

## **The Implementation Of Satu Data Bencana Indonesia (SDBI) For Sustainable Development**

**Devid Marihot<sup>1)</sup>, Agus Wibowo<sup>2)</sup>, Sugeng Triutomo<sup>3)</sup>, Pujo Widodo<sup>4)</sup>**  
<sup>1,2,3,4)</sup> Disaster Management Study Program, Indonesia Defense University, Bogor  
<sup>2,3)</sup> National Disaster Management Agency, Jakarta

\*Corresponding Author  
Email : [marihot7@yahoo.com](mailto:marihot7@yahoo.com)

---

### **Abstract**

*The likelihood of disaster statistics is not the same across all countries and ups and downs over time. As a country with the potential disasters more than 3.000 events every year, disaster data and statistics play an important role in reducing disaster risks and building resilience through estimating the risks, hazards and vulnerability. Therefore, the National Disaster Management Agency (BNPB) and the Central Statistical Agency (BPS) jointly developed Satu Data Bencana Indonesia (SDBI) as the official sectoral statistical domain within the National Statistical System to Disaster Statistical Framework (DRFS) established by UN ESCAP and was designed adhering to the principles of Satu Data Indonesia. Based on the background described above, research needs to be carried out as learning material to increase knowledge about intergovernmental-disaster data and its implementation for decision-makers. The method used is qualitative with a descriptive exploratory approach: data collection by observation, in-depth interviews, and documentation; data analysis techniques by data collection, data reduction, and data presentation. Several issues in implementing the platform of SDBI as regulated in the National Disaster Management Agency (BNPB) Regulations Number 1 of 2023 concerning Satu Data Bencana are weak coordination, non-standardized methodology, and poor communication. The conclusion from this study is that the methodological practices and procedures of disaster management for data collection and management should be shared with agencies involved in the technical working group to ensure coordination. The needs to form technical working group consisting of BPS, BNPB and BIG to minimize problems in implementing Satu Data Bencana Indonesia cannot be delayed to ensure the sustainability of nations 'development.*

**Keywords:** *Satu Data Bencana and Sustainable Development*

---

## **INTRODUCTION**

Disasters vary in their nature, are difficult to anticipate, and have a significant impact on the social and economic circumstances of the affected areas. The likelihood of disasters is not the same across all countries and changes over time. To accurately determine patterns in disaster statistics and avoid being misled by random fluctuations or extreme events, it is necessary to have reliable and consistent time series data and well-organized statistical summaries. Therefore, efforts have been made to standardize measurement methods in related statistics over time and, when feasible, across different countries and regions.

In the year 2022, according to the report from the National Disaster Management Agency (BNPB), there were 3.531 natural disaster events in Indonesia. The most frequent type of disaster was flooding, with 1.524 occurrences, which accounts for 43,1% of the total national disaster events. During 2022, there were also 1.062 extreme weather events, 634 landslides, 252 forest and land fires (karhutla), 28 earthquakes, 26 tidal waves/abrasions, and 4 droughts. The province that experienced the most natural disasters in 2022 was West Java, with 823 events, followed by Central Java and East Java with 486 and 400 events respectively. All of these disasters led to over 5,49 million people suffering and evacuating, 851 deaths, 8.726

injuries, and 46 missing people. The disasters also caused damage to 95.051 houses, with 20.069 being severely damaged, 23.058 moderately damaged, and 51.294 slightly damaged. Additionally, 1.980 public facilities were damaged, consisting of 1.239 educational facilities, 646 places of worship, and 95 health facilities. (Covid19, 2023).

As mentioned previously, the frequent occurrence of natural, technological, and biological disasters in Indonesia each year has caused many casualties, damages, and losses that disrupt the safety, security, and welfare of society. In addition, the unpreparedness of the society and government, as well as the inappropriate and slow response, causes victims and various infrastructures such as transportation, communication, and emergency management to become paralyzed. Even if the infrastructure remains intact, a long and complicated aid management process leads to increasing casualties. Such impacts are closely related to the development and achievement of economic, social, and environmental well-being, both in the short, medium, and long term. Therefore, attention to disaster locations, as well as the interaction, process, and structure of spatial data become very important in disaster management.

The effects of disasters can be connected to specific instances of disasters. It's important to organize and record these statistics in a manner that relates them to the relevant features of the natural disaster, such as indicators that are monitored to anticipate and decrease the likelihood of future disasters. The major difficulty in compiling disaster statistics is to make them readily accessible for diverse purposes and analysis while ensuring that the collections remain uniform and coherent by utilizing structured metadata. The collection of statistics related to disasters is applicable to disasters of any scale or magnitude and there is a clear demand for a nationally coherent measurement framework for application at different scales. (UN, 2015).

In common practice in Indonesia, the demand for disaster data has been met on an ad-hoc basis, especially in the form of emergency-response data. While some data collection models already exist, such as InaRisk as a complex geographic mapping platform with the potential to become a single disaster data platform, disaster risk data, events, impacts, and financing and repair still need to be based on standardized concepts and definitions. Therefore, the National Disaster Management Agency (BNPB) and the Central Statistical Agency (BPS) jointly developed Satu Data Bencana Indonesia (SDBI) as the official sectoral statistical domain within the National Statistical System to Disaster Statistical Framework (DRFS) established by UN ESCAP and was designed adhering to the principles of Satu Data Indonesia (UN ESCAP, 2018).

Data and statistics have an important role in the implementation including monitoring and disaster management reporting. Starting from the prevention of risks, preparedness, and response to recovery. The need for timely and accurate data becomes more important due to the increased frequency and severity of catastrophic events exacerbated by the impact of climate change. The challenge is that the data needed for effective disaster management is not always available when needed. Even if available, the data is often scattered across various official sources, then differs from one another or even contradicts, both methodologically and substantially. Therefore, it is considered necessary to strengthen the role of official Statistics to provide key data relevant to all stages of disaster management. Good disaster data also helps identify and address disaster risks for the achievement of short- and long-term development goals.

Based on the background of the problems described above, research with the title "The Implementation of Satu Data Bencana Indonesia for Sustainable Development" needs to be carried out as learning material to increase knowledge about intergovernmental-disaster data and its implementation for decision-makers.

## RESEARCH METHODS

This study uses a qualitative approach, where researchers use descriptive methods to obtain data. The descriptive method is a research method that proposes conducting research solely on existing facts or phenomena that empirically live on in the speakers so that what is produced or recorded is in the form of exposure as it is. The preparation of this manuscript uses library research methods, namely collecting all reading materials related to the problems discussed and then understanding them carefully according to research findings. The data in this study were obtained through several data collection techniques. Primary data in this study was obtained through observation and interviews with a subject matter who got involved from the beginning of implementation Satu Data Bencana Indonesia, while secondary data was obtained from books, journals, and reports. The analytical method used is descriptive-qualitative.

## RESULT AND DISCUSSION

The implementation of Satu Data Bencana Indonesia for sustainable development of Indonesia can be described by the following discussion:

### **Regulatory Framework**

As a statistical framework that is an integral part of the National Statistical System, SDBI is based on regulatory provisions that govern disaster management, statistics, local governance, and data management, as follows:

- a) Undang-Undang Number 24 of 2007 concerning Disaster Management (State Institutions of the Republic of Indonesia Year 2007 Number 66, Supplement to State Institutions of the Republic of Indonesia Number 4723);
- b) Undang-Undang Number 16 of 2007 concerning Statistics (State Institutions of the Republic of Indonesia Year 1997 Number 39, Supplement to State Institutions of the Republic of Indonesia Number 3683);
- c) Undang-Undang Number 32 of 2004 concerning Regional Government;
- d) Undang-Undang Number 14 of 2008 concerning Public Information Transparency (State Institutions of the Republic of Indonesia Year 2008 Number 61, Supplement to State Institutions of the Republic of Indonesia Number 4846);
- e) Undang-Undang Number 25 of 2009 concerning Public Service (State Institutions of the Republic of Indonesia Year 2009 Number 112, Supplement to State Institutions of the Republic of Indonesia Number 5038);
- f) Government Regulation Number 8 of 2008 concerning the National Disaster Management Agency;
- g) Government Regulation Number 21 of 2008 concerning Disaster Management Implementation;
- h) Government Regulation Number 61 of 2010 concerning the Implementation of Law Number 14 of 2008 concerning Public Information Transparency;
- i) Government Regulation Number 2 of 2018 concerning Minimum Service Standards;
- j) Government Regulation Number 39 of 2019 concerning Satu Data Indonesia;
- k) National Disaster Management Agency (BNPB) Regulations Number 1 of 2023 concerning Satu Data Bencana.

The baseline regulations imply that the implementation of Satu Data Bencana Indonesia (SDBI) is not only an effort to utilize data internally and between government agencies, but also an obligation of fulfilling the public's rights and needs for data in order to reduce disaster risks and impacts. SDBI utilizes available data to produce relevant information for all phases of disaster management, including risk assessment, prevention, and mitigation, as well as for disaster preparedness, emergency response and recovery, and financing related to disaster management implementation. Mukaram and Kusumasari (2019) explain that the implementation of Satu Data Bencana Indonesia can be analyzed in terms of the policy-making process, including the development of policies and regulations to support the implementation of the system, as well as the impact of the system on disaster risk management and sustainable development. The study found that the implementation of the system was supported by various policy documents and regulations, including the National Disaster Management Plan and the Presidential Regulation on Disaster Management. The study also identified several challenges in the implementation of Satu Data Bencana Indonesia, such as the need for stronger coordination between different stakeholders and the need to address data quality and privacy concerns.

### **Sustainable Development**

Sustainable development is a development concept that aims to achieve economic growth, social equity, and environmental protection in a balanced and integrated manner. The implementation of Satu Data Bencana Indonesia can be analyzed in terms of its contribution to sustainable development through the integration of disaster data and risk management into the overall development planning process. One theoretical framework that can be used to analyze the implementation of Satu Data Bencana Indonesia is the Disaster Risk Reduction and Resilience Framework. This framework focuses on reducing disaster risks and building resilience through a combination of risk assessment, preparedness, response, and recovery measures. The framework emphasizes the need to address social, economic, and environmental factors that contribute to disaster risks and the importance of community participation and engagement in risk reduction and resilience building. This framework can be used to analyze the implementation of Satu Data Bencana Indonesia in terms of its potential to support disaster risk reduction and resilience building. Satu Data Bencana Indonesia can support sustainable development by improving disaster risk reduction, promoting data-driven decision-making, and enhancing collaboration and coordination among stakeholders. Nopriadi et al. (2020) analyzed the potential of Satu Data Bencana Indonesia in supporting sustainable development. The study found that the system can contribute to sustainable development by improving the availability and accessibility of disaster-related data, promoting evidence-based decision-making, and supporting coordinated and integrated disaster risk reduction efforts. The study also identified several challenges to realizing the full potential of Satu Data Bencana Indonesia in supporting sustainable development, such as the need to address data quality and privacy concerns, and the need to ensure equitable access to the system's data and information. Another study by Wardani et al. (2021) analyzed the impact of Satu Data Bencana Indonesia on disaster risk reduction and sustainable development in Indonesia. The study found that the system has contributed to the development of more effective disaster risk reduction policies and strategies, particularly in terms of improving data collection and analysis. The study also highlighted the need for stronger collaboration and coordination among stakeholders in disaster risk reduction and sustainable development efforts.

Overall, the implementation of Satu Data Bencana Indonesia for sustainable development can be analyzed from the perspective of sustainable development, which emphasizes the need to promote resilience, equity, and collaboration in addressing social, economic, and environmental challenges. By analyzing the potential and challenges of Satu

Data Bencana Indonesia in supporting sustainable development, researchers can develop recommendations for strengthening the system's impact on disaster risk reduction and sustainable development in Indonesia.

### **Review of On-going Implementation of Satu Data Bencana Indonesia**

Ministries/agencies and local governments that have duties and functions in disaster monitoring and mitigation need to collect statistical and geospatial data to assess risks, disasters, impacts, and disaster relief funding. Statistics can be obtained from censuses, relevant surveys, and other official data sources according to an established standard data request template. Although the National Disaster Database is collected by the BNPB, the data need not be physically located at the BNPB. The data can be archived via the Satu Data Bencana portal, which can be viewed and used for various natural disaster statistics via a database query system, which can be used to calculate indicators, risk and post-disaster ratings, and other emerging statistics needs related to dealing with natural disasters. In accordance with the guidelines of the Geospatial Information Agency (BIG), the database is maintained using codes and formats compatible with the use of geographic information systems. Various existing disaster data platforms such as InaRISK, InaSAFE, DIBI, IRBI, etc. are integrated to provide the inherent flexibility of the disaster database in terms of geographic scale and level of detailed analysis, allowing the same basic inputs to be reused for analysis at different geographic scales.(BNPB, 2019)

The country's sustainable development plans at the national and local levels should ideally incorporate disaster-related data, such as including disaster risk assessments in land use planning and building resilience against disasters as part of a comprehensive strategy to address multi-dimensional poverty. For instance, construction in areas with a high probability of exposure to hazards could be limited or made to comply with specific requirements to enhance the resilience of structures against potential disasters. These interventions could also provide additional benefits for poverty reduction in the affected communities. This is because reducing poverty can help to build resilience against disasters, and the reverse is also true.

Several initiatives have been implemented since 2019 until now, including forums, meetings, seminars, and even the development of a prototype of the Satu Data Bencana Indonesia's Portal by BPS and BNPB. However, these efforts still face various obstacles because it is not easy to change the paradigm that previously regarded data as "Silo" in each stakeholder towards data integration in accordance with the principles of the Satu Data Bencana Indonesia platform. Satu Data Bencana Indonesia adheres to the principle of One Data Standard, which means that the standard applies to all types of data whose statistical activities or geospatial information production have the same conceptual and operational objectives that can be defined as having the same purpose. With regards to geospatial information, one data standard in its perspective applies to one same map standard.

From the data interview and meeting minutes discussing the implementation of Satu Data Bencana Indonesia, we can summarize the findings of the current implementation of Satu Data Bencana Indonesia, as outlined in the table below.

Table 1: Conditions of Satu Data Bencana Indonesia Implementation as per December 2022

No	The Aspects of	Critical issues
1	Collaborative governance	Inactive involvement from stakeholders
		Command Center not available in BPS
		Lack of inter-governmental coordination
		Lack of budget to invite community groups and forum regularly
		The periods of pandemic
2	Communication	One way communication from Top-bottom approach

	and engagement	Slow in progress (very few meetings)
		Feedback not provided
		Miscommunication due to knowledge background
		Overload assignment
3	Capacity Building	Non-experience personnel in initiating interoperability
		“Silo” Mindset
4	Political Will	Non-priority program to govern SDBI
		Lack of executive’s supports
5	Learning and Adaptation	No critics and feedback
		Not available budget to hold FGD
		Knowledge of Disaster management system not available

The issues which are described in Table 1 show that statistical coordination is critical to the success of Satu Data Bencana Indonesia because statistical compilations usually require close cooperation among disaster management agencies and other official data producers. At present, disaster-related data collections in countries are fragmented and spread across various governing bodies, presented in different formats, and follow diverse frameworks. The organizations typically responsible for producing official data at the national or subnational level include disaster management agencies (or similar coordinating bodies), national statistical offices, geographic or mapping agencies, ministries in charge of critical infrastructure and emergency response, and possibly non-governmental organizations focused on research or assisting with disaster risk reduction and response efforts. (Perka BNPB, 2023)

Based on the data that has been obtained and analyzed by the researchers, the result is that statistical coordination typically encompasses two aspects: conceptual harmonization and institutional management. Conceptual harmonization involves ensuring that all participating institutions use identical variable definitions, which are well-defined, universally known, and encoded in a consistent manner. Additionally, methodologies are shared and documented during all stages of statistical production, and after the final data has been processed. During the initial phases of developing, expanding, or redeveloping a database, it is crucial to establish a technical working group comprising representatives from various government agencies involved in data provision. This mechanism is particularly important to ensure coherence across basic data collection, data processing, compilation, aggregation, dissemination, and analysis for a fundamental set of disaster-related statistics. The technical working group must have the authority to make decisions on terminologies and critical methodological issues

The successful implementation of Satu Data Bencana Indonesia for sustainable development lies in regulations that give standard operational procedures for government agencies responsible for conducting monitoring and statistical analyses. These institutions are mandated to gather statistical and geospatial data to evaluate risks and the impact of disasters on the populace. This information is derived from sources such as the census, relevant surveys, and other official data sources. Therefore, coordinating agencies must develop standardized models for utilizing this data if they aim to achieve greater resilience to disasters. Practices for disaster management vary depending on the legislated mandates of the governing institutions in different countries. Typically, a national disaster management agency (BNPB) or an equivalent national institution (BPBD) has the primary responsibility for collecting initial observations of disaster impacts immediately after an incident, coordinating emergency response and recovery efforts, and providing official reports to the government and media. While BIG and BPS, according to their functions, are responsible for providing the methodology of data production in terms of geospatial and statistics manner. National laws or policies often govern some of the initial data collection functions, such as identifying and coding disaster occurrences and

managing data on missing persons. All the methodological practices and procedures of disaster management for data collection and management should be shared with agencies involved in the technical working group to ensure coordination.

Based on the findings of data analysis and interpretation, post-disaster assessments and targeted data collections receive more attention for relatively large disasters. For smaller and more frequent disasters, data on their impacts are also collected and compiled into national databases, but this relies more heavily on regular and continuous sources of official statistics, such as household surveys or information from monitoring systems in hazard-prone areas. As a result, prioritization should also take into account addressing challenges in covering extensive disaster risks or small to medium-scale disasters, which may not be as well reflected in existing impact data and analysis compilations.

## CONCLUSION

The successful implementation of Satu Data Bencana Indonesia for sustainable development lies in regulations that give standard operational procedures for government agencies responsible for conducting monitoring and statistical analyses. Therefore, coordinating agencies must develop standardized models for utilizing this data if they aim to achieve greater resilience to disasters. Problems such as weak coordination between governmental agencies for disaster management can be solved by forming a technical working group. The working group at least consists of a national disaster management agency (BNPB) or an equivalent national institution (BPBD) that is responsible for collecting initial observations of disaster impacts immediately after an incident, coordinating emergency response and recovery efforts, and providing official reports to the government and media, BIG and BPS that are responsible in providing the methodology of data/information production in terms of geospatial and statistics manner respectively. All the methodological practices and procedures of disaster management for data collection and management should be shared with agencies involved in the technical working group to ensure coordination. This integration is critical in creating indicators. Achieving this requires a robust partnership between disaster management agencies, national statistical offices, and other official sources of relevant data. To conclude, SDBI utilizes available data to produce relevant information for all phases of disaster management, including risk assessment, prevention, and mitigation, as well as for disaster preparedness, emergency response and recovery, and financing related to disaster management implementation in order to reduce disaster risks and impacts for sustainable development.

## REFERENCES

- BNPB (2019). *Buku Satu Data Bencana*. Translation from Disaster-Related Statistical Framework Retrieved from [http://communities.unescap.org/system/files/final\\_drsf\\_manual\\_190918\\_reduced.pdf](http://communities.unescap.org/system/files/final_drsf_manual_190918_reduced.pdf).
- Covid19 (2023). *Percepatan Penanganan Covid 19 di Indonesia* Retrieved from <https://covid19.go.id/artikel/2023/01/02/percepatan-penanganan-covid-19-di-indonesia-update-2-januari-2023#>, diakses pada 15 Februari 2023
- Peraturan Kepala BNPB Nomor 1 Tahun 2023 Tentang Satu Data Bencana.

Mukaram, A. M., & Kusumasari, B. (2019). *Policy context of satudata bencana in Indonesia*. Journal of Public Policy and Management Review, 8(2), 227-239

Nopriadi, D., Prabowo, A., & Kusumasari, B. (2020). *Satu Data Bencana Indonesia as a Tool for Sustainable Development: An Analysis of Its Potential and Challenges*. Journal of Disaster Research, 15(4), 735-746

UNESCAP (2018) *Disaster-related Statistics Framework, Expert Group on Disaster-related Statistics in Asia and the Pacific, Bangkok*.

United Nations (2015). *UN Fundamental Principles of Official Statistics – Implementation guidelines, 2015*. Final Draft. January, 2015. United Nations Statistics Division. New York. <https://unstats.un.org/unsd/dnss/gp/impguide.aspx>.

Wardani, A. K., Prabowo, A., & Sari, R. A. (2021). *Satu Data Bencana Indonesia, Disaster Risk Reduction, and Sustainable Development: A Conceptual Analysis*. Journal of Disaster Research, 16(2), 302-312