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DEVELOPMENT PROJECT SUSTAINABILITY MANAGEMENT (STUDY ON RESERVOIR DEVELOPMENT PROJECTS IN SABU RAIJUA REGENCY)

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Abstract:
82.3 percent of the population of Sabu Raijua Regency work as farmers with a high need for water, but the geographical conditions of Sabu Island cannot support this activity because the majority consists of dry land with a percentage of 97.51 percent and the number of rainy days is approximately 100 days per year. This study used a descriptive qualitative method with 76 purposively chosen participants. Primary and secondary data were analyzed using Creswell's methodologies. The sustainability of the pond development project in Sabu Raijua Regency was analyzed using the Methodology in Sustainable Development Indicators which is described in 4 aspects with the following research results; (1) The reservoir was advantageous to the community's social activities because it stored rainwater for use during the dry season., (2) On the economic side, the reservoir helped build profitable enterprises that generate economic value for the community, (3) the environmental aspect is not used as the main aspect but as a supporting aspect and (4) On the economic side, the reservoir helped build profitable enterprises that generate economic value for the community. Inhibiting factors for the sustainability of the pond development project in Sabu Raijua Regency include a minimal budget, less effective institutional governance, and climate and geographical conditions. The authors formulate a model for the sustainability of the pond development project in Sabu Raijua Regency that includes 3 dimensions: policy, resource, and institutional relationship.

Keywords: Sustainability, Reservoir, Water

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INTRODUCTION

The goals of the 2030 global agenda as a result of an agreement at the UN General Assembly at the end of 2015. TPB/SDGs agreed on 17 goals/goals and 169 targets with an implementation period of 2016-2030. Following up on this, the Indonesian government issued Presidential Regulation Number 59 of 2017 concerning the Implementation of Sustainable Development Goals (TPB), one of which is goal number 6, namely the availability of clean water and proper sanitation, including those related to ease and equality of access to clean water. The availability of clean fresh water is only 2.5% of all water available in the world.

Currently, the world has experienced a clean water crisis. The amount of clean water in the world is only 1% that can be consumed. Of the 1% of available clean water, not all of it can be easily accessed by the community (Unicef, 2019). WHO data for 2015 found that 663 million people still have difficulty accessing clean water (United Nations, 2015), while the latest data from the Centers for Disease Control and Prevention (2021) found that worldwide, 785 million people do not have adequate access to clean water. In connection with this water crisis, it is predicted that by 2025 nearly

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two-thirds of the world's population will live in areas experiencing water shortages (Centers for Disease Control and Prevention, 2021).

The United Nations Children's Fund (UNICEF) said that the availability of clean water and proper sanitation in the world is increasingly worrying. The sixth target of the Sustainable Development Goals (SDGs) has the potential not to be achieved by 2040. The UNICEF Water, Sanitation and Hygiene Specialist revealed that, based on global statistical data, around 1 billion more of the world's population has not been able to access clean water and proper sanitation. In developing countries, the availability of clean water is a severe problem because it threatens human potential because of its relationship to socioeconomic stability and health (Grafton, 2017, p. 3037).

In the Indonesian context, drinking water is still inaccessible to most Indonesian people. UNPDF indicates that at least 42.8 percent of Indonesian people do not have access to proper water sources (UNPDF 2016-2020:22). The presence of water in Indonesia is very abundant in the wet months due to high rainfall and shortages in the dry months (Directorate of Irrigation Water Management. 2014), one of which is in the Province of East Nusa Tenggara (NTT), which has a large part of the area which is an area with a dry climate.

Irrigation networks such as the construction of ponds can collect rainwater in the rainy season to prevent flooding. In addition to preventing floods, ponds can help farmers, especially in the dry season, to maintain water availability. According to the strategic plan of the Ministry of Agriculture for 2015-2019 that the management of water resources is carried out through the development of water resources, the development of irrigation networks, the construction of reservoirs and ditches and the institutionalization of Associations of Water-User Farmers (P3A) (Directorate of Irrigation Water Management. 2014).

Regarding the need for water in NTT, the Head of the NTT Provincial Public Works Office stated that NTT needs 2 billion m3 per year and currently, 539 million m3 is available. NTT experienced a deficit of up to 1.5 billion m 3 (Pos Kupang, 2014). Thus, the water supply authorities (PU and BWS) stated that NTT needed 60 dams and 4,000 ponds to overcome this deficit (Pos Kupang, 2014). From this need until 2021, 1086 ponds have been built throughout the province of NTT (https://ntt.bps.go.id/indicator/155/687/1/keberadaan-embung.html).

One of the districts that are very serious about building reservoirs to provide clean water for the people of NTT Province is Sabu Raijua Regency. Until 2021, this outermost district in Indonesia has built 59 reservoirs to address its water crisis problems. Regarding the condition and need for water in Sabu Raijua Regency, quite comprehensive research has been conducted and identified that the problem of Regency water in Sabu Raijua is caused by rainwater that falls quickly overlapping as surface runoff and immediately being dumped into the sea (Susilawati, 2013).

The climate of these small islands is characterized by long dry spells with low rainfall. In a year only 14-116 rainy season days. Table 1 shows that in 2010 the number of rains was 88 days, while in 2011, it reached 116 days. The climatic conditions are related to its location which is quite close to the Australian Continent (Sabu Raijua In figures, 2012).

In Sabu Raijua Regency, most of the population, 82.3%, work as farmers out of a total population of 74,403 people (BPS Sabu Raijua, 2021). This paradox is not an option but shows that the production phase of most NTT people has only reached the subsistence farming stage, in which this method of production has a high level of water demand. Even though they work as farmers, the number of paddy fields in Sabu Raijua Regency is only 2.49%, the rest is a dry land with a percentage of 97.51% and with the number of rainy days only 100 rainy days per year (BPS Sabu Raijua, 2021). So during the dry season, many rivers and streams dry up, so local residents can only use wells for their clean water supply.

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The local government of Sabu Regency and the Nusa Tenggara River Basin II (BWS NT II) built the argument that the construction of the reservoir is in the interest of the welfare of the wider community, meeting raw water needs and controlling floods. The need for water in Sabu Raijua Regency is to meet agricultural activities for both rice and crops, domestic, urban and industrial activities (DMI), and consideration of water loss (BWS NTT II, 2011). The regional government wants to fulfill this need for water by building a pond which is considered a solution to meet the need for this water.

However, one of the fundamental problems in development in Indonesia, including in the context of the construction of reservoirs in the Sabu Raijua Regency, is the weak sustainability of good development projects carried out by the government. Many development projects experience mortality and create dependence on project resources after the end of the project's fiscal year. The reservoir development projects in Sabu Raijua Regency are no exception. The high mortality rate of development projects reflects the weak sustainability of the project (Tjokrowinoto, 1991, p. 5).

A continuous allocation of inputs does not allow this pond development project to develop on its own. According to Bryant and White, one of the causes is the limited capacity of the administration or management system (in Effendi, 1991:17). In contrast, on the other hand the reservoir development projects in Sabu Raijua Regency were built to increase people's welfare. The high mortality rate of pond construction projects in Sabu Raijua Regency is one of the consequences of applying the growth paradigm. Because this paradigm tends to create certain negative effects, which consequently reduce the degree of sustainability (sustainability) of development (Tokrowinoto, 1991, p. 6). Furthermore, it is said that the drive to achieve the highest possible economic growth often results in neglect of institutional development and capacity-building efforts.

The main objective of implementing the reservoir construction in Sabu Raijua Regency is to improve the community's welfare by meeting their needs and aspirations for water. To meet these needs, it is necessary to develop as broadly as possible by utilizing existing human and natural resources to minimize the mortality rate of the main objective of the development of the reservoir itself. The harmonious synergy between the government, the private sector, and the community without forgetting local wisdom is needed to achieve the results of the development of the reservoir. The hope is to achieve the maximum sustainable development results that can be felt so that researchers feel the need to conduct research with the title Development Project Sustainability Management (Study on Ponds Development Projects in Sabu Raijua Regency).

In the Indonesian context, sustainable development indicators are used to analyze the achievement of sustainable development in Indonesia, namely by evaluating the development of development programs that have been implemented, especially in this study, namely the goals of sustainable development contained in Presidential Regulation Number 59 of 2017 concerning Implementation of Sustainable Development Goals (TPB) number 6 through the availability of clean water, including related to the ease and equality of access to clean water through the construction of reservoirs in Sabu Raijua Regency and will be focused only on Methodology in Sustainable Development Indicators (Department of Economic and Social Affairs, 2001: 14) which is described in several aspects, namely; (a) social aspects, namely human resource development (community empowerment), (b) economic aspects through the development of productive enterprises, (c) environmental aspects concerning the impact of the development of reservoirs on the environment and (d) institutional aspects concerning relations between institutions because sustainable development is a development process that provides a balanced portion of economic, social and environmental interests. Sustainable development must be a system that is interrelated and mutually influencing (Davies, 2015; Le Blanc, 2015; Carmela et al., 2013). Based on the description

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above, the authors chose the study's title, "Development Project Sustainability Management (Study On Reservoir Development Projects In Sabu Raijua Regency)".

METHODS

Interactions between indicators in the sustainable development goals of ponds in Sabu Raijua Regency will be analyzed using a qualitative approach (Castañeda et al., 2018; Pradhan et al., 2017; Nilsson, 2016; Nilsson et al., 2016) so that the research methods used in this study This is a descriptive research method with a qualitative approach, while the informant selection technique used by researchers in this study was a purposive sampling technique with a total of 76 people. Then the informants mentioned above were investigated using the snowball sampling technique to reach the data saturation stage. Sources data in this study were obtained through primary sources and secondary sources. Primary sources are data sources that directly provide data to data collectors, such as interviews with informants. Secondary sources do not directly provide data to data collectors, such as documents, photographs, art objects, videotapes or all kinds of sounds/sounds. The data that has been collected is analyzed using data analysis techniques from Creswell (2016: 264-268).

RESULT AND DISCUSSION

Management of the Sustainability of the Reservoir Development Project in Sabu Raijua Regency. The operationalization of the concept of sustainable development requires indicators to assess its effectiveness. In many cases in many countries, indicators of sustainable development are related to development strategies that are participatory, integrative, cross-sectoral and comprehensive. Sustainable development indicators have been recognized in Agenda 21 as a tool for decision-making. In its development, a set of sustainable development indicators, including guidelines and methodologies, have been prepared by the Commission on Sustainable Development (CSD) since 1995.

These indicators are used to analyze the achievement of sustainable development in Indonesia, namely by evaluating the development of development programs that have been implemented, especially in this study, namely the goals of sustainable development contained in Presidential Regulation Number 59 of 2017 concerning the Implementation of Sustainable Development Goals (TPB) number 6 through the availability of clean water, including related to the ease and equality of access to clean water through the construction of reservoirs in Sabu Raijua Regency analyzed using the Methodology in Sustainable Development Indicators (Department of Economic and Social Affairs, 2001: 14) which is described in several aspects with the results research and discussion as follows:

Social Aspect. Sustainable development aims to empower society as a social organization. Humans are seen as the key to the success of development through the development of community social organization empowerment through the development of human resources (community empowerment) with the construction of a reservoir in Sabu Raijua Regency.

Based on the results of interviews and observations conducted by the author, it is known that the construction of ponds in Sabu Raijua Regency is very beneficial for community social activities because it can store water in the rainy season. Then water is used by the community during the dry season to meet needs in priority order, residents, livestock and gardens or rice fields (Rustam, 2010, p. 34).

In Sabu Raijua Regency, most of the population, 82.3%, work as farmers out of a total population of 74,403 people (BPS Sabu Raijua, 2021). This paradox is not an option but shows that the production phase of most NTT people has only reached the subsistence farming stage, in which

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this method of production has a high level of water demand. Even though they work as farmers, the number of paddy fields in Sabu Raijua Regency is only 2.49%, the rest is dry land with a percentage of 97.51% and with the number of rainy days of approximately only 100 rainy days per year (BPS Sabu Raijua, 2021) as a result during the dry season, many rivers and streams dry up so that local residents can only use wells for their clean water supply and the findings of the authors note that the construction of reservoirs in Sabu Raijua Regency has significantly contributed to the development of empowering social organizations such as groups farmers to empower individuals in farmer groups.

Wahyono et al. (2001:8) state that community empowerment emphasizes the importance of self-reliant local communities as a system that organizes themselves, which according to Hikmat (2004:4), are independent, participative, networked and fair. In the context of this study, the people of Sabu Raijua Regency, as local communities (self-reliant communities), form farmer groups in each village. Farmer groups that have been formed are empowered through agricultural assistance, bank capital assistance, nursery assistance, planting to harvesting and marketing by the relevant agencies in Sabu Raijua Regency as the direction of development has been set by the Central Government which requires the local government to prepare infrastructure at the regional level in the form of providing the policy, budget and program support to align with efforts to achieve the SDGs. This is important to do because, basically the development of ponds in Sabu Raijua Regency must have integrated goals with community empowerment in line with SDGs goal number 6 concerning water (water) which must be able to guarantee the availability and sustainable management of water and sanitation for all until governance is implemented. Governance that is able to maintain an increase in the quality of life from one generation to the next (Bappenas, 2020).

The community empowerment strategy of building ponds in Sabu Rijua Regency is in line with the goal of SDGs number 6, which is an effort made to improve and become self-sufficient and self-help communities according to their potential and local culture as a whole and comprehensively so that the dignity of the layers of society whose conditions are unable to escape from poverty and backwardness. Through this empowerment strategy, community participation in carrying out development will increase. Thus, the scope of empowerment is not only increasing the individual capacity of the community but also groups and institutions that exist and grow in the community because the main goal of community empowerment is not to make the community more dependent on various grant programs (chanty).

Economic Aspect. Economic objectives (efficiency and growth). Economic development is used as the first step in sustainable development. Development in other fields is assumed to experience success after successful economic development. The results of the author's research show that the Regional Government of Sabu Regency and the Nusa Tenggara II River Basin Office (BWS NT II) build the argument that the construction of the reservoir is in the interests of the economic welfare of the broader community in addition to meeting raw water needs and controlling floods. The need for water in Sabu Raijua Regency is to meet agricultural activities for both rice and crops, domestic, urban and industrial activities (DMI) and consideration of water loss (BWS NTT II, 2011).

In essence, economic development is a series of efforts and policies that aim to improve people's living standards, distribute people's income equally, improve regional economic relations and seek a shift in economic activity from the primary sector to the secondary and tertiary sectors. In other words, economic development aims to increase people's income with an even distribution of income so that the welfare of the whole community is achieved. To achieve development goals, sometimes economic development is more focused on efforts to spur economic growth. Economic development is solely aimed at pursuing economic growth, often without regard to the sustainability of natural resources and the environment, so it has a negative impact on nature and

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society. The negative impact of economic development can be reduced through environmentally sound economic development so that generations can also enjoy the development we are experiencing today. The Regional Government of Sabu Raijua Regency intends to fulfill this need for water through the construction of ponds considering that in Sabu Raijua Regency, the majority of the population, 82.3% work as farmers out of a total population of 74,403 people (BPS Sabu Raijua, 2021). The human potential will be threatened without a reservoir because it is related to socio-economic stability (Grafton, 2017, p. 3037).

Based on the results of interviews and observations made by the author, it was found that the construction of the reservoir in Sabu Raijua Regency contributed to the development of productive businesses that generate economic value for the community working in the agricultural sector. Able to produce economic value to support local food production because water availability is minimal during the dry season and many have even dried up during this season, so production is uneven, some villages only plant once a year and some plant up to three times a year.

Environmental Aspects. Ecological goals deal with climate change, especially those carried out by local governments to maintain water availability for the community. Local governments should involve the community in mitigation and adaptation policies in policy planning and implementation. Based on the results of research and observations made by the author, it is known that the construction of the ponds in Sabu Raijua Regency does not consider environmental aspects as the main aspect but as supporting aspects that follow after the ponds are built, even after the ponds are built there is no allocation of funds for environmental management in around the pond but based on the results of observations made by the author it is known that the construction of the ponds in Sabu Raijua Regency has contributed to the preservation and sustainability of the plants around the ponds which are used for animal feed for the surrounding community and no environmental damage was found around the ponds and findings this is in line with the SDGs policy steps to address climate change and protect the environment (Johnston, 2007, Department of Economic and Social Affairs, 2001:14, Jovovic, 2017).

Institutional Aspect. In this aspect, there must be a triangular partnership between the government, the business world, and civil society in the management of the reservoir where in the author's observations, it was found that there are 3 types of reservoirs based on the source of funds for the construction of the pond, namely the source of funds from APBD I, APBD II and APBN through BWS for Nusa Tenggara II Region with details in the table below:

Table 1. Data on Built Reservoirs in Sabu Raijua Regency
Source of APBD II of Sabu Raijua Regency

No.	Reservoir Name	Year	Capacity (m3)	Region		Description
				Village	District	
1	Eibalu Reservoir	2011	25,000	Ballu	Raijua	Slightly Damaged Inundation Area , Heavily Damaged Spillway Needs rehabilitation
2	Keduru Cekdam	2011	15,000	Bolou	East Sabu	Good Condition
3	Djami Lobo Cekdam	2012	20,000	Lobodei	East Sabu	Condition Rehabilitated by Village Fund 2016
4	Eimadaginu Cekdam	2012	15,000	Raerobo	Liae	Slightly Damaged Condition Needs Maintenance
5	Embung Muli	2013	30,000	Delo	West Sabu	Damaged Spillway and Safety Fence
6	Embung Hella	2013	26,000	Ledeana	West Sabu	Slightly Damaged Tubs and Spillway

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7	Embung Raenalulu	2013	21,000	Raenalulu	West Sabu	Sedimentation in Catchment Area
8	Mini Reservoir 100 Units	2013	150,000	Scattered in Kab. Sabu Raijua		Existing Existing Scattered
9	Embung Ledepaju	2013	25,000	Kel. Mebba	West Sabu	Good Condition
10	Wadumedi Reservoir Kelabba Madja	2014	30,000	Wadumedi	Hawu Mehara	Sedimentation in Catchment Area Needs Dredging of Sediment and Safety Fence Damaged
11	Embung Daili	2014	28,000	Bolua	Raijua	Good Condition
12	Mini Embung 25 Units	2014	375,000	Scattered in Kab. Sabu Raijua		Existing Existing Scattered
13	Embung Nahuru	2015	26,000	Raenyale	West Sabu	Good Condition
14	Mini Embung 50 Units	2015	750,000	Scattered in Kab. Sabu Raijua		Existing and Scattered
15	Embung Nadawi	2016	28,000	Huaga	Sabu Timur	Good Condition
16	Embung Roagella	2016	25,000	Matei	Sabu Tengah	Good Condition The inscription is missing
17	Embung Eimau Rehab	2016	17,000	Eimau	Sabu Tengah	Good Condition
18	Embung Mini 100 Units	2016	1,500,000	Scattered in Kab. Sabu Raijua		Existing and Scattered
19	Embung Deki	2018	289,000	Nadawawi	West Sabu	Good Condition
20	Embung Mesara Loko E	2018	60,000	Pedarro	Hawu Mehara	Good Condition
21	Embung Ledekebeli	2018	60,000	Pedarro	Hawu Mehara	Good Condition
22	Embung Padan Ae	2020	90,000	Lobodei	East Sabu	Good Condition
23	Embung Keballa	2020	18,000	Lobodei	East Sabu	Good Condition
24	Embung Lokobele	2020	130,000	Kel. Ledeunu	Raijua	Good Condition
25	Raenyale Village Embung	2021	42,800	Raenyale	West Sabu	Good Condition
26	Tada Village Embung	2021	95,000	Tada	Central Sabu	Good Condition
27	Raekore Village Embung	2021	30,000	Raekore	West Sabu	Good Condition
28	Wadumedi Village Embung	2021	20,000	Wadumedi	Hawu Mehara	Good Condition

Source: Sabu Raijua Regency PUPR Service, 2022

Table 2. Data on Built Reservoirs in Sabu Raijua Regency APBN Funding Sources (Ministry of PUPR / BWS-NT II)

No.	Name of Reservoir	Year of Development	Capacity Capacity (m3)	Area of Sabu Raijua Regency		Description
				Village	District	
1.	Embung Eipuke	2013	27,000	Bebae	Central Sabu	Already OP BWS 2019

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2.	Embung Luinyabu	2013	38,000	Tada	Central Sabu	Requires fence maintenance op
3.	Embung Djami Nyepu	2013	38,000	Eida	Central Sabu	Requires OP BWS NT II APBN
4.	Turuma Reservoir	2013	29,000	Kujiratu	East Sabu	The condition is not filled with dry water
5.	Hokowarai Reservoir 1	2013	24,000	Raekore	East Sabu	The angled razor wire fence is missing
6.	Hokowarai Reservoir 2	2013	38,000	Raekore	West Sabu	Required maintenance
7.	Reservoir Raeraga	2013	27,000	Mebba	West Sabu	Fence missing reservoir landslide
8.	Reservoir Hangaraka	2013	34,000	Raekore	West Sabu	Pipes and tubs are not working
9.	Embung Lokorae	2013	29,000	Raekore	West Sabu	OP BWS 2020
10.	Reservoir Raraka	2013	26,500	Djaddu	Sabu West	Need to maintain opws ntz
11.	Keraka Ai Reservoir	2013	26,100	Raenyale	West Sabu	Landslides closed the evacuation area
12.	Wohaha Embung	2013	37,000	Lobade	Sabu East	The wire fence has started to disappear
13.	Embung Laripedia	2013	24,000	Ledetslo	Sabu Liae	Damaged condition on Spillway and tubs and hoses
14.	Embung Guriola	2014	350,000	Raenyale	West Sabu	Multipurpose Reservoir Good condition
15.	Embung Luimaja	2015	27,000	Raemude	West Sabu	Good
16.	Hangahuki Reservoir	2015	38,000	Raemude Slightly	West Sabu	Damaged
17.	Eimula Reservoir	2015	25,000	Depe	West Sabu	Damaged
18.	Eipahi Reservoir	2015	26,000	Teriwu Heavily	West Sabu	Damaged (slide from upstream into inundation area)
19.	Hangaleo Reservoir	2015	29,000	Ledeke	West Sabu	Good
20.	Embung Marepano	2015	315,000	Ledetalo	West Sabu	Good (Emb. Irrigation)
21.	Muli Reservoir	2016	327,000	Delo	West Sabu	(A landslide crashed into the spillway area)
22.	Hangalui Reservoir Table	2016	26,000	Raemude	West Sabu	Good
23.	Hangalui Reservoir Table	2016	37,000	Media	West Sabu	Good
24.	Eibolo	2016	38,000	Nadawi	ReservoirWest	Moderately damaged in the spillway
25.	Hangakepaka Embung	2016	35,000	Djaddu	West Sabu	Good
26.	Anuana Embung	2016	40,000	Raemude	West Sabu	Good
27.	Embung Leoratu	2016	27,000	Mapipa	West Sabu	Moderate landslide

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28.	Rehae Embung	2016	29,000	Huwaga	Sabu Timu	Good
29.	Embung	2016	24,000	Raemude	West Sabu	Large landslide from upstream into inundation area
30.	Leokitu Running Reservoir	2017	269,000	Loborae	Sabu Liae	Versatile
31.	Loborai Embung	2018	26,000	Ledeana	West Sabu	Good
32.	Raenyale Embung	2018	38,500	Renyale	West Sabu	Good
33.	Lokobe	2018	Renyale	38,500	Hawu Mehara	Good
34.	Reservoir Renst	2019	39,000	Raekore	West Sabu	Good
35.	Embung Luipau	2019	37,000	Reakore	West Sabu	Good
36.	Embung Gumi	2019	30,000	Gurimonearu	Hawu Meha ra	Good
37.	Bele Reservoir	2019	35,000	Raemude	West Sabu	Good
38.	Hangalokobe Reservoir	2019	26,000	Raemude	West Sabu	Good
39.	Loborui Embung	2019	27,000	Loborui	Sabu Liae	Good

Source: PUPR Service Office of Sabu Raijua Regency, 2022

Table 3. Data of Reservoirs Built in Sabu Raijua Regency Source of APBD I Sabu Raijua Regency

No.	Reservoir Name	Year	Capacity (m3)	Area	
				Village	District
1.	Ledetalo Reservoir	2020	40,000.00	Ledetalo	Liae
2.	Lobohede Reservoir	2020	Hawu	35,000.00 Lobohede	Mehara
3.	Wadupalla Reservoir	2021	25,000.00	Ledeke	Sabu Liae
4.	Erapuru Reservoir	2021	35,000,00	Raerobo	Sabu Liae

Source: PUPR Office of Sabu Raijua Regency, 2022

The 3 sources of funds for the reservoir construction also affect the reservoir management in Sabu Raijua Regency. If the pond is built using APBD I and II funds from Sabu Raijua Regency, the responsible institutions as managers are related agencies in Sabu Raijua Regency with a maintenance budget.) was handed over to the PUPR Service of Sabu Raijua Regency or used village funds, whereas if BWS Nusa Tenggara II built the pond, the management was handed over to the village with maintenance returned to BWS Nusa Tenggara II, this resulted in a long and impactful span of institutional governance. On the failure to achieve the essence of the construction of reservoirs for the availability of raw water in the regions.

This division of authority and responsibility in water management is regulated in the Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 14/PRT/M/2015 concerning Criteria and Determination of Status of Irrigation Areas in article 8, paragraph 1 of the regulation.

The criteria for the division of authority and responsibility for the development and management of irrigation can be seen in the table below:

Table 4. Criteria for Irrigation Regional Authority

No.	Area of Irrigation Area	Authority/Responsibility
1.	>3000 ha and across provinces	Central Government

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2.	1000 – 3000 ha and across districts	Provincial Government
3.	<1000 ha	District/City Government

Source: Permenpupr Number 14/PRT/M/2015

Irrigation Management Institutions (KPI) consist of three institutional elements, namely (1) institutional government agencies, both central government, provincial government and district/city government elements in charge of irrigation, (2) institutional associations of farmers using water, both P3A, GP3A, as well as IP3A and (3) Irrigation Commission institutions (Komir), both provincial Irrigation Commissions, inter-provincial Irrigation Commissions, and district/city Irrigation Commissions. The three institutional elements have different characteristics from one another when viewed in terms of their membership. Institutional government agencies, both the Central Government, provincial governments and district/city government elements in charge of irrigation, all members come from government elements, while the Irrigation Commission (Komir) institutions, both provincial Irrigation Commissions, inter-provincial Irrigation Commissions, and district/city Irrigation Commissions its members come from a combination of government and non-government elements (other stakeholders), while the institutional members of associations of farmers using water, both P3A, GP3A, and IP3A, all members come from elements of the farming community.

The purpose and objective of establishing an Irrigation Management Institution (KPI) are to create order in the management of irrigation networks built by the government. Even though it is the authority and responsibility of BWS Nusa Tenggara II, the implementation of water governance is carried out jointly with other stakeholders or in the current term (water governance). As a result of this long span of control, the construction of the reservoir is not sustainable, it even creates new problems such as erosion and sedimentation where only a few moments after the reservoir is built, it is immediately full of sediment so that it cannot be utilized. The absence of an operating and maintenance system often causes the reservoir to become a mere monument.

One of the fundamental problems in development in Indonesia, including in the context of the construction of reservoirs in the Sabu Raijua Regency, is the weak sustainability of good development projects carried out by the government. Many development projects experience mortality and create dependence on project resources after the end of the project's fiscal year. The reservoir development projects in Sabu Raijua Regency are no exception. The high mortality rate of development projects reflects the weak sustainability of the project (Tjokrowinoto, 1991, p. 5).

Factors Inhibiting the Sustainability of the Reservoir Development Project in Sabu Raijua Regency. Based on the results of research conducted by the author, it was found that several factors inhibiting the sustainability of the pond construction projects in Sabu Raijua Regency, namely as follows:

Budget. In the context of the construction of ponds in Sabu Raijua Regency, the budget used comes from APBD I and APBD II, but this budget is not sufficient for the construction of large-scale reservoirs of over 100,000 m3, while the construction of one large pond requires a budget of around Rp. 13 billion to Rp. 15 billion, but it needs to be understood that the APBD allocation is not only used for the benefit of the development of the ponds, so it results in a decrease in the degree of sustainability of the development of the ponds themselves.

The minimal budget allocation has caused most of the ponds built in Sabu Raijua Regency to be small to medium-scale reservoirs that can only hold 15,000 to 40,000 m3 of water so that they dry up faster when the dry season occurs. Even some of the ponds have experienced siltation, so they must be repaired. However, due to the lack of funds available allocated, the reservoirs are allowed to become projects with high mortality rates. These medium and small reservoirs are also only used as a source of drinking water for livestock and irrigation water for agriculture. In contrast, for water

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consumption, the community continues to use tank water at the cost of Rp. 250,000, so the sustainability of the pond development project in Sabu Raijua Regency needs to be improved due to the lack of government incentives to cooperate in the name of sustainable development and the lack of a strategy for allocating funds for priority programs.

Institutional Governance. Institutional governance in the utilization of these ponds is also a problem that can hamper the sustainability of the ponds in Sabu Raijua Regency with findings in the field that several large reservoirs such as the Deki, Guriola, Marepano, Lari Leokitu reservoirs are the main water sources that support the ponds. Small ponds in this district are ponds with governance responsibilities that are located far away in the provincial capital of NTT, namely BWS Nusa Tenggara II Region which results in a long span of institutional control resulting in unclear management of pond water and impacts on conflicts over distribution pond water for the community so that this long span of control should be one of the essential considerations that need to be considered because it is often a problem of coordination, namely the distance between one work unit and another. Another problem is the institutional governance that hinders the sustainability of the ponds in Sabu Raijua Regency, the distribution of tasks is uneven where the Sabu Raijua Regency PMD Service is only given the authority to empower the community around small ponds, while for large ones, the authority is given to the PUPR Service and the Public Works Agency. Agriculture thus also influences the community's effectiveness in the utilization of the reservoir.

In order to maintain the sustainability of the development of reservoirs in Sabu Raijua Regency, water as a common pool resource needs to be managed using an equal institutional model. According to Ostrom (1999), common pool resources are types of goods whose availability is limited, but many parties want to use them. Thus, the management of water retention ponds in Sabu Raijua Regency no longer needs to be handled and dominated by a single actor or institution such as BWS Nusa Tenggara II, but with a joint management approach (Ostrom, 1999; Berkes & Folke, 2009). This is important to facilitate collaboration between actors (Berkes, 2009; Carlsson & Sandström, 2008) and is formulated in terms of the division of powers and responsibilities between state actors and local user communities (farmers) (Carlsson & Berkes, 2005; Carlsson & Sandström, 2008).

Climate and Geographical Conditions. Regarding the need for water in NTT, the Head of the NTT Provincial Public Works Office stated that NTT needs 2 billion m3 per year and currently 539 million m3 is available. NTT experienced a deficit of up to 1.5 billion m3 (Pos Kupang, 2014). Thus, the water supply authorities (PU and BWS) stated that NTT needed 60 dams and 4,000 ponds to overcome this deficit (Pos Kupang, 2014). From this need until 2021, 1086 ponds have been built throughout the province of NTT. One of the districts that are very serious about building reservoirs to provide clean water for the people in NTT Province is Sabu Raijua Regency.

Until 2021, this outermost district in Indonesia has built hundreds of ponds to solve their water crisis problems. Regarding the condition and need for water in Sabu Raijua Regency, quite comprehensive research has been conducted and identified that the problem of Regency water in Sabu Raijua is caused by rainwater that falls quickly overlapping as surface runoff and immediately being dumped into the sea (Susilawati, 2013). The climate on Sabu Island is characterized by long dry spells with low rainfall. In a year only 14-116 rainy season days. Climatic conditions are related to its location which is quite close to the Australian Continent (Sabu Raijua In figures, 2012). This is the factor inhibiting the sustainability of the pond construction project in Indonesia's southernmost district.

Even though they work as farmers, the number of paddy fields in Sabu Raijua Regency is only 2.49%, the rest is a dry land with a percentage of 97.51% and with the number of rainy days only 100

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rainy days per year (BPS Sabu Raijua, 2021). So during the dry season, many rivers and streams dry up, so local residents can only use wells for their clean water supply.

The Sustainability Model of the Reservoir Development Project in Sabu Raijua Regency. Based on the results of the research and the inhibiting factors found by the authors, the authors recommend a model of sustainability for the development of ponds in Sabu Raijua Regency by questioning the following dimensions:

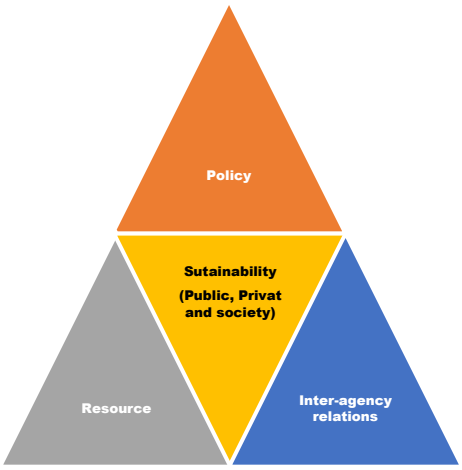
Policy Dimensions. (a) Information that includes adequate and relevant information about pond management to support the sustainability of pond development in Sabu Raijua Regency; (b) Strategies and policies regarding the existence of clear strategies and policies for managing the water reservoirs that have been built and their sustainability.

The Resource Dimension. (a) Financial which includes a transparent and well-functioning financial system for the sustainability of the ponds in Sabu Raijua Regency; (b) Instruments (tools) assessed by the existence of facilities that support the sustainability of the built ponds in Sabu Raijua Regency; (c) Knowledge and skills concerning needs related to knowledge and skills in managing water reservoirs that have been built and their sustainability.

Dimensions of Inter-Institutional Relations. (a) An organization in which the reservoir management organization has a clear division of roles and responsibilities and a short span of control to facilitate coordination and collaboration. In this case stakeholders must involve public institutions, private institutions and the community as policy beneficiaries; (b) Participation involving active participation in the pond water management institution by each stakeholder; (c) Community culture which includes the culture where the management of the reservoir water is carried out; (d) Integrity which talks about the integrity of the stakeholders in carrying out the management of the reservoir water; (e) Transparency which concerns whether water management operates transparently without discouraging or exaggerating other interested parties; (f) Communication is about intense communication between stakeholders in water management.

These question points can be used to evaluate the sustainability of the development of ponds in Sabu Raijua Regency or to see how far the sustainability principles have been implemented.

The sustainability model described by the author can be visualized as shown in Figure 1 below:



Source: Results of the author's analysis, 2022

Figure. 1 The Sustainability Model of the Reservoir Development Project in Sabu Raijua Regency

CONCLUSION

Based on the background, research results and discussion in the previous chapter, it can be concluded as follows:

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The Sustainability Management of the pond development project in Sabu Raijua Regency is analyzed using the Methodology in Sustainable Development Indicators (Department of Economic and Social Affairs, 2001: 14), which are described in 4 aspects which can be concluded as follows:

Social Aspect. The construction of ponds in Sabu Raiju Regency is very beneficial for community social activities because it is able to store water in the rainy season and then the water is used by the village during the dry season to meet needs in priority order, population, livestock and gardens or rice fields.

Economic Aspect. The construction of ponds in Sabu Raijua Regency has contributed to the development of productive businesses that generate economic value for the community in the agricultural sector, but several villages with small reservoir capacity have not been able to generate economic value for the community.

Environmental Aspect. The construction of the existing ponds in Sabu Raijua Regency does not consider environmental aspects as the main aspect but as supporting aspects that follow after the reservoirs are built, even after the ponds are built there is no allocation of funds for environmental management around the ponds.

Institutional Aspect. The long span of control of institutional governance has an impact on the failure to achieve the essence of the development of reservoirs for the availability of raw water in the regions. (a) Factors inhibiting the sustainability of the pond development project in Sabu Raijua Regency consist of a minimal budget, less effective institutional governance and climate and geographical conditions; (b) The sustainability of the pond development project in Sabu Raijua Regency can be evaluated using the sustainability model of the pond development project in Sabu Raijua Regency which the author formulated which includes 3 dimensions, namely the policy dimension, the resource dimension and the relationship dimension between institutions.

Based on the conclusions outlined, the authors recommend a number of things to support the sustainability of the pond development project in Sabu Raijua Regency as follows:

(a) To support the sustainability of the pond development project in Sabu Raijua Regency, it is necessary to provide abundant information, provide and involve many experts and resources, both in the form of facilities and funding, which are essential in making good pond management policies in Sabu Raijua Regency; (b) Improvement of integration, coordination and coherence is also needed for organizations related to the sustainability of built ponds at every level of government of Sabu Raijua Regency; (c) In the concept of sustainability, the task of managing the environment around the reservoir is no longer fully held by the government, so it needs to be handed over to experts (making a council) with the principle of opening the widest possible community participation; (d) Sustainability also requires public participation by utilizing multi-stakeholders or multi-actor elements in the management of the reservoir because it is a necessity accompanied by clarity of roles and functions of each actor in collaborative water management; (e) There is a need to balance supply and demand to maintain the sustainability of reservoir water resources which often results in conflicts. The supply and demand process also needs to pay attention to the sustainability of ecosystems and water sources and use a distribution justice approach and ecosystem sustainability and pay attention to human rights to water through public participation and management accountability.

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