The involvement of persons with disabilities in disaster risk management

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Abstract. Persons with disabilities tend to be neglected in disaster risk management. This study aims to assess the preparedness of persons with disabilities in experiencing disasters and their involvement in disaster risk management using a combination of qualitative and quantitative methods. Data and information to measure the preparedness and involvement of persons with disabilities were collected using a questionnaire that was probed by interviews and observations. The study involved 120 respondents consisting of 30 respondents with disabilities for each location. The results showed that persons with disabilities were still not prepared to face disasters. Researchers recommend the active involvement of persons with disabilities in disaster risk management at all phases and a service unit for persons with disabilities in disaster management (ULDPB) in each district/city. Those affirm the commitment of the ULDPB in providing services for them. It is also suggested to build facilities and infrastructure for mitigation and self-rescue that are friendly to persons with disabilities. Therefore, a disaster risk management model involving persons with disabilities needs to be prepared.

1. Introduction
Geographically, Indonesia is one of the countries with a high level of disaster vulnerability. Almost no area in Indonesia is not at risk from the threat of disaster [1]. The most common disasters were earthquakes and tsunamis. BNPB revealed that the earthquake in 2018 caused 572 people died, while the 2018 tsunami resulted in 3,678 deaths [2]. Statistically, the number of victims who have died and gone missing due to the disaster in 2018 was recorded at 3,548 people including persons with disabilities [3]. Natural disasters have created a new group of persons with disabilities, namely victims who are injured and have organ malfunctions. Persons with disabilities are a high-risk group during a disaster due to their limited capabilities and limited access to the physical environment, information, and communication in the community [4]. In a disaster, evacuation for persons with disabilities is often neglected and does not receive adequate attention and services [5].

Several studies have revealed that persons with disabilities and been affected by disasters often do not receive services based on their needs during the evacuation, emergency response, and rehabilitation processes [6]. So far, the handling persons with disabilities who are victims of disasters is the same as those having normal physical condition. As a result, the condition of persons with disabilities gets worse when they are at the evacuation site [7]. In 1997, The Office of Emergency Services (OES) conducted a study on how to improve the government’s response to disaster preparedness for persons with disabilities [8]. Another study was conducted by the National Council on Disability (NCD) regarding the impact of Hurricane Katrina and Rita on persons with disabilities, those persons with disabilities were a marginalized group due to limited knowledge and facilities for
protection services in disaster situations. Through the research, NCD offered the governments to develop more inclusive emergency preparedness and response planning [9]. In 2013, the United Nations Office for Disaster Risk Reduction (UNDRR) conducted a survey of persons with disabilities on how they coped with disasters and why persons with disabilities became victims in every disaster, either injured or even died. The survey results showed that 85.57% of respondents with disabilities in 137 countries were not involved in disaster communication management and risk reduction processes in their environment. As many as 72.20% of respondents stated that they did not have a disaster preparedness plan, the rest relied on family assistance. A total of 20.6% of respondents stated that they believed they could save themselves without difficulty during a disaster [10].

In Indonesia, Saru Arifin [11] researched natural disaster mitigation policies for persons with disabilities in Bantul earthquake occurred in 2006. The results of this study indicated that the mitigation policies carried out by Bantul Regency Government generally succeeded in restoring the conditions caused by the 2006 Bantul earthquake, but these conditions were not experienced by persons with disabilities. Persons with disabilities were placed in the last group to be included in the disaster planning process and even forgotten. A number of these studies showed that persons with disabilities were a group that had not been included in disaster management and preparedness planning. This underlined the need for a study on disaster risk management for persons with disabilities in Indonesia. This study aimed to examine the preparedness of persons with disabilities in dealing with disasters and their involvement in disaster risk management.

2. Literature review
Disasters are occurrence or series of events that threaten and disrupt people's lives or livelihoods caused by natural factors, non-natural factors, and human factors. Disasters can cause human casualties, environmental damage, property losses, and psychological impacts on the community [12]. Disasters are events that the time and the process are unpredictable. Therefore, it is important to take disaster management action so that the impact and victims can be minimized.

Nick Carter identifies disaster management as “an applied science which seeks, by the systematic observation and analysis of disaster to improve measures relating to the prevention, mitigation, preparedness, emergency response, and recovery” [13]. In disaster management, it has been mentioned that one of the important things that need to be conducted is to build disaster preparedness. Disaster preparedness is any activity before a disaster that aims to develop operational capabilities and facilitate an effective response when a disaster occurs [14]. According to the Indonesian Institute of Sciences (LIPI) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), five factors influencing disaster preparedness are: 1) knowledge and attitudes towards disaster risk, 2) policies and guidelines, 3) plans to deal with the emergency during a disaster, 4) disaster warning system, 5) ability to mobilize resources [15].

Those five factors are then explained further. Knowledge is the main factor and the key to preparedness. The knowledge can usually influence the attitude and concern of the community to be ready and alert in anticipating disasters [16]. A disaster preparedness policy is a concrete effort to carry out disaster preparedness activities. Policies that have a significant effect on preparedness include public education, emergency planning, disaster warning systems, and resource mobilization, including funding, management organizations, human resources, and important facilities for disaster emergencies [17]. The policy is stated in various forms such as Decree or Regional Regulation which is equipped with operational guidelines. Plans for natural disaster emergencies are mainly related to evacuation, relief, and rescue so that disaster victims can be minimized. This effort is crucial, especially during a disaster and in the first day after a disaster before aid from the government and outside parties arrives [18]. Disaster warning systems include warning signs and the distribution of information about a disaster. Through disaster warning, the community can take appropriate actions to reduce casualties, property, and environmental damage. Therefore, exercises and simulations are required: what to do when they hear a warning, where and how to save themselves at a certain time, depending on the location of the community when the warning is issued. The available resources, human resources, funding, and important infrastructure for emergencies are potentials that can support or otherwise become obstacles in natural disaster preparedness [19].

Increased preparedness is part of the disaster risk management process. The preparedness of a community cannot be separated from other aspects of disaster management activities [20]. Various
pre-disaster preparation steps are needed to ensure the achievement of preparedness level, and the effectiveness of community preparedness can be seen from the implementation of emergency response and post-disaster recovery activities [21]. During the implementation of post-disaster recovery and reconstruction, a preparedness mechanism must be established to deal with the possibility of the next disaster. Disaster risk management must be carried out in the entire community, so vulnerable groups are included as well as persons with disabilities [22].

Persons with disabilities are one of the groups who mostly at-risk during disasters besides children, women, pregnant women, and the elderly [23]. Persons with disabilities are any person who experiences physical, intellectual, mental, and/or sensory limitations in the long term who is interacting with the environment. Those can experience obstacles and difficulties to participate fully and effectively with other citizens based on equal rights. The physical limitations experienced by persons with disabilities make them require special services or facilities that support their mobility when disaster occurs. The involvement of persons with disabilities in disaster management activities will ensure the fulfillment of their needs and their handling when a disaster strikes.

In Indonesia, the protection of persons with disabilities in disaster management has been regulated in the Regulation of the Head of the National Disaster Management Agency (Perka BNPB) Number 14 of 2014 concerning the handling, protection, and participation of Persons with Disabilities in disaster management. The regulation clearly states that every person with a disability gets protection from inhumane treatment, torture, exploitation, violence, and arbitrary treatment, and gets respect for their mental and physical integrity based on the principle of equal rights, including social services in terms of independence (chapter 3:1). Article 4 also states that BNPB and BPBD form a disability service unit as a team for handling persons with disabilities in disaster management. Article 9 states that to fulfill the rights and needs according to the aspirations of persons with disabilities, all aspects of disaster management must actively involve them in the planning, implementation, monitoring, and evaluation stages as well as in disaster risk reduction forums. Moreover, article 10 states that capacity building must be provided to persons with disabilities. The assistant staff, families, and the community are facilitated by services, training, simulations, and disaster drills by adjusting the type and degree of disability through formal and non-formal education. Regulation of the Head of BNPB also regulates the handling of persons with disabilities at each stage of disaster management. It means that the government guarantees the handling, protection, and involvement of persons with disabilities in every stage of disaster management. Perka BNPB became the starting point for the involvement of persons with disabilities in disaster management in Indonesia.

3. Methodology
This study combined qualitative and quantitative methods [24]. The research was conducted in four areas, namely Padang city, Magelang regency, Gianyar regency, and South Lampung regency. The four locations were selected based on the vulnerability, history of disasters, and the large number of persons with disabilities in the area. Researchers specifically chose the research locations by dividing them into four types of factual disasters that had been experienced, namely earthquakes, tsunamis, volcanic eruptions, and hydro metrology disaster. Padang city represents an area with earthquake, South Lampung regency with tsunami, Magelang regency with a volcanic eruption, and Gianyar regency with a drought disaster [25]. This study involved 120 respondents consisting of 30 respondents with disabilities in each location. As many as 120 respondents were interviewed in Indonesian using a semi-structured questionnaire. Respondents consisted of 69 men and 51 women with 25 age groups between teenagers, 86 adults, and 9 elderly people. Respondents were divided based on the categories of disability, namely 16 people with visual impairment, 47 people with physical disabilities, 14 people with hearing impairment, and the other 43 people. As many as 50 respondents had disabilities since birth, while the rest were caused by accidents, diseases, natural disasters, and others.

The research data consisted of information on the preparedness of persons with disabilities for disasters and their involvement in disaster risk management. Their readiness to the disaster was measured using five parameters, namely knowledge of policies, knowledge of disasters, ownership of emergency response plans, knowledge of early warning systems, and the ability to utilize the resources by optimizing skills in dealing with disasters, such as financial assets, relatives, and friends who are willing to help. The involvement of persons with disabilities in the disaster risk management
process was observed from the pre-disaster stage, during a disaster, to post-disaster. Data and information to measure the their preparedness and involvement were collected using a questionnaire deepened by interviews and observations. The data and information obtained were then analysed descriptively to explain the research objectives without testing the hypothesis. The level of preparedness and involvement of persons with disabilities in disasters was divided into five categories, namely very ready, ready, almost ready, less ready, and not ready. Research credibility was fulfilled using triangulation of research sources, namely field findings, expert opinions, and literature studies.

4. Results and discussion

4.1. Preparedness of persons with disabilities for disaster

The readiness of persons with disabilities is their ability to deal with disasters that may occur, including their views on the disaster itself and their knowledge of policies and programs that the government has prepared to deal with disasters. The readiness of persons with disabilities in this study was assessed in five parameters, namely knowledge of policies, knowledge of disasters, ownership of emergency response plans, knowledge of early warning systems, and utilizing the resources by optimizing the skills to deal with disasters, such as financial assets, relatives, and friends who are willing to help. Those five parameters were then calculated in the preparedness index at each research location. Table 1 shows the disaster preparedness index of persons with disabilities.

| Parameter                        | Total index | Gianyar  | South Lampung | Magelang  | Padang  |
|----------------------------------|-------------|----------|---------------|-----------|---------|
| Policy                           | 31.67       | 8.67     | 41.33         | 40.67     | 36.00   |
| Disaster knowledge               | 64.23       | 45.29    | 83.32         | 67.94     | 60.38   |
| Emergency response plan          | 47.06       | 26.22    | 68.22         | 53.00     | 40.78   |
| Early warning system             | 38.21       | 13.34    | 55.21         | 42.93     | 41.76   |
| Resource Mobilization            | 20.09       | 10.82    | 33.51         | 17.89     | 18.16   |

Remarks:
0 – 20 Not ready
21 – 40 Less ready
41 – 60 Almost ready
61 – 80 Ready
81 – 100 Very ready

Table 1 shows that persons with disabilities as respondents are less prepared to encounter disasters, especially on policy parameters, early warning systems, and resource mobilization. In the disaster knowledge parameter, the respondents are ready for disaster, while in the emergency response plan parameter, the respondents are quite ready. Respondents’ readiness for disaster knowledge and attitudes should be a strong basis in determining steps and preparations dealing with possible disasters and to reduce disaster risk; however, in reality, the very ready knowledge index is not followed by other readiness parameters, especially the respondent's ability to mobilize their resources and assets. It turns out that the respondents’ knowledge is only in the level of knowing; moreover, they have not been able to practice it in their daily lives. Several factors that may be the causes are low level of knowledge (more than 50% of respondents were elementary school graduates, even 46 respondents did not go to school at all) and low level of welfare (63.33% of respondents did not have a permanent job). Those two factors cause the priority of respondents' lives merely to fulfill their basic needs without concerning on disaster risk management even though the disaster cannot be predicted precisely when it will occur. Meanwhile, Gianyar regency has the lowest disaster preparedness index for policy parameters, early warning system, and resource mobilization with a value of less than 20 (not ready). Meanwhile, the emergency response plan parameter has a value of 22.26% or less ready. The unpreparedness and even unpreparedness of respondents regarding emergency response plans, policies, early warning systems, and resource mobilization is because the respondents in Gianyar regency have never experienced a major disaster and generally they only experience the impact of
disasters such as earthquakes, distribution of volcanic ash in eruptions. They do not experience the direct impact of the disaster. Gianyar was once a refuge for disaster victims from other districts in the vicinity, namely during the eruption of Mount Agung. Each parameter of disaster preparedness of persons with disabilities is explained in more detail as follows.

4.1.1. Knowledge of policy. Knowledge of persons with disabilities about government policies in disaster management is reviewed in five ways, namely socialization of disaster preparedness, preparedness policies in the nearest environment or residencies, evacuation signs, guidelines for helping persons with disabilities, and special evacuation routes for persons with disabilities. Respondents’ answers to questions regarding knowledge about disaster management policies are presented in Table 2.

| Indicators                                | Respondents (n = 120) |
|-------------------------------------------|-----------------------|
|                                           | Frequency | Percentage |
| Preparedness socialization                 | 41        | 34.17      |
| Residential preparedness policy            | 31        | 25.83      |
| Evacuation signs                           | 79        | 65.83      |
| Guidelines for helping persons with disabilities | 21        | 17.50      |
| Special evacuation routes for persons with disabilities | 18        | 15.00      |

From Table 2 above, it is known that the highest knowledge of persons with disabilities towards government policies in disaster management is regarding the existence of evacuation instructions with a score of 65.83%. Meanwhile, the lowest score is in their knowledge of special evacuation routes for persons with disabilities with a score of 15%. The available evacuation signs are for the general public and can be easily recognized, but there is no special evacuation route for persons with disabilities provided and known by the respondents.

4.1.2. Knowledge of disaster. Knowledge of persons with disabilities about disasters is revealed from their knowledge of the potential and types of disasters that may occur in their place of residence, what a disaster is, what characteristics or signs of a disaster are, as well as disaster information they receive. Respondents’ answers regarding their knowledge of disasters are shown in the following table.

| Respondents                               | Frequency | Percentage |
|-------------------------------------------|-----------|------------|
| Yes, they know                            | 83        | 69.17      |
| No, they don’t                            | 37        | 30.83      |
| Total                                     | 120       | 100.00     |

Table 3 shows that the majority of respondents (69.17%) know that the area where they live is prone to various potential disasters. More specifically as many as 88.33% of respondents know that their houses stand on land that is prone to disasters. In reality, knowledge of disaster risk at the location of residence is often ignored by respondents due to several historical reasons (ancestral land) as well as economic reasons, namely proximity to their workplace. The high level of knowledge about disaster zones where respondents live is related to obtaining disaster information. The research shown that 67.50% respondents get information about disaster from non-government institutions than from government employees themselves (27.50%). This is certainly an important note for the government in dealing with persons with disabilities who experience disasters.
4.1.3. Emergency response plan. Knowledge of persons with disabilities is assessed from their awareness of disasters. This includes planning to deal with disasters, saving themselves, and preparing the locations to escape. Respondents' answers can be seen from the following table.

| Emergency plans                                                  | Respondents |
|-----------------------------------------------------------------|-------------|
| Prepare actions to be taken by family members                    | 58          |
| Agree on a place to evacuate                                    | 54          |
| Prepare evacuation routes                                       | 67          |
| Prepare food or supplies while evacuating                        | 61          |
| Prepare first aid kit (medicine box)                            | 61          |
| Prepare important documents and papers, including family photos | 53          |
| Prepare clothing, cash, and emergency supplies                  | 16          |
| Set up alternative communication tools (Handy Talkie/Radio/mobile phone) | 82          |
| Prepare important addresses/phone numbers (e.g., Nearest hospital, Police Station, State Electricity Company) | 56          |
| Others                                                          | 35          |

Table 4 shows that the average respondents have prepared various escape plans during a disaster. More than 50% of respondents have prepared evacuation routes, food or supplies during the evacuation, important documents and letters, and alternative means of communication. Unfortunately, only 13.33% of respondents prepare clothing, money, and other emergency needs in their emergency response plans. In addition, they will also take some measures to save themselves. As many as 57.50% of respondents state that they will move house, 63.33% have participated in family evacuation exercises, but only 16.67% state that they have made evacuation plans. A total of 71.67% of respondents choose a place of worship as a place to evacuate and to save themselves and only 20% of respondents will choose the tent/disaster post provided.

4.1.4. Disaster warning system. Knowledge of persons with disabilities regarding disaster warning signs or methods in their respective areas showed their preparedness to face disasters. Research shown that only 48.33% of respondents know the signs/methods of disaster warnings in their area. In the next question, it is also known that only 20% of respondents are aware of the cancellation of disaster status and only 14.17% of respondents are aware of any warning signs of a safe situation. Sources of information on disaster warnings known to respondents are mainly from local governments amounted to 81.67 percent and also from stories passed down through generations as much as 70.83 percent.

4.1.5. Resource mobilization. It is the respondent’s knowledge to take advantage of the assets they have, including the training they have attended, their skills, their family members, their relatives and friends who are willing to help, and other financial assets. Research showed that only 9.17% of respondents have attended training, seminars, or meetings related to disaster preparedness. Furthermore, the types of skills possessed include how to give first aid (12.50%), how to evacuate (5.83%), scouting knowledge (25%), how to treat water (16.67%), how to process food (20%), and other skills as much as 9.17%. Research result also showed that savings are assets that are generally owned by respondents, regardless of how many balances they have. Only 14 respondents state they have life/property insurance and only 15 respondents owned land or houses elsewhere. Their insurance is usually life insurance obtained from where they work. In addition to financial assets, there are 33.33% of the respondents also have social assets in the form of relatives or friends who are willing to help and can be relied on when a disaster occurs.

The community's ability to mobilize and utilize its resources and assets is considered low. The results of the interview state that it is not because the respondents are not willing to save or invest, but that they do not have enough money to have savings, insurance, spare-house or other forms of investment.
4.2. Involvement of persons with disabilities in disaster risk management

The involvement of persons with disabilities in disaster risk management is divided into three phases, namely pre-disaster, during the disaster, and post-disaster.

4.2.1. Pre-disaster. The involvement of persons with disabilities in disaster risk management in the pre-disaster phase is dominated by mitigation activities and strengthening the preparedness of persons with disabilities. Respondents' answers regarding the involvement of persons with disabilities in the pre-disaster phase are shown in the following table.

| Policy                                      | Respondents |
|---------------------------------------------|-------------|
| Emergency response plan for persons with disabilities | 8 6.67      |
| Evacuation for persons with disabilities    | 2 1.67      |
| Disaster warning system for persons with disabilities | 0 0.00      |
| Mobilization of resources for persons with disabilities | 0 0.00      |
| Disaster preparedness education for persons with disabilities | 12 10.00    |
| Others                                      | 5 4.17      |

Table 5 shows that persons with disabilities were rarely involved in the process of formulating disaster policies related to their disability conditions. Only 12 respondents revealed that they have been involved in formulating policies or disaster preparedness education materials for persons with disabilities, 8 respondents answered that they participated in the making of emergency response plans, and only 2 respondents answered that they have participated in the making of disaster evacuation policies for persons with disabilities. The involvement of persons with disabilities in disaster risk management is also shown in the policy socialization activities. Persons with disabilities did not participate in socialization activities related to disaster policies and guidelines in their regions. Only 2 (1.67%) respondents stated that they have participated in socialization at the district/city level, and 7 (5.83%) respondents have attended socialization at school. To fulfill their rights in disaster situations, regions are required to form a Disaster Management Disability Service Unit (ULD-PB). However, unfortunately, out of 120 respondents, only 7 (5.83%) respondents admitted that they knew this institution. In addition, it is also revealed that only 3 (2.5%) respondents were involved in the preparation of mitigation plans, and 1 (0.83%) respondent was aware of the disaster management budget for persons with disabilities. Meanwhile, there were 2 (1.67%) respondents who were included in the preparation of the budget.

4.2.2. When a disaster occurs. The involvement of persons with disabilities in disaster risk management when disaster occurs were more focused on the evacuation and shelter condition. Research showed that facilities for persons with disabilities during disasters and in the shelter were still very minimal. Only 4 (3.33%) respondents stated that there are disaster warning signs adjusted to the type of disability they have; 7 (5.83%) respondents stated that there are special evacuation facilities for persons with disabilities; 3 (2.5%) respondents stated that there are special facilities, such as special toilets for persons with disabilities in the refugee camps; and 16 (13.33%) respondents stated that they have received aids in the refugee camps. Only 6.67% of respondents revealed that they received assistance in the refugee camps.

4.2.3. Post-disaster. The involvement of persons with disabilities in disaster risk management in the pre-disaster phase is dominated by data collection and empowerment of persons with disabilities, while in the post-disaster phase, involvement is prioritized on the reconstruction of disability-friendly buildings. The involvement of persons with disabilities in the post-disaster phase is shown in the table.
Table 6. Post-disaster data collection for persons with disabilities

| Indicators                              | Respondents | Frequency | Percentage |
|-----------------------------------------|-------------|-----------|------------|
| Post-disaster data collection           | 31          |           | 25.83      |
| Economic empowerment                     | 5           |           | 4.17       |
| Construction of disabled-friendly public facilities | 6           |           | 5          |

Table 7 states that only 31 (25.83%) respondents were recorded by officers from the social service which focus on the type of disability, losses experienced, current conditions, conditions during disaster, required assistance, shelter during disaster, and other personal data. In addition, persons with disabilities also receive economic empowerment assistance. Unfortunately, only 5 (4.17%) respondents stated that they received post-disaster economic empowerment assistance. The economic empowerment obtained was in the form of massage training, making handicrafts, and making crackers (kerupuk). During the post-disaster reconstruction period, the government also built damaged public facilities, but only 6 (5%) respondents were aware of this fact.

From the respondents’ answers, it is generally known that persons with disabilities are not fully involved in disaster risk management from the planning stage to supervision. Persons with disabilities are still considered as objects of development or programs, not subjects that can be optimally empowered. The regulatory mandate of the Head of BNPB states that the participation of persons with disabilities in disaster management must be carried out to fulfill the rights and needs according to their aspirations. However, in reality, this has not been implemented yet. The regional service units for persons with disabilities that should be established in each district/city are still below the expectation. It is very possible because there is no common perception between the government and persons with disabilities in understanding themselves. The Indonesian Ministry of Social Affairs as the leading sector that provides services for persons with disabilities has not yet treated them as fully and empowered individuals. This can be seen from the service program for persons with disabilities which focuses more on providing social assistance (as a mere charity) instead of empowerment [4].

The low involvement of persons with disabilities in disaster risk management was also caused by the low ability of government officials who handled disasters related to how to communicate and how to interact with persons with disabilities. The government had not had sufficient capacity yet to create an inclusive environment for them. Socialization at the school level also could not be carried out optimally because the education system had not supported inclusive education yet. There was no standard curriculum in disaster education for children in general and persons with disabilities. The lack of availability of facilities for persons with disabilities during a disaster also showed that persons with disabilities received less attention during a disaster emergency. Persons with disabilities were excluded so that their relevant needs were not met. Newly disabled persons were seen as disaster victims who had to be recorded but were not involved in the post-disaster rehabilitation and reconstruction process.

5. Conclusion

The two issues that are the focus of this research are the preparedness of persons with disabilities in dealing with disasters and their involvement in disaster risk management. This research reveals the unpreparedness of persons with disabilities in dealing with disasters. This fact is reflected at least in the low understanding of persons with disabilities about policies, early warning systems, and resource mobilization in disaster management. This research also reveals that although disaster risk management has been implemented in all research locations, no location has specifically implemented it for persons with disabilities. This fact confirms the low involvement of persons with disabilities in disaster risk management in their area.

The low understanding of persons with disabilities about policies, early warning systems, and resource mobilization in disaster management is not the only cause of their unpreparedness in disasters. On the other hand, the low capacity of government officials, especially on how to communicate and how to interact with persons with disabilities, also contributes to the vulnerability of
persons with disabilities in dealing with disasters. This fact is reflected that the involvement of persons with disabilities is excluded in disaster risk management in each of the research locations.

The researchers recommend an active involvement of persons with disabilities in all stages of disaster risk management and the establishment of a service unit for persons with disabilities for disaster management (ULDPB) in each district/city which is strengthened by a commitment to provide inclusive services to persons with disabilities in disaster risk management. It is expected to increase the preparedness of persons with disabilities to face disasters. Therefore, a model of inclusive disaster risk management needs to be prepared immediately to increase and ensure the involvement of persons with disabilities. The disaster risk management model for them is a guideline for the active involvement of persons with disabilities in disaster risk management including planning, organizing, directing, coordinating, controlling, supervising, budgeting, and financing. It covers the pre-disaster stage (preparation, prevention, mitigation, preparedness), the the emergency response stage (disaster), and the post-disaster stage (reconstruction, rehabilitation, and taming of natural movements that cause disasters). However, this cannot be separated from 1) increasing knowledge and attitudes of persons with disabilities towards disaster risk, 2) improving policies and guidelines for disaster management efforts, 3) improving plans for dealing with disaster emergencies, 4) improving disaster warning systems, and 5) increasing the capacity of persons with disabilities in mobilizing resources. Involvement of persons with disabilities in disaster risk management along with increasing their understanding of disaster management will better ensure the fulfillment of the needs of persons with disabilities in the disaster.

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