Doctoral Dissertation

Sustainability of Cultural Heritage Assets along with Self and Community Driven Recovery from Natural Disaster in Indonesia

Case Study in Yogyakarta and Padang

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ABSTRACT

Cultural heritage, tangible artifacts and intangible attributes is an evidence and witness of development history, as well as the identity of a region. Conservation of cultural heritage is always challenging, especially on privately owned or community assets buildings. One of the most formidable challenges comes on the recovery process after natural disaster with its hasty recovery manner. Recovery in Indonesia after the natural disaster often occurs in purpose to restore into normal condition as fast as possible and imposed separately with the cultural heritage conservation, that leads to massive degradation of the cultural heritage assets after recovery of natural disaster. An understanding of conservation oriented recovery for cultural heritage assets from the building owners and users viewpoint may help bridge the gap between owners' and users' necessity and wiser cultural heritage recovery.

This study investigates the degree of alterations that occurred at cultural heritage buildings in the selected district and evaluate the owner driven rehabilitation and its influence to the cultural heritage preservation. Attention has also been paid to overview the strategies and frameworks of the programs to tangible as well as intangible assets of cultural heritage as an important tools to enhance sustainability.

The study found that the cultural heritage building's recovery manner post-natural disaster is strongly rooted to the behavior prior the earthquake. The earthquake seems like a windows opportunity to build back with better adaptation of the current necessity. In the viewpoint of cultural heritage conservation, level of consciousness and sense of belonging of cultural heritage buildings or activities.

For the two types of privately owned cultural heritage buildings, the alteration of spatial arrangement, function, material and style have been occurred prior the earthquake. On residential building recovery after the earthquake, most of the respondents appreciate more on stronger building structure and new look of the building, instead of conservation of original building style and material. This encouraging behavior will lead to the degradation of the originality of the building style. Nevertheless, the improvement of the structural quality could lead to better resilient of traditional houses. Likewise, commercial buildings have experienced some changes due to rehabilitation before the earthquake, triggered by the adaptive manner of living and commercial activity. The difference between building owner and tenant also give distinct influence to do recovery. Further, the building users who practically have highest access to daily assessment and monitoring to their historical buildings required to be supported with appropriate technical knowledge and options of recovery with structural retrofitting with full consideration to the cultural building conservation. People centered

recovery framework has proven effective to support timely recovery process. The shifting of framework prior the earthquake for recovery framework is required to be supported with the appropriate consideration and knowledge of cultural heritage conservation, in order to prevent the degradation of cultural heritage assets after the recovery.

The above mentioned results required to be explored to find the opportunity for elaborating with the factual condition of the available framework, especially in role sharing between private sector, community as well as government.

Further research is recommended to assess the influence of the recovery frameworks and process and its contribution to the cultural heritage building conservation in the normal condition. This may need to be repeated at certain intervals to monitor any further changes that may result to clarify the main intention.

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Yogyakarta, 13 January 2016

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GLOSSARY

AHC/YKLPA	Aceh Heritage Community/Yayasan Komunitas Lestari Pusaka Aceh
APBD	APBNAnggaran Pendapatan Belanja Daerah (Regional Budget)
APBN	Anggaran Pendapatan Belanja Negara (State Budget)
BAPPEDA	Regional Body for Planning and Development (Badan Perencanaan Pembangunan Daerah)
BAPPENAS	National Development Planning Board (Badan Perencanaan Pembangunan Nasional)
BCB	Cultural Heritage Objects
BKM	Badan Keswadayaan Masyarakat (Community Self-reliance Agency)
BNPB	National Agency for Disaster Management
BP3	Prehistoric Legacy Conservation Center
BPBD	Regional Agency for Disaster Management
BPPI	Indonesian Heritage Trust
BPR	Bank Perkreditan Rakyat (Community Credit Bank)
CHC	Centre for Heritage Conservation
CSF	Common Service Facility
CSR	Corporate Social Responsibility
DED	Detailed Engineering Design
Deperindagkop	Departemen Perindustrian, Perdagangan dan Koperasi (Department of Industry, Trade and Cooperative)
DHRA	Damaged Heritage Rapid Assessment
GDP	Gross Domestic Product
GMU	Gadjah Mada University
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (German agency for technical cooperation)
HBT	Heng Beng Tong (Himpunan Bersatu Teguh)
HER	Heritage Emergency Response
HTT	Hok Tek Tong (Himpunan Tjinta Teman)
IAI	Indonesian Architect Association
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOMOS	International Council on Monuments and Sites
IFFINA	International Furniture and Craft Fair Indonesia
IMB	Building Construction Permit

INGO	International Non-Governmental Organization
INTO	International National Trusts Organisation
IOM	International Organization of Migration
IRP	International Recovery Platform
ISI	*Institute Seni Indonesia* /Indonesian Art Institute
JHS	Jogja Heritage Society
JICA	Japan International Cooperation Agency
Joglo	Javanese Traditional House with High Roof angle
JPPI	Indonesian Network for Heritage Conservation
JRF	Java Reconstruction Fund
KP3Y	Silver Entrepreneur Production Cooperative, Yogyakarta
MRBP	Heritage Disaster Risk Management
Musyawarah Mufakat	Consensus to achieve conclusions
NGO	Non-Governmental Organization
OPKP	*Organisasi Pengelola Kawasan Pusaka* (Kotagede Heritage District Management Organization)
PCF	Prince Claus Fund
PCF	Prince Claus Fund
PDA	Centre for Architecture Documentation
PEKERTI	*Pengembangan Kerajinan Rakyat Indonesia*/ Indonesian People's Folk Art and Handicraft Foundation
PHI	Indonesian Green Map
POSKO	Coordination Post (Pos Koordinasi)
Pusaka	Centre for Architectural Heritage Conservation
RAB	Budget Plan
RI	Relief International
RKS	Work Plan and Conditions
Rp.	Indonesian Rupiah
RS	Richter Scale
SME	Small & Medium Enterprises
UN	United Nations
UNESCO	United Nations Educational, Scientic and Cultural Organisation
WHC	World Heritage Centre
WMF	World Monument Fund

I. INTRODUCTION

The necessity of privately owned cultural heritage assistance in post-natural disaster

1.1. BACKGROUND OF THE STUDY

1.1.1. CULTURAL HERITAGE IN INDONESIA ARE ENDANGERED

UNESCO defined cultural heritage as tangible artifacts (movable, immovable, as well as underwater artifacts) and intangible attribute (oral traditions, performing arts, rituals) of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations. According to Law of Republic Indonesia number 11/2010, an artifacts can be categorized as cultural heritage when it aged 50 (fifty) years or more, has a special meaning to history, science, education, religion and/or culture; and has a cultural value for the reinforcement of the national identity.

The republic of Indonesia counts around 17,000 islands and rich of cultural heritage that bears clear traces from a long history of trade and exchange across the archipelago and with the wider Indian Ocean region (Salazar 2014). This is one of the reasons why Indonesia has various types of indigenous cultural heritage as well as acculturated one.

In Indonesia, there are two types origin of cultural heritage. The first is a cultural heritage that is built as the excesses of the formation of a royal, which is usually dominated by residential buildings (such as in housing in the palace of Yogyakarta, Solo) and the second is the cultural heritage that is built as the excesses of the development of trading activities as in the coastal cities (usually located in the port cities built by the Dutch). These formed of two main types of privately owned cultural heritage in Indonesia, first which is functioning as a residential and commercial.

Cultural heritage in Indonesia has various levels which are National level, Provincial level and City level. Usually, those levels of cultural heritage usually are in a monumental scale, has very special meaning to history are taking care under the responsibility of the nation. In contrary, some folk level artifact that can be categorized as a cultural heritage that has lower cultural values, privately or community owned, are usually being conserved under responsibility the owner or community. This makes the conservation of folks level cultural heritage artifacts are merely relying on the knowledge and consciousness of the owner itself. This can be inferred that

folks (privately owned) level cultural heritage could be more endangered in compared with the monumental cultural heritage.

Fig. I.1 The begining of indegenous cultural heritage in Indonesia

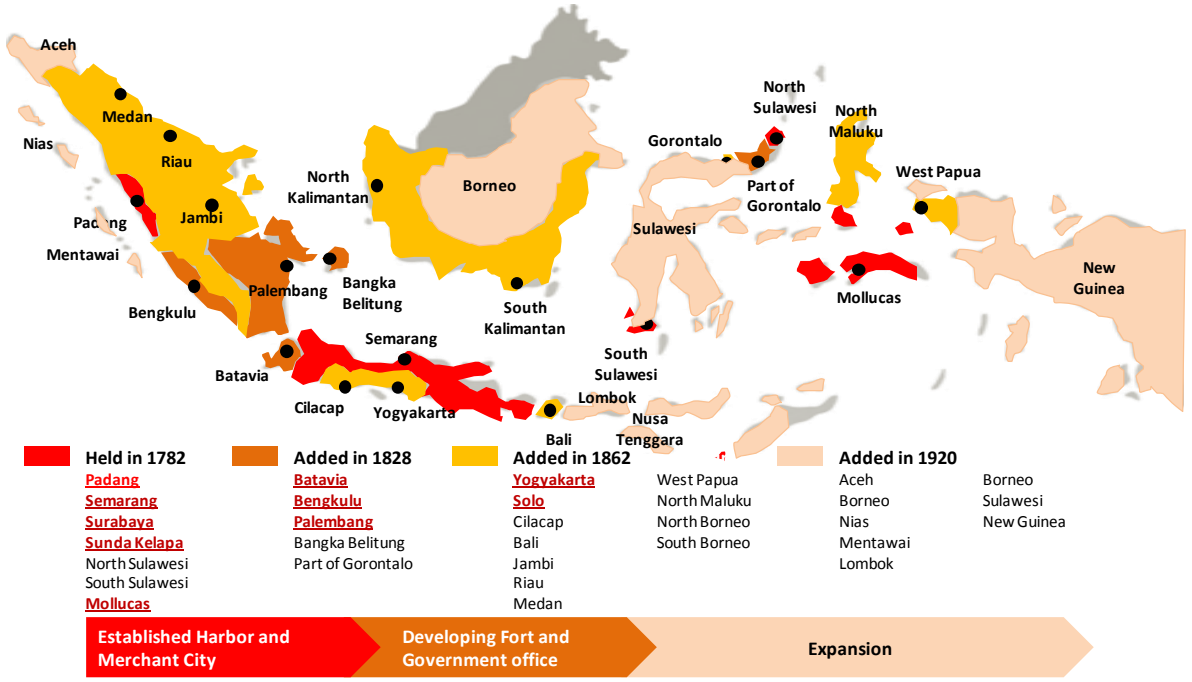

Fig. I.2 The begining of colonial cultural heritage in Indonesia

Besides privately owned cultural heritage, the developments of these towns are also usually equipped by the establishment of a community activities as well as public spaces. Community activities create both tangible and intangible culture.

In the case of Kotagede, cultural heritage community activity is mainly dominated by silver craft making and pottery making in Kasongam that are inherited from past generations since the middle of 16 C. Meanwhile, in Padang, existing communities have formed spaces to congregate and socialize housed in the building community buildings such as churches, mosques and the community building. As part of the cultural heritage that is managed by the community, these buildings also indicated changes caused by usage and maintenance. Related to this, these buildings are also made the emphasis in this study.

Indonesia lies on the ring of fire (Fig. I.3) and faces various disasters such as earthquake, volcanic eruptions, tsunami and other natural disasters. Numerous mitigation efforts, ranging from strengthening disaster preparedness, emergency response activities, to post-disaster recovery, rehabilitation and reconstruction have been conducted. There is a tremendous threat to damaged heritage buildings when they undergo rehabilitation and transformation into new buildings without taking into consideration their heritage values (World Monuments Fund 2008).

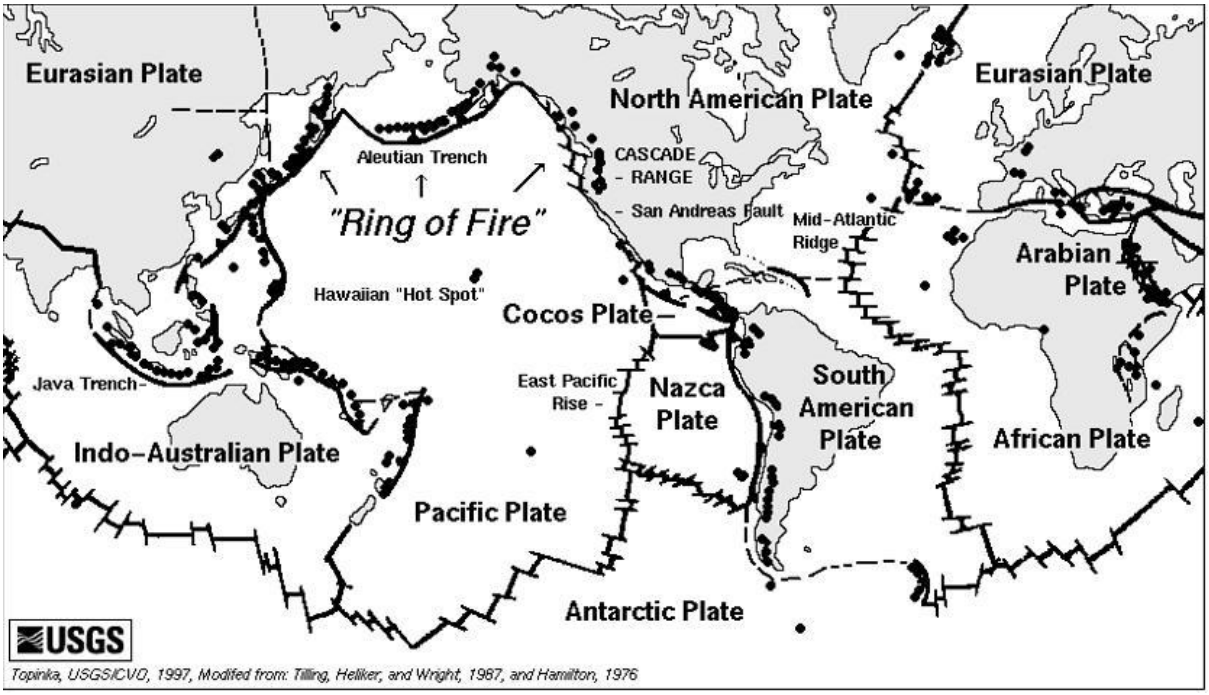

Fig. I.3 Active Volcanoes, Plate Tectonics, and the "Ring of Fire"Source: (USGS, 1997)

1.1.2. OWNER DRIVEN REHABILITATION LEADS TO THE UNCONTROLLABLE TRANSFORMATIONS OF PRIVATELY OWNED CULTURAL HERITAGE ASSETS

In relation between culture and environment, (Oliver, 1997) states that all vernacular cultures exist within, largely depend on and are partially shaped by their environmental contexts. The diverse forms of vernacular architecture are an expression of the cultures that build them. In the last few decades this situation has changed, the concern about the cost of 'progress' and growing interest in alternative lifestyle has led to an even greater appreciation of the special humaneness of architecture without architects (Rudofsky, 1964), with its organic integration of

the buildings into their natural surroundings. In the case of Kotagede (Aminah, 2011)mentioned that the morphological changes of joglo houses caused by selling, reconstructing and inheritance system has already occured before the earthquake. Exploring how this vulnerability condition contributes to the existence of cultural heritage buildings is very promising in result to provide further consideration in assisting the recovery process of cultural heritage assets post-natural disaster.

The traditional buildings generally have a good record or better performance in past earthquakes. This is due to the fact that man and nature have co-existed on the planet of earth for a long time. Since the primitive days man has tried to adjust himself to the conditions of environment and made feeble attempts to cope with the fury let loose by forces of nature. The pattern of human settlements and traditional methods and materials for traditional buildings on a regional basis embody the accumulated traditional wisdom, experience, skill, and craft evolved through the ages. Some of the buildings which have existed for centuries have withstood the onslaughts of earthquakes (Boen, 2001). Nevertheless, about two thirds of the buildings in Indonesia are non-engineered, most of them are one-story and two-story structures. Studies show that the problems in these buildings were caused by minimum reference to standards/codes, lack of detailing, wide variety of quality of materials and construction methods, and improper structural design. Therefore, non-engineered buildings tend to have low structural quality and to be susceptible to earthquake (Kusumastuti, Pribadi, & Ridolva, 2008).

Privately/community owned cultural heritage buildings, presumably experience this owner driven rehabilitation as well through the years. This makes a lot of privately/community owned cultural heritage assets in Indonesia have suffered from all kinds of uncontrolled transformations. The deliberate changing of urban spaces, activities, and economic values reveal multiple ways of how the owner transforms their environment. Many historic buildings have been either demolished or transformed according to new designs even before the disaster struck (Fig.I.4).

Fig.I.4 The degraded building condition, and uncontrollable transformation of the cultural heritage buildings before the earthquake in Padang old district and Kotagede

1.1.3. RECOVERY OF CULTURAL HERITAGE ARE NOT INTEGRATED IN THE RECOVERY FRAMEWORK

In accordance with the Law of the Republic of Indonesia No. 24 of 2007, disaster recovery is defined as a series of activities to restore the affected condition of society and the environment by re-creating the institutions, infrastructure, and facilities with rehabilitation efforts aimed at achieving normal circumstances all aspects of government and life people in the disaster area. Unfortunately, the protection of objects/buildings of cultural heritage, especially the privately owned not specifically mentioned or are set in the law.

Often after the strike of disaster, the consideration of what to do with old houses and damaged historic buildings is perceived to be of low priority for the community and the disaster management team, who is overwhelmed by the need to cope with rescue, demolition, making of safe routes, finding food, shelter provision, etc (Lubkowski 1987). The destruction of traditional buildings has permanent cultural and historical implications. The loss can also mean the loss of a “sense of place” that by its mere presence the traditional building helped create and perpetuate (Waite, 2000).

Sometimes some programs such as clearing debris, rehabilitation and reconstruction are not in line with the spirit of cultural heritage building conservation. This can be clearly seen in the case of cleaning debris program of cultural heritage buildings in the Padang Old Town district. after the earthquake hit the debris were mostly treated like common building rubble (Fig.I.5). The Jakarta post (Bachyul, 2011), reported that scores of historical buildings of the Dutch colonial era that were damaged in the 2009 earthquake in Padang, West Sumatra, remain in poor condition due

to a lack of funds needed to renovate them. Things got worse for the buildings after the earthquake, as many people scavenged materials from the damaged historical sites, and some of the buildings' owners knocked down parts of their structures that they felt had become dangerous. Even one of the private company, The management of PT Perusahaan Perdagangan Indonesia, was reported to the police by the Batusangkar Prehistoric Legacy Conservation Center (BP3) two weeks ago for destroying a protected building on Jl. Batang Arau 23 using an excavator.

In Indonesia, the reconstruction of cultural heritage buildings and historical district are taken into account by the government in a term of policy/financial/technical support 2-3 years after the disaster. It has sometimes lacked of policy and program related to the heritage reconstruction. In the case of post tsunami 2004 Banda Aceh, the Kohler Dutch Cemetery, Colonial Buildings such as Bank Indonesia, National High School 1, and also Traditional House—Rumoh Aceh Cut Nyak Dhien—were reconstructed by donors' initiatives. As well as in the Colonial Ward so called Kota Lama in Padang started to reconstruct its heritage buildings two-years after the Earthquake in 2008. In Yogyakarta's case, especially the World Heritage Monument such as Prambanan temple complex, have attracted various international supports. However, the folk heritage, the colonial buildings, and other types of heritage did not have enough attention from donors/government soon after Java earthquake 2006 (Ikaputra, 2011). Although, small amount of intense joglo houses recovery assistance were given within the first year of recovery promoted by Gadjah Mada University, most of the affected joglo houses treated as an ordinary vernacular house in the term of recovery. Further, lack of intense technical assistance on the historical point of view. The Recovery of cultural heritage that is not integrated with a disaster management framework from the beginning of the recovery process is increasing the risk of loss of cultural heritage assets as a result of natural disasters.

Fig.I.5 Debris clearing by the owner of cultural heritage building in Padang

1.2. AIM AND OBJECTIVES

This study mainly aimed to identify the degree of alteration that occurred at cultural heritage building in the selected district and evaluate the owner driven rehabilitation and its influence to the cultural heritage preservation. Further enhancing the sustainability, over viewing the strategies and frameworks of the programs to tangible as well as intangible assets was being reviewed as well. So that hopefully this study could provide some possible options of recovery framework for private as well as a community owned cultural heritage assets in Indonesia due to natural disaster threats in order to pursue conservation.

With the Kotagede district at Yogyakarta special province and Old Town district Padang as the case study, the objectives comprise as follows:

1. Identify the variety of the recovery process of privately/community owned cultural heritage.
2. Identify the impact of owner/community recovery either planned or unplanned to the conservation of the cultural heritage.
3. Identify the factor that significantly influences the participatory level of owner/community to do recovery that support cultural heritage preservation.

1.3. METHODOLOGY

Since the post disaster recovery process, and respondents tendency as a manifestation of their needs and aspirations may highly influence the recovery process, the data collection on cultural heritage condition, pre and post disaster, framework of recovery from the respondent's viewpoint is taken into prime consideration.

First, to give a comprehensive evaluation regarding cultural heritage recovery process, it is very important to understand the condition of the cultural heritage assets before the earthquake, to identify the degree of building's originality before the earthquake as well as the causes of the alteration. During the field survey, redrawing the plan, observing the changes using building history reconstruction method, and several questions regarding the building condition before the earthquake has been delivered to the respondents. During this phase, some tendency to alterations and cause of the alterations before the earthquake can be clarified. Since the value of tangible cultural heritage in Javanese housing so called *joglo* houses are at the spatial arrangement, meanwhile the value of colonial houses that formed their style from its building appearance, two different assessment approaches have been selected. For Javanese housing, the alteration will be focused on spatial arrangement, building material and building technique. Meanwhile, for colonial building, the degree of alteration is measured on building appearance at the facade, roof and wall, as well as building material and building technique.

Second, collecting data is focused on identifying the framework in cultural heritage recovery, some deep in interviews have been conducted with several key players in the program such as

local government, INGO, cultural and education department at city level, as well as involved university.

Third, synchronic analysis using cross analysis has been selected in order to evaluate the to identify the correlation between the tendency of alteration before the earthquake and the applied recovery options is subsequently explored in the analysis.

1.4. LOCUS AND OBJECT OF THE STUDY

The locus of the research was selected at cultural heritage districts that have experienced natural disasters in Indonesia. In this case, Kotagede and Kasongan districts in Yogyakarta and Old Town district of Padang had been chosen as the main location of observation in relation with 2006 Yogyakarta and Central Java earthquake and the 2009 west Sumatera earthquake.

The objects of this research are focusing on the privately owned buildings as well as community engaged program on cultural heritage recovery. The issue of cultural heritage conservation in privately owned buildings, especially in the manner of post-disaster recovery is very important to be reviewed. Especially in Indonesia, where the advocacy of this type of building is not normally delivered even not at emergency condition. To enhance the sustainability, people centered become the main concern in this research, considering limitation roles of stakeholders, donors as well as government. Some cases that provide various frameworks, especially that strongly empower community and local people have been picked up.

1.5. POSSIBLE CONTRIBUTION TO ENVIRONMENTAL THEORY AND DESIGN METHOD

The topic of cultural heritage asset recovery in Indonesia is expected to complement current research on disaster recovery as well as cultural heritage conservation in Indonesia. Examination from the residents point of view, moreover, is expected to provide an alternate perspective as a community based activity oriented approach in the cultural heritage conservation within the disaster recovery environment.

The findings are expected to contribute as considerations in disaster recovery theory that could be strongly aligned with the cultural heritage conservation. The findings are expected to provide options in delivering better recovery with full consideration of cultural heritage conservation, that leads to sustainability in the midst of hasty recovery manner after natural disaster.

The proposal for cultural heritage recovery frameworks offers hints where community, non governmental organization, government institution, local organizations, heritage experts and university can further develop partnerships before the natural disaster hit that can support cultural heritage recovery. These frameworks are expected to serve as a model / prototype for similar cases on Indonesian cities and on Asian Cities that have similar formation and ownership of cultural heritage building culture.

1.6. RESEARCH FRAMEWORK

The discussion is arranged into six chapters (Fig.I.6). In **CHAPTER 1: INTRODUCTION**, over viewing the consideration why assisting privately owned cultural heritage asset recovery is highly important. This chapter introduces the background of this research, study aims, methodology and study framework, to give a guidance on this dissertation's structure.

CHAPTER 2, LITERATURE STUDY provides some literature consideration of the role of culture as an agent of changes, culture and architecture alteration, the definition of cultural heritage assets, and disaster recovery frameworks in Indonesia. This leads to a discussion on a parameter and research variable that will be utilized in this research.

One type of cultural heritage in Indonesia was the one that started with the development of the city center of influence of the traditional kingdom or Dutch colony. The development of the city center is usually followed with the development of residential and commercial area. **CHAPTER 3 CULTURAL HERITAGE RECOVERY ON RESIDENTIAL DISTRICT** is started with the overview of Kotagede heritage district, housing arrangement characteristics as well as the challenges of the housing conservation before the earthquake. The heritage reconstruction method was utilized based on the interview to reconstruct the condition of the houses right before the earthquake hit on 2006. Based on JICA-GMU data of rapid assessment and supported by the identification of respondents, the damages and recovery frameworks of the houses is identified. To clarify the essential factors and vulnerable element of the houses due to the recovery process at the point of view of building conservation, the evaluation from the respondents regarding recovery process and results become the main concern in this chapter.

In the case of the commercial district, **CHAPTER 4: CULTURAL HERITAGE RECOVERY ON COMMERCIAL DISTRICT** with the case study of Padang Old Town district that have been impacted by 2009 West Sumatra earthquake was chosen. It is started with a brief introduction of Padang Old Town district and its historical background. The same method as in chapter 3 was utilized as well in chapter 4.

Participatory and people centered is one of the keys to ensure sustainability. Cases of participatory programs by the community were being analyzed qualitatively in **CHAPTER 5: PARTICIPATORY CULTURAL HERITAGE RECOVERY: A WAY FOR SUPPORTING THE SUSTAINABILITY**. Six cases of cultural heritage recovery post earthquake in Yogyakarta and Padang were selected based on the variety of the frameworks. The participation level is further compared to evaluate the engagement of the beneficiaries/local people that could contribute to the sustainability in conserving cultural heritage. This qualitative research allows to define particular approaches, including its advantage as well as disadvantages of the program.

Overall finding and discussions restated in **CHAPTER 6 CONCLUSION** lead to consideration on the new tendency for cultural heritage assets recovery. Fig.I.6 shows the structure of this study.

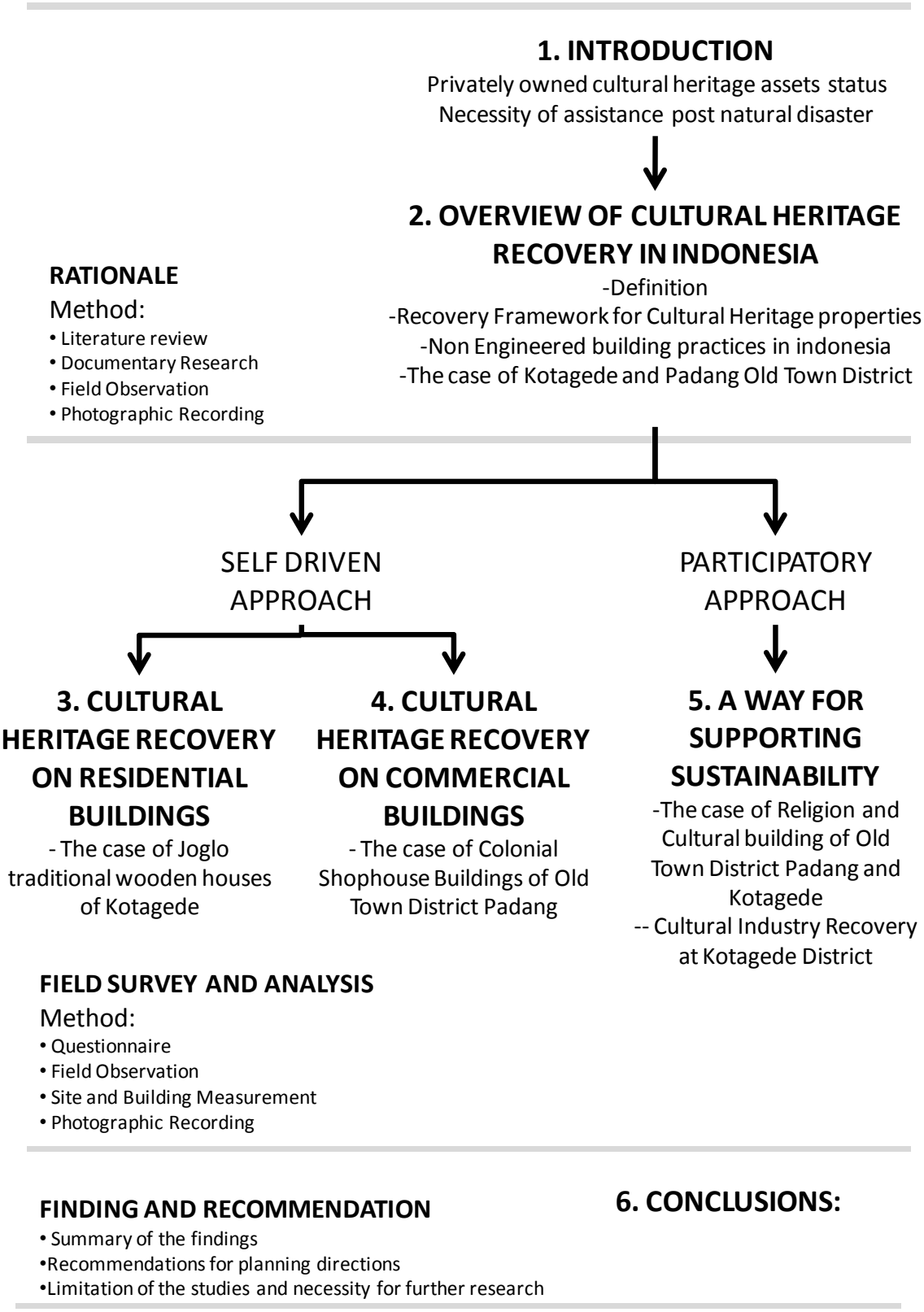

Fig.I.6 Structure of the study

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II. LITERATURE STUDY

Culture and Its Influence to Architecture &
Overview of Cultural Heritage Recovery in Indonesia

2.1. CULTURE AS AN AGENT OF CHANGE

Culture is a unity of ideas, work and attainments is a result of that learning process (Sardjono, et al. 2013). In addition, the culture can be inferred as a result of human adaptation to the environment. The concept of culture can be divided into two which are in a form of physical; concept; or encompasses both. Meanwhile, according to Kroeber and Kluchkohn (in Sardjono, 2013) culture is the overall pattern of behavior and deportment, explicitly or implicitly obtained through symbols that eventually able to form something that is typical of human groups, including manifestations in material things. The same concept expressed by Koentjaraningrat (in Sardjono, 2013) which states that the culture obtained from the process of learning through the study of the natural environment where he lives, trying to adjust and try to draw benefits.

Mankind's dwellings hold a double fascination for the cultural geographer. Not only do they commonly contribute much to the distinctive character of landscapes, they also stand as the concrete expressions of a complex interaction among cultural skills and norms, climatic conditions, and the potentialities of natural materials. Widely traveled architect, considers in this volume how the houses of the world's people, thus reflect the physical conditions of their environments, as well as cultural preferences and capabilities, in a wide variety of solutions to basic problems of house design (Rapoport 1969).

According to its form, culture can be divided into three categories (JJ. Honigman in Sardjono, 2013), which are:

- **Ideas (Being an ideal)**. An ideal form of culture is the culture that shaped collection of ideas, values, norms, rules, and so forth that is abstract; cannot be felt or touched. Culture form is located in the heads or in the nature of thinking citizens. If the community's expressed their ideas in written form, then the location of an ideal culture that is in the books of essays and works of writers such citizens.
- **Activity (action)**. Activity is the manifestation of culture as a pattern of human action in society. This form often referred to the social system. The social system is composed of human activities interact with each other, making contact, and mingle with other humans, according to certain patterns of behavior are based on customs procedures. Concrete nature, occurring in everyday life and can be observed and documented.

- **Artifacts (work)**. Artifacts are the physical manifestation of culture in the form of the results of activities, actions, and the work of all men in society in the form of objects or things that can be touched, seen, and documented. It's third among the most concrete manifestation of culture. In the reality of social life, between one culture form which cannot be separated from another culture form. For example: culture form an ideal set up and give direction to the actions (activities) and work (artifacts) humans.

Culture as a system constantly changes and develops, either because the impulses from inside as well as outside the system. The changes occurred due to the process of human adaptation and learning towards the demands of a better life. There is also the potential for mixing between cultures with other cultures. The process of meeting between two different cultures led to acculturation and assimilation (Poerwanto in Sardjono, 2013). Acculturation is one form of continuous culture (Cultural Sustainability) or an attempt to maintain the continuity of a culture (Rapoport in Sardjono, 2013). Although cultural changes, which is expected as a development yet retaining the character of the culture. Changes essentially an adaptation to the demands and new challenges so that the culture can remain sustain. Thus, some elements remain and become a strong feature of the culture and some others altered to reflect the changing times (continuity and change). The elements are retained and passed down between generations into a heritage and cultural traditions.

2.2. CULTURE AND ARCHITECTURE ALTERATION

Architecture as a cultural product reflects the level of civilization of the local community and the level of complexity that affect cultural diversity. Cultural characteristics of the area reflected in the physical appearance of their living environment so called traditional architecture. The traditional architecture is often defined as Vernacular Architecture, Indigenous, Tribal (Oliver in Sardjono, 2013), People's Architecture, Anonymous, Primitive, Local or Folk Architecture (Papanek in Sardjono, 2013) or the so-called Ethnic Architecture (Tjahjono in Sardjono, 2013). These terms are intertwined and difficult to separate from each other. The similarity is its characteristic that refers to cultural issues, linkages with the local natural environment (locality), and custom-derived sources that inherited inter-generational with very little of the changes. Meanwhile, according to Oliver (in Sardjono, 2013) referred to as the vernacular architecture of traditional architecture because it was built by the community to meet the special needs in their own world view. The specific needs of the local values rise diversity in every region. The characteristic of each region depending on the response to its natural resources of the environment. Thus, traditional architecture also reflects the magnitude of cultural variations and the wide spectrum of relations between the community and place.

Architecture as a container system is highly influenced by the activity. The meaning of activity is important because it draws attention to wants (as opposed to "needs") and wants are often more important than needs in an explanation of the nature of space organization and standards,

shape, form, transitions, material etc. (Rapoport 1998). Fig.II.1 shows the correlation between culture and activity system.

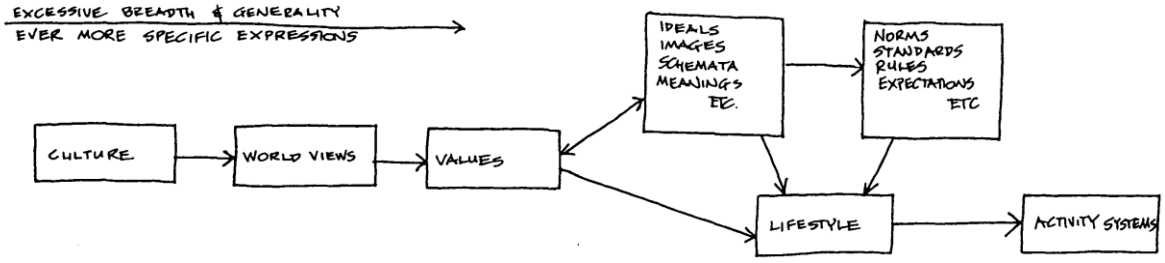

Fig.II.1 Correlation between culture and activity system. Source: (Rapoport 1998)

Sardjono (2013) explains that changes in architecture or form settlements do not take place spontaneously and thoroughly, but depending on the position of the element in the cultural context (as core or peripheral elements). Architecture as a tangible manifestation of culture will certainly be affected if the culture as a holistic system change. Further, as a form of cultural outermost position, the architecture is the most vulnerable forms of cultural change. As a form of adaptation, changes the shape of the architecture represented the condition of the culture at that time, which when coupled will be able to tell you about the history of a culture.

This point of view clarified that the perspective of the building owner or user can highly influence the alteration. In order to clarify the correlation between physical alteration and the developed culture, cross analysis between owners preference and the building status have been delivered in this entire research.

2.3. DEFINITION OF CULTURAL HERITAGE ASSETS

Heritage is the witness of history and it is a valuable asset of an important resource for future generations (BPPI 2011). Heritage definition, initially understood solely as artifact, has developed greatly over the last two decades to even broader and across borders. Heritage is not only natural and cultural but also the mixture of them and its interactions with time and space, including both tangible and intangible. Therefore, heritage issues should be a part of life and not be separated from everyday life, managements of culture and arts, city, village as well as region. The Heritage in Indonesia is defined as natural, cultural, and *Saujana* (cultural landscape).

Heritage conservation in Indonesia's traditional society has long been known and a part of the society's life. In many areas of Indonesia any valuable objects older than 50 years is a heritage to be conserved and pass on to future generations (World Monuments Fund 2008). Scientifically, Heritage conservation started its development in archaeological field in the archipelago in 1903. The Netherlands Indies, which ruled in 1933 issued a law on archaeological objects which is the foundation of the Law of the Republic of Indonesia No. 5 year 1992 concerning cultural heritage

objects. In its development, heritage in Indonesia is known as *warisan* or *cagar*[1] whether it's cultural or natural. In early 1990s, the time of issuance of the Law No. 5 concerning Cultural Heritage Objects the scope of heritage conservation in Indonesia solely focused on the artifact. But at the end of 1990s, conservation for heritage area and heritage cities started to develop.

Refers to cultural heritage definition which was the work of indigenous community aside from the heritage of the kings, ulemas which is known as monuments. The folk heritage came in the forms of vernacular houses, specifed environment, performing arts, handicrafts, and other heritage as part of the daily life of the community. Indonesian heritage as inscribed on the Indonesian Charter for Heritage Conservation 2003 consist of natural heritage, cultural heritage (tangible and intangible), and saujana/cultural landscape (the mixture of natural and cultural) (World Monuments Fund 2008) Table II.1.

Table II.1 Cultural Heritage Levels in Indonesia. (Indonesian 2010)

	National Level	Provincial Level	City Level
1. Special Meaning	Associated with history of the formation nation of Indonesia both in the historic and pre-historic era	Associated with the history of the formation of the province, or have a deep meaning for the province or some region within a province.	Has special meaning for the town/city
	Outstanding universal value		
2. Conservation actors	Owned by Nation Maintained by Nation	Owned and Maintained by Provincial Government	City Government
			Owner
3. Registration	Has been started	Not Yet	Not Yet
4. Example	Prambanan Borobudur House of Maeda	Pagaruyung Palace	Kotagede district Padang Old Town
	 Prambanan Temple	 Pagaruyung Palace	 Mandiri Bank, Padang
5. Scale	Usually Monument cultural Heritage		can be both monument or folk level

[1] *Warisan* or *cagar* (according to the Great Dictionary of the Indonesian Language of the Language Center)defined as protection of the conservation areas of life are protected by law from the danger of extinction (

2.4. DISASTER RECOVERY FRAMEWORK FOR CULTURAL HERITAGE PROPERTIES

According to Guiding Principles for Cultural Heritage Conservation (Worldbank 2010), recovery framework of cultural heritage recovery should have a holistic consideration to achieve sustainable cultural heritage conservation. Some considerations are:

- Cultural heritage conservation helps a community not only protect economically valuable physical assets, but also preserves its practices, history, environment, a sense of continuity and identity.
- Cultural property may be more at risk from the secondary effects of a disaster than from the disaster itself, therefore quick action will be needed.
- Built vernacular heritage offers a record of a society's continuous adaptation to social and environmental challenges, including extreme events, such as past disasters. This record can often be drawn on to design mitigation strategies for new construction or retrofitting.
- Communities should prioritize which cultural assets to preserve, considering both cultural meaning and livelihood implications, although reaching a consensus may be difficult.
- Cultural heritage conservation plans are best designed before a disaster, but, in their absence, heritage authorities can and should collaborate to develop effective post-disaster heritage conservation strategies.
- Because vernacular cultural properties are sometimes capable of withstanding local climate conditions, they may serve as safe havens where surrounding communities can temporarily relocate.

(BPPI 2011) Conservation of heritage architecture is developing in Indonesia. Initially, it was only focused on individual building and it evolves to include management of heritage building complex and even broader to management of the heritage area. The interrelations of buildings in a heritage area is now being utilized and adaptively use to meet the needs of residents and modern activities while remaining protected the visual appearance and the exceptional values and feels about the historic place.

Moreover, after the disaster, there were many sudden changes. Reconstruction into prior original conditions is already too difficult. Although there are regulations and ethics to protect heritage values that cannot be altered or changed and has to remain the same. Meanwhile, field experience tells that a series of efforts to conserve the physical structure of heritage buildings need to be done parallel with conservation of intangible cultural heritage of the people that can enhance life quality and economically benefiting them. Based on our experience in Yogyakarta and other disaster stricken regions, such as Aceh and Nias, Indonesian Heritage Trust (BPPI) established Heritage Emergency Response Team in collaboration with University of Bung Hatta, Centre for Architectural Heritage Conservation (*Pusaka*), Centre for Heritage Conservation (CHC), Department of Architecture, Faculty of Engineering, University of Gadjah Mada, Jogja

Heritage Society (JHS), Indonesian Architect Association (IAI) of West Sumatra, Aceh Heritage Community (AHC), Indonesian Green Map (PHI), Archaeological Conservation Oce (BP3) of Batusangkar, supported by Prince Claus Fund (PCF) and International National Trusts Organization (INTO) to conduct rescue activities and rehabilitation of heritage in Padang damaged by the earthquake in 30 September 2009 (BPPI 2011)

(World Monuments Fund 2008) Currently in Indonesia there is Law No. 11 year 2010 concerning Items of Cultural Property which protects cultural heritage including heritage buildings. There isn't any law to protect intangible cultural heritage, such as music, literature, dance, theater or tradition. As for natural conservation there is a Law on Living Environment.

As it previously mentioned, the law no 24/2007 concerning disaster management (Table II.2), as well as Law no 11/2010 concerning the post disaster management of heritage building (Table II.3); not specifically mentioned regarding framework, system, actors and standard operating procedure in safeguarding and doing recovery of cultural heritage post-natural disaster. The protection mainly concerned with rescuing the cultural heritage assets. This place cultural heritage asset recovery reminds uncertain in the implementation level after the disaster.

Table II.2 Law No 24/27 concerning Disaster Management. Source Law no 24/27

No.	Aspect	Content
1	Objective	Disaster management shall aim to respect local culture
2	Disaster Management Implementation	Disaster management shall take account of 4 (four) aspects: a. social, economic, and cultural lives; b. environmental conservation; c. benefit and effectiveness; and d. scope of territory.
3	Phases of Post-Disaster	Disaster management at Post-Disaster phase shall include rehabilitation and reconstruction through following activities: - socioeconomic and cultural recovery; - revival of life; and - improvement to social, economic, and cultural conditions Further provisions concerning reconstruction and rehabilitation shall be governed by a Government Regulation

Table II.3 Law no. 11/2010 concerning post disaster management of heritage building (Indonesian 2010)

No	Aspect	Content
1	Protection	Items of Cultural Property Rescue is conducted to prevent damages due to human and/or natural factors that cause alteration of authenticity and values of the items; and Rescue is conducted in emergency and normal situations. Rescue actions can be done through efforts such as: a. reporting missing or damaged Items of Cultural Property to the authorities responsible for Conservation, National Police of the Republic of Indonesia, and/or relevant government institutions; b. removal of Items of Cultural Property, Buildings of Cultural Property, and Structure of Cultural Property which existence are threatened, due to factors of natural, human disturbance, as well as development plan on the Site of Cultural Property or Area of Cultural Property including its environment.

Risk-preparedness in the context of the cultural heritage conservation is very important to improve the capacity of cultural heritage asset to better prepare for, respond to and recover from

natural or man made disaster. The below cycle (Fig.II.2) has been proposed by ICCROM for providing comprehensive protection of cultural heritage. This cycle was originally proposed for world level cultural heritage.

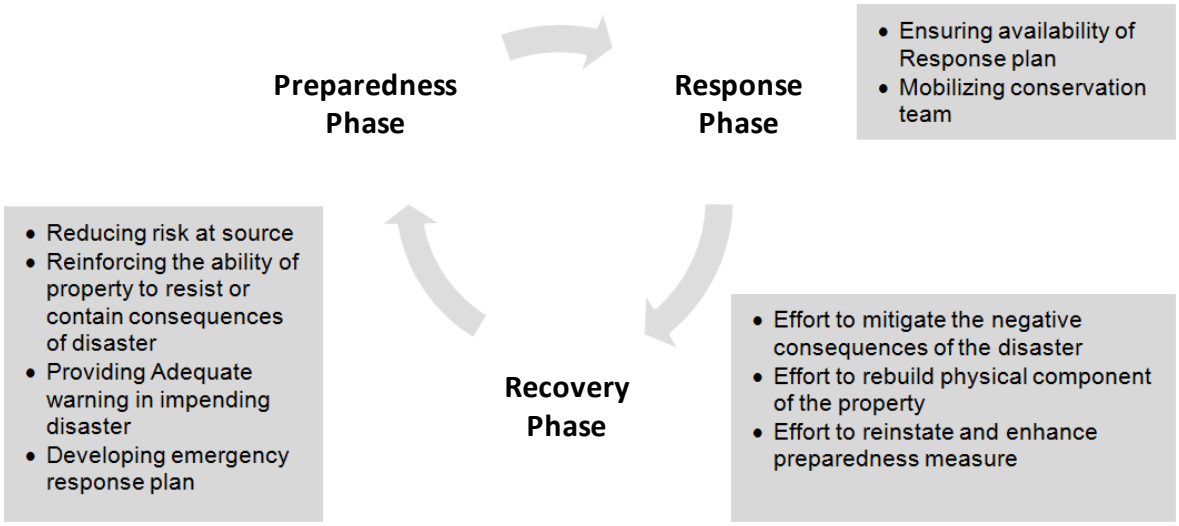

Fig.II.2 Disaster Management Cycle Phases on Cultural Heritage Building. Source:illustrated based on (Stovel 1998)

2.5. PARAMETER AND RESEARCH ELEMENTS

Based on above mentioned theories, the author concludes some parameter to be utilized in this entire research as follows:

- Architectural Parameter with research variable such as building plan, spatial organization, circulation pattern, variety of space, partition, material, properties of form.
- Addaptation Pattern Parameter with research variable such as number and variety of occupant/user, world view, activity, etc.
- Alteration Parameter with research variable such as preference of the user/owner.

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III. CULTURAL HERITAGE RECOVERY ON RESIDENTIAL DISTRICT

Case study of *Joglo* Houses in Kotagede

3.1. INTRODUCTION

Joglo houses in Kotagede have become a witness and part of Mataram Kingdom history since 16 C. During the recovery process post 2005 Yoyakarta earthquake, the affected *joglo* houses in Kotagede that have been rehabilitated independently without intensive supervision from the cultural heritage conservation viewpoint. This increases the probability of cultural heritage loss post natural disaster as well as the necessity of safeguarding the *joglo* houses in Kotagede. Accordingly, these buildings have been selected as the main object of research. The examination starts with identification of the alteration tendency residential type building so called *joglo* houses and its influence to the pre-disaster condition to be further evaluated its influence in the post-disaster recovery process and result.

3.3.1. AIMS

This chapter aims to:

1. Identify tendency of alteration of the traditional Joglo house before the earthquake, and clarify the correlations of the user's preference to the alteration.
2. Identification of the building damages and its relation to pre-earthquake conditions is clarified.
3. Identify and evaluate the recovery process, recovery frameworks to the privately owned residential cultural heritage buildings especially from the homeowner point of view.
4. Examine the resident's intention of preserving the cultural heritage building as well as its influence to the choice of recovery.

3.3.2. METHODOLOGY

The action research method is selected to analyze the impact of the earthquake to the joglo houses in Kotagede. This aimed to determine the damage and loss caused by the earthquake and pre disaster condition of traditional houses. Second, the observation of the traditional building recovery programs is conducted to find the framework of the recovery process and further to be analyzed the correlation between the framework and the result of recovery of the cultural heritage building, in the point of view of cultural heritage conservation. Third, focusing on

collecting data and facts of the process of recovery, recovery outputs accomplished by the house owner on traditional *joglo* building and the house owner evaluations regarding the recovery result and process. More detailed regarding the framework of this research is shown in Fig.III.1.

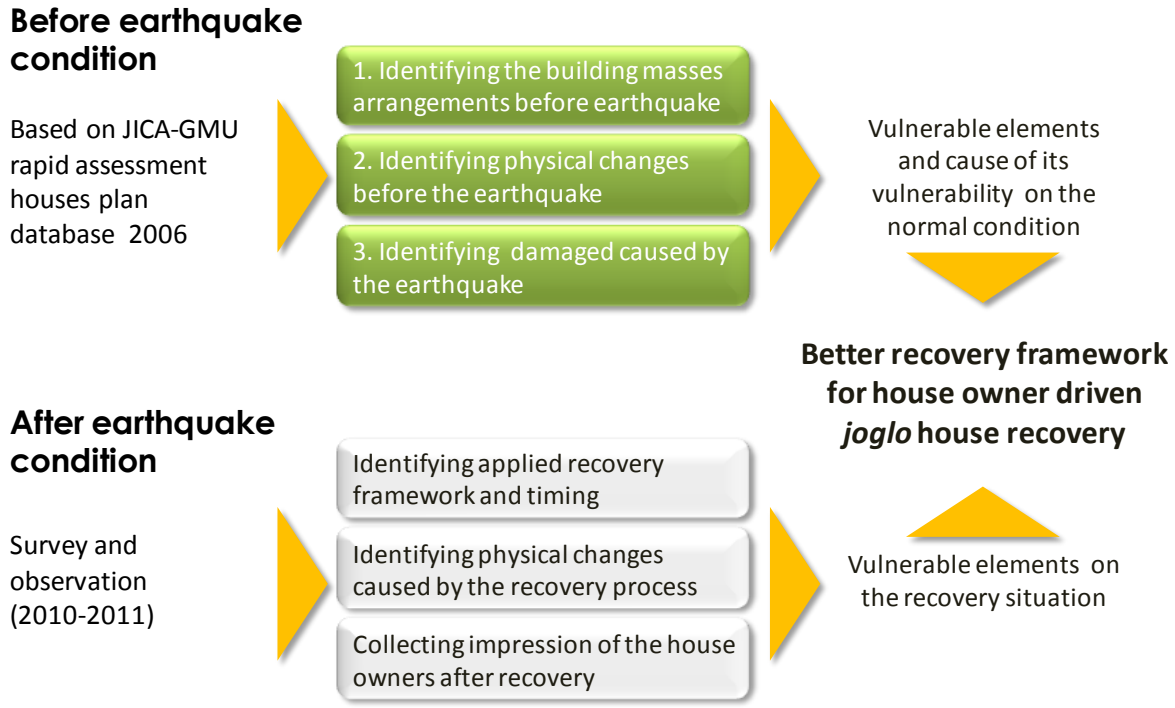


Fig.III.1 Structure of the research

3.2. OVERVIEW OF KOTAGEDE

Kotagede, the former capital of Islamic Mataram Kingdom in the 16C, is located 6 km to the south east of Yogyakarta, Indonesia (Fig.III.3) is well known with the Javanese *"Joglo"* houses and homemade silver craft industries. Further, the great earthquake on May 2006 destroyed some historical sites, traditional houses and infrastructure in Kotagede, brings suffers to Kotagede people as well as economic activity of small scale industries. From the rapid assessment to the *Joglo* roof type houses, it found that from 88 damaged traditional houses with *Joglo* roof type there are 25 totally collapsed, 47 severely damaged and in danger condition, 16 partly damaged and only 17 houses partly cracked (Fig.III.2).

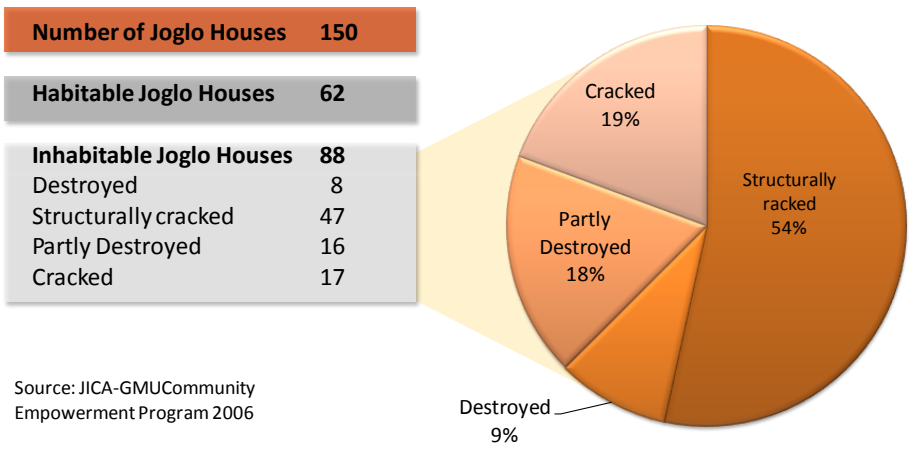


Fig.III.2 Joglo houses damage assessment. Source (JICA-GMU, 2006)

Further, the damaged of the traditional houses threaten the existence of cultural heritage assets of 300 years old. In accordance to the damage and priority of post disaster recovery, there are two main concerns in Kotagede recovery plan that are traditional building reconstruction and silver craft reviving program.

The research site was conducted on September 2011 to 97 of 150 traditional Javanese *joglo* roofed buildings, located in three sub districts of Jagalan, Prenggan and Purbayan (Fig.III.4). The questionnaire survey was conducted to 97 joglo house owners, to get an evaluation and information of joglo house's condition before, post the earthquake and post recovery, as well as their impression toward previous and present building style.

Secondary data Rapid Assessment (Nov 2006) Gadjah Mada University (GMU) –JICA Community Empowerment Program that provides a number of affected joglo was utilized as the basic selecting respondents in the questionnaire survey.

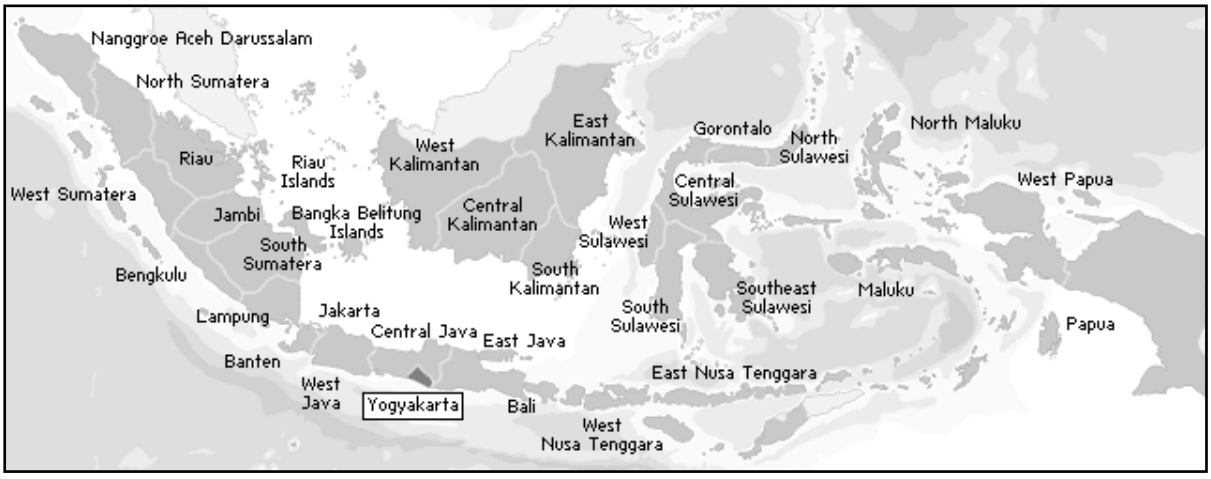


Fig.III.3 Positioning of Yogyakarta (Kotagede) within Indonesia

Fig.III.4 Location of Kotagede

Observation District	Kotagede
Sub District	Jagalan, Prenggan, Purbayan
Location	S7°49'45.7" E110°23'52.5" 7 Km Southern of Yogyakarta Province Capital City
Survey Schedule	August-September 2011
Respondents	*Joglo* House Owner
No. Respondents	96
Methodology	Questionnaire Survey
	Observation
Secondary Data Resource	Rapid Assessment (Nov 2006) Gadjah Mada University - JICA Community Empowerment Program

3.3. CHARACTERISTIC OF TRADITIONAL JOGLO HOUSES IN KOTAGEDE

Joglo house is a typical of the Javanese traditional house. *Joglo* is believed as the most ideal type of Javanese residence. This has a very complex structural system and required high quality of wooden material. As in the case of Javanese traditional architecture, *joglo* house has a distinctive high angle and symmetrical of the roof. Because its prestigious value, joglo usually owned by nobles or royalty, and functioned as facilities associated with the Javanese kingdom. In Kotagede district, the presence joglo type buildings are very common. Joglo can be found in almost every part of kotagede district in significant amounts. This is because Kotagede was a center of the old Mataram Kongdom (KotagedeHeritage, 2012).

Besides bigger scale *joglo* that mainly owned by the nobel or high rank official of Mataram kingdom, there are several smaller size *joglo* owned by the courtiers, the lower rank official. This type of *joglo* become the main character of Kotagede landscape. In compared with nobel *joglo*, *joglo* houses are rather smaller in scale, simpler in structural construction as well as building layout.

3.3.1. BUILDING ARRANGEMENT WITHIN JOGLO HOUSE

Joglo houses are usually consisted of several building masses (Fig.III.5) as follows:

- ***Pendapa*** is a non walled room, with lower floor elevation, functioned as a meeting room or room for accepting guest(s) (Ismunandar, 1986).
- ***pringgitan/emper*** is located between *pendapa* and *dalem*, was originally functioned as puppet show area, only guests of the homeowner can use this area.
- ***dalem*** accommodates main living function, which consist of three chambers so called *senthong kiwa* (left chamber) and *senthong tengen* (right chamber), indicated by number

1 and 3 on the figure, and *senthong tengah* (middle chamber) which was originally functioned as treasure chamber that was believed as the place of God (indicated by number 2).

- ***gardi* or *pekiwan*** is the service area. It is usually located at the back side of the house, which is consisted of kitchen, bathroom, and toilet (indicated by D).
- ***gandhok*** is additional buildings located on the west and east side of *dalem*. These buildings were originally used as semi-opened sleeping area for male (left side) and female (right side), or as a sleeping area for visitors/guests/relatives.

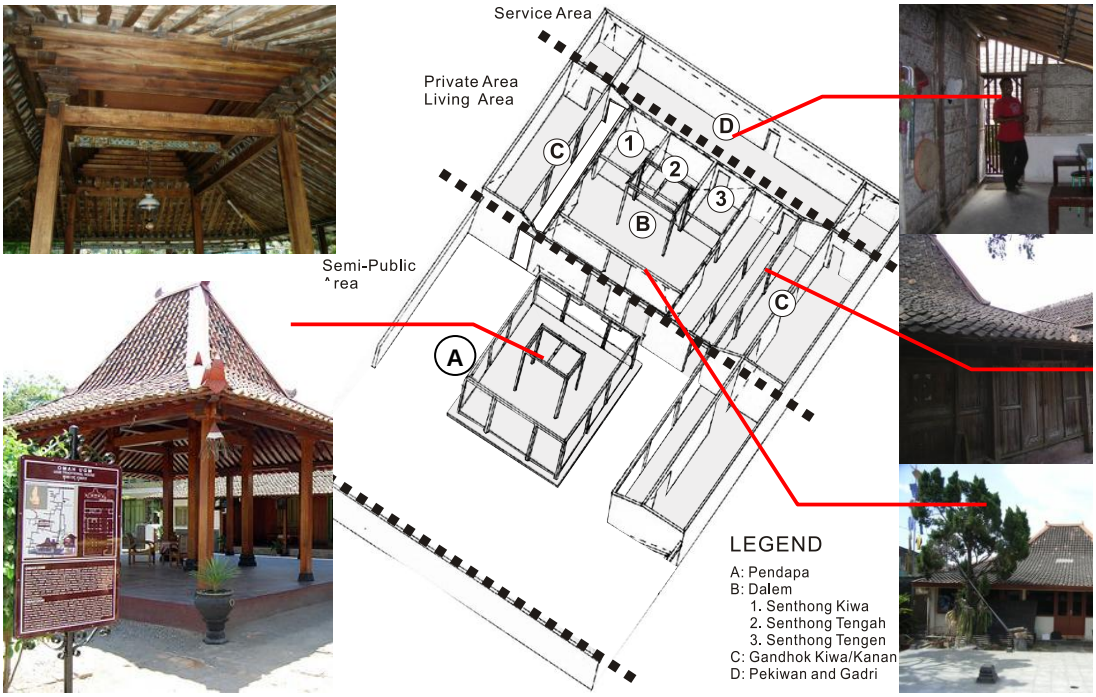


Fig.III.5 The basic mass arrangement of *Joglo* House

3.3.2. SPATIAL COMPOSITION OF HOUSING GROUP

Spatial composition of the *joglo* house is mainly based on the north-south cosmological axis. The orientation was originally referred to an indigenous Javanese belief that direction toward a mount-in this case Mount Merapi to the north-is associated with the image of the strength of nature and God, meanwhile toward south-in this case the south sea to the south is considered as the place of *Nyi Roro Kidul* (the queen of the south sea).

Another symbol that is associated with the legend Nyi Roro Kidul who is a beautiful goddess who ruled the Indian Ocean and being told as the wife of Sultan Agung in Mataram (Kotagede) and his descendants were then successively held the reins of leadership as the king of the land of Java. According to that, Javanese people believe when someone wants prosperity, it is very important to face their house to the south, in order to get bless from the queen of the south sea.

This legend was very strongly rooted in the javanese people, especially in the era of early old Mataram kingdom in Kotagede. This is why almost all of the *joglo* houses in kotagede face their building orientation to the south, regardless the other external factors such as the position of the street and land lot, as it shown in Fig.III.6.

Nowadays, together with economic development, where the street becomes the magnet of economics, there were some changes in Kotagede building arrangement. People started to add a small stall next to the main road. Although this doesn't automatically mean changing the orientation of the building, but additional the store in front of or behind the house *joglo* leads to changes in the cosmological nuances of the building as well as the landscape.

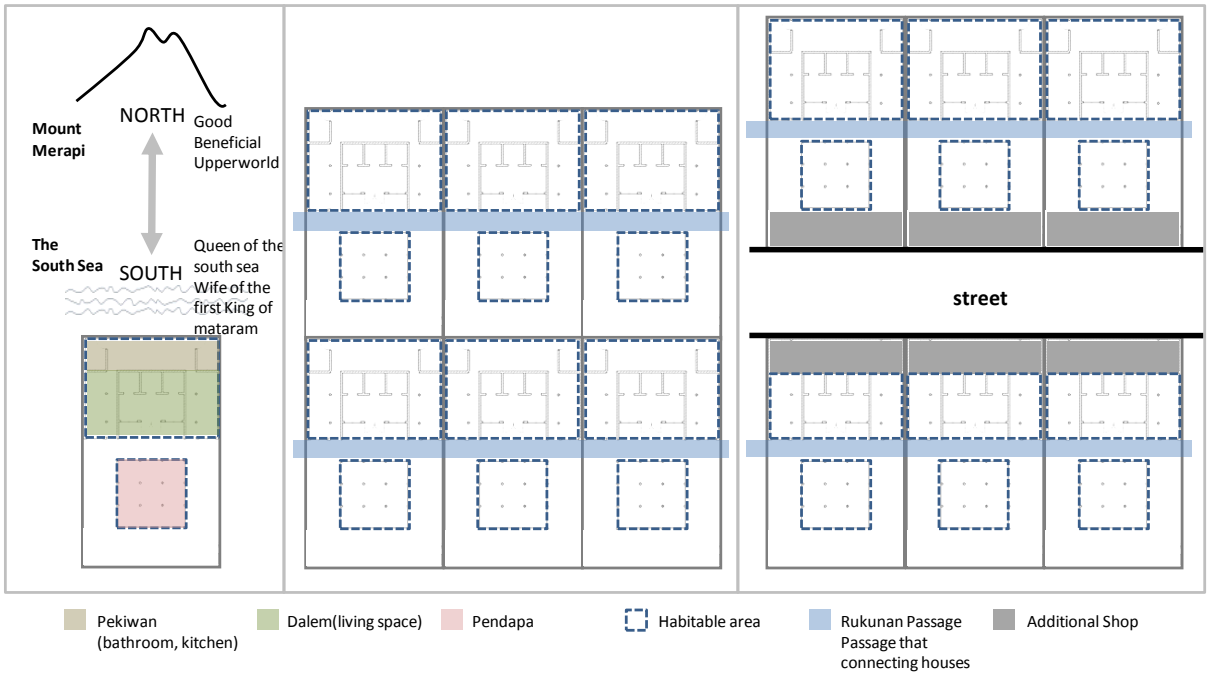


Fig.III.6 Philosopical consideration and its influence to the *joglo* houses orientation

3.3.3. CHALLENGES OF JOGLO HOUSES PRESERVATION IN KOTAGEDE BEFORE THE EARTHQUAKE

In Kotagede, it can be easily found more than 300 years traditional Javanese houses. Presently, most of the traditional building that mainly made of wooden material is neglected. The morphological changes of *joglo* houses caused by selling reconstructing and inheritance system have had already occured before the earthquake (Aminah 2011). Except the expensive maintenance cost of *joglo* houses, the incapability of house owner/inheritor to maintain the *joglo* house is the most reason of this degradation.

The inheritance the culture also contributes the loss of *joglo* houses in Kotagede. In Indonesia, it is very common to divide parent's assets such as land and house to all of their children. Hereby some types of inheritance culture in Kotagede based on interview to OPKP (Table III.1):

SELLING THE BUILDING AS WELL AS THE BUILDING LOT

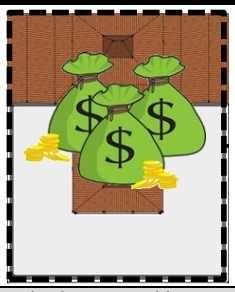
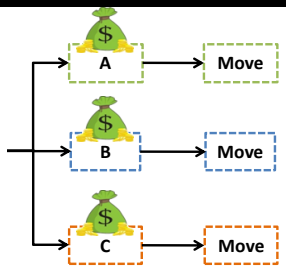
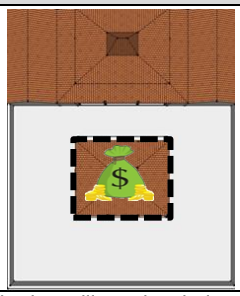
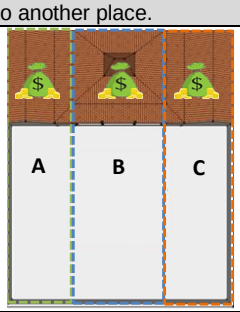
To avoid conflict among children, and to be able to divide the assets equally, selling the whole assets (building and lot) is the simplest method in addressing inheritance. Some of them sold the building and lot to other people/friends, some other sold it to the relatives which are called *nyusuki* which means buying the other part of the divided assets from the sibling.

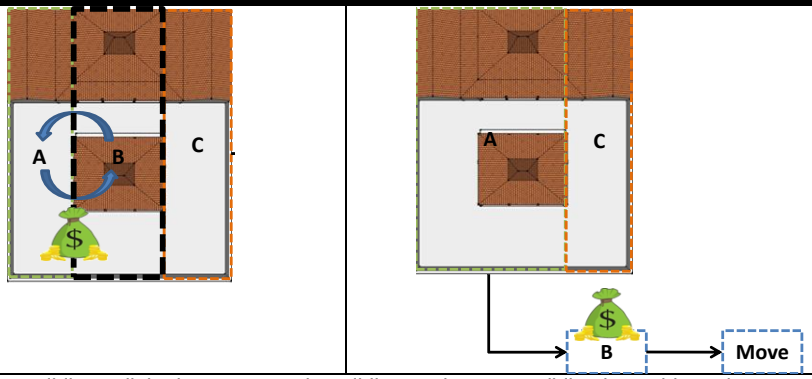
SELLING ONLY PENDAPA BUILDING AND DIVIDING THE REST EQUALLY

Characteristic of *pendapa* that can be easily moved, and the difficulties in maintaining become some of the main reasons in choosing this method. By selling *pendapa*, they could reduce the maintenance cost, and earn more money for their daily life; meanwhile each inheritor could get the rest of the building masses. Further, the function of pendapa that no longer essential in the present day also increasing their eagerness to sell pendapa. There are two types of selling the *pendapa* building as follows:

- *The whole pendapa building*; usually pendapa has moved to another city outside Kotagede. This is *usually* being used for restaurant, house, gazebo, etc.
- *The Building Material*, the teak wood is the main material of the traditional *Joglo* houses. This has a very high value in the market. The owners usually still wanted to preserve the building exterior to appreciate their ancestor.

Table III.1 Some variety of inheritance system in Kotagede

<table>
<tr><th>Inheritance system</th><th>Result</th></tr>
<tr><td rowspan="2">Selling entire building and lot</td><td>  </td><td> 
</td></tr>
<tr><td colspan="2">After selling the house and lot, each inheritor will receive some amount of money based on family consensus and move to another place.</td></tr>
<tr><td rowspan="2">Selling pendapa and dividing the remaining lot and building</td><td>  </td><td> 
</td></tr>
<tr><td colspan="2">Each inheritor will receive their part of selling pendapa, then continuing living in the remaining house.</td></tr>
</table>

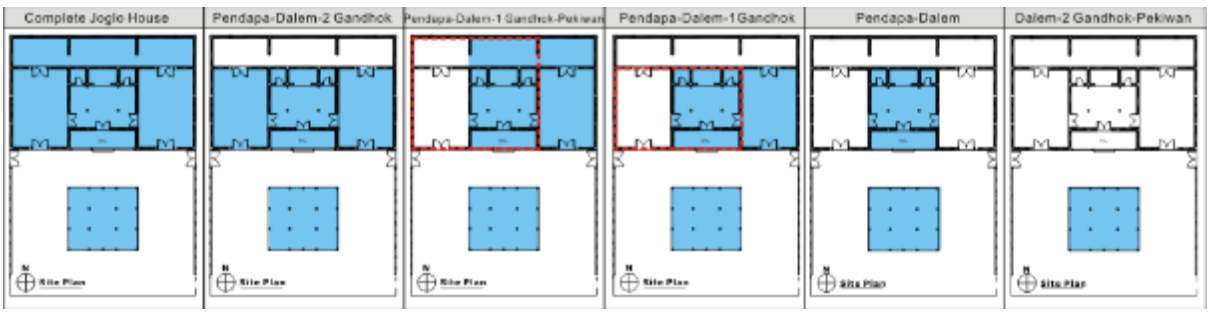
Inheritance system	Result
Selling inherited part to sibling, so called ***"nyusuki"*** system	
One or more sibling sell the house to another sibling so that some sibling has a bigger house and building lot than others.	

3.4. JOGLO HOUSES CONDITION BEFORE THE EARTHQUAKE

Since most of the joglo in Kotagede has been passed through generations, It is most likely that all of the joglo houses have experienced inheritance. The direct impact of this, smaller building size, less room, increases the possibility of space organization, and some other physical changes in order to adjust to the current needs. This sub chapter will focuse on clarifying the correlation between alteration of mass arrangement, function and the physical element.

This study identified thirteen types of building mass ownership in *Joglo* houses before the earthquake which can be categorized into 5 categories as it showed in (Fig.III.7). These morphological changes of *Joglo* houses were caused by selling reconstructing and inheritance system. In the case of inheritance system, the house owner (parents) usually splits their *joglo* house into several parts to be divided to their inheritors.

Fig.III.8 shows the distribution of those 5 building mass category in the present time. It shows that the joglo houses in Kotagede presently are mainly composed with of 3-4 building masses. Although this building mass arrangement based on ownership does not necessarily reflect the loss or degradation of cultural heritage, but this condition could be a trigger for further alteration such as the function distribution and even further physical alteration.



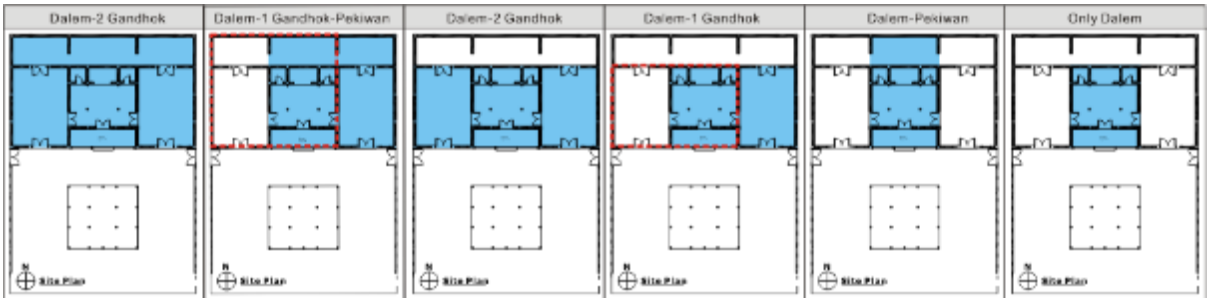


Fig.III.7 Types of Masses Arrangement based on building ownership in *Joglo* House before Earthquake

Fig.III.9 shows the correlation between the building mass arrangement of the *joglo* houses and the function accommodated in each building mass. In the one building mass houses, the original function was accommodated very low. Except in 1 building mass houses, the original function was still highly accommodated at pendapa, and pekiwan. In contrary, in dalem and gandgok, which originally accommodated living activity, were lowery accommodating original function. This can be implied that when the house owner has building mass choice to be functionally modified, they preferably do it at gandhok and dalem.

It can be concluded that the house which consist of single and/or lesser building masses accommodated more various additional functions instead of its original function. In contrary, the houses which consist of more building masses could still accommodate its original function better, although some of them are also still accommodate additional functions. It shows a tendency and strong correlation that the changes of building arrangement influence changes of building function. The fewer building mass arrangement might trigger households to modify and/or bring in the ordinary building functions into available building mass. This can be implied that viewer building mass gave a higher opportunity of the functional changes in the traditional *joglo* houses instead of maintaining the original function.

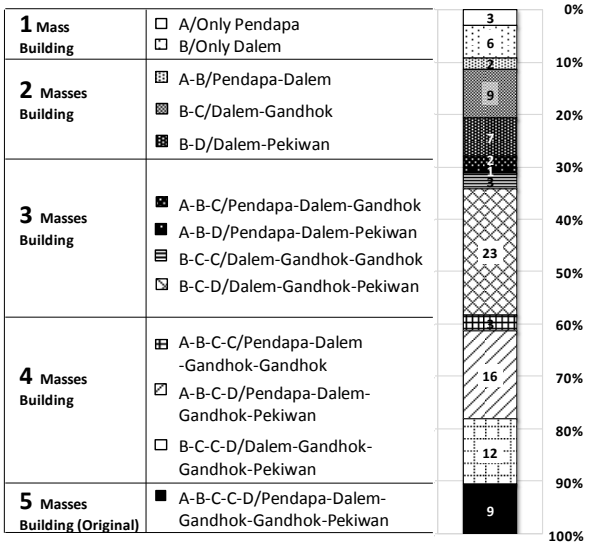


Fig.III.8 Building Mass and accommodated Function before Earthquake

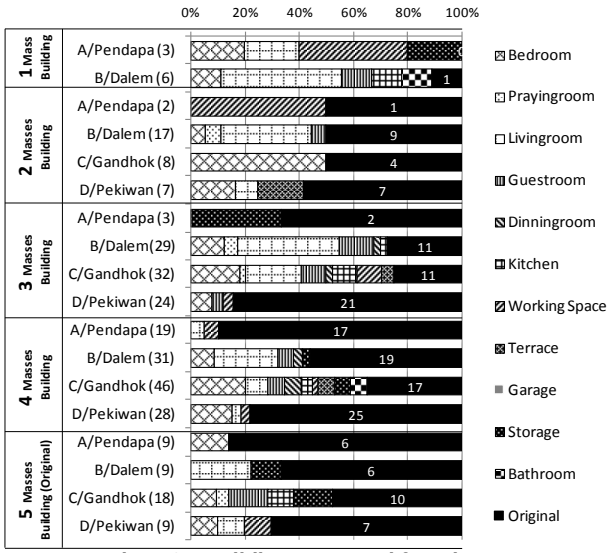


Fig.III.9 Building mass and function

To evaluate how the influence of functional alteration could influence the physical appearance of the *joglo* building masses, the following analysis (Fig.III.10) has been conducted. The author identifies the physical changes of the building mass based on the questionnaire survey to the building owner. The physical changes were identified in compared with the authentic pattern of *joglo* house in Kotagede. Identification of physical changes was divided into four categories which are:

a. Temporary enclosure: usually are made from bamboo or wood partition that have been added from floor to ceiling in order to make some rooms.
b. Temporary divider: people sometimes use movable furniture such as bookshelves, cupboard, cabinet or closet. Usually this partition does not covering entire floor to ceiling.
c. Permanent enclosure: brick is become the most options in building permanent enclosure, that divide the room from floor to ceiling.
d. Permanent divider: brick has been utilized to divide rooms, but not entirely. Usually this option has been chosen to create more rooms and still preserving spacious nuance.

Fig.III.10 showed the comparison between the building masses that accommodates only the original function, and the building masses that also accommodate additional functions. It shows that the building mass that accommodate only original function has less tendency to experience physical changes compared with the building mass that accommodate also the additional functions. Building mass with original function indicated higher in preserving its authentic physical condition. This condition is exceptional in pekiwan, although the function still authentic, the physical changes were highly identified.

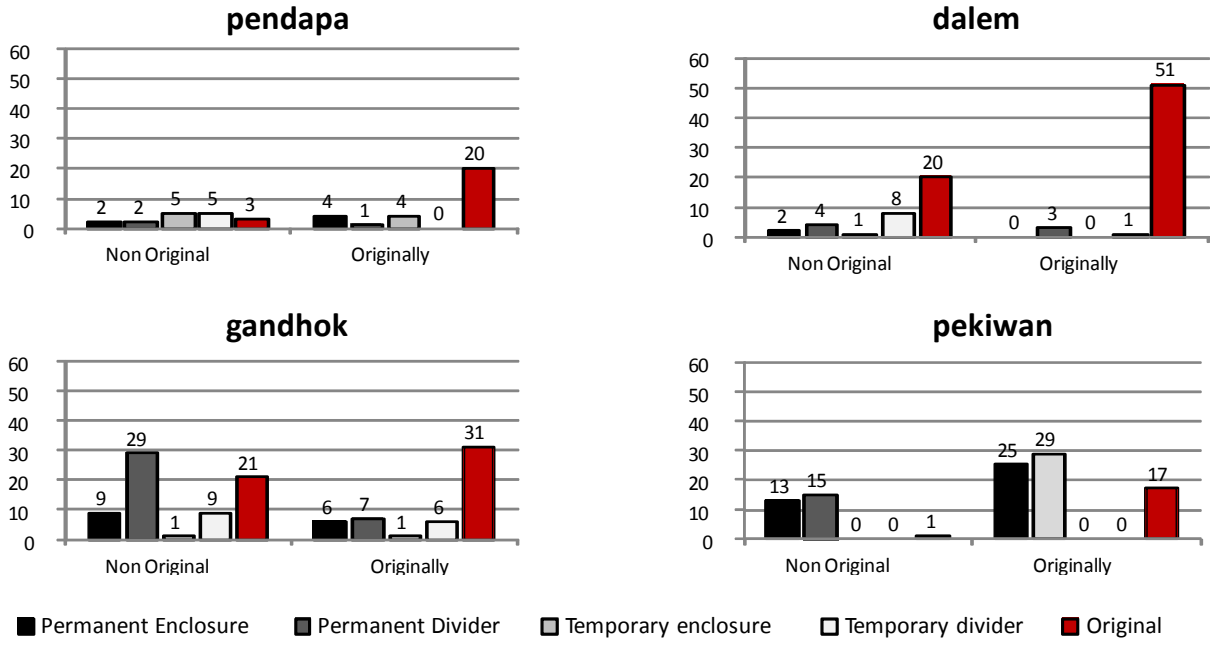


Fig.III.10 Constructional adaptation due to the functional changes of Joglo House before Earthquake

3.5. THE DAMAGE AND RECOVERY ACT POST EARTHQUAKE

The following evaluation was conducted to clarify the vulnerability of traditional *Joglo* houses due to the earthquake and the recovery process. As previously mentioned, traditional *Joglo* houses in Kotagede were severely affected by the 27 May 2006 Yogyakarta earthquake. Due to the lack of historical protection policy and the necessity of households to do hasty housing recovery, most of the recovery processes delivered without proper technical assistance. The damages were evaluated each building mass and categorized into several categories as follows:

a. Cracked: damage of the building was categorized cracked when the cracks are only on the surface of the material (not thoroughly).
b. Structurally cracked: damage of the building was categorized as structurally cracked when the cracks cut through the material or affected the structural part of the building, but that part of the building still on pace.
c. Partly destroyed: when part of the building collapsed, or displaced.
d. Totally destroyed: when the building was entirely collapsed.

Fig.III.11 it showed that more than 80% of the total house masses were affected by the earthquake, the severe damage indicated with structurally cracked, partly destroyed and totally destroyed only showed in less than 42%. Nevertheless, very massive damaged showed especially in *pendapa* where 8 of 32 pendapa buildings (20.5%) were totally destroyed. Since the pendapa structure consists of wooden joint structures, the experience of the structural crack on this building required the household to dismantle the entire structure for recovery.

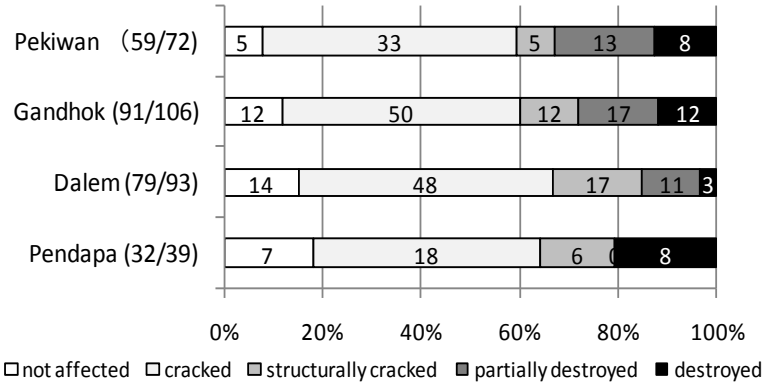


Fig.III.11 The Influence of Earthquake to the Building masses of Joglo Houses

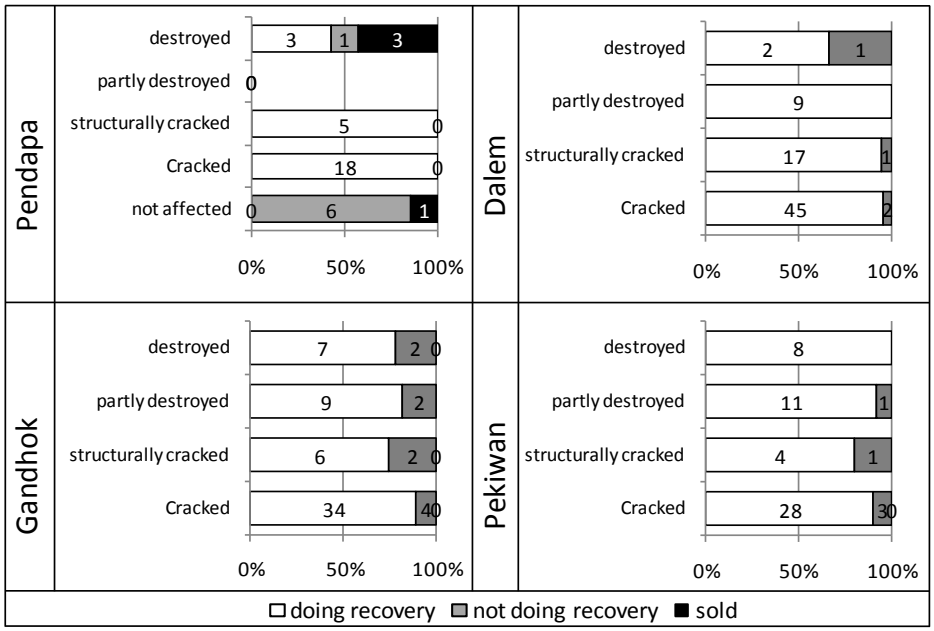


Fig.III.12 The Act of Recovery on affected building masses

According to the survey, not all of the household delivered recovery. Since the level of damage may influence the degree of recovery, each part of the building that experienced damage have been examined and cross analyzed the act of recovery, as it is shown in Fig.III.12. Especially in pendapa building, 4 of 32 surveyed affected buildings were sold. It showed that 3 of 4 sold pendapa was totally destroyed post earthquake 2006. Most of the affected building masses were doing recovery.

Destroyed pendapa buildings were very vulnerable of selling after the earthquake. Although the pendapa building was totally destroyed, high quality of teak wood as the main material of these are still very salable in the market. The other one of the 4 sold *pendapa* was not affected by the earthquake. Actually the practice of selling *pendapa* has been occured since the beginning of 1990. Further, by the assistance of carpenters, the wooden joint structure of *pendapa* can technically be dismantled, and moved easily. More severe damage somehow prevents them to do recovery due to lack of funding support.

Fig.III.13 and Fig.III.14 showed the reasons of household for not applying recovery to the affected part of the *joglo* house and the present condition of the affected buildings. The major reason of these was insufficient funding to do restoration recovery of the building. In the other hand, heavy massive damages caused by the aged building were also given a challenge to the household to do recovery.

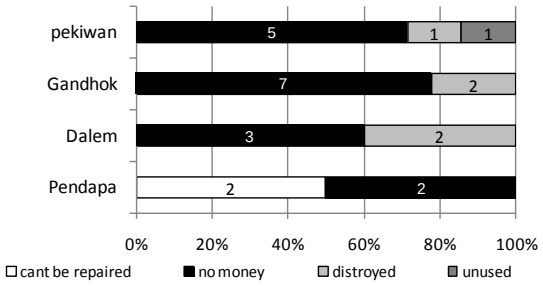


Fig.III.13 The Reason for not doing recovery

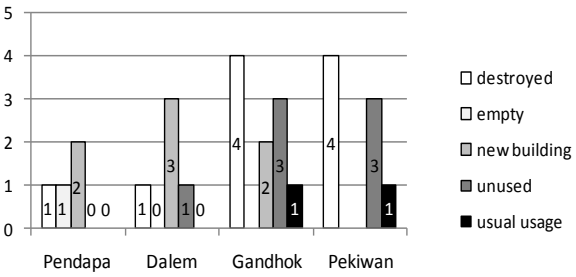


Fig.III.14 Present condition of the building/site

3.6. RECOVERY PHASE OF *JOGLO* HOUSES AT KOTAGEDE

3.6.1. RECOVERY FRAMEWORK OF *JOGLO* HOUSES

There were three key players that were actively taking assistance in traditional building recovery at Kotagede, which are Government, Java Reconstruction Fund and Gadjah Mada University (Fig.III.15). This chapter will mainly overview the recovery act that mostly led by the home owner. The homeowner lead program was initiated by government and have been applied during recovery post Yogyakarta and Central Java earthquake. The key player lead program will be closely evaluated in chapter 5.

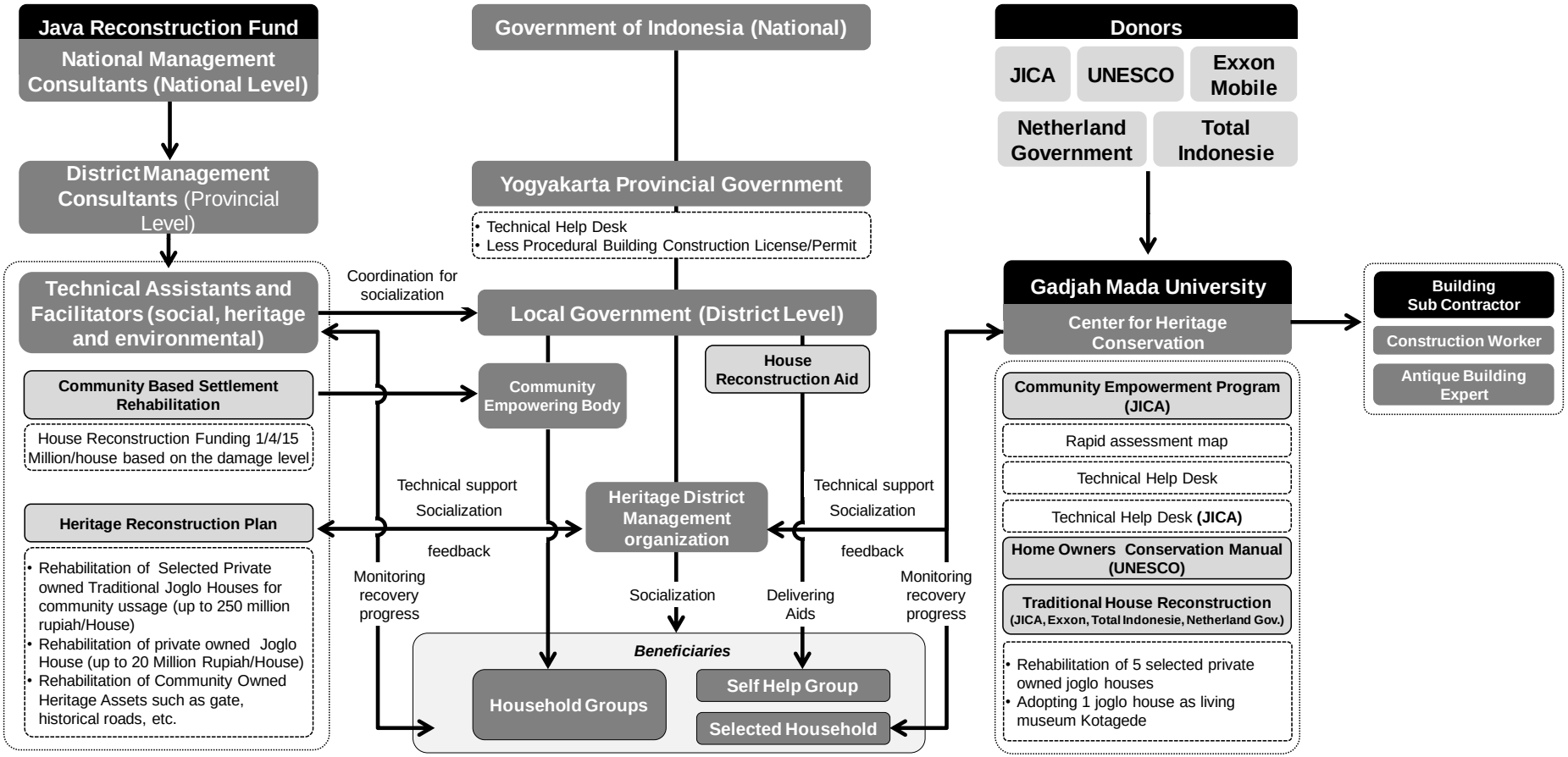


Fig.III.15 Framework of Housing Recovery in Kotagede

On government program, each affected house was treated as an ordinary vernacular house. Each eligible house has received 20 million rupiahs as the compensation of housing reconstruction support. The funding support was delivered by utilizing community groups (*kelompok masyarakat*, so called *pokmas*) (Yusdayati, 2009). The main concern of this program was to achieve a speedy recovery (within 2 years) and to ensure the beneficiaries build more earthquake resilient building. To support the community, the government provided facilitators to give required technical support to the community. This system has gained some criticisms due to lack of monitoring of funding usage and database chaos. In the case of Kotagede, from cultural heritage preservation view point, house, less consideration of the building conservation in the program and the speedy recovery could increase the risk of loosing the historical assets.

There were two types of house recovery provided by JRF funded program in Kotagede. For ordinary vernacular houses, the aids were divided into three types, based on the damage level of each house. Each heavily damaged house received 15 million, 4 million for medium damaged and 1 million rupiah for the slightly damaged house. The other program with full consideration of cultural heritage preservation was delivered much later after the first program.

According to the recovery assessment, some of *joglo* houses have been categorized as ordinary vernacular houses and eligible to receive this type of aids. This is indicated by Fig.III.16, where 84 of 96 respondents of *joglo* house owner received funding support from government programs.

The detail time of recovery process consisted of clearing debris, receiving funds, organizing worker, starting recovery and finishing recovery have been carefully collected during the interview to the respondents. This timeline has been evaluated to identify the manner of recovery among the cultural heritage building owners.

The recovery process, especially on clearing debris is very crucial for cultural heritage houses. Since in this phase, the identification of cultural heritage assets should be delivered in order to prevent further cultural heritage loss. Fig.III.17 shows that clearing debris process had already finished within the first 7 days after the earthquake. From the interview to some house owners, the clearing debris phase has been initiated by local government one day after the earthquake. By utilizing community work bee so called *gotong royong*, clearing debris can be finished in 7 days.

Meanwhile, the delivery of funding support was mostly occurred from August 2006-December 2006. In comparison with the speed of recovery, which most of them have been finished its recovery process on October 2006, this could be implied that some of the households were doing recovery without proper technical assistance or funding support.

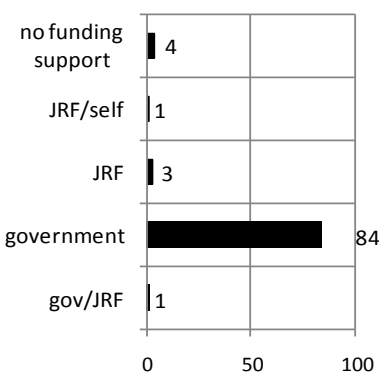


Fig.III.16 The distribution of House Recovery Support in Kotagede

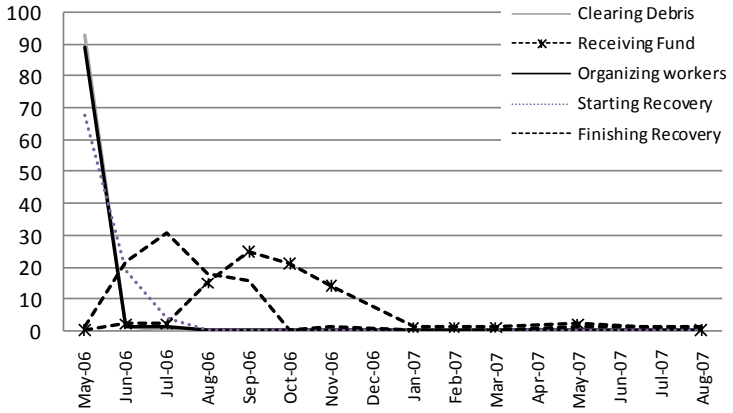


Fig.III.17 Recovery timeline in Kotagede

3.6.2. RECOVERY PROCESS AND ITS IMPACT TO THE CULTURAL HERITAGE CONSERVATION

The following discussion is aimed to clarify the impact of above mentioned homeowner driven recovery approach to the present condition of *joglo* houses in Kotagede. The option of recovery was categorized into four (Fig.III.18) which are:

1. New Material-New technique, usually highly associated with building retrofitting. The house owner usually adds reinforce concrete techniques, utilizing new material such as zinky board, ceramic tile instead of clay tile etc.
2. Traditional material-new technique. Using old brick for new construction and combining it with adding reinforce concrete for retrofitting become a very common option that can be put in this category.
3. New material-traditional technique. Choosing new material such as concrete, brick, bamboo, for practical reasons without adding retrofitting technique is the main consideration for this category.
4. Traditional material-traditional technique. Preserving both, the material, technique as well as building style.

Fig.III.19 showed the applied style after recovery on the authentic *joglo* building mass after recovery. In *gandhok, dalem, pekiwan*, that had never experienced major changes (original) before the earthquake, have been recovered mostly in non Javanese style. In contrary, the appearance of *pendapa* building after recovery had mostly been built back to Javanese style. This might because the guideline of making *pendapa* is very strict and strongly rooted to the culture. Fig.III.19 also indicates that applying new material and new technique (such as retrofitting, adding reinforced columns) were most common in the recovery of *joglo* houses.

In terms of doing recovery, *pendapa* have mostly been recovered into its authentic condition. In compared with recovery to Javanese style, the building masses that recovered to non Javanese style applied more new-material and new technique. In contrary, the other building

mass (except *pendapa*) recovery went along with building retrofitting. Fig.III.19 showed that not all of the building part which built back to the Javanese style building was using the same technique and material as its original. This condition increases the vulnerability in preserving the originality of the *joglo* houses in the future. Further, the building part that had been recovered in non Javanese style building was mostly using the new material and new technique especially *in dalem, gandhok* and *pekiwan*.

Fig.III.18 Recovery options in Kotagede

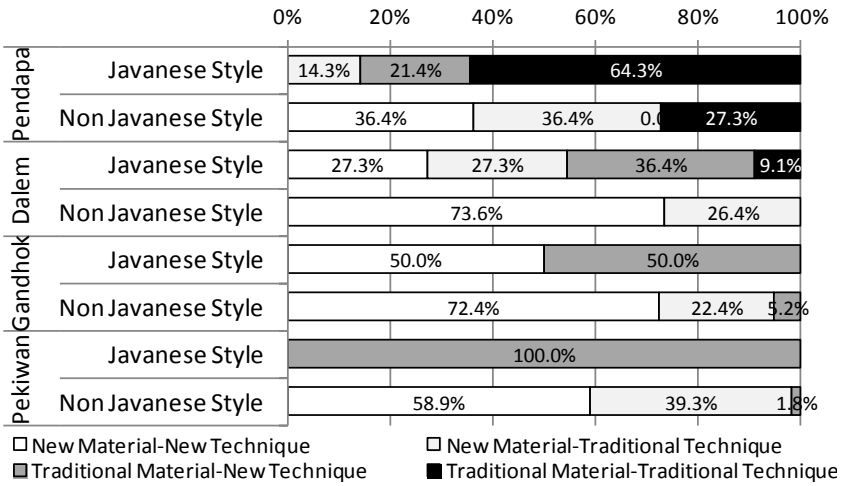


Fig.III.19 Distribution of recovery option in Javanese and non Javanese style each building mass

Build back the cultural heritage building in its authentic Javanese style are highly influenced by the availability of the knowledgeable masons. So that it is important to have review regarding the involvement of masons during recovery phase. According to respondents (Fig.III.20), the involvement of ordinary masons was massive. High demand of the masons during recovery process give some limitations for the house owner to choose appropriate masons with Javanese building knowledge.

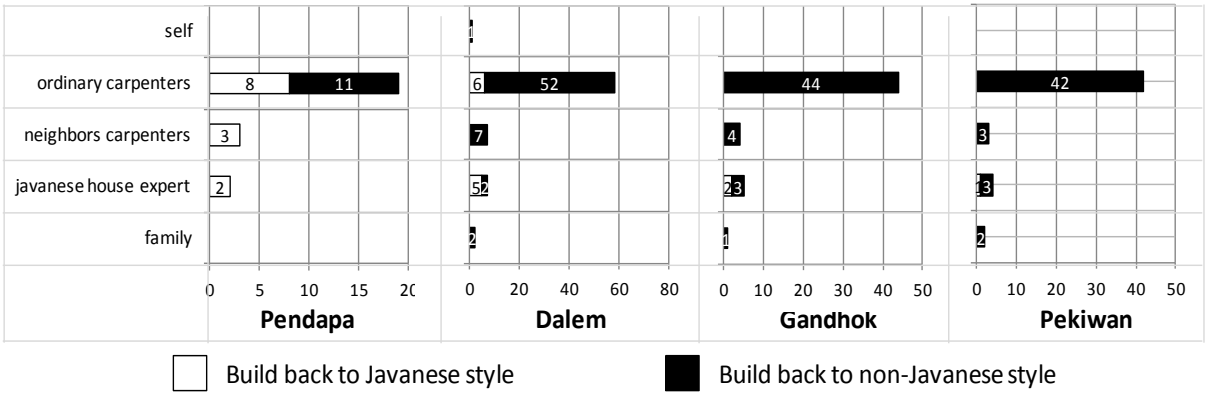


Fig.III.20 Massons involvement in cultural heritage recovery in Kotagede

3.6.3. EVALUATION OF THE HOMEOWNER TO THE RECOVERY RESULT

The building is highly influenced by the activity. The meaning of activity is very important since it draws needs of the people. The preference and evaluation of the building owners regarding the recovery result is very important to understand their world view toward their cultural heritage asset. Their preference will become a reference while doing building rehabilitation in the future.

The evaluation is divided into four types which are building style, building structure, building appearance and recovery assistance. Regarding building style (Fig.III.21) shows that except in pekiwan, especially in pendapa and dalem, the recovery to Javanese style were evaluated higher than non Javanese one. This could be implied that homeowner still highly appreciate Javanese style as their preference for doing rehabilitation. Nevertheless, the respondents prefer to have a more modern bathroom at *pekiwan.*

Regarding the structure quality, the application of new technique seems to give a more secure feeling for the respondents in living in the old traditional house such in Kotagede (Fig.III.22). This degradation of traditional building originality is gaining more risk by encouraging behaviors of the house owner.

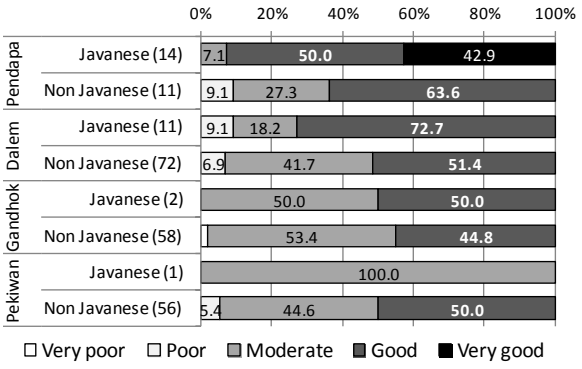


Fig.III.21 Evaluation regarding building style

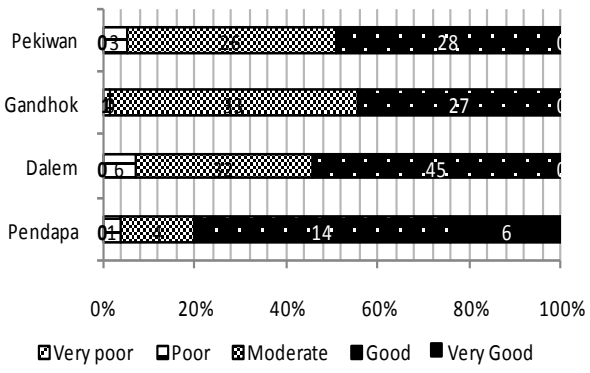


Fig.III.22 Evaluation regarding structure quality

The evaluation of recovery assistance has shown in Fig.III.23. It shows that the household experienced dissatisfaction on poor assistance during recovering the traditional house. Based on the survey, lack of attendance and technical support were some reason of this. On the other hand, the building appearance was positively evaluated (Fig.III.24). This tendency showed that the households are likely to have the present building appearance in compared with pre-earthquake condition, even though the building material, style and technique are no longer the same as its original.

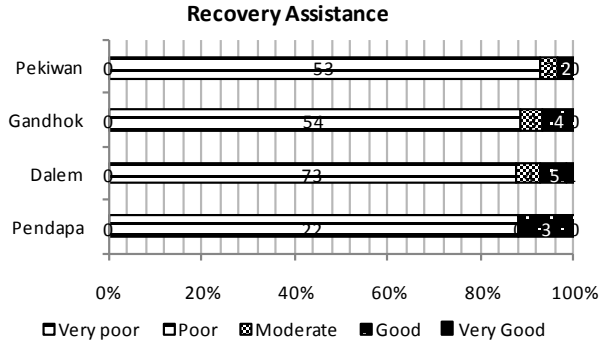


Fig.III.23 Evaluation regarding Recovery Assistance

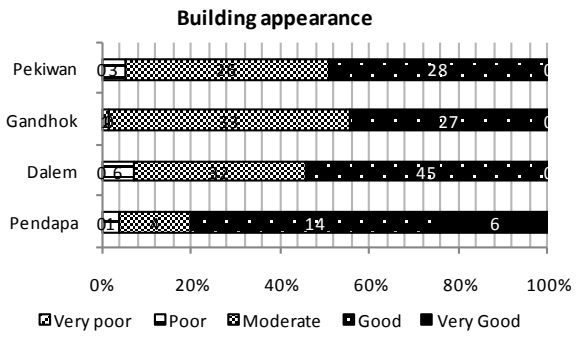


Fig.III.24 Evaluation regarding Building appearance

3.7. DISCUSSION

Understanding the architectural characteristics of cultural heritage building is a basis for conservation. The characteristics consist of building material, structure, spatial composition and spatial usage. This chapter is aimed to clarify the tendency of building alteration before the earthquake, the recovery process and its influence to the cultural heritage building caused by the recovery process. It can be concluded as follows:

BUILDING ALTERATION BEFORE THE EARTHQUAKE

This research identified that the alteration comprising building material, building technique and spatial arrangement has occurred in Kotagede before the earthquake. Specifically the findings are

- The alteration of houses before the earthquake mostly occurred on spatial and functional alterations, especially at living space related building masses, indicated higher at *gandhok* and *dalem.*
- This spatial alterations mostly was triggered by the culture of inheritance system that divide the house masses to each inheritor. By the time, each inheritor grows families and trigger the spatial arrangement alteration within available building mass.
- The buildings that experienced less spatial arrangement transformation show lower physical appearance alteration.

- It is clearly shown that there is a conflict between living activity adaptation that somehow influenced the changes of building function and morphology, versus the originality of traditional building. This vulnerability requires to be compromised and assisted wisely (e.g. encouraging to use temporary dividers instead of permanent dividers).

RECOVERY PROCESS

- Most of the homeowners were joined government program which only provided funding support without proper assistance for heritage preservation consideration.
- Decision making at the house owner level somehow could help government to deliver the recovery program faster and more sustainable. But in the case of traditional buildings, recovery without proper assistance could lead in endangering the originality of the traditional houses.
- Ordinary masons and carpenter were highly involved during the recovery process instead of Javanese building knowledgeable masons.
- It is obvious that an inappropriate recovery framework caused the higher vulnerability to the privately owned historical houses, especially on the nature of homeowner driven recovery.

POST-RECOVERY VULNERABILITY

- In term of doing recovery, pendapa have mostly recovered to original condition.
- In compared with recovery to Javanese style, the building masses that recovered to non Javanese style applied more new-material and new technique.
- Except in pendapa, the recovery went along with building retrofitting.
- Most of the respondents were evaluating high on the building structure and appearance, regardless the style and originality of the building. Somehow the value of Javanese style buildings were still highly evaluated.
- This encouraging behavior could lead to the degradation of building appearance's originality. Nevertheless, the improvement of the structural quality could lead to better resilient of traditional houses.

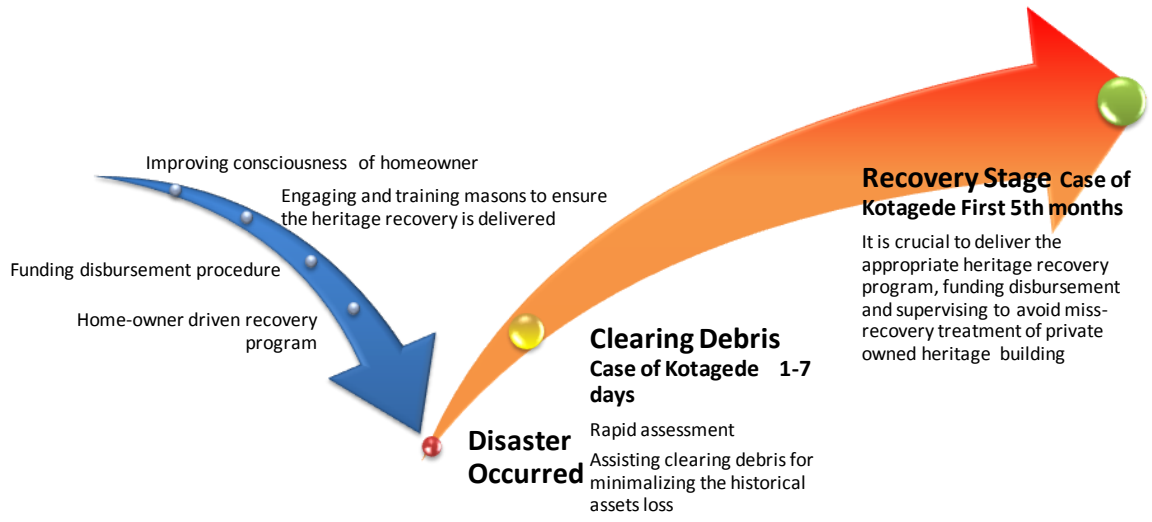


Fig.III.25 proposed preparedness plan for cultural heritage building recovery

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IV. CULTURAL HERITAGE RECOVERY ON COMMERCIAL DISTRICT

Case study of Shophouse buildings in Old Town District Padang

4.1. INTRODUCTION

Colonial buildings are one most common variety of cultural heritage assets in Indonesia. Some of these buildings which are in a big scale, such as Indonesian Bank buildings, Post office buildings, Forts and National bank Buildings have been assessed and registered as national level, province level or city level cultural heritage. Most of others, are still unregistered and managed privately by the owner. As other privately owned cultural heritage, these buildings experienced various levels of building conservation and maintenance before the earthquake. Some adjustment was applied to adapt the necessity of 300 years developed trading activities.

In the case of disaster recovery in the Padang old town district, since special program for cultural heritage building recovery was not applied in this area, these privately owned buildings were treated as common/non cultural heritage buildings and eligible to receive common building's aid. In compared with residential district recovery in Kotagede, the necessity for doing hasty recovery feels higher to support their livelihood activity. This tendency was contributed to increasing the risk for cultural heritage building conservation in Padang Old Town District. Further, the lack of heritage protection policy to the historical buildings and its common behavior of user/owner-driven rehabilitation before the earthquake, add some risks to the cultural heritage building conservation in order to preserve the originality and the existence of these historical buildings post-earthquake.

4.1.1. AIMS

This research was a part of Japan Center for International Cooperation in Conservation, National Research Institute for Cultural Properties' research on a cultural heritage reconstruction report of Padang old district. The aims of this research will be specifically emphasized on identifying the alteration of colonial buildings before the earthquake, the impact of the earthquake, as well as the influence of non-engineered building- recovery to the cultural heritage buildings.

The objectives of this study are

1. Identify the tendency of building alterations on privately-used cultural heritage colonial buildings before the earthquake.
2. Define the recovery frameworks and model developed by building owners and users.
3. Evaluate the impact of the building owner driven recovery by determining the influential elements of vulnerability.

4.1.2. METHODOLOGY AND TARGET AREA OF STUDY

The research site, Old Town Padang is located along the Batang Arau River (Fig.IV.1). The 83 of 156 cultural property buildings had been surveyed by deep interview to the building users (some are the building tenants, some other are the building owner) on January 2012. The pre-earthquake conditions of the building were merely collected by questionnaire survey, since the initial condition of the buildings have never been properly recorded by the building owner or the local government. Building conditions such as facade and building plan in the current situation was also collected during the field survey. The questionnaire consisted of three sections: 1) pre-earthquake condition, including rehabilitation led by the building-users or owners; 2) the specific damages of the building due to the 2009 earthquake; and the recovery status and recovery framework led by the building owners or users.

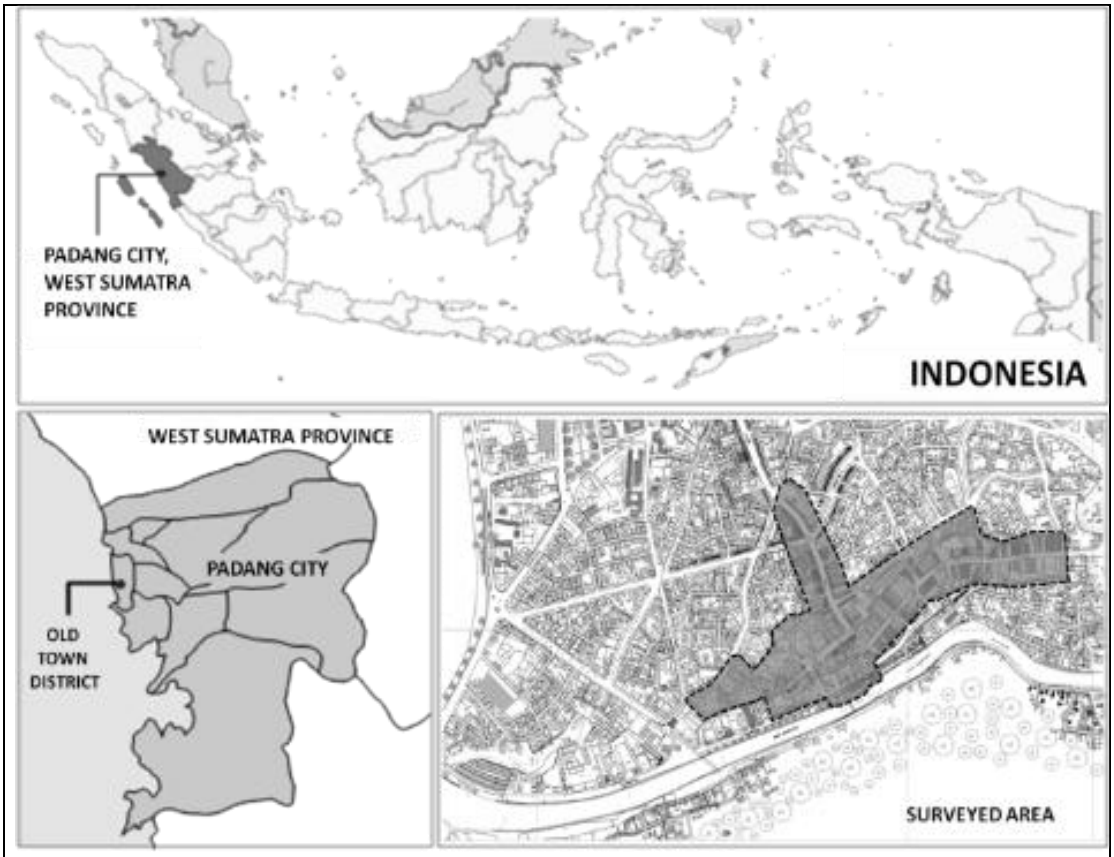


Fig.IV.1 Location of Padang Old town district

Survey Location	Old Town District, Padang, West Sumatra

Survey Time	January 2012
Building Ownership	Privately Owned Building which have been registered as cultural heritage building by the Padang city government
Building Type	Houses (14), shop houses (41), warehouses shops (28)
Respondents	Historical House Owner/User/Tenant
No. Respondents	83
Methodology	Deep interview
	Buildings observation

4.2. OVERVIEW OF PADANG OLD TOWN DISTRICT

4.2.1. HISTORICAL BACKGROUND

Since the sixteenth century, West Sumatra and particularly its capital, Padang, had become a major trade center, serving as a hub for the pepper, gold, coffee, salt, and textile industries. Since then, Padang old town district has functioned as a trading center, initiated by Dutch colony. Years of Dutch and British rule have made the architecture of the city an amalgamation of vernacular and colonial styles. This region, which is located at the north bank of the Batang Arau river became more crowded with offices, warehouses, and residential housing, attracting Dutch, Chinese and Indian traders. Two story buildings which combined residential function and economic activity function were the most common buildings in this area.

This district is located in the earthquake and tsunami prone area. Great tsunami was recorded occurred in 1797 and 1833 (Natawidjaja & Triyoso, 2007). Recently, it has severely affected by two major earthquakes; 6.3 Richter Scale (RS) on March 6, 2007 and 7.9 RS on September 30, 2009. The latest earthquake gave a severe impact to 16th century brick structured buildings. Based on (BPPI, 2011), most of the house, shop, warehouse and shop-houses were severely affected by the earthquake (Fig.IV.2).

Fig.IV.2 Condition of Old Town District after the Earthquake. Source: (USGS, 2009)(left); the rapid assessment status after the earthquake; retrieved from (BPPI, 2011) (right)

According to the heritage rapid assessments conducted by Bung Hatta University one day after the earthquake (Fig.IV.3), it is recorded that 46% was severely damaged, 30% was in

medium damaged, 19% lightly damaged and only 5% of the buildings was habitable. Severely damaged include collapsed building (partly destroyed), demolished (totally destroyed) and structural damaged. Meanwhile, medium and light damaged indicated with cut through cracks (for medium damaged) and cracks.

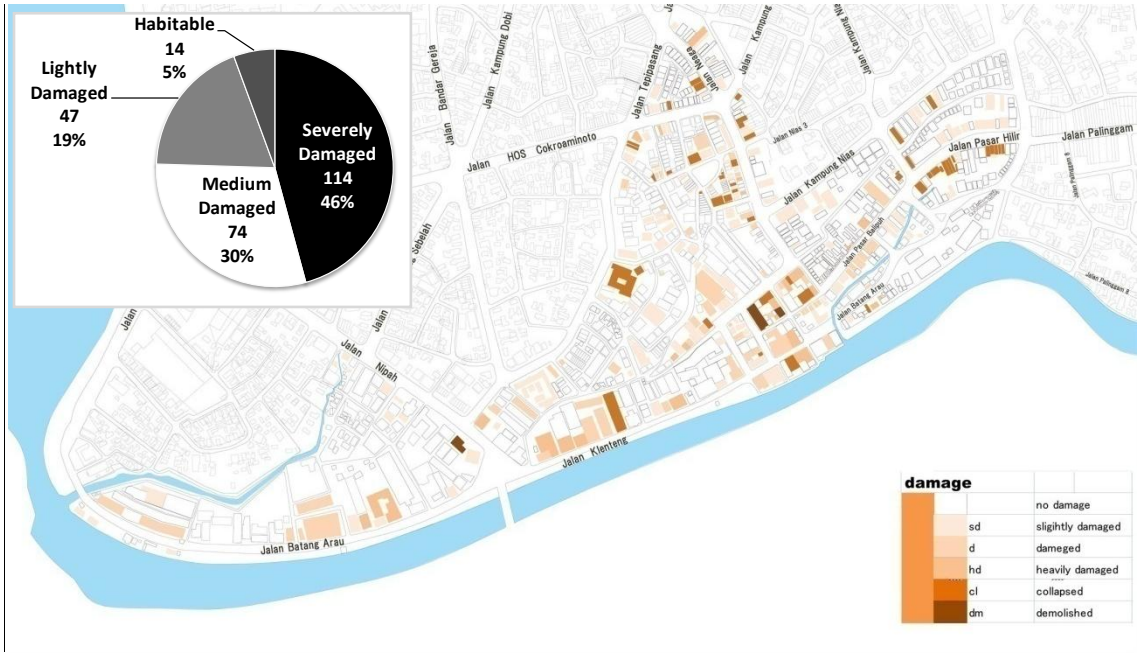


Fig.IV.3 Damage on cultural heritage building at Padang Old Town district (BPPI, 2011)

4.2.2. CHARACTERISTIC OF COLONIAL BUILDINGS AT PADANG OLD TOWN DISTRICT

This research will mainly focus on privately owned commercial buildings (indicated with blue color in Fig.IV.4, which are two stories-shop house building located in the narrow building lot. Even though the placement and styles of windows, door, height and ornament might be various, there were some basic characteristics. The buildings arranged side by side, connected with consecutive arcade at the front side of the building, one hall connected to the arcade which usually used as a shop, at shop-house type buildings, or office at the warehouse-type buildings, or reception room in residential type buildings; and another hall, facing the inner court, usually functioned as storage (for shop-houses type and warehouse type) or living room (at residential-type buildings). The inner court which provides air and sunlight for the narrow building lot and gives significant improvement to the environment quality inside the building. Kitchens and service area on rear part of the first floor. On the second floor basically consist of one hall with two verandas, the one facing the road side and the other facing the inner court (Fig.IV.5).

Fig.IV.4 The function distribution in Padang Old Town district (BPPI, 2011)

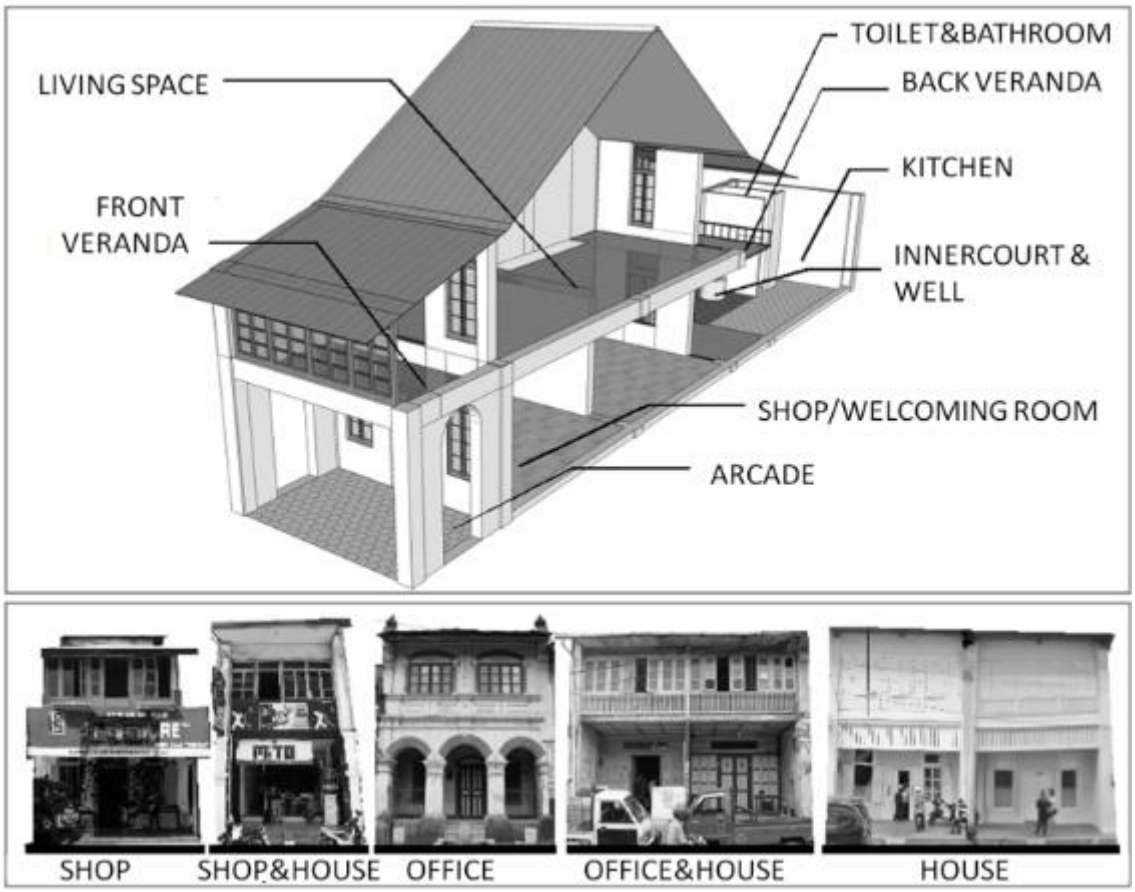


Fig.IV.5 Axonometric Image: Typical of the Surveyed Buildings (upper); some variety function and details of the surveyed buildings (below)

The structure of the buildings is made by non reinforced thick brick walls with some wooden columns in between. This also functioned as roof structure, supported by roof truss inside.

The roof enclosure was originally made by clay tile, but recently some of them have been replaced by zinc board. Originally, this roof structure has some weakness. The roof has a long span to accommodate the narrow building lot. As consequences, the building required to have a tall wall (approximately 15 meters) to support this roof structure. Although this structure contributes good air circulation for the narrow building lot; but this also makes the roof structure heavier hence it is very vulnerable to the earthquake. The floor on the second floor is made of wood planks, joint with the wooden structure on the first floor. This is also functioned as a ceiling for the first floor.

The buildings that located side by side, creating a consecutive landscape that becomes the characteristic of the district (Fig.IV.6). Regardless the changing of the building interior, most of them has been registered as Padang City cultural property. The main protection of these buildings is mainly concerned on the façade. Unfortunately, the detailed guidelines and proper socialization regarding building conservation, has been interpreted variously at the local level practice.

Fig.IV.6 Consecutive landscape of Padang old town district at Jalan Batipuh

4.3. SHOP HOUSES CONDITION BEFORE THE EARTHQUAKE

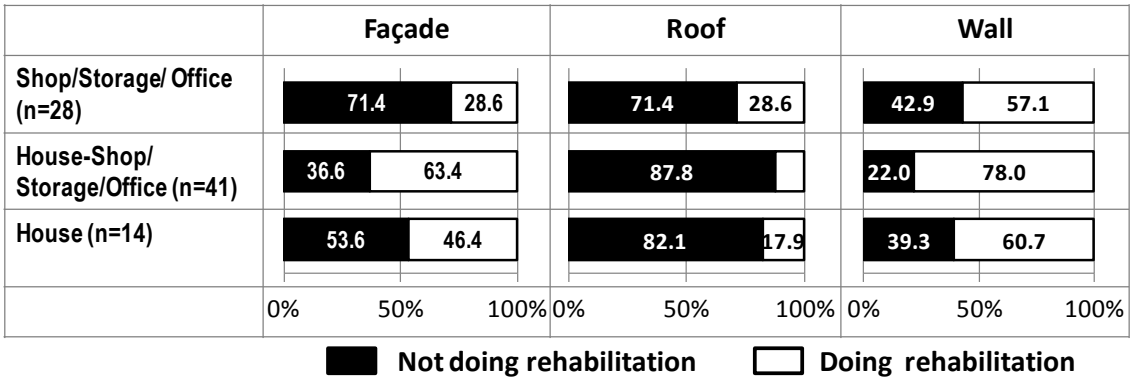
Pre-Earthquake conditions are required to provide a comprehensive point of view on pre-earthquake manners by the building users that might influence or indicate the essential elements related to the vulnerability of the building to the earthquake. These are essential to clarify the degree of originality of the buildings, vulnerable or easily-changed building parts and further important factor(s) that lead to physical changes of the buildings before the earthquake. This also may contribute to the vulnerability of the building from the earthquake. The results are as follows:

4.3.1. THE BUILDING ALTERATIONS BEFORE THE 2009 EARTHQUAKE

Table IV.1 shows the ratio of building user's rehabilitation before the earthquake. Identification of rehabilitation was being categorized into specific building part to collect more specific data regarding the preference of the building owners and users.

Generally, the rehabilitation occurred at façade and wall higher than at the roof part. At façade, the highest rehabilitation was occurred at the House-Shop type building, where 63.4% of the users did rehabilitation before the earthquake. The rehabilitation of this roof type does not require special technique, and can be delivered by the ordinary mason. Nevertheless, not more than 30% of the observed buildings have delivered roof rehabilitation. This condition indicates that the owner of the buildings gave less attention to do rehabilitation before the earthquake. This might influence its resilience to the earthquake. At the wall part, more building rehabilitation happened on the house-shop type building, where 78.0% of the building users did rehabilitation before the earthquake. In general, it can be seen the House-Shop type buildings had been restored more than shop/storage/office type and house type buildings.

Table IV.1 Building user's ratio of doing recovery before earthquake



The details of options in rehabilitation at façade, roof and wall show at Table IV.2. Some rehabilitation on the façade consisted of recovery with less physical changes such as painting, tiling, wall covering using plywood; as well as recovery with massive physical changes such as walled arcade, changing roof height and replace window and door with shutter/rolling door, newly rebuilt façade and covering the second floor veranda. In the house-shop type there is higher tendency to change the façade of the building to shutter door for adapting requirement of the current commercial activity.

At the roof part, rehabilitation before the earthquake shows very low at all building types. The most common options in rehabilitating roofs are replacing broken roof tiles using original material or zinc board and structural retrofitting by adding a steel truss. Lowering the roof elevation and adding roof at the inner court is implemented in some buildings as an response

to the needs of room and activity. The most common option in rehabilitating the indoor walls are painting, adding partitions and re-plastering the wall. Unfortunately, rehabilitation with additional structural retrofitting indicates very low in every type of the building.

Table IV.2 Rehabilitation options before earthquake

	REHABILITATION ACTS	SHOP/WAREHOUSE/OFFICE (N=28)	HOUSE-SHOP/ WAREHOUSE/OFFICE (N=41)	HOUSE (N=14)
FACADE	COVERING 2 ND FLOOR		2	
	REBUILT FAÇADE		1	1
	CHANGE TO SHUTTER DOOR	3	13	
	WALLED ARCADE	1	1	
	PAINTING /TILING	12	25	4
ROOF	ADDING ROOF		2	
	LOWERING ROOF ELEVATION		2	
	STRUCTURAL RETROFITTING	3	1	1
	REPLACING BROKEN ROOF TILE	2	3	
WALL	ADDING BATHROOM		1	
	MERGING ROOMS	2		
	ADDING PARTITION	5	10	
	ADDING REINFORCED COLUMN	1	1	1
	PAINTING/PLYWOOD COVERING	4	14	1
	RE-PLASTERING	2	6	
		0 20 40	0 20 40	0 20 40

The reasons for doing maintenance and rehabilitation shows the preference and needs of the building owner/user. Behavioral factors in housing design become the source of preference either needs or wants while implementing rehabilitation. Fig.IV.7 clarified the motivations that pursue alterations at old town district Padang.

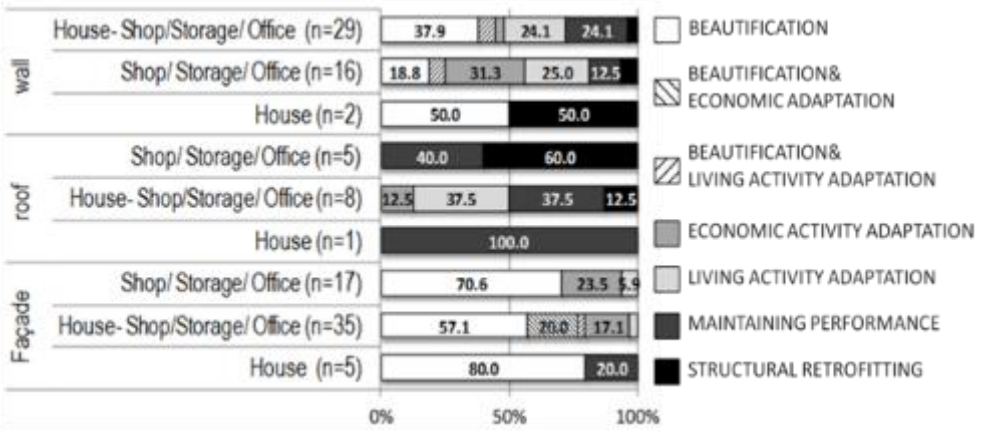


Fig.IV.7 The reason of doing rehabilitation before earthquake

At façade, mostly the reason of doing rehabilitation and maintenance before the earthquake was for beautification. Buildings which accommodated commercial function shows that economic activity gives motivation to deliver rehabilitation and maintenance. At the colonial districts in Indonesia, it is very common that landlord rent out their building. A very strategic location in the downtown, resulted high demand of the rental building for economic activities. In the case of Old Town district Padang, 37% of the surveyed buildings are rental building.

This fact means that sense of belonging of the owner and tenant to the cultural heritage building could be different. This also means that the knowledge regarding cultural heritage building did not pass through generations on the rented building.

The following analysis was carried out to identify the influence of building ownership to the motivation to do a careful rehabilitation. In Fig.IV.8 show that at the wall and especially façade, the building owners did maintenance and rehabilitation more frequent and significantly higher, in compared with facade at the rented buildings. Whereas at the roof in both categories, shows low consideration to do rehabilitation and maintenance. This can be concluded that façade and wall rehabilitated more frequent than the roof part. Technical difficulties such as very high roof, this may be related to the different types of ownership and consciousness between the owner-user and the tenant-user.

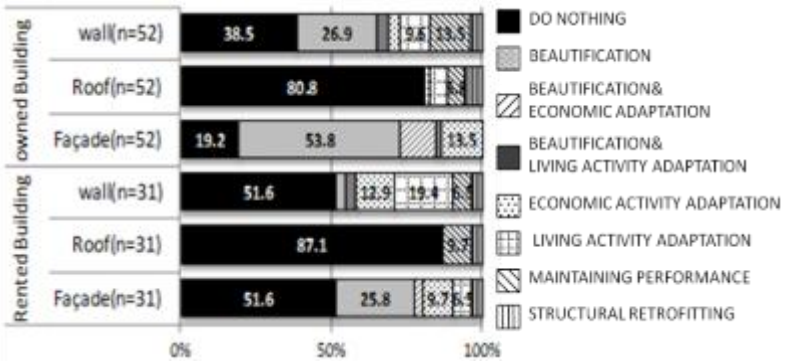


Fig.IV.8 The correlation between the reason of doing rehabilitation before earthquake and the building ownership

FACADE ALTERATIONS

In the case of cultural heritage building in Padang, building façades become the main concern of conservation of the government. Fig.IV.9 shows the correlation between building styles and motivation to do recovery at façade. It shows that although 39 of 57 buildings façade conserved its original style, it is obvious that 88.9% (16 of 18) building façades that have been rehabilitated into new building styles were highly motivated by economic adaptation. This means that economic activitiy has become a threat to cultural heritage buildings. Careful facade rehabilitation plan, that could accommodate their economic activity adaptation as well as supporting cultural heritage building conservation is required to prevent further damage of cultural heritage assets.

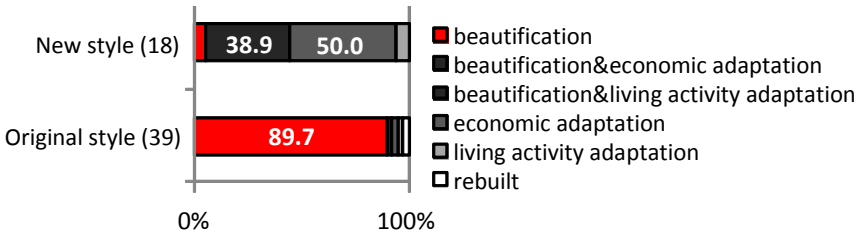


Fig.IV.9 The preference of building appearance style after doing rehabilitation before the earthquake at the façade

STRUCTURAL ALTERATIONS

Fig.IV.10 shows the relation between the rehabilitation and its contribution to the structural retrofitting before the earthquake. It shows that even though more than half of the surveyed buildings did rehabilitation on the wall and the façade, it shows that only 32.6% of the wall and 31.6% of the facade have been rehabilitated with additional structural retrofitting. In contrary, only 14 of 83 surveyed buildings has experienced the roof rehabilitation, 57.1% of this roof rehabilitation have been rehabilitated with structural retrofitting.

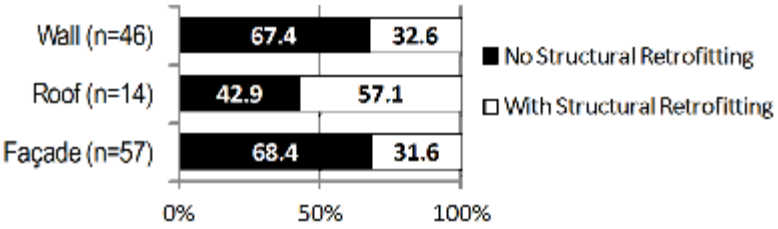


Fig.IV.10 Structural retrofitting before the earthquake

4.3.2. IMPRESSION OF THE BUILDING USERS

User perception towards the fulfillment their needs in the buildings are instrumental in determining wishes and preferences to the building rehabilitation. To determine whether the condition buildings prior to the disaster had been corresponding to user expectations, the analysis related to the building area and functions of existing buildings in the building is done. Fig.IV.11 shows the appreciation of the respondents to their cultural-historic building before the earthquake. The questionnaire was aimed to observe the level of attachment and likeliness to the building before the earthquake.

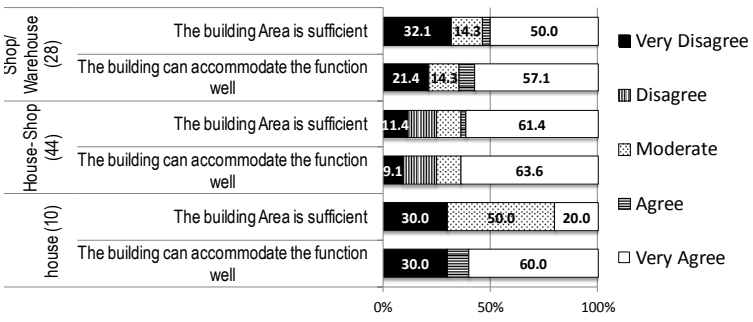


Fig.IV.11 Appreciation of the users to the building area and function before earthquake

As it shows in Fig.IV.11 the appreciation of the respondents to the spatial functions and the area which was categorized into each building function. Regarding the sufficiency of the building area, the respondents felt that the building is very sufficient for accommodating the shop-house and warehouse/shop function. In contrary, only 20% of the respondents who used the building as residential thought that this building area is appropriate. Some respondents said that the buildings are too big for residential. Further, it's long and narrow shape of the building lot (approximately 6-8 meters wide and 20-30 meters long); is considered inefficient for living function. However, in all categories, respondents considered that the building still could accommodate each required function.

Fig.IV.12 shows the appreciation of the building-users regarding building style, building maintenance cost, technique, and the structural quality before the earthquake, categorized by the type of building ownership. In both categories, it shows that more respondents answer disagree on the maintenance cost and technique. Nevertheless the degree of difficulty in maintenance shows higher on the rented building users. This condition might be strongly related to the age of the buildings that mostly were built in the early 19th century, and lack of material to replace the decaying part of the building. This could be one of the reasons why there was less maintenance and rehabilitation held before the earthquake as it shown in the above mentioned.

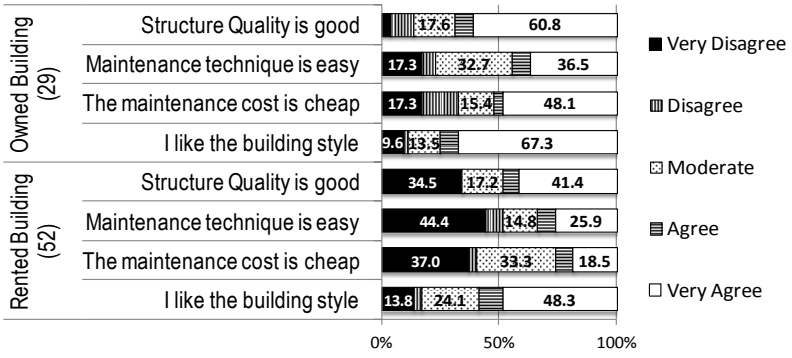


Fig.IV.12 Appreciation of the users to the building style, maintenance cost and technique, and the structure quality before earthquake

On the contrary, the respondents have very a high degree of likeliness to the building. Although the proper assessment of building structure had never been conducted, most of the owned building users considered their buildings were in good structural quality condition before the earthquake. Generally the owned building users, shows higher appreciation in the building condition in comparison to the rented building users.

4.4. IMPACT BY THE EARTHQUAKE

The following data on the impact of the earthquake were resourced from the interview with the respondents and field survey of the available buildings. The assessment would focus to evaluate specifically on the impacts of the earthquake to each building part. This is to clarify

the vulnerable elements due to the earthquake threat in the colonial historical building that can be used as consideration for technical guidelines. The results are as follows:

4.4.1. DAMAGE CHARACTERISTICS

Fig.IV.13 shows facade, roof and walls, which located in the second floor affected more severely by the earthquake compared with the building on the first floor. However, the worst affected part of disaster indicated occurred at the roof, where 32.5% surveyed roofs were completely destroyed, and 41.3% others are partially destroyed. Surprisingly, the level of damage at the building façades indicated very low, in comparing with the wall or roof part. It indicates 70.7% facade in the second floor and 80.5% of the first floor facade were not affected by the earthquake. This was certainly a great relief, considering the building facade was an important forming element for the district image that has been registered as one of the protected elements of cultural heritage.

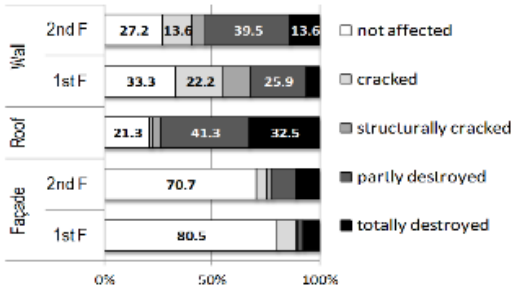


Fig.IV.13 The impact of the earthquake per building part

To clarify the reasons of the above mentioned trends, further evaluation has been done through cross analysis of the building maintenance and rehabilitation before the earthquake and the level of damages due to the earthquake. As results (Fig.IV.14), every part of the building was indicated less severe damage on the building that had been rehabilitated with structural retrofitting prior the earthquake.

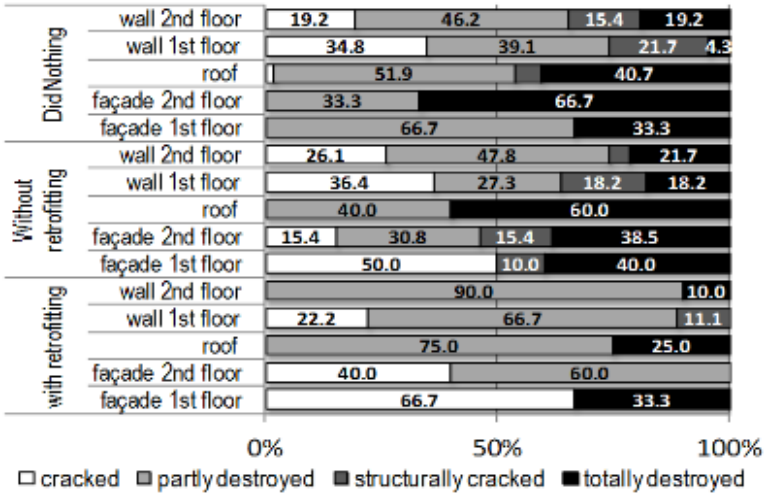


Fig.IV.14 Correlation between pre-earthquake maintenance and rehabilitation acts and the building damages

Conversely, the more severe damages show at the buildings which have never been rehabilitated, and the buildings that have been rehabilitated without retrofitting. Nevertheless, there were 33.3% façade at the first floor and 25.0% of roof that have been rehabilitated with structural retrofitting experienced severe damage (totally destroyed). This can be implied that not all buildings that have been rehabilitated with retrofitting before the earthquake have met the earthquake resistance standards. It can be concluded that the rehabilitation actions performed by the building users before the earthquake, as a form of investment to reinforce and conserve the cultural heritage building were hardly achieved without proper retrofitting.

4.5. RECOVERY PHASE OF CULTURAL HERITAGE SHOP HOUSES

4.5.1. RECOVERY FRAMEWORKS

After the earthquake, Padang city government delivered fund aid program to the affected building owners. The government also provided debris clearing service for the people right after the earthquake occurred. Unfortunately, this service had been delivered in the old town district without proper consideration and supervision on cultural asset protection. This could lead to the extinction of some important historical elements. In this aid program, only the building owners could receive the funding aids for building recovery. It was completely delivered approximately one year after the earthquake, divided into three terms of disbursement. The heavily damaged building received 15 million rupiahs, the medium damage building owner received 10 million rupiahs, and lightly damaged building owner received 5 million rupiahs. Nevertheless, from the building user point of view, there were two types of recovery frameworks at local level as follows:

a) Recovery by the building owner

In this framework (Fig.IV.15), building owners had the chance to get multi-funding to support recovery, which is derived from the government, and community association (for members). The executor of building recovery is various, depends on the level of damage and availability of funding. Usually, the building recovery was organized by the owner himself if the earthquake had only lightly impacted the building, or if there was insufficient resource funding to hire a contractor. When the impacted building has urgency to do hasty recovery (such as commercial building, storage etc.) or there were sufficient funding support, hiring contractor was reasonable option to maintain the recovery process in time.

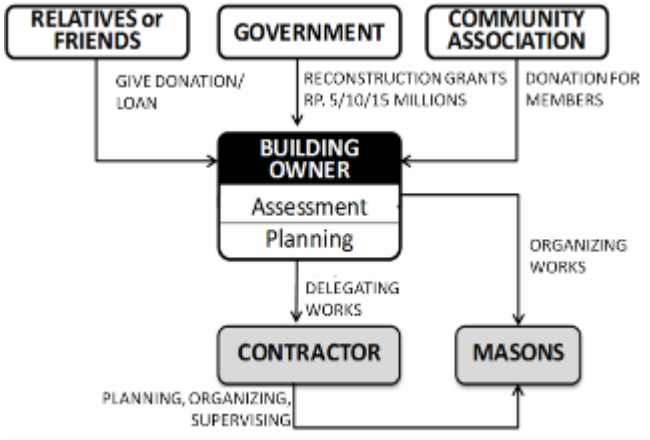


Fig.IV.15 Recovery framework at the owned building

b) Recovery on rented building.

In fact, not all of the affected building owners that had already received reconstruction funds were living in the affected building. As a result, the damage of the building did not directly affect the activity of the building owners. Many building owners did not intend to do recovery, mostly because the reconstruction cost will be much more expensive than the amount of aid received.

This condition had led to some confusion at the building tenant's level. In one sense, the building tenants have already paid rent, and still wanted to use the affected building as their living and economic activity place. On the other hand, building tenants were facing the fact that not all building owners have desire to allocate the funds for building recovery, and moreover limited access to the government fund aid were a huge obstacle for doing the recovery.

To deal with this situation, some building tenants developed a recovery framework by negotiating with building owners so called "cut-rent" system (sistem potong-sewa)Fig.IV.16. In this system, the reconstruction was arranged, funded and delivered by the building tenant. The funds were provided by the tenant, and will be calculated as a rental fee for a future certain mutually agreed period. This is a win-win solution for tenants and building owners, where the building tenants could do building recovery and use the building in longer term, and the building owners did not need to spend the money for doing the recovery.

This framework had some limitations. First, this framework was highly dependent to the agreement between building tenant and owner; and unfortunately, not every building owner and tenant had reached the agreement. As a result, some tenants have to live in the damaged building, and a few others decided to move out and leave the cultural heritage building abandoned. Second, the lack of access to government support made the recovery

process slowly. This is because the building tenants have to find other funding support to support their recovery.

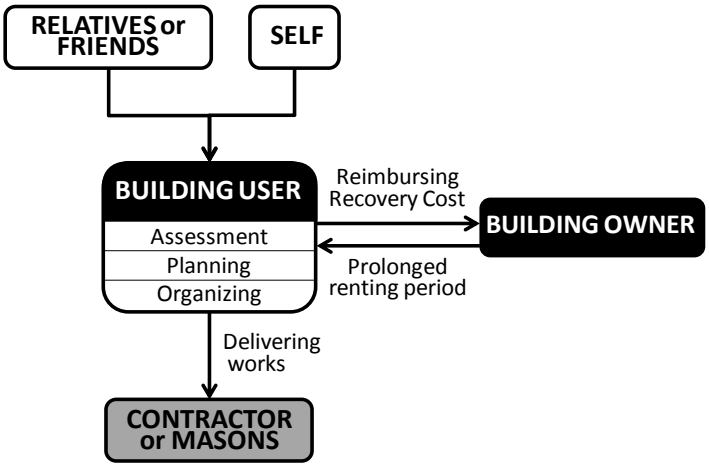


Fig.IV.16 *Potong Sewa* framework at rented building

In the term of cultural heritage protection, both frameworks had been implemented in the absence of intensive supervision and guidance related to the cultural asset building protection by the government or other actors. Considering that not all tenants have the knowledge of the technical details such as the building history, essential detail ornament and building typologies, which are usually better understood by building owners hereditary inherited from ancestors. This type of recovery, especially by the tenant is very vulnerable to the loss of historical elements as part of the old town district identity.

4.5.2. CHARACTERISTICS AND OPTIONS IN RECOVERY

In order to maintain the Old Town district identity and sustainability, analysis regarding the influence of the recovery options toward the originality of the building, especially the building appearance; and building retrofitting due to further earthquake has been conducted. Fig.IV.17 shows there are seven patterns of recovery options. Despite of the material choice, it shows that 66.7% of building facades, 77.8% of roofs and 81.0% of wall recovery have been delivered using new materials. This new material refers to zinc board, multiplex, and asbestos for the walls and facades as well as the recovery of roofing mantle, and lightweight steel roof truss for the roof structure. The fear toward upcoming earthquake becomes the main consideration of these choices.

In the recovery of the building structure, 51.5% of the facade, 46.0% of the roof and 63.5% of the walls applied new structure. These include adding reinforced concrete columns for façade and wall; and light steel frame structure for the roof. However, almost half of the existing buildings have been recovered using conventional structures.

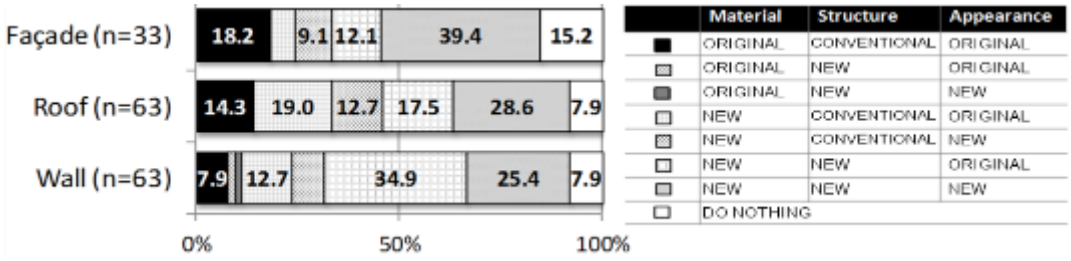


Fig.IV.17 The option of recovery per part

Regarding building appearance recovery, only 39.4% of the facades, 28.6% of the roofs and 25.4% walls have been recovered into a new style and shape. It means that the original style buildings are still being a preference for the building users in doing recovery. This might be highly related to higher affection to the building style as it has shown in Fig.IV.9. However, considering that the external appearances of buildings (facade and roof) provide high contribution to the image of the district; the intensive assistance and supervision during the recovery planning, and implementation is highly required.

Fig.IV.18 shows the correlation between the level of the damage and the intention for not doing recovery. It shows that the tendency for not doing recovery shows at 2nd floor of the facades (71.4%), 2nd floor of the walls (90.0%) and the roofs (83.4%) that were impacted severely by the earthquake (indicated by partly destroyed the totally destroyed). On the other hand, the tendency for not doing recovery shows at very light damage level (cracked) in the entire part of the facade. Further, the tendency for not doing recovery shows higher on the second floor and the roof, compare with the recovery in the first floor.

Fig.IV.18 The correlation between not doing recovery and level of damage

To ensure the sustainability of cultural historical buildings due to the future earthquake, structural retrofitting in an appropriate manner and consideration to the building conservation is a must. The following analysis (Fig.IV.19) has been delivered to provide evaluation on the structural retrofitting and its relation to the level of damage. It can be seen that there is a tendency of doing recovery without retrofitting at the less severe damage building part (indicated by cracked and structurally cracked). Nevertheless, the roof recovery with retrofitting has a low consideration at every level of damage.

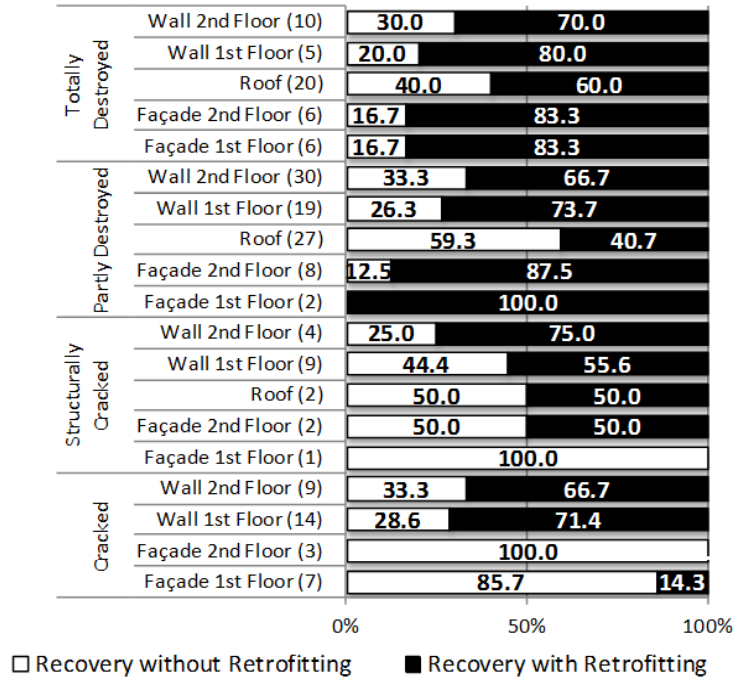


Fig.IV.19 The correlation between level of damage and retrofitting

Clarification regarding the correlation between the recovery appearance and the building ownership shows in Fig.IV.20. It is obvious that there is less intention of doing recovery in the tenant building. This is indicated by higher proportion “do nothing/not doing recovery” at the tenant building. This might strongly related with more obstacles experienced by tenant building’s recovery framework.

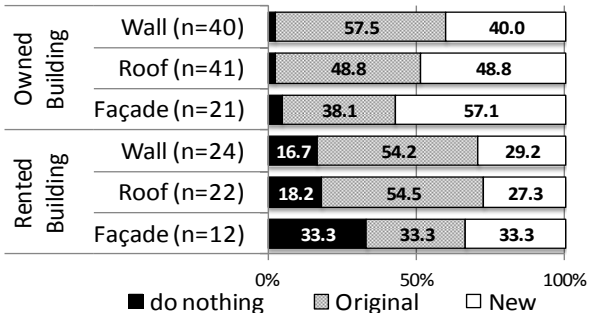


Fig.IV.20 Correlation of recovery appearance to building ownership

The further clarification regarding how the recovery frameworks could influence the speed of recovery shows in Fig.IV.21. Unfortunately, due to the lack of documentation by the building owners and tenants, only 37 building owners and 23 building tenants could answer this part of the questionnaire.

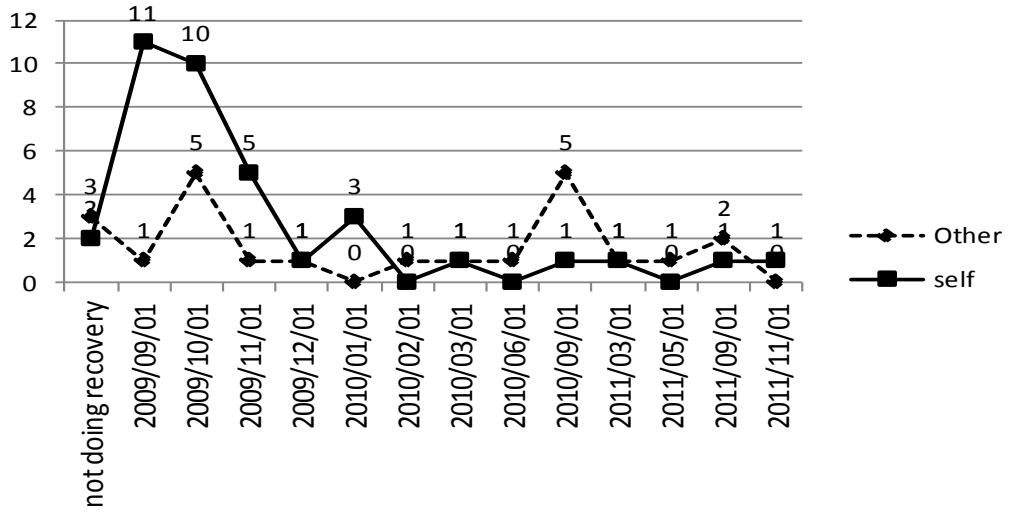


Fig.IV.21 Timelines of starting recovery at the rented buildings (dashed line) and owned buildings (plain line)

The graph shows the recoveries have been started right after the earthquake (September 2009) and some buildings were even still continuing recovery by the end of 2011. The dashed line indicates the number of tenant buildings who started the recovery per month, and the plain line indicates the number of owned buildings who started recovery. It shows that the owned buildings can directly plan, organize and do the recovery process right after the earthquake occurred. In contrary, most of the tenant buildings have just started recovery 1 month after the earthquake occurred. The building tenants who have already achieved agreement with the building owners to do recovery using “potong sewa” system, they could start recovery immediately. In contrary, some of tenants, with low economic funding resource choose to wait the transference of government funding aid from the building owner. This is indicated by the increasing of building tenants who started recovery on September 2010. It can be concluded that the difference type of recovery framework could highly influence the recovery timelines, hence increasing the loss of cultural historical assets due to decaying and exposing to the weather condition.

4.6. DISCUSSION

This chapter is aimed to clarify the tendency of building alteration at privately owned commercial colonial buildings before the earthquake, the recovery process and its influence to the cultural heritage building caused by the recovery process. It can be concluded as follows:

THE ALTERATIONS BEFORE THE EARTHQUAKE

- The privately used cultural historical building at Padang Old Town district have experienced changes due to rehabilitation before the earthquake, triggered by the adaptive manner of living and commercial activity.

- The higher appreciation and affection to the original building style encourage people to do the rehabilitation with consideration to conserve its original style.
- The rehabilitations was not necessarily equal to the structural retrofitting of the buildings.
- The roof part that has experienced minimum rehabilitation and maintenance before earthquake, become the most vulnerable element of the building. On one side, this condition means that most of the roof material, structure and appearance were original before the earthquake; on the other side, regardless its heavy roof structure, the minimum rehabilitation and retrofitting manners gives more vulnerable to the roof.
- As a result, the roofs have been severely affected due to the 2009 earthquake. Furthermore, the second floor also more likely impacted due to the collapse of the roof structure. This research clarified that pre-earthquake rehabilitation; especially the structural retrofitting could be more resilient due to the earthquake threats.

RECOVERY PROCESS

- In the term of commercial buildings, some obstacles faced by the building tenants, since they can not acces recovery funding.
- It forced them to develop a win-win solution system so called "*potong-sewa*". Nevertheless, with no support of legal policy from the government makes this system very weak because of the lack of supervision and guidance especially on building conservation. Furthermore, the high dependency to the building owners and provides more challenges for doing recovery at the tenant buildings.
- In both systems, the less government assistance and supervision makes the building owners or building users take a role as the focal person and decision maker. On one side, this shows the activeness recovery of the building-user level; on other side this is also giving more challenges and threats to the cultural heritage building protection.
- It is obvious that an inappropriate recovery framework caused higher vulnerability to the privately used cultural heritage building, especially on the nature of building user driven recovery.

IMPACT OF THE RECOVERY TO THE BUILDING CONSERVATION

- In the term of recovery outcomes, seven options of recovery have been clarified.
- Façade, roof, and wall have the same tendency of using new material and new retrofitting technique. In the contrary, the tendency to preserve the original building style indicates high. The difference between the building ownership also has shown distinct influence to the intention for doing the recovery.

- If these obstacles in the past recovery framework could be addressed by the legal policy support from the government or other actors, hopefully this could lower the risk of losing privately-used cultural heritage building.
- The building users who practically have higher access to daily assessment and monitoring to their historical buildings required to be supported with appropriate technical knowledge and options of recovery with structural retrofitting with full consideration to the cultural building conservation.

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V. PARTICIPATORY CULTURAL HERITAGE RECOVERY: A WAY FOR SUPPORTING THE SUSTAINABILITY

Key Player's initiated programs

5.1. INTRODUCTION

Participation of the beneficiaries is a key feature in the recovery program. Engaging the public, in one way or another, is crucial to achieving a holistic or sustainable recovery from a disaster. Engaging beneficiaries participation in recovery program could be an obstacle and time consuming in comparison with direct fund aid. In both observed areas, Kotagede and Padang Old Town district, this approach have been utilized to some tangible and intangible cultural heritage assets.

5.1.1. AIMS

This chapter focuses on how beneficiaries for holistic recovery might be engaged in the recovery process, to ensure the sustainability of the program and further to support both tangible and intangible cultural heritage conservation post 2006 Yogyakarta and Central Java Earthquake and post-2009 West Sumatra Earthquake. Particularly the objectives are

1. Identifying key players in participatory cultural heritage asset recovery
2. Observing the framework of engaging beneficiaries
3. Qualitative analysis to evaluate the result of the various type of recovery of the cultural historical building in the conservation point of view

5.1.2. METHODOLOGY

In order to collect the frameworks, interviews regarding timelines and the method of recovery have been conducted to the key players. Data gathering was started by interviewing community leaders to clarify the recovery effort. This data is described and furtherly compared using qualitative analysis method to examine indepth "purposive samples" to better understand a phenomenon based on the key player's type. To analyze the data, exploratory research had been chosen to explore the advantages and challenges of each program during the implementation and community assistance process. The quantitative

research was being applied to evaluate the questionnaire in order to get the obvious evidence of the program influence on the folk industry and community. Each program has been chosen based on the variety of frameworks and key players. These frameworks hopefully could provide options in community based cultural heritage recovery.

To achieve above mentioned objectives, two programs have been observed post-2006 Yogyakarta and Central Java earthquake: the “Craft Revival Program” in Kotagede led by GMU and the “Developing Livelihoods through Common Service Facility” program in Kasongan by Relief International (RI) on September 2008. In-depth interviews to 5 key players in each area (including program planners, local level coordinators, and program facilitators) and questionnaires to the craftspeople beneficiaries (46 crafters in Kotagede and 23 crafters in Kasongan) had been chosen as the methodology to collect qualitative data to support this research (Fig. V.1)

Fig. V.1 List of Key Player’s and Beneficiaries‘ at Kotagede and Kasongan

	Key Players	Roles	No	Deep Interview	
Kotagede	Gadjah Mada University	Programme Planner	1	✓	(1)General Information regarding the programme (2)Programme background and approaches (3)Challenges and lessons learned
	Center for Heritage Conservation	Local level coordinator	2	✓	
	Kanthil Local Organization	Mediator	1	✓	
	Hamlet Leader	Facilitator	1	✓	
	Low income Silver Crafters (46)	Beneficiaries	46	×	
Kasongan	Relief International (INGO)	Programme Planner	2	✓	
	Business Unit Cooperative Coordinator	Local level coordinator and Implementator	1	✓	
	Hamlet Leader	Mediator and Facilitator	2	✓	
	Locals pottery crafters (32)	Beneficiaries	23	×	

Fig. V.2 List of Key Player Respondents in Padang Old Town district Recovery

Interviewee	Affiliation
Mr. Eko Alvares	Indonesian Heritage Trust expert, Vice Rector of Bung Hatta University
Mr. P. Sahib Khalid	Imam and Head of Daily Committee of muhammadan Mosque
Mr. eddy	Daily Committee of Tjoa and Kwa Family Clan Association
Mr. Albert	Treasurer, Himpunan Tjinta Teman (HTT)
Mr. Alensius Wijaya	Secretary of Himpunan Bersatu Teguh (HBT)
Mr. Lie Kian Gwan	Daily Committee of HBT Funeral House Service
Mr. Fauzan	Librarian and Daily Committee of Gantiang Mosque
Mr. Sis	Rehabilitation and Reconstruction committee of Padang Monastry
Ms. Rini Afrimayetti	Lecturer, Bung Hatta University, Field coordinator of Heritage Rapid assessment
Mr. Indra	Secretary of See Hin kiong Shrine
Dr. Ir. Eko Alvares, MAA	Indonesian Heritage Trust expert, Vice Rector of Bung Hatta University

Meanwhile, at Padang old town district, four cases based on its key players which are Chinese association, public-private partnership program on Muhammadan mosque recovery, collaborative work of university and catholic church community on building recoveries, and Islamic ad hoc community have been observed. One of the main features that makes Padang distinctive within West Sumatra province is its multi-ethnic composition. It can be said that the city is a pluralistic society in which ethnic groups with various backgrounds and lifestyles coexist. The existence of these groups can be traced to the establishment of places, spread around Padang city, that are named after these groups, such as Kampuang Jao (Ward of Javanese), Kampuang Nieh (Niasan ward) and Kampuang Cino (Chinese ward), Kampung Keling (Indian ward)(Elfira 2011). Chinese community immigrated and arrived in Padang and founded their first unique local settlement.Chinese community settled around Pondok and Pasar Gadang on the streets of Niaga and Pasar Batipuah. They also built See Hin Kiong Temple and shop houses along Niaga corridor to support commercial

activities primarily by the Chinese community. The Chinese community's involvement in the economic sector is mainly as traders. Meanwhile, Indian community settled along Batang Arau river so called Kampung Keling, facing Pasar Batipuh street. They built Muhammadan Mosque, the only mosque in Padang Old town district with Indian style architecture. Minang community mostly settled at the east part of Pasar Gadang. At the Dutch era, Gantiang mosque was built to represent this community. Catholic monastery consisted of several colonial era' s building such as chapel, nunnery, school, and church. These are located at Gereja street. All of this ethnic and religion live side by side in the Padang old town district, and become an icon and characteristic of this district (Fig.V.3). The survey was conducted in 7-14 September 2012 (Fig. V.2) by doing a depth in interviews to 7 community leaders and 2 heritage rapid assessment expert.

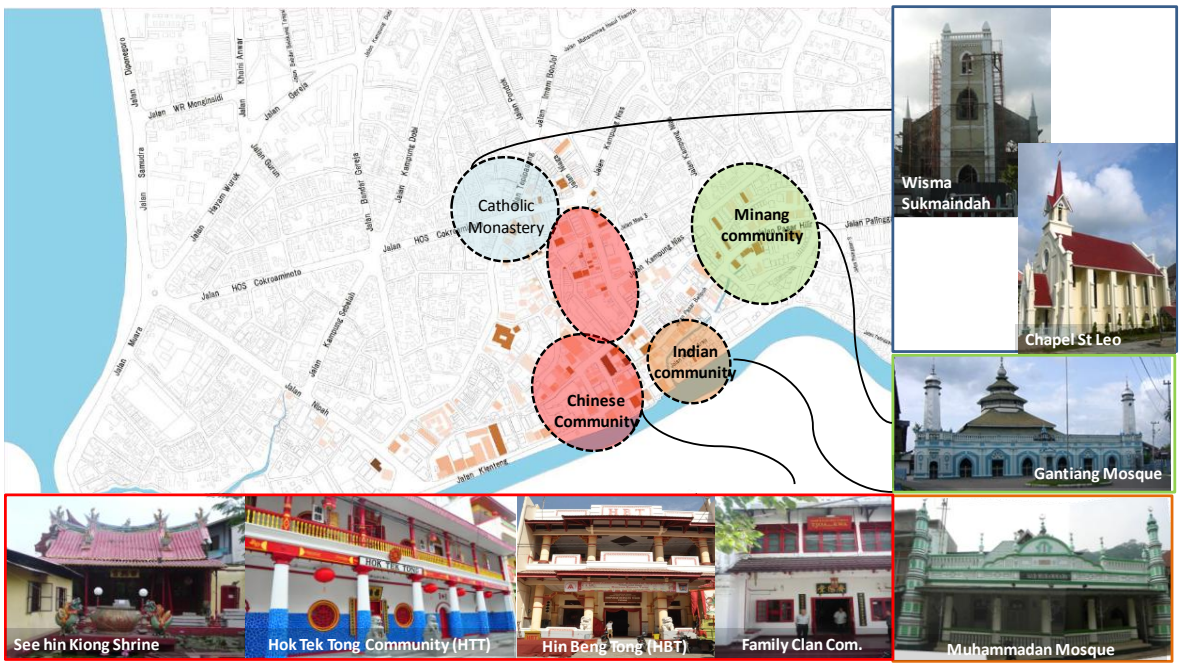


Fig.V.3 Ethnicity Distribution in Padang Old Town District.

5.2. LITERATURE STUDY

There is a lot of literature on community involvement in post disaster recovery. Some studies (Barakat 2003, Barenstein 2008, Thwala 2005, and Fallahi 2007) have identified the advantages of community-driven recovery as offering greater cost effectiveness, a potentially better product quality where technical and supervision skills are available, more empowerment, restoration of confidence among those traumatized by their disaster experience, local capacity building and employment, and preservation of the local cultural heritage through land use planning and locally appropriate housing styles. A study by (Hwang, Lay dan Miyazaki 2008) has different emphasis such as paying attention to the development model, led by a Non Profit Organization (NPO) in post disaster recovery as

observed in Taiwan. This research will emphasize on University and International Organization role in folk industry recovery post disaster that combines both community involvement and folk industry based livelihood recovery, as this area is not yet widely evaluated.

The Great Hanshin Earthquake alerted people to the task of conserving historic monuments, of which there are a huge number in the region. Recently, more people are aware that building a network on the basis of human development during peacetime will work effectively if there is a disaster. Since action by the government is limited, sections in charge of cultural assets in the six prefectures of the Kinki district started investigating methods for reducing damage area-wide on the precondition of the participation of ordinary citizens. For example, preparation of two types of survey slips-for administrative organizations and private participants- are examined (Murakami 2000). Kobe University has experimentally started a general course, including architecture, arts and crafts, history, agriculture (agricultural assets), and medical science (welfare) based on a comprehensive review of the lecture session from the heritage manager seminar as one part of the Modern Educational Needs Program, a regional cooperative scheme with Hyogo Prefecture and Kobe City. If the practice session is supported by the Architects' Association, and administrative organs register trainee graduates, we believe that a stable mutual-supportive network will be built based on human development in cooperation among industry, government, and academia.

The integration of culture into sustainable development strategies and policies advances a human-centered and inclusive approach to development, in addition to serving as a powerful socioeconomic resource sustainably (UNESCO 2012). Cultural heritage, cultural and creative industries, sustainable cultural tourism, and cultural infrastructure can serve as strategic tools for revenue generation. As an exemplar of the “Power of Culture for Development”, UNESCO has commenced the project entitled ‘Revitalization of Local Community Livelihood in Cultural Industries and Heritage Tourism’ at the Borobudur Temple Compounds, one of the World Heritage sites in Indonesia.

Safeguarding the significance of the region’s ancient historical and artistic heritage is directly tied with the livelihoods of the local communities and their future generations (Nagaoka 2011). Economic sustainability in this area relies on the highest possible conservation quality of the sites, their environments, their explicit characters and unique assets, which all contribute to the cultural and economic well-being of local people.

5.3. PARTICIPATORY CULTURAL HERITAGE RECOVERY PROGRAMS AND FRAMEWORKS

5.3.1. GADJAH MADA UNIVERSITY LED PROGRAM

The livelihood in Kotagede is dominated by the private sector, whereas the folk and home industry is only 10.29%. Kotagede post-earthquake condition did not show high levels of impact in the physical or economic sector. Further, although Kotagede is very famous of its traditional *joglo* houses that severely impacted by the earthquake, most of them have not been registered as a cultural heritage building. Nevertheless, Gadjah Mada University (GMU) was still prioritizing its concerns in Kotagede, since it has a strong historical background and high risk of losing the folk industry culture as well as the degradation of privately owned traditional *joglo* houses.

The main concept of Kotagede recovery program assisted by university was to make Kotagede's community have the capacity to manage cultural heritage assets independently and put additional value so that cultural heritage assets could give economic and cultural benefit to the community (Adishakti 2008). To enhance its sustainability, GMU in collaboration with local people formed Kotagede Heritage District Management Organization (OPKP) at the local level.

A. SILVER CRAFT REVIVING PROGRAM

The 2006 Earthquake has caused additional burdens for small crafters since their homes that used as their workshop were damaged. The small capital crafters that mainly do not have much savings, allocate some of their capital to renovate their houses. Further, some folk industry employees who do not have saving funds while the production stopped, waited for aids from donors to restore their house.

On March 2007, Gadjah Mada University (GMU), using the support funding from Exxon mobile oil, developed a program called "*Program Order Produk Unggulan Kerajinan Perak*"—qualified silver craft products based on order program (Ikaputra, 2009). The program was aimed to motivate low-income crafters to solve their own economic problems after the earthquake by working on an "order-based program"; to introduce a collaborative program simulating the relationship between "customer and craft worker", to improve the quality of silver craft products; and to promote silver craft products resulting from the "order-based program" to a wider market either inside or beyond Kotagede(Adishakti 2008).

Supported by OPKP, GMU created a think tank team that collaborated with a university laboratory called the Center for Heritage Conservation (CHC) as the daily operationsl team. The steps to implement the program are as follows:

- Preparation and Designing Program. As an academic institution, GMU has difficulty to get funding support for disaster recovery. Therefore, GMU arranged networking with the Exxon Mobil Oil Company by utilizing the CSR program to get the funding resources of this program. Simultaneously, GMU held discussions and market chain analysis with

local leaders and OPKP to learn how the crafters could eventually increase their income. Through the discussions, it was determined that creating networking between crafters and consumers was important to overcome the squire domination in the silver industry; improving product quality it has higher price is a must for grasping the national and international market.

- Targeting beneficiaries were conducted together with local leaders and OPKP. Particularly, OPKP was taking on the role of information collecting, advocating and socializing the program and eligibility of beneficiaries. The criteria of selecting beneficiaries were decided not only based on the damage level caused by the earthquake, but also based on their cultural value such as: beneficiaries should be local crafters from Kotagede; small capital and have willingness to join the program; they should have unique skills. To avoid conflict at the local level, the selection of the beneficiaries was delivered internally between GMU and OPKP. During this phase, 50 beneficiaries out of 152 crafters were selected.
- Capacity Building and Enhancing Market. GMU proposed several interventions to build the capacity of the crafters, OPKP and GMU themselves. To improve the knowledge and vocabulary of jewelry design, in collaboration with crafters, GMU developed designs by utilizing on traditional patterns into new marketable designs. OPKP was appointed as the silver material supplier to avoid price monopoly by the squires. Mainly beneficiaries took roles in the production process. Orders indirectly gave beneficiaries training to produce higher quality product in limited time. Crafters were thought to design their own product, and for each design, they received additional fee. For enhancing the market, Lecturers of GMU were utilizing the university network such as other universities and government bodies. Promotions had been done through a website and exhibitions. As a result, the first selling took place on March 2008, one year after the program was launched.
- Sustainability plan and present condition (by 2010); In order to enhance the sustainability of the program in the future, GMU created a direct network between the crafters and the buyers by putting the name and address of the crafters in every product. This system will be the replacement of the GMU role in the future, after the program finished. Unfortunately, this system is still difficult to apply since the buyers had difficulty to reach the crafters's houses by them self. Further, payment, transfer and shipping were difficult to be carried out individually by the crafters. CHC is still handling and managing the orders. Another obstacle of this program is the refusal of the crafters to manage and promote the product by themselves.

B. TRADITIONAL HOUSE RECOVERY PROGRAM

Reconstructing affected traditional house in Kotagede become crucial to be implemented right after the earthquake. The program was initiated with engaging local people by forming

OPKP. The assessment was shared by the university and OPKP in order to have a better understanding and set up the priority of the program, including targeting of beneficiaries and choosing implementation strategies. Since the implementation is led by university with a small involvement of the community, the knowledge transference regarding the technical of building the traditional house could not be delivered to the house owner. The operational that fully delegated to the beneficiaries without providing the financial mechanism and with less support from the policy makes the difficulty in the local level Fig. V.4.

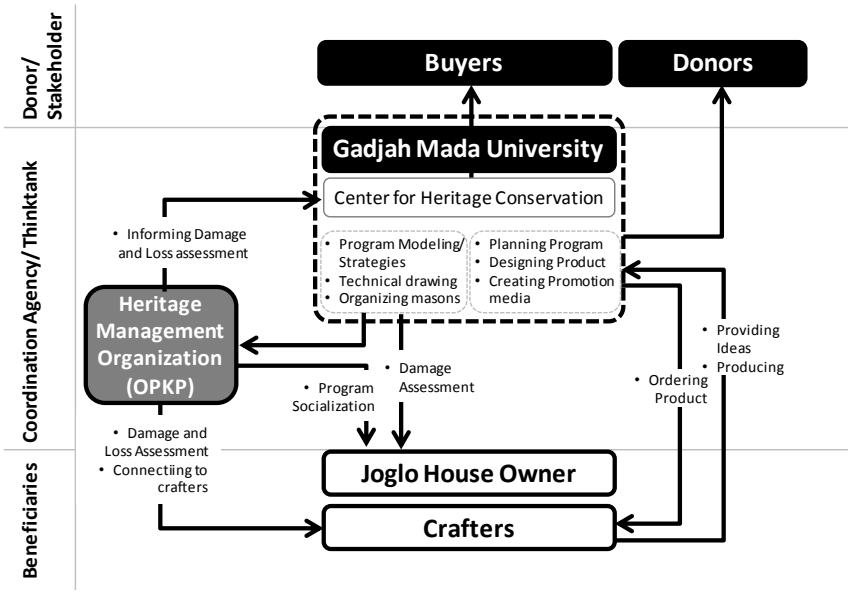


Fig. V.4 Recovery framework and partnership at university led program at Kotagede

Further, to achieve sufficient funding amount for recovering one traditional house, the university must apply multi donor system in this program. This issue has been followed up by university, by arranging foster parent program to recover the *joglo* house through multi donor approach. This program was mainly aimed to build pilot project or recovery model of traditional houses recovery in Kotagede. For heavily damaged *joglo* houses, multi donor funding could cover 100% of the recovery fund for house owner who will to let one part of the building as a public space. For privately owned *joglo* homeowners that were not willing to share its building as community space, GMU will only cover up to 20 million rupiahs. Unfortunately, multi donors funding made the disbursement of aid by the donors was time consuming. Further, the reconstruction of *joglo* houses were involving large amount of money. This condition, force the house owners who were mostly experienced heavily damaged, to voluntarily allow their building for community gathering. Although this gives benefit to local people since they could use it freely as a public meeting place, it shows a contrary effect for the house owners since they could not receive any economic benefit for them self.

This program was started on June 2006, right after the earthquake stricken Yogyakarta at the end of May in the same year. Close communication with OPKP to socialize the *joglo* reconstruction plan also take the important point. This program was accomplished in 2008. This program has successfully selected five *joglo* houses with full consideration of building conservation. This program results some outcome as follows: damages assessment of approximately 100 j*oglo* houses, and restoration of 5 *joglo* houses into previous condition, and one of these has been adopted by GMU as the living museum of Kotagede to generate the local consciousness and activities on heritage preservation. Nevertheless, the scale of the GMU program was minor in compared with the government program. It was applied as additional program to support the main program. It provided a development model and supplemented the main program with a specific concern such as cultural/historical value that sometimes is neglected during the recovery assessment. This also means that the supplementary program is more flexible in deciding the themes of recovery, and engaging donors as long as it is aligned with the main framework.

5.3.2. INGO LED PROGRAM AT THE POTTERY VILLAGE, KASONGAN

Kasongan is a trademark of the handmade terracotta pottery industry in Yogyakarta Province. It is located 7 km from the city center in the southern part of Yogyakarta city. For Kasongan people, pottery has become a part of the pottery history that has been alive in the region since 1675, when Kyai Song, one of the followers of Prince Diponegoro, for the first time developed the production of pottery for kitchen utensils. Even the name of Kasongan was taken from the name of Kyai Song. It has been developed and become a tradition passed on over generations through the family to make pottery (Priyanto 2009). Before the earthquake hit, Kasongan pottery artisans who were the indigenous heirloom of the pottery crafters pioneers have suffered from a lack of connection to the market. It is caused by the location of their settlement that is located far from the main road. The prices and orders were monopolized by the squires and bigger industries that are lined up along the main road. After the earthquake, JICA rapid assessment reported that 40% of houses in Kasongan were heavily damaged and another 22% were moderately damaged (Narotama 2009). In compared with Kotagede, the damage in Kasongan was recorded to be more severe. This condition paralyzed the pottery industry production at that moment, since most of the crafter's houses were also its production place. The loss of assets post earthquake was significant including the equipment, showrooms, and also pottery product. Further the crafters needed to restart the production as soon as possible to maintain the customer.

To address these issues, an International Non Governmental Organization, Relief International (RI) proposed the "Developing Livelihoods through Common Service Facility (CSF)" project in Kasongan. For implementation, RI collaborated with GMU at the first phase, empowering the youth association so called *karang taruna* that mainly consisted of the

crafter's children. Some particular steps and approaches of this program are as follows Fig. V.5:

- **Preparation and Designing Program.** During the preparation phase, RI, supported by GMU, approached the local village leader and youth association as the entry point to determine the needs and strategy for the whole program. From the discussions, it was determined that there was a requirement to facilitate temporary artisan work space for regaining the industry activity as soon as possible to prevent the loss of customers. Further, the small capital crafters are needed to be prioritized and it was necessary to create more interaction between the visitors and crafters to overcome the monopoly of the squires.
- **Targeting.** To avoid conflict at the local level, RI facilitated open consensus among the crafters so called *musyawarah mufakat*. In this consensus, the crafters determined the qualification of beneficiaries, type of the assistance and aid; and how to evenly access the artisan workspace. Community was agreed to use the artisan workspaces openly and be shared among the group/family of crafters. The consensus was proved effective to prevent further conflict within communities. For facilitating the community based planning and improving local capacity building, RI established a cooperative as a pottery business center that mainly empowered the youth association as the motor of its activity.
- **Recovering Livelihood Assets.** To regain the pottery activity, the provision of 22 artisan workspaces had been chosen by RI and the cooperative as the first step in procuring livelihood assets. Meanwhile, basic infrastructure to support tourism within the pottery production village such as 800 meters of village pathways and 7 sanitation/porous wells, were prepared to be built simultaneously by empowering the crafters(CSF 2009).
- **Capacity building through engaging community.** There were two approaches to engage the community in Kasongan, which were community empowerment and community investment.
  - **Community empowerment** was delivered by motivating and engaging the youth association, which consists of the children of the crafters as the operational team in the cooperative. Their capacity buildings were improved through training on computer operations and accounting. Once a week, Relief International facilitated an internal meeting for this team to evaluate and discuss the challenges and difficulties in implementing the program. RI, with partnership from ISI (Indonesian Art Institute), GMU, and PEKERTI (Indonesian People's Folk Art and Handicraft Foundation) had organized several trainings for the cooperative members to develop their skills, technique, and business management capability. On May 2008, RI implemented an advance short course for beneficiaries; including laminating technique, advance design, and art painting, air brush technique, shipping and forwarding course. Their involvement in these phases improved their know-how knowledge in managing the

cooperative. This has not only improved their capacity building level, but also their interest in the pottery business.

- **Community investment** was arranged for the cooperative members to improve the sense of belonging to the cooperative. They were encouraged to invest a certain amount of money for the business activities within the cooperative. This was utilized for micro finance loans, buying and maintaining the assets of the cooperative, promotion through exhibition and operational cost. At the end of the year, members will receive dividends based on their investments. Further, members of the cooperative benefited joining the cooperative by receiving the orders through the cooperative.

- **Enhancing the Market.** Promotions, product innovations and diversification have been developed through the cooperative. The service was not only customer oriented, but also providing the crafters with hay as a fuel to fire the pottery. The cooperative hired an outsourced manager to facilitate the communities' idea into the program and developing it. The Cooperative focuses primarily on expediting the production of high quality, locally produced products based on a market driven demand for ceramics and bamboo products. On 7–11 March 2008, CSF joined in IFFINA (International Furniture and Craft Fair Indonesia) 2008 exhibition. The Cooperative and CSF Business Manager, with assistance from Relief International, participated in a five day exhibition held at Jakarta Fair, Kemayoran, Jakarta. Besides selling CSF products, this activity had some other objectives to introduce CSF-crafts to the public, look for potential buyers, build market, networking and train the cooperative member to deal with international exhibitions, so that they have experience in promoting, marketing, networking, and learning about product development.
- **Sustainability Plan.** RI h gradually reduced their financial support to the cooperative along with the improvement of skills and capacity building of members within 2 years. Even this approach creates worries and frustrations among the member and youth association; on the other hand, this indirectly forced them to increase their knowledge and capability in running the pottery cooperative by themselves. The Cooperative held meetings once a month to work out issues and problems as well as ideas for development. These approaches improved trust of beneficiaries to the cooperative.

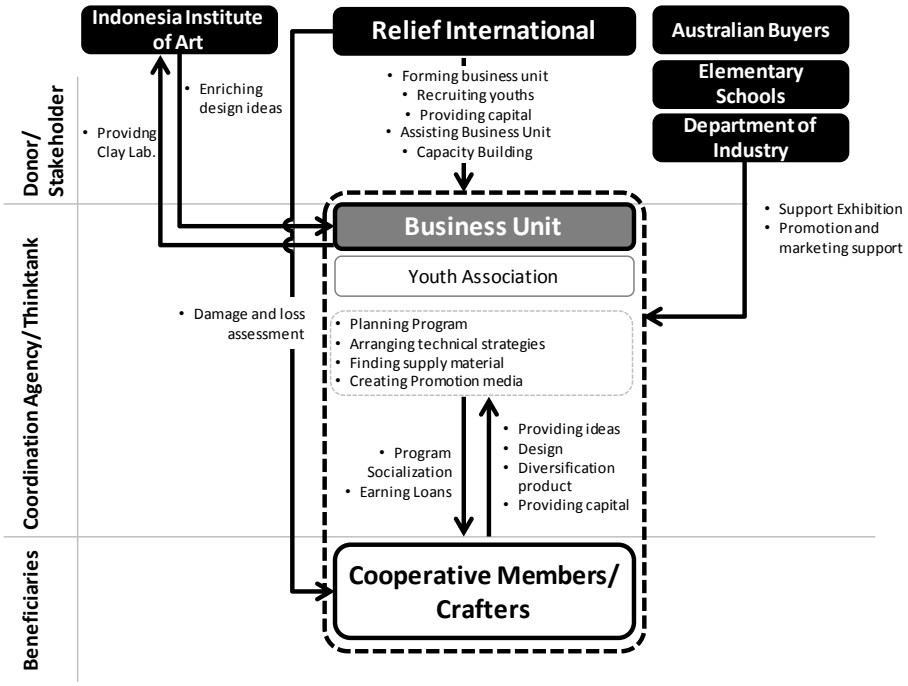


Fig. V.5 Recovery Framework at Kasongan Pottery Recovery Program

5.3.3. CHINESE COMMUNITY ASSOCIATION LED PROGRAM AT PADANG OLD TOWN DISTRICT

Two of the oldest Chinese ethnic organization's was born in the Padang old town district (Suroso 2008). This organizations are even the oldest cemetery association in Indonesia. Chinese ethnic trading activity with the Minangkabau community has been delivered on since the 13th century. There are three main categories of Chinese community cultural heritage assets in this district (Fig.V.6). All of these facilities are stretched along the south and north side of Kelenteng street as it is shown in Fig.V.7.

- **Chinese Funeral Association**. The Padang Chinese community formed the organization, with the aim to provide the social and cultural service for members. In 1863, the organization so called Hook Tek Tong (HTT) established as an association for providing cemetery and burial service. The formation of this cemetery organization cannot be separated from the needs for Chinese ethnic in Padang to work together when they wanted to bury the dead. They had to carry crates of a hollowed piece of wood logs up the mountain that overlooks at the sea. The process of carrying hundreds kilograms crates together with the community. In 1890, because of a great demand of Chinese community social and cultural service, another association so called Heng Beng Tong (HBT) formed. These two organizations have flourished and still providing service to almost 5000 members inside and outside Padang city.
- **Family Clan Community.** This community membership is based on the family name. A person with certain family name such as Lee, Tan, Tjoa, and Kwa who live in

Padang will automatically become the member of this community. The activity of this family clan community are almost the same with the funeral association (except holding funeral service), but simpler and less frequent in compared with Chinese funeral association.

Fig.V.6 Chinese Community Cultural Heritage Building in Padang Old Town district

Nowadays they have developed their services wider such such as renting wedding venue, elderly health check service, lion dance and self defense lessons for member's childrens. The members use this place as gathering place to do socialization and exchange information on daily basis. All of these associations collected data and monthly fee from its members. This funding become the main source in providing social services for its members such as festival, medical day, providing ambulance, and help care for elderly and poor members. These activities have been managed very well by forming structural committee that have been elected among the members and the election is being held each 5 years (Figure). These committees consisted of

a. Daily committee is responsible in collecting and updating member's database, collecting monthly member fee, and doing administration works
b. Cultural Affair is responsible in holding cultural events, such as festivals, providing lion dance and self defense lessons, worshiping to ancestors and Gods, etc.
c. Business Affair is mainly responsible in maintaining and developing business to support the association, such as renting ambulance, wedding venue, selling coffins, providing funeral service etc.
d. Charity and Social Affair delivers a monthly health check for elderly, and fundraising.
e. Building and Assets Maintenance Committee. This division is responsible in maintaining assets such as cars, ambulance, funeral home, wedding venue etc.

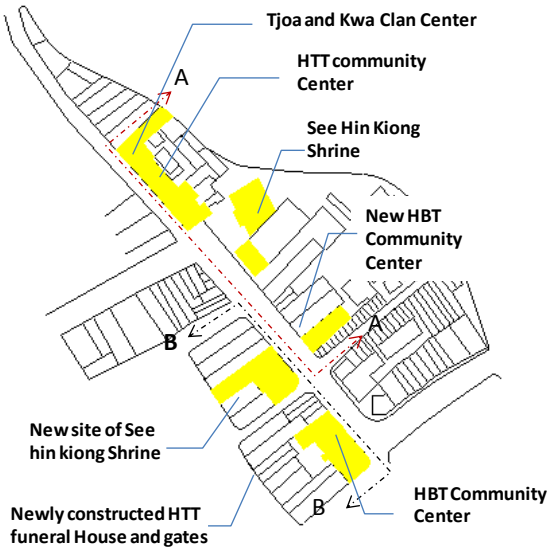


Fig.V.7 Distribution Map of Chinese Community Building

According to the interview, all of the Chinese funeral association HBT, HTT, and Tan, Tjoa and Kwa Clan Family had rehabilitated their building before the earthquake. Although most of the community building still preserves its original facade, very massive rehabilitation has been applied on the inside of the building. The rehabilitation levels were various, but most of them have added one or two floors above and behind the original building. Structurally, they have to support the original building with reinforced structure or steel columns and beams. This also contributes in strengthening the entire building due to the earthquake. Further, since the associations consist of thousand members from early young age to elderly, adding elevator inside the building have been implemented before the earthquake. The funding support for doing rehabilitation usually utilized from donations of the members and monthly membership fees (that have been collected prior the earthquake). Unfortunately, these changes did not support with full consideration of the building conservation. The building conservation is mainly concerned at 1st and 2nd floor building facade that facing the main road.

Table V.1 shows the level of damage due to the 2009 earthquake. Very little damage to these community buildings after 2009 West Sumatra Earthquake. This may because that most of these buildings have experienced rehabilitation and retrofitting before the earthquake. Nevertheless, some other HBT, and HTT funeral building have severely collapsed due to the earthquake. Those buildings were located on the south part of Kelenteng street as it is shown at Fig.V.8, elevation B-B.

Table V.1The condition of Chinese Association Buildings and See Hin Kiong Shrine before, after earthquake and after recovery

	Before Earthquake	After Earthquake	After Recovery
Chinese Funeral Association	 • Adding Elevator • Replacing structure with reinforced concrete inside the building • Adding floor from 2 stories building to 5 stories building	 • Light damaged • cracks at the building surface	 • repairing slight damage
Family Clan Association	 • Changing building level • Adding the ornamental column on building facade • Changing building colors • Set backing the building • Adding reinforced column • Adding floor	 • Light damaged • cracks at the building facade	 • repairing slight damage

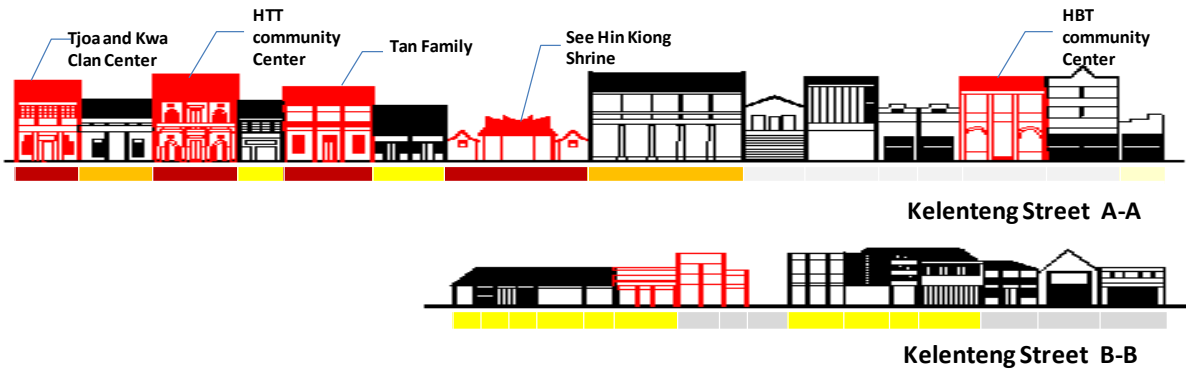


Fig.V.8 Building Facade before the earthquake; Redraw from Building and Regional Guideline of Padang Old Town district (2002)

After the earthquake, collective and donated funds from the members have been switched to provide support for affected members. The programs include emergency response, providing temporary shelter and healthcare for the members, delivering financial aids to the affected members, especially who experienced heavily damage buildings, gathering donations. Since most of the buildings have experienced rehabilitation before the earthquake, it was impacted very less damage.

There was no requirement for doing intensive rehabilitation at HBT, HTT and Clan Associations community buildings. The rehabilitation has only been delivered by committee members. Nevertheless, recovery of HBT and HTT funeral house was required more complex approach. It has been delivered by empowering committee and members. They shifted structural committee member that have been existed before the earthquake to manage disaster related emergency response and recovery. The association utilized members' data such as address, age, family member, occupation, expertise, etc. that have been collected before the earthquake as the main source to find expertise and assessments. It was very helpful for identifying the damage and loss of members while doing rapid assessment. This data also helps to deliver the financial and medical aids for the members during emergency response.

For rehabilitation of the funeral house, the member data on occupations and expertise was helping them to empower and connecting to most eligible and appropriate members for recovery. HBT and HTT had consulted with members who is an architect to redesign the new funeral house. Since the architect also the member of the association, the communication between the committee member and the architect was delivered very effectively. The association was very pleased with the design, since the architect cloud accommodate the needs of funeral house, not only the space organization and setting, but spiritually and philosophically as well. They evaluate the present funeral house are much better than the one before the earthquake. This recovery was also supported by some members as main donors, some members donated timber pillars, some of the pillars were taken from the destroyed house, and written their name on that pillars as a reminder. This method has been applied traditionally in Chinese community for hundred years as one of Chinese community culture in the community building (Fig.V.9).

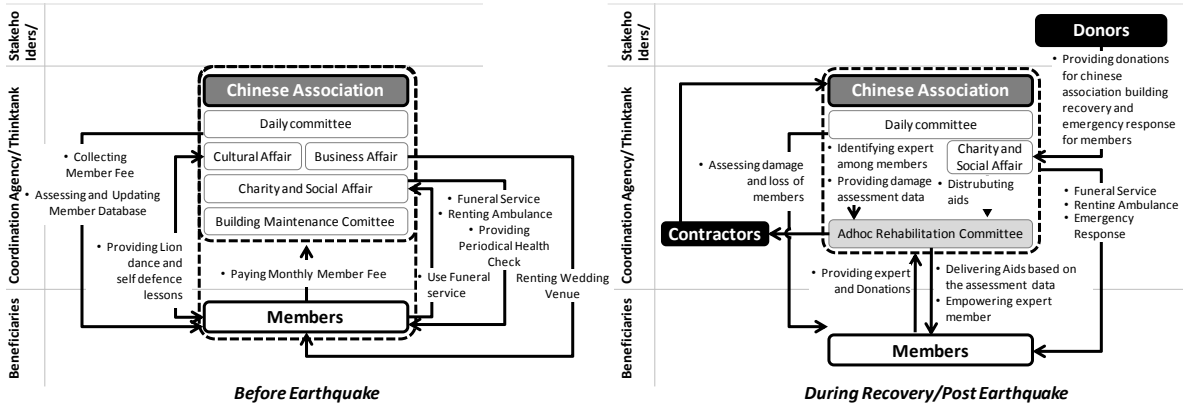


Fig.V.9 Recovery framework of Chinese Associations

5.3.4. SEE HIN KIONG SHRINE LED PROGRAM AT PADANG OLD TOWN DISTRICT

See Hin Kiong Shrine is very famous Chinese cultural heritage in Padang Old Town. This shrine has been built since 1861. Buddhists had used the See Hin Kiong Shrine as a place of worship for the past 150 years, especially ethnic Chinese residents of West Sumatra. This shrine was functioned gathering place for Chinese community in doing rituals and religious activity. This has been registered as cultural heritage building far before the earthquake. For running this shrine, structural committee members have been formed to do administrative works, managing donations, and building maintenance. In compared with Chinese community association, See Hin Kiong Shrine reminded at its original stage before the earthquake. This shrine has never experienced major rehabilitation since 1861. Table V.2 shows the transformation of See Hin Kiong Shrine by the time. See Hin Kiong shrine had experienced heavily damage caused by the earthquake.

The main temple building is still standing, but the left and right side of the roof collapsed. Statues of gods were reduced to dust and wall paintings damaged by the fall of plaster, especially the painting depicting the god of goodness. As a result, more than 3,000 Padang Buddhists have lost their historic places of worship (Bachyul 2009). Right after the earthquake, due to the necessity of worship place, the Chinese community, together with the structural committee of See Hin Kiong Shrine, built temporary worship place in front of the collapsed shrine. Based on the damage assessment result by government, that declare See Hin Kiong Shrine was heavily damaged and difficult to be recovered, the committee and the community proposed a plan to the government to build a new Shrine on the different building lot. This decision is also being support with their beliefs, that it is prohibited to build the shrine at the same place when the shrine have been collapsed. They moved the shrine not far from the previous site (Table V.2).

Table V.2 See Hin Kiong Shrine Before and After the Earthquake

	Before Earthquake	After Earthquake	After Recovery
See Hin Kiong Shrine	 	 	 
	• changing building color from white to yellow, reflecting the color of shrine's Flag	• structural damaged • partly destroyed • altar collapsed	• adding temporary building in front of the shrine for temporary praying room • build new shrine in front of the authentic shrine

The recovery of See Hin Kiong shrine was conducted by engaging broader community (Fig.V.10). The committee formed an ad hoc rehabilitation committee for engaging recovery. The main duties of this committee are:

1. Financial affair, is responsible for collecting donations, and reporting the progress of recovery to donors. By the end of 2014, there are more than 500 donors have contributed in building the new shrine.
2. Rehabilitation Committee, is responsible in organizing masons, networking with Chinese masons from China. See Hin Kiong shrine was built by China's domestic masons 150 years ago. To re-built the shrine same as its previous condition, it is very difficult for only engaging local masons due to the lack of technical knowledge. The committee members correspondenced with their ancestors in China to provide China's domestic masons to build the new shrine. They utilized the same method to build the new shrine as it applied while built See Hin Kiong shrine 150 years ago. Although the shrine is built on the new site with new materials, they believed that they have respect/honor the ancestor by preserving the way of building the shrine as it was.
3. Logistic, is responsible in providing materials and logistics for recovery.

By the end of 2014, rebuilding of the shrine has been accomplished. The community has utilized the new shrine as their worshiping place. Unfortunately the plan of government to build the museum on the original site of See Hin Kiong Shrine is remained as undone plan. The site and rubble of 150 years old shrine are neglected at this district.

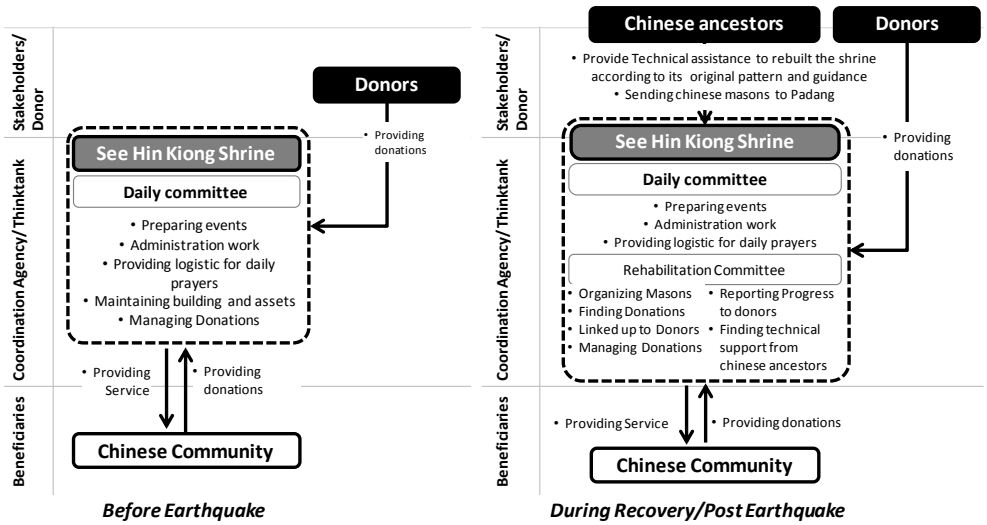


Fig.V.10 Recovery framework of See Hin Kiong Shrine

5.3.5. ENGAGING UNIVERSITIES FOR RECOVERY ON CATHOLIC MONASTERY

St. Leo Monastery founded in 1903. The building represents a Gothic architecture in the City of Padang. The monastery is a part of a convent of SCMM (Sororum Caritatis a nostra Domina Matre Misericordia) complex (BPPI 2011). The buildings were constructed mainly with brick without reinforced structures. These complex experienced severe damage post 2009 Earthquake. Previously, it was aimed as a place of worship of the Catholic religion community and priests residence in the Dutch era. Now the cathedral complex is still used as a place for worshiping. Some of the cultural heritage buildings in this complex are Cathedral church, Sukma Indah nunnery, the bishop's house and Santo Leo nunnery's church. Prior the earthquake, these buildings have been used actively on daily and weekly basis for the nunnery, catholic community gathering, Sunday school, catholic youth gathering, etc. For running these activities, Padang diocese formed a daily committee that is taking roles in preparing events, providing public services, buildings and assets maintenance, providing logistic for daily and weekly prayers, as well as handling administrative works.

Almost all materials and equipment used to build the chapel came from the time when it was established. The mosaic glass in the window, beneath the carved wooden ceiling, as well as the tiles, all came from the 19th century. Only the Tabernacle iron box to store the host (bread) and wine were still intact after the quake (Bachyul 2009). According to damage and loss assessment by Bung Hatta University, in collaboration with Batusangkar Prehistoric Legacy Conservation Center (BP3 Batusangkar), Padang catholic monastery buildings was impacted heavily by the earthquake. Structurally damaged, and partly collapsed become the main characteristic of the damage. Further, the large scale of the building that most of them more than 1000m2 of the built area, required to be restored massively (Table V.3).

The recovery has been started by forming a rehabilitation committee (Fig.V.11). Like other rehabilitation committee, it has responsibility in managing recovery process, provide logistics, organizing masons, open up donation, linked up with donors, managing aids, and reporting the progress to donors. Since they have managed donation even before the earthquake, the network to the donors have been established. Further, as the characteristic of Catholic dioceses in Indonesia, Padang diocese is also strongly linked with all diocese in Indonesia. This helps Padang diocese to spread information, collecting donation and get technical advice from experts outside Padang region faster. Parahiyangan catholic university, Bandung sent its experts and provided technical advises during recovery process. Recovery with retrofitting methods have been carefully chosen by rehabilitation committee in order to build back better, with technical support from university colleagues. The recovery process have been carefully recorded and documented. Some retrofitting methods such as changing into lighter roof structure, jacketing the inner part of the wall and roof, maintain/restore the building outlook as its original styles have been applied during the recovery process.

Table V.3 The condition of Chapel St. Leo and Sukma Indah Nunnery before, after earthquake and after recovery

	Before Earthquake	After Earthquake	After Recovery
Chapel St. Leo			
Sukma Indah Nunnery			

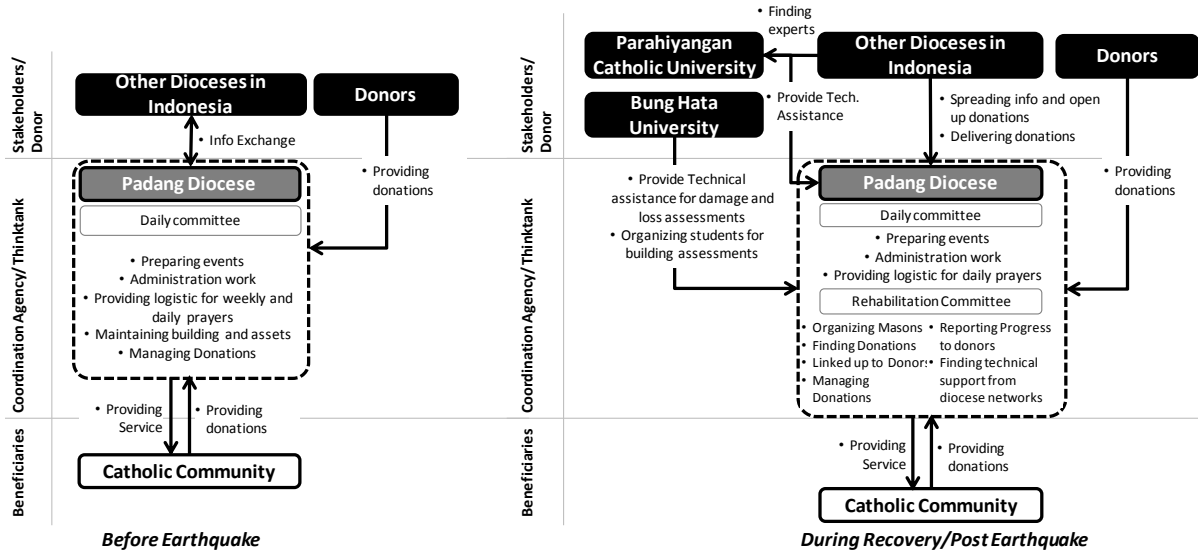


Fig.V.11 Recovery Framework for Catholic Monastry by Engaging University

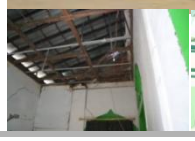
5.3.6. UTILIZING CSR FOR HERITAGE RECOVERY AT MUHAMMADAN MOSQUE AND GANTIANG MOSQUE

Two historical mosques in Padang city, including the Gantiang Mosque - the first and the oldest mosque in the city established with the help of the Dutch East Indies government in 1815 — and the Muhammadan Mosque in the Kampung Keling area, near Batang Arau, were also hit by the earthquake (Bachyul 2009). The latter mosque was mostly used by the

Keling people from India, who have lived in the area since the 19th century, as shown by the colonial Indian style architecture of the building. Very Limited resource regarding Muhammadan mosque. Although this mosque has been established for more than 200 years ago, until 2007, this mosque have been never recorded as Indonesian National/Regional Cultural Heritage building. This mosque is unique, since the design is close to some mosque in Gujarat, India. These mosques have been actively used 5 times a day for the Islamic community praying place. Every afternoon, the children from nearby neighborhood are gathering for Al Quran recital.

After the 2009 earthquake, this mosque can still be used. Nevertheless, cracks caused by the earthquake are crisscrossing the walls and floor (Bachyul 2009). At Gantiang mosque, the damaged recorded at the main facade of the building, some pillars, and minarets. At Muhammadan mosque, the cracks showed at pillars and the additional building behind the mosque. Further, one crown of minarets have been collapsed due to the earthquake. These damages have been categorized as structural cracked damages by the authorities (Table V.4).

Table V.4 The Condition of Muhammadan and Gantiang Mosque before, after earthquake and after recovery

	Before Earthquake	After Earthquake	After Recovery
Gantiang Mosque	 Gantiang Mosque 1930	 Gantiang Mosque Aftermath	 Present Condition
Muhammadan Mosque		  	

After the earthquake, some television media reporting the damage of these mosques. Based on that information, Mandiri Bank by utilizing its CSR, was deciding to give financial and technical aids to help restore Gantiang mosque. Likewise, one of Indonesian TV stations, decided to give financial and technical aids to restore Muhammadan Mosque. The mosque committee decided to be supervisor of the recovery. Most of the planning Assessment and

implementation is delivered by the CSR team and contractors (Fig.IV.10). The CSR team works side by side with Batusangkar Prehistoric Legacy Conservation Center (BP3 Batusangkar) to restore these mosques as it's previous condition. As results, these mosques have been fully restored to its previous condition by 2013.

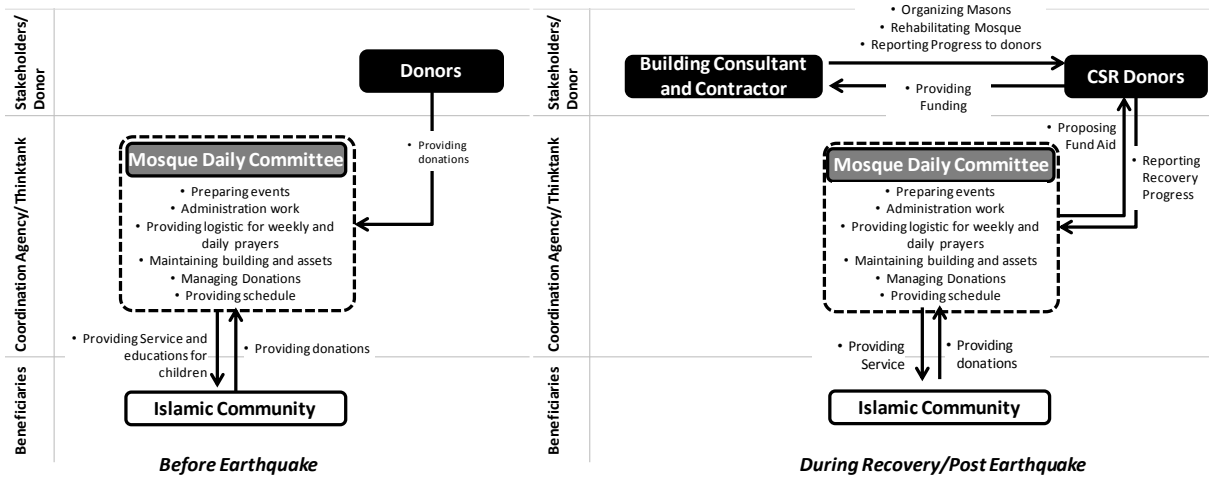


Fig.V.12 Recovery Framework for Muhammadan and Gantaing Mosque by Utilizing CSR Program

5.4. COMPARISON OF PARTICIPATION LEVEL IN PADANG AND KOTAGEDE

The analysis of the people centered aspect is one step to evaluate the sustainability of the program. Table V.5 shows the degree of participation level and partnerships during the planning and implementation phase of the program that have been applied for engaging the community. the phases of the program are divided into initiative, assessment, selecting beneficiaries, planning, and implementation. To enhance the sustainability, the analysis regarding maintaining the assets/program after the recovery phase finished has also been reviewed.

There are two different characteristics of the community involvement programs in cultural heritage assets post 2006 Yogyakarta earthquake and 2009 West Sumatra Earthquake. Community involvement. In Kotagede, as well as Kasongan, the program initiators were mostly come from the coordinating agent, which were University and International NGO, Relief International. Meanwhile, at Padang, the initiatives come from the community themselves at the local organization level. In Padang, most of the observed associations have established daily committee before the earthquake. They were adapting the previous framework to deal with the recovery process needs.

At assessment stage, most of the program did damage and loss assessment in collaboration with stakeholders such as university, INGO, and cultural heritage expert. There is an exception at the Chinese funeral association, the assessments have been delivered by

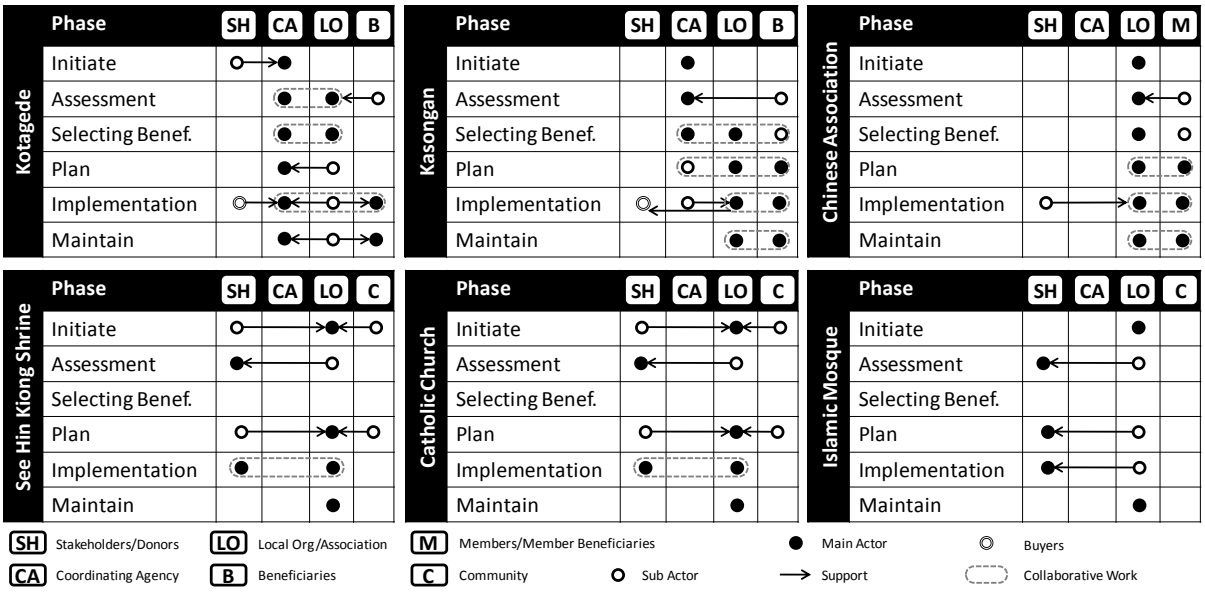
utilizing the expert members. Although this independent move shows a stronger community level, on the other side, it rises a risk of cultural heritage loss due to less consideration of the cultural heritage conservation at the early stage.

Addressing priority beneficiaries are very crucial in cultural heritage recovery. At kotagede and Kasongan, since most of the program initiated outside the community, it is a very important stage to get the community support and involvement in the program. Selecting beneficiaries in a fair and transparent manner, by engaging local organization could increase the degree of trust among the beneficiaries in the program, that may contribute to the involvement at local level.

Planning stage of the program is very important in improving capacity building. This capacity building includes the consciousness and the sense of belonging to cultural heritage preservation. Transferring knowledge to the local level regarding problem solving with full consideration of heritage conservation is important to maintain the sustainability of cultural heritage assets in the local level after the program finished.

Heritage experts are highly involved in almost every level of plan in Kotagede, Kasongan, Catholic Monastery, and Islamic Mosque recovery program. In contrary, at Chinese funeral association and See Hin Kiong Shrine recovery program, there was very limited involvement of cultural heritage conservation experts or government.

Table V.5 Degree of Community Involvement in the Program



As it showed in Table V.5, at Kotagede allocated the think-tank (program planning) at the university level. During the planning phase, beneficiaries were not actively involved. The beneficiaries were mainly involved in the implementation process, by working on the orders and joining training. This framework may limit the capacity building, especially at problem

solving at the beneficiary's level. The beneficiaries' improvement in craft design and quality was not being elaborated with the improvement in know-how/problem solving and managing business abilities. This increased the dependency level of beneficiaries to GMU, that might influence the sustainability the crafter's livelihood after the program finished. As of July 2009, the beneficiaries were still highly dependent on GMU in providing orders and doing marketing of their silver products.

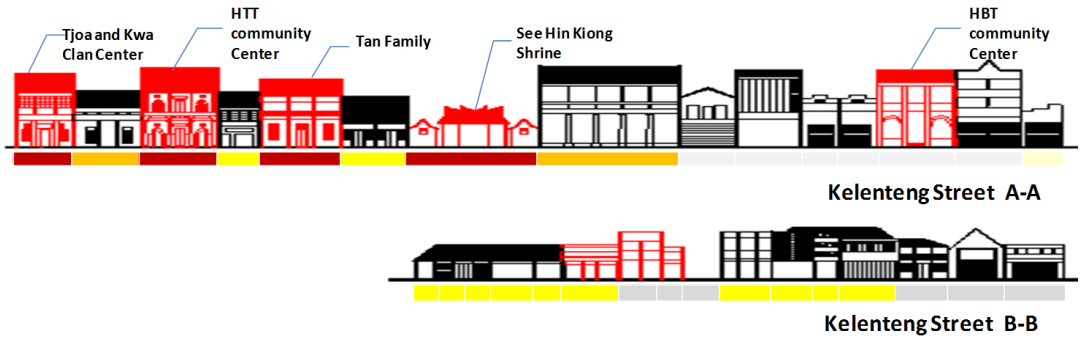
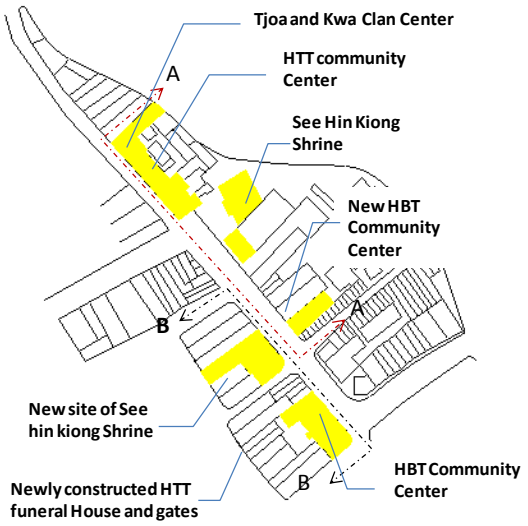
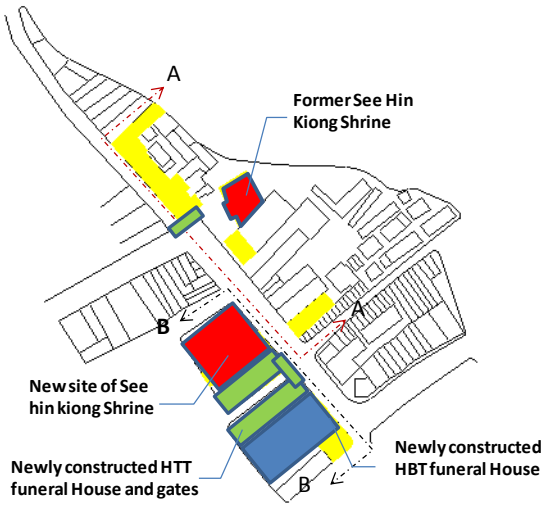
At Kasongan, Relief International allowed beneficiaries to get involved in almost every level of the recovery process. Their involvements include the mechanism of using the aids, the qualification of beneficiaries, program planning and implementation. Considering that not all crafters had time to be involved intensively in the whole process, and to maintain the attachment of the program to the people, the youth association was empowered to maintain the daily activity. By July 2009, almost all of the daily activities and monthly activity plan of the cooperative were run by the youth association members. The support from RI was determined to be only for advising and supervising the activity.

At Padang, high involvement of the community and local organizations are showed more at the Chinese funeral association, See Hin Kiong Shrine, Kasongan and Catholic church recovery. The framework allows all of member or community that willing to help recovery process get closely involved in any phase. Creating daily committee of the organization to run daily basis activity before the earthquake, proved smoother the shifting framework from daily committee to recovery committee. Collecting member's database, and networking to donors and stakeholders prior the earthquake is one of the keys for Chinese Association, See Hin Kiong Shrine, and Catholic Monastery to do assessment and appoint the most eligible partner for doing the recovery. Unlikely, the recovery at Muhammadan and Gantiang Mosque, showed very limited involvement of the local organization or community. The local organization was only involved in making proposals to donors, and supervising the program. Meanwhile the assessment, planning, and implementation is delivered by the CSR team provided by the donor. The weakness of this system are, there was no direct communication between the Rehabilitation committee and CSR rehabilitation committee, so that the complain or supervision result could not be treated in timely manner.

Post disaster recovery is a window of opportunity.For Chinese Community Association, this was an opportunity to expand their building according to the needs prior the earthquake. HTT and HBT funeral houses have been re-built without resembling characteristic of the former house. Nevertheless, they still adopt a traditional way in organizing recovery by utilizing the community member. This option is very feasible since they have strong community member involvement of hundred years before the earthquake. This proved that community power in the term of recovery is very powerful source to boost the speed and the sustainability of the recovery process, since it could be implemented by reflecting the needs of making their

community better. From the conservation point of view, this method could give additional risk to the building landscape alteration as it is shown in Table V.6.

Table V.6 The alteration of scenery at Kelenteng Street after recovery

Before earthquake		
After Earthquake		
	Before earthquake	**After Earthquake**
		

From the above mentioned evaluation, it can be concluded that the appropriate framework that allowed the beneficiaries to be closely involved in the program (both planning and implementation) may contribute a significant influence in knowledge transfer to the beneficiaries that further influenced the degree of dependency. The know-how and knowledge to manage the business by them self is essential to be transferred to the local people to ensure sustainability.

5.5. DISCUSSIONS

This chapter is aimed to identify the key player's participation in the community owned cultural heritage assets, observe the process in engaging the community in the recovery and as well as evaluate recovery frameworks from the conservation point of view. It can be concluded as follows:

KEY PLAYER PARTICIPATION IN THE RECOVERY PROCESS

- The key players during the recovery process in community assets can be divided into two types from outside of the community (such as university, INGO, CSR from companies and donors) and inside of the community (such as local organization, local leaders, community association, religion association, etc).
- The key players from outside mainly contributes knowledge improvement from different perspectives such as sustainability, cultural heritage conservation, etc. to the local key players. The outsource key player can give broader attention to some themes, not only to address issues post disaster, but also emphasizing local issues before the disaster.
- Local key players are very valuable to provide information regarding the potencies and conditions prior to the earthquake.

PROCESS OF ENGAGING COMMUNITIES

- In a case, where the community association does not exist or does not strong enough to empower them self, the initiative of the outsource key players is very important.
- In the stronger community, the initiative of engaging community has been established far before the earthquake. This contributes to faster the recovery process of the cultural heritage community assets.
- With stronger community involvement prior the earthquake, and membership database, the recovery can be done faster. Contrarily, this condition can give more threats to the heritage buildings if there is no proper assistance from heritage expert.

RECOVERY FRAMEWORKS

- In compared with government framework, key players lead program are more flexible in determining the donors, beneficiaries, approaches, the theme and area of recovery not only based on damage level, but also cultural and historic consideration.
- Level of think-tank in the recovery framework determine the knowledge transfer between outsource and local key players. This also influenced the degree of participation of the beneficiaries. The higher involvement of beneficiaries will also improve the opportunity to absorb knowledge to be utilized in the future independently.

- University knowledge could provide appropriate consideration of cultural heritage preservation as well as the building retrofitting solutions.
- The balance role between outsource key players and local key players is the key to ensure the sustainability of the community owned cultural heritage assets. The stronger role of outsource key player, can lower the probability of sustainability of the local community.

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VI. CONCLUSIONS

This research has been started with a hypothesis that the recovery manner post-natural disaster may be strongly rooted to the behavior prior to the earthquake. Further, a premise that privately/community owned cultural heritage recovery post natural disaster is required to be advocated to prevent massive loss on cultural heritage assets become the base of this research. The examination of actual building characteristics and situations, including the tendency of alterations before the natural disaster, post-recovery alteration and developed frameworks, clarified a new tendency of people centered in cultural heritage recovery. Accordingly, new perspectives and possible frameworks for assisting the process of cultural heritage recovery in Indonesia can be recommended.

Aim. This chapter aims to summarize findings in previous chapters, to present a tendency for assisting recovery of cultural heritage assets in Indonesia, and to suggest the needs for future study. This chapter consists of (6.1) summary of the findings and (6.2) Limitation of this study and necessity for further research.

6.1. SUMMARY OF THE FINDINGS

Cultural heritage assets in Indonesia cities and Asian Cities that have similar tendency to be threatened by the natural disaster. Due to this similarity, hopefully it increases the opportunity to adapt the result of this research in some cities that has same threat on cultural heritage assets.

This entire research is aimed to collect the alteration of cultural heritage assets prior the earthquake and its cause of alteration, variety of the recovery process of privately/community owned cultural heritage, identify the impact of owner/community recovery either planned or unplanned to the conservation of the cultural heritage, as well as to identify the factor that significantly influences the participatory level of owner/community to do recovery that support cultural heritage preservation.

From this research, some findings are as follows:

	Self Driven		**Key Players Initiative**
	Kotagede	**Padang**	**Community Own**
Alteration Before Earthquake	• Altered at spatial arrangements, building materials and building techniques • Building Function and	• Altered at Facade • Rehabilitation without retrofitting • Building appearance	• Altered except in façade to accommodate members needs • Degradation of intangible cultural heritage activity

	building appearance		
	• Inheritance system Adaptation to living activity and the alteration of living space arrangement	• Caused by Adaptation to economic activity (beautification to attract customers	• Alteration of the community building is caused by the changes of need by the community • The degradation of the intangible cultural heritage activities is caused by low popularity of cultural industru for the youths
Frameworks & Process	Treated as common building recovery	Treated as common building recovery	Top government top down and university involvement can contribute to cultural heritage conservation
	Less Gov. supervision	Less Gov. supervision	Less Gov. supervision
Speed of Recovery	As fast as ordinary building recovery (within 6 months after the occurrence) Clearing debris finished very early (1 week after EQ)	As fast as ordinary building recovery (within 6 months after the occurrence, takes longer in rental building) Clearing debris finished very early (1 week after EQ)	Non tangible recovery needs emergency response in order to maintain sustainability Stronger community contribute faster recovery
Recovery Result	Recovery with retrofitting are massive (necessity to be more resilient can be felt by the building owner)	Recovery with retrofitting are massive (necessity to be more resilient can be felt by the building owner)	Top government top down and university involvement can contribute to CH conservation
	High appreciation to original Building Style Lack of Material, Funding, technical ability, Appropriate masons	High appreciation to original Building Style Lack of Material, Funding, technical ability, Appropriate masons	Stronger community without supervision endanger CH existence In term of CH conservation, top down approach contribute better conservation

6.1.1. PRIVATELY OWNED CULTURAL HERITAGE ASSETS AS GROWING ENTITIES

In many literatures, described **in Chapter 2** cultures and architecture cannot be separated. Culture as a system constantly changes and develops, either because the impulses from inside as well as outside the system. The changes occurred due to the process of human adaptation and learning towards the demands of a better life. Architecture, as well as cultural heritage assets as a tangible manifestation of culture will certainly be affected if the culture as a holistic system change. Privately owned or community owned cultural heritage assets, tangible and intangible, as cultural and architectural entities have experienced constant changes and develops. It grows together with its environment conditions such as building trends, cultural system, adaptation of activity, even the growth of family members, leaves footprints to the cultural heritage assets.

6.1.2. TREATING GROWING ENTITIES VS. CULTURAL HERITAGE CONSERVATION

This statement has been supported by the factual findings at the beginning **of Chapter 3, Chapter 4 and 5** that clarifies there are several spatial arrangements, physical changes prior the natural disasters. In residential districts, this spatial alterations mostly was triggered by an inheritance system culture that divide the house masses to each inheritor. Meanwhile the privately owned/used cultural historical building at Padang Old Town district have experienced some changes due to rehabilitation before the earthquake, triggered by the adaptive manner of living and commercial activity. At community buildings, stronger community shows higher alteration of the cultural heritage buildings. The adaptation before the earthquake was highly influenced by demand for “better” place for community activity. Meanwhile, at intangible cultural heritage assets, such as cultural heritage industry shows stagnant development and shows tendency for loosing its popularity among the youths.

Besides the alteration of spatial arrangement, some characteristic of alterations are the application of new techniques and new materials to the cultural heritage buildings. The availability of cultural heritage masons, lack of identical material, and lack of consciousness to treat the building as cultural heritage assets become the main reason for this alteration. Specifically, there is a tendency that certain parts of the building such as *dalem*, *gandhok, pekiwan* at Kotagede and the facade of the shop houses building in Padang, alters more than some the other part. The alterations mostly occurred in the places that accommodate living or economic activities. In contrast, the other part that less accommodate of living or economic activities reminds preserved and abandoned.

6.1.3. DEVELOPING FRAMEWORKS DURING RECOVERY PROCESS OF CULTURAL HERITAGE ASSETS

Post disaster recovery in Indonesia is based on law no 24/2007 concerning disaster management as well as Law no 11/2010 concerning the post disaster management of heritage buildings; not specifically mentioned regarding framework, system, actors and standard operating procedure in safeguarding and doing recovery of cultural heritage post-natural disaster. The protection mainly concerned on rescuing the cultural heritage assets. The cultural heritage assets recovery reminds uncertain in the implementation level after the disaster. This statement is supported by the findings that most of the cultural heritage buildings were treated as non-cultural heritage one. Further, community based recovery and recovery to cultural heritage assets without consideration on conservation, increase the risk of degrading the cultural heritage assets. Specific characteristic of cultural heritage assets such as big scale, specific material and techniques, certain building height, and proportion

cannot be addressed through community based recovery without consciousness of building conservation and comprehensive database and protection prior the earthquake.

This condition has been confirmed by the results described in **Chapter 3, Chapter 4 and 5**. The clearing debris stage at Kotagede, Padang as well as community building have been delivered at with hasty manner. During the recovery phase, some tendency in applying new material, new technique and new building style instead of its original style is very common findings of the recovery process on cultural heritage buildings. Further the tendency to apply general consideration on better recovery technique for disaster resilient consideration such as recovery with retrofitting and replacing a lighter structure such as steel column, lighter material, such as bamboo, zinky board, lowering building heights are clarified in this study.

Recovery frameworks on cultural heritage assets was developed during the implementation phase. Adaptive recovery frameworks shows at university and INGO initiated programs on intangible cultural heritage industries. It also develops at community buildings and rented buildings. The recovery framework that has been developed prior the earthquake was highly contributing to the speed of recovery, as it shows in the community building recovery. The switching of community framework can contribute faster response in comparison with creating and applying new framework.

Due to limitation of funding, the priority of doing partly recovery is occurred. In the viewpoint of conservation on cultural heritage recovery, that required a holistic approach, this condition increases the risk of loosing cultural heritage assets. It is very clear that cultural heritage is endangered while being treated as common building in the recovery phase post-natural disaster.

6.2. POSSIBILITY FOR SUSTAINING PRIVATELY/COMMUNITY OWNED CULTURAL HERITAGE

Disaster preparedness for cultural heritage assets.

Cultural heritage assets alteration prior the natural disaster is unavoidable. It gives challenges for its conservation. However, this alteration is required to be accommodated by win-win solutions for the residents as well as for the sustainability of cultural assets.

The assessment of the assets before the natural disaster occurred could be an important step to be delivered as a starting point for conservation. Further, the building users who practically have higher access to the building on a daily basis can be involved in assessment and monitoring stage. They required to be supported with appropriate technical knowledge and options of recovery with structural retrofitting with full consideration to cultural building conservation.

Strengthen the community framework disaster recovery with conservation consideration. The recovery process starts after the disaster occurred. Nevertheless, the recovery framework can be prepared prior the natural disaster and be implemented on normal situation. This can encourage the nature of independent behavior of the residents. This also aligned with the spirit of preparing the recovery prior the natural disaster, so called pre-disaster recovery planning.

Creating guidance on cultural heritage assets rehabilitation. Although the independent behavior of rehabilitation before the natural disaster, increase worries in the viewpoint of cultural heritage conservation, with proper assistance and knowledge improvement, it can be developed and encourage to support the sustainability of cultural heritage conservation. Creating guidance, providing options setting priority of cultural heritage asset rehabilitation, and disseminate it to the residents may increase the option vocabulary at the local level and give contributions for cultural heritage rehabilitation in normal situation.

6.3. LIMITATION OF THE STUDIES AND NECESSITY FOR FURTHER RESEARCH

6.3.1. LIMITATION OF THIS STUDY

With an objective to explore alternate cultural heritage perspective and approach in the midst of post-natural disaster recovery, this study has attempted to examine actual situation, alteration tendency, and community involvement frameworks on privately owned and community owned cultural heritage asset recovery, carried out with considerable limitations.

Post disaster recovery cases required to be assessed in a timely manner. The topic cultural heritage alterations post recovery was involved many intangible elements such as preference, behavior, sense of belonging and psychological conditions, prior the earthquake that may strongly correlate to the conditions during and after the recovery, which could not to be punctual and comprehensively collected and reconstructed by the time of the survey. Further, in the case of Indonesia, commonly lack of written documentations prior the occurrence of natural disaster. Accordingly, this study relied mostly on on-site measurement, interview with the building owners, users and recovery actors. So that the examination, especially on building alteration prior the earthquake, has been carried out in part of interpretative by means of limited data.

6.3.2. FURTHER RESEARCH

Considering the result so far, it is realized that this study needs more exploration, particularly concerning the variety of cultural heritage building in Indonesia in related to other natural disaster threats such as volcanic eruptions, tsunami, hurricane, floods, landslide, etc. The

result of this research will not accomplish without the exploration of possibility to be elaborated with the basic framework of disaster recovery.

Further research is recommended to assess the influence of the recovery frameworks and process and its contribution to the cutural heritage building conservation in the normal condition. This may need to be repeated at certain intervals to monitor any further changes that may result to clarify the main intention.

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APPENDIX

Questionnaire Sheet

Name of Respondent/Building:	Survey District	Building Code

A. ATTRIBUTION

1. Building Function (multiple)	☐ House	☐ Shop	☐ Storage
	☐ Industry	☐ Other:	
2. Building Style	☐ Colonial	☐ Modern	☐ Traditional
	☐ Other:		
3. Land Owner	☐ Government	☐ Self	☐ Other:
4. Building Owner	☐ Government	☐ Self	☐ Other:
5. Building User	☐ Government	☐ Self	☐ Other:
6. Land Area/ Building Coverage Area			

B. VULNERABLE ELEMENTS OF COLONIAL BUILDING BEFORE THE EARTHQUAKE

7. Building Maintenance and Change of physical appearance:

Bldg Part	Maintenance		Rooms Related to this part	Rehabilitation act	Material		Technique		Style	
	Time /year	Act			Ori	New	Ori	New	Ori	New
☐ E.g. facade	1	Painting	Shop,	Changing facade to shutter doors		√		√		√
☐ Facade					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
☐ Roof					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
☐ Wall					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
☐ Column					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
☐ Ornaments					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
☐ Rooms					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐
☐					☐	☐	☐	☐	☐	☐
					☐	☐	☐	☐	☐	☐

8. Evaluation of the colonial building before the earthquake :

	Evaluation				
1. Building Style	1 (Dislike)	2	3	4	5 (Like)
2. Building Function	1 (Bad)	2	3	4	5 (Good)
3. Building/Land Area	1 (too big/small)	2	3	4	5 (Just Right)
4. Building Maintenance Cost	1 (not affordable)	2	3	4	5 (Affordable)
5. Building Maintenance Technique	1 (Difficult)	2	3	4	5 (Easy)
6. Structure Quality	1 (Poor)	2	3	4	5 (Good)

C.1 RECOVERY PROCESS & EVALUATION

9. Who did you choose as reconstruction worker?

☐ Colonial Building Masons
☐ Ordinary masons
☐ Others_____

10. What did you put into considered the most when you were choosing reconstruction workers? (multiple answer, indicated 1 most influential element in choosing masons)

☐ Speedy of the mason
☐ Wedge of the masons
☐ Quality of job (skill, technique, neatness)
☐ Knowledge on Colonial building
☐ Other_____

11. where did you live during the recovery and please indicate the time

Options	Indicate the where (multiple choice)		Reason (multiple choice)
☐ inside the house / ~ /	☐ shop	☐ kitchen	☐ unaffected by earthquake
	☐ guestroom	☐ toilet	☐ want to live in the house to keep belonging
	☐ bedroom	☐ service area	☐ easier to supervise the recovery
	☐ livingroom	☐ other_____	☐ No other place to go
			☐ No money
☐ Outside the house / ~ /	☐ Evacuation area/temporary house provided by government		☐ I need to stay near the original place to maintain my earning income
	☐ Renting house near the former house		☐ House is totally collapsed
	☐ Relative's house near the former house		☐ Afraid to live inside the house/dangerous to live in
	☐ Move out from Padang		☐ I have another house to live in
☐ Other / ~ /	☐		☐ Other:
	☐		☐

12. Which actor do you think was most helpful on doing recovery?

☐ Self
☐ Government
☐ Relatives
☐ Friends
☐ NPO
☐ Community_____
☐ _____

C3. Recovery Process & Evaluation

Building part	Level of damage		Rec. Order	Clearing Debris	Funding	Planning	Implementation	Material	Technique	Style	Evaluation					
☐ Facade	C (1)	PD (3)		Helped by:	Helped by:	Helped by:	Helped by:	Ori	Ori	Ori	Speed of Recovery	1	2	3	4	5
Indicate the Rooms Related to this part				How long _____ days	How much:		Recovery act:				Structure Quality	1	2	3	4	5
	SC (2)	TD (4)		/ ~ /	/ ~ /	/ ~ /	/ ~ /	New	New	New	Difficulties	1	2	3	4	5
											Style	1	2	3	4	5
											Recovery Assistance by _____	1	2	3	4	5
☐ Roof	C (1)	PD (3)		Helped by:	Helped by:	Helped by:	Helped by:	Ori	Ori	Ori	Speed of Recovery	1	2	3	4	5
Indicate the Rooms Related to this part				How long _____ days	How much:		Recovery act:				Structure Quality	1	2	3	4	5
	SC (2)	TD (4)		/ ~ /	/ ~ /	/ ~ /	/ ~ /	New	New	New	Difficulties	1	2	3	4	5
											Style	1	2	3	4	5
											Recovery Assistance by _____	1	2	3	4	5
☐ Wall	C (1)	PD (3)		Helped by:	Helped by:	Helped by:	Helped by:	Ori	Ori	Ori	Speed of Recovery	1	2	3	4	5
Indicate the Rooms Related to this part				How long _____ days	How much:		Recovery act:				Structure Quality	1	2	3	4	5
	SC (2)	TD (4)		/ ~ /	/ ~ /	/ ~ /	/ ~ /	New	New	New	Difficulties	1	2	3	4	5
											Style	1	2	3	4	5
											Recovery Assistance by _____	1	2	3	4	5
☐ Column	C (1)	PD (3)		Helped by:	Helped by:	Helped by:	Helped by:	Ori	Ori	Ori	Speed of Recovery	1	2	3	4	5
Indicate the Rooms Related to this part				How long _____ days	How much:		Recovery act:				Structure Quality	1	2	3	4	5
	SC (2)	TD (4)		/ ~ /	/ ~ /	/ ~ /	/ ~ /	New	New	New	Difficulties	1	2	3	4	5
											Style	1	2	3	4	5
											Recovery Assistance by _____	1	2	3	4	5
☐ Ornament	C (1)	PD (3)		Helped by:	Helped by:	Helped by:	Helped by:	Ori	Ori	Ori	Speed of Recovery	1	2	3	4	5
Indicate the Rooms Related to this part				How long _____ days	How much:		Recovery act:				Structure Quality	1	2	3	4	5
	SC (2)	TD (4)		/ ~ /	/ ~ /	/ ~ /	/ ~ /	New	New	New	Difficulties	1	2	3	4	5
											Style	1	2	3	4	5
											Recovery Assistance by _____	1	2	3	4	5

D. DIFFICULTIES AND FUTURE PLAN

13. How do you plan to recover your house in the future?

Part to recover	Style	
☐ Whole	☐ Modern	☐ Colonial
☐ Partly_____	☐ Traditional	☐ Other

14. Please indicate the difficulties in recovery colonial building back to colonial/traditional style

- ☐ Difficult to find material
- ☐ Expensive
- ☐ Difficult to find colonial building skilled masons
- ☐ Future maintenance are expensive
- ☐ I personally don't like colonial style building
- ☐ Others_____

15. Do you plan to use this building in the present condition as present activity in the future? YES/NO

If NO, What will you do with this building?

- ☐ Selling the building (Reason: _____)
- ☐ Renting the building (Reason: _____)
- ☐ Other:_____

16. Who do you think should support the recovery process on traditional building?

Support	Actors					
	Government	BP3	Community	NGO	RT/RW	Other:
☐ Planning						
☐ Material						
☐ Funding						
☐ Heritage building preservation technique						
☐ Retrofitting technique						
☐						

17. What do you think can support you to continue maintaining to having heritage building?

Support	Actors					
	Government	BP3	Community	NGO	RT/RW	Other:
☐ Tourism						
☐ Tax Reduction on heritage building						
☐ Periodical Heritage Building assistance						
☐ Maintenance cost support						
☐ Revitalization of local economics						
☐ Heritage community support						
☐						

18. Change of activity intensity after the recovery

Activity	Decreased	Slightly decreased	The same	Slightly improved	Improved
Heritage Preservation Activity	☐	☐	☐	☐	☐
Cultural Activity	☐	☐	☐	☐	☐
Economic Activity	☐	☐	☐	☐	☐
Economic Income	☐	☐	☐	☐	☐
Social activity_____	☐	☐	☐	☐	☐
Religious Activity_____	☐	☐	☐	☐	☐