Community Resilience in facing Tsunami Disaster in the Coastal Areas of Purworejo Regency

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Abstract. Purworejo Regency is one of the regencies in Central Java Province, which is directly adjacent to the Indian Ocean. Because the topography of the southern coast of Purworejo Regency is relatively flat, the area's vulnerability to a tsunami is high. A resilient community is needed to reduce the number of victims in the event of an earthquake and tsunami. This study aims to analyze the level of resilience of the southern coastal community of Purworejo Regency to the tsunami disaster. This research uses a qualitative approach. Collecting data using in-depth interviews with selected respondents, observation, secondary data analysis, and questionnaires. Data analysis used the scorecard toolkit version 2 with 22 questions for each question with five answer options. With a score of 1 to 5. The result of this study indicate that of the 16 villages the coastal area of Purworejo Regency, all of them have a caution zone status.

Keyword: Tsunami Megathrust, Community Research, Purworejo

1. Introduction
Purworejo Regency is located in Central Java Province, which is in the southern part of Java Island and is directly adjacent to the Indian Ocean. Although the Meteorology, Climatology, and Geophysics Agency (2018) has never recorded a tsunami incident in Purworejo, this does not mean that the area is safe from the threat of a tsunami disaster. The Purworejo area is physically vulnerable. The Central Bureau of Statistics of Purworejo Regency noted that the altitude of the area in coastal villages is 6 - 16 masl [1], [2], [3]. There are three sub-districts in the coastal area of Purworejo district, the easternmost is Purwodadi District with an average height of 6 masl, then to the west of Ngombol and Grabag Districts which have an average altitude of 11-16 masl. It can be concluded that the morphological conditions of the Purworejo coastal area are relatively gentle.

Data shows that there were at least 28 earthquakes that impacted a tsunami in Indonesian waters between 2000 and 2018 [4]. One of them is the Sumatra megathrust tsunami on December 26, 2004 in Banda Aceh, Nangro Aceh Darusalam Province. Initially, the term megathrust earthquake was commonly used among paleoseismologists to describe a large earthquake that was very destructive [5]. The potential for megathrust or large earthquakes occurs due to the very large amount of energy released for a long time, and the plates' movement was colliding with each other [6]. In the southern region of Java, a location that may be capable of generating a large tsunami in the eastern part of the Sunda megathrust
consisting of the Indo-Australian plate plunging below the Eurasian margin [7]. From this explanation, it can be assumed that the conditions on the southern coast of Java Island are threatened by a megathrust tsunami. Along the southern coast of Java Island is a subduction zone or a meeting zone between the Eurasian continental plate and the Indian Ocean plate. Purworejo is one of the districts that have these dangers, here is a model in the event of a megathrust tsunami in Purworejo released by gitews.org (2010)

Natural disasters can affect life in a community. Losses arising from the occurrence of a disaster can create vulnerabilities. As Gallopin (2006) argues [8], the vulnerability will affect existing systems in the community, meaning that a system will be vulnerable when there is a disturbance. However, if a disturbance hits another system, it is not certain that the system will be affected, because each system contains a different form of vulnerability. Addressing and building resilience enables communities and households to strengthen their capacities to cope with, survive, and recover from disasters [9]. Thus, the study of community resilience is crucial. Because community resilience plays a role in dealing with a disaster or pressure. However, resilience does not have to reverse the situation as before (before the disaster). In an area that is prone to disasters such as Purworejo, ideally the community has a high level of community resilience [9].

Community resilience has a different definition in each of the disciplines that use it. The common thread or identical characteristic that defines a resilient society is that it can continue to carry out its function when under pressure, successful adaptation to new challenges, independence, and social capacity [9]. These characteristics are key to understanding how a community or community contributes to disaster exposure. Social support systems, such as the environment, family and kinship networks, social cohesion, mutual interest groups, and groups helping each other are needed to build community resilience. Various community assets should be considered when evaluating community resilience, such as community members’ skills, knowledge, experience and motivation, and physical assets and connections between them [10].
Various community assets should be considered when evaluating community resilience, such as community members’ skills, knowledge, experience and motivation, and physical assets and connections between them. [10]. It is important to consider internal community structures, community history and community vulnerability, and to undertake an assessment of community resources and adaptive capacity [11]. Resilience can also be considered using a systems approach by considering subsystems such as diversity, resilience, connectedness, relationships across functional scales and learning capacity [12]. The availability and resilience of critical infrastructures, such as mitigation systems, water supply, information technology and buildings must also be considered [12], [13], [14].

2. Methods

This research was conducted on the south coast of Purworejo Regency, consisting of 3 sub-districts, namely Purwodadi, Ngombol, and Grabag Districts. The qualitative research method was chosen to explore and deepen socio-environmental phenomena that cannot be obtained by quantitative methods. A qualitative research methodology is considered suitable when the researcher or researcher is either investigating a new field of study or intends to ascertain and theorize a salient problem. There are many qualitative methods developed to have a deep and broad understanding of problems through their interpretation of texts. The most common types are interviews and observations [15].

The ideal data collection uses the Focus Group Discussion (FGD) method with community leaders such as government representatives, representatives of disaster organizations, religious leaders, female leaders, youth leaders. However, because during the Covid-19 pandemic, mass gatherings were not allowed, the FGD was replaced by using in-depth interviews. In-depth interviews were carried out on a sample selected propositively representing three sub-districts, consisting of government officials (Head of Regional Disaster Management Agency of Purworejo Regency, Sub-district Head, and Village Head), religious leaders, community leaders, female leaders and representatives of community organizations and the general public. To complement the data, field observations and secondary data collection were also carried out. If done carefully and planned the interview approach can provide a rich set of data [16]. Secondary data were collected from district and district level agencies.

In-depth interview data were analyzed to understand community interaction. The qualitative research method of discourse analysis focuses more on the social context in which communication between respondents and researchers occurs. In-depth interviews are guided by Community Disaster Resilience Scorecard Toolkit Version2. According to the Scorecard consists of 4 parameters, namely community connectedness, risk and vulnerability, planning and procedure and available resources. The table contains 22 questions: 5 questions for community connectedness, seven questions for risk and vulnerability, four questions for planning and procedure and six questions for available resources. Then performed triangulation with data from direct observation and documentation. The findings from the analysis were then applied to the assessment table. The answer to each question consists of 5 options that can be included in a score of 1 to 5. From the results of the respondents' answers were analyzed to be included in the community resilience classification.

| Table 1. Scorecard toolkit version 2 |
|-------------------------------------|
| Parameter                          | Red Zone          | Caution Zone     | Going Well       |
|-------------------------------------|--------------------|------------------|------------------|
| Overall score                       | 25% (22-33)        | 26-75% (34-98)   | 76-100% (99-110) |
| Community Connectedness             | 25% (5-10)         | 26-75% (11-19)   | 76-100% (20-25)  |
| Risk & Vulnerability                | 25% (7-13)         | 26-75% (14-280)  | 76-100% (29-35)  |
| Planning & Procedures               | 25% (4-8)          | 26-75% (9-16)    | 76-100% (17-20)  |
| Available Resources                 | 25% (6-11)         | 26-75% (12-24)   | 76-100% (25-30)  |

Source: Torrens Resilience Institute (2015)

3. Results and Discussions

The community resilience index to the tsunami disaster is obtained by scoring from observations, documentation, and interviews. The three data with different outcomes were combined. So that complement each other and validate. These data are then used to determine the level or index on the four aspects used to determine the level of community resilience to the tsunami disaster. These aspects
are community connectedness, risk and vulnerability, planning and procedures, and available resources [9].

3.1. Community Connectedness

Based on interviews with selected respondents, the results of field observations and document analysis, the conditions of the community connectedness of the southern coastal communities of Purworejo district are:

a. The proportion of populations was engaged with organizations

Every RT has a community association, whether it's an association of gentlemen, an association of PKK women, and the Youth Organization. Most of the population (about 80%) is involved in this community organization. Besides that, in coastal villages, Disaster Resilient Village has also been developed and many community members (around 50%) are actively involved in this activity. Some people are also active in religious organizations such as administrators of mosques, churches, and so on. Overall, the proportion of the population involved in the organization is good, the value is 4 (about 70 – 75%) in each sub-district.

b. Community access to various communication methods to come together and share information during an emergency

Because many people are involved in community organizations, communication access between residents for sharing communication is also good. At this time, the community has joined the WhatsApp (online chatting application) Group community between residents, there is a WhatsApp group between the Head of Regional Disaster Management Agency and the sub-district head, village head and community leaders. On the coast of Purworejo, a Tsunami Early Warning System (TEWS) has also been installed, besides that, the Regional Disaster Management Agency of Purworejo Regency has also installed a tsunami EWS along the coast. For community access, the score is 4 (between 60-75%) in each district.

![Figure 2. Early warning system tool](image)

Figure 2. Early warning system tool

c. The level of communication between the local governing body and population

Resilient communities are formed from the synergistic efforts of the community and the government as policymakers. The government has carried out collaborative communication with the community through government channels. The government conducts outreach through the village government and asks for and accommodates public input through village heads in forums organized by government disaster agencies. There are two forms of communication between the government and the community on the coast of Purworejo regarding disasters. The first is consultation, in which the government asks questions without any feedback. The two are related, namely the government asking questions and feedback.

d. The general relationship of the community with the larger region

The composition of the community which is more than 90% has the same belief (religion), making the people on the coast of Purworejo able to connect. There are associations with religious titles such as the grand recitation. These associations can establish and strengthen links with the wider community (between villages). However, this is an informal association. There is no specific planning or discussion regarding disaster in this association. The score on this parameter is 2.
e. The degree of connectedness across community groups

The community or community on the coast of Purworejo is relatively homogeneous. In general, there are no socially isolated communities. There were small groups formed, for example a minority faith group. This does not isolate the minority community. The community still receives attention even though there is no comprehensive forum and inventory. With the word score for this parameter is 2.

The conditions for the five parameters community connectedness above can be described as follows:

| N. | Indicator of Community Connectedness | Purwodadi Sub District | Ngombol Sub District | Grabag Sub District |
|----|-----------------------------------|------------------------|----------------------|---------------------|
| 1  | Populations engaged organizations | 4 (61 - 80%)           | 4 (61 - 80%)         | 4 (61 - 80%)        |
| 2  | Community access                  | 4 (60 - 75%)           | 4 (60 - 75%)         | 4 (60 - 75%)        |
| 3  | Level of communication            | 2 (Consultation)       | 2 (Consultation)     | 3 (Engagement)      |
| 4  | General relationship with a larger region | 2 (Informal network) | 2 (Informal network) | 2 (Informal network) |
| 5  | Degree of connectedness across the group | 2 (No isolated group) | 2 (No isolated group) | 2 (No isolated group) |
|    | Total score                       | 14                     | 14                   | 15                  |
|    | Classification                    | Caution Zone           | Caution Zone         | Caution Zone        |

3.2. Risk and Vulnerability

Enhancing disaster risk reduction and preparedness for natural hazards requires first and foremost identification and assessment of the various vulnerabilities of the community, economy, institutional structure, and environmental resource base through tools for measuring vulnerability [17]. Regarding material assessment, it is viewed from the efforts that have been made by conducting document studies. These documents can be used to project damage and losses from a tsunami. In addition, interviews and observations were also carried out to get an in-depth study.

a. The known risks of all identified hazards of community

In Purworejo there is already a tsunami hazard map that provides information on areas that may have been affected by the tsunami, but there has been no calculation of the damage or losses exposed to the tsunami disaster. The existing map shows risks in general, there is no spatial risk specification. The map published by the government covers the entire coastal area of Purworejo. The score for this parameter is 3 (see Figure 2).

b. The trend in relative size of population permanent population and daily population

The daily population was identified from workers not residing in the study area and tourists. Researchers did not get documentation of the daily population. Based on interviews and direct observation, researchers assume that the daily population has a low quantity. This is because agriculture and aquaculture are the dominant sectors on the coast of Purworejo. The two sectors of the economy do not have great potential to attract workers from outside the region. Likewise, the tourism sector on the coast of Purworejo is also not heavily promoted and does not have a strong appeal. This condition brings advantages for community resilience in facing the tsunami. This parameter has a score of 5.

c. Rate of the resident population change in the last 5 years

Population growth in the last 5 years is calculated from population data. The data was obtained from the Central Statistics Agency of Purworejo Regency. The calculation results are as follows:
Table 3. 5 year population increase

| No. | sub-district | Total Population (study area) | Enhancement (%) |
|-----|--------------|-------------------------------|-----------------|
| 1   | Purwodadi    | 2870 3352                     | 17              |
| 2   | Ngombol      | 3585 4342                     | 21              |
| 3   | Grabag       | 10046 12168                   | 21              |

The scores for Purwodadi District are 3 and Ngombol and Grabag Districts is 2.

d. Proportion of the population has the capacity to independently move to safety

To calculate the proportion of the population who can move to a safe place independently, researchers used population data from the Central Bureau of Statistics. Researchers compared the population of children under five and the elderly with a population of more than toddlers and less than the elderly. The results are as follows:

Table 4. The proportion of independent population

| No. | sub-district | Total population | Percentage |
|-----|--------------|------------------|------------|
|     |              | Independent      | Toddler    | Elderly   |
| 1   | Purwodadi    | 10043            | 814        | 1311      | 83         |
| 2   | Ngombol      | 3582             | 287        | 473       | 82         |
| 3   | Grabag       | 2807             | 240        | 305       | 84         |

e. Proportion of the resident population prefers communication in a language other.
The languages commonly used on the coast of Purworejo are Javanese (regional) and Indonesian. As a whole, residents on the coast of Purworejo can use these two languages or one of them. That means the use of language is not a problem. This conclusion is based on interviews from the village government along the coast of Purworejo. The score is 5 because it is less than 5%.

f. Transient population (eg, tourists, transient workers) been included in planning for response and recovery.

In the aspect of risk and vulnerability point b, it is explained that there is no documentation regarding the daily population or the working population that is not permanent. The absence of this document indicates that there is no planning for the temporary population. If there is, it cannot function without good data collection or documentation. There is only identification for tourists with inadequate procedures. The regulations that have been established by the tourism awareness group are actually quite adequate, by recording the identity of tourists. But in practice, it is not as good as planning. The score is 2.

g. The risk that your community could be isolated during an emergency event

To assess the risk of the community if required to evacuate during an emergency, the researcher conducted an assessment of the supporting infrastructure. The infrastructure in question is a path or road used for evacuation. Overall, the villages along Pesisir Purworejo already have roads connected to the arterial road (Daendels Street). The road conditions vary, some are still in the form of dirt and stone roads to asphalt or concrete roads. Ideally, roads should be built properly to facilitate the evacuation process during an emergency. In terms of quantity, villages along the coast of Purworejo have only one entry and exit access. This will hamper the evacuation process. Thus, the score is 1.
**Figure 3.** Some photos of the main road connecting the village by arterial line

**Table 5.** Risk and Vulnerability

|   | Purwodadi Sub District | Ngombol Sub District | Grabag Sub District |
|---|------------------------|----------------------|---------------------|
| 1 | Known risks            | 3                    | 3                   | 3                   |
|   | (There are mapping)    | (There are mapping)  | (There are mapping) |
| 2 | Daily population       | 5                    | 5                   | 5                   |
|   | (less than 20%)        | (less than 20%)      | (less than 20%)     |
| 3 | Population change      | 3                    | 2                   | 2                   |
|   | (17%)                  | (21%)                | (21%)               |
| 4 | Capacity to move       | 5                    | 5                   | 5                   |
|   | Independently          | (83%)                | (82%)               | (84%)               |
| 5 | Population use another language | 5 | 5 | 5 |
|   | (<5%)                  | (<5%)                | (<5%)               |
| 6 | Transient population planning | 2 | 2 | 2 |
|   | (identification)      | (identification)     | (identification)    |
| 7 | Risk of isolation      | 1                    | 1                   | 1                   |
|   | (there is 1 access)    | (there is 1 access)  | (there is 1 access) |

|   | Classification         | Caution Zone         | Caution Zone        | Caution Zone        |
|---|------------------------|----------------------|---------------------|---------------------|
|   | Total score            | 24                   | 23                  | 23                  |

### 3.3 Planning and Procedures

Careful planning and procedures will overcome and foster resilience. Addressing and building resilience enables communities and households to strengthen their abilities to cope with, survive, and recover from disasters [9]. Planning starts at the household level. Ideally, the household should be part of the planning from pre-disaster to post-disaster.

a. Level of households resource within the community engaged in planning for disaster response and recovery.

To measure the extent to which household resources are included in disaster planning, researchers used a questionnaire. Respondents amounted to 100 from the entire population who live in the coastal area of Purworejo. The results of the questionnaire are as follows:
b. Planning to reach the entire community about all-hazards resilience
   Activities planned to reach all communities regarding tsunami disaster resilience need to be carried out. It is intended that knowledge about the disaster is owned collectively. These activities can refresh knowledge and abilities and instill awareness in people who need to relay to the next generation. However, at the researched location, there were no sustainable activities. The government once held socialization, but it was not carried out frequently. Planning for future outreach was not scheduled either. Based on interview data and documentation, massive socialization was carried out after the tsunami in Tasikmalaya, which impacted large waves in Purworejo. To measure a society, researchers used a questionnaire with the following results:

   ![Household planning questionnaire result](image)

![Household planning questionnaire result](image)

   **Figure 4.** Household planning questionnaire result

b. Planning to reach the entire community about all-hazards resilience

   ![Participate in disaster activities](image)

![Participate in disaster activities](image)

   **Figure 5.** Disaster activities participation questionnaire result

   ![Readiness](image)

![Readiness](image)

   **Figure 6.** Readiness questionnaire result

c. The requirement for disaster readiness
The community's readiness to face the threat of a tsunami disaster is already present in the community. Some communities already have awareness of the importance of having disaster preparedness. However, the sample questionnaire shows that ready people are below 50%. The following are the results of the questionnaire:

   ![Readiness](image)

![Readiness](image)

   **Figure 6.** Readiness questionnaire result
d. Change expectations or plans in post-disaster event

In Purworejo, Regional Disaster Management Agency Purworejo recorded a catalog of earthquakes that hit Purworejo. On this note, there is no information that Purworejo had a tsunami. Thus, the post-disaster assessment was never applied to the Purworejo coast in connection with the tsunami disaster. However, the government has carried out an assessment of the tsunami disaster in other areas, such as after the tsunami in Tasikmalaya. In addition, the government also carried out assessments for other disasters that had occurred and the results were also shared publicly. This reflects that post-disaster assessments have been carried out and shared which can also be applied to a tsunami disaster should it occur.

Table 6. Planning and Procedures

| No | Indicator of Planning and Procedures | Purwodadi Sub District | Ngombol Sub District | Grabag Sub District |
|----|-------------------------------------|------------------------|----------------------|---------------------|
| 1  | Households resource level            | 2 (25-50%)             | 2 (25-50%)           | 3 (> 50%)           |
| 2  | Planning to reach the entire community | 3 (> 50%)             | 2 (25-50%)           | 2 (25-50%)          |
| 3  | Requirement for disaster readiness   | 2 (25-50%)             | 2 (25-50%)           | 2 (25-50%)          |
| 4  | Change expectations or plans         | (Assess and share)     | (Assess and share)   | (Assess and share)  |
|    | Total score                          | 9                      | 8                    | 9                   |
|    | Classification                       | Caution Zone           | Red Zone             | Caution Zone        |

3.4. Available Resources

In order to assess the level of community resilience, an analysis of resources is needed. The resources in question include human and non-human resources. The availability of resources will affect disaster planning. The following are the parameters for assessing the level of available resources:

a. Local infrastructure emergency protection plan

Infrastructure is critical to the success of disaster risk reduction efforts. The infrastructure referred to includes roads, directions for evacuation, early warning system tools, gathering points, evacuation places and buildings (either residential or public facilities). In the context of disaster risk reduction and mitigation it can be needed at any time, it is necessary to determine a temporary evacuation site (TEP), a final evacuation site (FES) and an evacuation route in a tsunami-prone zone.[18]. Roads already exist in every village that connects to arterial roads (as described in the risk and vulnerability point), but there is no maintenance plan yet. Damage to roads will hamper mobilization, while in an emergency it requires mobilization in a short time. The score for this parameter is 2 (there is identification without treatment planning).
b. The proportion of population with skills useful in emergency response
   If the composition of the community includes people who have the skills for emergency response, it will have a good impact on risk reduction efforts. This composition can be seen from the demographic profile. Namely the proportion of people with medical and rescue skills. As a result, the people in each village still have a very low proportion. If the proportion is low, then the community only depends on assistance from outside parties such as the government and volunteers. The score for this parameter is 1.

c. Educational institutions engaged in emergency preparedness education
   In Purworejo there is already an educational effort implemented by the government to prepare a generation of resilient students to face disasters. Regional Disaster Management Agency Purworejo came to schools to conduct socialization with students. However, it has not been done regularly and on a scheduled basis. The provision of disaster material is still carried out by external parties of the school (not provided by the teacher). The target of disaster education in schools is only students. At a higher level, it can be extended to all school members and parents of students. The score for this parameter is 2.

d. Available medical and public health services included in emergency planning
   Regional Disaster Management Agency Purworejo in carrying out tasks facing disasters, will act as coordinator during emergency situations. As for what is being coordinated, namely the medical team, search and rescue team, logistic team, and so on. This indicates that the support services needed during an emergency response are included in emergency planning (dealing with disasters). One of them is medical services that have been included in emergency planning. The score is 2.

e. Accessible locations available as evacuation or recovery centers
   The villages along the coast of Purworejo already have evacuation routes and temporary evacuation sites (see Figure 7). The community needs TES and evacuation routes so that when a disaster occurs, the community can immediately go to TES through the correct route according
to the evacuation route to reduce the risk of casualties when a tsunami occurs\cite{19}. The planning of evacuation routes and places is carried out by Regional Disaster Management Agency Purworejo. There is no final evacuation site (FES) in this plan. Regional Disaster Management Agency explained that the final evacuation site is conditional. When a disaster occurs, the most important thing is that the community knows where to go (namely TES). Then it can become FES depending on post-disaster conditions and available resources. The problem in the field is the absence of good publications. Evacuation directions in several villages did not show the TES location. The score is 2.

f. Level of food, water or fuel readily available in the emergency situation

The supply or supply of food, water, and fuel that is prepared for an emergency has not been prepared. From the results of interviews with Regional Disaster Management Agency and document studies, there is no specific information about this plan. Thus, the score for this parameter is 1.

Table 7. Available resource

| No | Indicator of Available Resources | Purwodadi Sub District | Ngombol Sub District | Grabag Sub District |
|----|---------------------------------|------------------------|---------------------|---------------------|
| 1  | Infrastructure emergency protection | 2 (identification without a treatment plan) | 2 (identification without a treatment plan) | 2 (identification without a treatment plan) |
| 2  | Population with skills useful in emergency | 1 (<20%) | 1 (<20%) | 1 (<20%) |
| 3  | Educational institutions engaged in emergency preparedness | 2 (there for students) | 2 (there for students) | 2 (there for students) |
| 4  | Available medical and public health services | 2 (rely on local services) | 2 (rely on local services) | 2 (rely on local services) |
| 5  | Locations available as evacuation | 2 (There is inventory, but bad publicity) | 2 (There is inventory, but bad publicity) | 2 (There is inventory, but bad publicity) |
| 6  | Level of food, water or fuel readily availability | 1 (Do not know) | 1 (Do not know) | 1 (Do not know) |
|    | Total score | 10 | 10 | 10 |
|    | Classification | Red Zone | Red Zone | Red Zone |

From the analysis of these 4 aspects, it is then used to determine the level of community resilience to the tsunami disaster. The researcher conducted a scoring on each aspect (community connectedness, risk and vulnerability, planning and procedures and available resources). The scoring results are classified into 3 clusters. The first cluster is a low category (red zone) with an index of 0 - 25%, the moderate category (caution zone) with an index of 26 - 75% and the high category (going well) with an index of 76 - 100%.
The phenomenon that occurs in the coastal community of Purworejo, when compared to the coastal community of Kebumen Regency, to be precise in Puring District, has a relatively high gap. In other research results, with the same parameters and calculation methods, it shows a higher index and has a good predicate. Historically, neither Kebumen District nor Purworejo District had a history of facing a tsunami disaster. This is evidenced by the absence of documents proving the existence of a tsunami incident at that place. However, with the same historical conditions, it turns out that it does not always produce the same results, as the views of the people in the two areas. In the Kebumen coastal community, there are several efforts made more frequently, this is a striking difference. Efforts made by the community to improve preparedness regarding tsunami disasters are by participating in the simulation and socialization of tsunami disasters. The efforts implemented in Kebumen district are actually no different from what has been implemented in Purworejo Regency. The difference is how it is implemented and its consistency. Generally, the more often it is done the better impact. This is evident in this case study. The skeptical attitude of the community that was formed was the impact of the low level of human resources, especially in understanding the tsunami phenomenon. Skeptical means ignoring the threat of a tsunami disaster or being ignorant. In several villages on the coast of Purworejo, the community behaves like this on the basis of the excuse that their area is still relatively far from the coast and has a high enough place to feel safe from the threat of a tsunami. Even though this is far from safe, in the event of a megathrust tsunami.

4. Conclusions

The total community resilience index in each sub-district is Purwodadi and Grabag 52% and Ngombol 50%. Of the 3 sub-districts located on the coast of Purworejo, all showed a moderate level of community resilience or a caution zone. At this level, improvements must be made to form communities that are resilient to disasters. The gap from the total index shows a very small gap, which is 2%. This is because the community's condition tends to be homogeneous, and the government's efforts are uniform along the coast of Purworejo in relation to the handling of the tsunami threat.

The government has made efforts to reduce the risk of tsunami disaster in Purworejo through the Regional Disaster Management Agency. The form of the effort is to build supporting facilities for disaster risk reduction with road infrastructure, directions, and places for evacuation and early warning system tools. These efforts still require development and maintenance planning. In some villages, there is no proper infrastructure and maintenance plans have not been established. Evaluation of the
community on the coast of Purworejo shows that there is still a need for efforts to increase knowledge and skills. One of the ways is by increasing public education through socialization and publication of information. Lack of this results in low public knowledge, so that awareness of disasters is also low. In addition, people who are poor in skills need to be improved so that people can be resilient in facing disasters. Efforts to increase community resilience can be carried out by considering the approach to local wisdom values, so that the community more easily accepts them. Human and non-human resources found in Purworejo need to be framed with careful planning. This means that the existence of supporting facilities must also be accompanied by demonstrations of their use so that the infrastructure and facilities can function properly. Then, maintenance efforts should ideally also be included as part of the planning. Because in the context of facing the threat of disaster, it can be needed at any time without knowing for sure.

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