

## How to Improve Disaster Governance for Non-Natural Disaster? A Literature Study Evaluating Indonesian Government Management of Disaster During the Covid-19 Pandemic

### Bagaimana Meningkatkan Tata Kelola Bencana untuk Bencana Nonalam? Kajian Pustaka yang Mengevaluasi Penanggulangan Bencana pada Masa Pandemi Covid-19 oleh Pemerintah Indonesia

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**ABSTRACT** Infection with the COVID-19 virus since the end of 2019 has become the biggest pandemic tragedy of this century. In a short time, this virus spread throughout the country infecting millions of people and causing an increase in the world's death toll. At the beginning of the spread of COVID-19, government of Indonesia showed no sense of crisis and had weak disaster management system. The response to control COVID-19 impacts in Indonesia is interesting to analyze. This study adopted a quantitative systematic literature review of academic articles on Indonesian government response to the Covid-19 pandemic published in national and international journals. There were four main topics in the study of disaster management, namely government policy, intergovernmental relations, crisis communication phases, and mitigation and preparedness. This study found that that the government had to improve the communication strategies to deliver data of COVID-19 and mitigation strategies to keep COVID-19 under controlled. Thus, it is necessary to develop a model for handling non-natural disasters in the perspective of disaster governance to strengthen interactions between institutions, communication channels in the midst of crisis conditions, and develop emergency response and preparedness procedures.

**ABSTRAK** Infeksi virus COVID-19 menjadi tragedi pandemi terbesar abad ini. Dalam waktu singkat, virus ini menyebar ke seluruh penjuru dunia dan menjangkiti jutaan orang sehingga angka kematian dunia meningkat drastis. Pada awal penyebaran COVID-19, Pemerintah Indonesia tidak menunjukkan kesadaran krisis dan terlihat memiliki sistem penanggulangan bencana yang lemah. Respon penanganan COVID-19 di Indonesia menarik untuk dianalisis lebih lanjut. Penelitian ini menggunakan metode *systematic quantitative literature review* pada artikel ilmiah di jurnal nasional maupun internasional. Terdapat empat topik utama dalam kajian manajemen bencana, yaitu kebijakan pemerintah, hubungan antarpemerintah, fase komunikasi krisis, dan mitigasi dan kesiapsiagaan. Hasil penelitian ini menunjukkan bahwa pemerintah harus meningkatkan strategi komunikasi penyampaian data COVID-19 dan strategi mitigasi agar COVID-19 tetap terkendali. Oleh karena itu, perlu dikembangkan model penanganan bencana non-alam dalam perspektif tata kelola bencana untuk memperkuat interaksi antarinstansi, alur komunikasi di tengah kondisi krisis, serta mengembangkan prosedur tanggap darurat dan kesiapsiagaan yang tepat perkandangan. Upaya peningkatan peran perempuan dalam usaha budi daya perlu dilakukan oleh pemangku kepentingan melalui penetapan kebijakan untuk meningkatkan pemberdayaan perempuan melalui program dan bantuan modal.

**KEYWORDS** *Controlling COVID-19; Disaster Management; Develop emergency response; Literature Review; Preparedness procedures*

**KATA KUNCI** *Manajemen Bencana; Mengembangkan tanggap darurat; Pengendalian COVID-19; Prosedur kesiapsiagaan; Tinjauan Literatur*

## INTRODUCTION

The discourse of disaster governance terminology was built on an environment full of uncertainty which supported the idea of developing a risk culture (Brunner et al., 2005; Revet and Langumier, 2015). The development of risk culture indicated an attempt to prevent disaster hazard from expanding through a series of policy prepared by the government, along with initiatives program form NGO actors (Revet and Langumier, 2015). Disaster risk reduction is often elucidated as a rescue work, social aid distribution, and infrastructure reconstruction due to disaster effects, however, governing by disaster is not just such as these reactive actions. Governing by disaster requires an availability of emergency system that is able to control and manage uncertain conditions in the future, it is necessary to arrange a prevention policy and stimulate carefulness and preparedness principles. A wider urgency aside from stimulating a risk culture is to diffuse an understanding of disaster governance for public actor and other stakeholders involved in order to encourage resilience of people amidst an emergency situation.

In an environment with a high level of uncertainty, government should take an early action to identify the threatening risk even without a full scientific information. A great disaster risk will occur due to delay response (Kim et al., 2021). Learning from past experience, Japan is one of the countries that has successfully implemented disaster management by its effective and contextualized Emergency Preparedness and Response (EP&R) Systems (Forni, 2017).

Other outstanding disaster management presented in South Korea's systematic response system which is supported by their essential agencies (Kim et al., 2021). On the other hand, developing countries have a quite high disaster risk potential due to the limitations of disaster mitigation (Danar, 2018). Indonesia is one of these developing countries that also ranks as the most populous nation. After all experience of disaster such as earthquakes, floods and tsunamis causing massive catastrophes, yet its disaster management still less than well (Carolina, 2018). However, as experienced by other nations for the last 1,5 years, Indonesia has been faced with COVID-19.

The literature related to COVID-19 disaster management has shown an increase since the president announced first case on March 2, 2020. Ridlo, 2021 and Purnamasari, 2020 have criticized the government's responses for not showing a sense of crisis as evidenced by the negative narratives from public officials when in various country working on mobility restriction and tracing policy. Furthermore, the chaos of policies and incoherent interactions between governments in an attempt to suppress transmission, this condition suggest that there is a regulatory crisis for non-natural disasters. Author tries to collect some literature related to the handling of COVID-19 in Indonesia then to fill the gaps found in the research result as the basis for building a model for COVID-19 management in disaster governance perspectives.

This study utilized a systematic literature review guided by a study protocol consisting of four stages, namely (1) identifying the scope and research questions to focus on a

particular topic to develop inclusion criteria and exclusion criteria; (2) assessing the potential and relevant literature according to the research questions raised; (3) examining the literature in detail to extract relevant information and examine the data elements contained; and (4) compiling a summary and analysis according to the identified data (Booth et al., 2012; Islam et al., 2020). Mapping of inclusion criteria and exclusion criteria was used to guide the systematic literature review, shown in Table 1.

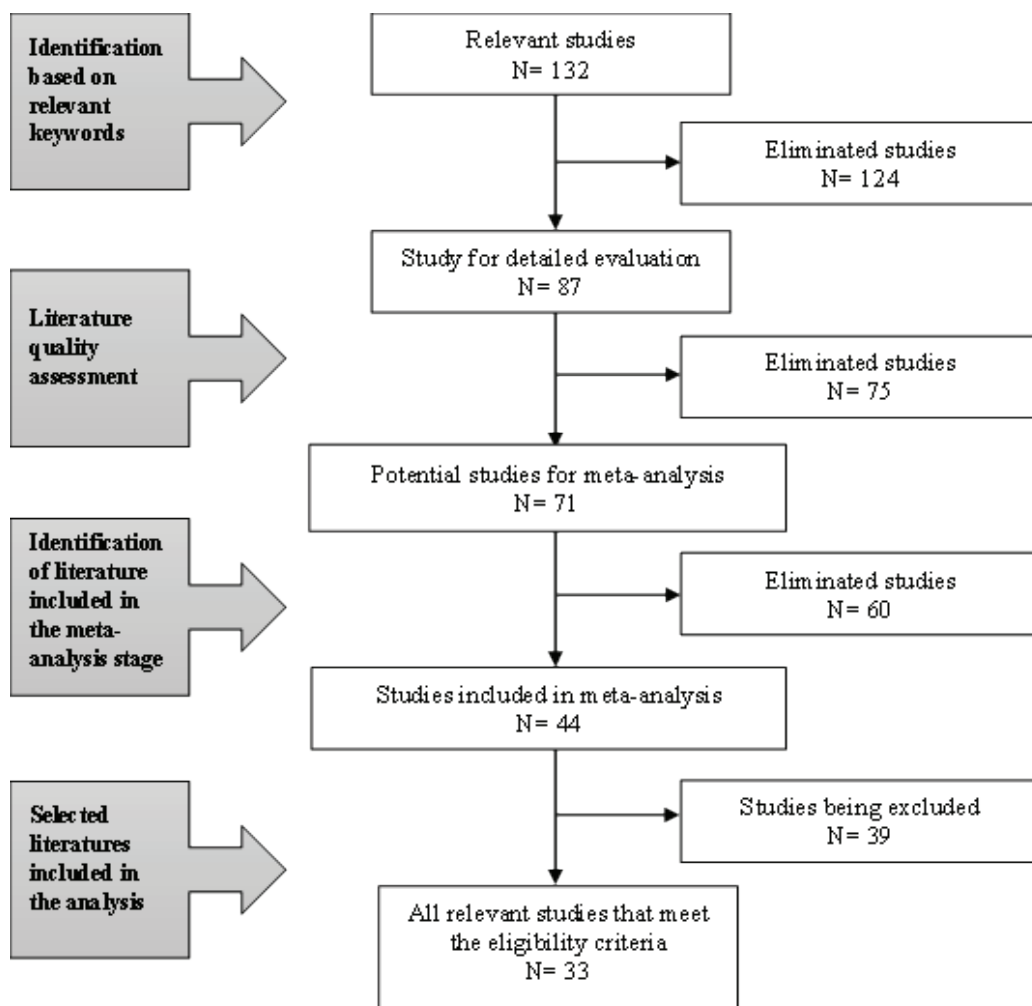
**Table 1.** Inclusion and Exclusion Criteria

<b>Inclusion Criteria</b>	
Research published January 2020 to August 2021 (Research with issues surrounding the handling of COVID-19 at the national-regional level)	
Language	Indonesian and English
Location	Indonesia
Databases	National Library E-Resources Republic of Indonesia, Garuda
Keywords	COVID' or 'COVID-19' combined with 'policy responses in Indonesia', 'government policy in Indonesia', 'mitigation in Indonesia', 'intergovernmental relations'
Focus	Handling COVID-19 and disaster governance for non-natural disasters
<b>Exclusion Criteria</b>	
Research published outside the period January 2020 to August 2021	
Language	Apart from Indonesian and English
Location	outside Indonesia
Not in the database	E-Resources National Library of the Republic of Indonesia, Garuda
Focus	Resilience, vulnerability, empowerment

Source: Author, 2021.

The literature assessment stage utilizes the preferred reporting items for systematic reviews and meta-analysis (PRISMA Statement) data analysis method. The purpose of using this method is to help researchers build the construction of various systematic reviews in a transparent and comprehensive manner. To obtain an assessment of the literature according to the required topic, meta-synthesis is used to examine and integrate the existing research results so that the characteristics and patterns of the same literature can be known.

Figure 1. Shows the literature assessment procedure carried out according to the PRISMA Flowchart (Booth et al., 2012). Overall literature screening procedures utilizes coding features in NVIVO. This process resulted in 33 peer-reviewed literature that passed the due diligence. The search database used displays the literature published from the initial period of the spread of COVID-19 (January 2020) to August 2021. Taking a few small samples from the literature available in that period makes the SLR used more reliable and transparent (Wang et al., 2018). Starting with the identification of the literature according to keywords. After determining the study protocol, the researchers used it to carry out a literature screening based on keywords that were set with four main topics in disaster governance, namely government policy, mitigation, intergovernmental relations, and crisis communication.



**Figure 1.** PRISMA flow diagram- search strategy  
Source: Author, 2021.

The collected literature was then assessed for its level of potential and relevance. Any literature that did not meet the inclusion criteria will be removed. We then determined the literature that will be used in the meta-analysis stage before proceeding to the final stage of literature screening, namely the determination of the literature involved and the data extraction will be taken.

## DISCUSSION

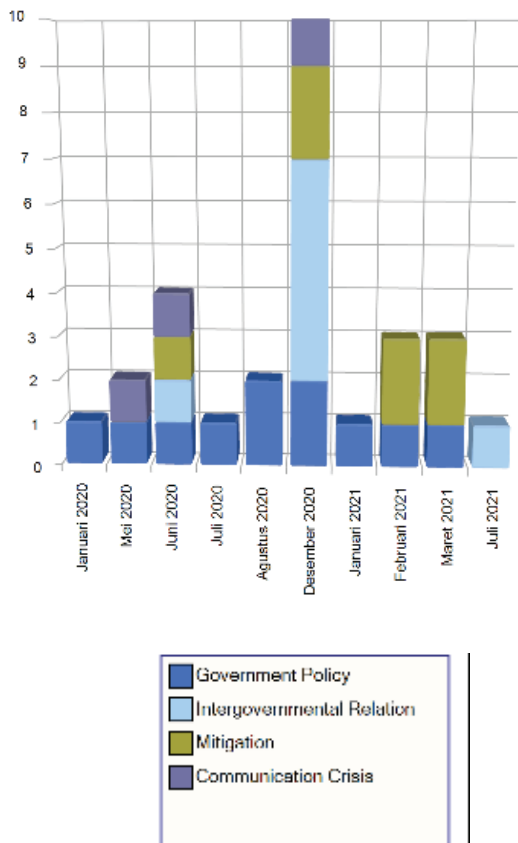
### The Topic of Existing Studies

Through a systematic literature review, there are four main topics that are often

appeared in the search database with the initial period setting for the spread of COVID-19 from January 2020 to August 2021. The four topics are government policy, intergovernmental relations, mitigation, and communication crisis.

The figure 2. shows the pattern of literature published in the midst of a health emergency situation where in 2020, there was an increasing trend of publishing articles on government policy topics (cover 13 files of 33 relevant articles examine this topic with 436 reference elaboration). In the same year, articles discussing intergovernmental relations in handling COVID-19 were easily found in the literature database used by researchers (6 out of 33 relevant articles examine this topic with 140 reference

elaboration). Meanwhile, articles on the topics of disaster mitigation (9 out of 33 articles with 227 reference elaboration) and communication crisis (4 out of 33 articles with 67 reference elaboration) were discussed further since early 2021. Researchers concluded that in the early days of the spread of COVID-19, scientific articles had actually emerged to criticize government policies. In addition, there are many articles published discussing government crisis communication which show that there was no sense of crisis for public officials in the early days of this condition.



**Figure 2. Graph of relevant prior studies**  
Source: Author, 2021.

The topic of disaster mitigation has gained many attentions by researchers and academics in the following year. Mitigation defined as readiness to face hazard risks

by increasing understanding of disaster risk reduction such as reducing individual vulnerability, improving post-disaster response behavior, to post-disaster recovery (Danar, 2018). Entering its second year, the trend of publishing articles on the governance of handling COVID-19 is more about how to survive in the midst of situations with the risk of non-natural disasters being faced.

### Government Policy in The Time of COVID-19 Era

The surge in positive confirmed cases at the beginning of the spread of COVID-19 was the impact of the government's response to ignoring the WHO's instructions to close access to foreign entrances in early 2020. There were contradictory attitudes from several actors such as negative narratives that came out of government elites such as the Coordinating Minister for the Economy who responded to the crisis situation by linking the convoluted licensing process so that the corona virus would not enter Indonesia (Garjito and Aditya, 2020). A non-scientific statement was also conveyed by the Minister of Transportation as it stated that Indonesian people who like to eat *nasi kucing* will have strong immunity from COVID-19 infection (Saubani, 2020). The statement from the top government officials shows the neglect of the epidemic that is currently infecting thousands of people in various parts of the world. This negligence is causing a multidimensional disaster in all sectors of development. The Ministry of Health, which is supposed to be the leading sector in handling COVID-19, is accused of having an irresponsible attitude towards the statement of its Minister who actually



provides a subjective narrative so that the urgency to unite the public's understanding of this emergency condition is not well formed.

Government policies in dealing with the COVID-19 pandemic are divided into several sectors, namely, the health sector, the social sector and the economic sector. In the health sector, the government has set several regulations related to health protocols. In the social sector, policies relate to restrictions on people's movement or mobility and relate to the operation of public and private vehicles, educational operations (schools and universities). Meanwhile, in the economic sector, policies relate to the implementation of office operating hours, shopping centers, markets, tourist sites, and providing assistance to communities affected by the COVID-19 pandemic. In addition, the policy for handling COVID-19 can be divided into several phases.

From early 2020 to August 2021, at least the government has made policies that are categorized into 10 phases. The following are the policy phases that have been implemented with various regulations: 1) Stay at Home Policy; 2) Policy on Social Distancing; 3) Policy on Physical Distancing; 4) Policy on Use of Personal Protective Equipment; 5) Policy on Maintaining Personal Hygiene; 6) Policy on Working and Studying at Home; 7) Policy Suspend all activities that gather crowds; 8) Large-Scale Social Restriction Policy; 9) New Normal policy enforcement policy; 10) Enforcement of Restriction on Community Activities with multiple levels (level 1, level 2, level 3 and level 4) (Tuwu, 2020).

Through the description of the phases above, it can be seen that the government

has begun to relax social activities after 5 months of passing the disaster emergency response period. This was chosen with the consideration that COVID-19 has entered Indonesia and we must live side by side with the virus. In addition, the implementation of Large-Scale Social Restriction (PSBB) in the long term will affect the national economy and exacerbate the crisis. Therefore, the implementation of the new normal policy is a solution after going through several phases and considering the social and economic impacts. The New Normal policy began when the government through the Minister of Health issued a Decree of the Minister of Health regarding Guidelines for the Prevention and Control of Corona Virus Disease 2019 (COVID-19) in Office and Industrial Workplaces in Supporting Business Continuity in a Pandemic Situation.

The drastic economic decline in various sectors and the consideration that COVID-19 will not disappear from human life, the implementation of the new normal with health protocols is the most appropriate policy. However, the new normal policy still draws criticism. After 4 months of implementing the new normal, it was proven that the cases were high again. This is because people do not comply with the health protocols that have been made as a consequence of the new normal (Agustino, 2020). As a result, the government has experienced quite severe chaos. The government re-formulated policies that could be a solution to events that had already occurred due to "blunders" at the beginning of the pandemic. Learning from experience proves that policies will not succeed if there is no cooperation and support from various

sectors, especially the community (Sitorus & Rahmadi, 2021). This has caused cases to rise again in mid-2021 and forced the government to treat the Policy for the Enforcement of Restriction on Community Activities Policy (PPKM) at various levels. The difference is that the Enforcement of Restriction on Community Activities policy is implemented with indicators of spread and positive cases, deaths and recoveries. So that Enforcement of Restriction on Community Activities is only carried out in areas with high case rates.

Enforcement of Restriction on Community Activities in 4 levels categorized by the level of transmission, positive rate and death in each area. With this policy, if the local government wants to survive the economic downturn due to COVID-19, it must work extra to reduce the transmission rate through strict implementation of health protocols. Enforcement of Restriction on Community Activities is considered very appropriate to the conditions of the Indonesian government, where when an area has Level 1 or with a very low level of transmission, the policy of limiting community activities is getting looser. Thus, each region is competing to survive the economic crisis caused by the COVID-19 pandemic and be able to save its citizens.

### **Intergovernmental Relations in Response of COVID-19 Cases**

In dealing with COVID-19 which has been designated as a non-natural national disaster, the government cannot resolve the pandemic without the cooperation of all parties and various sectors and levels of government. Thus, inter-agency cooperation is the main key to reducing the spread of the virus and

suppressing the death rate. In early phases, the government tends to be top-down in making decisions. The central government tends to ignore input from the regions in proposing social restriction policies at the regional level (Ramdani et al., 2021). However, after a drastic growth in positive cases, the government realized on the importance of various actors in dealing with this outbreak.

The focus of cooperation between levels of government and private institutions is divided into several types, namely first, cooperation in distributing assistance which includes assistance in distributing logistics and basic needs, aid for medical personnel and intensive improvement of task force teams, and educational assistance. Second, cooperation in implementing manpower operational policies covering factory and industrial operating hours, banking and various other operations related to the private sector. Third, related to support involving multiple ministries, especially the ministry of tourism and the creative economy, the ministry of finance, the ministry of transportation, the police and the military. This collaboration is carried out at all levels of government, both regional and central, taking into account the spread of the COVID-19 virus.

In reducing overlapping policies caused by the many sectors involved, the government through the president formed a Task Force for the Acceleration of Handling COVID-19. This task force was formed since the establishment of COVID-19 as a national disaster. In the task force, placing the National Disaster Management Agency as the central agency and assisted by a special team from the ministry of health. the placement of National

Committee for Disaster Management (BNPB) as a central task force refers to the status of COVID-19 as a national disaster. However, this task force team is also equipped by 34 ministries including the Ministry of Health, TNI and Polri. The support of the TNI and Polri is shown by the use of military transportation as transportation for logistics distribution for affected communities, the use of buildings and facilities as emergency hospital infrastructure, to monitoring the implementation of regulations in the field.

In the field of state finance, the role of State-Owned Enterprises also provides efforts to reduce the socio-economic impacts that occur. The policies issued include free electricity assistance for 24 million customers with 450 VA power, and providing a 50% discount to 7.7 million customers with 900 VA power usage. Assistance was also given to the education sector with a total value of Rp 1.7 Trillion. In addition to SOEs, Bulog also provides assistance in the form of cheap rice to reduce the economic impact of COVID-19 (Malik and Purwanto, 2020). BUMN is the most dominant sector in dealing with economic impacts, especially the health sector and basic needs. PT. Kimia Farma (Persero) Tbk provides medical assistance in 1,300 pharmacies, personal protective equipment (PPE) and 600 clinics and laboratories throughout Indonesia. The use of medical devices is very supportive for handling positive cases treated in hospitals. In addition, the government is also focusing on adding medical personnel in various areas that are prone to the spread of COVID-19. By increasing salaries and incentives for health workers, the government hopes to have a positive impact on the performance of

medical personnel (Malik & Purwanto, 2020).

In addition, the Indonesian's government has urged its citizens to be vaccinated. Health Research and Development Agency of the Indonesian Ministry of Health reported that COVID-19 vaccine is an effective way to mitigate the risk of being infected by COVID-19. There are two dozen of vaccination, first dose vaccination and complete vaccination (second dose). It was reported that among people who were not vaccinated had a higher death case compared with those who had received a complete vaccination. This concludes that vaccination plays an important role in slowing the risk of COVID-19 infection (Rokom, 2021).

### **Early Stage of Mitigation Strategy for COVID-19**

To control the rapid transmission of COVID-19, a better strategies including prevention, preparedness and mitigation are urgently needed (Bahtiar et al., 2021). A number of policies to prevent and handle COVID-19 cases have been issued by the government as a disaster mitigation effort. First, on March 31, 2020, the Government of Indonesia introduced a policy of Large-Scale Social Restrictions (PSBB) (Ramdani et al., 2021). In contrast to lockdown or regional quarantine, PSBB social activities are limited and still allow certain economic activities to continue. Second, from April 2020 to May 2020, the Eid homecoming restriction policy will be enforced. Then the new normal policy was issued.

The second wave of COVID-19 occurred in June-July 2021 due to a surge in homecoming and Eid, coupled with the SARS-Cov-2 mutation which was classified



as 'Variant of Concern' with details of 45 alpha variants, 6 beta variants, and 160 delta variants. So that the government issued a policy of Enforcement of Community Activity Restrictions, especially for the Java and Bali regions to reduce community mobility. This policy was made as one of the national disaster mitigation efforts by looking at the severity of each region, so the implementation of Enforcement of Restriction on Community Activities policy was made.

Weak disaster mitigation in handling COVID-19 results in the complexity of the problems faced, especially in the fulfillment of health infrastructure facilities. First, the government's lack of responsiveness in meeting the need for Personal Protective Equipment (PPE) for health workers which resulted in an increase in COVID-19 cases in health workers, which was 6.14% (Bahtiar et al., 2021). Second, the limited number of medical personnel available to handle this pandemic. Data from the Ministry of Health states that the ratio of Indonesian medical personnel only has 4.27 doctors per 10,000 population. This number is the least among neighboring countries such as Malaysia (15.36 doctors per 10,000 population), Singapore (22.94), Philippines (6), Vietnam (8.28), Thailand (8.05), Myanmar (6 ,77), even Timor Leste with 7.22 doctors for every 10,000 inhabitants (WHO, 2020).

From the dynamics of the problems faced in efforts to mitigate the Covid-19 disaster that have not been optimal, it is necessary to have a governance concept that is dynamic and adaptive in its implementation. Adaptive governance is governance that can be applied in the face of environmental changes that occur that connect individuals,

organizations, institutions and institutions at various levels of the organization in solving problems. In the implementation of adaptive governance, there are three main indicators in the implementation of adaptive governance, namely: (1) adaptive human resources; (2) strengthening adaptive organizations; (3) Adaptive institutional reform (Grindle, 1997). In its implementation, adaptive governance is realized through a number of adaptive policies in various sectors. the education sector, for example, which eliminates face-to-face schools and replaces online-based education, the public service sector which limits face-to-face administrative services and is replaced with online services, work from home policies as an alternative policy in minimizing social contacts in work relationships and so on (Hizbaron et al., 2021). This is done as a community mitigation effort in preventing the spread of COVID-19.

Community mitigation in Indonesia still needs to be improved. This aims to reduce social contact with someone who is infected, or reduce the chance of being infected if there is contact. The more a person interacts with different people, and the longer and closer the interactions, the higher the risk of spreading COVID-19. Public involvement can also contribute to disaster mitigation by providing information about disaster management as a mitigation effort in a small environment, namely down to the village level in increasing public knowledge about disasters, so that the risk of the disaster can be minimized (Buchari, 2021).

Disaster mitigation efforts in Indonesia can be said to be not optimal, for that a number of improvements are needed from various aspects. From the aspect of information

dissemination, for example, the need for improvements: (1) systematic distribution of information that has been supported by adequate infrastructure; (2) direct responses by most critical sectors by complying with rules and regulations and making necessary adjustments, (3) open access to spatial data and non-spatial and their widespread use, (4) rapid active involvement of the community in the enforcement of new rules and regulations mandated by national and provincial governments, and (5) stakeholder engagement during emergency response, i.e., in providing ICT infrastructure and information such as integrated early warning system through mobile application, deal with conflicts in various spatial units, encourage adaptation, and formulate rules and regulations (Hizbaron et al., 2021).

From the health aspect, it can be seen from the role of the Government in making decisions and policies. special regulations need to be made that are emergency in nature to immediately implement full control in handling COVID-19 in the health sector, especially on the factor of equitable distribution of medical personnel and the distribution of PPE according to the priority scale. Not only that, the Government must also distribute and evaluate the need for medical personnel, as well as the need for adequate health facilities and infrastructure such as; as a hospital and superior isolation room for COVID-19 (Bahtiar et al., 2021).

### **Communication Crisis of Indonesia's Government**

In a pandemic situation, communication is the most important part in dealing with the threat of a pandemic. The importance

of building 'public trust' to the Indonesian government in preventing and controlling the spread of COVID-19 as one of the intensive communication efforts. Intensive government communication and transparent information in the service system will provide peace and increase public confidence in the government's performance in efforts to prevent the spread of COVID-19 (Noor et al., 2020).

The amount of confusion in information related to COVID-19 has caused unrest and decreased public confidence in the information crisis that occurred. Crisis communication is the dialogue between an organization and its publics before, during, and after a negative event. The dialogue details strategies and tactics designed to minimize damage to the image of the organization. Crisis communication can be broadly defined as the collection, processing and dissemination of information necessary to address a crisis situation (Coombs, 2008). To deal with these problems, the Government of Indonesia formed a Task Force for the Acceleration of COVID-19 handling on March 13, 2020 based on Presidential Decree Number 7 of 2020 by cooperating with government agencies, especially National Committee for Disaster Management as the leading agency in handling national disasters (Noor et al., 2020).

The COVID-19 Task Force also functions as an information traffic controller. The task force must be able to ensure that the information received by the public is accurate and reliable (Noor et al., 2020). If false information or hoax appears, the task force must respond quickly. Management of information among various stakeholders in

natural and human-caused disasters is the basis for mitigation and effective disaster management operations. This policy has not actually had a significant effect. Problems in crisis communication in Indonesia, there are still several problems including (1) the formation of public distrust of the government which is reflected in blunders made by relevant state officials which are actually counterproductive to the government's obligation to deal with this epidemic; (2) the inconsistency of public communication messages as reflected in poor coordination between institutions and state officials both vertically and horizontally which has an impact on the occurrence of inconsistencies in messages from one party to another; (3) the absence of a sense of crisis as seen from the beginning of the COVID-19 pandemic, the government did not have any ideas to prepare conceptualized disaster mitigation, and instead seemed to issue rhetoric that was not too important; and (4) weak internal communication (Aziz & Wicaksono, 2020).

There are three main things that the government can do in crisis communication work in dealing with this pandemic, including (1) speed in conveying messages or information to the public. Speed in providing information will have an impact on the fulfillment of valid and reliable information for the public and other stakeholders, such as the mass media; (2) consistency is required in every information or message conveyed to the public; (3) The third is the principle of openness. This principle requires that the government appointed as spokesman must be willing to share information openly (full disclosure) to stakeholders, especially the mass media on what they know (Suherman, 2020).

## **Strengthening Disaster Governance: Issues and Challenges**

Disaster governance is the intersection of two basic theories, namely the theory of social science and natural science (Dana, 2018). In combination of these two concepts, another new concept is constructed, particularly it's called the socio-ecological system. Socio-ecological system is a systemic idea that was developed to examine further complex phenomena involving the dimensions of social science and science itself. This approach is carried out by including all stakeholders consisting of government, community, scientists, experts, private sector, NGOs, even media to be able to coordinate both at regional and national levels in implementing a socio-ecological system indeed.

The legal basis for disaster management is Act No. 24/2007 which doesn't even explain in detail terms about the ideal manual for non-natural disasters and only focuses on handling casualties and infrastructure damage in natural disasters. Non-natural disaster countermeasures are regulated in different policies (Epidemic Disease in Act No. 4/1984; Health Quarantine in Act No. 6/2018), but these regulations seem to stand alone not in accordance with the needs after COVID-19 spread, apparently these legal bases need to be harmonized. The current situation of disintegrated law in the time of COVID-19 outbreaks leads to different perceptions regarding the role of leading sector in initiating responsive actions when non-natural disaster strikes. It was a contrast with COVID-19 management in South Korea which is based on three manuals covers roles and responsibilities of institutions (Standard

Manual) and developed instruction in critical actions for emergency (Working Manual and Action Manual) (Kim et al., 2021).

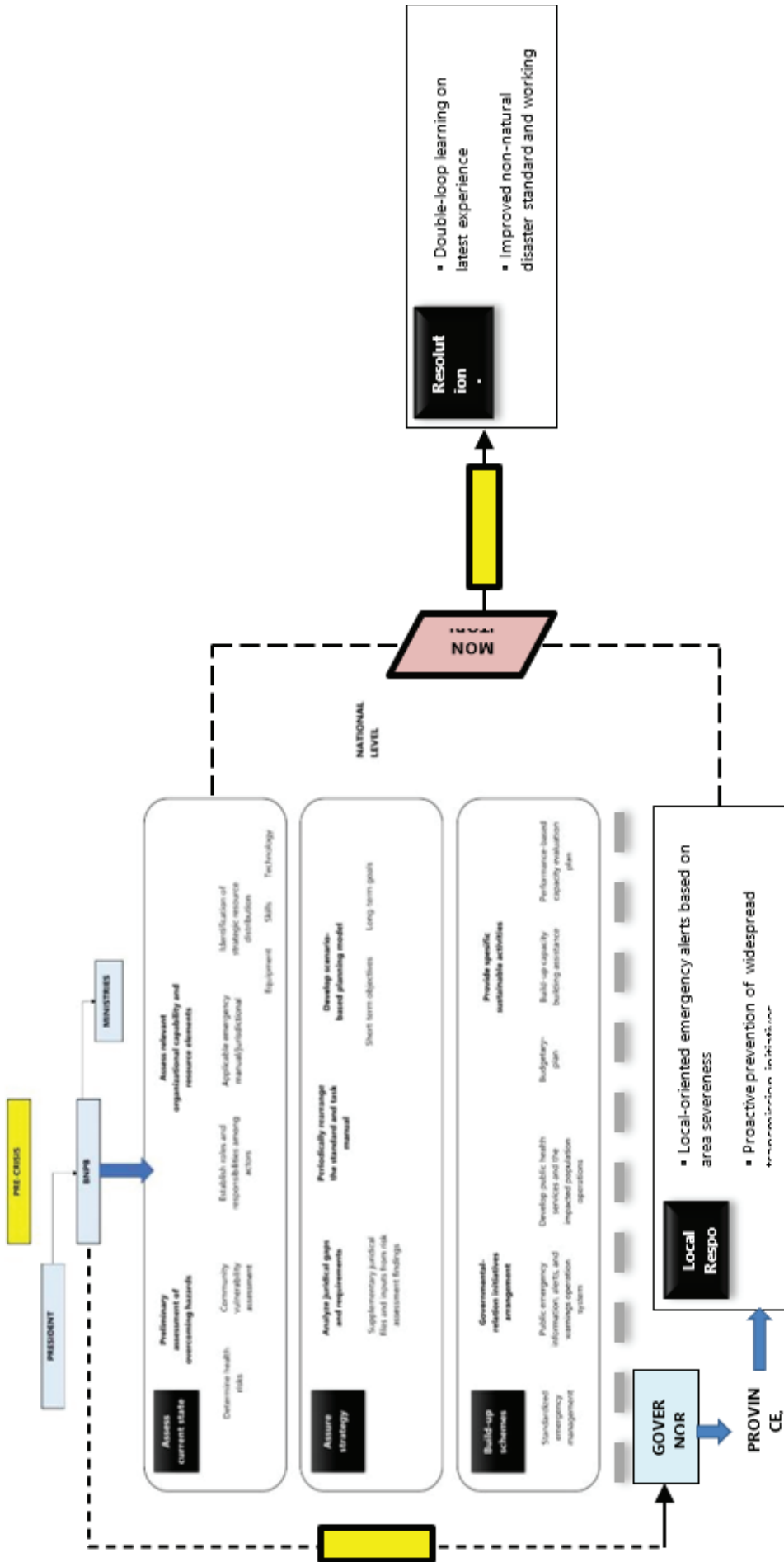
Due to the non-natural disaster policy inertia causes un-optimal response of government bodies, such as the ineffectiveness of COVID-19 Acceleration Handling Task Force led by the National Committee for Disaster Management encountering a weak coordination among central and local governments. Thus, there was irrelevant data of positive cases and limited diagnostic laboratory in many areas. This confirms that an amendment of disaster management policy needs to be carried out in an attempt to clarify each position and relations of involved leading sector institutions. Learning from previous situation to minimize the transmission of infectious disease, a smooth coordination of strategic resources through the design of a strong non-natural disaster countermeasures institutional structure is very important to determine a successful early mitigation.

Incoherent mobility restriction caused some regions to assign local lockdown was a result of delay in government action amidst the increase transmission cases. Meanwhile, the Japanese government has decided not to impose a lockdown, but authorizes the prefectural government to enforce health protocols (Shimizu and Negita, 2020). This policy is supported by a good lifestyle characteristic that can suppress COVID-19 transmission such as culture, healthcare system, sanitation, food habits, and immune system (Tashiro and Shaw, 2020), and makes it possible to flatten the curve and reduce number of deaths.

The same condition as South Korea which also did not impose a lockdown but only by providing a transparency and democracy risk management system (Kim et al., 2021). South Korea is considered to have a fairly good social life, where its citizens have a relatively high level of obedience to their government. From them we can look to another value of successful pandemic control is on how public support affects a proper and active implementation of government policies and vice versa. Through the public information sector, South Korea provides education and information about COVID-19 in a transparent manner. The government distributes posters containing the prevention of COVID-19 transmission, press statements related to COVID-19 cases through television and the Centers for Disease Control and Prevention (CDC) website, and sends text messages to residents in case of emergency warnings (Shaw et al., 2020).

The Figure 3 shows a proposed framework to improve disaster governance for non-natural disaster particularly on infectious disease. This framework was compiled from double-loop learning through these past years dealing with pandemic. There are several things need to be improved are listed in the proposed framework divided into three comprehensive phases namely pre-event, during event, and resolution.

One essential act facing with the spread of infectious diseases is to encourage national health system. As done by South Korea which relies on technological innovation in order to develop accurate diagnostic tools (RT-PCR) (Shaw et al., 2020). Testing has proven to be a crucial process that enables virus



Figures 3. Improved Non-Natural Disaster Handling Framework

Source: Author, 2021.



tracking and is a component of 3T (Tracking, Testing, Treating) strategy, so this process can be carried out immediately to prevent wider spread. Meanwhile, Japan strategy is more of a cluster approach by building up cooperation with residents to provide information on suspected people (Shaw et al., 2020). It is indicated that innovation and the use of technology is very useful appliance in the midst of a health emergency, especially in affiliation with a strong public awareness formed through sense of crisis by public officials.

## CONCLUSION

Indonesia's response on COVID-19 prove the need to an improvement of complete disaster governance components which consists of its government policy, Intergovernmental Relations, mitigation and preparedness, communication on critical phases, and relations between government officials in carrying out each roles of emergency countermeasures. This study identified some lessons regarding disaster management for non-natural hazards since systemic risk as a practical and academic issue has not been given the attention it deserves in the early time. The framework offered above expected to be a useful investment to reduce casualties due to neglect of responsibility and wasteful costs. Thus, several brief lessons which can be learned through this experience as follows:

### **Improvement of disaster management policies to avoid policy inertia**

Lack of specific non-natural disaster regulation leads to a chaotic early COVID-19 responses. As result, various bad narratives

were uttered by several public officials and it's causing a shortage of sense of crisis in emerging infectious disease outbreak. This leads to a policy inertia; the absence of action for a period of time while other countries have begun to respond it with travel restriction or report of confirmed cases because our state institutions did not have an actual manual standard to guide their moves toward public-health crisis. Establishing instructions, standards and manuals to handle non-natural disaster notably for easy transmitted virus through social contacts will be indispensable. The guidelines should clearly contain the mapping of responsible institutions and the roles of each actor from national through local government.

### **Double-loop learning on previous experience**

Current pandemic should be an experience to improve country's overall system in preparing for future disaster risks countermeasures. South Korea and Japan made use of the experience of dealing with MERS, SARS, and H1N1 viruses to renew their guidelines on disease outbreaks. Relations between institutions and roles of each actor have been composed in detail, even including the activation of new institutions according to any kind of hazard-level ahead. Both South Korea and Japan have a systemic risk which is updated regularly at any certain times. Today's event should be seen as a double-loop learning acts to understand better about possible situations in the future and how to handle them by increasing the capacity of government institutions in order to carry out health-related necessity risks, also public mitigation and preparedness responses.

## Innovation and technology augmentation

In the midst of a rapid advancement of ICT, it is a necessity to intervene on potential disaster risks by utilizing current state of sophisticated tools such as big-data systems and mechanisms, 5G, even the artificial intelligence (AI). It has been proven that a successful disaster hazard countermeasures utilizes the integration of latest ICT components linked to medical technologies. Particularly in the time of infectious disease outbreaks, ICT is useful appliance as an early warning system in linkage to Enforcement of Restriction on Community Activities policy on each region; track resident mobility; up to date information on the dissemination of active transmission cases at national, provincial, district or city to village levels.

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