

# THE CHARACTERISTICS OF URBAN COMMUNITIES IN THE DISASTER RESPONSE AREA (CASE STUDY: KELURAHAN CAWANG, EAST JAKARTA, DKI JAKARTA)

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## Abstract

**Purpose of the study:** The purpose of this research is to analyze the characteristics of urban communities in the disaster response area to tackle floods.

**Methodology:** In principle, this study uses an approach based on qualitative research. The area that is the background of this study includes the Cawang Village area which is prone to flooding. Sources of data in this study were interviewees who were community leaders who had lived for more than 20 years and local RT/RW devices.

**Main Findings:** From the results of the research obtained, based on the experience of the residents, two of the largest outflows of capital were obtained, namely social capital and human capital, while the least capital outflows were natural capital.

**Applications of this study:** The characteristics of urban communities in the disaster response area are kelurahan cawang, East Jakarta, and dki Jakarta.

**Novelty/Originality of this study:** There are 2 capital components of SLA which are human capital and social capital. While the natural capital component is the lowest compared to the others, are physical capital and financial capital; and have a good early warning system with the existence of a communication network from BPBD to RT, RW, and PB2M.

**Keywords:** *Floods, Sustainable Livelihood Assessment (SLA), Human Capital, Social Capital, Natural Capital, Physical Capital, Financial Capital.*

## INTRODUCTION

In 2016, flooding was the most frequent disaster. 766 flood events occurred in 2016. The impact of the incident was: died 147 people; 2.72 million people were displaced, and 30,669 houses were damaged. Flood also causing infra-structure damage even though the flood is a natural disaster, the magnitude of the loss can increase due to lack of environmental concern, human intervention and bad management practices (Deffi Ayu Puspito Sari, Madonna, & Fitriani, 2018).

In accordance with Law Number 3 of 2002 concerning National Defense, disaster is a threat that is non-military (Deffi Ayu Puspito Sari, Malahayati, Nefianto, & Kertawidana, 2018). The defense system to deal with this threat demands a mechanism that places professional groups as the main element, assisted by the Indonesian Military / Police (Republik Indonesia, 2002). This means that there is a positive correlation between disasters and national security and national defense (Arcala Hall, 2008; Chretien et al., 2006; Laksmana, 2010; Sukma, 2010).

Based on the sustainable concept (Beder, 1996; Goodwin, 2003; Parkin, 2000; Twigg, 2009; Veleva, Hart, Greiner, & Crumpley, 2001) there are five livelihood assets that are owned by each individual and society in their efforts to maintain the continuity of the functioning of a community from serious disturbances and threats that cause both human and material harm. These assets are: (1) human assets/capital, namely the capabilities possessed by individuals; (2) social assets/capital, are social capital owned by a society; (3) natural assets/capital, is the state of the natural environment; (4) physical assets/capital, are infrastructure built to increase the capacity of the community; and (5) financial assets/capital, namely financial resources owned by the community. Every individual, community and larger social unit develop these assets to deal with threats and disturbances (Hörnqvist, 2004; Obrist, Pfeiffer, & Henley, 2010; Omer, 2001; Osbahr, Twyman, Adger, & Thomas, 2008).

Disaster management is very important because natural disasters can cause property loss and infrastructure damage and will affect food security in these areas (Puspito Sari, Listiyowati, Nefianto, & Lasmono, 2018). Lately, the concept of disaster management has undergone a fairly fundamental change. The meaning of a disaster that is conventionally considered an event that cannot be prevented has undergone a shift. Some disasters, except earthquakes, are believed to be predictable, so prevention and reduction of risks can be carried out. The timeframe and focus of assistance that was initially only oriented towards providing physical, technical assistance and only carried out during disaster response, has changed to the concept of community-based disaster management, through disaster management works carried out before the disaster occurred, namely through prevention efforts risk reduction and early warning. A very fundamental change is seen in the role of stakeholders in disaster management. As mandated in Law 24/2007, that disaster management activities must involve three pillars, namely the government, the private sector or the business world and the community itself (Republik Indonesia, 2007).

The urban area that is the focus of this research is the Cawang Village community. The location of Cawang Village is along the banks of the Ciliwung River. Throughout its history, the community has been threatened by the Jakarta floods that occur every year. Lack of government capacity to provide a job, housing, infrastructure and public facilities resulted in poverty and unsuccessful urban development, shortage of saving and palatable water supply, epidemic and man-made disaster (D.A.P. Sari et al., 2018).

According to the disaster-prone map, Jakarta turned out to be a city with a high level of vulnerability. This is due to the location of the city of Jakarta, where 40% of the area (around 24,000 ha) is a plain that is located lower than the sea level (Sakethi, 2010).

Besides that, the city of Jakarta was also traversed by 13 rivers namely Kali Mookevart, Kali Angke, Kali Pesanggrahan, Kali Grogol, Kali Krukut, Kali Baru Barat, Kali Ciliwung, Kali Baru Timur, Kali Cipinang, Kali Sunter, Kali Buaran, Kramat Jati, and Kali Cakung.

Among the 13 rivers, the Ciliwung River is one of the biggest sources of flooding in Jakarta. The Ciliwung River has an area of 337 Km<sup>2</sup> with the length of the main river along 109.7 Km and upstream from Mount Pangrango, the Ciliwung river passes from Bogor, Depok, to Jakarta. The Ciliwung river canal can be divided into three parts, namely the upstream, middle and downstream parts of the river (Rusdiana, 2003).

### Downstream

The downstream part of the Ciliwung river covers areas including the Bogor district (Megamendung, Cisarua, and Ciawi sub-districts), and a small part of the Bogor municipality (sub-district of East Bogor city and South Bogor city).

### Middle part

The central part of the Ciliwung river covers areas including the Bogor Regency (Sukaraja, Cibinong, Bojonggede, and Cimanggis sub-districts), Bogor municipalities (sub-district of Kota Bogor Timur, Bogor Tengah city, North Bogor city, and Tanah Sareal), and administrative city Depok (Pancoran Mas, Sukmajaya, and Beji sub-districts).

### Downstream to the Manggarai Watergate

The downstream to the Manggarai sluice covers areas including the administrative areas of the municipalities of South Jakarta and Central Jakarta, further downstream from the Manggarai sluice gates, including West Canal-made channels, the Ciliwung River crosses the Central Jakarta municipal area, West Jakarta, and North Jakarta.

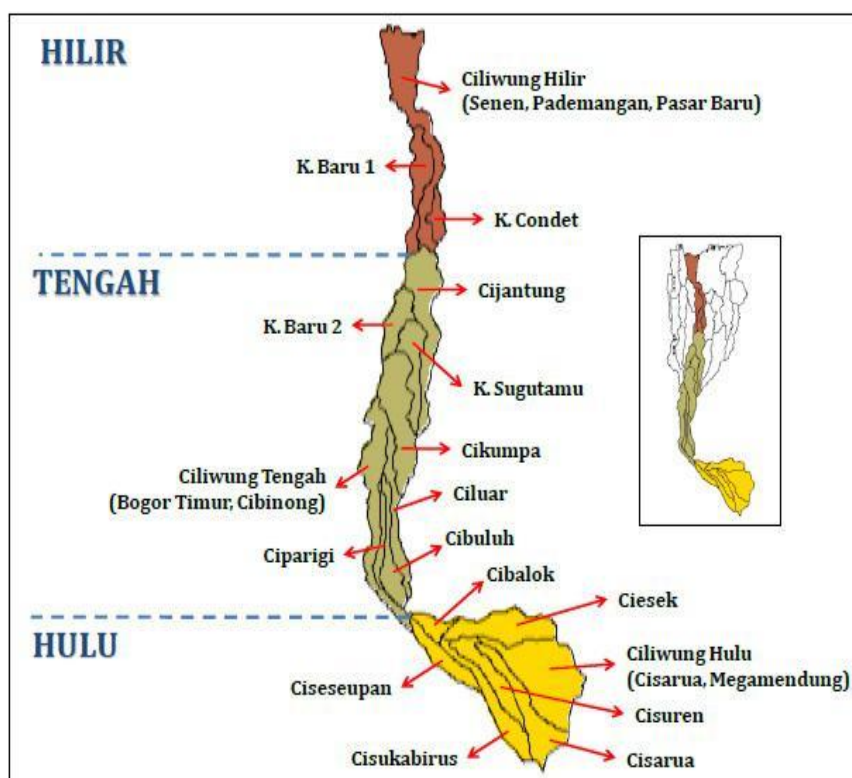


Figure 1: Ciliwung river basin

Source: (Pascasarjana, 2017)

The area of the Ciliwung River has long been an area prone to flooding by the ciliwung river overflow, various adverse effects have been experienced by local residents ranging from health to the economic side. In terms of health, flooding causes the supply of clean water to be reduced and a variety of diseases such as skin diseases, diarrhea, and trigger dengue fever caused by puddles that appear. In terms of the economy, in addition to material losses due to damage caused by overflowing water, flooding also caused many community economic activities to stop.

Besides that, one of the causes of Jakarta prone to floods is population growth. The capacity of the community plays an important role to minimize the risk of a region. Disaster risk reduction strategy is done by creating a safe condition, which is intensified the movement of disaster risk reduction (D. A.P. Sari, Innaga, & Safrilah, 2017).

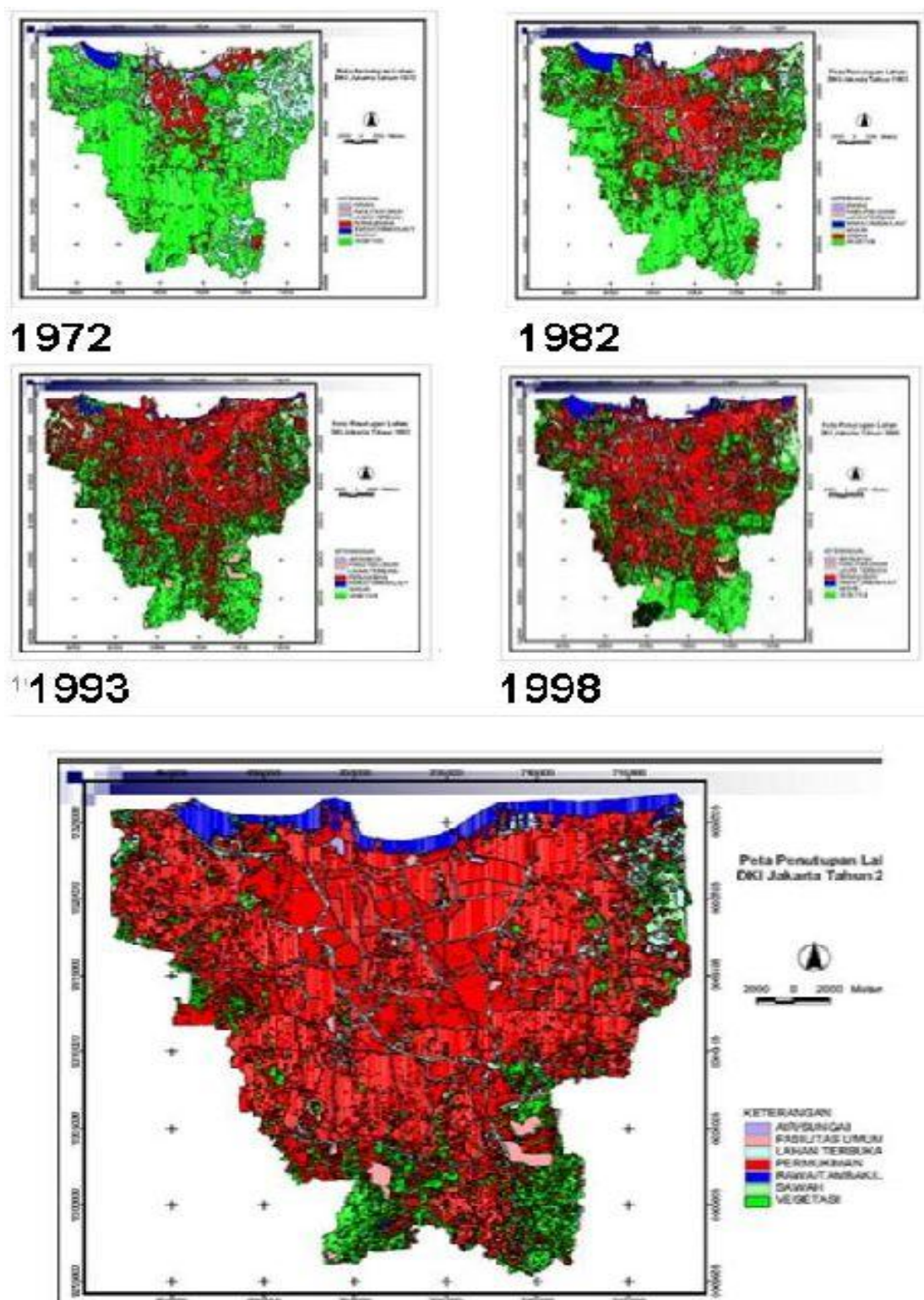


Figure 2: Jakarta Population Growth in 1972-2000



Based on these images, we can see that rapid population growth has caused Jakarta to lose its green open area, which has changed to residential buildings and offices. Even due to the rapid population growth, there has been a shift in the function of limited land, for example, riverbanks that also functions as residential areas.

This condition applies to Cawang Village, which is on the banks of the Ciliwung River. Based on discussions with one of the community leaders in Cawang, in the event of a flood in 2007, almost all of the Cawang area was flooded and there were even houses destroyed due to being hit by river currents. In 2014 Cawang was also affected by significant flooding. There are several houses submerged by floods. Even though they knew that the area where they lived was a disaster-prone area, they remained in that area. This study wanted to explore various problems related to the capacity of urban communities represented by the Cawang community.

## METHOD

In principle, this study uses an approach based on qualitative research. The area that is the background of this study includes the Cawang Village area which is prone to flooding. Sources of data in this study were interviewees who were community leaders who had lived for more than 20 years and local RT / RW devices.

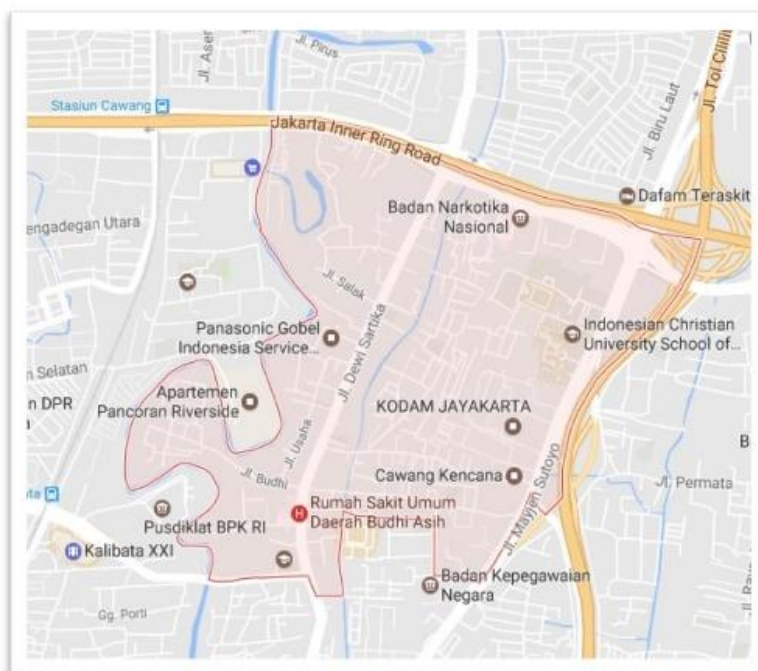
This measuring instrument uses an open type of question, which will then be assessed in content analysis. The researcher will determine family resilience and key behavior based on the quality of answers from the respondents. Each answer that matches the behavior of the key will be given a value of 1. The results will be accumulated in accordance with the factor category of volatile livelihood assessment (SLA); the higher the frequency of key behavior of the component 5 capital SLA that comes out, the more capital is needed by a community or community. Variations in respondents' answers will be grouped into several categories based on the 5 components of sustainable livelihood capital.

## DISCUSSION

### Interview result

#### • General Description of the District of Cawang

According to an explanation from one RW that is prone to flooding, Cawang Village is one of the Kelurahan in DKI Jakarta Province which is vulnerable to flooding. Most of the population are migrants from various regions, and most of them are traders and seasonal workers in Jakarta. From this explanation, it can be seen clearly the reason why they continue to live in the area is that the location is very close to their source of livelihood.



**Figure 3:** Administrative Map of Cawang Village, East Java

#### • Condition of Cawang Village

The Chairperson of RW 03 revealed that part of the Cawang area is the area that has the lowest altitude in Kramat Jati. Cawang is also a densely populated area that is very close to the Ciliwung riverbank and has a very low topography. This density makes access to the Cawang area especially RW 02, 03, 04, 05 and 08 increasingly narrow, the distance between one house and the front of the house in the RW-RW ranges from only 3 meters. This short distance makes the condition

of the Cawang region vulnerable to flooding. When floods occur, narrow access to community settlements makes rescue activities even more difficult. But with the initiative of several residents in RW 03 and RW 08 as well as the youth of the Youth Organization, they formed a volunteer Team namely the Community Based Disaster Management Team (PB2M) and with NGO funding they had sirens as an early warning tool during floods.

The Chairperson of the RW and the Chair of the RT stated that in the face of the consequences of the disaster, residents were the first party to feel the consequences of the disaster. This causes residents or families to be vulnerable to disaster risk. Community groups at risk of disasters are seen from their age group and gender.

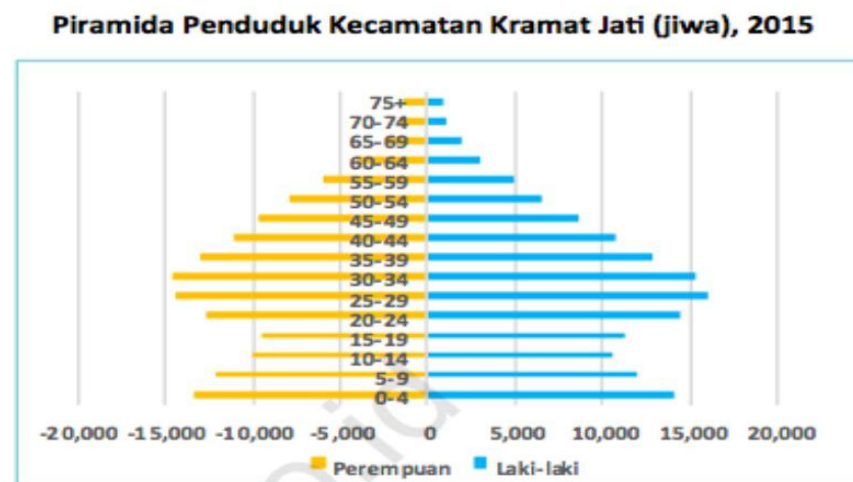
They also stated that during the flood disaster, before outside assistance arrived, residents of the Cawang area had prepared themselves to survive during the flood, including after getting information in the form of SMS, announcements from mosques or hearing sirens, they immediately moved valuables and their families to on the second floor, if the flood nearly exceeds the second-floor limit, they will take refuge in safe highland areas such as Jakarta, the field at the blind housing of the DKI Jakarta Provincial Government social service, and Budhi Asih Hospital.

The following is the population data of the Cawang Village community:

**Jumlah Penduduk Kecamatan Kramat Jati  
Menurut Kelurahan, 2015**

Kelurahan	Laki-laki	Perempuan	Jumlah	Rasio Jenis Kelamin
(1)	(2)	(3)	(4)	(5)
Bale Kambang	18 500	17 779	36 279	104
Batu Ampar	28 666	28 097	56 763	102
Tengah	26 768	26 773	53 541	100
Dukuh	14 569	13 869	28 438	105
Kramat Jati	17 019	18 116	35 135	94
Cililitan	21 506	22 894	44 400	94
Cawang	17 708	16 540	34 248	107
<b>Jumlah</b>	<b>144 736</b>	<b>144 068</b>	<b>288 804</b>	<b>100</b>

Sumber : Proyeksi Penduduk, BPS



Sumber : Proyeksi Penduduk, BPS

**Figure 4:** Population Data of the Cawang Community

#### • History of floods in Cawang Village

From the explanation of the Chairperson of RW and RT Chairmen, the information was obtained that the flood disaster had become a routine occurrence in Cawang Village. This event usually occurs if the intensity of rainfall is high and continues for several days in Bogor or Depok areas. The flood has a water level between 50 cm and 1 meter; the height reaches 3 meters during the 2007 flood. In this situation, usually, the RT heads and the heads of RW were prepared to monitor information from the Katulampa Door Guard and information from kelurahan about the river water overflow

from Bogor. At an altitude of 1 meter, usually, residents still choose to stay in their respective homes. They will only evacuate if the height exceeds 1 meter from their home.

They also stated that the latest floods occurred in 2014. Cawang Village, especially RW 02, 03, 04, 05 and 08 were affected by the flood. The water level when the flood reaches 1 meter. This flood is a disruption to the routine of people's lives such as going to school for children and earning a living for parents or adults, besides that a lot of property damage occurs.

#### • Flood Characteristics in Cawang Village

Cawang is one of the areas prone to flooding, especially in RW 02, 03, 04, 05 and 08. The area is the lowest and closest to the lip of the Ciliwung river. If seen from the type, the floods that occur in Cawang are often referred to by them as the term flood. This flood is a flood caused by runoff from upstream rivers. In the case of the Cawang flood, this flood occurred because of an increase in water discharge from the Bogor and Depok areas. The increase in water discharge is caused by high and continuous rainfall in the upstream area of the river. In addition to the increase in water discharge, one of the drivers of the occurrence of flooding in Cawang is the tidal sea conditions. When seawater is the tide, the water that passes through the Ciliwung river cannot be flowed towards the sea, so that the water overflows. Likewise high local rainfall will exacerbate flood conditions in the region.

Nevertheless, this flood can be detected and predicted earlier. The warning signs used to predict floods include the height of the water discharge at the Katulampa, Depok and Manggarai sluice gates, weather conditions in Bogor and Depok, and the condition of the seawater whether it is high tide or low. This warning is obtained between 6 and 8 hours before a flood occurs. This flood is different from banjir bandang, floods that occur in the Cawang area occur relatively slowly, and can be said to be seasonal flooding which only occurs in the rainy season. Access to information patterned from Katulampa officers until the Cawang Village has been built since 2007 based on the experience of the major floods at that time.

#### • Characteristics of Disaster Prone Communities in Cawang Village

The Sustainable Livelihoods Assessment (SLA) approach conducted by researchers in the Cawang Sub-District Area, East Jakarta aims to identify five (5) capital in the face of floods, namely human capital, social capital, natural capital, physical capital, and financial capital. This approach is based on the belief that the community has potential that can be empowered so that they have the ability to independently detect threats or potential disasters that will emerge. The results obtained from in-depth interviews with 3 residents living in flood-prone areas in Cawang Village are as follows:

**Table 1:** Interview Data

Capital	Indicators	FK
Human Capital (18)	Knowledge of Landslide Disaster Risk Reduction	5
	<ul style="list-style-type: none"> <li>Attend disaster management training related to landslides</li> <li>Involved in handling landslides</li> <li>Had been a victim of a landslide</li> <li>Find out the causes of landslides in the area</li> <li>Know the signs before the landslide</li> </ul>	
	Community Behavior	4
	<ul style="list-style-type: none"> <li>Make efforts to protect the environment to avoid landslides</li> <li>Make efforts to maintain the environment around the slopes</li> <li>Conduct preventive activities regularly and continuously</li> <li>Conduct tree planting initiatives in areas that experience deforestation in the Tajur Halang area</li> </ul>	
Social capital (19)	Citizen Preparedness	5
	<ul style="list-style-type: none"> <li>Knowing that the location of his residence in an area prone to landslides</li> <li>Make prevention efforts to avoid landslide hazards</li> <li>There are plans related to disaster management</li> <li>Have an understanding of landslide early warning</li> <li>There is learning after the experience of landslide events</li> </ul>	
	Community preparedness	4
	<ul style="list-style-type: none"> <li>There are activities carried out by the community together to reduce the risk of landslides</li> <li>There is training or outreach related to landslide management in the Tajur Halang area</li> <li>There are no community contingency plans in the face of landslides</li> <li>There is no place that has been agreed upon by the community to be used as a refuge when landslides occur</li> </ul>	
	Formal organizational structure patterns	3
	<ul style="list-style-type: none"> <li>There are formal organizations in the area of the father/mother related to landslide disaster management</li> </ul>	

Capital	Indicators	FK
	<ul style="list-style-type: none"> <li>Village officials are involved in disaster management organizations</li> <li>There have been no activities related to Disaster Management that have been carried out in the village of Tajur Halang</li> </ul>	
	The pattern of informal organizational structure	5
	<ul style="list-style-type: none"> <li>There is a disaster alert group in the Tajur Halang area</li> <li>There is the involvement of citizens in the disaster alert group</li> <li>The organizational structure is under the village government</li> <li>There are no activities related to Disaster Management that have been carried out by disaster groups</li> <li>Karang Taruna has not been active and knows about disaster</li> </ul>	
	The pattern of Relationships between citizens	4
	<ul style="list-style-type: none"> <li>There are activities based on mutual cooperation that are routinely carried out</li> <li>The close kinship between residents in the village</li> <li>When there is a landslide the community selves to help one another</li> <li>Community members know each other well with each other</li> </ul>	
	The process of communication between citizens and the government	2
	<ul style="list-style-type: none"> <li>There are regular meetings between residents and the village government</li> <li>The government has conducted socialization related to disaster management</li> </ul>	
	Government policy on Disaster Management (Special for village government)	6
	<ul style="list-style-type: none"> <li>Village parties do not have a special budget to allocate in disaster management</li> <li>The village provides funding assistance during a landslide</li> <li>The village party does not have disaster management related documents such as RPB, Renkon, or disaster management Action Plan</li> <li>The village has formed a village volunteer/standby team</li> <li>Community involvement in the village volunteer/standby team</li> <li>Disaster alert group has not been socialized in landslide areas</li> </ul>	
	Natural Capital(1)	1
Physical capital (7)	Environmental Resilience	
	<ul style="list-style-type: none"> <li>There are no tall trees in the village that can prevent landslides</li> <li>There are terraces in the hillsides in the Tajur Halang area</li> </ul>	
	Structural mitigation;	4
	<ul style="list-style-type: none"> <li>There are the formation of gabions or landslide retention buildings in landslide-prone areas</li> <li>There is no place for evacuation in the event of a landslide</li> <li>There are already lines and evacuation signs</li> <li>There are already landslide early warning systems</li> </ul>	
	Settlement	
	<ul style="list-style-type: none"> <li>There are residential areas in areas prone to landslides</li> </ul>	-
	Public and social facilities	2
	<ul style="list-style-type: none"> <li>There are public facilities that can be used when landslides occur</li> <li>There are social facilities that can be used during a landslide disaster</li> </ul>	
	Early recovery system	2
	<ul style="list-style-type: none"> <li>There are already landslide early warning systems</li> <li>There is a communication network to inform disaster information to residents</li> </ul>	
Financial Capital (2)	Community Work Activities	1
	<ul style="list-style-type: none"> <li>Most of the residents are farmers, farmers, and traders</li> <li>The location of work is an area prone to landslides</li> <li>There has never been a landslide in the working location</li> <li>There are no other alternative livelihoods if landslides hit the workplace</li> </ul>	
	Disaster Savings Fund	-
	<ul style="list-style-type: none"> <li>There are no savings/deposits in preparation for landslides</li> <li>There has been no fundraising done by the community</li> <li>Use of village funds for emergencies</li> </ul>	
	Total toughness	49

### Research Results Characteristics of Communities in Disaster-Prone Areas in Cawang Village

From the results of the research obtained, based on the experience of the residents, two of the largest outflows of capital were obtained namely social capital and human capital, while the least capital outflows were natural capital.

### Perception of the Risk of Residents in Cawang Region



Citizens' perceptions of a threat will be different when the residents continue to face the same disaster; their perceptions of the disaster will also change. This happens in the Cawang area, residents who have experienced flooding more than twice have another view of flooding. Residents have the habit of measuring floods by using their height as a reference or using the height of their homes. When residents were asked about their opinions about flooding, residents said that the flood was normal if the flood height only reached the chest of an adult or the flood had not reached the second floor of their home. Usually, at these heights, residents still do not want to evacuate because they think that a flood is a normal event or flood that can still be overcome. This risk perception makes them more alert to the threat of flood hazards that will follow if the rainfall does not stop for more than a week and leaves the water from the Katulampa floodgate because the water level will last a long time or take longer to recede.

The new residents will consider the flood dangerous or just about to evacuate when the existing water level has reached a height above their height or the existing water has started to inundate the second floor of their house. It is at this height that the new residents really feel the flood disturbs their daily activities.

To find out the perceptions of residents about flooding, researchers conducted FGDs on the category of flooding using high and long periods of flooding. Based on the results of discussions with the residents, the following results emerged:

1. Normal: Water levels from 10 cm to 60 cm and occur for less than 1 day to 2 days. Normal conditions for residents are when flooded with sheer height to the knees or thighs of adults.
2. Disruptive but still manageable: water levels from 60 cm to 110 cm and occur for 1 day to 4 days. The flood condition that is disturbing for the family is when the flood has reached the waist of an adult to the chest of an adult. This condition is disturbing because at these height families who want to travel are forced to bring change clothes, replace wet clothes.
3. Cannot be overcome: water levels from 120 cm to 180 cm and occur for 4 days to 7 days. At this height, the water has exceeded the average head of an adult, so sometimes this also makes it difficult for adults to get out of the house, and at this height, some people have started to flee to refugee camps.
4. Major disasters: water levels from 180 cm to 240 cm and occur for 3 days to 7 days. When the floods have begun to reach this height, almost all of the people go to evacuation posts because usually, flood water has entered the second floor of people's homes.
5. Fatal: water levels of more than 240 cm occur more than one day. At this height, the entire community had already fled to the evacuation post, because the flood had already entered the 2nd floor even on the 3rd floor of their house.

**Table 2:** Risk Perception Matrix of Cawang Residents

Water depth (cm)	Flood Duration			
	< 1 day	1-2 days	3-7 days	>7 days
10-60	Normal	Normal	Distracting but can overcome	Distracting but can overcome
60-100	Distracting but can overcome	Distracting but can overcome	Distracting but can overcome	Can not overcome
120-180	Distracting but can overcome	Distracting but can overcome	Can not overcome	Can not overcome
180-240	Can not overcome	Can not overcome	Big disaster	Big disaster
>240	Fatal	Fatal	Fatal	Fatal

**Source:** adapted from Marschiavelli's research with data obtained from Cawang FGD

Based on the residents' risk perceptions above, it can be concluded that the risk perceptions of Cawang residents will be flooded with a height of 110 cm but can be overcome. In this case, the residents realized that such water levels could disrupt their activities but because the equipment was sufficiently sufficient they could still overcome it by cooperating without waiting for help from the government. This is enough to show that residents in the Cawang sub-district have a good perception of the threat of flooding because they do not underestimate river water levels but try to reduce the impact of flood risk by gathering information to always be alert in facing floods.

From the results of 5 capital or SLA assets owned by the community faced with strong community characteristics in accordance with the defense perspective, it will be affirmed in the form of behavior and efforts to fight threats (enemies) with war tactics, namely by fighting or attacking with structural mitigation namely making dikes along the river flow that passes through the houses of residents; how to survive through non-structural mitigation; namely by increasing the



capacity of citizens through training and socialization on flood management; and the last is by temporarily withdrawing or avoiding that is to temporarily evacuate from the affected area until conditions are under control.

## CONCLUSION

Based on the results and data analysis of the research conducted, it can be concluded that the capital components of the theory of sustainable livelihood assessment (SLA) can still explain the phenomenon of the capacity of communities living in flood-prone areas, in Kelurahan Cawang, East Jakarta; higher the frequency of the capital component of sustainable livelihood assessment (SLA) means that it has a more significant influence on the capacity of the community itself. This capital model is very necessary for increasing the capacity of PRBBK in flood-prone areas, in Kelurahan Cawang, East Jakarta. There are 2 capital components of sustainable livelihood assessment (SLA) that have the highest frequency of occurrence. The 2 capital components are human capital and social capital while the natural capital component is the lowest compared to the others. However, in addition to the 2 capital components of sustainable livelihood assessment (SLA) above, the other components are physical capital and financial capital needed to help citizens to overcome the effects of floods that are fully experienced and help residents to have resilience.

Citizens in Cawang Sub-District, East Jakarta have 5 components of capital that are quite good, because they are found by the behavior of citizens such as fathers, mothers, and youth who support the capacity of disaster-based communities. This can be seen from the active role of the fathers, the mothers, and youths of the Karang Taruna who work together in mutual service activities such as cleaning the river from garbage, culture of throwing garbage in its place; Residents in Cawang Sub-District, East Jakarta have a fairly good risk perception of flood risk and knowledge to deal with flooding if it occurs. The community has understood that the intensity of rainfall in the Bogor area, Depok as a trigger for a flood of shipments in their area. They are now wary of rainfall, the intensity and the period of flooding will arrive in their area. Citizen awareness increases over time gradually. This is because the residents remain vigilant even though they have often been flooded; From the community capacity analysis it was found that the community in Cawang Sub-District, East Jakarta had a good early warning system with the existence of a communication network and BPBD and kelurahan that was active and effective in submitting news through SMS to RT, RW and PB2M (Community Based Disaster Management) teams; thus, the community of Cawang, East Jakarta is a fairly resilient community. The community has tried to reduce vulnerability and increase its physical and human capacity. Cawang Urban Village Community, East Jakarta has been able to anticipate all kinds of threats in this matter; the community that is able to protect/fight or avoid threats; people who are able to adapt quite well and can adjust to the conditions that are happening. The community has shown high self-awareness because they have participated in planning Disaster Risk Reduction activities in the area where they live; Cawang, East Jakarta needs to get outside intervention in an effort to increase capacity both physically and human resources. These external interventions can be carried out by the government, in this case, BPBD DKI Province, academics such as the University and the Center for Disaster Studies, Scouts and NGOs or other NGOs.

The limitation of this study is that there is a cultural bias because the theory used is a theory originating from the western region and there is a sample bias because it does not involve the public more evenly and the government as the policyholder.

## SUGGESTIONS

Based on the above conclusions it is suggested:

1. For residents who live in Cawang, East Jakarta, the filtered data can be used as input to improve community resilience when the floods come. Communities need to increase natural capital such as planting water retaining trees; physical capital such as dredging river sedimentation carried out periodically (monthly); financial capital such as disaster savings that are collected independently by citizens.
2. For the DKI Jakarta Provincial Government to conduct a review and give attention to the community in the Cawang Sub-District area, East Jakarta. So that they can help improve community resilience in terms of physical resilience that is like completing the equipment needed when evacuating when the floods come.
3. It is recommended for the Lurah, RW, and RT to work together in directing and improving the quality of community resilience in overcoming flood problems.
4. It is recommended to conduct further research on further evaluating the results of research to see the effectiveness of community resilience in urban flood-prone areas other than the Cawang Sub-district, East Jakarta so that it can be used as a basis for the process of increasing PRBBK capacity in flood-prone areas in Indonesia.
5. This research can be used to use the highest weight by looking at the frequency. Virtue can only be obtained based on the number of capital components in sustainable livelihood assessment (SLA) that appear (based on frequency). However, this study has not found a norm that can determine the main and supporting division of capital components.
6. This research uses theories developed from local communities, therefore the recommendations need to be formulated or carried out by the approach of sustainable livelihood assessment based on values in non-western communities.

## LIMITATION AND STUDY FORWARD

This research is limited to one case that occurred in the Cawang Village community. The results of this study can be beneficial for film activists and stakeholders. Further research is needed on the disaster response area.

## IMPLICATION

Further research is needed in cases that are in accordance with future technological developments. This research will contribute to the knowledge of the disaster response area

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## REFERENCES

1. Arcala Hall, R. (2008). Civil-military cooperation in international disaster response: the Japanese Self-Defense Forces' deployment in Aceh, Indonesia. *The Korean Journal of Defense Analysis*, 20(4), 383–400. <https://doi.org/10.1080/10163270802507310>
2. Beder, S. (1996). *The nature of sustainable development*. Scribe Publications Newham. <https://doi.org/10.7205/MILMED.171.1S.12>
3. Chretien, J.-P., Glass, J. S., Coldren, R. C., Noah, D. L., Hyer, R. N., Gaydos, J. C., & Malone, J. L. (2006). Department of defense global emerging infections surveillance and response system Indian Ocean tsunami response. *Military Medicine*, 171(suppl\_1), 12–14.
4. Goodwin, N. R. (2003). *Five kinds of capital: Useful concepts for sustainable development*.
5. Hörnqvist, M. (2004). Risk assessments and public order disturbances: new European guidelines for the use of force? *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 5(1), 4–26. <https://doi.org/10.1080/14043850410033699>
6. Laksmana, E. A. (2010). *The Indonesian defense forces and disaster relief: potential pitfalls and challenges*. <https://doi.org/10.1355/9789814345491-009>
7. Obrist, B., Pfeiffer, C., & Henley, R. (2010). Multi-layered social resilience: A new approach to mitigation research. *Progress in Development Studies*, 10(4), 283–293. <https://doi.org/10.1177/146499340901000402>
8. Omer, H. (2001). Helping parents deal with children's acute disciplinary problems without escalation: The principle of nonviolent resistance. *Family Process*, 40(1), 53–66. <https://doi.org/10.1111/j.1545-5300.2001.4010100053.x>
9. Osbahr, H., Twyman, C., Adger, W. N., & Thomas, D. S. G. (2008). Effective livelihood adaptation to climate change disturbance: scale dimensions of practice in Mozambique. *Geoforum*, 39(6), 1951–1964. <https://doi.org/10.1016/j.geoforum.2008.07.010>
10. Parkin, S. (2000). Sustainable development: the concept and the practical challenge. *Proceedings of the Institution of Civil Engineers*. <https://doi.org/10.1680/cien.2000.138.6.3>
11. *Engineers-Civil Engineering*, 138(6), 3–8. Thomas Telford Ltd.
12. Pascasarjana, S. (2017). *Pendugaan debit aliran memanfaatkan radar cuaca dan model hidrologi di das ciliwung hulu (kasus stasiun katulampa) ali wardhana*.
13. Puspito Sari, D. A., Listiyowati, I., Nefianto, T., & Lasmono. (2018). The Discrepancy between the Programs and Disaster Management Policy in Klapanunggal District, Bogor, West Java. *IOP Conference Series: Earth and Environmental Science*, 135(1). <https://doi.org/10.1088/1755-1315/135/1/012011>
14. Republik Indonesia. (2002). *Undang-Undang Republik Indonesia Nomor 3 Tahun 2002 Tentang Pertahanan Negara*.
15. Republik Indonesia. (2007). *Undang-Undang Republik Indonesia Nomor 24 Tahun 2007 Tentang Penanggulangan Bencana*.
16. Rusdiana, O. (2003). *Hubungan kerjasama institusi dalam pengelolaan daerah aliran sungai: kasus DAS Ciliwung*. Fakultas Kehutanan, Institut Pertanian Bogor.
17. Sakethi, M. (2010). *Pengendalian Banjir Pemerintah Provinsi DKI Jakarta*. Jakarta.
18. Sari, D. A.P., Innaqa, S., & Safrilah. (2017). Hazard, Vulnerability and Capacity Mapping for Landslides Risk Analysis using Geographic Information System (GIS). *IOP Conference Series: Materials Science and Engineering*, 209(1). <https://doi.org/10.1088/1757-899X/209/1/012106>
19. Sari, D.A.P., Ramadhonah, R. Y., Innaqa, S., Sugiana, A., Irawan, D. E., Ratnadewi, ... Harmanto, D. (2018). Obstacle and driving factors of Ciliwung river revitalization and community acceptance of the new land use. *International Journal of Engineering and Technology(UAE)*, 7(2.14 Special Issue 14), 256–259.
20. Sari, Deffi Ayu Puspito, Madonna, S., & Fitriani, A. (2018). *Environmental Health Evaluation for Jatinegara Apartment from the Perception of Kampung Pulo Displaced People*. 7, 224–228. <https://doi.org/10.1111/jocs.12132>
21. Sari, Deffi Ayu Puspito, Malahayati, M., Nefianto, T., & Kertawidana, I. (2018). Disaster Early Warning and

- Information Services Meteorology, Climatology and Geophysics Agency's Employees Performance Observed from their Motivation and Competency. *International Journal of Multi-Discipline Science (IJ-MDS)*, 1(2), 129–136. <https://doi.org/10.26737/ij-mds.v1i1.430>
22. Sukma, R. (2010). Indonesia's Security Outlook, Defence Policy, and Regional Cooperation. *Asia Pacific Countries' Security Outlook and Its Implications for the Defense Sector*, 5, 3–24.
  23. Twigg, J. (2009). *Sustainable Livelihoods Approaches*.
  24. Veleva, V., Hart, M., Greiner, T., & Crumbley, C. (2001). Indicators of sustainable production. *Journal of Cleaner Production*, 9(5), 447–452. [https://doi.org/10.1016/S0959-6526\(01\)00004-X](https://doi.org/10.1016/S0959-6526(01)00004-X)