບລວມມາທັງໝົດຈາກການຄົ້ນຄວ້າຈະຖືກເກັບຮັກສາໄວ້ຢ່າງປອດໄພ, ຄວາມຄິດເຫັນຂອງຂ້າພະເຈົ້າຈະນຳສະເໜີຢ່າງຖືກຕ້ອງ. ຮູບພາບຕ່າງໆອັນໃດທີ່ຂ້າພະເຈົ້າສາມາດລະບຸລະອຽດແມ່ນຈະຖືກໃຊ້ເຂົ້າໃນຂອບເຂດສາທາລະນະດ້ວຍຄວາມຍິນຍອມຂອງຂ້າພະເຈົ້າເທົ່ານັ້ນ.

ຊື່:.....

ລາຍເຊັນ:.....

ວັນທີ:.....

ໂຄງການນີ້ໄດ້ຖືກດຳເນີນການໂດຍປະຕິບັດຕາມ the Research Ethics Code ຂອງ the Royal College of Art.