

BPBD Preparedness Analysis for Flood Disaster in Rokan Hulu in 2023

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ABSTRACT

Indonesia is very vulnerable to natural and non-natural disasters. Situations that pose a threat and disrupt livelihoods and people's lives are called disasters. An overflow of water where the river cannot accommodate it is called a flood. Floods are also dangerous. They are disturbing because they disrupt people's lives. Rokan Hulu Regency has a high probability of flood disasters. As a result, efforts must be made to anticipate this flood disaster. This is related to BPBD's preparedness for flood disasters in Rokan Hulu Regency, which can then be evaluated to ensure that Rokan Hulu Regency is ready to face flood disasters.

INTRODUCTION

Indonesia is a country that is vulnerable to various types of natural disasters. Many losses are caused by this natural disaster, both directly and indirectly, including loss of life, damage to facilities and infrastructure, loss of valuables, environmental damage, and psychological damage to disaster victims. In accordance with Law no. 24 of 2011 (Razikin et al., 2017). Disaster can be defined as an event or series of events that disrupts and threatens people's lives and livelihoods, both due to natural and human factors, environmental damage, loss of life and loss of property, and psychological consequences.

Rokan Hulu is one of the districts in Riau Province, Indonesia. The capital is located in Pasir Pengaraian which is nicknamed the land of a thousand suluks. The majority of the native Malay population has a population of 568,004 people in 2023 and an area of 7,588.13 km². Due to very rapid climate change and extreme weather, Rokan Hulu Regency has the potential for flood disasters because the magnitude and high rainfall causes river water to overflow. Apart from that, based on research, flood disasters can also threaten Rokan Hulu Regency. According to the 2020 Indonesian Disaster Risk Index (IRBI), Riau Province has a risk index of 64.02 which is a medium value. In other words, Rokan Hulu Regency has the threat of extreme weather, floods, drought, storms, extreme waves/abrasion. (BNPB, 2022).

Flooding is the amount of river water that is greater than average because the rain that falls non-stop upstream of the river or in certain locations cannot be accommodated by the existing river channel, so the water overflows and inundates the surrounding area. According to Ningrum and Ginting (2021). There are two sources of flooding: 1) Natural factors such as erosion and sedimentation, rainfall, river topography and geophysics, inadequate river capacity and drainage, flood control, and so on; 2) Human factors such as waste disposal, changes in land use, slum areas along rivers, and inappropriate planning of flood control systems. (Razikin et al., 2018).

According to IRBI 2020, Rokan Hulu Regency is included in the category of areas that are vulnerable to flood disasters. The flooding that occurred claimed lives, damaged infrastructure and disrupted community activities in Rokan Hulu Regency. These floods are caused by high rainfall, the location of residential areas close to rivers, the high use of groundwater, and the lack of water catchment areas, strewn rubbish due to littering. Considering this, the Rokan Hulu Regency Government needs to prepare a flood disaster mitigation and prevention plan. Therefore, the author examines how the Rokan Hulu Regency Government is prepared to face flood disasters in terms of LIPI and UNESCO preparation criteria.

LITERATURE REVIEW

Rokan Hulu is one of the districts in Riau Province, Indonesia. The capital is located in Pasir Pengaraian which is nicknamed the land of a thousand suluks. The majority of the native Malay population has a population of 568,004 people in 2023 and an area of 7,588.13 km². Due to very rapid climate change and extreme weather, Rokan Hulu Regency has the potential for flood

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METHODOLOGY

This research uses a qualitative approach. According to Kusumastuti, A., and Khoiron (2019), a qualitative approach carries out data analysis that is different from a quantitative approach that uses statistical programs. The quantitative approach carries out data analysis after all the data has been collected, while the qualitative approach is carried out during the data collection process.

The literature study method is used to collect data, where research is carried out using articles taken from books, extra documents and journals, which explain theories and information related to current and previous situations. In addition, organizing the library according to topics and documents required.

Previous research literature is used in this article about the flood disaster that occurred in the Rokan Hulu Regency area, as well as books about the concept of disaster. The author also uses the keyword disaster preparedness. in his writing and produced forty articles or journals published from 2012 to 2020. The results obtained by researchers from Vosviewer are as follows::

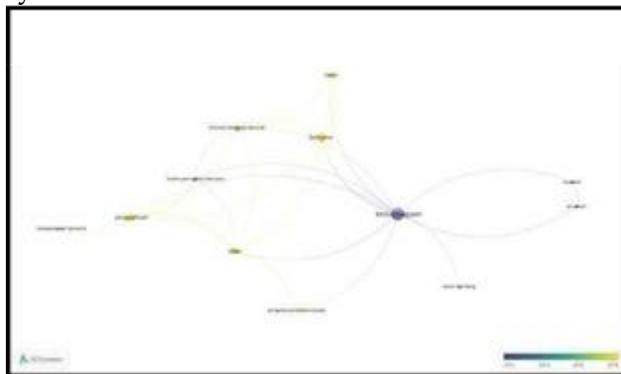


Figure 1. Network Visualization

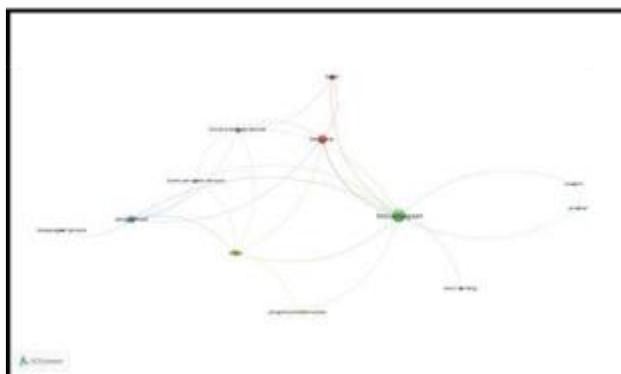


Figure 2. Overlay Visualization

Overlay Visualization can display a list of previous research using preparedness as a keyword. Vosviewer results show that previous research with the keyword disaster preparedness was the focus of the study from 2016-2018.

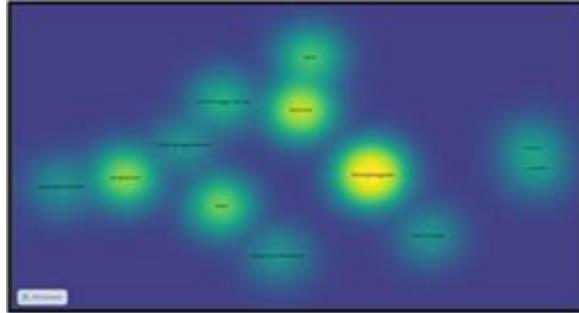


Figure 3. Density Visualization

Additionally, they found that color was the most frequently used subject in previous research, the brighter it was. Therefore, the most commonly studied topic is preparedness, followed by disasters, attitude knowledge, and floods, among others. Meanwhile, topics such as tsunamis, threats and disaster knowledge are still rarely studied.

RESULTS AND DISCUSSION

Flood Disaster Preparedness

According to Wesnawa and Christiawan in their research (Wesnawa and Chirstiawan, 2014) Indonesia's geographical position makes it vulnerable to natural disasters and natural hazards. Natural disasters are disasters caused by natural events such as tsunamis, earthquakes, floods, volcanic eruptions, droughts, landslides and hurricanes. Indonesia also has two seasons: dry and rainy because it is in a tropical climate. Due to its position, Indonesia is the third most vulnerable country in the world to flood disasters, behind only India and China. Thus, disaster management must be carried out (Oktari, 2019).

One way to reduce the impact of flood disasters is to prepare for disasters, starting from early warning to increasing public awareness to preparing for refugee management. Socialization activities and natural disaster preparedness simulations are one way to deal with the threat of flood disasters (Aini & Pristiwandono, 2017).

It has two seasons, dry and rainy, which makes it one of the areas vulnerable to natural hazards and natural disasters. Thus, in terms of community preparedness in disaster management, Indonesia ranks third in the world, which is a very important role because it will influence how society acts when a disaster occurs. Preparedness is closely related to disaster knowledge. People's knowledge and attitudes towards disasters are the first indicators used to measure preparedness. According to Dony (2018), knowledge about disasters is a person's main motivation to continue their current preparedness or protection efforts.

Six sub-districts in Rokan Hulu Regency were affected by the flood: Rambah Hilir District, Rambah District, Tambusai District, Rokan IV Koto District, Bonai Darussalam District, and Kunto Darussalam District. As a result of the flood disaster in Rokan Hulu Regency, there were houses that were

flooded, including in Rambah District, Rokan IV Koto, Bonai Darussalam, Rambah Hilir, Tambusai, North Tambusai, Kunto Darussalam, Pagaran Tapah, and Kepuas District with an average depth of 1.5 up to 2 meters. Apart from that, there is very little logistical assistance for food and drink, because the flood water is so deep that it is difficult for officers to distribute logistical basic necessities to houses affected by the flood disaster. The flood disaster in Rokan Hulu Regency, according to the results obtained in the field, the government only provided assistance per public kitchen, so before interviewing the BPBD, this was a suspicion, the reason could be that they did not have a budget, indeed there was no budget for flood disasters, but it could be that because of the total flooding, it was limited assistance provided outside of planning.

Yatnikasari, S., Pranoto, S., and Agustina, F. (2020) said that a combined index that includes all parameters can indicate the level of preparedness that the head of the family has to face flood disasters. Attitude and knowledge index, disaster warning system index, resource mobilization index, and emergency response plan index are some of these indices.

Evri Riwalidi (2019) also said that forecasting and taking action decisions are part of disaster preparedness before a very dangerous natural disaster occurs and enthusiasm for preventing flood disasters. It includes experience with disaster symptoms, such as early signs of disaster, distribution and regular testing of early warning systems, evacuation plans, and additional steps that must be taken during the alert period to reduce the number of deaths and physical injuries. In addition, preparedness includes training and education of the public, officers, special teams, decision making, standards for inventory management and expenditure of funds. Therefore, the goal of disaster preparedness is to reduce losses with quick action.

For this reason, the Rokan Hulu Regency Government, through the BPBD, must handle quickly and responsively the flood disaster that hit Rokan Hulu Regency and all elements of society affected by the flood disaster must be prepared and ready to handle floods due to the intensity of unsupportive and unpredictable weather where the weather is extreme rainy or hot dry weather. For the people of Rokan Hulu Regency who are affected by the flood, they must quickly evacuate before the flood water level rises because the flood water will always be deep and it will take quite a long time for the water to recede after the flood disaster that hit Rokan Hulu Regency.

Therefore, preparedness must be carried out as well as possible and is very important. To make an area "ready" to deal with disasters, especially floods, preparation is necessary. Governments must work with communities to disseminate information about flooding, provide related training and education, and provide communities with the resources necessary to better deal with floods. Preparedness is the idea of preparing for a disaster. Therefore, preparedness must consider the results of previous disaster evaluations to make plans to avoid or anticipate disasters, and to remain ready if at any time a disaster occurs.

Rokan Hulu Regency Flood Infographics

85% of the Rokan Hulu area is land, and 15% is water and swamp. It borders the following regions geographically:

Utara	Padang Lawas dan Labuhan Batu Selatan
Timur	Bengkalis dan Rokan Hilir
Selatan	Kampar
Barat	Pasaman

Figure 4. Rokan Hulu Area

In Rokan Hulu Regency there are many rivers, including the Rokan Kiri River and the Rokan Kanan River, which are large rivers. There are also small rivers such as Tapung, Dantau River, Ngaso River, Batang Lubuh River, Batang Kumu River, Duo (Langkut) River, Batang Sosa River, Rokan River, Siasam, Muaro Bungo River, and others.

Causes of Floods in Rokan Hulu Regency

In the Rohul Flood Monitoring in (ROKAN HULU FLOOD MONITORING, 2022), identify the source of the flood, namely:

Local Rain Floods

This flood occurred due to heavy and prolonged rain in the Rokan Hulu Regency area. Rain fills drains and sunken areas, causing water to overflow, causing flooding. But drainage in Rokan Hulu is designed to accommodate up to 120 mm of rainwater per day. However, the extraordinary rainfall still exceeded capacity. On October 5 2021, rainfall in Rokan Hulu Regency can reach 465 mm per day, causing flooding in several areas in Rokan Hulu.

Flood of Posts

Rokan Hulu Regency is a lowland area located between upstream rivers and swamps. There are thirteen rivers in this area. If heavy rain occurs in upstream river areas such as Kampar and Siak, the Rokan Hulu stream flows from upstream to residential areas, but cannot accommodate large water discharges, so it overflows through several riverbanks in Rokan Hulu Regency.

According to Supriadi (2015) in (Margono, 2022) said that there are many causes of flooding in Rokan Hulu. In general, the main factor is significant spatial changes in several districts, including Rokan Hulu and Rokan Hilir on the border of North Sumatra. Because of this change, the amount of area that should be used to collect rainwater is reduced, so that instead of seeping into the ground, rainwater flows onto the roads.

Analysis of Preparedness Success with Preparedness Parameters

Paramentary Readiness is a metric that is evaluated as a standard for quantifying how well something is functioning. Preparedness can be measured using several criteria. Knowledge and understanding of disaster risk, emergency response plans, disaster warning systems, preparedness guidelines,

policies, regulations, and the ability to mobilize resources are five criteria for calculating preparedness levels (LIPI and UNESCO, 2006: 14).

Knowledge and Attitudes Towards Disaster Risk

This knowledge and attitude consists of knowledge about natural events and disasters based on type, magnitude, source and location, as well as knowledge about disasters and the physical risks of locations, conditions and facilities. Meanwhile, attitude refers to the risk of disasters occurring. According to research conducted by Ridha and Husna (2017), to carry out flood management actions that are beneficial to society, knowledge is the key. The countermeasures will be good if done correctly.

The Rokan Hulu Regency Government has used media such as Info Rokan Hulu to increase public awareness about how to deal with floods. Apart from that, people are aware that waste can cause flooding, so they take actions such as 3R (reducing, recycling and recycling). This activity aims to reduce household waste before it reaches the landfill, and there are also recycling waste programs and banks, such as Rawajati (Revani et al., 2016).

Emergency Response Plan

Emergency response plans include plans for handling equipment and supplies, meeting basic needs and essential facilities, as well as first aid, evacuation, rescue, safety and security. This emergency response plan was made by the Rokan Hulu Regional Government with the assistance of BNPB and in collaboration with the Rokan Hulu Regency BPBD to handle emergency flooding in the area. In addition, the team looked at refugee camps and conducted rapid research to get support from the local government as needed. People fled to various places, such as places of worship, educational institutions, and large areas (Jati & Raditya, 2021).

Policies, Regulations and Guidelines for Preparedness

Policies are laws or regulations set by the government to deal with disasters. In addition, the Rokan Hulu Regency government has shown a good response to the problem of flooding, as shown by Perbup Number 15 of 2017 concerning Flood Disaster Contingency Plans for 2017. This regulation is intended to function as a guideline for dealing with floods (2017), by addressing victims floods and residents quickly, repair various infrastructure and facilities, and restore people's routines that have stopped.

Apart from that, in 2020, the Regent of Sukiman issued the Rokan Hulu Regent's Instruction No. 52 of 2020 concerning Acceleration of Improvement of Flood Control Systems in the Era of Climate Change. There are 7 main tasks: (1) Creating an early warning and flood disaster detection system that is productive, effective, intelligent and integrated; (2) ensuring that existing infrastructure for managing floods always functions properly; (3) accelerate infrastructure construction that has not yet been completed; (4) encourage everyone to fulfill their obligations and roles in flood control; and (5) improve the existing flood control system; (6) increase public awareness, awareness and

culture of adapting to climate change and flooding; (7) ensuring financial assistance is available and making breakthroughs in using the budget for flood control or floods in Rokan Hulu (Adyatama & Egi, 2020).

Warning System

Information, simulation, and available human resources are provided by this system. A flood disaster warning system already exists in Rokan Hulu Regency, one of which is the Rokan Hulu Stay Emergency (RH-SE) or Rokan Hulu flood early warning system.

Operated by the Water Resources Research and Development Center in 2013, RH-SE involved authorities such as BBWS Pasir Pengaraian, BNPB, Rokan Hulu Public Works Department, and BPBD. The test results show that RH-SE can provide information about inundation and flood areas several days before the flood, so it can be considered to perform its function well. However, the accuracy of estimating the size of the flood still needs to be improved. For the next step, recalibrate the prediction model with the latest flood data. be a challenge (Ginting & M. Putuhena, 2014). This early warning system is also sent by the news media and via social media, such as informing about the condition or status of floods.

Ability to Mobilize Resources

Monitoring and evaluation, provision of materials and technical guidance, logistics and funding, and social networking are part of this resource mobilization. The flood management process begins with the Rokan Hulu Regional Government providing early warnings about the possibility of extreme weather as informed by the BMKG. The local government has also provided assistance in terms of logistics, rescue and evacuation to residents affected by the flood. For example, the Rokan Hulu Regency BPBD set up a disaster emergency post in front of the PMI Building. The post is equipped with a staff of 50 people. Apart from that, tents for evacuation have been built and five rubber boats have been maintained. Ambulances are operated by health institutions (Desi & Andi, 2022).

Analysis of Data and Information Management for the Rohul Flood Disaster Emergency Response

The regional government monitors information and data related to flood emergency response in Rokan Hulu. This is supported by the special Pantau Banjir Rokan Hulu website and the Sipantau Rohul application, each of which functions as an important portal for information about the flood disaster that occurred in Rokan Hulu Regency. Lastly, One-Stop-Service aims to give people in DKI Jakarta the ability to access the various services available in Rokan Hulu. Thus, this information portal can help people and strengthen the community because of the integrated services available in the application. Deni, 2021).

This contains information about all areas of Rokan Hulu that were affected by the flood. The mobile application initially conducted research on the public's need for flood information. Then, after several adjustments to the user

interface (UI) and user experience (UX), the final goal is to make the information provided easy to understand and use by everyone who accesses it.

Info Rokan Hulu can provide information about locations that are flooded or waterlogged, and this information is always updated every hour. Additionally, they can track this information in real-time or in real time. Water gates, observation points, water pumps, and flood information are some examples of data that can be found.

The public can easily get information about the flood disaster in Rokan Hulu Regency after knowing several important points. For this reason, the public must have information data related to flood disasters because the weather in Rokan Hulu Regency, especially in Riau Province, is unpredictable due to the weather, simply because the public knows why the flood disaster in Rokan Hulu is caused, because the river overflows due to the very large intensity of rainfall and very adequate to the potential for flood disasters in Rokan Hulu Regency.

It is very easy to understand conveying information and monitoring flood developments anywhere and at any time if people select the Water Gate icon; This will show the location of the floodgates around Rokan Hulu on the digital map available on JakPantau. Then, when the community selects one of the indicated locations, information will appear showing the location, the alert status of the sluice gate, and information about the water level at the location. The window color varies based on the alert status of the sluice, for example blue for alert status 4, yellow for alert status 3, orange for alert status 2, and red for alert status 1. This also applies when people select the Observation Post icon to find out about its location throughout Rokan Hulu Regency.

Apart from that, the public can see the alert status of the water pump by pressing the Water Pump icon located at the bottom of the screen, which will display the location of the water pump. If people choose one of these locations, they can find out information or find out the number of water pumps available at the location, as well as how many are on standby or operating to deal with flooding. The public can also find out the area of authority and the weather through the JakPantau application. Next, you can use the Flood Information icon, which will display every sub-district in Rokan Hulu that has been affected by the flood. Affected areas will be colored on the map based on water levels, with blue indicating between 10 and then red indicating water levels greater than 150 cm. Apart from that, each sub-district area affected by the flood has detailed information such as the number of victims, evacuation locations, locations for providing public kitchens, and the assistance needed.

Knowing its features, it is actually a useful mobile application. because community members can participate and help deal with floods in Rokan Hulu by using the feature. If the public uses this feature and makes a report, the report will be sent to the CRM reporting system and immediately ratified by the SKPD or sub-district authority in that area. After pressing the camera button below the center of the screen, a report can be generated. After that, people must take photos of areas that are inundated or affected by flooding. Then, the community must select the problem category "flood" so that the report is sent to

the appropriate party: the Water Resources Service (DSDA) or the Regional Disaster Management Agency (BPBD) of Riau Province. Apart from that, the community must provide brief and clear details about the location of the flood incident, so that field officers can easily find out and find the location. Basically, other people affected by flooding will benefit from the flood reporting process created by the community. Apart from that, the community will help local agencies and BPBD to map flood locations in the Rokan Hulu Regency area, which will make it possible to speed up evacuation and flood management (Androeda, 2021).

Therefore, the government uses this method to manage information and data for emergency flood disaster situations in Rokan Hulu Regency. This allows the public to get information about flood disasters anytime and anywhere.

Analysis of Planning and Development of Flood Management Policies

The Rokan Hulu government has also issued many policies, guidelines, programs and activities to deal with flooding. An example is Governor's Instruction Number 52 of 2020 concerning Improving Flood Control Systems in the Era of Climate Change issued by the Regent of Rokan Hulu Sukiman. This instruction is aimed at improving early warning and flood detection and mitigation systems. They also outlined the roles and responsibilities of the entire community in dealing with floods, as well as extraordinary budget absorption for flood control in Rokan Hulu and the availability of physical needs (Sulaiman, 2021).

According to Regent's Instruction Number 55 of 2021 concerning How Fast Flood Control Systems Develop Due to Climate Change, the Water Resources Service (DSDA) is required in Riau Province to build and be responsible for 495 stationary water pumps and 327 mobile pumps throughout Rokan Hulu Regency, all of which are ready to handle flooding. This pump mostly functions to pump or move water from low places to high places. This reduces flooding by sucking up stagnant water and channeling it to where it should be, such as the Rokan Hulu river.

In addition, all stationary water pumps are equipped with sensors, so the JakPantau feature can be used to track the operational status of each. (ROKAN HULU FLOOD MONITORING, 2021).

In addition, all stationary water pumps have sensors. Thus, the JakPantau feature can be used to consistently monitor the operational status of each pump (ROKAN HULU FLOOD PANTAU, 2021). In addition, there is REGENT Instruction Number 131 of 2019 which regulates the speed of vertical drainage construction on land belonging to Rokan Hulu Regency. According to this instruction, the Riau Province Water Resources Service (DSDA) has the authority to create 2,424 vertical drainage points in 849 locations in one administrative district and five administrative city areas (Rokan Hulu, Rokan Hilir, Pelalawan, Indragiri Hilir, and Meranti Islands) from 2019 to July 2021 with a total capacity of 6,747.42m². In addition, other regional government organizations (OPD) in Rokan Hulu Regency, including the general public and

community, have helped build vertical drainage. Overall, there are three vertical drainage development plans in Rokan Hulu. The first is a project built by the Rokan Hulu Regency Water Resources Service (DSDA), which includes 7,438 vertical drainage points. In Rokan Hulu, there are three plans for the construction of vertical drainage. The first was built by the Rokan Hulu Regency Water Resources Service (DSDA) in an area owned by the government and public facilities. The second scheme involves controlling Building Construction Permits (IMB) in participating communities, several Regional Apparatus Organizations (OPD) within the Rokan Hulu Regency Government. Furthermore, the third scheme is Large-Scale Social Collaboration for Vertical Drainage (KSBB DV), which is motivated by the need to complete development independently and in collaboration (Tempo.co, 2021).

Apart from that, the procurement of heavy equipment is part of the Large-Scale Social Collaboration (KSBB) for handling floods in Rokan Hulu. The aim of this collaboration is to quickly complete mud dredging in water bodies in Rokan Hulu, which is currently being carried out in 15 main locations (Info Rohul, 2022). Currently, the Rokan Hulu Regency government has 212 units of heavy equipment which are used to reduce the impact of flooding in Rokan Hulu Regency. Apart from that, rivers, reservoirs and waterways in the Rokan Hulu area are cleaned with this tool.

The Batang Lubuh River Throttling Program in Babussalam, Rokan Hulu, was implemented in 03 RTs in the Babussalam area with the aim of reducing water levels to prevent flood disasters. This program uses other heavy equipment. According to Yusmada Faizal, Head of the Rokan Hulu Regency Water Resources Service (DSDA), in front of the Rawa Badak pump which is 495 meters long and in front of Artha Gading which is 210 meters long, mud is dumped. 10 units of heavy equipment were deployed by DSDA for this activity, including 3 large amphibious vehicles, 2 long arm excavators and 1 standard excavator. for dredging in the Rawa Badak Pump segment. In addition, the Artha Gading segment has two long arm excavators and two large amphibious vehicles. Apart from that, there are 18 waste disposal trucks on standby at the two locations. This mud raid activity was carried out by various Regional Apparatus Organizations. In addition, the Rohul Regency government is pumping out mud in the Batang Lubuh River to reduce the water level and reduce the impact it has on four areas. The Batang Lubuh River increases the water supply in Rokan Hulu and drains a third of the flow of the Kaiti River, making it a very important channel for the flood control system (Wahyu, 2021).

Based on previous instructions, policies and programs, the Rokan Hulu Regency Government is planning the best possible preparedness. Apart from that, the Rokan Hulu Regency Government has additional strategies and mechanisms to deal with flood disasters. As previously explained, there are sensors that track the location of water pumps in Rokan Hulu. Collaboration with Rokan Hulu Regency in the application allows the use of information technology to use WhatsApp to send data to the command center. The Rokan Hulu Regency command center then uses this data to disseminate information to the public. Furthermore, the Rokan Hulu Water Resources Service (DSDA)

uses an information system in the form of weather forecast reports provided by the Meteorology, Climatology and Geophysics Agency (BMKG). Thus, information about rainfall levels can be updated by sending the DSDA task force to the field or to locations that are prone to flooding. In addition, the Rokan Hulu Early Warning System (EWS) allows them to provide accurate, direct and active information at all times.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the analysis regarding preparedness according to LIPI and UNESCO, that:

1. Attitudes and Knowledge towards disaster risk: The Rokan Hulu Regional Government increases public awareness through the media and community actions by participating in the waste bank program and managing waste using 3R to reduce waste that causes flooding.
2. The government is unable to distribute logistical assistance or basic necessities to flood victims to every family card (KK), but is only able to distribute it to every public kitchen. In the future, the Rokan Hulu Regency Government, through BPBD, is budgeting an even larger budget so that logistics or basic necessities during major floods are distributed among each family.
3. Regulations, policies and guidelines for preparedness, the government also responds to problems by establishing policies such as regional regulations.
4. Disaster warning system; one of which enables early warning and distribution of information through the media.
5. Resource mobilization is carried out through providing early warnings of extreme weather by BMKG, providing logistical and rescue assistance, and evacuating affected residents.

Fulfilling the five criteria shows that Rokan Hulu has prepared itself for flood disasters. The district government has managed data and information through the Flood Disaster Review in Rokan Hulu, and the website has been changed to Rohul Terkini to provide complete information about flood disasters. The Regency Government can also plan and prepare various needs to reduce flood disasters in Rokan Hulu by following the Regent's regulations or instructions and following them up.

However, the implementation of this preparedness must continue to be developed and adapted to future situations. Apart from that, the government is actively collaborating with stakeholders regarding flooding problems in its area and can handle flooding in Rokan Hulu Regency collectively.

FURTHER STUDY

This research still has limitations so it is still necessary to carry out further research on the topic "BPBD Preparedness Analysis for Flood Disaster in Rokan Hulu."

REFERENCES

- (IRBI) tahun 2020. Bnpb, 78.
BNPB. (2021). Indeks risiko bencana Indonesia

- Eldi. (2021). ANALISIS PENYEBAB BANJIR DI ROKAN HULU. *Journal of Environmental Education and Sustainable Development*, 22, 50–60.
- Ginting, S., & M. Putuhena, W. (2014). Sistem Peringatan Dini Banjir Rokan Hulu-Flood Early Warning System (J-Fews). *Jurnal Sumber Daya Air*, 10(1), 71–84. <http://journalsda.pusair-pu.go.id/index.php/JSDA/article/download/144/132>
- Hamdi, I. (2020). 5 langkah Penanggulangan Banjir Rohul: Instruksi Bupati Hingga Normalkan Sungai. *Tempo.Co*. <https://metro.tempo.co/read/1393974/5-langkah-penanggulangan-banjir-rohul-instruksi-bupati-hingga-normalkan-sungai>. (2021). Rohul Terkini. <https://rohulterkini.go.id/id/about-us/>
- Jati, & Raditya. (2021). BNPB Dukung Penanganan Darurat Banjir Rokan Hulu dan Sekitarnya. *Badan Nasional Penanggulangan Bencana*. <https://bnpb.go.id/berita/bnpb-dukung-penanganan-darurat-banjir-rohul-dan-sekitarnya>
- Kusumastuti, A., & Khoiron, A. M. (2019). Metode penelitian kualitatif. *Lembaga Pendidikan Sukarno Pressindo (LPSP)*.
- Maryani, E. (2010). MODEL PEMBELAJARAN MITIGASI BENCANA DALAM ILMU PENGETAHUAN SOSIAL DI SEKOLAH MENENGAH PERTAMA*). *Jurnal Geografi GEA*, 10.
- PANTAU BANJIR ROKAN HULU. (2021). Tentang Banjir Rokan Hulu. *PANTAU BANJIRROHUL*. <https://pantaubanjirrohul.go.id/bencana-rohul>
- Plus Rohul. (2021). *KSBB Penanganan Banjir*. <https://plus.rohul.go.id/ksbb>
- Razikin, P., Kumalawati, R., & Arisanty, D. (2017). STRATEGI PENANGULANGAN BENCANA BANJIR BERDASARKAN PERSEPSI MASYARAKAT DI KECAMATAN
- Revani, B., Purwaningrum, P., & Indrawati, D. (2016). Penerapan Konsep 3R Melalui Bank Sampah Dalam Menunjang Pengelolaan Sampah Di Kelurahan Rawajati, Jakarta Selatan. *Indonesian Journal of Urban and Environmental Technology*, 8(1), 107. <https://doi.org/10.25105/urbanenvirotech.v8i1.719>
- Tempo.co. (2021). Ribuan Titik Drainase Vertikal Cegah Banjir Rokan Hulu. *Tempo.Co*. <https://nasional.tempo.co/read/1514877/ribuan-titik-drainase-vertikal-cegah-banjir-rohul>
- Ula, N. M., Sriartha, I. P., & Citra, I. P. A. (2019). Kesiapsiagaan Masyarakat Terhadap Bencana Banjir Di Desa Pancasari Kecamatan Sukasada Kabupaten Buleleng. *Jurnal Pendidikan Geografi Undiksha* 7.3 (2019): 103-112.
- Umar, N. (2013). PENGETAHUAN DAN KESIAPSIAGAAN MASYARAKAT MENGHADAPI BENCANA BANJIR DI BOLAPAPU KECAMATAN KULAWI SIGI SULAWESI TENGAH. 8(3), 184–192.
- Waluyo, D. (2021). *Pemkab Rohul Kembali Gelar Gorok Lumpur di Rokan Hulu*. *Kompas.Com*.
- Yatnikasari, S., Pranoto, S. H., & Agustina, F. (2020). Pengaruh Pengetahuan dan Sikap Terhadap Kesiapsiagaan Kepala Keluarga dalam Menghadapi

Syahputra

Bencana Banjir. *Jurnal Teknik*, 18(2), 135-149.