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Spatial Expression of Malay Kampung Semarang in Facing Flood Disaster

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Abstract. Disaster is one of the most significant global challenges confronting the society and environment in recent days. It poses a threat to the cultural heritage of conservation areas, including Malay Kampung (Kampung Melayu) Semarang. Today, it is experiencing physical, social and economic degradation, triggered by environmental factors and disasters such as flooding. This research therefore aims to identify the areas of residual disasters and monitor its impact on spatial expression and the resilience patterns. New adaptation and spatial expression develop when there is prolonged contact between flood disaster and the environment. Hence, a spatial expression transformation due to disaster adaptation occurs this expression is a type of resiliency pattern vulnerable in the area. During flood disasters, this pattern is essential to observe and understand the resiliency along with the sustainability of the cultural heritage of these affected areas. This research used qualitative method, Descriptive analysis technique conducted in this study to determining the research area delineation, identifying phenomena of flood disasters in Malay Kampung Semarang, analyzing spatial expression of Malay Kampung Semarang, and determining flood effects on spatial expression. Banjar Kampung was then chosen to represent the entire Semarang Malay Kampung. The spatial expression affected the building conditions, resulting in damage to some inhabited and non-inhabited buildings though some were not severely affected (are in good condition), and however, the buildings can be renovated. Out of the 57 buildings, in the region, 41 are in good condition and 16 others are in damaged condition. The result obtained from the study indicated that the flood phenomenon that occurred is now improved. The occurrence, depth, affected areas and duration of flood has improved as shown in this study.

Keywords: flood Disaster, spatial Expression, malay kampung semarang

1. Introduction ¹²

Globally, nearly all cities in the world are at the risk of disasters and their impact making it a major global challenge faced by the general public and the environment [1,2]. In-Law Number 24 of 2007 on Disaster Management, explains that disasters are a series of occurrences which threaten and disrupt the lives and livelihoods of people [3]. It results from natural, man-made and human factors, which leads to the emergence of casualties, environmental damages, loss of assets and psychological effects. The most common disaster faced by society is flood which is caused by natural factors making it a problem for the general public [4]. When the land surface is lower than sea level coupled with a high intensity of rainfall, flood will occur [5]. Also, human behavioral influences such factors like

removing garbage in rivers, deforestation, poor drainage networks, building settlements in water catchment areas [6]. Climate changes also play a role through the increase in global temperatures leading to an increased in sea level resulting from an increase in the volume of seawater [6]. According to Urban Tissue Theory, cultural heritage are the core areas forming the structure and history of the city. For that reason, the sustainability of cultural heritage sites depends on its ability to withstand the impacts of natural disasters, changes in climate, pressures of economic and socio-cultural activities. Stated during the Special Expert Meeting of the World Heritage Convention, UNESCO World Heritage and Climate Change that held in Paris on March 16 and 17th, 2006, there are 46 Cultural World Heritage Sites. Each site is threatened by natural disasters and nearly all structures are man-made such as archeological sites, churches, mosques, temples, fortresses, and others.

The city of Semarang face two major challenge namely: a shock in form of sudden occurrences such as earthquakes, landslides, flash floods and stress in form of situations that weaken the good urban structure every day or periodically [7]. The City is constantly faced with stress due to floods, and it has developed a weakened structure. Malay Kampung Semarang, which is one of the cultural heritage areas experiences physical, social and economic degradation because of the flood occurring in the area. This occurrence calls for attention because the area has become less productive and marginalized due to degradation. However, it remains one of the important cultural heritage areas. The research conducted by Kumiawati, 2002; Kumiawati & Astuti, 2013; Kumiawati, Nindya Larasati, Murdiyati, 2011; Rusgiyanto, 2005; Sibuea, 2011; Wardhani, 2000, revealed that there were adaptation efforts carried out by the community [6,8–12]. In dealing with floods and tidal current, the community made effort by transforming ancient buildings (stage houses) so the shape of the building was no longer the same as the initial building. The evidence of such transformation encourages the need for further research related to the survival form of Kampung. Resilience, as defined, is the ability of the social system to respond and recover from disasters. It involves the development of conditions that allow adaptation efforts through the absorption of impacts, reorganization, and learning to respond to challenges [13]. This research therefore aims to identifying the phenomenon of occurring disasters, study its impact on the spatial expressions and the resilience pattern of Malay Kampung Semarang.

16 2. Research Method

This study aims to identifying the phenomenon of occurring disasters, study its impact on the spatial expressions and the resilience pattern of Malay Kampung Semarang. Based on these objectives, this study use qualitative method, which will be examined facts in the field such as the characteristics of the flood that occurred and the form of spatial expression in Malay Kampung Semarang. This is intended to be known and formulated the impact of the flood disaster on the spatial expression in Malay Kampung Semarang. Descriptive qualitative analysis is used as analysis technique in this research. Qualitative descriptive analysis is an analysis technique by describing data that has been collected and processed as it is without intending to make generally accepted conclusions [14]. In compiling the analysis, data collection was carried out through field observations and random interviews with the community in Malay Kampung Semarang.

3. Spatial Expression

According to Goldberg, Leyden, & Scotto, (2012) the reason citizens reside in an area is influenced by two dimensions called place and performance [15]. The value of place, in this case, facilitates the ability to enjoy life and attain daily needs. While performance relates to is the provision of basic services (e.g. school quality or policy). Based on the place theory of urban design, the regional characteristics classify into two categories namely; the physical characters aimed at the physical appearance of buildings formed by mass and space. The non-physical characters are the relationship between humans and the cultural environment they are the terms used as a background in the formation of certain physical characteristics. The place indicator translates into 5 basis points:

1. Pride in the region

2. Perception of the number of facilities available
3. Perception of easy access to culture and leisure amenities, lots of shops and stores
4. The convenience of public transportation
5. The degree to which residents feel their environment is beautiful.

Performance indicators, a measure of the general perception of the community regarding services obtained from existing government and non-profit organizations. The resilience of the community to settle can ⁵ be observed from the level of their welfare and public understanding of the quality of life [16]. The ability of the community to respond, adjust and recover from disturbances (natural disasters) is classified as ecosystem resilience [17]. The ability of the community to return to the initial condition before the disorder is a type of engineering resilience [18]. The spatial expression of an area is identified from the resilience and settlement of the community.

4. Results and Discussion

⁷1 Determination of the research area delineation

Malay Kampung Semarang is one of the oldest Kampung in the city of Semarang, which is in the northern part of the city. It has a high historical value and an important significance in the formation of the City of Semarang. It is a distinctive and multi-ethnic cultural image and with a variety of architectural artifacts such as the Layur Tower Mosque, Malay Kampung Temple, Indis house, Malay house, Javanese house, Banjar house, the old Semarang Port, and new canal. The people who inhabit the city are the indigenous people of Semarang as well as other ethnic groups such as Arabs, Chinese, Banjars, Malays, Javanese, Cirebon, and others. This ethnic diversity has a significant role in the formation of the structure and pattern of the Semarang Kampung space.

The city was originally used as a haven for Arab and Malay traders, which later developed into residential and trading areas. The occurrence of floods and tidal current resulted in many indigenous people who choose to migrate to other places. Before now, lands in the area were used for dense settlements, trades, offices, and uninhabited ancient houses.

In this study, a regional delineation was formulated which is the focus of observation and the delineation area is Banjar Kampung (figure 2). Some justifications for the delineation of the region are:

- The delineation area can be considered strategic because of its close proximity to the main route in Layur Street and Petek Street.
- The delineation area is considered capable of representing the entire Malay Kampung Semarang. The Gang of the area has old buildings that are still surviving and the ethnic Banjar who are ethnic descendants currently reside in the area
- The delineation area also consists of people outside the Banjar ethnic group and it is monitored for any influence that may have an effect on the results of the study.
- In the delineation area, there are numbers of infrastructural facilities such as prayer rooms, schools, stalls, pharmacies and so on. It is monitored to see if flood problems affect them.



Figure 1. Malay Kampung Semarang delineation (Source: google earth, 2019)



Figure 2. Research area delineation (Source: ¹direct observation, 2019)

4.2 Identifying phenomena of flood disasters in Malay Kampung Semarang

The delineation area of the study is located in the northern part of Semarang City, which is a coastal area. It is prone to tidal flood, which occurs when the height of the land surface is either on the same with the water level or below it. Sometimes the flood is also caused by high rainfall intensity, tidal seawater, inundates coastal areas and lowland surroundings. The characteristics of flood that occurred include:

- Time of flood
The results compiled from interviews with informants revealed that flood occurrence began in the 1980s. The embankment holding the seawater broke which caused a severe disaster that lasted from 1990 to 2009, the most critical flood occurrence happened in the year 2003; it drew the attention of BNPB who then intervened and provided assistance. From the year 2010 to 2019, the most severe floods occurred in 2015 because of rainwater mixed with the tidal current. In 2016, the Semarang City Government built two pump houses and sluice gates which reduced the flood rate.
- The area most affected by flood
From the result of interviews with informants who reside in the area, revealed that the most flooded regions are Banjar Kamung and a section of Petek Street. The heights of all affected areas are almost the same, though the severities of houses affected by flood depend on the height of each house. This condition has improved since the introduction of pump house and sluice gates.
- Depth level of flood
The information obtained showed that the tidal floods no longer occur. It also showed that the floods that occurred in the year 1980 to 2019 have varying depth levels. The average flood height obtained were 1 cm in 1980 between 1990, 30 to 50 cm in 2000 between 2009 and \pm 30 cm in 2010 between 2019. There is now a decrease in flood depth thanks to the solution provided by the Semarang City Government through the construction of pump houses and sluice gates in Kali Semarang. The floods are not exacerbated by tidal water that inundate in the area.
- Duration of a flooding occurrence
From the interviews with informants, the floods that occurred since the 1980s have a duration that varies and decreases every year. The average flood duration per rainfall since 1980 recorded were; 3 new days in 1990-1999, half a new day (12 hours) in 2000-2009 and 1-2 hours in 2010 to 2019. The decrease in the flood duration resulted from the construction of pump houses and sluice gates that were made by the City Government.
- The most intense month of flooding
From interviews with informants, the floods that occurred from 1980 until this date have nearly similar flood patterns and occurrences. The months of July and August experience the most intense flooding. However, the rainy and dry season are uncertain and difficult to predict but it the most intense period is at rainy season. The people are always advised to be on alert in case of an unexpected flood that might take place. Notwithstanding, this condition has greatly improved after the construction of pump houses and sluice gates in Semarang river which makes it easier for flood to be anticipated and controlled.

4.3 Analyzing spatial expression of Malay Kampung Semarang

During the flood experienced, various spatial expressions developed in the area, and these forms of spatial expressions are:

- Non-inhabited Damaged Building Conditions
Figures 3 and 4 illustrate the form of spatial expression that occurred in a non-inhabited damaged building:

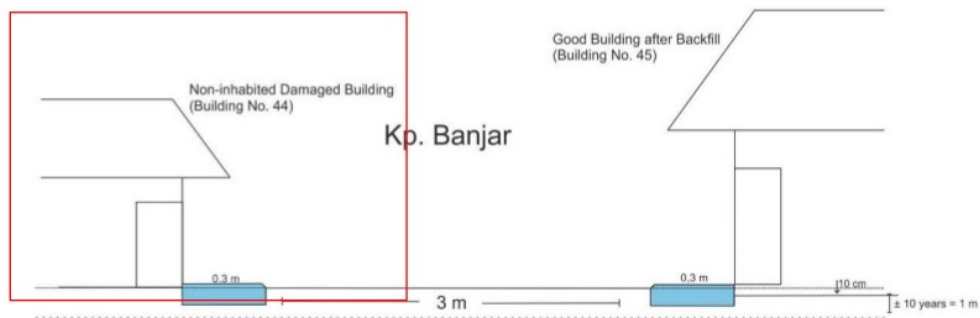


Figure 3. Spatial expression of non-inhabited damaged buildings (Source: direct observation, 2019)



Figure 4. Non-inhabited damaged buildings (Source: direct observation, 2019)

Figures 3 and 4 Indicate that the building experienced critical damages that changed its original design. The damage caused the owner to abandon it. This residential building a decreased height due to the occurrence of land subsidence and is now vulnerable. People were advised not to live in it because it is prone to flood. The ground level has increased by ± 1 meter in the last 10 years.

- Inhabited Damaged building conditions

The figures 5 and 6 describe a form of spatial expression of an inhabited damaged building.

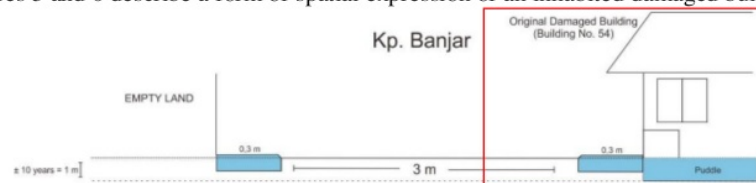


Figure 5. Spatial expression of inhabited damaged building (Source: direct observation, 2019)



Figure 6. Inhabited damaged buildings (Source: direct observation, 2019)

In Figure 5 and 6, the building has changed from its original design because of a reduced height, which happened when the occurrence of land subsidence took place. The condition of the house is damaged which is important because it is very prone to collapse and in the middle of it there is a pool of water such as a pond. Notwithstanding the form of spatial expression done, the owner inhabits it. The building is a house.

- Good Building Condition After Backfill

The figures 7 and 8 illustrate a form of spatial expression in a building that is in good condition after the floor has been backfill in Banjar Kampung:

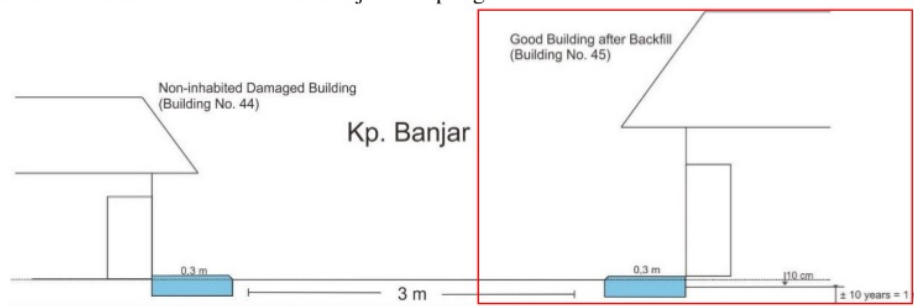


Figure 7. Spatial expression of good building after backfill (Source: direct observation, 2019)



Figure 8. Good building after backfill (Source: direct observation, 2019)

From the figures 7 and 8, the residential building did not experience a severe effect (it is in a good condition) from the flood. The form of spatial expression carried out required the raising of floors higher than the ground level. The creation of elevation walls alongside backfilling to raise it higher is essential to prevent a flood. Buildings only backfilled will appear lower if not accompanied by elevating the walls. The owner currently occupies it.

- Good quality Building After Renovated

Figure 9 and 10 describe a spatial expression in a renovated building:

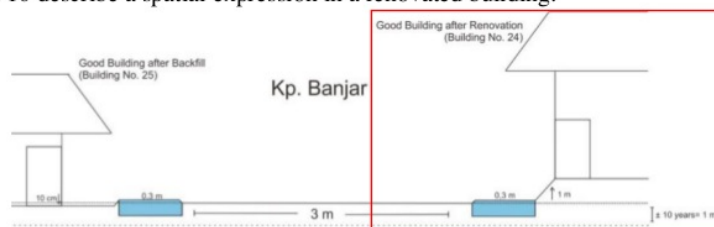


Figure 9. Spatial expression of good quality building after renovation (Source: direct observation, 2019)



Figure 10. Good building after renovation (Source: direct observation, 2019)

The above figures 9 and 10- show that the building is in good condition. The form of spatial expression carried out was renovation. The activities performed involved raising the walls and floor by ± 1 m to ensure the building remains proportional. The owner occupies it. There are

ranges of spatial expression carried out by several regional support facilities and infrastructures, they include:

- Mosque building

Following is the form of the spatial expression of the mosque building:

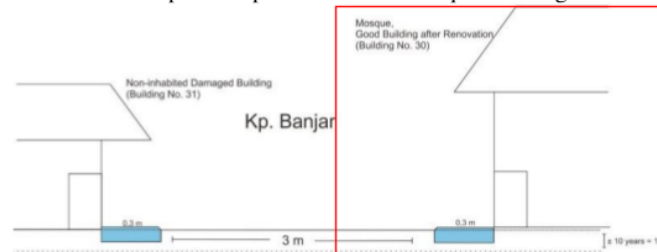


Figure 11. Mosque building in a good condition after renovation (Source: direct observation, 2019)

Figure 10 and 11 show that the mosque building is in good condition. Renovation that took place in the building. The activities focused on raising the floor and walls of the building also maintaining the original shape and size of the building. The building is a worship facility for the Muslim community.

- School building

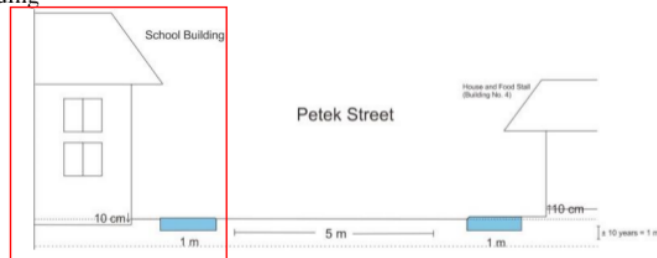


Figure 12. School building in good condition after renovation (Source: direct observation, 2019)

The figure details the school building which is in good condition. The spatial expression carried out was renovation It. involves raising the floor and walls of the building to maintain proportionality. Although it has undergone a renovation, the school experienced a decreased height of ± 10 cm. It building serves as a means of education by residents of the community and neighboring areas.

- Food stall building

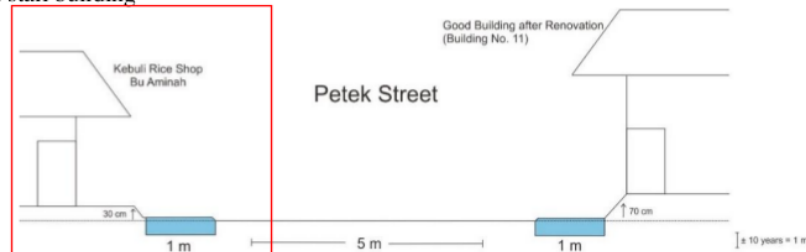


Figure 13. Food stall building in good condition after renovation (Source: direct observation, 2019)

The Food stall building is in good condition as shown in figure 13. Raising the spatial expression carried out is renovation. The floor and walls of the building were the changes made. The building is elevated to a height of ± 30 cm.

4.4 Determination of the flood effects on spatial expression

From the various spatial expressions of buildings in Banjar Village, in the face of floods, the following is a description of the distribution of the condition on it:

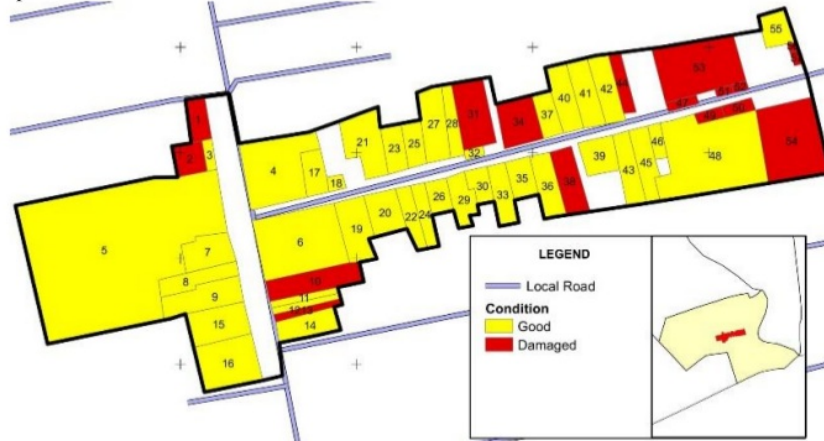


Figure 14. Buildings condition in banjar village (Source: direct observation, 2019)

From the picture above, out of the 57 structures in the area, 16 buildings were damaged by flood while 41 were not severely affected are. The renovation activities, which took place in the building, were raising the floor and wall above the ground level to prevent flood from entering it and maintaining the building's original shape and size. Some of the buildings affected were either inhabited by occupants or non-inhabited. Figures 15, 16, 17 and 18 below further describe the building conditions,



Figure 15. Map of building status in banjar kampung (Source: direct observation, 2019)



Figure 16. Good building after renovated (Source: direct observation, 2019)



Figure 17. Good building after backfill (Source: direct observation, 2019)



Figure 18. Damaged building (Source: direct observation, 2019)

7 Conclusion

Malay Kampung Semarang is one of the oldest Kampung in the northern part of Semarang City. It holds a high historical value and portrays significant meaning in the formation of the City. Banjar Kampung, which is a part of Malay Kampung, is the key focus area of observation was considered capable to represent the entire region. The affected areas have adapted a flood control method to help reduce the occurrence. Previously the flooding was rigorous as rainwater mixed with the tidal water, which lasted for a long time (once lasted 3 days) with a depth of ± 1 m. It lasts for 1-2 hours due to rainfall intensity with a depth of ± 30 cm. The most intense occurrence happens in Banjar Street and Petek Street. The efforts made by the government in the construction of pump houses and sluice gates in Kali Semarang improved the condition. However, Climate changes are difficult to predict therefore making the efforts of the government and community to foresee and control it slow. The aftermath of the occurrence resulted in the development of several spatial expressions. In the area, out of the 57 buildings, 41 were in good condition while the 16 others were damaged. The results of the analysis in this study can be an input for the government in preparing a plan for the preservation of cultural heritage areas such as Malay Kampung Semarang, understanding the fact that there is any threat in the form of changes and original identity of Malay Kampung Semarang who adapted to the flood disaster that occurred

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Acknowledgment

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References

- [1] Ekawati J 2018 Kebertahanan Kultural dan Religi di Area Permukiman Terdampak Bencana Lumpur Lapindo Sidoarjo, Jawa Timur *Sabda J. Kaji. Kebud.* **13** 122–34 [[crossref](#)]

- [2] Pelling M 1967 *The Vulnerability of Cities : Natural Disasters and Social Resilience* (London: Earthscan Publications Ltd)
- [3] Republik Indonesia 2007 *Undang-undang Nomor 24 Tahun 2007 tentang Penanggulangan Bencana* (Jakarta: Sekretariat Negara)
- [4] Priyanti R P, Hidayah N, Rosmaharani S, Nahariani P and Mukarromah N 2019 Community Preparedness in Flood Disaster : A Qualitative Study 1–5 [[crossref](#)]
- [5] Halim H, Arifin A, Nonci N, Zainuddin R, Anriani H B and Kamaruddin S A 2019 Flood disaster and risk anticipation strategy *IOP Conf. Ser. Earth Environ. Sci.* **235** [[crossref](#)]
- [6] Kurniawati W and Astuti K D 2013 Bentuk Ketahanan Iklim Kawasan Bersejarah di Kampung Melayu Semarang *Ruang* **1**
- [7] Erlani R and Nugrahandika W H 2019 Ketangguhan Kota Semarang dalam Menghadapi Bencana Banjir Pasang Air Laut (Rob) *J. Reg. Rural Dev. Plan.* **3** 47–63 [[crossref](#)]
- [8] Kurniawati W 2002 *Penataan Kawasan Lama sebagai Kawasan Wisata Budaya. Studi Kasus: Kampung Lama Sepanjang Kali Semarang*
- [9] Kurniawati W, Larasati N, Murdiyati Y P, Kusumawati V O and Simanjuntak S F 2011 *Keberlanjutan dan Keberlanjutan Kawasan Warisan Budaya* (Semarang)
- [10] Rusgiyanto A 2005 *Strategi Peningkatan Kualitas Lingkungan Permukiman di Tepi Kali Semarang* (Universitas Diponegoro)
- [11] Sibuea R T 2011 *Praktek Ketahanan Sosial Ekonomi Masyarakat Kampung Melayu dalam Menghadapi Dampak Perubahan Iklim* (Universitas Diponegoro)
- [12] Wardhani A G 2000 *Karakteristik Permukiman Kampung Melayu di Semarang, Kajian Arsitektural dengan Pendekatan Urban History, Morfologi, dan Tipologi* (Universitas Parahyangan)
- [13] Cutter S L, Ash K D and Emrich C T 2014 The geographies of community disaster resilience *Glob. Environ. Chang.* **29** 65–77 [[crossref](#)]
- [14] Sugiyono 2014 *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (Bandung: Alfabeta)
- [15] Goldberg A, Leyden K M and Scotto T J 2012 Untangling What Makes Cities Liveable : Happiness in Five Cities *Institution of Civil Engineers (ICE)* vol 165 (ICE Publishing) pp 127–36 [[crossref](#)]
- [16] Theofilou P 2013 Quality of Life : Definition and Measurement *Eur. J. Psychol.* **9** 150–62 [[crossref](#)]
- [17] Qasim S, Qasim M, Shrestha R P, Khan A N and Tun K 2016 Community resilience to flood hazards in Khyber Pukthunkhwa province of Pakistan *Int. J. Disaster Risk Reduct.* **18** 100–6 [[crossref](#)]
- [18] Norris F H, Stevens S P, Pfefferbaum B, Wyche K F and Pfefferbaum R L 2008 Community Resilience as a Metaphor , Theory , Set of Capacities , and Strategy for Disaster Readiness *Am. J. Community Psychol.* **41** 127–50 [[crossref](#)]

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