Building resilience in heritage district: lesson learned from Kotagede Yogyakarta Indonesia

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Abstract. Kotagede, a heritage district in Yogyakarta and famous as a silver town and a destination for heritage tourism, is one of the vulnerable heritage resources in Indonesia. Its history, dates back to the Old Mataram Kingdom in 16th Century, has inherited many heritage properties, including traditional settlement patterns and Javanese traditional architecture of houses. As a vulnerable heritage area, Kotagede experienced several disaster attacks; with the last one was the Java biggest earthquake in 2006 that destroyed more than 200,000 houses in Yogyakarta and dozens of traditional houses in Kotagede collapsed. Ten years after the big disaster, Kotagede has significantly developed with some former earthquake impact can still be found.

This paper aims to document and examine the way Kotagede built its resilience, particularly after the last earthquake, and how the reconstruction process relates to the broader concept of resilience. Descriptive and qualitative approaches are used based on historical data and field observation. This paper notes that although not as fast as other non-heritage areas, the reconstruction process in Kotagede has finally done. It is also argues that several factors contribute to the building resilience of Kotagede, and the most important factor is the collaborative actions among stakeholders in coping the disaster impact. Such collaboration can be effectively done when the local community have strong commitment and willingness to solve their problem and have a resilient Kotagede.

Keywords: resilience, heritage, earthquake, recovery, Kotagede

1. Introduction
Globally, concern on the resilience of cities to the impacts of natural and human-made crises has been increased. With its long history and cultural diversity, Indonesia is rich in heritage resources, both tangible and intangible. Meanwhile, Indonesia is also famous as a country in the ring of fire that makes it vulnerable. Under such condition, heritage resources face difficult situation, as they have to deal with disaster attack.

Yogyakarta is one of many regions in Indonesia that is considered as a disaster-prone area. This is apparent from its position toward Merapi volcano in the north and Opak vault in the south that causes Yogyakarta in a high risk of earthquake disaster. In the last decade, a number of disasters have occurred in Yogyakarta. The May 27th 2006, a 5.9 Richter scale of earthquake has ruined many Yogyakarta’s and Central Java’s buildings and district heritages. More than 200,000 houses in Yogyakarta collapsed and almost 3,000 people died. This disaster also collapsed local people’s economics.

Kotagede was one of the districts in Yogyakarta that experienced major damage as the impact of the disaster. Hundreds of traditional houses were damaged, from minor to major damages, or even many of them were totally collapsed. In addition to collapsed houses, shops and markets also collapsed. Damage occurred because in traditional house construction there is no strong enough
Methods

Kotagede as Heritage Ditrict

The question arises and natural environment of the city, including infrastructure, geo

This paper is based on several writing about Kotagede post-disaster and my experience when involved in some activities during the recovery time of Kotagede. Two manual books that I am one of the authors are the basic references for this paper, which are: 1) Post-Disaster Conservation Manual for Kotagede Heritage District Yogyakarta Indonesia, and 2) Homeowner’s Conservation Manual for Kotagede Heritage District. Descriptive qualitative approaches are used based on historical data and field observation.

3. Discussion

3.1 Kotagede as Heritage Ditrict

Kotagede lies 7 km Southeastern of Yogyakarta City, and administratively it belongs to both Bantul Regency and Yogyakarta City. Geographically, Kotagede lies in relatively higher area between two rivers, Gadjah Wong River in the West part and Manggisan River in the East. The Southern part of Kotagede tends to be green field areas, while the Northern part is high populated residential areas.

The existence of Kotagede is closely related with the history of Yogyakarta. Its history, dates back to the Old Mataram Kingdom in 16th Century, Kotagede used to be the capital city of Mataram Islamic Kingdom. The role of this region gradually faded along with the move of the capital to Pleret, then to Kerta, and finally to Surakarta. Nevertheless, the uniqueness of Kotagede reappeared along with its role as a trading and craft center during the Yogyakarta Sultanate and the Colonial Government of the Netherlands.

The historical value of Kotagede and its uniqueness landscape and culture can be seen from its traditional settlement patterns with the Javanese traditional architecture of houses and its social life. The narrow walled gangways and jalan rukunan (mutual gangways); the wooden construction of the Javanese traditional houses built hundred years ago; and the physical remains of the past such as old mosque, cemetery, ruin of fortress, are precious heritage of Kotagede. As the traditional sites,
Kotagede is also famous as a center for silver, gold and copper crafts. Along the main road which crosses the Kotagede, namely Jalan Mondorakan and Jalan Kemasan, silver jewellery shops are easily found. Tourists come to Kotagede see the heritage, buy the silver works, see the traditional houses, and feel the indigenous surroundings. ‘Silver’ at last is adopted to be the Kotagede’s trademark, and Kotagede is called Silver Town.

The typical of Kotagede community has a long history. Formerly they were known to be a well-off or even rich community. Most of them were merchants, batik producers, goldsmiths and silversmiths. Their riches can be seen even nowadays from their big traditional houses and Kalang houses which mostly use high quality of tiles, stained glass, roof and even beautiful ornament. In this modern era, Kotagede community live as a traditional community harmoniously. It can be seen as the result of their residential place which is dense and closed with only few new comers from outside. Their pure social and cultural life are seen from their willingness to help each other and their close relationship can be witnessed from their pintu butulan, that is the door that connect each land border. This kind of door has a very high social function.

The activity of the community is varies, like activities that relate to religion, such as Islamic women’s meeting for reciting Al’Quran and celebrating Islamic days. Activities that relate to Javanese believes, such as ceremonial things when building houses, having a new child, burying the death, and having marriage. In a daily life, a busy activity of Kotagede people can be seen in the Big Market which is mostly placed at the center of the residential places. The market is so full with not only people in that area but also those from the outside as well.

Today, with its rich heritage properties, Kotagede is one among several destinations for the heritage tourism in Yogyakarta, while also the home of about 33,300 people. The rich Kotagede in its landscape and culture proves that this area is a heritage district, a valuable asset of Yogyakarta. In 2011 Kotagede was set as a heritage district together with five other heritage areas in Yogyakarta under the Government Decree (SK Gubernur DIY No. 186/KEP/2011).

3.2 Post-Disaster Recovery of Kotagede
The post-disaster recovery of Kotagede was realized through Revitalization Program that was done simultaneously for both tangible and intangible heritages and by encouraging the community’s economics to grow better. To recover the folk heritage and rebuild or encourage the betterment of people’s economic; a comprehensive handling for multi discipline and multi sectors is needed. The recovery can only be done step by step gradually based on the priority and needs.

The post-disaster recovery of Kotagede heritage included rehabilitation and reconstruction activities of the area, which were the rebuilding of all the facilities and infrastructure, such as road, public buildings (mosques, market, schools, etc.), electricity, water, and drainage networks, and so on with retaining the value of Kotagede history, architecture and culture. This activity is also rebuilding the institutional community with the goal of continuing the development of the economic, social and cultural activities, and the rise of the role of the community in all aspects of community life.

Post-disaster recovery of Kotagede team was initiated by the Center for Heritage Conservation (CHC), Department of Architecture and Planning Gadjah Mada University, and Jogja Heritage Society (JHS). Behind this team were academicians who had many links with local, national, and international institutions for the idea and actions of the post-disaster recovery. The team then initiated to found the Society Concerned on Emergency (TSCE) or called Pusaka Jogja Bangkit (PJB/Jogjakarta Heritage Revival) for the recovery actions.

3.2.1 Founding the community organization
Many kinds of post-disaster recovery of heritage need the participation of the local community as well as community from outside the area actively. Two days after the earthquake struck Kotagede, PJB was founded and it grew from time to time. A volunteer of this PJB were organization of non-governmental, social, universities, private or individual which open heartedly help the earthquake victims to rebuild their area and encourage them to lead a new life. PJB then developed links with heritage conservation organizations all over the world to get support and funding.
On August 17th 2006, the local community organization called Organisasi Pengelola Kawasan Pusaka (OPKP) or Kotagede Heritage District Management has been founded. Its operational fund for the year 2007 was supported by the Netherlands Government. This organization was the bridge for many community organizations to communicate regarding the revitalization program of Kotagede. OPKP involved in selecting which houses needed to be reconstructed and it was as a community representative in all discussion and negotiation with the external institutions that were willing to help Kotagede. OPKP also encouraged local community activities such as macapatan training (traditional song that is full of philosophical learning), keroncong (classical-modern local music), and art performances for welcoming guests. OPKP was then expected to be able to involve in the heritage conservation, so that the member of OPKP were people who had capacity in conservation. There were some trainings to encourage OPKP on how to manage their heritage district intensively, and at that time were funded by JICA 2006/2007. Therefore, each village in Kotagede district was expected to have OPKP.

The quick formation of community organizations that care for disaster victims in the heritage area shows a concern for the conservation of Kotagede heritage district and of humanity, both the local community as well as other parties from outside Kotagede. PJB and OPKP worked together to solve the problem of recovery and build the resilience toward unpredictable disaster.

3.2.2 Reconstruction of heritage buildings
The condition of heritage assets in Kotagede was listed right after the earthquake by Pusaka Jogja Bangkit (PJB). It was done by doing damaged rapid assessment for the tangible as well as intangible heritage. The rapid assessment includes: 1) Identifying the heritage which is ruined; 2) Identifying the kind of the damages (total ruin, half or just minor damage); 3) Valuing the kinds of re-cure needed; 4) Cost estimation for each heritage. The rapid assessment done in June 2006 for Kotagede shows the following result:

| No. | Result of rapid assessment |
|-----|---------------------------|
| 1   | The traditional houses with joglo roof type that have been evaluated are 88 |
| 2   | The number of all joglo type houses in Kotagede is 150 |
| 3   | Some houses are not yet evaluated |
| 4   | Among those which are already inspected: |
|     | -8 houses are ruined (9%) |
|     | -47 houses are severely damaged and cannot be used (54%) |
|     | -16 houses are partly damaged, but can be occupied (18%) |
|     | -17 houses crack (19%) |

The next step, a detailed assessment of heritage buildings was done. This detailed assessment was needed to get more accurate information about the damage. The aims of the detailed assessment were: having documentation about kinds and level of heritage damage in detail; knowing the kinds of recovery and the most suitable handling activities; and preparation for treatment (experts, funds, picture, field labor, etc.).

After quick assessment towards the damage heritage was done, the dissemination about it to the international world was conducted through the PJB web-site to collect funding. Funds were the main factor in a series of activities to handle the emergency situation and recovery of Kotagede after the earthquake. A number of aids from individual, group of people, government and private agencies locally, nationally as well as internationally were collected for Kotagede, such as the Netherlands Government, JICA (Japan International Corporation Agency), Total Indonesie Perancis. Several efforts to save Kotagede heritage post-earthquake, in the form of reconstruction of several heritage buildings, with funding support from neighboring countries are listed below[^5][^7]. They are:
1) The reconstruction of six traditional houses. In this case, the selection of which houses needed to be reconstructed was helped by OPKP as the representation of Kotagede community, and those six houses were:
   (a) Jatmiko’s house: the *pendapa* reconstruction was funded by Netherlands Government funds; the survey and drawing was supported by JICA; and the *gandok* renovation were also funded by JICA and BAQ 2007 funds.
   (b) Edi Priyanto’s house: the *pendapa* reconstruction was funded by Netherlands Government funds; the survey and drawing was supported by JICA funds.
   (c) Soediyo Prasetyo’s house: the *pendapa* reconstruction was funded by Netherlands Government funds; the survey and drawing was supported by JICA funds.
   (d) Joko Nugroho’s house: walls retrofitting was fully funded by Netherlands Government
   (e) Mukadi’s house: the reconstruction is funded by Total Indonesie.
   (f) UGM’s house: the *pendapa* reconstruction was supported by JICA funds; and the renovation of *ndalem* was supported by Total Indonesie.
2) The Kotagede community and UGM-JICA hold consultation, retrofitting and restoration of traditional houses.
3) The reconstruction of *Babon Anim* (Electric Center building), that was then functioned differently, was funded by Total Indonesie.
4) The renovation and reconstruction of monuments (gates, mosque’s wall, mosques) were funded by the government (BP3).
5) Homeowner’s Conservation Manual by Jogja heritage Society was funded by UNESCO Jakarta.

### Figure 1. Joglo reconstruction of UGM’s house

### Figure 2. The ruin of Edi Priyanto’s house before reconstruction

### Figure 3. Gotong royong to reconstruct the joglo

#### 3.2.3 Rehabilitation activities in Kotagede post-earthquake

Basically, the post-disaster recovery of heritage has a long agenda after emergency situation. The recovery needs a long time and is done continuously. The more damages happen and the less preparation for handling it, the more complex the problem will be. This condition will influence the resilience of the heritage from disaster impact.

In Kotagede, two years after the disaster, the economic revival of the community began. This condition was influenced by the environmental conditions that were already better, and support of many foreign agencies for the revival of the local economic activities including silver craft production. After the emergency situation, some rehabilitation activities for Kotagede were conducted, such as:

1) Livelihood recovery
   This activity was called Kotagede Craft Revitalization Post-Earthquake 2007, supported by Exxon Mobil, from March 2007 until February 2009. This activity aim to reactivate the small craft production by empowering 13 silver crafters with low income because of the low access to market their products. This included to help designing the more fashionable design and to market the new products in various places; and strengthening the crafters managerial and marketing capacity.

2) Rehabilitation and reconstruction of settlements-based disaster mitigation
This activity begun in 2008 under World Bank support and was known as Java Reconstruction Fund (JRF) that includes some countries (European Commission, the Netherlands, British, Finland, Canada, and Denmark Governments) and run by Ministry of Public Work. This program was called REKOMPAK and the output was the planning document for the medium term community-based development that was prioritized on the disaster mitigation. The aim of this program was to improve the environment quality of the villages in Kotagede, and at the same time preserving the heritage assets. Three areas in three villages that already had OPKP were chosen to be rehabilitated and reconstructed, which were: Soka Tumenggungan area in Jagalan Village; Sopingen area in Prenggan Village, and Between Two Gates area in Purbayan Village. Elements to be rehabilitated and reconstructed were traditional houses, roads, street furnitures, and public open spaces.

Various rehabilitation activities in Kotagede were held continuously until several years after the disaster. Support and fundings for these activities came from various sources, both the government and private agencies, nationally as well as internationally. The local community always fully participated in all the rehabilitation activities, and step by step they could be able to manage their environment and social life.

3.3 Resilience of Kotagede

Many lessons can be learned from the experience after the 27th of May 2006 earthquake left terrible damages for tangible and intangible heritages in Kotagede. The recovery of the heritage was continuing until a long time after the disaster. In line with the recovery, the disaster mitigation, which is a serial action to decrease the risk of the disaster can be implemented physically as well as by encouraging the community’s awareness and skill to overcome the disaster. The disaster mitigation is becoming one of the approaches in Disaster Risk Management (DRM), and this management should be owned by all areas in Indonesia. The DRM should consist not solely to keep the community aware how to face disaster and its mitigation, but also increase their awareness to do emergency things in the long run.

Although not as fast as other non-heritage areas, the recovery process in Kotagede has finally done successfully. These activities of heritage recovery post-earthquake in Kotagede were based on the principles and approaches of DRM, which are: 1) Well coordinated collaboration between public and private networking, 2) The comprehensive choice of the priority of heritage assets to be recovered, and 3) Broad networking, especially with those involved in expertise, funds and aids. Those three points contribute to the building resilience of Kotagede.

Finally, the resilience of Kotagede in facing the disaster is built by three aspects, which are:

1) The resilient local community to face the disaster is supported by their good community system. The community already have a strong social capital, such as gotong royong and a sense of togetherness, so when a disaster comes, they immediately help each other hand by hand and work together to cope with the disaster. Managing Kotagede heritage district will not be successfully done if the local people do not actively involve and do their work voluntarily and responsibly. Their participation can be accommodated through Community’s Organization or Non-Governmental Organization (NGO). The existence of OPKP shows that the community have good motivation, solidarity and social linkage as an action capital.

2) The various parties from the outside (community and institution) who voluntarily helped Kotagede, have a very big role in supporting the resilient of Kotagede. They have supported the physical rehabilitation as well as strengthened the social system of the local community.

3) The resilience of Kotagede can be judged from the effective collaborative action between the local community and outside parties in facing and coping with the unpredictable disturbances and capable to adapt to change. Such collaboration can be effectively done when the local community have strong commitment and willingness to solve their problem and have a resilient Kotagede. Although unconsciously understood by the local community, the whole process of recovery can be seen also as an important resilience building.
4. Conclusion
This paper concluded that Kotagede is one example of the success story in managing post-earthquake recovery, both in improving the physical heritage quality and reviving the local economic activities of the community. Post-disaster recovery program of a heritage district is not a short time program, but it needs yearly to bring it back to the normal condition or even better. Building the resilience toward disaster can be achieved if there are voluntarily commitment and willingness among stakeholders (local community, government, private agencies, university, and other parties) to work together in coping the disaster. When a heritage district is resilient, it will be able to cope with an unexpected disaster and easy to adapt to the changes.

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