Bridging the Gap: Enhancing Multi-Stakeholder Communication on Coastal Disaster Risk Reduction in Kandanghaur District, Indonesia

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SYUKRON SUBKHI

716511

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Second Reader : Dr. Sunil Tankha

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Inquiries

International Institute of Social Studies
Erasmus University Rotterdam
P.O. Box 29776
2502 LT The Hague
The Netherlands

t: +31 70 426 0460
e: info@iss.nl
w: www.iss.nl
fb: http://www.facebook.com/iss.nl
twitter: @issnl

Location

Kortenaerkade 12
2518 AX The Hague
The Netherlands

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Bansos	: Bantuan Sosial (Social Aids)
Bappeda	: Badan Perencanaan Pembangunan Daerah (Local Bureau for Development Planning)
Basarnas	: Badan Nasional Pencarian dan Pertolongan (National Search and Rescue Agency)
BBWS	: Balai Besar Sungai Citarum (Citarum River Major Authority)
BMKG	: Meteorology, Climatology, and Geophysics Agency
BNPB	: Badan Nasional Penanggulangan Bencana (National Bureau for Disaster Management)
BPBD	: Badan Penanggulangan Bencana Daerah (Local Disaster Management Agency)
CCA	: Climate Change Adaptation
CSOs	: Civil Societies Organizations
CVI	: Coastal Vulnerability Index
Diskimrum	: Dinas Perumahan Kawasan Permukiman dan Pertanahan (Department of Housing, Residential Areas and Land Affairs)
Dinsos	: Dinas Sosial (Department of Social Affairs)
DPR RI	: Dewan Perwakilan Rakyat Republik Indonesia (The House of Representatives of the Republic of Indonesia)
DRM	: Disaster Risk Management
DRR	: Disaster Risk Reduction
ENSO	: El Niño Southern Oscillation
GIS	: Geographic Information System
IPCC	: Intergovernmental Panel on Climate Change

ISS	: International Institute of Social Studies
KII	: Key Informant Interviews
KSB	: Kampung Siaga Bencana (Disaster-Prepared Village)
Musrenbang	: Musyawarah Rencana Pembangunan (Development Planning Conference)
NGOs	: Non-Governmental Organizations
PMI	: Palang Merah Indonesia (Indonesian Red Cross)
Pokmas	: Community Group
PPM	: Pemerintahan dan Pembangunan Manusia (Government and Human Development)
Renstra	: Rencana Strategis (Strategic Plan)
RKPB	: Rencana Kerja Pemerintah Daerah (Local Government Work Plan)
RPJMD	: Rencana Pembangunan Jangka Menengah Daerah (Local Mid-Term Development Plan)
SoVI	: Social Vulnerability Index
Tagana	: Taruna Tanggap Bencana (Youth Community for Disaster Preparedness)
UNDRR	: United Nations for Disaster Risk Reduction

Abstract

This research analyzes how the multi-stakeholder communication mechanism shapes, supports, or limits the implementation of Disaster Risk Reduction (DRR) in Kandanghaur District, Indramayu Regency. Through a qualitative approach with an in-depth interview and policy document/paper analyses, this research examines that the effectiveness of collaborative-based DRR governance is very dependent to adaptive, participative, and contextual communication towards social condition of coastal communities. The findings indicates that the informal social relations and mutual trust between the actors have a crucial role to bridge the limitation of formal structure. However, the different perception between the government institutions and public/community members, as well as one-way communication, hinders the mutual lessons and cross-sectoral coordination. This research emphasizes the importance of two-way inclusive communication mechanism to strengthens the community resilience towards disaster and climate change.

Relevance to Development Studies

This research is relevant to Development Studies because of it highlighted the communication process that influenced development governance in the local level, particularly in the context of disaster risk reduction and climate change adaptation. Through positioning the communication as not only technical tool, but also social process that shapes trust, legitimation, and cross-sectoral collaboration, this research indicates that the successfulness of development policy cannot be separated from the surrounded social and political dynamics. This finding enriches the understanding in the study of development governance and participatory development through emphasizing effective collaborative governance should be able to integrate local knowledge, strengthen the multi-actor dialogue, and to ensure a meaningful community participation in every development phases.

Keywords

Coastal Floodings, Disaster Risk Reduction, Collaborative Governance, Policy Communication, Community Participation

Chapter 1: Introduction

"There are disasters that are entirely manmade,
but none that are entirely natural."
- Rebecca Solnit –
#NoNaturalDisasters

Indonesia has been known as an archipelagic country, where shores, beaches and coastal areas in this country offers various beauty landscape and become a major holiday destination. Coastal areas are regions connecting land and ocean that offer promising living spaces for human population with various economic activities and livelihoods. For many people, coastal areas have become a space for livelihoods, such as fisherman, fish sellers, fish farmers, and others.

Alongside of the goods that coastal areas can provide, the area is also known with the high risk of climate related hazards such as coastal floodings and erosion which impacted the local communities and has increased their vulnerabilities. As reported by IPCC (Intergovernmental Panel on Climate Change) in Climate Change Report (2023) with the state of the rising global surface temperature by 1.1 Celsius degrees, resulting on sea level rises which poses a significant threats to coastal areas with hazards caused by this event such as coastal floods and coastal erosion (Arda, et al., 2024).

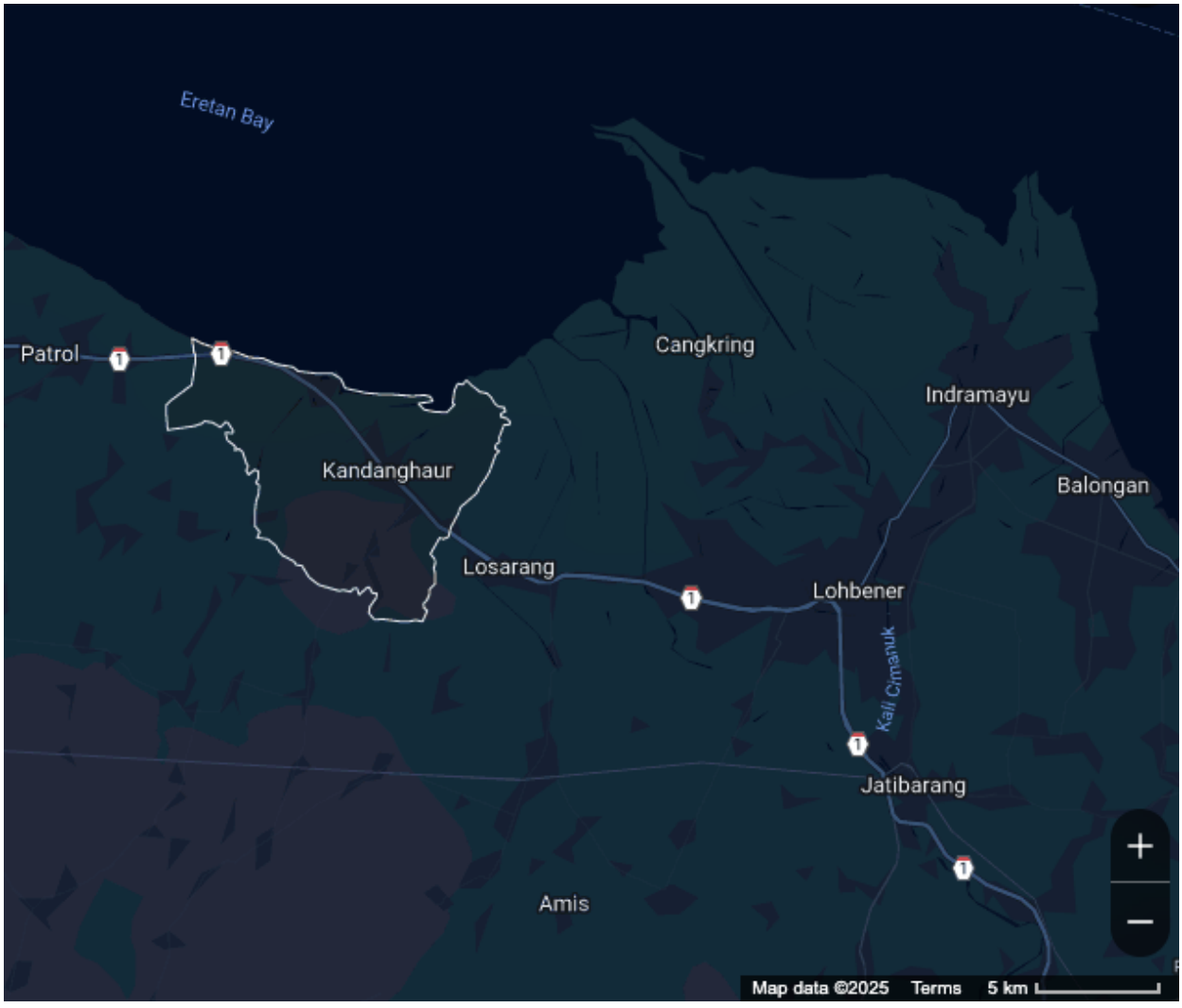
As mentioned by Putiamini (2022) based on World-Meteorological Organization Report (2019), the significant rises of sea level caused by the rapid changes of global climate change resulting on coastal disasters which threatened human population in coastal areas by affecting the environment and socio-economic activities. According to Nurhidayah and McIlgorm (2019) argued the state of coastal floods occur caused by weather changes in addition to ocean circulation patterns which includes El Nino Southern Oscillation (ENSO), and are aggravated by the degradation of mangrove plantations. Aside from environmental factors such as climate hazards which contribute to the increase of disaster risk in coastal areas, the other underlying factors also related to socio-political aspects such as disaster management and community participation in the decision-making system.

Within the aspects that has been mentioned in the previous paragraph, ss a country with total 60% of its population lives along the 100,000 km coastline with 22% of them relies on the fisheries

sector for the livelihoods, Indonesia is considered to have a high level of risks and vulnerability towards climate related events in the coastal communities (Putiamini, et al., 2023). According to Indonesia National Authority for Disaster Management (BNPB), throughout 2023 tidal wave and coastal erosion affected 7,562 local residents, forcing them to suffer and be displaced from their homes with 33 recorded cases of coastal floods event, damaging more than 1,000 infrastructure including houses and public facilities in all over region in Indonesia (BNPB, 2024).

Figure 1.1.

Maps of Kandanghaur District, Indramayu Region



Source: Google Maps

One district in Indramayu Regency, namely Kandanghaur, has faced persistent coastal floods for over a decade. The floods have significantly disrupted livelihoods, people mobility, and local

socio-economic activities. According to Kompas (2022), the coastal floods is no longer dependant to monsoon seasons when the sea level is rising, but recurrence in almost every day up to two times a day, compared to the previous year that the floods have only occurred around hundreds of times a year. On 29th January 2025, the same event occurred in the district, took place from 06.00 AM to 01.00 PM (Western Indonesian Time), which resulted in resident's houses being submerged and disrupted transportation and socio-economic activities around the location (Kompas, 2025).

The recurrence coastal floodings in Eretan Wetan and Eretan Kulon is a phenomenon that has been occurred in the last few years. However, up to the recent time, there is still ambiguity in viewing the phenomenon, whether it should be categorized as a disaster or will it be more reliable to be understood as a developmental issue. This ambiguity comes up because, even though the coastal floodings has caused the destruction of the households, fishponds, and also disrupting the socio-economic activities, the impact is often considered as a part of environmental and socio-economic dynamic that is regularly occurred in the northern coastal areas in Java Island.

In order to make a clearance of this context, this research strives to re-assessing the classification and the understanding towards coastal floodings in Eretan Wetan and Eretan Kulon by referring to the formal definition of disaster as mentioned in the *Undang – Undang no. 24 Tahun* (2007) (Government Regulation no. 24 of 2007) regarding disaster management in Indonesia and *Peraturan Kepala BNPB Nomor 2 Tahun* (2012) (Regulation of the Head of BNPB Number 2 of 2012) which emphasizes that disaster is a phenomenon threatens and disrupts community livelihoods and activities, caused fatalities, environmental damages, property loss, and psychological impact, This approach also strengthened by the reference from the United Nations Office for Disaster Risk Reduction (UNDRR) who defines disaster as a serious disruption beyond affected communities to overcome it with the available resources. Thus, the understanding regarding whether the coastal floodings in Eretan Wetan and Eretan Kulon is categorized as disaster or developmental issue will be dependant to how far the impact is affecting community livelihoods and government capacity as well as the community to response.

According to Chirwa (2023), in the context of disaster risk reduction (DRR), community participation cannot be separated from communication processes. Effective communication between government institution and communities is essential to ensure that participation is not merely symbolic but contributes meaningfully to decision-making and implementation. The mono-

directional communication often limits or disrupts the community participation because of vulnerable people need to know about the hazards and risks they facem and the measure they can take to mitigate and prepare.

1.1. Research Problem: The Communication Gaps and the Fragmentation of DRR Governance

The Indonesian National Board for Disaster Management (BNPB) has developed the Indramayu District Disaster Risk Reduction Report year 2019 – 2023 to assess the existing risks and vulnerability in the recent years. The report includes the assessment on the mitigation plan and risk reduction of coastal floods towards community vulnerabilities (BNPB, 2018). Other than that, the latest document published by BNPB in larger area of West Java Province Disaster Risk Reduction Report and Plan 2022 - 2026 includes a broader scope of disaster governance and mitigation plan at the provincial level (BNPB, 2021), hence both documents underscore the complexity of disaster risk reduction (DRR) efforts in the region. Noting the responsibilities of disaster governance are dispersed across various agencies, the documents missing the key-stakeholder involvements such as Regional Development Planning Agency, District Municipality, Regional Indonesian Red Cross Community, Universities, and community participations such as local NGOs, village enterprises, and fish-farmers community. This shows that the disaster governance mechanism in the area is not yet centralized, and leads to overlapping duties and gaps in implementation, particularly evident in coastal areas like Kandanghaur.

Even though various intervention has been conducted by the local and national government to overcome coastal floodings in Indramayu Regency, particularly in Eretan Wetan and Eretan Kulon, including breakwater construction and relocation programme, this problem remain exist and recurrence annually. This condition caused a basic questioning regarding how the coastal floodings in the area is classified and handled by the stakeholders, whether it is considered as disaster which needs an emergency management mechanism, or as a development and spatial problem which needs a durable long-term and integrated solution.

As argued by Georgina et. al (2023), flood management should involve multiple actors and stakeholders to work throughout the decentralized governance system, which sectoral silos and unclear mandates between stakeholders and community exclusion will hinder the cohesive flood

management strategies and exacerbates the governance fragmentation which leads to inefficient response to floods events.

This research aims to examines the existing coordination and communication mechanism of the local governance as it is correlated to the policy integration on disaster risks reduction (DRR) and management (DRM) in Indramayu region. Through this examination, this paper will contribute to evaluating the current coastal disaster governance in the area, and mapping stakeholder analysis for a better policy integration.

Other than that, community participation cannot be separated from communication process / mechanism regarding the disaster risk reduction process. Thus, this research will also examines government's engagement with community on their participation on decision making system in DRR and DRM as part of communication mechanism which is also stated in the role of stakeholders that included community participation in the Sendai Framework for Disaster Risk Reduction 2015-2030 (UNDRR, 2015). This purposed to generating local knowledge from the local community to be considered in the decision making of policy development regarding the DRR strategy in the area.

By analysing these factors, this research will contribute to a deeper understanding of the existing governance arrangement on DRR and DRM, in addition to particular emphasis of community participation towards decision making system in Indramayu region.

1.2. Justification of Case Selection

This research has selected Kandanghaur District as the research site due to its recurrent coastal floods, longstanding vulnerability, and the institutional response towards the disaster. It also presents a dynamic setting with visible community-led adaptation efforts and ongoing policy interventions. These characteristics make it a meaningful case for examining the interplay between local knowledge, institutional capacity, and collaborative governance in the context of climate-related hazards.

1.3. Research Questions

How do communication mechanisms within multi-stakeholder governance shape, support, or constrain disaster risk reduction implementation in Kandanghaur District, Indonesia?

Sub Research Questions :

1. Which actors are involved in disaster risk governance and communication for coastal flooding in Kandanghaur District, and what roles do they play?
2. What communication practices currently exist (or are lacking) for managing disaster risk in Kandanghaur?
3. What types of knowledge and practices are recognized and communicated within disaster risk governance in Kandanghaur?
4. In what ways do communication practices between stakeholders' support, limit, or shape coordination and implementation of disaster risk reduction strategies in Kandanghaur?
5. How do communication challenges or gaps affect the effectiveness of disaster risk reduction implementation at the local level?

By answering these question, it is expected that this research paper is able no limited to contribute to knowledge production and policy development, but also bridging the communication gaps to enhance the knowledge of people or community members in Kandanghaur District regarding disaster, risks, impact, and vulnerability, and the awareness on community participation towards policy decision making.

1.4. Thesis Structure

The research paper is structured into seven chapters. Chapter one introduces the study by outlining the background and context of the research, problem statement, justification for case selection, and the research question and sub-questions. Chapter two details of the methodology, presenting the methodological framework, data collection methods, sampling strategy, data analysis approach, and addressing ethical considerations and positionality. Chapter three develops the conceptual and theoretical framework, discussing key issues such as coastal disaster risk reduction, disaster risk governance, and community participation. Chapter four provides the contextual background of Kandanghaur, including its geographic and socio-economic profile, the history of coastal floods and climate-related hazards. Chapter five presents the research findings and analysis, focusing on institutional and community perspective on impact, risk, and vulnerability, the governance challenges in policy development, and the practice of community participation. Chapter six discusses the findings in relation to the conceptual framework, highlighting their implications for

theory, policy, and practice. The final chapter concludes the research by synthesizing the key insights and offering recommendations for strengthening disaster risk governance and community participation in coastal areas.

Chapter 2: Methodology

In this chapter, it is examined that the research employs a qualitative case study approach to investigate disaster risk governance and community participation in managing coastal floods in Kandanghaur District, Indramayu Regency, West Java. The case study design is well suited for this research as it enables an in-depth exploration of the social, institutional, and contextual factors shaping multi-stakeholder governance and local responses to climate-related hazards. It allows the researcher to investigate complex, real-life governance processes while being attentive to the situated knowledge and experiences of affected communities.

Besides evaluating the disaster risk governance arrangement and community participation, this research paper is focused on understanding the coordination and communication between government agencies and local communities in shaping disaster response and long-term adaptation. This research paper assessed how communication mechanism among multi-stakeholder governance actors influence the implementation of coastal disaster risk reduction in Eretan Wetan and Eretan Kulon Village, Kandanghaur District, Indramayu.

Ontologically, this study assumes that social realities are multiple, subjective, and constructed through interactions and communications between actors, institutions, and their environments. This perspective aligns with the study's focus on exploring perceptions, narratives, and live experiences of both institutional (formal) actors and local communities.

2.1. Data Collection Methods

Key Informant Interviews (KII)

In order to collect primary data, researcher travelled to Kandanghaur District, Indonesia in August 2025. The research employed Key Informant Interviews (KII) method as the primary data collection with multiple stakeholders in disaster risk governance in the area including government officials, community leaders, and representatives of community members. The interviews were conducted on semi-structured basis to allow flexibility in exploring key issues, while keep preserve the consistency of the core research questions to be addressed properly (Bryman, 2016).

The respondents are chosen through a purposive approach, in accordance to the strategic role and their involvement in the disaster risk reduction (DRR) governance in Kandanghaur District, Indramayu Regency, particularly in Eretan Wetan and Eretan Kulon. The combination between the

government institution representatives and local community are chosen to obtain the holistic view the dynamic of communication, coordination, and DRR policy implementation in the local level.

The respondents of the interviews include:

1. Department of Development Planning (Bappeda) of Indramayu Regency

   Bappeda has the role as a coordinating and planning institution for local development policy, including the DRR aspects integration to the planning document such as RPJMD or *Rencana Pembangunan Jangka Menengah Daerah* (Local Mid-term Development Plan) and RKPB or *Rencana Kerja Pemerintah Daerah* (Local Government Work Plan). Their involvement is crucial to understand how the coastal floodings issue and coastal erosion are accommodate in the mid-term development policy, and also how the cross-sectoral coordination is conducted within infrastructure, social, and economic body.

2. Local Disaster Management Agency (BPBD) of Indramayu Regency

   BPBD is the key institution for the organization of disaster management in the local level, covering pre-diisaster, emergency situation, and post-disaster stages. The resource person from BPBD provide the perspective regarding the coordination mechanism are being conducted between government institutions, community members, and non-government organization in facing recurrence coastal floodings. BPBD is also the main resource to provide the explanation in the role of giving the command and leading the communication system when the disaster happens.

3. Department Social Affairs (Dinsos) of Indramayu Regency

   Dinsos has taken a crucial role in the socio-humanity role and recovery of disaster-affected communities, including social aid distribution, protection on the vulnerable groups, and the coordination with voluntary groups such as Tagana and PMI (Indonesian Red Cross Community). The resource person from this department provides explanation on how local social policy has contributed to social resilence of coastal communities and how the mechanism of aid distribution is conducted.

4. Department of Housing, Residential Areas and Land Affairs (Diskimrum) of Indramayu Regency

   This department is responsible to the spatial, housing, and relocation program for the communities who are affected by coastal erosion and coastal floodings. The resource person from this department is chosen to provide the understanding of the policy dynamic

od the relocation, land conflict, and the coordination challenges between government institution and community members in the implementation of structural mitigation.

5. Community Leader of Eretan Wetan (East) Village and Community Leader of Eretan Kulon (West) Village

   Two community leaders are chosen in the reason that the acquired a deeper local knowledge regarding historical, impact, and community response towards reccurence coastal floodings in the area. They also responsible to connect or as a liaison between government institutions and community members in the aid distribution process, policy communication, and community organization. Their view provides the socio-cultural context and local perception regarding disaster and development.

6. Other community members (Fishermen and Fish Sellers)

   The chosen community members represents the most impacted population by the coastal floodings, in the context of economic or even social. Their life and livelihoods are very dependant to the condition of the coastal ecosystem that recently more and more vulnerable. Fishermen and Fish Sellers participation provides the understanding on the real impact of coastal floodings towards the sustainability of households economic situation and local community adaptation.

These interviews aim to uncover institutional (government officials) and community perspectives on risk, vulnerability, governance coordination, policy implementation, and challenges in fostering community participation towards disaster risk reduction and management. The findings from the collected data resulting from the interviews were analyzed and referred to previous literature.

Table 2.1. List of respondents

No.	Respondent Type	Affiliation	Date of Interview	Code
1.	Government Official	Department of Development Planning (BAPPEDA) of Indramayu Regency	14/08/2025	GO1
2.	Government Official	Local Disaster Management Agency	14/08/2025	GO2

		(BPBD) of Indramayu Regency		
3.	Government Official	Department Social Affairs (Dinsos) of Indramayu Regency	13/08/2025	GO3
4.	Government Official	Department of Housing, Residential Areas and Land Affairs (DPKPP) of Indramayu Regency	15/08/2025	GO4
5.	Community Leader	Eretan Kulon Village	16/08/2025	CL01
6.	Community Leader	Eretan Wetan Village	16/08/2025	CL02
7.	Community Member	Eretan Kulon Village	16/08/2025	CM01
8.	Community Member	Eretan Kulon Village	16/08/2025	CM02
9.	Community Member	Eretan Kulon Village	16/08/2025	CM03
10.	Community Member	Eretan Wetan Village	16/08/2025	CM04
11.	Community Member	Eretan Wetan Village	16/08/2025	CM05
12.	Community Member	Eretan Wetan Village	16/08/2025	CM06

Document Analysis

The document review will encompass both formal and grey literature to provide a comprehensive understanding of the governance of coastal disaster risk in Indramayu, with particular attention to Kandanghaur District particularly in Eretan Wetan and Eretan Kulon Village. This document analysis supported not only to situate the research within the policy frameworks, but also to complement the collected primary data through KII by offering contextual background and secondary evidence for triangulation (Bowen, 2009). The reviewed documents included national regulations on disaster risk governance, regional development planning documents such as *RPJMD* and *Renstra,* government reports related to coastal risk and poverty reduction strategies, etc. These documents provided insights into both the institutional arrangement and the practical challenges of policy implementation at the local level, as well as enriching the interpretation of stakeholder perspectives collected through interviews.

2.2. Data Analysis

This research applied a thematic analysis approach to qualitative data with identify recurring issues and patterns highlighted in the conversation (Braun & Clarke, 2006). The data analysis started with exploring literature review to analyse previous relevant studies and documents including report, policy document, and article publications. Afterwards, the primary data was collected through 12 semi-structured interviews that will be analysed using a framework-informed thematic analysis, supported by thematic coding using Atlas.ti tool. During the interviews, notes are taken complemented with voice recordings through participant's consent. The notes and recording were transcribed and later coded through Atlas.ti to identify emerging themes/issues and patterns.

This method allows this research to engage closely with the data while maintaining the flexibility to capture bot theory-driven and emergent themes. Key themes will be guided by the research's conceptual framework, which includes dimensions of disaster risk governance, collaborative governance, and community participation in the context of coastal flood risk reduction and adaptation.

2.3. Ethical Considerations and Positionality

This study will adhere to ethical research standards. Informed consent will be obtained from all participants, and their anonymity and confidentiality will be protected. Sensitive data will be securely stored and only accessible to the researcher. Participants will be fully informed about the aims of the research, their rights to withdraw, and how their data will be used. Ethical approval will be sought from the International Institute of Social Studies (ISS) Ethics Committee or BoE before data collection begins.

As an Indonesian researcher with prior experience in this area, I acknowledge my positionality and how it may influence data collection and interpretation. I aim to foster mutual respect and learning with participant, while being reflexive about my own biased, assumptions, and positional power. My background may facilitate access and trust, since I already have connection in the area and have made contact with them, but in this research, I may also require careful navigation of expectations and relationships.

2.4. Limitation of the Research

This research will focus on the assessment towards multi-stakeholder communication mechanism who are involved in the coastal disaster risk reduction effort in the Kandanghaur District, Indramayu Region Even though the disaster governance network has involved various actors, including government institutions, non-government organizations, and community groups, this research delimits its scope regarding the communication dynamics within government institutions, and also between the government institutions and community groups.

First, this research does not extensively discuss the communication between non-governmental actors (NGO, CSO, private sectors, or international partners), unless if their involvement have direct relations with the interaction between government and community. This limitation is purposed in order to maintain analytical depth on the institutional and participatory dimension of communication that shape local governance processes.

Second, the scope of the research is limited to the communication process occurring within policy planning, coordination, and implementation stages. The focus is directed to understand how the government institutions such as Department of Development Planning (BAPPEDA) of Indramayu Regency, Local Disaster Management Agency (BPBD) of Indramayu Regency, Department Social Affairs (Dinsos) of Indramayu Regency, Department of Housing, Residential Areas and Land Affairs (Diskimrum) of Indramayu Regency coordinate decisions and exchange knowledge in coastal flooding response, and how this communication influence the inclusion of community needs in policy decisions. Consequently, a broader and potential political and economic factor influence the institutional communications are acknowledge by its existence but not comprehensively discussed.

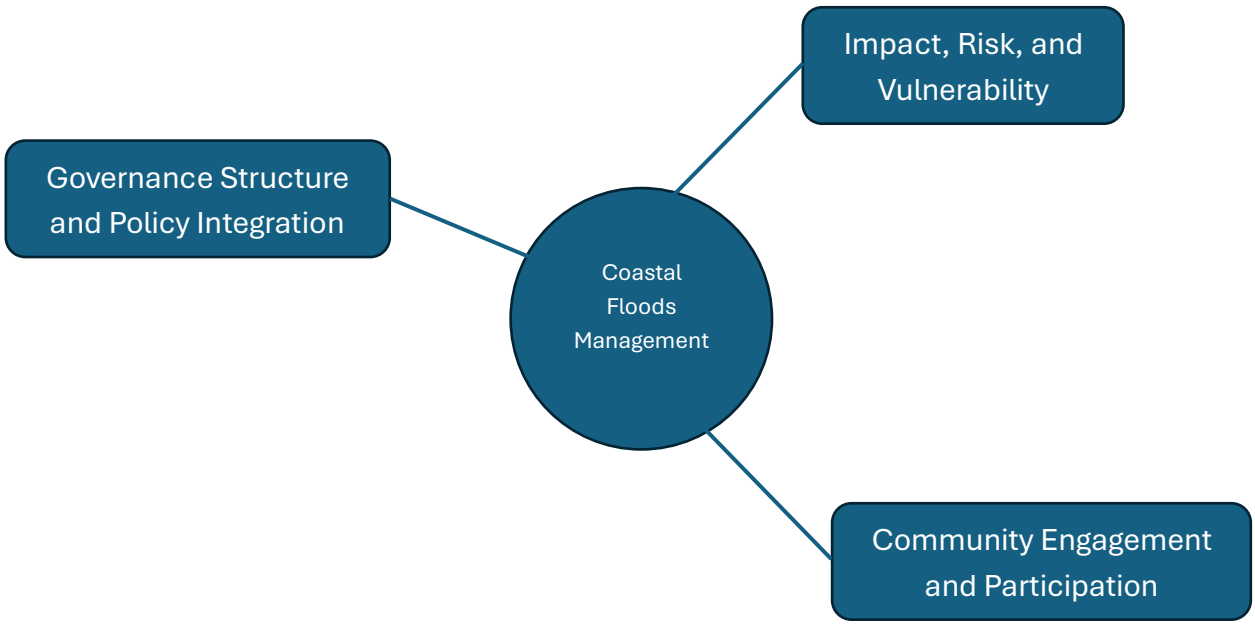
Third, while community participation constitutes an important element in this analysis, this research approaches it primarily from the communication perspective on how the community groups are able to convey their needs, experiences, and feedback to government institutions through participatory mechanisms such as advocacy and informal dialogues during government field visits. This research does not aim to measure the effectiveness of the community participation quantitatively but rather to understand its communicative processes and limitations.

Finally, the findings of this research are context-specific to Kandanghaur District and may not be generalized to other region without considering the local socio-political and institutional factors. The data used in this research are collected through interviews, document analysis, and field observation in a limited time frame; thus, the interpretation may reflect to the perspective and availability of the informants during the period of data collection.

Chapter 3: Conceptual and Theoretical Framework

Since the coastal floods have occurred in years and worsened in the past decade in Kandanghaur District, Indramayu, there should be an academical approach to support the government agenda in this issue. The program and communication between the key-stakeholders must be integrated with the community participation to ensure its relevance, effectiveness and considering its accountability on the implementation. This research paper views communication and community participation as interrelated components of collaborative disaster governance. Communication serves as the enabling mechanism that allows information exchange, trust-building, and coordination, which in turn foster genuine participation of local communities (Ansell & Gash, 2008).

Figure 3.1. Research Angles



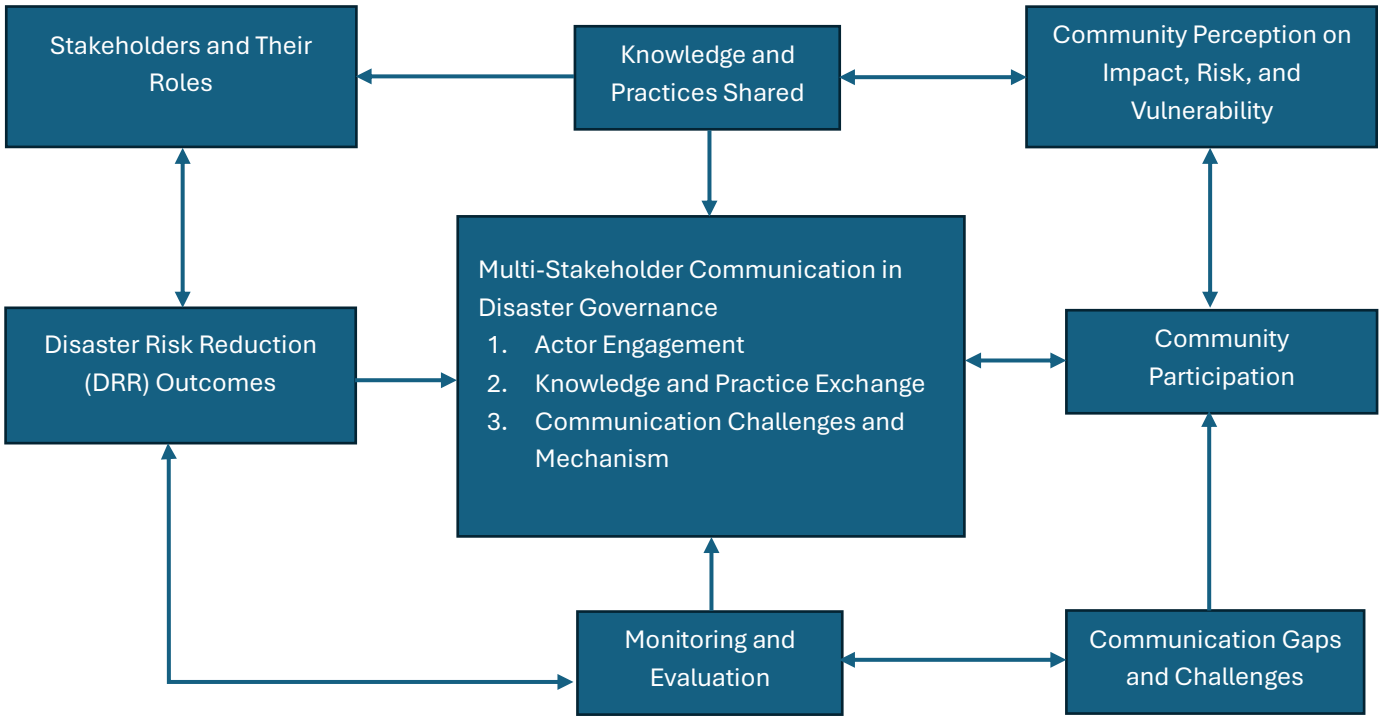
The research angles as portrayed in Figure 3.1. will direct the research project to significant aspects of the problem and the factors to address of it. The governance structure and policy integration aspect would analyse the existing multi-stakeholder arrangement in the Kandanghaur to identify points of fragmentation and opportunities for how policies can be designed or restructured to bridge the gap between governmental agencies and local communities to ensure cohesive and effective DRR strategies.

The aspects of impact, risk, and vulnerability of the community would be able to examine the perception of community towards their adaptive capacity and response to occurrence coastal floods threats. Meanwhile through community engagement and participation, the investigation of current state of community participation in DRR efforts is aimed to develop frameworks that facilitate meaningful inclusion.

This research views communication and community participation as interrelated components of collaborative disaster governance. Communication serves as the enabling mechanism that allows information exchange, trust-building, and coordination, which in turn foster genuine participation of local communities. In contrast, active community participation strengthens communication feedback loops, allowing policies to be more responsive to local needs.

This research would develop the concept and mechanism on multi-stakeholder communication on disaster governance. Through Figure 3.2, this research aims to examines the mechanism of improving the multi-stakeholder communication for disaster risk reduction in coastal area of Kandanghaur District through risk communication and communication for development approach adjusted and adopted from the conceptual framework on integration between risk communication and sustainable climate change action developed by Volenzo and Odiyo (2019).

Figure 3.2. Conceptual Framework



This conceptual framework illustrates how multi-stakeholder communication mechanisms influence the implementation of disaster risk reduction (DRR) in Kandanghaur District. The Multi-Stakeholder Communication in Disaster Governance as the main concept, encompasses three core elements including actor engagement, knowledge and practice exchange, and the presence of communication challenges and its mechanism. The multi-stakeholder engagement would be emphasized since there has been conceptual shift from viewing communication merely as the diffusion of information or technologies, toward recognizing it as a participatory process that facilitates the involvement of multiple stakeholders in shaping policy, preparedness, and community action (Servaes & Lie, 2013). These components form the foundation for strengthening communication practices among different stakeholders.

The interconnected components surrounding the core concept are reflecting the key elements of the governance ecosystem. Starting with the *Stakeholders and Their Roles,* it identifies the diverse actors, ranging from government bodies, NGOs, and community representatives who have the roles in the DRR governance process. These actors bring varied knowledge systems, institutional mandates, and resources that influence how disaster risks are interpreted and addressed (Few, et al., 2011). According to Gaillard and Mercer (2012) the scientific and indigenous knowledge helps circulate and shape risk understandings to formulate better preparedness strategies.

On the community *Perception on Impact, Risk, and Vulnerability,* it is important to measure how the response towards disaster on the local context is shaped. Through their experience, trust in institutions, or social learning, their willingness to engage and the legitimacy of risk governance efforts are being affected (Renn, 2008). *The Communication Gaps and Challenges* is also addressed through the framework as a crucial part which includes issues of misinformation, top-down messaging, and lack of coordination as factors constrain effective DRR implementation. The gaps often caused by the fragmented institutional arrangement or the difference on the narratives of risk among the actors (Lassa, 2015).

Last but not least, the feedback loop is reflected through *Monitoring and Evaluation* to enable learning and iterative improvements in DRR communication and governance. This to ensure that the efforts on DRR are responsive to evolving risks and stakeholder dynamics in coastal floodings management in Kandanghaur District, and it serves a core principle of adaptive governance (Folke, et al., 2005).

Overall, this framework emphasizes a relational and cyclical understanding of DRR governance, where communication functions as both a process and a tool for fostering collaboration, enhancing transparency, and promoting more equitable and effective disaster preparedness and response in coastal areas.

3.1. Understanding Coastal Disaster Risk Reduction

This sub-chapter discuss the conceptual basis regarding how disaster and risk are defined and understand in the context of this research, particularly in the coastal areas that is vulnerable towards the climate change. The first part explains the basic concept of disaster and risk according to UNDRR (2017) dan Blaikie et, al., (1994), through emphasizing that disasters are not only caused by the environmental threats (hazards), but also the vulnerability of social, economic, and governance. The second part discusses the correlation between coastal risk and climate change, showing that the increasing number of coastal floodings and erosions are not merely caused by the climate change, but also the weakness of local disaster risk governance and planning. Meanwhile, the third part introduces the concept of Disaster Risk Reduction (DRR) in the context of coastal areas, emphasizing the crucial strategy of risk reduction that is not only through technical approach, but also through social and institutional which involved the multi-actor governance, community participation, as well as inclusive and sustainable policy direction.

a. Defining Disaster and Risk

According to the UNDRR (2017), disaster is defined as *"a serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses, and impacts."* Meanwhile, Blaikie et al. (1994) defines risk as an interaction between two factors including hazard and vulnerability. In that sense, risk can be understood as a function of:

Risk = Hazard x Vulnerability

**Hazard* : *Natural phenomenon or physical event that has the potential to cause harm (e.g. earthquake, flood, drought, and others).*

**Vulnerability : A social, economic, political, and physical condition that makes individuals or groups more vulnerable to the impacts of those hazards.*

In other words, risk is the probability of loss, or the impact caused by the occurrence of hazard and vulnerability. In that sense, disaster is not only the result of hazards but also occurs because hazards affect vulnerable communities. Meanwhile, hazards will not generate equal risk in every different place, due to the differences of vulnerability level in communities (Blaikie, et al., 1994). This framing focuses on a more holistic view where structural inequalities, spatial planning, and governance failures contribute to disaster risk, and not only consider the hazards alone as the main contributor.

In relevant to this research, Putiamini, et al., (2023) conducted research on coastal vulnerability assessment to tidal floods in Indramayu through Coastal Vulnerability Index (CVI) and analyzed 62 spatial dataset using remote sensing and GIS (Geographic Information System). Their findings include a recommendation on floods reduction by mangrove restoration and better land use planning. In the other research, Putiamini, et al., (2022) explored the socio-economic sector, assessed social vulnerability of coastal fish farming community to tidal floods in Indramayu. They developed a context-specific Social Vulnerability Index (SoVI) through questionaries involving 150 fishpond farmers in five villages. The result comes with the SoVI-scores in +1.76, indicating a high-level of social vulnerability to the coastal floods is high, while the capacity of the community resilience to reduce impact and disaster response are low due to their low competency to the climate change adaptation in the long run.

b. Coastal Risk and Climate Change

The intensifying of natural hazards, sea-level rise, hurricanes, coastal floods and erosion, and others have worsened the vulnerabilities of the communities in the area as an impact that resulted not only by the climate change but also ineffective planning and response towards the disaster risks that can reduce its impact (Serrao-Neumann, et al., 2015). Given the significant impacts of climate change and disaster risks in coastal areas, it is important to develop long-term planning strategies that emphasize sustainability by reinforcing adaptive policies, effective programs, and practical measures capable of withstanding future uncertainties (Busayo & Kalumba, 2020). In that sense,

climate change is not the main cause of the disaster itself, but climate change exacerbates the frequency and intensity of coastal hazards (sea-level rise, higher tides) and exposing the weakness of risk governance and management, and non-resilient infrastructure.

In relations to this research, Park, et al., (2024) assessed the gaps between institutional and practical disaster risk management measure on coastal flood risks in South Korea's coastal communities where sea level rises causing the floods in southern coastal region of South Korea remain fragmented on its DRR policy. The study reviewed the DRR related regulations in combination with data collection through interviews with key actors, stakeholders, and residents. The research methods and theoretical framework of these previous studies will be beneficial to be adapted in this research paper, due to the similar aspects that are analyzed further in the context of coastal floods disaster risk reduction in Kandanghaur District.

In this context, according to Volenzo and Odiyo (2019) risk communication and communication for development approach can be adopted to enhance multi-stakeholder governance as a tool for the integration of precautionary on disaster risk reduction, and reducing the risks of maladaptation strategy, other than that it also contribute to the enhancement of resilience building in community level.

c. Disaster Risk Reduction (DRR) in Coastal Areas Context

UNDRR defines Disaster Risk Reduction (DRR) as a policy that is purposed to prevent new and reducing existing disaster risk and managing residual risk to strengthen resilience and to achieve sustainable development. It is an approach focused on minimizing disaster risks by systematically identifying and addressing their underlying causes (UNDRR, 2017). In the context of coastal areas, DRR includes early warning systems, coastal embankments, spatial planning and zoning, ecosystem-based approach, and community-based preparedness. However, beyond technical matters, risk reduction particularly in coastal areas is aligned to social and political factors. The DRR planning on the decisions of people who get the protection, priority areas, and the inclusivity of people who are involved in DRR planning are shaped by governance structure, power dynamics, and resource distribution (Wisner, et al., 2025). Therefore, coastal risk reduction must go beyond physical infrastructure and involve an inclusive governance and empowered local participation.

3.2. Disaster Risk and Climate Change Governance

As argued by Tierney (2012), disaster governance is a growing field that combines disaster risk governance through policies and decision-making processes by engaging institutions at various levels. It serves as a practical approach, focusing on strategic planning and response to extreme weather events, assessing risk and vulnerability at the community level, and increasing public awareness of disaster-related threats. This framework also highlights the interconnected roles of legal systems, institutional arrangements, and social structure in managing disasters effectively (Ashu & Van Niekerk, 2020).

In the context of climate change governance, Leck and Simon (2012) argued that the necessity of dynamic relations among national, regional, and local government actors in fostering cooperation in climate change adaptation contributes to underscore the barriers such as the communication breakdowns, mismatched priorities, and operational challenges within multi-level governance. In relations to Indonesian context, Mukhlis and Perdana (2022) on their research on climate change adaptation policies in Bandar Lampung City, Indonesia will complement the narratives on the investigation of collaborative governance in an Indonesian context to assess cultural, institutional, and political factors that can influence how effective multi-stakeholder communication and adaptation is implemented. Dwirahmadi, et al., (2023) explored the integration of disaster risk reduction and climate change adaptation through collaborative governance with the case study of urban floods in Jakarta. They examined the typical constraints, limitations, and challenges on the effectiveness of governance collaboration between stakeholders on implementing the DRR-CCA (Climate Change Adaptation) integration on flood mitigation through collaborative governance framework.

The governance arrangement will be examined through **Collaborative Governance Theory** that can be used to determine the multi-stakeholder governance arrangement as explained by Ansell and Gash (2008) as the direct engagement of one or more government agencies with non-state stakeholders to be involved in the legal policy making process, including in the process of public policy planning and implementation to maintain public interest, with orientation to the consensus and deliberative approach, and the importance of multiple stakeholders coordination.

Besides that, according to Liu, et al., (2015), the effectiveness of disaster risk governance is dependant to how the communication lane is developed in two-way direction between government

institutions, media, and public/community members. The form, source, and kind of the delivered information will influence the public trust level and community participation in the disaster risk reduction process, so that the successfulness of disaster risk governance is not merely decided by the institutional structure, but also how far the communications can be participative, open, and trusted between the actors.

3.3. Community Participation

According to Sendai Framework for Disaster Risk Reduction 2015-2030 (2015), it emphasizes the importance of local capacity enhancement, cross-sectoral policy integration, and evidence-based data as a foundation in the development of policy adaptation towards climate change. Jackson (2011) argues that integrating or mainstreaming the risk in development policy is government's responsibility to not only avoid loss, but also to ensure the use of public resource in efficient, just, and sustainable way. In that sense, policies that are only oriented to technocratic or infrastructure solutions without including the impacted community participation will risks neglecting tangible necessity of the community and broaden the gap between planning and reality in the area. Therefore, public/community participation will be a crucial element in the process of policy development on disaster risk reduction.

Wardman (2008) in Volenzo and Odiyo (2019) argued, the knowledge gaps between different actors regarding particular risk and how to resolve it must be closed by the insights from the knowledge obtained from the impacted community that can be used in DRR policy adaptation. Hence, exploring the local knowledge from coastal floods impacting communities in Kandanghaur District will be an essential asset to develop the policy integration between the community and multi-stakeholders in the area.

Involving local community in the risk identification process will not only strengthen the legitimation of government's decision but also improving collective community resilience. This approach will reflect a democratic and responsive disaster risk governance, at the same time to ensure inclusive and sustainable development in coastal areas. To further assessed how the community participation is important in decision making process, Sarah C. White's **conception on participation as a political process and action** (1996) will strengthen the discussion to investigate the opportunity of community participation on their risk perception to be involved in disaster risk reduction policy in the area.

Chapter 4: Kandanghaur Coastal Floods: Local Context and Historical Flood Patterns

This chapter discusses the structural context that shapes the vulnerability and DRR governance in Eretan Wetan and Eretan Kulon, as well as explains the position of multi-stakholder communication and collaboration within them. It is first exercised the low geographical profile and socio-economic of coastal areas, dependency on fishermen livelihoods, and vulnerbaler against the coastal floodings the foundational risk understanding. Second, to explore the recurrence coastal floodings logs and intensified, indicated that coastal floodings is a chronical phenomenon, and not incidental, so that demanding the policy response to be more systemic. Third, it is explain the institutional framework and the previous/existing DRR initiative, including the combination of structural and non-structural mitigation, however it is remain dominated by reactive approach, and hinders by the fragmentation of coordination. Fourth, to deepen the analyses through multi-stakeholder role mapping and highlighting that the existing collaboration remain tends to asymmetric, consultative, and influenced by power relations. The corelation between the four topics of discussion emphasizes that disaster risk in Kandanghaur cannot be separated from the socio-economi structure, institutional design, and the quality of communication between the actors that determine how far the DRR governance can be inclusively and effectively implemented.

4.1. Geographic and Socio-economic Profile

Eretan Kulon and Eretan Wetan Village are part of coastal area of Kandanghaur District, Indramayu Regency that are located in Pantura track and adjacent to the North Java Sea. Geographically, this area has an average elevation of only 0 – 1 meter above sea level, making it too vulnerable to coastal flooding and tidal waves. Eretan Kulon covers an area of approximately 5.04 km^2 with an average daily temperature of 28-30^oC, while Eretan Wetan has similar conditions with low topography and frequent tidal/coastal flooding (Eretan Kulon, 2025). These geographical conditions affect the local socio-economic activities of the local community, especially in the reason of many infrastructure damage due to the tidal/coastal floodings and difficulty on the access to clean water and other affected daily activities such as school, health, and market activities in the area (Kabar Indramayu, 2024).

In the context of its livelihood, the majority of the local community members of the two villages are mainly as a ship owner *(juragan)* or fishermen themselves. However, there is a significant disparity on wealthiness between *juragan* and the fishermen. Juragan tend to have more stable income, meanwhile the fishermen are completely dependent to daily fish catches and highly vulnerable to seasonal changes and extreme weather (Norvita, et al., 2018). This condition increase

socio-economic vulnerability in both villages, so that the government through the Ministry of Social Affairs of Indonesia enact the Eretan Kulon village as one of the village for *Kampung Nelayan Sejahtera* (Prosperous Fisherman Village) program implementation in 2025 to increase their wellbeing and provide access to social assistance *(bansos)* (Pemerintah Kabupaten Indramayu, 2025). Thus, the geographical conditions of both villages that are prone to the coastal floodings and vulnerable to extreme weather which significantly have direct implications for the increasing level of socio-economic vulnerability of the communities, reinforcing the need for risk management and communication strategies and inclusive development policies.

4.2. Coastal Floods Log in the Area

Coastal flooding has been a recurring phenomenon that affects coastal areas in Kandanghaur District, particularly Eretan Wetan and Eretan Kulon village. The coastal flooding log in the area showcased that the phenomenon has been intensely occurred since late 2020, where in January 2021 more than 40 households and a number schools were submerged with floods level reaching 40-100 cm in a few weeks (Times Indonesia, 2021). This phenomenon repetitively occurred, and on 13 December 2024 a major coastal flooding struck the two villages that was triggered by the high tides, resulting the breach of the Bendo River embankment. According to the BNPB, this event affecting 4,354 families and inundated hundreds of hectars of productive rice fields (BNPB, 2024). Because of this event, the local government of Indramayu regency have planned the initiative for the construction of subsidized housing for the relocation programme and strengthening of breakwater infrastructure as long-term mitigation plan to be finished in mid-2025 (Indramayu, 2024).

Prior to that, in January 2025, the impact of the coastal flooding became more widespread in Eretan Kulon that were inundated again by a complication of hight tides, heavy rain, and the breach of breakwater / sea wall, affecting more than 800 people (RRI, 2025). The state of emergency was stated by the local government by establishing public kitchens and start relocating residents whose homes were severely damaged. This occurrence phenomenon pattern defines that the coastal flooding in Kandanghaur District, particularly in Eretan Wetan and Eretan Kulon is not merely an incidental event, but rather a chronic continuous phenomenon linked to low-lying coastal geography, environmental degradation, and sea level rise caused by the climate change, with low

adaptive capacity of the community members and inadequate disaster governance and risk reduction management.

4.3. Previous DRR Governance and Coordination in the Area

The disaster risk reduction (DRR) effort in Indramayu Regency has become major concern for local and national government, considering this area is seen as one of the region with the highest vulnerability towards coastal floodings, coastal erosion, and extreme weather in West Java Province. According to the Indramayu Regency Disaster Risk Study Document (*Dokumen Kajian Risiko Bencana Kabupaten Indramayu)* 2019 – 2023 (2018) that is published by the National Disaster Management Agency (BNPB) Indonesia, Indramayu is categorized as a region with *high risk class* towards various kind of hazards, particularly coastal floods and erosion. This document become the main reference for disaster risk reduction policy planning in the regional level, with methodology that is referred to Perka BNPB no. 2 Tahun 2012 regarding *Pedoman Umum Pengkajian Risiko Bencana* (General Guidelines on Disaster Risk Study).

The disaster risk reduction strategy has been implemented through the combination between structural and non-structural mitigation. From the structural side, the local government institutions have recommended embankments, reservoirs, and breakwater to retain coastal erosion in coastal areas such, mainly in Eretan Wetan and Eretan Kulon, also mangrove plantation programme as a natural move to tidal control. Meanwhile, from the non-structural side, the main approach were public education, preparedness enhancement, and developing a contingency plan towards priority hazards such like floodings and extreme tidals.

Therefore, the implementation of DRR policy remain facing various cross-sectoral communication and coordination challenges . As mentioned by the Local Disaster Management Agency (BPBD) of Indramayu Regency:

> *“BPBD Indramayu serves as the coordination center during emergency response, but its coordination role remains limited pre and post disaster. We are more active after an incident has occurred.”*

This interview’s quote shows that the pre-disaster coordination mechanism mainly in the planning and prevention stages has not in optimum implementation and still focused on emergency response.

At the provincial level, West Jave Disaster Risk Study Document 2022 – 2026 *(Dokumen Kajian Risiko Bencana Jawa Barat)* (2021) also placed Indramayu Regency as a priority region for risk reduction in the northern coastal area. Provincial government emphasizes the important of coordination and synergy between BBWS *(Balai Besar Wilayah Sungai Citarum)* or Citarum River Basin Center, BMKG *(Badan Meteorologi Klimatologi dan Geofisika)* or Meteorology, Climatology and Geophysics Agency and regional government institutions to face climate chang challenges and land degradation that worsened coastal flooding risks.

This structural effort attracted the attention of national government through Specific Working Visit of Commission V of the DPR RI (House of Representative) in 2023. In its report, the House of Representative highlights the importance of breakwater construction and coastal areas relocation. It also mentioned that the annual recurrent coastal erosion and coastal floodings caused the damage and loss of thousands households and the failures of the harvest ponds. In regard to this matter, the shore safety construction in the coastal areas of Indramayu regency is considered in an emergency statsus to protect community members in the area from reccurence coastal erosion threats.

In the context of regional planning, the GO1 has taken an important role in policy coordination and cross-sectoral disaster financing. According to the Aris, staff in the Regional and Infrastructure Department:

> *"The function of Bappeda is coordinate the planning and financial budgeting. Meanwhile, the technical implementation is taken care of other government institutions. However, the coordination between the sectors inside Bappeda itself such as between PPM (Government and Human Development Division) and Infraswil (Regional and Infrastructure Division) needs to be strengthened to avoid overlap"*

Other than that, Suhartati who works in the Governament and Human Development Division of GO1 added that the community involvement become a crucial part, particularly for the Eretan case in 2022:

> *"We conducted a sampling on community aspiration alongside with the Coordinating Ministry of Human Development and Cultural Affairs and Universitas Gadjah Mada. However, the implementation needs to be broaden so that it is not limited on a project basis, but also becoming a part from poverty alleviation strategy in the coastal areas / fishermen village."*

GO1 also highlighted the role of Musrenbang *(Musyawarah Rencana Pembangunan)* Development Planning Conference as formal platform for public opinions and aspirations screening. However, in practical, the implementation of the result of Musrenbang often constrained by the limitation on coordination and financial matters.

> *"Sometimes, we have delivered the mentoring material to other departments (government institutions), but the technical departments have not always passed the on to policymakers. So, the information transfer has not been optimal"*

According to this, it shows a classical challenge in DRR governance in the regional level, where strategic policy is not optimally delivered nor implemented in the technical level.

In the other hand, the non-government involvement, even PMI (Indonesian Red Cross Agency), Tagana *(Taruna Tanggap Bencana),* or Basarnas (National Search and Rescue Agency) have participated in disaster management, but their involvement remain in the form of command under GO2 and has not integrated firmly in participative DRR planning process.

Overall, various documents and interview results are showcased that Indramayu Regency has improved its institutionalisation and the technical planning on DRR, however the implementation is remain dominated through structural approach and reactive. In order to strengthen its effectivity, it is necessary to enhance cross-sectoral communication, local community capacity building, and DRR integration in regional mid-term development planning so that DRR become a part of sustainable development governance system.

These findings are aligned with the concept of Collaborative Governance (2008), which emphasized the importance of joint decision-making process between government actors, community groups/members, and non-government organization to overcome complex public problems such as disaster. The exiting pattern in Indramayu has shown an asymmetric collaboration, where the cross-sectoral coordination are implemented in the formal level through *Musrenbang* and other regulation, while the substantial interaction in the decision making remain dominated by the local government institution, particularly Bappeda and BPBD. This shows that the ideal collaboration principle as a trust-building and equal responsibility division has not optimally achieved.

Other than that, this condition also confirmed the idea on Communication Theory of Disaster Governance (Liu, et al., 2015) that highlights the cruciality of two way information channel between government actors / institutions and public or community groups/members in reducing disaster risk. The challenge mentioned by Bappeda regarding internal knowledge transfer and the minimum number of the dissemination of mentoring results shows that cross-sectoral communication remain fragmented. With this, this analysis is not merely strengthen the relevance of communication theory in disaster governance, but also emphasized the necessity of participatory communication as a key to achieve an effective and just risk reduction.

4.4. Different Roles of Stakeholders in Building Collaborative DRR Governance

The research showed the coastal floods governance in Indramayu Regency particularly in Kandanghaur District in Eretan Wetan and Eretan Kulon Village emphasize the collaborative effort between the local government stakeholders. In the interview with GO2, they confirmed:

> *"The Command Post is used as a hub for communication between agencies involved in disater response activities when the major coastal floodings occurred in the area. This includes the involvement of the volunteers from CSOs, community members, and other NGOs"*

This discloses a form of cross-sectoral coordination that is in accordance with the institutional design principle in the collaborative governance, where the formal forums and clear rules of the game is shaping the basis of the legitimacy of collaborative process. In line with this, GO1 stated that they are taking the role of policy maker, as well as financial budget coordination, emphasizing the cross sectoral planning and policy integration function within another related department.

Meanwhile, GO4 emphasizes the importance of the consistency of multi-sectoral roles, they mentioned:

> *"In the relocation programme, the Department of Social Affairs should take the leadership role, in accordance with the major fundings sourced from the Ministry of Social Affairs of Indonesia."*

This is re-emphasized by the GO3 who explains that they are not merely distributing the logistical assistance when the floodings strike the area, but also taking the role in data collection and

organization of the beneficiaries, community empowerment, and escorting the relocation project alongside the community members:

> *"Community members who are involved in the Pokmas / Kelompok Masyarakat (Community Group) to escort the budget expenditure management in the relocation project implementation with the guidance of the Department of Social Affairs. "*

Thus, the role of the Department of Social Affairs of Indramayu Regency showed the double function, as a technical actor at the same time as a community facilitator so that they can be involved in the decision-making process. This statement shows that there is a formal division of the roles, but at the same time it is potentially open the overlaps on the policy and decision making if the coordination and communication is not properly implemented.

Besides these multistakeholder coordination between the government institutions, this research discovered that the community participation is started to present, even though remain limited in the form of consultative and responsive. For instance, GO2 recognizing:

> *"Bupati (Regent) often visiting the site (coastal flooding-impacted area) and having the discussion with the community towards the durable solution. Later on, the result of the discussion could be a suggestion for the related department to be followed up further."*

In the community level, the community leader of Eretan Wetan highlighted:

> *"Prior to distributing the logistical assistance during the major coastal floodings, it is often to start with the discussion with the Department of Social Affairs. However, on practical the implementation, there is still miscommunication regarding the community needs and the assistance provided."*

This information affirms what Ansell and Gash (2008) mentioned as the differences between the natural collaboration and mere consultation, where communities are often not positioned as equal actors in the policy deliberation process.

These quotes resulted from the interviews emphasizes the practice of collaborative coastal flooding governance in Indramayu, particularly in Kandanghaur District has started to be established through cross-sectoral coordination within the government officials, but remain facing several challenges such as overlapping authority, miscommunication, and the

community participation that is tends to be symbolic. As stated in the collaborative governance theory by Ansell and Gash (2008), the successfulness of collaboration needs a facilitative leadership and strengthening institutional design to bridge this gap, also to encourage a more inclusive and deliberative process to position the community not only the beneficiaries, but also as an active actor in the decision making process.

Besides indicated the cross-sectoral coordination within the government institutions, the research findings has also indicates that the community's roles in the disaster governance cannot be understood homogenously. It is important to remember that "community" does not always represented one whole and uniform voice, as criticized by Mohan and Stokke (2000) regarding "the myth of community". In the local level such as Eretan Wetan and Eretan Kulon, the community itself is consisted of individuals with different social, economic, and power access. In this context, the community participation is often dominated by public figure or those who has a close relation with village officials, meanwhile the vulnerable persons such as fishermen, women, and informal worker has not always possesess a common space to voice their needs.

Furthermore, the interview results with Bappeda has shown that the involvement of community is often conducted in the form of community aspiration sampling, as explained by the Government and Human Development Division of Bappeda, however it has not covered or reached all levels of the community. This indicates the existence of power imbalance between the institutions and public/community, where the policy decision and priority remain decided by the formal actors of the government institutions. In the other hand, the existence of informal actors such as community groups and local volunteer have a crucial role to bridge the communication between government institutions and public/community members, although their legitimation is not always formally recognized.

Thus, the understanding of "community" in the collaborative governance is necessary to cover the diversity of the actors and the power relations behind. This approach is aligned with the principle of collaborative governance that emphasizes the importance of recognizing formal and informal actors (Ansell & Gash, 2008), also to strengthen individual capacity in the community to substantially participating, and not merely consultative.

Chapter 5: Research Findings and Analysis

This chapter discusses the findings of the fieldwork regarding how disaster risk governance in coastal area in Kandanghaur District, Indramayu is implemented and perceived by various actors, including the government institution and public/community members. This chapter is started with the analysis on different perception towards risk and vulnerability between the government institutions/officials and community members/public, where the government institution tends to emphasizes the technical solutions and social aid, meanwhile public/community members have various perspectives/views within risk normalisation and the needs of relocation. After then, it is continued to discuss the communication challenges within the disaster governance, including the weakness of cross-sectoral communication and communication gaps between the government institutions and community members that caused a confusion and resistance towards government's programme. The next part examines the dynamic of community participation in the decision making process, indicating that the existing participation remain in a consultative form and has not reach the deliberative form that is equal between the government institutions and community members. The last part discusses the successful study case of relocation programme in West Eretan as a pilot project that showcased the importance of cross-sectoral coordination and community advocacy to encourage more participative and just disaster risk reduction policy. Overall, this chapter highlighted how the perception differences, communication challenges, and participation form influences the effectiveness of disaster governance in the local level.

5.1. Impact, Risk, and Vulnerability: Institutional and Community Perspectives

According to the results of the Key Informant Interviews (KII), there is a significant difference regarding the perception of risk between the local government officials and local community in the Kandanghaur District. The local government officials that have been interviewed assess that the coastal flooding is the disaster with socio-economic consequences that should be handled through policy intervention such as relocation, social assistance, as well as the embankment construction. For instance, GO2 emphasized that coastal floodings are closely related to the overflow of the river caused by high rainfall and sea tides, thus requiring structural solutions.

Meanwhile, GO1 linked the coastal risk with fishermen poverty level, in which seen as a "pocket of poverty" *(kantong kemiskinan)* that should be reduced. The source person from the Government

and Human Development Bureau of the GO1 explained their strategy to increasing income by providing assistance with fishing gear and employment insurance. Thus, coastal floodings not merely seen as an environmental problem, but also as a factor that exacerbates socio-economic vulnerability.

However, there is a fragmentation on the perception between the local government officials. GO3 highlighted that those local community members themselves often normalized coastal floodings, the source person mentioned:

> *"Coastal floodings are not seen as a disaster, the community members have considered the event as a natural phenomenon that has occurred in a daily basis."*

This viewpoint makes the GO3's interventions place more emphasis on social assistance such as logistical assistance when major floodings occurs rather than a long-term preventive strategies. Meanwhile, the Ministry of Social Affairs have developed a national plan on social barn *(lumbung sosial)* and *Kelompok Siaga Bencana* or Disaster Preparedness Group in the community level. It seems that this national plan has not been realized at the local government level in the regency. *Lumbung Social* or Social Barn is functioned as a centre for logistic and community resource when the disaster occurred. Meanwhile, *Kelompok Siaga Bencana* or Disaster Preparedness Group is purposed to establish community groups who are trained in the mitigation, emergency situation, and post-disaster recovery (Kementerian Sosial Republik Indonesia, 2021). However, the implementation of both programs has not been optimally internalized in the regional level, particularly in Indramayu Regency, where the perception of several stakeholders remain considers that coastal floodings are a regular social phenomenon, and not a disaster threats that need a systematic intervention. This condition shows the fragmentation on disaster governance, because while GO2 emphasized the aspects of technical mitigation, GO3 tends to focused on socio-caritative approach, where the social intervention is focused on direct logistical aid distribution to the affected community, instead of policy intervention. According to Tierney (2012) and Comfort (2010), the perception differences between the actors is potentially caused a partial and overlapping policies.

This point of view mirrored one of the fragmentations on disaster governance, in the reason that although GO2 has emphasized the aspects of technical mitigation, GO3 rather assume coastal floods as part of social routine that does not need to be exaggerated. Base on the existing literature,

the difference perception between the stakeholders is potentially resulting on partial policies which often overlaps (Tierney, 2012) (Comfort, et al., 2010).

On the community's side, there is a variant of perception between the two villages. Eretan Kulon community indicates a higher awareness regarding coastal floods risk, where one of *Tagana / Taruna Siaga Bencana* (youth community for disaster preparedness) mentioned:

> *"We have the awareness of the needs to be relocated, because the event of coastal floodings becoming more intense with higher frequency".*

This view emphasizes, for some of community members, relocation programme is the realistic solution to reduce the vulnerabilities. Other community member also reveals the obvious daily impact of the floodings:

> *"Beforehand, the coastal flooding was not as bad as it is now, but now it is getting worse…even if we wear boots, the water still gets in."*

On the contrary, the community members of Eretan Wetan still indicates the resistance towards relocation programme, even though they experience the impact on healthiness and economic loss. A fisherman (CM04) said:

> *"Coastal floods occurred almost in every day…we even sometimes spend the night at the sea if we do not get any catches."*

The community leader of the area also emphasizes that relocation is not yet the durable solution for them.

> *"We cannot follow the relocation program for now; our livelihood is here (sea)."*

Instead of moving through the relocation programme, they are hoping for an in-situ solution. They often confused about the steps that need to be taken to overcome the coastal floodings, and assuming that constructing a dike along the river basin would be the durable solution from them.

According to the theoretical framework explained by Wisner, et al., (2004), these differences on the perception indicated that disaster is not merely produced by hazard (high tides), but also social vulnerability that has been attached to the society. Several factors influence the perception on risk and the adaptation option of the local communities, such as dependency to the sea as their

livelihoods area, the status of land ownership, access to social assistance, and others. Meanwhile, Ansell & Gash (2008) on their perspective towards collaborative governance, this condition situated the asymmetry of knowledge and power between the government official and local community members. The government institutions emphasizing on structural solutions meanwhile the local community members, particularly in Eretan Wetan choosing to normalizing risk and day-to-day adaptation strategy.

Through the Sendai Framework for Disaster Risk Reduction (UNDRR, 2015) which emphasizes the main pillar of understanding disaster risk, it should cover the local perception and social vulnerability towards this matter. However, these findings shows there is no shared understanding between government institutions and local communities, nor between the government institutions themselves. Similarly, the standard on ISO 22395 (2018) regarding community resilience emphasizes the importance of providing support to vulnerable group, including the clear mechanism of communication.

Overall, the significant difference of preference underlines the fragmentation on the disaster governance as several government institutions believed that coastal floodings are disaster that should be mitigated, while others assumed that coastal floodings are natural phenomenon. Meanwhile, local communities are divided between those who supported the relocation and resistance against the programme and prefer to stay in the affected area. This fragmentation weakens the coordination and policy effectiveness, as well as hinders the successfulness of inclusive collaborative governance.

In addition to the findings regarding the perception differences, the findings also indicates that community in Eretan has developed the local knowledge and adaptive capacity as their mechanism to face recurrence coastal floodings. A number of people has raised their houses by personal savings or through collective work to minimize the damage caused by coastal floodings. Some other people constructed small embankments around their houses, or adjusted their daily activities such as moving their property to higher places during high tides, also reducing fishing activities when the sea level rises.

These practices showed how the autonomous adaptation has occurred outside the intervention of formal government policy that is shaped through a long community experience with the environmental risks. Therefore, this kind of adaptation is also limited by the households economic

capacity. Only households who has a durable resource that are able to conduct significant renovation of their houses, meanwhile a small fishermen and daily worker with a low income remain faced recurrence loss every time the floodings occurred.

This condition has strengthened the vulnerability theory by Wisner et al. (2004) that is not resulted by physical threats (hazard), but also by the social and economic inequality that limits the community capacity to adapt. Therefore, the recognition and integration of local knowledge into diaster risk reduction policy become crucial so that the development of adaptation strategy must be just in terms of of social and contextual within the condition of coastal communities.

5.2. Governance Challenges and Gaps on Communication Mechanisms

Communication is found to be one of the challenges in the coastal floodings governance in Kandanghaur District, Indramayu Regency. GO2 emphasizes that communications are well circulated when the major floodings occurred through the Command Post, but weaker on its implementation in the phase of pre and after disaster. Even community initiatives such as *Kampung Siaga Bencana* / KSB (Disaster-Prepared Village) remain operating on their own way, indicating the minimum effort of the integration of communication between the local groups.

GO1 highlighted the information bottleneck in the bureaucracy, they mentioned:

> *"The transfer of information within the internal government institution must be improved. For instance, the guiding materials provide to the technical institutions sometimes are not well-implemented because the information is not effectively communicated between the guided participants and policymakers."*

This indicated a breakdown of vertical communication that make policies are difficult to consistently implemented.

In the context of communication between government institutions and local communities, GO4 recognizes that there is a resistance from the community members of Eretan Wetan Village trigerred by lack of socialization regarding compensation, they mentioned:

> *"The absences of compensation mechanism to the relocation of community who lives on their own land"*

As a result, the community members of Eretan Wetan Village refused to be relocated and prefer to demand the in-situ solution. GO3 take the important role as the lead on relocation program. However, this role was not smoothly implemented as the source person from GO3 explained they must manage the beneficiary's data which sometimes invalid, thus the verification process in the field caused debate and confusion in the communities. This means, the reason behind the community members of Eretan Wetan Village feeling not fully involved not only limited to the substance of assistance, but also the unsynchronized coordination between national, local, and village government institutions. In the other hand, the communication gaps and challenges of GO3 mainly appeared from the misalignment of the data and information which hinder the relocation process as well as the distribution of logistic assistance.

From the perspective of community, communication also perceived as weak. Eretan Kulon Village is more dependant to the information that is distributed through WhatsApp group chat provided by Local Disaster Management Agency (BPBD) and Meteorology, Climatology, and Geophysics Agency (BMKG), however they complain the inaccurate information. One of the community members mentioned:

> *"The information circulated through the WhatsApp Group Chat sometimes is not accurate… in the past, there was a warning of high tides, but it turned out there wasn't one, and vice versa."*

When it is viewed through the lenses of network theory in the post-disaster governance (Lassa, 2015), this phenomenon can be understood as information asymmetry in the actor's network. Quoting from Lassa on his publication titled "Post Disaster Governance, Complexity and Network Theory" (2015), in the case of Aceh Tsunami in 2004, he mentioned:

> *"it was seen that a high asymmetry of information could lead to unnecessary and unhealthy competition by aid players… this leads to the weakness of the coordination due to the missing of a clear single authority"*

The condition of coastal floodings disaster governance in Kandanghaur District, Indramayu Regency has a similar pattern, instead of maintaining the existence of credible and centralized communication system, the information unequally disbursed, with various communication

gaps/loops (for instance between department, community groups, or social media channel) that conducted on their own way.

5.3. Community Participation in Practice and Decision-Making Process

The findings from the result of the Key Informant Interviews indicates that community participation in the decision-making process toward coastal floodings in Kandanghaur District, Indramayu regency take place in various level, yet remain limited in the form of consultative and not yet fully deliverative. For instance, the GO1 gather the aspirations from the community groups through formal mechanism *"Musrenbang"* or *Musyawarah Perencanaan Pembangunan* (Development Planning Conference) and Regent visits to the impacted areas. Therefore, this process is more like consultation than a real engagement, since the final decision remains in the authority of the local government, thus the decision taken remain in the form of top-down policy.

Participation also visible in the relocation program as it involved *Pokmas / Kelompok Masyarakat* (Community Group). GO3 emphasized:

> *"Community members who are part of the group were given a role to oversee the management of budget implementation of relocation project, with the guidance from the Department of Social Affairs."*

However, even though community members are given a role, the characteristic more into instrumental, to oversee policy implementation that has been established, rather than being involved in the policy formulation. According to the Arnstein's Ladder of Participation (Arnstein, 1969), this situation reflects the level of "tokenism" where community groups are given a space to express their opinion or to oversee, but does not have the real power to direct or change the decision.

From the perspective of community, the participation pattern is more various. Eretan Kulon Village tends to show a cooperative participation. One of Tagana community members mentioned that they have an awareness to be relocated, since the coastal floodings event are more intense with a high frequency. This participation can also be translated in a form partnership with the government institutions, where the community group supports the relocation policy and even pushing the program to be implemented earlier. In the contrary, Eretan Wetan village shows the resistive participation. CL02 explains that prior to the distribution of logistic social assistance, there will be

a discussion regarding the logistic that will be provided. Their resistance against the relocation program is also a form of active participation but oppositional, since they emphasize on other alternative solutions such as breakwater construction and fisheries equipment that are not fully accommodated in the government program.

Through deliberative governance framework analysis, this situation indicated the existence of community involvement in the discussion but not yet achieving the true deliberative. The on-going process remains asymmetrical, where the government institutions are dominating the agenda, meanwhile the community groups only have a limited space to articulate their preferences. Whereas deliberative governance emphasizes the importance of equal voice, dialogue, and mutual justification in building common decision (Dryzek, 2002).

This fragmentation indicates that community groups are involved in the decision making, but their participation remain limited to the Arnstein's (1969) mid-ladder spectrum participation (tokenism to partnership), and rarely to reach the higher level such as delegated power or citizen control. This stimulated the need of a stronger deliberative mechanism to unite perception, reduce conflict of interest, and to make sure of the decision on relocation or in-situ solution are truly mirrored the needs and aspiration of coastal community groups/members in Kandanghaur District, Indramayu.

5.4. Relocation as a Pilot Project: a Lesson Learned

The relocation program of Eretan Kulon village community members can be a success story on how the implementation of disaster risk reduction strategy that relatively work out in Kandanghaur District, Indramayu. This program can be exemplified as the pilot project, where the communication between community groups and government institutions are relatively successful, compared to other area, particularly Eretan Wetan Village.

Community Advocacy and Planning Process

The relocation initiative is not fully coming from the government institutions but also coming from the community advocacy themselves. After a major coastal flooding struck, the local community group, especially *Tagana* pushed the government institutions to provide the relocation immediately. On the interview with the community members of Eretan Kulon, CM01 explained that they have the awareness regarding the relocation, because of the frequency of the floodings has intensified. This pressure coming from the community group triggered the urge of policy

formulation, so that the relocation program being prioritized even though it is gradually implemented.

In the participation framework, this form can be categorized as advocacy participation, where the public participation is not merely as a consultative approach, but also able to shift government policy agenda. This indicates the dual communication process, where public / community group is not only the obedient of policy, but also an active actor who influence priorities. This concept is parallel to Cornwall's (2008) conception which differs participation as consultancy and participation as citizen voice. Also, Gaventa (2004) in Hickey & Mohan (2004) underlined the importance of claimed space where public creates participation space through advocacy to influence policy.

Multi-Department Coordination in the Implementation

The successfulness of relocation program for Eretan Kulon Village was also supported by well-executed cross-sectoral coordination between the departments. GO4 take the responsibility in providing the area of relocation and the spatial aspect. GO3 leads the implementation in the field through *Pokmas* and managing data and administration for the beneficiaries. GO2 supported from the aspects of preparedness, and GO1 making sure the program formulation as well as financial budgeting are integrated. Thus, the coordination between departments is well executed, not only in the aspect of administrative, but also community involvement as part of the process.

The Acceptance Factor of Relocation Program in Eretan Kulon

One of the main factors behind the reason why community members of Eretan Kulon are willing to be relocated is the tatus of the land where they area reside is belong to the government. This mean that there is no significant obstacle on land ownership status or the needs to compensate the community members. In the contrary, the majority of Eretan Wetan community members are owned their own land. In that case, the relocation program faced a more complex situation, where the government institution must provide compensation, formulate its scheme, and face the resistance of community members who are not willing to leave their land asset.

The different status of land ownership has become one of the important variables to determine risk perception and community's decision towards relocation. Wisner et, al., (2004) argued that the

socio-economic vulnerability often time determine public acceptance towards DRR intervention, rather than the risk factor itself.

Chapter 6: Discussion

This chapter deeply discuss the dynamic of multi-stakeholder communication in the DRR governance in Kandanghaur District. First, it highlighted how the communication practice between the government actors and public/community has been implemented through dual role of formal and informal channels. Second, exercised various communication challenges, such as information gaps, the low of public trust towards official channel, and also the fragmentation of communication structure that impacted to the effectiveness of DRR governance. Third, it also synthesized those empirical findings with the conceptual framework of collaborative governance and multi-stakeholder communication, to indicate how the communication process has not fully inclusive and in a two-way mechanism become the main factor that hinders the cross-sectoral coordination and meaningful community participation to be achieved. Overall, the correlation between the topic of discussion in this chapter indicates that communication is not only become the supporting element, but also as a core of the effectiveness or failures of the DRR governance in the local level.

6.1. Communication Practices between Stakeholders

The communication practice between the stakeholders in Kandanghaur District are taken through various way of support, limit, and at the same time constructing the strategy coordination of DRR. From the supporting aspect, communication can strengthen main coordination in the emergency status. GO2 emphasized, the Command Post that is used as a communication hub which are involved in the disaster preparedness activity. Similarly, GO1 mentioned that the Regent are open to the discussion with the community group / members, then coordinated with the relevant department to be a consideration. Even though this practice remain a top-down approach, but this provides as an aspiration space for the public to be included in policy formulation process.

Therefore, communication can also limit the coordination. GO3 acknowledge the issue on data validation of beneficiaries, which according to the resource person, it comes up with debat and confusion within community group/members. In the other hand, GO4 acknowledge the weakness on the communication regarding the relocation, with the reason of the absence of compensation mechanism for the people who lives in the self-owned land. This obstacle showcased that non-transparent communication can strengthen public resistance.

Even so, the communication also play a role to shape the DRR implementation. The community members of Eretan Kulon through *Tagana* held an active advocacy as their awareness to be relocated, due to the intensity of the coastal floods with an increasing frequency. This advocacy triggers the government institution to accelerate relocation program gradually. In the contrary, Eretan Wetan community members make use of the discussion to reject the relocation option. This form of resistive communication force the government institution to consider alternative in-situ solutions.

From this analysis, there is an asymmetrical of information that weaken the multi-stakeholder coordination and create a sub-network of communication that is disconnected (Lassa, 2015). With this, communication practice in Kandanghaur has a dual roles: strengthened the coordination in one side, but also limited dan shaped the direction of DRR implementation in line with the dynamic of the public and government relation.

Other than the formal communication mechanism, such cross-department coordination meeting and command post in the emergency situation, the communication practice in Eretan Wetan and Eretan Kulon has also maintained through informal channel that has significant role in day-to-day information flow. The formal communication is often conducted in the reason of administrative accountability matters and policy legitimation, for instance the *Musrenbang* forum, cross-sectoral coordination, or policy report development. This formal communication is set be hierarchical, following a clear command stream, and oriented to bureaucracy procedure. However, this kind of formal communication sometimes caused the delay of communication flow and degrading the flexibility in responding the field situation the is changing very fast.

Meanwhile, the informal communication (day-to-day) has become a practical space for the information exchange between the actors. For instance, WhatsApp Group between The Climatology and Geophysics Body and BPBD for the disbursement of information regarding early warning and quick response coordination. However, according to several informants, the effectiveness of this group remain limited due to the accuracy and validity of the distributed information sometimes are not well verified, so that resulting on the confusion between the institutions. In the community level, people in Eretan are also maintain a coordination group within the community that has been used when the coastal floodings occurred, and functioned as an community-based early warning system. Even though it is a kind of an informal communication,

this network indicates how the horizontal communication within the community is able to complemented the formal government system, especially when the formal information is delayed or unable to reach households level.

Through the analytical approach, the results of the interview shows three main patterns to read the communication practice in Kandanghaur:

1. Communication as a tool of formal coordination, which emphasizes the legitimacy and responsibility between the institution, however often in a form of top-down communication.
2. Communication as an informal day-to-day practice, which mirrored a spontaneous initiative, but facing an accountability and accuracy matters.
3. Communication as a negotiation space for power, where the informations are used to strengthen the position of a certain actor, whether it is the government institutions or public/community members in the context of deciding the policy direction, such as relocation programme or in-situ adaptation.

Thus, the communication dynamic in Kandanghaur indicates that coordination is not merely decided by the formal institutional structure, but also by the social network and informal communication practices which shapes how the disaster policy can be understood, accepted, or even rejected by the public/community members. In line with Lassa (2015), the fragmentation of communication network showcased the existence of the sub-network that is not always effectively connected, strengthening the argument of the effectiveness of collaborative governance is dependant to how far the communication is able to bridge the gap among the actors.

6.2. Communication Challenges and Their Impact on DRR Effectiveness

Communication gaps are proven to be significantly impacted the effectivity of DRR implementation in the local level. First, there is an asymmetrical information where the situation of logistical and aid distribution from the government institution are not in accordance with the people's need. This weaken the implementation effectiveness because public/community members are not considered in the meaningful involvement.

Second, the distrust of the official information channel. The community members of Eretan Kulon more dependant to the information coming from social media (Facebook) and WhatsApp Group

Channel within their community, rather than official channel from the government institution. The absence of credible early warning system has also weaken community preparedness.

Third, the fragmentation on communication structure. GO2 acknowledges that KSB and *Tagana* remain working on their own way. Besides the relocation program, GO1, GO2, and GO3 also operate through different communication lane without integrated system. As a result, the DRR strategy inconsistently implemented, with the relocation in Eretan Kulon was accepted, with a contrast response in Eretan Weta due to the miscommunication on compensation.

This findings showcased that the effectivity of DRR strategy in Kandanghaur District is majorly influenced by communication pattern. Without clear communication mapping, the fragmentation between government institutions dan public distrust will direct a sporadic and inconsistent DRR implementation. In his argument, Dryzek (2002) also emphasizes the importance of inclusive dialogue and equal voice of expression to reduce asymmetrical information and building public trust.

6.3. Synthesis of Findings with the Conceptual Framework

This part provides the synthesis between the empirical research findings with the conseptual framework that has been developed in the Chapter 2. This research comes up from the concept of multi-stakeholder communication and collaborative governance which emphasizes the reciprocal communication, cross-sectoral coordination, an community participation in order to achieve an effective disaster risk governance (Ansell & Gash, 2008). In this context, the findings in the field shows that the communication practice between the stakeholders in Indramayu Regency, particularly in the case of coastal floodings in Eretan Wetan and Eretan Kulon, Kandangharu district remain facing various structural an cultural challenges that caused non optimal implementation of the disaster risk reductions strategy in the area.

Conceptually, the collaborative governance demands the existence of interaction process that is signed through shared understanding, trust building, and joint decision-making between the government and non-government actors (Ansell & Gash, 2008). However the field's findings shows that the communication between the local government institution such as Bappeda, BPBD, Department of Social Affairs, and Department of Housing, Residential Areas and Land Affairs has not implemented in a way of integration. Even though Bappeda has major responsibility as the coordinator of policy planning and financial budgeting, the exchange information process between

the sectors. For instance, the Infrastructure and Spatial Planning Division with Government and Human Development Division remain fragmented. This case shows that even though the coordination structure has been developed, the substantial communication to develop cross sectoral mutual understanding has not been achieved. This condition portrays a gap between collaborative structure that is formal and communication practice thar remain sectora-oriented, as identified by Comfort, Ko, & Zagoracki (2004) on their study of cross-institutional coordination in the context of disaster management.

Other than that, according to Lundgren and McMakin (2018), the concept multi-stakeholder communication emphasizes two way direction of information alnes between government institutions and public/community members. In the context of Indramayu, the formal forum such as *Musrenbang* is indeed functioned as a space for community participation, however the communication process remain top-down and administrative approach. This information form the community members is often to be delivered thorugh spontaneous mechanism, such as regent visits to the field, which is become the alternative communication lanes beyond the formal system. This phenomena proves that the informal communication remains a significant role in disaster management governance in local level, and at the same time to broeade the theoretical understanding regarding how participative communication happened in coastal community within their original socio-cultural context. (Tierney, 2012) (Cash, et al., 2003).

Furthermore, the role of local community groups such as fishermen and public figure portrays the community-based governance practice the is organically well-developed. However, their involvement in the disaster risk reduction planning has not fully accommodated by the local government. In the theoretical framework, this condition shows the limitation in achieving the principle of inclusive governance and mutual accountability, as highlighted by Pattberg and Widerberg (2016) that the effectiveness of cross-sectoral collaboration is very dependant to the existence of communication mechanism that possibly causing the division of clearer roles and responsibilities. This also correlated to the risk communication aspect, where the message regarding coastal floods risk is often undelivered well or taken into further action by the community members because there is a perception differences towards threat and priority (Morss, et al., 2011).

Therefore, the synthesis between the field findings and the conceptual framework indicates that the main challenge in disaster risk reduction governance in Indramayu regency is not merely faced by the technical aspect of disaster mitigation, but also in the communication process between the stakeholders who have not conducted through collaborative principle. The case of Indramayu has showed that the effectiveness of cross-sectoral communication and communication with public or in this case the community members are able to building the trust, strengthening coordination, and establish mutual understanding to face disaster risk that has increased caused by the climate change (Comfort, et al., 2010) (UNDRR, 2015).

Chapter 7: Conclusion

This research provides deep understanding regarding how multi-stakeholder communication mechanism shapes, supports, and at the same time limits the implementation of Disaster Risk Reduction (DRR) in Indramayu Regency, particularly in Kandanghaur District which covers Eretan Wetan and Eretan Kulon Village. The findings of the research showed that the effectivensee of collaborative-based disaster governance is very dependant to the capacity of the local actors in building adaptive, participative, and contextual communication towards the socio-cultural condition in coastal areas community. This communication is not only functioned as a tool for the dissemination of information, but also as a social process that shapes perception, and to build the trus and to strengthen policy legitimation at the local level.

The DRR governance in Kandanghaur involves various actors including government institutions, technical institutions, public/community, and non-governmental organizations (NGOs). Bappeda take the responsibility as the coordinator body in planning and financing cross-sectoral policy such as BPBD, Dinsos, and Diskimrum, meanwhile, BPBD become the spear in the technical command in emergency situation, and Dinsos take the responsibility in the social aspect and aid (logistic) distribution. In the other hand, coastal communities, local figures, and fisherman groups are also take a crucial part in the communication process, particularly in the identification of disaster impact and response the situation in the area. However, the findings of this research has showcased that the cross-sectoral coordination remain faced a serious challenge caused by the overlapping roles and responsibilities, the weak horizontal communication mechanism between the departements, and the minimum number of systemic information exchange channel, even within the internal government institution themselves such as in Bappeda.

In practical, the DRR communication in Kandanghaur has been implemented through formal and informal mechanism. Formal forum such as *Musrenbang* and coordination meeting has become a major space in program planning and evaluation, however it tends to be administrative and has not fully accommodate public aspiration. In contrary, the informal communication such as Regent's field visit to impacted areas and spontaneous interaction between government officials has been more effective and bridge the information gaps and has strengthened the public trust. Nevertheless, the informal communication practice tends to be temporary and has not been a part of institutional

system, therefore the successfulness of this mechanism often dependant to an individual figure or certain moment.

Other than that, the results of this research shows that coastal communities possess local knowledges and adaptive practice that are developed through a long experience in facing coastal floodings, such as constructed on-stilts houses, communal works to constructed breakwater, or adjusting fish farming time when the tides rises. However, the local knowledge and adaptive strategy often does not optimally accommodated in the local planning and policy. This is caused by the different perception between the communities and government institutions regarding the meaning and urgensi of coastal floodings. For several people, coastal floodings has been considered as a part of usual everyday routines, and it is not a major threats that needs a structural intervention. In the contrary, the government institutions tends to consider coastal floodings as a technical and socio-economic issue that needs to be solved through physical project such as breakwater construction or social aid programme for poor communities. The perception differences has caused the asynchronous in policy priority decision and mitigation strategi in the field. In the one side, public/community depend on adaptation mechanism based on communal work and empirical experience; in the other side, the government institutions more emphasizes on project oriented top-down approaches. As the consequences, the one-way communication pattern limits the space to collective learning and equal knowledge exchange. This condition has strengthened the findings that communication is not only technical issue, but also related to power relations, legitimation, and recognition towards local knowledge in the public policy.

The form of communication mechanism is also crucial to decide the effectiveness of coordination and implementation of DRR program. The social relations and multi-stakeholder informal communication is able to strengthen trust and simplify field coordination, but the high dependency towards personal networks has caused the effectiveness is discontinued. When the rotation of government's official happens or the change of organizational structure, the communication network is often disconnected and caused the obstacle on the policy coordinatin. Other than that, the fragmentation on the cross-sectoral communication caused an overlapping program such *Lumbung Sosial* and *Kelompok Siaga Bencana* that has not been fully integrated into local development planning system. The communication gaps, whether vertically (between national,

province, and local) or horizontally (between the local institutions) has impacted to the delays of policy implementation and the decreases of DRR implementation effectiveness in the local level.

General Implication

Theoretically, this research enriches the Collaborative Governance model by (Ansell & Gash, 2008) with the addition of social-relational dimensions such as communal work, mutual trust, and informal relations that bridge the limits on formal structure. The communication in the context of DRR is not merely on information dissemination tools, but a social process which determines the legitimation and policy effectiveness (Tierney, 2012) (Morss, et al., 2011) (Comfort, et al., 2010).

In the aspect of policy implication, it is necessary to strengthened the cross-sectoral coordination, synchronization of local and national policies, as well as the development of comprehensive and participative risk communication system (Lundgren & McMakin, 2018).

Practically, the communication capacity enhancement of civil apparatus, the use of digital technology, as well as institutionalization of good practice such as local leader's visit to the impacted areas need to be developed, so that it is not dependant to a certain figure, but become a part of the continuous institutional mechanism.

Finale

Thus, this research is not only provide an empirical understanding regarding communication dynamics in DRR governance in Indramayu, but also offers a crucial lesson for the development of collaborative theory and disaster policy design in Indonesia. The effective, inclusive, and adaptive communication mechanism is a key to achieve a responsive disaster governance towards the necessity and risk of the local community, particularly within the increase of climate change threats and challenges, and sosial complexity in the local level.

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Erasmus

Declaration of Consent

I have read the information letter. I understand what the study is about and what data will be collected from me. I was able to ask questions as well. My questions were adequately answered.

By signing this form, I:

1. consent to participate in this research;
2. consent to the use of my personal data
3. confirm that I am at least 18 years old;
4. confirm that I understand that participating in this research is completely voluntary and that I can stop at any time;
5. confirm that I understand that my data will be anonymised for publication, educational purposes and further research;

Check the boxes below if you consent to this.

Data

Audio recording
I consent to the interview being audio recorded. ☑

Sharing of data outside the EEA
I consent to the sharing of my data with Erasmus University Rotterdam in Netherlands. ☑

My answers in the article
I give permission for my answers to be used in papers, such as an article in a journal or book.
My name will not be included. ☑

My answers in the article with my name .
I give permission for my name to be used with my answers in an article. ☑

Use for educational purposes and further research
I hereby consent to having my personal data, namely name, address, phone number, and institution stored and used for educational purposes and for future research, also in other areas of research than this research. ☑

New research
I give permission to be contacted again for new research. ☑

Name of participant:
SUHARTATI, S.Si. M.Si.

Participant's signature: Dinsos Indramayu **Date:** 13 agustus 2025

Declaration of Consent

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New research
I give permission to be contacted again for new research. ☑

Name of participant: TATI HARTATI S.ST. MH.Kes. (Kepala bidang Linjamsos).

Participant's signature:

Date: 15 agustus 2025.

Erasmus

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New research
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Name of participant: ARIS STIAWAN
(Penata Ruang di bidang Infrastruktur dan Kewilayahan Bappeda)

Participant's signature: **Date:** kamis 14 agustus 2025.

Erasmus

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New research
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Name of participant:
Kretan Wetan

Participant's signature:
Haron
RT

Date: Sabtu 16 agustus 2025.

Erasmus

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New research ☑
I give permission to be contacted again for new research.

Name of participant: Supriyanto. SH

Participant's signature: Tenaga Pendegaran BPBD **Date:** Kamis 14 agustus 2025

Erasmus

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New research
I give permission to be contacted again for new research. ☑

Name of participant: Widiya
Staf bidang perumahan kawasan permukiman dan pertanahan Kab. Indramayu

Participant's signature: **Date:** Jum'at 15 agustus 2025

Erasmus

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New research
I give permission to be contacted again for new research. ☑

Name of participant: WAMINUDDIN

Participant's signature: TAGANA **Date:** 16 agt 2025