

THE INTEGRATION OF CULTURAL RESOURCES MANAGEMENT IN DISASTER MANAGEMENT AT SPECIAL REGION PROVINCE OF YOGYAKARTA

Deffi Ayu Puspito Sari, Ph.D1), Rizky Afriono, M.Si.(Han)²⁾
1Universitas Bakrie, 2Professional Certification Agency of Disaster Management
E-mail: , deffi.sari@bakrie.ac.id , rizkyafriano@gmail.com

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Abstract. The Republic of Indonesia Law number 24 year 2007 on disaster emphasizes that the protection of national assets is in line with Law No. 11 year 2010 on the cultural heritage. Yogyakarta Province has 12 disaster hazards and has five complete archaeological cultural layers in Indonesia. In the event of a disaster, potential damage to the cultural heritage is exposed. The archaeological cultural layer consists of prehistoric, classical, Islamic and colonial. The lack of research related to cultural heritage in the province resulting in increasing vulnerability of cultural heritage and society. Using qualitative method with in-depth interview, the aim of this study is to analyse the management of cultural heritage from the perspective of disaster management. Archaeological cultural layers that embedded into the realm of cultural heritage is defined as a national asset that should be protected. The result shows that the management of cultural resources in the province is not yet integrated with disaster management. However, the results of the archaeological identification of cultural heritage in each cultural layer in Yogyakarta showed the development of community adaptation to the disaster. Utilization of cultural heritage as an element of the panca gatra has been impartial that affected the regional resilience and security in facing the disaster. Both of these problems can be overcome by integrating the cultural resources management and disaster management, the establishment of an emergency response team on cultural preservation, and disaster risk analysis on cultural heritage that annexed by BPBD and Cultural Office of Yogyakarta Province.

Keywords: Cultural Resources Management; Disaster Management; Contingency Plan; Cultural Heritage; Archaeological Identification.

Introduction

Yogyakarta Special Region (Yogyakarta Province) is one of 34 provinces in Indonesia. At the time of colonialism in the area that nowadays known as Yogyakarta province, colonial governments built many public facilities, places of worship and the palace which reveal European architecture. Yogyakarta province has comprehensive wealth of history which describes the development of human culture from prehistoric to modern times.

Yogyakarta province consist of four regencies (Sleman, Bantul, Gunung Kidul and Kulon Progo) and one city

(Yogyakarta). Table 1 shows that each regency or city has all the cultural layers, except the city of Yogyakarta which does not have prehistoric relics. However, Yogyakarta city has most objects of cultural heritage compare to other areas, namely 265 relics that dominated by Islamic relics. Relics from colonial period also mostly founded in Yogyakarta city. In other areas such as Sleman, relics from classical period is dominating, while the largest prehistoric relics are dominating in Gunung Kidul. Data from 1815 to 2011 shown that 12 types of disasters (potential disaster) have occurred in Yogyakarta province [1].

This potential disasters means that the disastrous events in the past is likely to occur again in the future. The potential disaster in Yogyakarta province, among others: floods, epidemic disease outbreaks, extreme waves and erosion, earthquakes, tsunamis, failed technology, droughts, volcanic eruptions, strong winds, landslides, fires and social disaster. In the event of disaster, damage to the cultural heritage is exposed.

TABLE 1

LIST OF CULTURAL RELICS IN YOGYAKARTA PROVINCE

No.	Regency /City	Period				Total
		Prehis-toric	Classic	Is-lam	Colonial	
1	Yogyakarta		2	148	115	265
2	Sleman	1	88	66	10	165
3	Bantul	13	5	56	29	103
	Gunung					
4	Kidul	43	2	6	2	53
	Kulon					
5	Progo	3	5	22	9	39

Source: <http://purbakalayaogya.com/potensi-yogyakarta.html> accessed February 22, 2017 [2].

Based on historical data, Yogyakarta province's government has made a priority scale based on the potential disaster in five regency/city. Table 2 shows that Bantul regency is an area that has most types of potential disasters, which are: earthquake, tsunami, floods, landslides, extreme weather and drought. While Yogyakarta city is the area has only one kind of potential disaster, namely the earthquake. Viewed from the side of potential volcanic eruption, Sleman regency is the most exposed.

TABLE 2

PRIORITY ZONE OF DISASTER MANAGEMENT IN SPECIAL REGION OF YOGYAKARTA

Priority Zone of	
Disaster Management	District/Town
1. Earthquake	1 Bantul
	2 Yogyakarta
	3 Sleman
2. Tsunami	1 Bantul
	2 Kulon Progo
3. Flood	1 Bantul
	2 Kulon Progo
4. Landslide	1 Bantul
	2 Sleman
	3 Gunung Kidul
5. Volcano Eruption	1 Sleman
6. Extreme Weather	1 Bantul
	2 Sleman
7. Drought	1 Bantul
	2 Sleman
	3 Gunung Kidul

Source : Disaster Management Plan Special Region of Yogyakarta 2013-2017 p.84 [3].

This study considers the importance of detailed standard operating procedures for disaster management related to preserving cultural resources in the event of disaster. Management of cultural resources, not merely about the preservation of cultural heritage, but also must includes research related to cultural resources. The problem addressed in this research, among others:

1. How does the handling of cultural heritage in disaster management?
2. How cultural heritage reflects community resilience infacing disasters?

II. RESEARCH METHODS

This is a qualitative research with inductive approach and aim to get deeper conclusions on individual or organizational experience. The subjects of this study were people who were directly involved as a resource [4]. They are the Head of the Provincial Disaster Management Agency, Archaeology Department of Indonesia University,

Archaeology Department of Gajah Mada University, Deputy of Rehabilitation and Reconciliation of National Disaster Management Agency Yogyakarta Chapter, Directorate of Cultural Heritage Preservation and Museum of Ministry of Culture and Education, Division of Heritage Preservation and Cultural Value of Yogyakarta province Cultural Office, Borobudur Unit Cultural Heritage Preservation Body, Yogyakarta Tourism Service, Puro Pakualaman Museum, Yogyakarta province legislative body, Piyungan Islamic Boarding School, and the Head of Yogyakarta province Culture Office. The object of study is the social situation which consists of three components, namely the place (space), actor (perpetrator) and activities (activity). In qualitative research data analysis is more focused during the process along with the field data collection. The initial step of data analysis has been conducted since the search for a variety of information from secondary sources that are useful as giving early descriptions of research problems. It is intended as an anticipation before performing data reduction so that the collected data is sufficient for analysis [5].

To test data that is valid, reliable and objective, extension of observation, improved persistence, triangulation, discussions with colleagues, negative case analysis and member check was done to confirm data credibility.

III. ANALYSIS AND DISCUSSION

3.1 An Overview of Research Data

Yogyakarta province's cultural heritage spread evenly over 5 City/Regency. Yogyakarta city does not have a layer of prehistoric archaeological heritage. This does not rule out the possibility of prehistoric cultural layers discovery in the future. The development of archaeological research as the first step of the cultural layers' collection will continue to grow and discover new things. Movable cultural heritage objects have a weakness that is not located at its original site, usually placed on museums or research centres.

Objects of cultural heritage in Yogyakarta province can be classified by type, in archaeological research methods

artefacts can be classified based on several categories, among others [6]:

1. Based on type (instrument massive, flakes bar, pickaxe square, *pipisan* and mortar as well as coins).
2. Based on materials (ceramics, glass objects, bone tools, and tools shells and clams).
3. Based on specific objects (jewellery and rock art).

Based on the data classification, movable cultural heritage objects in Yogyakarta province has twelve type namely: decorative architectural, decorative ornamental, flakes bar, pickaxe square, *pipisan* and mortar, *stupika*/tablets, coins, ceramics, pottery, metal, jewellery and iconography. *Arca* can be classified into the iconography because actually the embodiment of the gods codified to a material object.

3.2. Movable cultural heritage objects in Yogyakarta province

Table 3 shows that 94 pieces or 35.47% movable cultural heritage objects' location are unknown, while 64.52% are detected. Movable cultural heritage is placed on three areas, namely Bantul, Sleman and Yogyakarta city. Bantul district has the largest number of movable cultural heritage objects that is 133 pieces, then Sleman with 31 pieces and in the city of Yogyakarta as many as 7 pieces. Cultural layers of movable cultural heritage in the province shows the most important lining is the prehistoric which is equal to 42 objects (26%), followed by a layer of the classical period amounted to 41.50%, the Islamic cultural layer (14.71%) and colonial cultural layer (1.50%).

TABLE 3
NUMBER OF MOVABLE CULTURAL HERITAGE OBJECTS
IN YOGYAKARTA PROVINCE

Recency/ City	Culture Layer of Yogyakarta Province				Total
	Prehis- toric	Classic	Islam	Colo- nial	
Bantul	52	64	17	0	133
(%)	39.10	48.12	12.78	0.00	
Yogyakarta	6	1	0	0	7
(%)	85.71	14.29	0.00	0.00	

Sleman	23	8	0	0	31
(%)	74.19	25.81	0.00	0.00	
Not Known	31	37	22	4	94
(%)	32.98	39.36	23.40	4.26	
Total	112	110	39	4	265
(%)	42.26	41.51	14.72	1.51	

Source: BPCB DIY (2015), reprocessed by the author

3.3 Non-movable cultural heritage objects in Yogyakarta province

From table 4, data regarding non-movable cultural heritage in the Yogyakarta province shows that 94.01% location is known and amounted to 5.98% is in unknown location. Mostly stored in Bantul (29.91%), followed by 29.05% in Sleman, Gunung Kidul (14.52%), 11.11% in Kulon Progo, Yogyakarta (9.40%) and in unknown location of 5.98%.

TABLE 4
NUMBER OF NON-MOVABLE CULTURAL HERITAGE OBJECTS
IN YOGYAKARTA PROVINCE

Recency/ City	Culture Layer Yogyakarta Province					Total
	Prehis- toric	Classic	Islam	Colo- nial	Not Known	
Bantul	0	5	16	4	10	35
(%)	0.00	14.29	45.72	11.43	28.58	29.91
Sleman	1	22	0	1	10	34
(%)	2.94	64.71	0.00	2.94	29.41	29.05
Gunung Kidul	8	5	0	1	3	17
(%)	47.05	29.41	0.00	5.88	17.64	14.52
Kulon Progo	0	1	3	7	2	13
(%)	0.00	7.69	23.07	53.84	15.38	11.11
Yogyakarta	0	0	2	0	9	11
(%)	0.00	0.00	18.19	0.00	81.82	9.43
Not Known	0	0	3	0	4	7
(%)	0.00	0.00	42.86	0.00	57.14	5.98
Total	9	33	24	13	38	117
(%)	7.69	28.21	20.51	11.11	32.48	100

Source: BPCB DIY (2015), reprocessed by the author

In Bantul, non-movable cultural heritage objects is dominated by Islamic cultural layer (45.72%), followed by a layer of classical culture (14.29%), colonial cultural layer of 11.43% and an unknown cultural layer of 28.58%. Bantul has no non-movable cultural heritage representing prehistoric cultural layers. Sleman is dominated by the classical period amounted to 64.71%, followed by a layer of colonial and prehistoric cultures both by 2.94% and 29.4% unknown cultural layer. Gunung Kidul has the most non-movable cultural heritage objects in prehistoric cultural layer of 47.05%, followed by a layer of classical culture by 29.41%, a layer of colonial culture by 5.88% and an unknown cultural layer of 17.64%. The largest non-movable cultural heritage in Kulon Progo is represented by colonial cultural layer that is 53.84%, followed by a layer of Islamic culture (23.07%), classical culture (7.69%) and unknown cultural layer of 15.38%. Yogyakarta has 18.18% non-movable cultural heritage in Islamic period and unknown cultural layer of 81.81%.

3.4 Handling Cultural Heritage; The Implementation

In accordance with the mandate of Law No. 4 in 2007 that cultural heritage is included in the category of a national asset which should be protected and secured [7]. Handling cultural heritage will be described in sequence based on the concept of cultural resource management and disaster management. Early stage in the concept of cultural resource management is the **Protection** that consists of zoning, security, maintenance, preservation and restoration. Stages of zoning, security and maintenance in disaster management is included in the pre-disaster phase, the preservation is more focused on emergency response and restoration phase is associated with post-disaster phase.

Rebuilding preparedness is the initial processes in disaster management integrated with the management of cultural resources. The implementation of disaster management has the scope of pre-disaster, disaster and post-disaster response and risk reduction efforts. Disaster risk reduction is not in the end nor in early stages of the cycle, but in every stage of the disaster management cycle. Cultural resource management is very strongly linked to the disaster

management because it has the scope to preserve the cultural heritage through the protection, development and utilization of cultural resources, if both cycles is integrated, cultural heritage can be utilized as much as possible for the benefit of the nation.

Conclusion regarding the implementation of cultural resources management in Yogyakarta province, namely:

1. The absence of disaster management in the cultural heritage set in Indonesia, including standard operational procedure in handling cultural heritage in time of disaster.
2. Cultural heritage is not included in the contingency plan of Yogyakarta province.
3. The absence of risk assessment of the cultural heritage in the province.
4. Lack of integration between the management of cultural resources with disaster management in the province
5. The absence of a strong partnership between BNPB with relevant agencies and other stakeholders in disaster management on cultural heritage.
6. The paradigm of disaster risk reduction has not been implemented properly in the management stages of cultural resources.
7. At the time of disaster response and post-disaster, cultural heritage is still not a top priority that led to the threat of loss or damage.
8. Lack of implementation of risk management or training to increase the capacity of the cultural guard to be an expert.
9. The absence of an emergency response plan and team on cultural heritage in the province.

3.5. *Suggestions related to the handling of cultural heritage in disaster management*

Management of cultural resources in disaster management comprises the step of protection, development and utilization. Figure 1 shows the three stages of disaster management phases intersect with that of preparedness, emergency response and post-disaster. Preservation, research, revitalization and development of character are available in both cultural resource management and disaster

management. Preservation is a concept that should exist in all three phases of disaster management, the need for research and revitalization will result in better disaster management and development of character is the expected output of disaster management.

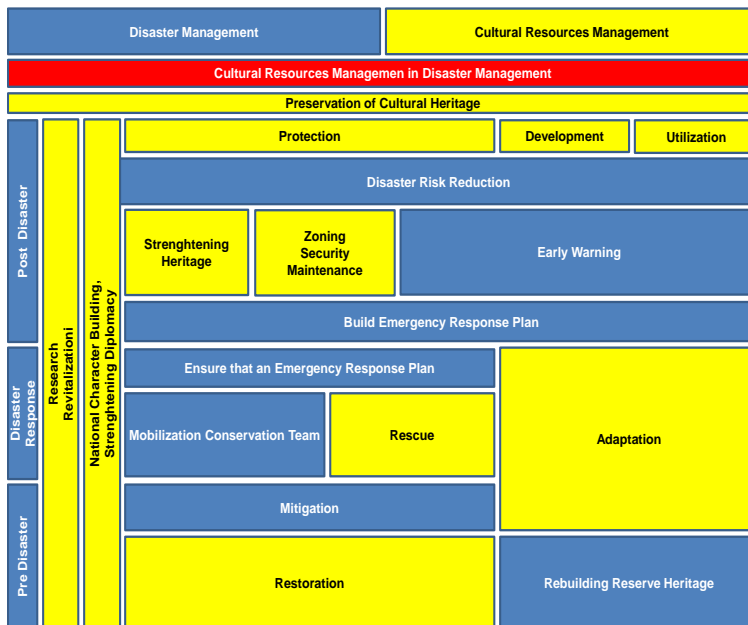


FIGURE 1
INTEGRATION OF CULTURAL RESOURCE MANAGEMENT
IN DISASTER RELIEF

Source: The Law no. 11 year 2010 [8], IOM [9]
reprocessed by the author

Figure 2 illustrates the structure of emergency response in the province. Making Cultural Heritage Emergency Response Team (*Tim Tanggap Darurat Cagar Budaya-TTDCB*) is required for the movement of the security and rescue in accordance with the procedures for handling cultural heritage. The involvement of the military (TNI) in accordance with the International Military Cultural Resources Working Group (IMcurWG) [10] will strengthen its role in terms of security of cultural heritage.

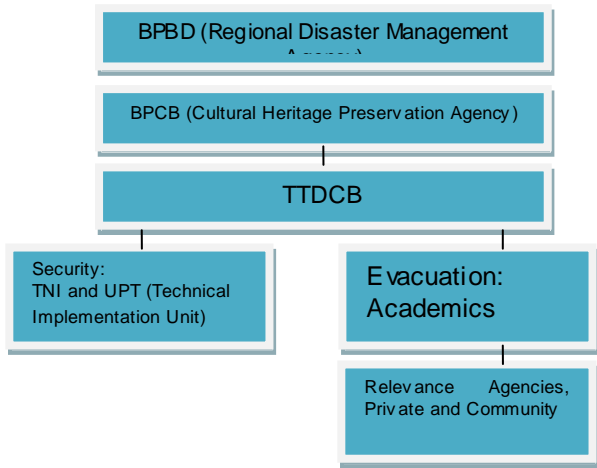


FIGURE 2

STRUCTURE OF THE CULTURAL HERITAGE EMERGENCY RESPONSE

Source: IFRC [11], reprocessed by the author

There are four risks in cultural heritage associated with the environment as shown in Figure 3, that are the risk of utilization, in this case, including for research; environmental risks and hazards, namely the reduction of the value of cultural heritage ; risk of damage due to improper handling and safety; and evacuation risk for not complying with operational standards. Calculation of security includes threat prevention, early warning, the cultural heritage and human evacuation, temporary shelter and priorities collection by colour. Preventive management include management system, storage security, standard list of vulnerabilities collection and evacuation operations and the implementation of cultural resource management.

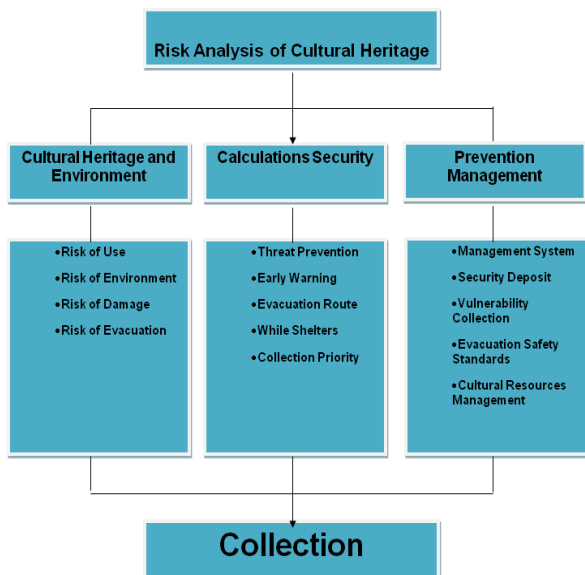


FIGURE 3
DISASTER RISK ANALYSIS ON CULTURAL HERITAGE

Source: Chien Lien, Sie and Song [12], reprocessed by the author

Figure 4 shows the disaster risk analysis in cultural heritage, it is suggested by this research in order to facilitate the cultural heritage emergency response decision making.

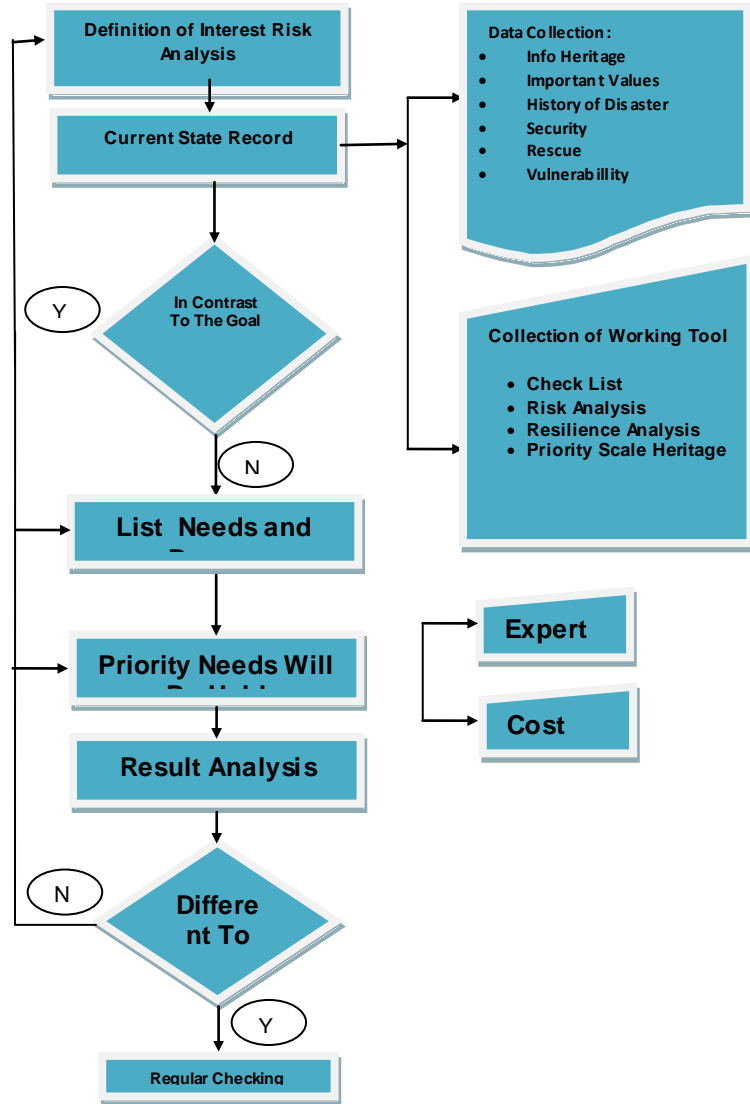


FIGURE 4

FLOW OF CULTURAL EMERGENCY RESPONSE

Source: Chien Lien, Sie and Song [12], reprocessed by the author

3.6. Community Resilience that Reflected in Cultural Heritage

The results of cultural heritage identification can be seen in table 5. It shows that in prehistoric human settlements is built with the aim of adaptation to the threats of nature in the form of wild animal attacks. At the megalithic era when human has started to understand the concept of living, great building has made, the remains left are pedestals, menhirs and stone tombs. Using the technology of stone slabs and cobblestone the remains showed their efforts to maintain the condition of the building related to shocks, this indicates that in the past people had tried to adapt to the threat of earthquakes.

TABLE 5
IDENTIFICATION OF RESILIENCE BASED ON SAMPLES OF
CULTURAL PROPERTIES IN YOGYAKARTA PROVINCE

Cultural Heritage	Resilience Analysis	Resilience
Movable Heritage		
Pickaxe		
Iconography		
Ceramics		
Specie		
Monumental		
Jewellery		
Pipisan dan Mortar		
Decorative		
Architectural		
a. Umpak	Based on morphological analysis pedestals prehistory have noticed shocks seen from the stone as a counterweight	Earthquake
b. Stone Tomb	Morphological forms infused grave stone with stone construction	Earthquake

Cultural Heritage	Resilience Analysis	Resilience
	plates are arranged well as how to create a solid rock tomb.	
c. Menhir	Morphology form of menhirs embedded in the ground with the amplifier rock on the right and left as strenght Menhir.	Earthquake
c. Plinth Statue	The technology to manufacture the plinth statue in Mataram period showed adaptation to shocks, as seen from the connection stones and the keystone	Earthquake
d. Statue	Arca made with andesite intact with material reduction technology. Heavy statues will strengthen the standing position of the shock.	Earthquake
	Decorative Ornamental Shale Bar Stupika Tablet Earthenware	
Immovable Heritage		
	Iconography Structure	
a. Tomb	The orientation of the tomb of the north south and is located on a high hill has been the continuity tomb	Earthquakes, landslides, tsunamis and floods

Cultural Heritage	Resilience Analysis	Resilience	Cultural Heritage	Resilience Analysis	Resilience
b. Monument	Development of the region during the colonial days notice tsunami threat not visible from the construction of the southern coast	Tsunami		attention to the structure of the landslide. Spatial Keraton Yogyakarta is located at the midpoint between Merapi and the South Coast	Eruption and Tsunami disaster (at the time of Islam)
Building			e. Pagoda	Wearing technology as a crutch teak roof of the boat	Earthquake
a. Temple	Meru shaped temple, continued technology vertical, horizontal dial, false arch and keystone is strengthening temple from shocks. The presence of a thin protective cement on the temple.	Earthquake and Disaster Eruption	f. School	Build with various iron pole, thick walls with large door windows	Earthquake and Fire
			g. Factory	Wall hefty	Earthquake
			h. House	Wall hefty	Earthquake
b. Mosque	Continuing technological prehistory and Hindu Mataram seen from the pillar, <i>kori agung</i> , roof overlapping, connecting vertical and horizontal technology and was created on the flat ground	Earthquakes and landslides	i. Gutter	Mataram ditch built with attention to north-south flow of water that are not accommodated	Drought
			Site		
			a. Cave	Goa Braholo is a settlement that takes into account environmental threats	The threat of early man, in the form of wild animal attacks.
b. Gate	Wearing the great <i>kori</i> system in crowded places this attention to human security	The earthquake and the evacuation of the east and west orientation	b. Various Site	Geographically placement of the building on the Hindu-Buddha of the environment	Have their risk analysis
c. Church	Noting shocks in building a large space	Earthquakes	Region		
d. Palace	During the Hindu Mataram Ratu Boko palace was built with	Landslide, Drought disaster,	a. Prambanan temple	There has been a change of location	Have their disaster risk reduction plan by

Cultural Heritage	Resilience Analysis	Resilience
		relocating the temple in the past
b. Guest Houses	Already very modern with a tropical adaptation. The presence of light roof and plaster on the slopes	Eruption and landslides

Source: Author from field observations

In the later period, namely the Hindu Mataram, quantum leap in terms of technology has occurred. The construction materials used are made from andesite stone which considered sacred at that time. Andesite stone is heavy, it requires modifications and adaptations to be able to utilize as building materials. The technology to assemble the stone building then developed in the form of keystone, vertical join, horizontal join, pseudo curved, sand foundation and cement coating for buildings. The technology mentioned above was adapted to mitigate earthquakes and landslides, while the thin cement is used as a coating to protect building from damage due to mount Merapi eruptions.

Period of Mataram Islam is a continuation of the classical period of Mataram Hindu, at this time more advanced technology was found. Not only the concept of environmental wisdom, but also structural mitigation technology became more advanced than ever before. The concept of pillar, a vertical join, horizontal join, overlapping roofs, *kori agung* arches are a showing their attempt to deal with the earthquake. Even very safe position of the palace showed the consideration to protect from volcano eruption and tsunami that comes from the south side.

In colonial period, the colonial government already consider the great potential of south coast related to tsunami. In addition to the hazard from mount Merapi eruption and earthquakes, in this period, windows and doors are made in

large size to mitigate fire hazard, and combine with thick wall will become safe when an earthquake strike.

3.7. Utilization of Cultural Heritage Objects in Yogyakarta Province

All of the positive things above shows the richness values that inherited as cultural heritage in Indonesia. Cultural resource management is needed to preserve these heritage so those values can be inherited to future generations. Being an area that prone to disaster, Yogyakarta province need to embed its cultural resource management and disaster management. Further research opportunities and challenges is needed in order to uncover the past history of Indonesia known as the archipelago. The study can be used as identity reinforcement that can be deployed through formal or informal education such as excursions.

The main objective of the cultural heritage utilization is to strengthen national identity. Utilization of cultural heritage in Yogyakarta province should be done not only aimed to increase number of tourists, but to pursue quality. National resilience is derived from the resilience of individuals, families, community, region and state. To achieve this, regulations that consider the content and the concept of *panca gatras* needed, not only strengthen the economy but to keep the balance of all *gatra*, namely the ideological, political, economic, social, cultural and defence.

IV. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Implementation of cultural resources management of Yogyakarta province have not been integrated with disaster management. It resulted in poor implementation of disaster risk reduction in the preservation of cultural heritage. On the other hand Yogyakarta provincial disaster management plans also have not entered the cultural heritage as an important element. In accordance with the mandate of Law No. 4 in 2007 that cultural heritage is include in the category of a national asset which should be protected and secured. Derivatives of these problems is the lack of cultural heritage

consideration in the contingency plan, the absence of strong linkages between relevant agencies, the lack of mitigation, emergency response, and assessment of cultural heritage during disaster.

In prehistoric times community has adapted to threats that exist at that time, like a wild animal, but already there is also understanding the structure of earthquake-resistant buildings. At the time of the Hindu Mataram knowledge of disaster adaptation can be seen from the technology used, for example the keystone, vertical join, horizontal join, and cement coatings to mitigate various hazard such as earthquakes, landslides, and volcanic eruption. At the time of Islamic Mataram, knowledge to adapt to tsunami began to appeared, for those palace of Yogyakarta in placed in a safe position from the hazard of mount Merapi eruption and tsunami from the south sea. Technology in the Islamic period is the continuation of the previous period, another example of community resilience related to cultural heritage isin colonial period, colonial style building is a very solid structure against earthquakes and other disasters, windows and doors are made in large size to mitigate fire hazard, it is worth to notice that in this period concept of safety is already considered in building construction.

There is less attention to the utilization of cultural heritage to strengthen national identity and security. As the development of tourism is more oriented in increasing quantity. Cultural heritage is a physical object, but it contains the non-physical values, to maintain those values is a form of prudent utilization that not merely from the viewpoint of economic standpoint.

4.2 Recommendation

Suggestion of this research is the need for integration of cultural heritage in disaster management. This integration is the main solution to improve the handling of cultural heritage as a whole. In this study, researchers recommend the table the integration between disaster management and the management of cultural resources, the flow of risk analysis of cultural heritage as that can be performed on all stagesof disaster management, and the structure of the emergency response of cultural heritage.

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