Implementation of disaster response policy in Indonesia

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Abstract. According to the Word Risk Report (WRI) 2022, Indonesia is the third most prone disaster countries in the world, with risk index is 39,89. Measures have been taken by the government of Indonesia to reduce disaster impacts within the country, however such measures have been conducted particularly on the fase of disaster response only. Although the policies and procedures to undertake the disaster response are in place, the actual disaster relief actions are still conducted uncoordinatedly, even failed to reach the mission accomplishment. This study has been conducted in order to find out solutions in undertaking disaster response management based on previous best practices in several major disasters in the country. Authors highlighted what went wrong and what successfully conducted and why related stakeholders failed to implement such policies. In this study authors found that there are 6 (six) findings that lead to disaster response management failures such as; 1) understanding of existing response policies, 2) response mechanism guidelines, 3) cluster mechanism, 4) facilitative leadership, 5) civil-military coordination, 6) disaster response exercise. Authors conclude that the government needs additional relevant policies in order to fill the gap among existing policies to enhance a better disaster response in the future.

1 Introduction

Indonesia ranks as the third most disaster-prone country in the world [1]. It faces various threats, including earthquakes, tsunamis, volcanic eruptions, floods, landslides, wildfires, and other hazards. These challenges are compounded by its population of 272 million inhabitants, with a significant portion residing on the island of Java. Addressing disaster events presents a considerable challenge, given Indonesia's maritime nature, characterized by a collection of islands that primarily hinder swift response efforts.

On December 26, 2004, the Indian Ocean tsunami occurred following a massive earthquake measuring 9.1 magnitude. This event impacted 14 countries, including Indonesia's Aceh Province, resulting in a death toll of 227,898 people across the affected nations. The response to the Indian Ocean tsunami's impact on Aceh Province involved national resources and international assistance. This catastrophe served as a wake-up call for the Indonesian Government, revealing the lack of a national policy to confront natural disasters despite its population reaching 272 million. Consequently, the Indonesian population remains inadequately resilient in the face of disasters. Learning from the 2004 Indian Ocean tsunami, Indonesia formulated a national policy for disaster management in 2007 through Disaster Law Number 24 of 2007 [2]. This law addresses policies, strategies, programs, and activities concerning disaster management, spanning pre-disaster, disaster occurrence, and post-disaster phases. The authority for disaster management was established through the National Disaster Management Agency (BNPB).

Crisis management during disasters hinges not solely on decision-making frameworks but also on implementing decisions. It involves shaping response networks and establishing legitimate responses based on orchestrated actions. Effective crisis response diminishes the impact of disasters, whereas inadequate handling exacerbates their consequences [3]. The enactment of Disaster Law No. 24 of 2007 on Disaster Management ushered in a new dimension to disaster mitigation. This paradigm shift underscores the transition from response-focused approaches to prevention. The framework encompasses several related regulations [4-6]. These regulations collectively emphasize comprehensive and proactive disaster management, uniting stakeholders' efforts to create resilience within a developmental context. These policies led to establishment of the National Disaster Management Agency (BNPB) [7], equipped with various implementing regulations. Effective, efficient, and sustainable disaster management operations are imperative.

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Disaster management involves diverse stakeholders from various disciplines, making it a complex and distinctive endeavor. Collaboration in disaster management entails multiple parties and coordination challenges. Inadequate coordination yields prolonged issues.

In 2016, BNPB issued guidelines for disaster response management through Head of BNPB Regulation [8]. Subsequent significant disasters since 2016 have been managed based on these guidelines. However, the efficient and effective implementation of disaster response management activities remains challenging. Observations were made on the management of disaster response activities in various instances, including the West Sumatra earthquake and tsunami (2009), the Pandeglang tsunami (2018), the NTB earthquake (2018), the Central Sulawesi earthquake (2018), and the West Sulawesi earthquake (2001).

Following a disaster management cycle, Indonesia's disaster management approach comprises three phases: pre-disaster, disaster occurrence, and post-disaster. Disaster response occurs during the disaster phase. Preparedness for disasters and mitigating their impacts occur before the disaster, while recovery and mitigation activities follow the disaster. There are five categories of disaster management models are identified: a) logical models, b) causal models, c) integrated models, d) combinatorial models, and e) uncategorized models. Among logical models, twelve types of disaster management models exist. One of these models, categorized as an expand & contract model [9], is frequently employed in Indonesia's disaster management practices.

![Graphic: Expand & Contract Model](Fig. 1. Expand & Contract Model [9].)

In this context, the author confines the discourse on the implementation to the disaster response phase exclusively.

### 2 Policy for the implementation of disaster response management activities

Within Disaster Law article 48 stipulates six tasks that must be carried out during the disaster response period to mitigate disaster impacts, then followed by recovery activities [2].

<table>
<thead>
<tr>
<th>No</th>
<th>Objectives</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Performing rapid assessments</td>
<td>Rapid assessments are conducted to identify and predict the impacts of the disaster, serving as the basis for the Regent/Mayor, Governor, or President to establish the disaster security level.</td>
</tr>
<tr>
<td>2</td>
<td>Declaring a state of emergency</td>
<td>Based on the disaster’s impacts, the Regent/Mayor determines the disaster severity level, with the President designating a national-level disaster, the Governor a provincial-level disaster, and the Regent/Mayor a regency/city-level disaster. The state of emergency declaration is necessary to enable “ease of access” in implementing SKPDB management to deploy required resources rapidly.</td>
</tr>
<tr>
<td>3</td>
<td>Search and Rescue (SAR)</td>
<td>Authorized institutions conduct search and rescue activities under the coordination of the SKPDB Commander for a designated period.</td>
</tr>
<tr>
<td>4</td>
<td>Fulfilling basic needs</td>
<td>Provide basic needs such as clean water, sanitation, food, clothing, healthcare, psychosocial support, temporary shelters, and housing.</td>
</tr>
<tr>
<td>5</td>
<td>Protection of vulnerable groups</td>
<td>Provide priority services for victims, pregnant women, infants, older people, and persons with disabilities.</td>
</tr>
<tr>
<td>6</td>
<td>Immediate recovery of vital infrastructure</td>
<td>Give recovery efforts to restore the functioning of essential infrastructure and facilities to ensure the continuity of community life.</td>
</tr>
</tbody>
</table>

### 3 Disaster response command system

Large-scale natural disasters (sudden onset major disasters) lead to crises across various development sectors, causing abrupt halt in governmental systems. To promptly address such crises, effective crisis management is essential. Effective crisis management entails a combination of various activities that achieve their objectives through efforts: rapidly detecting emerging crises, ensuring involved parties in crisis response comprehend the situation, critical
decisions made by appropriate actors, integrated efforts among involved stakeholders (orchestrated), effective public communication by the Government, and post-crisis accountability procedures and learning from crisis management [10]. This viewpoint aligns with perspective that a primary goal of managing significant disaster response management is to attain the maximum possible outcomes to mitigate the disaster's impacts. [11]

In Indonesia, the management of crisis or disaster response management is executed through the disaster response command system (SKPDB) activated based on the declaration of a state of emergency as stipulated by Disaster Law article 48. The implementation of this command system is differentiated according to the status of disaster emergencies at the district/city, provincial, and national levels. The statuses of disaster emergencies include emergency preparedness, emergency response, and transitional status from emergency to recovery.

The components of the disaster response command system (SKPDB) include Disaster Response Management Post (PBD) as the operational control unit, supported by field PDB posts as the operational execution units, and national coordination center (NCC) unit as the operational assistance units. The NCC unit normally placed at provincial level SKPDB, it refers to efforts involving humanitarian supports from the national level coordinated by BNPB (National Disaster Management Agency). Then at district/city-level SKPDB, there is a provincial coordination center unit that involves humanitarian supports from the provincial level which coordinated by BPBD Provinsi (Provincial Disaster Management Agency).

According to the Head of BNPB regulation [8], the Disaster Response Command System will be executed by a Disaster Response Task Force (DRTF) which is a hierarchical management structure that operates top-down after activating an on-site command post as describes in Figure 2. The primary objective of this command system is to conduct the six main activities listed in Table 1 above, as mandated by Article 48 of Disaster Law. The following presents a typical organizational structure of the DRTF, which can be tailored to fit specific field requirements.

In implementing such disaster response management on the ground, the DRTF should organize and coordinate huge involvement of stakeholders at the affected locations. According to such condition, the roles and functions of each activity section will be divided into clusters, comprising 8 (eight) working clusters, as follows [12]:

![Fig. 2. The Structure of Disaster Response Task Force (DRTF).](image)

### Table 2 Cluster group coordinators.

<table>
<thead>
<tr>
<th>No</th>
<th>Working Clusters</th>
<th>National Level Coordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Search &amp; Rescue</td>
<td>Basarnas (National Search and Rescue Agency)</td>
</tr>
<tr>
<td>2</td>
<td>Logistics</td>
<td>BNPB (National Disaster Management Agency)</td>
</tr>
<tr>
<td>3</td>
<td>Internal Displaced People</td>
<td>Ministry of Social Welfare</td>
</tr>
<tr>
<td>4</td>
<td>Educations</td>
<td>Ministry of Education</td>
</tr>
<tr>
<td>5</td>
<td>Initial Recovery</td>
<td>Ministry of Interior Affairs</td>
</tr>
<tr>
<td>6</td>
<td>Economic Recovery</td>
<td>Ministry of Agriculture</td>
</tr>
<tr>
<td>7</td>
<td>Infrastructures &amp; Housing</td>
<td>Ministry of Public Works &amp; Housing</td>
</tr>
<tr>
<td>8</td>
<td>Health</td>
<td>Ministry of Health</td>
</tr>
</tbody>
</table>

The working clusters depicted in Figure 3 constitute a component of the DRTF organizational structure in Figure 2, and the roles and functions of these cluster groups are positioned under the command and control of the DRTF Commander (acting as the Incident Commander). Each cluster group is coordinated by an official appointed by the relevant Minister or Head of the respective institution.
Subsequently, Head of BNPB enacted a mechanism of working clusters based on such letter of recommendations from related Ministers and the Heads of the relevant institutions, as outlined in Table 2.

The traditional concept, previously disaster response managed solely by the Government (single entity), has evolved into a framework involving multiple entities (multiple organizations) to enhance public service [13]. The implementation of the DRTF policy also involves the governance of diverse resources (multiple groups) originating from various ministries/institutions, TNI/Polri (Indonesian National Defense Forces/Police), business entities, NGOs, civil societies, communities, as well as international aid for major disasters. Within the stipulated timeframe during the state of emergency declared by the Regent/Mayor, Governor, or President, the DRTF management conducts humanitarian activities according to the types of activities listed in Table 1 above. The DRTF management activities continue until the state of emergency is officially concluded. In specific situations and conditions where humanitarian assistance activities and DRTF management remain necessary, the state of emergency status may be extended as required, or humanitarian activities can be conducted during the transitional state from emergency to recovery.

**Fig. 4.** Coordination meeting was conducting at disaster response command posts during West Sulawesi Earthquake (2021) during disaster relief period.

Four essential aspects determine the success of effective disaster response management: a) effective accountability systems, b) comprehensive situation assessment, c) deployment of resources aligned with needs, and d) effective communication systems. The management of disaster response is expected to coordinate various stakeholders involved within a unified organizational structure and a single command structure [14]

### 4 Findings

The authors conducted a study and direct observations on the disaster response management activities of four significant earthquakes in Indonesia that had widespread impacts. These events included the disaster response management of the earthquakes in NTB (2018), Central Sulawesi (2018), West Sulawesi (2021), and West Sumatra (2009). The researchers were part of the BNPB (National Disaster Management Agency) team officials who provided support during the disaster response management operations at these four locations. Disaster relief activities were carried out in each location using the DRTF as guided by the provisions outlined in SKPDB regulation [8]. However, discrepancies in understanding and implementing the DRTF were observed during its execution. Some of the primary findings observed by the authors that contributed to the failure of DRTF implementation are as follows:

a. Understanding of existing response policy
   
   Various central government ministries/institutions, the Indonesian National Defense Forces (TNI), the National Police (Polri), as well as regional disaster management authorities are expected to comprehend the policies related to disaster response management [2, 4, 5, 6, 8, 15, 16]. All these policies are intended to achieve the humanitarian needs targets, as listed in Table 1. From the authors observations during the implementation of response management at the four earthquake disaster sites, government officials at the central level, both from the TNI/Polri and Ministry/Institution sectors, have yet to understand the abovementioned policies fully. Similarly, there is a lack of understanding regarding these disaster response management policies at the regional level, including Governors, Regent/Mayors, and the Heads of Provincial/Regency/City BPBD (Local Disaster Management Agency). In the four disaster-stricken locations, the Head of BNPB and his officials arrived at the disaster sites and directly provided guidance and assistance to the Governors, Regents/Mayors on activating disaster response command posts and establishing the organizational structure of DRTF. Consequently, the leadership of TNI/Polri, Ministries/Institutions, and other involved parties set up separate command posts and acted without being under a unified DRTF command structure, as mandated by disaster response management policies.

b. Response mechanism guidelines
   
   The absence of guidelines, standard operating procedures (SOPs), and a clear division of tasks at the field level (main command post, subsidiary command posts, and supporting command posts) is evident. The SKPDB regulation have not detailed the responsibilities and relationships among the multiple parties involved. Consequently, the governance of disaster response management functions is mainly based on agreements reached during meetings at the command posts. This dependency heavily relies on the experience and capabilities of the command post leaders. Challenges in emergency management arise particularly during large-
scale, complex disasters, eventually affecting the smooth distribution of resources.

c. Cluster mechanism

The division of working clusters is intended to categorize the areas of work into eight distinct groups, thereby enabling each cluster to manage all relevant aid of similar nature originating from various stakeholders, including both civilian and non-civilian sources (Polri or military assets), as well as contributions from both national and international levels. The classification into eight clusters has been coordinated with UN-OCHA in Jakarta due to the international-level cluster division set by the Inter-Agency Standing Committee (IASC), which consists of eleven clusters. However, an agreement has been reached to integrate these IASC clusters into the eight national clusters in Indonesia. The implementation of this cluster system has been applied properly during earthquake disaster incidents in Central Sulawesi (2018), NTB (2018), and West Sumatra (2009), where the Indonesian Government received humanitarian assistance from countries and international organizations. Nonetheless, the execution of cluster-based workgroups (clusters) at the disaster mentioned above sites has not been effectively carried out due to the lack of standardized working procedures (SOPs), contingency plans and established field mechanisms, as well as the insufficient training of the personnel responsible for managing the roles and functions of these cluster-based workgroups (clusters).

d. Facilitative leadership

The observations conducted by the authors during moderate and large-scale natural disaster incidents at the four disaster sites mentioned above highlight that effective leadership entails strong leadership and the ability to facilitate equity among the involved parties. The deployment of logistical resources and personnel in the context of major-scale disasters (West Sumatra, Central Sulawesi, NTB, and West Sumatra) originates from various levels of stakeholders, both domestic and foreign, encompassing civilian and military assistance (TNI/Polri). The commanders of DRTF that normally appointed from the leadership of the TNI/Polri regions/areas have not fully embraced a facilitative leadership role. While stakeholders from the civilian sectors require direction, they also necessitate a commander who adopts a facilitative role, given that stakeholders encompass diverse competency levels and power imbalances among them. Thus, the role of the DRTF Commander as a facilitator is vital to address the disparities among involved stakeholders during decision-making within DRTF framework. The prevailing situation manifests in a reluctance of many civilian stakeholders to fulfill assigned tasks due to the insufficient training of DRTF Commanders in administering this DRTF management.

e. Civil-military coordination

Deploying military and police assets in disaster response in Indonesia is a mandatory and automatic procedure. In contrast, particularly in western countries, the deployment of military assets is considered as the last resort, meaning that military assets are employed when civilian assistance assets can no longer manage the situation. Military and police assets are government resources that are readily available 24/7 throughout the week. When a natural disaster occurs in Indonesia, the Indonesian National Armed Forces (TNI) and the National Police (Polri) automatically mobilize their resources to support disaster management authorities at the local level (coordinated by BPBD) in order to ensure the prompt delivery of humanitarian aid. In principle, TNI/Polri and civilian assets are simultaneously deployed for each disaster event location. However, no mechanism, guidelines, or Standard Operating Procedures (SOPs) currently exist governing the Civil-Military relationship under a single DRTF management framework.

The TNI and Polri operate based on SOPs established by their respective headquarters. It is evident when the DRTF Commander is appointed from the TNI or Polri, leading to civilian personnel within the DRTF organization, civilian officials feeling uncomfortable and unfamiliar with the working procedures of the TNI and Polri. This situation affects the smooth implementation of disaster response management. The authors observed the emergence of this issue in all four disaster event locations.

f. Disaster response exercises

Disaster preparedness training activities, encompassing forms such as Table Top Exercises (TTx), Command Post Exercises (CPX), and Field Top Exercises (FTx), were never conducted at any of the four disaster locations mentioned above prior to the occurrence of the disasters. The conduct of disaster preparedness activities should ideally occur periodically and be coordinated by the regional disaster management authorities (BPBD), involving all stakeholders at both local and central levels. The successful implementation of the Disaster Response Command System (SKPD) relies on the engagement of all involved parties in these disaster preparedness exercises.

Disaster preparedness exercise (drill) is a pivotal component within the framework of disaster readiness. The exercise of disaster preparedness drills is intended to mitigate the impacts of disasters.

5 Discussion and analysis

Barriers and mistakes are often observed when inexperienced managers operate within a centralized command system to manage a situation fraught with uncertainty, particularly in disaster response [17]. Emergency response systems have evolved and are extensively employed to manage crises. A significant
advantage of utilizing a command system during crises is its hierarchical structure, which aims to achieve flexibility and scalability [18].

In line with the above objectives, the Government of Indonesia has implemented various policies to address disasters, including those emergency conditions. Articles 48 and 50 of Disaster Law No. 24/2007 have already stipulated the types of activities to be conducted during periods of disaster response, and the response management offers legal avenues for streamlined access and flexibility in order to expedite the Disaster Response Command System (SKPDB) operation, even through shortcut procedures [2]. Subsidiary policies in the form of Government Regulations, Ministerial Decrees, and Regulations or Decisions by the Head of BNPB as the disaster management authority have also been provided for disaster response management. However, these policies have yet to be widely disseminated among disaster stakeholders at the local level, encompassing local government officials, BPBD, and TNI/Polri personnel. Therefore, BNPB, the Ministry of Home Affairs, and TNI/Polri are expected to collaboratively organize regular dissemination and training activities concerning these disaster response policies, particularly in high-risk disaster-prone areas, as outlined in the InaRisk disaster risk map.

The full implementation of the prepared national disaster policies must be accompanied by the availability of technical guidelines and Standard Operating Procedures (SOPs) at the local level, outlining response mechanisms for stakeholders. It entails delineating roles and responsibilities, inter-stakeholder working relationships at the field level, and interoperability among all mechanisms employed by each stakeholder [19]. Such protocols can be realized through Governor/Regent/Mayor Regulations, followed by their respective technical derivations in the form of Regulations by the Head of BPBD as the local disaster management authority, including deploying TNI/Polri resources at the regional level.

In disaster response management, a strong willingness to collaborate among various stakeholders is evident to achieve the common goal of effective disaster relief. However, this collective aspiration encounters challenges due to contested collaboration. Trust and shared vision are required to mitigate the adverse effects of potential inter-stakeholder competition and continuously disseminate accurate information among involved parties [13]. In line with this aim, the Government of Indonesia, has provided guidelines for dividing tasks and authorities among the 8 clusters, aiming to minimize the risks of contested collaboration [12]. However, the full implementation of this cluster system has not been realized in the disaster response management of the four major disaster events, such as the earthquakes in NTB (2018), Central Sulawesi (2018), West Sulawesi (2021), and West Sumatra (2009). While Head of BNPB Decree No. 173 of 2014 by concerning National Clusters is established with the support of delegated authority from relevant Ministers and Heads of Institutions, the field-level implementation of the cluster system in these four disaster-stricken locations has yet to reach its maximal potential.

Managing disaster response requires training and capacity building. Incident commanders in this role must be well-versed in all required resources to fulfill humanitarian missions and prepared to face future disaster threats [14]. Regulation has already granted the Disaster Response Task Force (DRTF) commanders the authority to manage disaster response activities and conduct the six types of activities as detailed in Table No. 1 [2]. However, training for incident commanders has not been consistently conducted by disaster authorities at the central level (BNPB), primarily due to limited budgetary resources and instructor availability.

The involvement of military assets in disaster response, particularly during large-scale disasters, is inevitable, as military assets are on standby and available 24/7. The existing systems within each level of Government are ill-equipped to be coordinated immediately after a disaster (in the first few days). It necessitates the involvement of military assets in massive logistics deployment operations [20]. In disaster response, the primary strength of the military lies in logistics deployment, the capacity to mobilize a large number of ground, sea, and air transport vehicles and specialized equipment [21].

Under the guidelines provided in the Oslo Guideline [22], the involvement of military assets in disaster response is considered a last resort. It is applicable when assistance from civilian assets can no longer address the situation. Subsequently, military assets are deployed to the affected area upon the request of the disaster management authorities in the affected country, as depicted in Figure 5. However, in Indonesia, the military's engagement (in this case, TNI/Polri) in disaster response is automatic due to legal provisions [15-16], as illustrated in Figure 6.
In this context, the National Disaster Management Agency (BNPB), in its role and authority, will coordinate the deployment of military assets in disaster response into affected locations. Furthermore, the involvement of military assets in Indonesia is not limited to the disaster relief period; the Indonesian National Armed Forces (TNI) and National Police (Polri) can also be engaged in pre-disaster and post-disaster phases. However, integrating civilian and military resources within the framework of disaster response command system (SKPDB) is not a straightforward process. The military sector (TNI/Polri) faces challenges when communicating and coordinating with civilian entities due to differences in nature and professional backgrounds. Civilian actors often perceive themselves as possessing humanitarian knowledge and experience, while the military sector (TNI/Polri) boasts readiness regarding massive logistical resources available for immediate deployment 24/7. Nevertheless, deploying military assets in international disaster scenarios remains a topic of pros and cons. Contrary to this standpoint, deploying military assets in a large-scale civilian disaster should not be an automatic response [21]. One fundamental issue is that military personnel need specialized training in civilian roles to handle humanitarian tasks. Additionally, based on research there are four key aspects must be addressed for a successful civil-military relationship [23]: a) interdependency, b) awareness about interdependency, c) domain consensus, and d) trust. These four aspects apply to involving military assets (TNI/Polri) in disaster management in Indonesia.

Disaster response exercises represent a primary form of preparedness activity in disaster readiness due to their comprehensive involvement of stakeholders in disaster management. These exercises test all standard operating procedures, interoperability, and the readiness of all stakeholders to respond to sudden disasters. Article 5 of Disaster Law No. 24 of 2007 emphasizes the responsibility of the government and local authorities in disaster mitigation [2]. The central Government and local authorities must conduct such exercises regularly. Governors, regents, and mayors can integrate resources from government agencies, local authorities, businesses, and the community.

At the regional level of ASEAN, ASEAN member countries must conduct ARDEX (ASEAN Disaster Exercises) every two years, taking turns hosting. Under BNPB's coordination, Indonesia successfully organized the 22nd ARDEX in 2018 in Cilegon City and the 23rd ARDEX in 2023 in Bantul Regency, attended by participants from all ASEAN member countries. However, disaster exercises at Indonesia's district and provincial levels are not regularly conducted.

6 Conclusion

Based on the six findings and discussions presented above, the authors draw the following conclusions:

1. Continuous and regular dissemination of disaster response policies is crucial to stakeholders at all levels of governance, business entities, civil societies, community leaders, and populations residing in high-risk disaster zones. The initiation and coordination of these awareness efforts should be led by disaster management authorities (BNPB and BPBD).

2. Under BNPB’s coordination, BPBD should formulate disaster preparedness plans and coordinate the creation of technical guidelines, standard operating procedures (SOPs), and field implementation instructions. All stakeholders involved in disaster response must possess these documents, and their interoperability should be ensured, tested, and proven effective.

3. BNPB and BPBD, as the disaster management authorities, should organize technical guidance on implementing the cluster system at the national, provincial, and district/city levels. They should also provide capacity-building training for ministries/agencies and departments/bodies responsible for coordinating each cluster. This training should include personnel from TNI/Polri who are potential members of the DRTF structure.

4. Effective disaster response command system (SKPDB) requires well-trained personnel. It is essential to provide specialized training to potential incident commanders, whether from the military (TNI/Polri) or civilian (Head of Regional Government/BPBD). This training should emphasize the principles of facilitative leadership and ideally be conducted by BNPB.

5. The success of civil-military collaboration in disaster response depends on addressing the four aspects identified in the research [23]: a) interdependency, b) awareness about interdependency, c) domain consensus, and d) trust. Disaster management authorities (BNPB & BPBD) should provide training to overcome these aspects in civil-military relationships.

6. National, provincial, and district/city governments should conduct regular disaster response exercises (drills) in TTX, CPX, and FTX at least every two years. These exercises should be coordinated by local disaster management authorities (BPBD) and supported by BNPB to ensure the coordination of national-level resource deployment in the drills. This practice will mitigate the disaster's impact (loss of life and property).
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