

Mitigation and public coordination for Flood Disaster Risk Reduction (FDRR) in the implementation of North Luwu sustainable development

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Mitigation and public coordination for Flood Disaster Risk Reduction (FDRR) in the implementation of North Luwu sustainable development

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Abstract. In flood-prone areas, coordination between parties in disaster risk reduction activities is very important. This is because disasters will directly impact the disruption of people's lives and livelihoods, as well as hinder the process of sustainable development. This study aims to develop a public coordination scheme for flood risk reduction activities based on public resources available in North Luwu Regency. Public resources come from government agencies and the potential of the community available in North Luwu Regency with their respective tasks at the stage before, during, and after the disaster. Public coordination is expected to support the implementation of sustainable development based on disaster risk reduction in North Luwu Regency. The preparation of the public coordination scheme was preceded by a geospatial flood hazard assessment based on the characteristics of the Rongkong Downstream Watershed using a Geographic Information System (GIS). The results of the assessment form the basis for the implementation of the preparation of public coordination for DRR. North Luwu Regency is dominated by coastal land units bordering Bone Bay, plains to mountains. High rainfall, critical land use, and low-lying settlements cause the research area to be in a high to very high risk zone experiencing flooding. Sustainable development can run effectively if its implementation is based on disaster risk reduction policies with public coordination. Public coordination is carried out between government agencies and the community, who work together according to their respective roles and tasks at the pre-, during, and post-disaster stages. The results of the study indicate that more sector involvement is needed in the pre- and post-disaster stages. This indicates that public coordination before a disaster is risk prevention and reduction activity that should be prioritized in the implementation of development before hampering the sustainability of development.

1. Introduction

Indonesia is a country with a high level of vulnerability to natural disasters. Its location at the confluence of the world's active plates can cause geological disasters. In addition, astronomically, Indonesia is located in the equatorial zone with a tropical climate with a risk of hydrometeorological disasters. This is an indication that in regional development plans, the government should not only be based on development needs but also need to consider aspects of disaster hazards that can hinder



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sustainable development in this country [1]. To achieve the goals of sustainable development in Indonesia, as mandated by the United Nations (UN) through the document Transforming Our World: The 2030 Agenda for Sustainable Development, the Government of Indonesia has adopted seventeen sustainable development goals with 169 targets [2]. This has also been regulated through Presidential Regulation No. 2 of 2015 concerning the National Medium Term Development Plan 2015-2019, and in its implementation, it is described through Presidential Decree No. 59 of 2017 concerning the Implementation of the Achievement of the Sustainable Development Goals 2016-2030 [3]. The policy has described the sector/government agency responsible for its implementation [3].

The concept of sustainable development has been regulated in the Law of the Republic of Indonesia (UU) No. 26 of 2007 concerning Spatial Planning. This of course must be accompanied by knowledge, in addition to data and information about disasters by the community and the government as policyholders in the implementation of development [4]. The government and society, which are part of a community, must of course be interrelated, coordinate, and work together in realizing sustainable development. UU no. 24 of 2007 concerning Disaster Management mandates the National Disaster Management Agency and the Regional Disaster Management Agency as coordinators, commands, and implementers in disaster management [5].

Disaster management is multi-sectoral, multi-stakeholder, and multi-hazardous, so the key to success is coordination and command [6]. However, coordination sometimes has complex problems and is not easy to solve by one sector alone, so partnership and collaboration (interoperability) are necessary to ensure proper handling or response in disaster management [7]. Good disaster management must also prepare not only for the emergency phase but also prepare a good framework in the pre-and post-disaster phases [8]. With good and coordinated disaster management, it will be clear which sectors need to be involved, what can be done, and how the mechanism works. This coordination framework in disaster management must of course be owned by every region in Indonesia, including North Luwu Regency [9].

North Luwu Regency is one of the administrative areas in North Luwu Regency which was formed on April 20, 1999, which was stipulated by the Law of the Republic of Indonesia No. 13 of 1999. Initially, the division of Luwu Regency was only divided into two administrative areas, namely Luwu Regency and North Luwu Regency, this area has experienced floods, one of the common potential disasters in North Luwu Regency is flash floods and landslides. On July 12, 2020, it rained heavily from around 22:00, until dawn on July 13. Afternoon, aftershocks came for almost eight hours. As of July 19, 2020, six sub-districts have an impact, namely, Masamba, Sabbang, Baebunta, South Baebunta, Malangke, and West Malangke. Masamba Subdistrict is an area affected by high to extreme high runoff floods. Other areas are mostly in the category of flooding with high inundation [10].

The status of emergency response is valid for 30 days, starting from July 14 to August 12, 2020. The National Disaster Management Agency provides ready-to-use funds of Rp. 1 billion for logistical assistance and other support in handling efforts. Until then 38 people have died, 46 people are missing, 58 are injured and are being treated," said Raditya Jati, Head of the BNPB Disaster Data, Information, and Communication Center, at an online press conference on July 19, 2021. A total of 14,483 people or 3,627 families took refuge in 76 points and spread over three sub-districts, in Sabbang, Baebunta, and Masamba. BPBD Luwu also recorded the vulnerable groups who were displaced, consisting of 2,533 elderly, 870 toddlers, 124 infants and 137 pregnant women [10].

Data collection for building material losses includes 4,202 houses, consisting of micro-businesses (61), places of worship (13), schools (9), government offices (8), health facilities (3), public facilities (2), and traditional markets (1). Infrastructure losses include 12.8 km of affected roads, nine bridges, 100 meters of clean water pipe, and two irrigation bends. Damage to the PDAM's clean water pipe network has resulted in difficult water supply and even PDAMs are still not operating. In the electricity network infrastructure, not all of them are operational, some points are still out. While the communication network is not yet stable. The flood also damaged 460 hectares of productive land in the form of agriculture and rice fields [10].

The development planned by the regional government should use development policies not only based on a needs assessment but also assessing the after effects and sustainability of the development [11]. In this case, the ability of local governments in disaster risk management is very important in sustainable development [11]. Local governments do not yet have adequate awareness of mainstream disaster risk reduction in development planning policies, because they still consider that disaster management is only carried out for emergency response [12]. Flood disasters that often occur in North Luwu Regency have certainly hampered and slowed the implementation of development. The most important thing about regional planning is not only requiring policymakers to have disaster risk information, but also to know about the factors that cause it to occur, how to reduce the impact of these risks, and what efforts must be made to anticipate it as development management in the near term and its sustainability shortly. In disaster management, coordination based on public resources is needed, namely the existence of cooperation between institutions or government agencies, academics, and the community according to their respective roles and duties [10]. Therefore, the implementation of sustainable development in North Luwu Regency requires a plan that adapts the coordination of the implementation [10].

Disaster risk reduction is based on available public resources. The impact of floods in the last 10 years until July 2020 has resulted in seven deaths and around 4,151 people displaced and caused damage and losses to houses, public facilities, and land [10]. Damage and losses due to the flood event are an indication that the disaster has hampered the sustainability of development in North Luwu Regency [10].

The Sustainable Development Goals that were hampered by the flood disaster included: (1) damage to people's houses and agricultural land which caused large losses of property and objects, thus hampering the 1st sustainable development goal, namely poverty alleviation. ; (2) around 4,112 Ha of paddy fields and 14,000 Ha of forest area were affected by the flood, thus hampering the 2nd sustainable development goal, namely eliminating hunger ; (3) public facilities that are affected include health and education facilities, thus hindering the 3rd sustainable development goal, namely good health and well-being and the 4th, namely quality education; (4) the flood event that occurs has a continuing impact, namely difficulty or lack of access to clean water and sanitation so that this hampers the 6th sustainable development goal, namely clean water and sanitation; (5) damage to several means of transportation, roads and bridges to places of business also causes obstacles to economic growth and business fields or to be precise the 8th sustainable development goal, namely decent work and economic growth (6) that the economic growth of an area as a result of a disaster will not directly hamper development which is also the 11th sustainable development goal, namely sustainable cities and communities; and (7) flood disaster is an event that disrupts the lives and livelihoods of the affected area community, and the result of this is the inhibition of the 15th SDG, namely life on earth [11].

This study aims to develop a public coordination scheme for flood risk reduction activities based on public resources available in North Luwu Regency. This scheme is expected to initiate the publication of a Public Coordination-Based Disaster Risk Reduction document by the North Luwu Regency Government, which is prepared based on the pre-disaster, during the disaster, and post-disaster stages along with regional apparatus organizations and the potential of the community involved to coordinate with each other across sectors, by adjusting their respective roles and functions in reducing flood risk in North Luwu Regency.

2. Methodology

In supporting the implementation of sustainable development in North Luwu Regency, it is necessary to formulate a measurable and specific coordination plan scheme and be carried out before, during, and after a disaster, emergency occurs in an area. The arrangement of the scheme or public coordination plan is made to reduce disaster risk based on the results of the analysis of threats or hazard risks that are expected to occur or not necessarily occur. In the research area that often experiences floods, a public coordination scheme is made based on flood risk information obtained

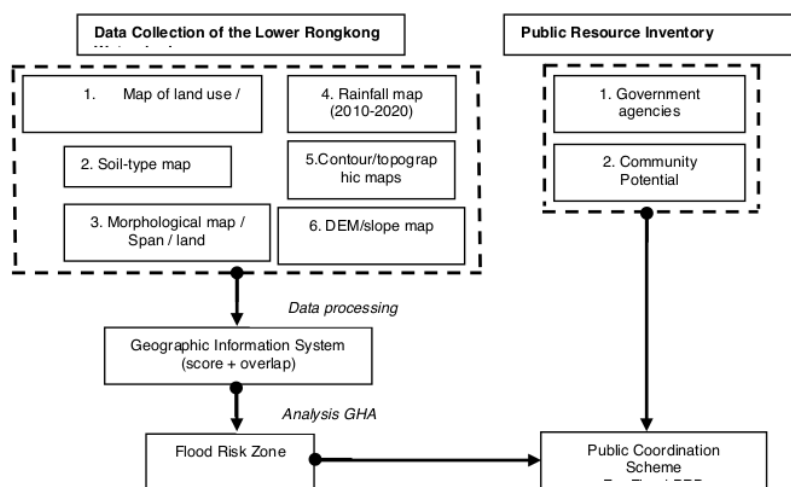


Figure 2. Research Stage Framework

3. Results And Discussion

Sustainable Development Implementation should also be responsive and resilient to disasters. For this reason, spatial planning is carried out by taking into account the physical condition of areas that are prone to disasters following the considerations of Law no. 26 of 2007 concerning Spatial Planning, that geographically the Unitary State of the Republic of Indonesia (NKRI) is located in a disaster-prone area so that spatial planning based on disaster mitigation is needed as an effort to improve safety and comfort.

Indonesia's geological order is located between the collision of three plates, namely the Eurasian Plate, the Asian Plate, and the Australian Plate, which are very active, making this country very potential to experience geological disasters such as earthquakes, volcanic eruptions, and tsunamis. Astronomically, Indonesia is crossed by the equator with a tropical climate that has two seasons, namely rainy and dry, which has the potential to cause hydrometeorological disasters including floods, drought landslides, and forest and land fires. The condition of Indonesia's natural ecosystem is also very unique because it is located near the equator with tropical weather, seasons, and climate, which is a very large asset or resource for the Indonesian people. In addition to the existence of this very strategic value, Indonesia is also in a disaster-prone area, which naturally can threaten the safety of the nation.

UU no. 23 of 2014 concerning Regional Government, Law no. 33 of 2004 concerning Financial Balance between the Central Government and Regional Governments, as well as Government Regulation No. 25 of 2000 concerning the Authority of the Government and the Authority of the Province as an Autonomous Region gives very large authority to the city and district governments to manage their regional development, especially in government administration and finance. Therefore, currently, the city/district government has a very strategic role and function in carrying out development in all fields, which aims to increase the role of the city/regency as a regional growth center, development driver, and service center in all fields, as well as an information center. and innovation, including in terms of disaster mitigation technology. Concerning the explanation of the regulations on spatial planning in Indonesia, each region must also have its plans and rules for realizing sustainable development.

The North Luwu Regency Government has regulated matters relating to the sustainable development of the region so that it is resilient to disasters through the North Luwu Regency Regional Regulation No. 4 of 2013 concerning the Regional Spatial Plan (RTRW) of North Luwu Regency for 2012-2032. This is considering that North Luwu Regency generally has geological conditions in West Malangke Regency including Alluvium & Coastal Deposit soil types. The distribution of soil types in North Luwu Regency is influenced by rock types, climate, and local geomorphology so its development is determined by the level of weathering of rocks in the area. Soil quality greatly affects the intensity of land use. Land that has developed horizons will be used more intensively, especially for agricultural and plantation activities. Soil quality and distribution will be very influential in the development of this area, which is related to the principle of land use based on the suitability of the carrying capacity and carrying capacity of the land. Sustainable development in North Luwu Regency requires not only data and information about potential disasters, but also must pay attention to the relationship between the level of knowledge and the economy of the community, as well as the accuracy of the development plan. For the sake of the progress of a region, planning should not only focus on development needs but must also pay attention to aspects of the possibility of disasters that will occur in the development. Sustainable development is based on the concept of disaster management, namely the risk reduction stage (preparedness, mitigation, prevention) and the post-disaster recovery or handling stage (emergency response, recovery, rebuilding). Better and safer rebuilding (rehabilitation and reconstruction) from pre-disaster conditions must also be carried out systematically with good regulation and management. Context of Flood DRR in the Sustainable Development Goals.

The Sendai Framework for DRR has prioritized disaster risk governance to manage disaster risk, in particular substantially enhancing international cooperation with developing countries through adequate and sustainable support to complement national action in the implementation of this framework in 2030 (United Nations, 2015a). This policy is expected to directly contribute to several Sustainable Development Goals in North Luwu, including:

- a. SDG 1&2: Eradication of all forms of poverty everywhere & ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture. Flood events can have an impact on crop failure due to submerged agricultural land. The impact is a very large loss of property and property for the farmers. In addition to potentially causing farmers to become poor, this will also reduce or eliminate food reserves in flood-affected areas. Because of this, it is necessary to coordinate and collaborate with the public such as the Social Service, Agriculture Service, Food Security Service, and Farmer Groups to jointly carry out a flood disaster mitigation program plan that can hinder these development goals. The regional apparatus, together with the farmer groups, can plan a joint program of extension regarding the importance of land conservation in agricultural areas. In counseling, they can give an appeal not to cut down and burn trees when they are going to clear land. In addition, it is given an understanding that these trees have a function to absorb rainwater and make it a groundwater reservoir, besides that it will prevent surface runoff which can erode the topsoil so that it can be carried into river channels, which over time can become shallow or sedimented. Another program that can be carried out in the coordination of DRR is to provide fertilizer assistance as well as tree seeds to be planted with agricultural commodities.
- b. SDG-3: Ensure a healthy life and improve the welfare of the entire population of all ages. Floods that occur have an impact such as psychological and health problems, such as diarrhea and dengue fever. Structured and well-coordinated disaster risk reduction between the Meteorology, Climatology and Geophysics Agency (BMKG) and the Regional Disaster Management Agency in early warning and preparedness, as well as the Environment & Natural Resources Service, Health Office, and health facilities available in handling emergency response, will minimize the occurrence of these risks. Thus, public coordination of flood Disaster Risk Reduction can help realize sustainable development goals to ensure health and well-being.

- c. SDG 4: Ensure quality education is inclusive and equitable, and promote lifelong learning opportunities for all. Indonesia, which is a country that has a very high disaster risk, then of course the vulnerability to the impact of disasters that may occur will also be large, including in educational facilities, educators, and students. For these vulnerabilities to be minimized, the risks must be reduced. Public coordination of DRR to support the realization of the 4th sustainable development goal can be done through collaboration between the Education and Culture Office, Universities in the area, and the Public Works and Regional Planning Office. The Department of Education and Culture and Higher Education can disseminate the Disaster Safe Learning Unit (SPAB) issued by the Ministry of Education and Culture in No. 33 of 2019 concerning the Implementation of the Disaster Safe Education Unit Program) from elementary to tertiary levels. SPAB can be included in sports, extracurricular, and university courses, where teachers and lecturers can provide students with an understanding of the causes of flooding and how to reduce the risk of its impacts. Meanwhile, the PUPR Service can plan mitigation-based spatial planning in plans for the construction of educational facilities and facilities in areas that are prone to be at risk of being affected by floods and other natural hazards.
- d. 8th & 9th SDG: Promote sustainable, inclusive, and sustainable economic growth, decent and productive work & Build resilient infrastructure, promote inclusive and sustainable industrialization and encourage technological innovation. Floods or other natural disasters have the impact of material and economic losses to infrastructure and environmental damage. Strong infrastructure development through DRR-based regional spatial planning and well-coordinated community economic development, between the PUPR Service, Social Service, Industry & Trade Office, as well as the Research and Development Agency, can with and realize the achievement of the SDG.
- e. 11th SDG: Make cities and human settlements inclusive, safe, resilient, and sustainable. With public coordination or available parties in the Gorontalo area in DRR-based development management, plans for preparedness, emergency response, and better development in the future, will certainly realize the North Luwu area and its sustainable inclusive community following the 11th SDG objective.

The implementation of national spatial planning must be carried out in a comprehensive, holistic, coordinated, integrated, effective, and efficient manner and pay attention to political, economic, social, cultural, defense, security, and environmental factors. In the perspective of sustainable development, public coordination of disaster risk reduction in the contingency plan (Rekon) in the local government of North Luwu Regency is advised to carry out a measurable and specific development program before an emergency or potential disaster occurs in an area, based on an analysis of the threats that are expected to occur or not necessarily happen (BNPB, 2008). The recon is included in the pre-disaster stage, the concept of preparedness and emergency which is carried out in coordination between sectors (communities). The stages of implementing DRR Reconnaissance can be seen in Figure 3

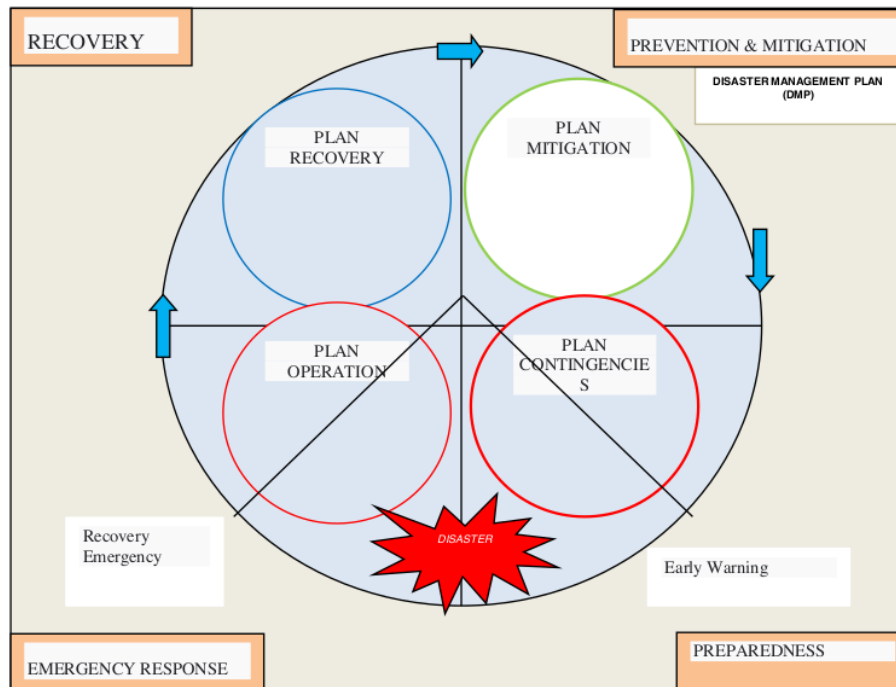


Figure 3. Stages of Disaster Management Implementation

The stages of disaster management implementation consist of cross-sectoral public coordination that works together with their respective roles and functions, including government agencies and the Public. Flood is one of the hazards of a meteorological phenomenon that begins with high and/or continuous rain in the upstream area or in an area, causing the river flow to be greater than the normal threshold. The danger of flooding can turn into a disaster if an area has a landscape whose land use is no longer following its function. In addition, the slope factor and soil types in the upstream area also have an important role in draining rainwater as runoff, so that areas with sloping topography will become areas that have the potential to experience inundation or flooding. This is following Law no. 24 of 2007 concerning Disaster Management defines a flood as an event or state of submersion of an area or land due to an increased volume of water. The impact of this event is also closely related to the influence of human activities and several other factors such as high rainfall intensity, damaged river conditions and upstream areas, inappropriate cultivation/land conversion conditions, and sea tides.

The parameters that determine the flood risk zone in the research area follow the Regulation of the Minister of Forestry of the Republic of Indonesia No. 32 of 2009 concerning Procedures for Formulating a Technical Plan for the Rehabilitation of Forest and Watershed Lands. The characteristics studied in the form of landscapes and their use, slopes, soil types, topography, and average rainfall are processed geospatially to produce information on flood hazard zones (Figure 4).

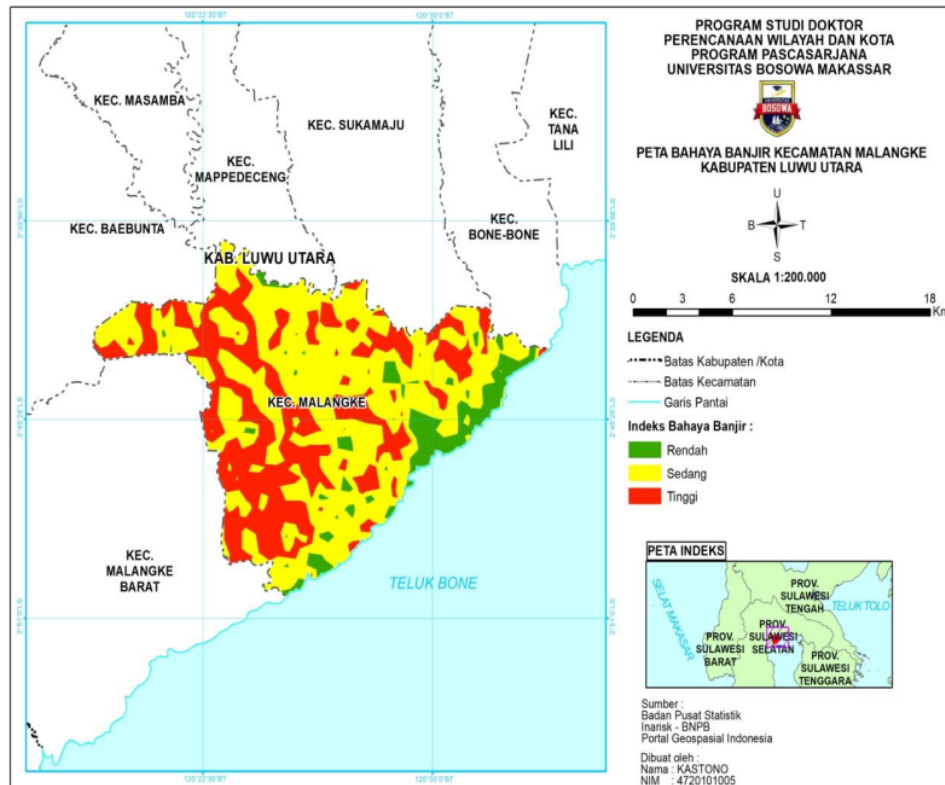


Figure 4. Flood Hazard Risk Zone in Rongkong River Downstream Watershed Coverage

The results of flood risk assessment based on geospatial analysis according to Rongkong Downstream Watershed characteristics are flood areas with low (not vulnerable) medium (vulnerable) and high flood susceptibility conditions (high) (very vulnerable) Namely: Areas that have a high level of vulnerability with an area of 913.9329 Ha prone to flooding, namely the Pombakka Village area, an area that has a moderate level of vulnerability with an area of 5.473202 Ha prone to flooding, namely the Waelawi Village area.

The geospatial hazard assessment in the research area shows that most of the coverage of the Rongkong Hilir watershed, including the North Luwu Regency area, has the potential to experience flood disasters that can hinder the implementation of sustainable development. To reduce the risk of disasters that could potentially occur, intersectoral coordination of available public resources in North Luwu Regency area is needed. Public resources that have been successfully inventoried in the North Luwu Regency area are divided into two, namely government agencies and community potential, and each will coordinate and cooperate in the implementation of flood DRR by adjusting the criteria. Public resources that will coordinate with each other to support flood DRR are shown in Table 1.

Table 1. Responsibility of each agency in flood DRR

	Agencies /Sector	Duties/Authorities
Before (Pre) Disaster	1 Govern ment Sector (Regional Planning and Development Agency/Bappeda)	1 Conducting regional development based on research and policy results (Research and Development).
	2 Public Works Sector (Department of Public Works and Spatial Planning/DisPUPR, Office of Housing and Settlement Areas/Disperkim, Office of Community and Village Empowerment/DisPemdes, Regional Disaster Management Agency/BPBD)	2 Planning of spatial planning and buildings that are safe from flooding, determination of routes evacuation or evacuation location
	3 Transportation Sector (Meteorology, Climatology and Geophysics Agency/BMKG, BPBD)	3 Detecting forecasts of extreme rainy weather and early warning for government and community preparedness
	4 Energy and Mineral Resources Sector (Department of Environment and Resources Nature/DLHSDA)	4 Energy and Mineral Resources Sector (Department of Environment and Resources Nature/DLHSDA)
	5 Financial Sector (Financial Agency)	5 Prepare the budget for disaster management activities in the pre- disaster period, including tactical funds for emergency response and rehabilitation
	6 Environmental Sector H life (DLHSDA, BPBD, Department of Agriculture; Department of Food Security, Social Service)	6 a. Planning and controlling preventive and advocacy efforts in disaster prevention b. Initiating tree planting activities, community service, and river cleaning, etc.
	7 The sector of Research and Higher Education Institutions (Balitbang, BPBD)	7 a. Carry out disaster risk assessment and analysis; b. Creating technology and/or materials supporting DRR; c. Disseminate disaster information such as infographics and disaster maps; and d. Creating early warning technology.

	8	Community Groups (Forum Volunteers-Village Disaster/FR-Destana, Kambungu Beresi)	8	Reduce and manage flood risk with early education at the family level to local wisdom
	9	Education Sector (Department of Education and Culture)	9	Provide training and early education at the school level regarding disasters through a curriculum according to the Disaster Safe Learning Unit (SPAB) which is intended for teachers and students
during a disaster	1	Health Sector (Health Office/Dinkes, Health Facilities: Dunda Hospital, Public Health Center/Pustu, Indonesian Red Cross/PMI, and so on)	1	Providing health and medical services including medicines and paramedics
	2	Social Sector (Disaster Alert Service Office/Tagana, Civil Service Police Unit/Satpol PP, BPBD, National SAR Agency/Basarnas)	2	a. Planning for food, clothing, and other basic needs for refugees; and b. Emergency response, search and rescue, asset security, distribution of logistical assistance including clean water, provision of evacuation sites, and public kitchens.
	3	Public Works Sector (PUPR Office)	3	Provide evacuation locations and infrastructure for evacuation sites, shelters, emergency schools, heavy equipment assistance, and so on.
	4	Transportation & Communication Sector (Department of Transportation/Dishub, Office of Communication and Information/Diskominfo)	4	Planning for emergency transportation and communication needs for disaster purposes
	5	Manpower and Transmigration Sector (Department of Manpower and transmigration/Disnakertrans, Satpol PP, BPBD)	5	Planning mobilization and transfer of disaster victims to safe areas (evacuation).
	6	TNI/POLRI (TNI and POLRI Units)	6	Assist in SAR activities, and security during emergencies, including securing abandoned locations because the occupants have fled.
	7	Community (Sub-district and Village Government, FR Destana, General Volunteer Team)	7	Handle search and rescue independently while waiting for help to arrive, or with a team.
	8	Private and Non-Governmental	8	Provide emergency assistance and

After Disaster	(Post)	Organizations			needs.
		1	Health Sector (Dunda Health Office and Hospital, PMI)	1	Providing health and medical services including medicines and paramedics, as well as trauma healing.
		2	Social Sector (Dinsos-Tagana, Satpol PP, BPBD)	2	Planning for food, clothing and other basic needs for refugees
		3	Public Works Sector (PUPR, DisPerkim)	3	Fulfilling the need for restoration of facilities and infrastructure such as refugee shelters, houses/housing (huntara) and temporary schools.
		4	Transportation & Communication Sector (Dishub, Diskominfo)	4	Meeting transportation and communication needs.
		5	Manpower and Transmigration Sector (Disnakertrans, Satpol PP, BPBD)	5	Planning the mobilization and transfer of disaster victims to disaster-safe areas
		6	Private sector, Non-Governmental Organizations, and International Institutions (Community Care, Philanthropy, and so on)	6	Provide additional assistance and needs for disaster-affected communities by coordinating with local governments, health and property insurance, educational scholarships, and so on.
		7	Media (Palopo Pos, Koran Seru Ya Harian Fajar, and so on)	7	Provide up-to-date and accurate information on post-disaster conditions and needs

4. Conclusion

In the results of the preparation of public coordination schemes for flood disaster risk reduction In the research area, it can be seen that the resources of government agencies and the potential of the community will play a greater role in collaborating in the activities of the pre-disaster stage (prevention, mitigation, and preparedness) and during the disaster stage (emergency response). This indicates that these stages are disaster risk reduction activities that the North Luwu Regency Government should pay more attention to in planning sustainable development in the area. According to Maarif (2013), disaster risk reduction activities must be a joint effort at the national and local levels, as a strategic investment in sustainable development, considering that the impact of losses caused by disasters is always greater than the government budget for its management.

Thus, public coordination between government agency resources and community potential together in disaster risk reduction activities will be a strategic investment in sustainable development in North Luwu Regency. This also shows the responsive disaster paradigm that we have adapted for a long time, namely the community has always been the object of disaster, it must have changed to an adaptive paradigm, namely all elements including government, universities and the community have a main (subjective) role in dealing with disaster risk. One of them is coordination between the Department of Public Works and Spatial Planning, Universities, and the Disaster Resilient Village Forum in planning regional spatial planning based on disaster risk studies. Therefore, the North Luwu Regency Government needs to pay attention to public coordination of DRR as a Contingency Plan

document that is proclaimed in a regional regulation. There is a division of tasks for the disaster management working group for prevention, mitigation, preparedness, and emergency response to the rehabilitation process (recovery) which synergize with each other and will automatically support the Sustainable Development Implementation Plan in North Luwu Regency. In addition, this research will try to initiate the issuance of Regional Government Policies/Regent Regulations concerning the Working Group of Sustainable Development Based on Disaster Risk Reduction.

7

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It is hoped that the results of this study will become the basis for the government in handling flood-prone areas based on their classification along with directions for handling flood-prone areas in Malangke and West Malangke Districts, North Luwu Regency, For further researchers who will examine the existing flood problems in Malangke and West Malangke sub-districts, it is better to study the flood hazard mitigation with integrated Rongkong watershed management.

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