

IDENTIFYING THE SCHOOL COMMUNITY PREPAREDNESS RATE OF FLOOD DISASTER OF 34 PUBLIC JUNIOR HIGH SCHOOL BANDAR LAMPUNG

Listumbinang Halengkara

ARTICLE INFORMATION

Article status:

Received: June, 12th 2020

Accepted: July, 20th 2020

Published online: August, 28th 2020

Keywords:

Flood disaster, preparedness rate, school community

Kata kunci:

Bencana banjir, kesiapsiagaan bencana, komunitas sekolah

Correspondent affiliation:

Geography Education, Fakultas Keguruan dan Ilmu Pendidikan, University of Lmapung, Bandar Lampung, Indonesia;

Correspondent email:

Listumbinang,halengkara@fkip.unila.ac.id

ABSTRACT

This research aims to describe the school community preparedness in SMP Negeri 34 Bandar Lampung. The populations in this quantitative descriptive research are the entire school community of SMP Negeri 34 Bandar Lampung; consist of school administrators, teachers, and students. The data were collected by using questionnaires, observation, interview, and documentation. The preparedness Index Formula from LIPI is used for data analysis.

The result indicates that the school community preparedness in SMP Negeri 34 Bandar Lampung was categorized as "prepared" with the index value 72,17, while school community components consist of school as institutions (S1) was categorized as "Prepared" with index value of 73,35, teacher (S2) was categorized as "prepared" with index value of 72,87, and student (S3) was categorized as "prepared" with index value of 65,75.

Penelitian ini bertujuan untuk mendeskripsikan tingkat kesiapsiagaan komunitas sekolah di SMP Negeri 34 Bandar Lampung dalam menghadapi bencana banjir. Penelitian ini dilakukan dengan menggunakan metode deskripsi kuantitatif. Populasi dalam penelitian ini adalah komunitas sekolah SMP Negeri 34 Bandar Lampung yang terdiri dari pengelola sekolah, guru, dan siswa. Pengumpulan data dilakukan dengan menggunakan kuisioner, observasi, wawancara, dan dokumentasi. Sedangkan teknik analisis data yang digunakan dalam penelitian ini adalah rumus Indeks Kesiapsiagaan Sekolah dari LIPI.

Hasil penelitian ini menunjukkan bahwa kesiapsiagaan komunitas sekolah SMP Negeri 34 Bandar Lampung masuk ke dalam kategori siap dengan nilai indeks 72,17, sedangkan komponen komunitas sekolah terdiri dari sekolah sebagai lembaga (S1) masuk ke dalam kategori siap dengan nilai indeks 73,35, guru (S2) masuk ke dalam kategori siap dengan nilai indeks 72,87 dan siswa (S3) masuk ke dalam kategori siap dengan nilai indeks 65,75.

Copyright © 2020 | geography-UNILA
This open access article is distributed under a
Creative Commons Attribution (CC-BY) 4.0 International license

Introduction

The Flood is a type of disaster that often occurs in Lampung Province. According to Akbar (2019), Flooding is a disaster that might occurs if water originating from a river overflows into the riverbank area and its surroundings and inundates areas that should not be inundated by water. According to Badan Penanggulangan Bencana Daerah (BPBD) of Lampung Province, in a span of 2010 to 2019, a total of 264 disasters occurred which resulted in 187 deaths, 1409 people affected and displaced, and 29 schools damaged (BPBD, 2019).

One of the areas in Lampung Province that experienced frequent flooding during this period is Bandar Lampung city. The flood in the Bandar Lampung mainly occurs during the rainy season. During 2019 to February alone there have been 15 flood points spread in across 9 sub-districts, namely Labuhan

Ratu, Kedaton, Sukarame, Way Halim, Kedamaian, Sukabumi, Tanjung Karang Timur, Tanjung Karang Pusat and Panjang (BPBD of Lampung Province, 2019). Necessarily, this needs to be a concern for local governments and also the community because flood will inevitably cause adverse impacts, both damage to infrastructure such as buildings and disruption of people's daily activities.

One of infrastructures that is often affected by flood in Bandar Lampung is a school building. In the last 10 years, there were 5 schools in Bandar Lampung that were damaged by floods. One of them is SMP Negeri 34 Bandar Lampung. This school is one of the schools which is often hit by flood during the rainy season because it is located on a riverbank area which is indeed a flood-prone area (Figure 1). According to Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat No 28 Tahun 2015 Pasal 7 concerning about the Determination of River Boundaries and Lake Borders, the embanked river boundaries in urban areas are determined to be at least 3 (three) meters from the outer edge of the embankment foot along the river channel. Therefore, there should be no building or other community activities on the right and left bank of the Way Balau River. Because this area is intended as a catchment area and an area for anticipation, so that the community remains safe if the responsibility of the river landslides or the river water overflows at any time.



Figure 1. Location of SMP Negeri 34 Bandar Lampung.

In reality, in the field, there are still houses built within the riverbank area, including the complex of SMP Negeri 34 Bandar Lampung. Based on the measurement results during the initial observation, it was found that the distance between the walls of the school building and the river is only about 1 meter. This river border condition can be observed in Figure 2.



Figure 2. Situation at riverbank of Way Balau River.

Yuneri (2005) through a research that has been conducted states that the Way Balau River is only able to accommodate the water discharge of $0.34 \text{ m}^3/\text{second}$ (13.82%) of the total discharge in the 5-year return period which reaches $2.64 \text{ m}^3/\text{second}$. This means that only 13.82% of the total discharge for the 5 year period can be accommodated by this river, while 86.18% will be the volume of flooding or standing water. In line with the data from the study, since it was founded in 2016, SMP Negeri 34 Bandar Lampung which is located on the border of the Way Balau River has been recorded as having been hit by major floods twice, namely in 2017 and in 2019. The impact of the disaster included damage to them. important school

documents, computer units, and hundreds of book collections in the library. In addition, the floods that occurred also disrupted the teaching and learning process.

The great impact and damage caused by the flood at SMP Negeri 34 Bandar Lampung is the reflection of the lack of disaster preparedness. Most of the problems that arise as a result of the disaster are the result of the lack of infrastructure provision and inadequate planning in the management of the affected areas. In other words, the element of disaster risk is still quite high. The element at risk is the degree to which an element is likely to experience a hazardous impact. These elements can be residents, buildings, public services, economic activities and infrastructure (Marfai et al., 2008).

Disaster is inevitable, but community can prepare to reduce the dangers of disasters. (Cindrawaty Lesmana, 2015). Disaster risk reduction action is urgently needed to reduce and eliminate the risk of flood disasters through reducing the threat and vulnerability of those who are threatened by disaster. Preparedness is one of the stages to anticipate disasters. Nick Carter, 1991 in LIPI UNESCO/ISDR, 2006) describes the concept of preparedness as actions that enable governments, organizations, communities, community and individuals to respond to a disaster situation quickly and appropriate. Included in preparedness measures are the preparation of disaster management plans, maintenance of resources and training of personnel/individual.

School is an effective media in implementing disaster preparedness, especially flood disasters. The school community has enormous potential as a source of knowledge, disseminating knowledge about disasters and practical instructions on what to prepare before a disaster occurs, what to do during and after a disaster (Jan Sopaheluwakan, 2006).

School community, in which in this case consists of school administrator, teacher, and student, has an important role in realizing or implementing disaster mitigation actions, especially non-structural mitigation. Non-structural mitigation can be realized in the form of implementing school curriculum on disasters as well as implementing school extracurricular activities such as in scouting or scouting activities, red cross youth, and disaster mitigation-based training activities (Marta, 2019). As an effort to improve so that the same thing does not happen again in the future, an effort is needed to assess the level of preparedness of the components or the school community so that improvements can be made to things that are deemed lacking.

This study aims to analyze the preparedness of the school community in SMP Negeri 34 for flood disasters that is expected to provide an overview of the efforts needed to improve school preparedness for flood disasters that can occur at any time.

METHODOLOGY

Populations and Samples

Triyono (2017) states that in measuring the level of disaster preparedness, the school community is represented by three groups, namely schools as institutions (S1), teacher (S2), student (S3). The population in this study was the entire school community in SMP Negeri 34 Bandar Lampung which consisted of school administrator, teacher, and student. The total population breakdown can be seen in **Table 1**.

Table 1. Population and Sample of School Community in SMP Negeri 34 Bandar Lampung

No	School Community	Population	Sample
1	School Administrator	4	2
2	Teacher	44	35
3	Student	601	72
	Total	649	109

Source: Field Observation, 2019

This research used purposive sampling in determine the sample. According to Sugiyono (2011), purposive sampling is a sampling technique with certain considerations. In this study, the samples chosen were those who directly involved in school preparedness efforts from every part of the school

community. The selected sample of school administrator consisted of 2 people, namely the principal as the policy maker and the school guard who looks after the school during working hours and outside working hours. The sample of teacher were 35 people, consisting of subject teacher whose material is still related to disaster and mitigation (social science, science, physical education) also teacher who have attended training/workshops/seminars on disaster preparedness. While the sample of student were 72, consisting of student who are actively involved in scouting organizations and Red Cross Youth, as well as student who have attended training/workshops/seminars on disaster preparedness.

Research Variables

LIPI UNESCO/ISDR (2006) states that school community preparedness can be measured based on 5 parameters, namely: 1) knowledge and attitudes, 2) policies statement and guidelines related to disaster preparedness, 3) emergency plan, 4) warning system, and 5) resource mobilization capacity. The variables for each of these parameters can be seen in **Table 2**.

Tabel 2. Parameter and Variables Indexes of School Community to Disaster Preparedness

Parameter	Variabel	
Komponen Sekolah		
Policy Statement	Policy	
	Regulation	
Emergency Planing	First-aid, rescue, safety and security	
	Evacuation plan	
Warning System	Important documents saving	
	Source of disaster warning	
	Installation (technique, equipment, alert and signal)	
Resource Mobilization Capacity	Respond towards the alert of warning	
	Human Resources	
	Technical Guidance and Material Provision	
	Fund	
	Institutional Management	
Monitoring and Evaluation (Monev)	Monitoring and Evaluation (Monev)	
	Teacher and Student Components	
	Knowledge and Attitude	Knowledge
		Attitude toward risk of disaster
	Emergency Planning	Preparation in disasters anticipating
Respond toward flood		
Availability of disaster mitigation materials		
Warning System	Source of Disaster Warning	
	Respond towards the alert of warning	
Resource Mobilization Capacity	Participation in disaster preparedness activities	
	Involvement in the dissemination of related	

Source: LIPI-UNESCO/ISDR, 2006

Data Collecting and Data Analysis

Data collection was carried out through interview method by using a questionnaire. Besides, observation was also done to see thereal conditions in the field. Quantitative descriptive analysis was used in the research to analyze the data. The preparedness index analysis was carried out using parameters from LIPI/UNESCO/ISDR (2006). The categories of school preparedness can be seen in **Table 3**.

Table 3. School Preparedness Level

Parameter Index	Categorize
80-100	Highly prepared
65-79	Prepared
55-64	Almost Prepared
40-54	Less Prepared
<40	Not Prepared

Source: LIPI-UNESCO/ISDR, 2006

The analysis of school preparedness data in this study was detailed based on the components of the school community consisting of school managers (S1), teacher (S2), and student (S3). Each of these components has a different weight in the calculation of the preparedness index. The complete weight of each parameter for each school component can be seen in **Table 4**.

Table 4. Quality of Each Parameters of the Preparedness Index School Community (%).

No	School Community Components (SC)	Parameter					otal
		A	S	P	S	MC	
	School						
(S1)			0	4			4
	Teacher						
(S2)		0					2
	Student						
(S3)		0					4
	Total						
		0	0	3		0	00

Source : LIPI-UNESCO/ISDR, 2006

Where:

- KA : Knowledge and Attitude
- PS : Policy Statement
- EP : Emergency Planning
- WS : Warning System
- RMC : Resource Mobilization Capacity

While the formula for calculating the preparedness index for each school component is as follows:

- School Managers Index (S1)
= 0.29 * PS index + 0.41 * EP index + 0.12 * WS index + 0.18 * RMC index (i)
- Teacher Index (S2)
= 0.71 * KA index + 0.17 * EP index + 0.05 * WS index + 0.07 * RMC index (ii)
- Student Index (S3)
= 0.83 * KA index + 0.08 * EP index + 0.04 * WS index + 0.04 * RMC index..... (iii)

Then to measure the rate of preparedness of the school community, the formula used is as described in Table 5 below.

Tabel 5. Formula of School Community Index (SC)

Keterangan	Rumus Perhitungan
KA Index (SC)	$(30/50) * KA \text{ index (S2)} + (20/50) * KA \text{ index (S3)}$ or $0.60 * KA \text{ index (S2)} + 0.40 * KA \text{ index (S3)}$
PS Index (SC)	PS Index (S1)
EP Index (SC)	$0.61 * EP \text{ index (S1)} + 0.30 * EP \text{ index (S2)} + 0.09 * EP \text{ index (S3)}$
WS Index (SC)	$0.57 * WS \text{ index (S1)} + 0.29 * WS \text{ index (S2)} + 0.14 * WS \text{ index (S3)}$
RMC Index (SC)	$0.60 * RMC \text{ index (S1)} + 0.30 * RMC \text{ index (S2)} + 0.10 * RMC \text{ index (S3)}$
Total of SC Index	$0.50 * KA \text{ index (SC)} + 0.10 * PS \text{ index (SC)} + 0.23 * EP \text{ index (SC)} + 0.07 * WS \text{ index (SC)} + 0.10 * RMC \text{ index (SC)}$

Source :LIPI-UNESCO/ISDR, 2006

RESULT AND DISCUSSION

Preparedness of School Administrator (S1)

Based on the results of interviews and analyzes that have been carried out, it can be seen that of all the parameters measured, namely policy statement, emergency plan, warning systems, and resource mobilization capacity, the parameter index score is more than 50%. In detail, the calculation results clearly can be seen in **Table 6**.

Table 6. Parameter Index of School Administrators Preparedness

No	School Community Component	Parameter	
		P	R
1	School Administrator	5	8

Source: Data Analysis, 2019

Based on the results of the analysis on each parameter of component School Administrator, then the calculation is done to get the value of School Administrator Index (S1) according to the formula, the value is 73.35. It means that based on the level of preparedness according to LIPI-UNESCO/ISDR (2006), school administrators as one of the components of the school community is categorized in the prepared category.

Preparedness of Teachers (S2)

The level of teacher preparedness is assessed by four parameters, consisting of knowledge and attitudes, emergency plan, warning systems, and resource mobilization capacity. The results showed that the values for all these parameters were more than 50%. In detail, the calculation results can be seen in **Table 7**.

Table 7. Parameter Index of Teachers Preparedness (S2)

No	School Community Component	Parameter	
		K	R
1	Teachers (S2)	7	6

Source: Data Analysis, 2019

After the value of each parameter was obtained, the Teacher Index analysis was then undertaken according to the formula used. The results of the calculation of the Teacher's index (S2) showed that the value is 72.87. It means that the same as the School Administrator component, Teacher is also categorized in prepared category.

Preparedness of Students (S3)

Similar to teacher, the level of preparedness of student (S3) is also assessed based on parameters, which include knowledge and attitude, emergency plans, warning system, and resource mobilization capacity. The results showed that the values for all these parameters were more than 50%. In detail, the calculation results can be seen in **Table 8**.

Table 8. Parameter Index of Students Preparedness (S3)

No	School Community Component	Parameter	
		K	R
1	Students (S3)	6	7

Source: Data Analysis, 2019

Based on the results of the calculations carried out, the preparedness index of student obtained a value of 65.75. It means that this component, student is also categorized in prepared category.

School Community Preparedness

The school community preparedness index is a composite index to determine the preparedness of all school components including; school (S1), teacher (S2) and student (S3). The parameter index for each component of the school community can be seen in **Table 9**. The results of the calculation of the School Community Index of SMP Negeri 34 Bandar Lampung can be seen in **Table 10**.

Table 9.Parameter Index School Community Components Preparedness

No	School Community Component	Parameter					INDEX
		AP	S	P	S	MC	
1	School(S1)	6	3.33	6.25	0	1.25	3.35
	Teacher (S2)	4.74		3.05	8	7.08	2.87
	Student(S3)	4.07		1.11	1.66	0.41	5.75

Source: Data Analysis, 2019

Table 10.Calculation of School Community Index (SC).

KAP Index(CS)		$(0,60 \times 74,74) + (0,40 \times 64,07)$ 44,84 +25,63 70,47
PSIndex(CS)		53,33
EP Index(CS)		$(0,61 \times 76,25) + (0,30 \times 63,05) + (0,09 \times 81,11)$ 46,51 +18,91 +7,29 72,71
WSIndex (CS)		$(0,57 \times 100) + (0,29 \times 88) + (0,14 \times 81,66)$ 57 +25,52 +11,43 93,86
RMCIndex (CS)		$(0,60 \times 91,66) + (0,30 \times 67,08) + (0,10 \times 81,25)$ 55 + 20,12 +8,12 83,24
CS Index in total		$(0,50 \times 70,47) + (0,10 \times 53,33) + (0,23 \times 72,71) + (0,07 \times 93,86) + (0,10 \times 83,24)$ 35,23 +5,33 +16,72 +6,57+8,32 72,17 (Prepared)

Source: Data analyzed by Researcher, 2019

CONCLUSION

School Community preparedness of SMP Negeri 34 Bandar Lampung is in the prepared category with an index value of 72.17, where the component school consisting school as an institution (S1) is in the prepared category with a value of 73.35, component teachers (S2) is in in prepared category with a value of 72.87 and and component students (S3) is categorized in prepared category with a value of 65.75.

However, school is still trying to do disaster mitigation to overcome flood disaster through some efforts including: (1) School Guard Component Effort, including monitoring river water levels during the rainy season, reporting flood via telephone, SMS, etc, victim evacuation, electronic goods and important documents, (2) Component School efforts include integrating or inserting material on disasters and disaster risk reduction into relevant subjects, providing materials and books about disasters and the availability of groups that can be used for preparedness, (3) Component Teacher Efforts, including providing disaster learning and disaster risk reduction to students and carrying out disaster simulations with students, and (4) Component Student Efforts, including improving student skills on evacuating disaster victims and first aid through school organizations such as scouts, Red Cross Youth, etc.

Based on the results of field observation, school also still need to develop policy statement and guideline for school preparedness against flood disaster which include forming disaster preparedness groups, making map and evacuation routes, organizing little doctor/Red Cross Youth, compiling guidelines (Standard Operating Procedure) for first aid, forming regular evacuation procedures, providing evacuation equipment and more frequently conducting flood disaster evacuation and simulation drills, delegating teacher and student to attend seminars, discussions, lectures, workshops or socialization about disasters, besides that it is also expected that schools will be more actively involved in the disaster preparedness network.

Teachers are expected to be more active in participating seminars, socialization, training, discussions on disaster preparedness and then it is expected to inform students the results, teacher needs to increase the knowledge of their students by providing disaster learning to their students and carry out simulations together with the student and evacuate flood disaster and be more actively involved in school disaster preparedness cluster/group.

Students need to improve their knowledge and skills in disaster evacuation through school organizations such as Scouts, Red Cross Youth or others, participating the simulations and evacuation of flood disaster/learning/ socialization held by teachers, schools or the government and being more active in school disaster preparedness groups.

REFERENCES

- Akbar Rizaldy. 2019. Study Of Flood Characteristic in Cikalumpang River by Using 2D Flood Model. *ATEC Web. Of Conferences*, 270
- Carter, WN. 1991. *Disaster Manager's Handbook*. Manila : ADB.
- Cinderawaty Lesmana. 2015. Kesiapsiagaan Komunitas Sekolah dalam Menghadapi Bencana di Kabupaten Magelang. *Jurnal Teknik Sipil*, Volume 5 No 1 Tahun 2015
- Jan Sopaheluwaken. 2006. *Kajian Kesiapsiagaan Masyarakat dalam Mengantisipasi Bencana*. LIPI UNESCO/ISDR
- LIPI/UNESCO/ISDR.2006. *Kajian Kesiapsiagaan Masyarakat dalam Mengantisipasi Bencana Tanah Longsor dan Tsunami*. Jakarta : Deputi Ilmu Pengetahuan Kebumihan Lembaga Ilmu Pengetahuan Indonesia.
- Marfai, M.A. & King L. 2008. Potential Vulnerability Impication of Coasatal Inundation Due To Sea Level Rise for the Coastal Zone Of Semarang City, Indonesia, *Environmental Geology*, 54, 1.235-1.245
- Marfai, M.A. & King L., Sartohaji, J, Sudrajat, Buniani, S.R., & Yulianto, F. 2008. The Impact Of Tidal Flooding on a Coastal Community In Semarang, Indonesia, *Environmentalist*, 208, 237-248.
- Marta Nilasari C. P., Tri Wibowo, R., Indrianto, Wahyu T., Purnama Sari, Intan., Hadid Rozi, A., & Diah Ayu W. 2019. Analisis Kesiapsiagaan Komunitas Sekolah Muhammadiyah dalam Menghadapi Bencana Tanah Longsor di Kabupaten Karanganyar. *Jurnal Geografi, Edukasi dan Lingkungan (JGEL)*. Vol 3, No 2, 100-107

- Peraturan Menteri Pekerja Umum dan Perumahan Rakyat No 28 Tahun 2015 Pasal 7 tentang Penetapan Garis Sempadan Sungai dan Garis Sempadan Danau. Jakarta
- Sugiyono, 2019. *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta
- Undang-Undang Republik Indonesia No 24 Tahun 2007 Tentang Penanggulangan Bencana. Jakarta.
- Yuneri Maulina M, M. Zen Kadir, M. Amin. 2005. Evaluasi Kapasitas Tampungan Maksimum Sungai dan Saluran Drainase Terhadap Banjir Maksimum (Studi Kasus Sungai Way Kuala Garuntang, Bandar Lampung). *Jurnal*. Fakultas Pertanian Universitas Lampung : Bandar Lampung