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Media and Disaster Mitigation Literacy

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ABSTRACT

This study aims to examine the effectiveness of disaster communication media in improving disaster mitigation literacy for the community in Pengaron District, Banjar Regency. This study is a quantitative research and uses an experimental type. Data collection techniques used pre-test and post-test questionnaires, observation and documentation. Respondents in this study were people who were affected by floods in January 2022 in Pengaron, Banjar Regency. Supporting informants are BNPB as an institution involved in flood disaster management.

The sample in this study amounted to 20 people for the experimental group and 20 people for the control group with data analysis techniques *Paired sample t-test* using the SPSS application. 22.00.

There was a significant difference between the control group and the experimental group who listened to the intervention media, especially on indicators of scientific and non-scientific knowledge, evidence of disaster interpretation and knowledge to explain disaster context. Meanwhile, on critical and evaluative indicators, assessing disaster conditions, and interpreting disasters, there is no significant difference between the control group without media intervention and the experimental group with media intervention in the Pengaron village community.

Keyword: mitigation literacy, Disaster Communication, Media

INTRODUCTION

Indonesia is at risk of experiencing various natural disasters such as volcanic eruptions, landslides, forest fires, hurricanes and earthquakes. In early 2021, South Kalimantan Province experienced severe flooding in several areas for two weeks. One of them was the flood in Banjar Regency that occurred in January 2021 and repeated in January 2022. Pengaron District experienced the worst flood disaster in January 2022 for 1 week. The water level reaches 2 meters or as high as the roofs of residents' houses.

Based on the results of Yuanita and Hanief's (2021) research entitled Disaster Communication Literacy on Flood Victims in Banjar Regency, it is known that the Banjar Regency BPBD uses information media in the form of Radio, Website and WA Group. Meanwhile, from the informant, Mrs. flood victims, it was known that the media did not reach

them. Mothers learned about the 2021 flood in Banjar Regency through TV, Facebook and *Word of Mouth* (word of mouth).

Based on the results of the research above, it is known that information about disaster communication is not optimally conveyed because the media used is not appropriate. Ideally, disaster communication media are selected according to the target audience. Based on the previous research that the most effective media is *mouth to mouth* besides television. Thus, this study will examine the effectiveness of poster and video media in improving disaster mitigation literacy for the people of Pengaron Village.

Based on the results of field observations, it is known that the people of Pengaron District are accustomed to dealing with flood problems. One of the residents named Siti said she knew information about the flood from the bakal (village officials) on the mountain. If there is a flood, the village will surely flood too.

In the perspective of disaster communication, facts regarding potential risks are a must. According to Haddow and Haddow (2008: 2) in Nugroho and Sulistiyorini:

1. *Customer focus* is understanding what information is needed by the community and volunteers through the creation of a communication mechanism that ensures information can be conveyed accurately and accurately.

2. *Leadership commitment* means that there are leadership factors that play a role in emergency response who must have a commitment to carry out effective communication and be actively involved in the communication process.

3. Situational *awareness* is an effective communication based on the controlled collection, analysis and dissemination of information related to disasters. The principles of disaster communication are the same as effective communication which emphasizes the need for transparency and accountability.

4. Conducting media *partnerships*, namely partnering with the media is one of the foundations for creating effective disaster communication. Mass media such as television, newspapers, radio, and online media are very important to convey accurate information to the public. Cooperation with the media involves understanding the needs of the media with a trained team to work with the media to obtain information and disseminate it to the public.

5. Fifth, from the main foundation for building effective disaster communication, disaster management must be supported by *soft power* and *hard power*. The *soft power* is to prepare community preparedness through socialization and providing information about disasters. While the *hard power* is an effort to deal with disasters with physical development such as building communication facilities, building embankments, erecting concrete walls, dredging rivers and so on. Both approaches are called disaster mitigation which absolutely requires communication.

Literacy is a person's language ability (listening, speaking, reading, and writing) to communicate in different ways according to his goals. Teale & Sulzby in Sari and Pujiono defines literacy in a narrow sense, namely literacy as the ability to read and write. This is in line with the opinion of Grabe & Kaplan and Graff who define literacy as the ability to read and write (*able to read and write*).

METHODS

This study uses a quantitative approach with experimental methods.. Questionnaires are used to measure disaster literacy of the community which will be given before media intervention and after media intervention. Observations were made to observe respondents who took part in a series of research ranging from pre-test to post-test. Based on BPS data in 2017, the population of Pengaron District is 17,668 people. Roecoe, in Sugiyono (2018), states that the number of samples for simple experimental research, which uses an experimental group and a control group, means that the sample sizes are between 10 to 20 samples each. Based on Roscoe's opinion, this study used 20 samples for the control group and 20 samples for the experimental group. Thus, the total sample is 40 people in Pengaron District, Banjar Regency.

Operational Definition of Variable Disaster Mitigation Literation : The series of knowledge that covers all aspects needed as an effort to increase disaster risk reduction (Suharini, 2019) with indicators :

Table 1

Operational Definition of Variable

No	Indicator	Scale	No item	Number of items
1.	Ability to criticize and evaluate problems in various disaster contexts	Interval	1,2,3	2
2	Ability to make appropriate judgments about disaster situations	Interval	4,5,6	2
3	Ability to show evidence, interpret disaster	Interval	7,8,9	2
4	Distinguish scientific/non-scientific questions.	Interval	10,11,12	2
5	Using knowledge to explain, evaluate, and interpret data in several disaster situations	Interval	13,14,15	2
6	Use knowledge to provide explanations related to the disaster context.	Interval	16,17,18	2

Media Intevetion Variabel : literacy is in the form of audio-visual media and informational visual media for disaster mitigation which was developed and made as a treatment and intervention to improve disaster mitigation literacy for the people of Banjar Regency.

The data analysis technique used in this study is to use a different test with 2 types of analysis. The first analysis uses the *Paired sample T-Test*. This test instrument was conducted to test the experimental group in pairs, namely the community sample group before being given treatment in the form of disaster literacy media with the same group after being exposed to the experimental treatment. The second analysis, namely the *Independent Sample T-Test,* was conducted to test the experimental group with the control group which was not treated with media intervention.

Paired sample T-Test and Independent Sample T-Test as test tools because the data obtained are interval and ratio scale and will be tested for data normality to ensure that the data obtained are normally distributed before testing the hypothesis. Hypothesis testing with *Paired sample T-Test and Independent Sample T-Test* using the SPSS application. 22.00.

RESULTS AND DISCUSSION

Based on the results of observations in the field, the people of Pengaron District stated that the worst flood occurred in January 2021 which reached the roof of the house or the water level was about 3 meters. One of the residents named Siti said that the source of information related to flooding was community leaders who were on the mountain, they would report the conditions of rainfall and water depths that could potentially flood.

Based on the results of the pre-test conducted on 20 respondents from the experimental group and 20 respondents in the control group and post-test conducted on 20 respondents in the experimental group, the results were as follows:

Characteristics of Respondents

Flood disaster mitigation, the characteristics of the respondents are as follows.

Table 1. Characteristics of Respondents by Age

Age			
		Frequency	Percent
Valid	15-24	6	15.0
	25-34	13	32.5
	35-44	12	30.0
	45-54	3	7.5
	55-64	1	2.5
	65-70	3	7.5
	Total	38	95.0
Missing	System	2	5.0
Total		40	100.0

Source: Primary Data, 2022

Based on Table 1 above, it can be seen the age distribution of the research respondents, where out of 40 people, there were 38 people who mentioned their age, while the remaining 2 people did not mention age. Of the 38 respondents, the majority of respondents were aged between 25-34 years as many as 13 people or 32%, followed by the age category between 35-44 years by 12 people or 30%. The age of the lowest respondent is 15 years, while the highest age is 70 years.

Table 2. Characteristics of Respondents by Gender

Gender			
		Frequency	Percent
Valid	Male	27	67.5
	Female	13	32.5
Total		40	100.0

Source: Primary Data, 2022

Based on Table 2 above, it can be seen the distribution of research respondents by gender where out of 40 people, there are 27 female respondents and only 13 male respondents. This shows that the majority of research respondents are women, namely 67.5%

B. Hypothesis Test

Based on hypothesis testing in research conducted in Pengaron Village, Banjar Regency, South Kalimantan, the following results were obtained.

1. Group Paired Difference Test Before Media Intervention and After Media Intervention
   Based on statistical data testing through paired samples T-test on 20 people in Pengaron Village, Banjar Regency regarding Media Literacy before and after the video and infographic media intervention, the following results were obtained.

Table 3 Paired Samples Statistics

Paired Samples Statistics			
			Statistic
Pair 1	Before	Mean	2.9590
		N	20
		Std. Deviation	0.44031
		Std. Error Mean	0.09846
	After	Mean	4.2535
		N	20
		Std. Deviation	0.35974
		Std. Error Mean	0.08044

Source: Primary data, 2022

Table 3 above shows that the average disaster mitigation literacy of the Pengaron village community, Banjar Regency before exposure to disaster information media in the form of videos and graphic info was 2.96. While the average disaster mitigation literacy of the Pengaron village community after listening to disaster information media in the form of videos and graphic info is 4.25 based on a value range of 1 -5. Because the average disaster mitigation literacy before listening to the media is 2.96 < after listening to the media (4.25) this shows that there is a descriptive difference in community disaster mitigation literacy between before and after listening to the media.

Tabel 4 **Paired Samples Correlation**

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	before&after	20	-0.504	0.023

Source: Primary Data, 2022

Table 4 above shows the correlation between disaster media and disaster mitigation literacy for the village community of Pengaron, Banjar Regency is – 0.504. This shows that the correlation significance value is 0.023 < probability 0.050, so it means that there is a significant relationship.

Table 5 **Paired Samples Test**

Paired Samples Test								
	Paired Differences							Sig. (2-tailed)
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
before – after	-1.29450	0.69505	0.15542	-1.61979	-0.96921	-8.329	19	0.000

Source: Primary data, 2022

Based on table 5 above, it is known that the value of sig.(2-tailed) is 0.000 < 0.050. This shows that there is a very significant difference between community disaster mitigation literacy before and after listening to videos and graphic info on disaster mitigation literacy. The mean value of -1,295 indicates the difference in the average value of disaster mitigation literacy for the village community of Pengaron, Banjar Regency before listening to the media and after listening to the media. The difference is in the range between lower (-1.620) to upper (-0.970) at the 95% confidence level. The t-count value of -8.329 indicates a negative value at t which means that the literacy value of disaster mitigation in the Pengaron village community before listening to media is lower than their literacy after listening to media literacy. For comparison with the value of t table, the value of – can be omitted. Thus, t count (8.329) > t table (1.729) Based on t table with df 19.

Table 6. Paired Sample Test

| | | **Paired Differences** | | | | | | | |
| | | | | | 95% Confidence Interval of the Difference | | | | |
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Before1 - After1	-1.29444	0.69555	0.15553	-1.61997	-0.96892	-8.323	19	0.000
Pair 2	Before2 - After2	-1.55000	0.81129	0.18141	-1.92969	-1.17031	-8.544	19	0.000
Pair 3	Before3 - After3	-1.18333	0.77592	0.17350	-1.54647	-0.82019	-6.820	19	0.000
Pair 4	Before4 - After4	-1.36667	0.83701	0.18716	-1.75840	-0.97493	-7.302	19	0.000
Pair 5	Before5 - After5	-1.21667	0.76682	0.17147	-1.57555	-0.85778	-7.096	19	0.000
Pair 6	Before6 - After5	-0.75000	1.19392	0.26697	-1.30877	-0.19123	-2.809	19	0.011

Source: Primary Data, 2022

Based on table 6, if viewed in more detail based on the value of each indicator, it is known that 5 out of 6 indicators have a very significant value with a sig. (2-tailed) value of $0.000 < 0.050$, namely indicator 1 (critical and evaluative), indicator 2 (assessing disaster conditions), indicator 3 (evidence of disaster interpretation), indicator 4 (scientific and non-scientific knowledge), and indicator 5 (disaster interpretation). while the 6th indicator, namely knowledge to explain the context of the disaster, has a significant value of $0.011 < 0.050$. This shows that there is a very significant difference in indicators 1-5, and a significant difference in indicator 6 between community disaster mitigation literacy before and after listening to videos and graphic information on disaster literacy. Based on the Mean Value of each indicator, it is known that the highest average value is -1.550, and the lowest average is -0.750. This shows that the difference in the average value of disaster mitigation

literacy for the village community of Pengaron, Banjar Regency before listening to the media and after listening to the media. The highest t-count value is –854 and the lowest t-count is -2.809. The negative value of t means that the literacy value of disaster mitigation in the Pengaron village community before listening to media is lower than their literacy after listening to media literacy, so that the minus value in comparison with the t table can be eliminated. The smallest value, t arithmetic is (2.809) > t table (1.729) So that all t table values based on 6 indicators have a value greater than t table with df 19.

2. Two-Group Difference Test Between Media Intervention Experiment and Control Group

    Based on statistical data testing through Independent samples T-test on 40 people in Pengaron Village, Banjar Regency, the results obtained regarding Media Literacy between the experimental group of video and infographic media intervention and the control group without intervention are as follows.

Table 7 **Group Statistics**

Group Statistics				
Group	N	Mean	Std. Deviation	Std. Error Mean
Control	20	3.5361	0.40356	0.09024
Experiment	20	4.2535	0.35974	0.08044

Source: Primary Data, 2022

Table 7 above shows that the average value of disaster mitigation literacy for the village community of Pengaron, Banjar Regency in the control group, namely the group that was not given media intervention, was 3,536, while the experimental group, namely the group with intervention media exposure to disaster information in the form of videos and graphic info was 4,254 based on a range of values of 1 -5. Because the control group's average disaster mitigation literacy is 3,536 < experimental group (4,254) it shows that

there is a descriptive difference regarding community disaster mitigation literacy between the control group and the experimental group, namely disaster mitigation literacy in the village community group in the group that was not given media intervention with village community groups who were given media intervention.

Table 8. **Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Nilai	Equal variances assumed	0.018	0.894	-5.934	38	0.000	-0.71739	0.12089	-0.96211	-0.47267
	Equal variances not assumed			-5.934	37.509	0.000	-0.71739	0.12089	-0.96222	-0.47256

Source: Primary Data, 2022

Table 8 above shows that the significance value for both the assumption of equivalent variance and unequal variance is the same, namely $0.000 < 0.050$. this means that there is a very significant difference between the literacy of disaster mitigation in the community with video and infographic media intervention and the control community without media intervention. The difference in the mean value is -0.717 where the value (-) indicates that the literacy of disaster mitigation in the control group without intervention is lower than the experimental group with media literacy interventions in the form of videos and infographics. At the 95% confidence level, the t-count value is -5.94 which indicates a negative value at t which means that the literacy value of disaster mitigation literacy of the Pengaron village community, the control group, is the group without listening to media is lower than the literacy of the experimental group with the intervention of listening to media literacy. For comparison with the value of t table, the value of – can be omitted. Thus, t count (5.94) > t table (1.686) Based on the t table with df 38. It also shows a significant

difference between the control group and the experimental group who listened to the intervention media.

Table 9. Independent Sample Test by Indicators

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Nilai1	Equal variances assumed	2.400	0.130	0.820	38	0.417	0.11389	0.13891	-0.16732	0.39510
	Equal variances not med			0.820	34.321	0.418	0.11389	0.13891	-0.16831	0.39609
Nilai2	Equal variances assumed	2.633	0.113	-1.508	38	0.140	-0.28333	0.18790	-0.66372	0.09705
	Equal variances not assumed			-1.508	30.546	0.142	-0.28333	0.18790	-0.66679	0.10013
Nilai3	Equal variances assumed	2.256	0.141	-7.844	38	0.000	-0.98333	0.12536	-1.23712	-0.72955
Nilai4	Equal variances assumed	1.471	0.233	-9.154	38	0.000	-1.31667	0.14383	-1.60784	-1.02550
	Equal variances not assumed			-9.154	32.582	0.000	-1.31667	0.14383	-1.60943	-1.02390
Nilai5	Equal variances assumed	0.291	0.593	-0.941	38	0.352	-0.21667	0.23015	-0.68258	0.24924
	Equal variances not assumed			-0.941	37.813	0.352	-0.21667	0.23015	-0.68265	0.24932
Nilai6	Equal variances assumed	0.117	0.734	-3.349	38	0.002	-0.66667	0.19905	-1.06962	-0.26372
	Equal variances not assumed			-3.349	37.477	0.002	-0.66667	0.19905	-1.06980	-0.26353

Source: Primary Data, 2022

Table 9 above shows that the significance value both with the assumption of equivalent variance and unequal variance based on 6 indicators of disaster mitigation literacy, there are 3 indicators that have significant differences between the control group and the experimental group, namely the indicator of evidence of disaster interpretation (3) which has a sig of 0.000 both *equal* and *not equal* , indicator 4 is scientific or non-scientific knowledge (sig 0.000 both *equal* and *not equal*), and indicator 6 is knowledge to explain disaster context (sig 0.002 both *equal* and *not equal*). While the other 3 indicators have insignificant differences between the control group and the experimental group, namely

indicator 1 which is critical and evaluative (0.417 *equal* and 0.418 *not equal)* , indicator 2 assesses disaster conditions (0.140 *equal* and *0.142 not equal)*, and 5 is the interpretation of disaster (0.352 both *equal* and *not equal)*.

At the 95% confidence level with df 38, the t table value is 1,686. When viewed from the 6 indicators, there are 3 indicators that have a t-count value greater than the t-table, namely indicator 4 (scientific and non-scientific knowledge), indicator 3 (evidence of disaster interpretation), and indicator 6 (knowledge to explain the context of a disaster) with t-count values are 9.154, 7.99, and 3.349, > t table 1.686. Meanwhile, the other 3 indicators, namely indicator 1 (critical and evaluative) indicator 2 assessing disaster conditions and indicator 5 namely disaster interpretation with a value of t count < t table (1.686) respectively, namely 1,508, 0.941, and 0.840.

This means that there is a significant difference between the control group and the experimental group who listen to the intervention media, especially on indicators of scientific and non-scientific knowledge, evidence of disaster interpretation and knowledge to explain disaster context. Meanwhile, on critical and evaluative indicators, assessing disaster conditions, and interpreting disasters, there is no significant difference between the control group without media intervention and the experimental group with media intervention in the Pengaron village community.

Communication is an important aspect of everyday life. The elements of communication are communicators, messages, communicants, media, and effects. The communication function according to Harlod D Laswell in Nurudin (2014: 15):

1. Environmental assessment/supervision.
2. Connect the disparate parts of society to respond to its environment.
3. Passing down social heritage from generation to generation.

Posters and animated videos of flood disaster mitigation literacy fulfill the environmental monitoring function according to Laswell, namely by providing information to the public about important things that can be done during pre, disaster and post-flood events.

Mass media is a channel used in mass communication activities. Disaster communication can use mass media as a channel to disseminate important information related to disasters. In accordance with one of the characteristics of mass communication,

namely one-way and simultaneous, the mass media disseminate information simultaneously to the audience. This study uses intervention media in the form of posters and animated videos.

The results of the study of Disaster Communication Media in Improving Disaster Mitigation Literacy (Experimental Study on Flood Victims in Pengaron District, Banjar Regency) showed significant results between the control group and the experimental group. This is relevant to the research entitled *The Strategy of Disaster Mitigation Literacy through Problem-Based Learning (PBL) in the School Prone to Tidal Floods* by Suharini, Meliana, Sanjoto, and Kurniawan (2019). The results showed that most of the experimental class's disaster mitigation literacy was at level 5 and better than the control class with the majority being at disaster mitigation literacy level 3.

CONCLUSION

Based on research on Disaster Communication Media in Improving Disaster Mitigation Literacy (Experimental Study on Flood Victims in Pengaron District, Banjar Regency) it was found that there were significant differences between the control group and the experimental group who listened to the intervention media, especially on indicators of scientific and non-scientific knowledge, evidence disaster interpretation and knowledge to explain the disaster context. Meanwhile, on critical and evaluative indicators, assessing disaster conditions, and interpreting disasters, there is no significant difference between the control group without media intervention and the experimental group with media intervention in the village community of Pengaron, Banjar Regency.

REFERENCES

Bajari, Atwar. 2017. Metode Penelitian Komunikasi. Bandung: Simbiosa Rekatama Media

Brown, Lisa M., Haun, Jolie N, and Peterson, Lindsay, 2014. *A Proposed Disaster Literacy Model* , Society for Disaster Medicine and Public Health Inc, pages 1-10. DOI: 10.1017/dmp.2014.43

Bungin, Burhan. 2005. *Metodologi Penelitian Kuantitatif*. Kencana: Jakarta.

Fiske, John, 2016. Pengantar Ilmu Komunikasi Yogyakarta : Buku Litera.

Intanny, Vieka Aprilya, Novian Anata Putra. 2019. *Studi Eksperimen Peningkatan Literasi Media Sosial Humas Pemerintah Daerah Experimental Study to Improve Social Media Literacy for Local Government Public Relations*. Balai Pengembangan Sumber Daya Manusia dan Penelitian (BPSDMP) Kominfo Yogyakarta. IPTEK-KOM, Vol. 21 No. 2, Desember 2019: 109 - 122 eISSN 2527 – 4902.

K.Arisandi, Fetty. Umam, Choirul. 2019. *Komunikasi Bencana Sebagai Sebuah Sistem Penanganan Bencana di Indonesia*. Mediakom.Vol. 3 No.1

Luik, J. E. 2009. .*Media dan Perubahan Iklim: Aplikasi Medium Komunikasi Terkini dalam Mengkomunikasikan Mitigasi dan Adaptasi Perubahan Iklim.* Konferensi Nasional Lingkungan Hidup.

Marlyono, Setio Galih, Gurniwan Kamil Pasya, Nandi. *Peranan Literasi Informasi Bencana Terhadap Kesiapsiagaan Bencana Masyarakat Jawa Barat*. Gea. Jurnal Pendidikan Geografi, Volume 16, Nomor 2, Oktober 2016.

Nugroho, Sutopo Purwo, Sulistyorini, Nugroho. 2019. *Komunikasi Bencana Membedah Relasi Bnpb Dengan Media*. Pusat Data, Informasi dan Hubungan Masyarakat Badan Nasional Penanggulangan Bencana: Jakarta.

Nurudin. 2014. *Sistem Komunikasi Indonesia*. Rajawali Pers: Jakarta.

Nurudin. 2016. *Ilmu Komunikasi Ilmiah dan Populer*. Rajawali Pers: Jakarta.

Perez-Lugo, Marla. 2004. *Media Uses in Disaster Situations: A New Focus on the Impact Phase.* Sociological Inquiry, Vol. 74, No. 2, May 2004, 210– 225

Ruslanjari, Dina., Dewi, Titis Puspita., and Puspitasari, Anisa Eka., 2019. *Non-Structural Mitigation Through Media Literacy on Cyclone Disaster in West Muna Regency Mitigasi Non Struktural Melalui Literasi Media Pada Bencana Angin Puting Beliung Di Kabupaten Muna Barat*. in The 10th IGSSCI (International Graduate Students and Scholars' Conference in Indonesia) New Media And The Changing Social Landscape Of Contemporary Societies: How are new media reshaping the whole aspects of life of contemporary societies?, KnE Social Sciences, pages 146–165. DOI 10.18502/kss.v3i20.4933

Sari, Vina Amelia Tunnikmah Deasya Cournia, 2019. *Efektivitas Media Video Edukasi Bencana dalam Meningkatkan Pengetahuan dan Sikap Kebencanaan pada Warga Sekolah SMP 1 Sumbermalang, Situbondo*. http://repository.unej.ac.id/handle/123456789/98090

Suharini, Erni., Meliana, Dwi Putri., Santojo, Tjaturahono Budi, and Kurniawan, Edi. 2019. *The Strategy of Disaster Mitigation Literacy through Problem-Based Learning (PBL) in the School Prone to Tidal Floods*. Conference: Proceedings of the 1st International Conference on Environment and Sustainability Issues, ICESI 2019, 18-19 July 2019, Semarang, Central Java, Indonesia. DOI:10.4108/eai.18-7-2019.2290156

http://publikasi.dinus.ac.id/index.php/andharupa/article/view/4156/2478

https://banjarmasin.tribunnews.com/2022/01/12/breaking-news-banjir-meluas-enam-desa-di-pengaron-simpangempat-kabupaten-banjar-terendam

https://bpbd.purworejokab.go.id/mitigasi

https://banjarkab.bps.go.id/