



Review Article

## A Study of Clean Water Resources Development Policy in Atambua at Belu Regency, Indonesia

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**Citations:** Mau, M.L.P.I.B.M., Warsono, H. & Herawati, A.R. (2024). The Implementation of Clean Water Resources Development Policy: A Case Study of Atambua, Belu Regency, Indonesia. *Journal of Madani Society*, 3(1), 31-37.

Received: 8 January 2024

Revised: 22 March 2024

Accepted: 6 April 2024

Published: 30 April 2024

**Abstract:** Developing clean water resources is essential for policies addressing populations that lack access to safe potable water. Belu Regency is classified as underdeveloped, partially due to the community's limited capacity to manage existing water resources for basic needs. This study investigates the implementation of clean water resource development policies in the Belu Regency and identifies the supporting and inhibiting factors. Employing a descriptive qualitative methodology, this study involves stakeholders such as government entities, private sector organizations, businesses, and non-governmental organizations. Data collection encompasses library and field research through observations, interviews, and documentation. These findings indicate effective policy implementation; however, the objectives have not been fully achieved. Supporting factors include community and stakeholder participation while inhibiting factors include communication, resource capability, implementers' attitudes, and the bureaucratic structure. The study concluded that single-region management may result in conflicts of interest in water regulation between the residents of the two regions. Consequently, collaboration between the government and stakeholders is necessary, involving an integrated water resource management pattern with participation from the community, religious leaders, and business sector, based on UNDP provisions. This cooperation is feasible because of the strong emotional and cultural ties between the two countries' populations.

**Keywords:** Development policy; Clean water resources; Border Area; Atambua; Belu Regency.



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### 1. Introduction

There is a desire to learn how to examine the dynamics of people's lives in Indonesia - Timor Leste Border Region, Belu Regency. The Belu Regency area is included in the category of underdeveloped areas. One aspect of the backwardness is the limited ability of the community to manage existing clean water resources to meet basic needs. Meanwhile, the capacity of local governments is still very limited in assisting in managing existing clean water resources for the community (Stoa, 2014). There is a clean water management unit, the Regional Drinking Water Company (PDAM), the technical implementer of the Regional Government. Its role is still insufficient because it does not have technical or managerial expertise and is limited in financial operations. On the other hand, two potential

non-governmental organizations, namely socio-religious and the business world, are very deep in developing clean water resources to meet their own needs independently. From that, there is a relationship between small communities, existing social institutions, and the social world. In other words, there is an injustice in using existing water sources.

Apart from directing the blame to other parties, the most important thing is to take lessons or lessons from social, religious, and business institutions that are relatively successful in managing existing water resources so that they can meet their needs. It can even provide an abundance (overflow) to the surrounding community. This condition is a valuable input for the government at all levels to improve themselves and seriously pay attention to resource management as much as possible for the community's welfare. Every development policy regarding the management of water resources it is closely related to every aspect of life. The basic concepts of policy and management are interpreted from providing clean water to developing an irrigation system based on fair and equitable principles and even protecting ecosystem functions (Ruhl, 2010; Snellen & Schrevel, 2004; Verchick, 2003). Generally, as protection is provided for managing water resources, water uses include agriculture, household, recreation, and environmental activities. This is an aspect that would be needed so that the use of air remains based on the legal dimension that is just and provides maximum benefits for humans because that is the true authority of the state in terms of control and regulation of air resources. Article 33, paragraph (3) of the 1945 Constitution wants it so.

In this connection, in the post-modernism era, the New Order Government has taken it seriously and implemented it in a structured, systematic, mass, sustainable manner (TSMS). The important thing hidden behind this institutional formal-political response is the insight of individual leadership from a cross-cultural national leader as a determining factor. It means that they can and are willing to serve the basic needs of small communities (Narayan-Parker, 1993). In connection with the problems described, this research will examine the implementation of clean water resources development policies in the Belu Regency. Policy implementation is an important step in a policy process. Policies are just documents that do nothing if they are not implemented. This research will use Grindle's policy implementation theory.

According to Grindle, the theory of policy implementation is used to see the policy's content and context. The content of the policy is seen from (1) the interests of the target group, (2) the type of benefits, (3) the degree of desired change, (4) the location of decision making, (5) program implementers, and (6) the resources involved. The policy context can be seen from (1) the power, interests, and strategic actors involved, (2) the characteristics of the institution in power, (3) the level of compliance and response of the implementers. 15 The policy variables are used to see whether the policy is appropriate and provides benefits and how to implement and instrument the policy. The policy context is used to see whether the implementers and target groups have implemented and responded well to the policy. 14 (Abidin, 2002). This study aims to identify the implementation of the policy for the Clean Water Resources Development of the Rotiklot Dam, Belu Regency, East Nusa Tenggara Province, by the Central Implementing Institution.

## 2. Literature Review

Water Resources Management is based on the State Constitution, namely the 1945 Constitution, Article 33 paragraph (3), which states that the earth, water, and natural resources are controlled by the state and used as much as possible for the prosperity of the people. Brooks (2014) emphasizes that the characteristics of State control over water do not guarantee human rights to obtain water as individuals or business groups from the community to meet their basic needs, and to a certain extent, must comply with regulations. In terms of regulatory regulations, management remains with the state or government. Segerfeldt (2005) and Mirumachi (2011) stated that raw water crises often occur because of centralised management weakness, eliminating the participation of the community and the business world. In other words, adjustments must be made from the conventional single government pattern to the new Water Management pattern. Within that framework, the researcher shows the importance of a strong moral commitment from the parties to solve the problem of clean water, which is a basic human need for citizens, communities and nations.

Mahlknecht et al. (2008) added that conflicts of interest between cross-border water users between citizens of two countries, namely Mexico and the US, have land and water pools on river boundaries that are difficult to resolve through discussion or behind-the-scenes views between the parties. The solution is achieved by utilizing science and technology with technical expertise and relying on natural facts. In this connection, integrated water resources management as a catalyst for science and technology, which is focused more on the operationalization of competencies, can objectively create normative and natural balances so that the decisions made can be accepted by the parties to the dispute because of the excess and shortage of water. This forms a solid foundation between the parties and between the parties and the air authorities.

The context of Indonesia-Timor Leste. The diversity of physical territorial boundaries is the border that is dominated by air traffic, namely 10 watersheds, which originate in the southeast of Covalima Timor Leste, stretching to the middle of 10 sub-districts in Belu Regency, Indonesia, and downstream into Timor Leste. During the independence period, border residents had a conflict of interest in using water for irrigated agriculture from the same watershed. Still, the conflict was resolved by the two countries' governments in 2003 when technical teams from the two countries agreed on land and aquatic transboundary lines under the control of the United Nations. The point is to minimize past conflicts of

interest and to develop more targeted air and land cross-border cooperation for mutual benefit. Citizens of both countries confirmed the sustainability of the relationship and cooperation. (Sanlath & Masila, 2020) found that air management has implemented two strategies, namely pricing and non-pricing.

The second strategy aims to increase public awareness around water conservancy issues. Efforts are also focused on changing people's attitudes towards air regulation. This mainly aims to create a lifestyle and culture of preserving water in Singaporeans. For this reason, a conducive environment is built, such as requiring air labeling to help consumers make informed decisions regarding air-related products. Consumers' efforts on water conservation are also rewarded by providing gifts to motivate them. Non-price strategies are also implemented by setting a price, especially to control wastewater. In this case Singapore sets the full cost of water and implements special tariffs that reflect the precious value of air and its scarcity. Due to the higher fees charged, consumers will naturally try to follow the initial tariff if usage exceeds the first block. The utilisation results over time do not exceed the target, even decrease due to savings. Because the supply of water is from outside, namely Malaysia, then the import of water has decreased rationally.

From these ideal conditions, three interesting lessons can be learned; 1) Positive results of air management are achieved through the implementation of a comprehensive management approach of the two strategies; 2) Strong political commitment and dedication of the government to realize sustainable and consistent efforts in managing water demand and supply; 3) Setting the full cost of water can be a powerful tool for promoting water conservation, as well as recording revenues that can be used to improve water management. It should be noted that the successful implementation of Singapore learning depends on various contexts and factors, including institutional, economic, social and geographic. For example, for economically weak groups of people, or those whose geographical area and population are large and dense, special treatments such as gathering political support and building public trust in the existing government, honesty, accountability, and active participation of all parties involved are achieved.

Researchers launched three types of research analysis on water governance based on the research results by Mingjiang Deng et al. (2012) in 20 Asian countries. The three frameworks are public sector economics, institutional economics and public administration perspectives. From the research, the general problems of Water Governance are the accountability of the Water Sector Manager, basic policies and policies for water management, financial/investment management, management capacity, regulatory mechanisms and accountability. The obstacles are regulatory regulations, accountability and the functional capacity of managers, which are inherent in controlling or becoming weaknesses in the Government sector. And because of that, it creates public distrust of the government. In other words, there is still insecurity of air resources due to conflicts of interest on the part of the parties that cancel each other out. The authors of the journal, relying on references, express the importance of exploring new horizons for the contemporary perspective on air by asking why we should pay special attention to water resources. The explanation is: "The physical world is in dire need of air, which is related to many aspects of global social, economic and political life" (United Nations Water, 2014). Again, they do not care about the economic aspect of water but also how air is managed with the principles of environmental policy, sustainability, and fair distribution.

The inherent meaning behind it is that the management of water resources is simply simplified because interplaying factors such as the dynamics between demand and supply, which are influenced by water availability in the environment, also determine the socio-economic intensity. The whole is not related in a circular cycle, so if one part is missing, there will be complicated problems in water resource management. Therefore, it is necessary to examine the emergence of the water management concept more deeply. The main change in the paradigm shift from government to government is that the state is no longer the only dominant actor in making a public policy. Actors and institutions play an important role in the policy process (Cahn, 2012; Khan et al., 2018; Radaelli, 1995). In the governance paradigm, decision or policy making involves all actors: the government, the private sector and the community. Governance is the effective implementation of socially acceptable and, therefore, highly political allocations of resources (Crook, 2003); (Rogers & Hall, 2003).

Governance is a more inclusive concept than the previous concept. Along with developing the governance paradigm and the crucial importance of the inherent environmental issue of air resources, sustainable development appears to adopt the governance paradigm. It is believed that the progress of this paradigm will facilitate the development of water resources and their conservation so that their use is multipurpose and sustainable. This paradigm is a framework for the government's policies in developing multipurpose water resources in the Belu Regency.

- This is in accordance with UNDP's water policy, which defines water governance as a range of administrative, political, social, and economic systems to manage and develop water resources at various levels of society. (United Nations Water, 2014).
- Water Governance is also the implementation and development of norms, principles, rules, incentives, information, and infrastructure to encourage changes in the behavior of actors at the global level in water governance (Pahl-Wostl, 2009).
- Water Governance is defined as a systemic perspective, and government focus on social actors, transparency to access values and goals and a comprehensive perspective on water resources sustainability ((Larson et al., 2015).

- Water Governance is the political domain (Joy et al., 2014). Further offers three approaches to the Water Management Analysis framework: public sector economics, institutional economics and public administration, each with details (Mingjiang Deng et al., 2012).

That is why there are unique temporary Water Managers that can do better, as is the case in the US, Mexico and Singapore. Research points to employees who focus on organizational governance and air management as determination. While the above review is more theoretical, in practice, specifications can be found in regions in Indonesia, where the basic elements of water structures are the same as above, which can be assessed by five empirical factors, namely: strong water administration and organization; 1) The existence of systemic air law which is still firmly rooted in the community (customary law) both natural and social, 2) Economic analysis and adequate financial support, 3) System planning capacity and political will of the Regional Government that is qualified in the management of water resources available, 4) The participation of the parties, urban and rural which is based on trust, accountability and accountability. In addition, the above modeling variants of the Dutch Water Governance model are also relevant for the research area in Belu Regency. Keith Philips, et al: "Water Scarcity Potentially Drains Texas Economy". The natural phenomenon of drought experienced by the people of Texas, USA, did not dampen their struggle for life, but on the contrary, renewed awareness of the availability of air as one of the most pressing issues that the country must face.

Air supply is shrinking, demand is projected to increase with Texas' number of permanent residents doubling by 2047. Agriculture consumes a share of the air supply. With the development of the country's metropolitan areas, the urban population's demand for air is intensifying. This condition means that the water allocation policy becomes important. Property rights and markets play a decisive role in efficiently allocating air by applying ownership and prices to describe air scarcity. For example, the agricultural air supply from 60% was reduced to 21% in 2011 and 2012, and vice versa for the allocation of other needs such as the urban environment and industry should be increased, thereby improving balances. For this reason, the pattern of water allocation must be adjusted to the development of the air market. The city's people are forced to collect supplies to anticipate drought attacks. The farmers will also not be harmed because the regulatory policies mutually agreed upon between the community, water agencies and the Federal/state Government through a special Water Act, are clear and detailed. So, all parties get social and environmental economic benefits/benefits. What is unique is that there is a novel combination of supply and demand strategies to meet urban needs. On the other hand, the reduced extent of agricultural problems, due to the use of water, increases the irrigation system's efficiency. Transfer of water rights from farmers to urban users, increases farmers' income multiple times because of the large purchasing power of urban people.

The specific role of the state here is to allocate the right to take water (surface water pumping) and display it as private property, after being given sufficient instructions in terms of how much to use it. Under control of low price and efficient use of air contract. This air market is profitable because air is allocated to be directed to highly productive uses, which helps overcome air scarcity. In summary, the realization of value as a rare commodity, will also promote conservation. People will try to make money by selling unused air or save by limiting purchases. Through market prices, people discover which needs take precedence. The context of the research on water resources in the case of Belu Regency, the facilities/infrastructure of the dam that was built, also contains multipurpose benefits, but prioritizes the fulfillment of clean water needs and the development of irrigation. So far, no tax burden has been imposed on users (based on interviews with the air authority, namely Balai Sungai NTT Region 2 in Kupang. Hidayat et al., 2019 Research Lecturer Research Results on the Effects of Implementing Agricultural Sector Policies on Irrigation and standardized government coordination on WUAs in the District Bandung shows that these two factors together have a positive effect on the participation of Water-Using Farmers in Bandung Regency, along with suggestions that persuasive relationships between program-related agencies are further improved to provide added value to the water-using farming community. The coordination factor that suggests the research as stated is relevant to the focus of research on water resources in Bandung and its utilization in Belu Regency, namely the increase in the legal basis of Law Number 7 of 2004, which has undergone changes based on the decision of the Court ah Constitution No. 85 / PUU-XI / 2013.

These changes concern the non-fulfillment of the 6 basic principles of water resources management. With the Constitutional Court's decision, the government re-enacted the RI Law no. 11 of 1974 concerning Irrigation. One of the points of the amendment (item 4) states that the state's supervision and control is absolute. On the other hand, laws are enforced to provide broad space for the community and existing water institutions to access and utilize available water resources, including the conservation of existing water sources (ecosystems). The Rotiklot Water Resources Management System has relatively adapted to the changes so far, with two priority scales, namely clean water and irrigation.

### 3. Materials and Methods

This study focuses on water management policies and overall water management activities carried out by the government. The solution is a systematic therapy: input, process, output, and outcome (multipurpose and sustainable).

Locations are places where physical and social situations will be researched. In this connection are the NTT II River Basin Center, NTT Province, the case of Belu Regency in Atambua, Rotiklot Dam. Article on water resources management. Primary and Secondary Data are sourced from data obtained directly from the Head of BWS NTT II, and all its technical components in Kupang and Belu District, including the community in the field and the project. Secondary data is sourced from the relevant agency institutions related to the program at the provincial, district, sub-district, and village levels. Purposive sampling informants are a source of data because they are the main sources that control the entire series of problems and provide solutions with related agencies/services at all levels of government: Province, Regency, District and Villages. Data collection techniques used are interviews, participant observation and documentation at the main institutions and related agencies/services at the provincial and district, sub-district and village levels where the project program is located. The basic description of the relatively global image, concept, and application of water governance is described above, and it cannot be separated from the local situation and conditions in a country or region. This means that general principles are met, and adjustments are made here and there. Similarly, the article on water.

Governance in Indonesia. The perspective of water resources development in the case of Belu Regency, in principle guides the five foundations of an ideal water structure. In its application, it is adapted to local wisdom. With these five building materials the research examines:

1. Administration and organization of water management;
2. The legal basis of water and its relation to other laws;
3. Financing system and economic analysis;
4. Planning capacity and political will of the Central Government and Regional Governments;
5. Participation of the parties;
6. This is based on the (Baumgartner & Pahl-Wostl, 2013) systematic analysis framework: input, process, output and outcome. (Ummah & Kusumah, 2020). These five factors are suspected to determine the effectiveness of the Water Resources Development Policy Implementation in Atambua, Belu Regency, East Nusa Tenggara.

#### 4. Results and Discussion

Water is a basic human need. As a public good, the government is given the power to regulate and manage this vital resource so that it can be used as much as possible for the prosperity of the people in a relatively just and equitable manner. The state constitution in the 1945 Constitution, Article 33 paragraph (3) confirms the above. Furthermore, Law Number 7 of 2004 concerning the Management of Water Resources defines Water Resources as water, resources and water resources contained therein. The types are all water found on the ground surface, groundwater, rainwater, and even sea water on land. Then the meaning of water source is a place or container of natural or artificial water above or below the ground surface. Here, an artificial water container or dam known as the Water Dam was built between the Water Dams built in East Nusa Tenggara, precisely in Fatuk Village, Kakuluk District, Belu Regency. Built in 2015 to 2019 and inaugurated by President Joko Widodo on May 20, 2019. Further use will begin in early 2020. The ecoregion of this area is the watershed, which is one of 5 watersheds in Belu, and at the Rotiklot point, there was a dam to accommodate the flow of water 5 tributaries in the upstream and work to collect rainwater.

The construction of this dam went through a long process, namely the commencement of a study by the Belu District Government Technical Team in 2010 and submitted to the Central Government to obtain legitimacy for the support of the APBN and the Central Professional Technical Team. Many factors are considered when submitting programs/projects at the Central level by the Belu Regency Government, namely extreme natural limitations, social economy and vulnerable air institutions. It is known that this area is still categorized as an underdeveloped or poor area. It is ironic when it is seen that the potential water resources collect as many as 8 watersheds, 43 living springs. The number of poor people is 33.095% of the total population of 213,596, the situation in 2019. The poverty line is Rp. 319,280, which means, the cost of living / income per capita / per month is in the range below that, while the % (percentage) of the poor is 15.95%. In the previous year, it was recorded at 15.82%. This means that there has been an increase in the percentage of the poor by 0.10%.

However, the percentage increase was due to the COVID-19 pandemic. Returning to the main problem, it is necessary to examine the main factors that trigger the worsening of this situation, in fact hydro political vulnerability which is characterized by (i) Climate variability and extreme rainfall, namely excessive drought due to a long dry season, drastic rains causing flash floods. (ii) Gap Socio-hydrological, namely the local government's provision of services in water regulation. (iii) Economic inequality is the number of people without economic growth who cannot access development and develop air resources independently. (iv) In addition, the pattern of traditional agricultural subsystems, shifting and slash-and-burn methods, triggers the acceleration of the drying of groundwater and forest sources (deforestation).

On this basis, and because all ecoregions' watersheds naturally recognize administrative boundaries, including all Belu Regency watersheds characterized by cross-border characteristics, it is proposed that this be repeated with the

center because it is the absolute authority of the Central Government. In operational tactics and technical administration, the Central Government always involves the Regional Government, namely the Province, Regency/City, Village and community participation as a form of concurrency of authority. Regarding technical work, expertise in the physical construction of the dam is handled by the Nusa Tenggara II River Basin Center, which is directly supervised by the Directorate of Water Resources, Ministry of Public Works and Public Housing. However, in technical-operational and technical aspects, it always involves the Regional Government, namely the related OPDs. So, based on the field study of the Central Technical Team and considering the suggestions for solving the problems mentioned above by the Belu Regency Technical Team, this Program/ Project is operated to realize multipurpose benefits, namely, (i) Flood control in the downstream area of Rotiklot and its surroundings. (ii) Serving raw water for the Port City of Atapupu and its surroundings. (iii) Serving the irrigation area of Ainiba. (iv) Micro Hydro Power Plant (PLTMH) and (v) Atambua City Tourism Destinations and Border Area.

There is a basic meaning behind this dam's physical building: (i) From a budgeting perspective, the construction cost of this dam is around 500 billion. (ii) From the economic side, high efficiency due to the application of technology systems provides added value to enhance and accelerate advanced economic growth because of the sustainable multiplier effect and (ii) this high technology Mexico calls Water Regeneration and Reuse Systems Waste (WRRS, idem P.76). The processing place is called the Flower or Waste-Water Treatment Plant Water Treatment Plant (WWTPs). The main target is producing quality clean water for household consumption, which is free of pollutants and protects the sustainable environment, along with water for rice and corn irrigation agriculture and the development of horticultural crops such as vegetables and fruits. To a certain extent, this pattern exists and is often applied by the Government in Rotiklot, Belu Regency. So, in this way, it is believed to minimize risks and increase opportunities for sustainable development.

## 5. Conclusions

The development of clean water resources is critical to policy implementation in communities to ensure access to safe and adequate potable water. Belu Regency, a border district, is classified as an underdeveloped area. One aspect of this underdevelopment is the limited availability of water and the restricted capacity of the community to manage existing clean water resources to meet basic needs. The results indicate that the policy for implementing clean water resource development in the Belu Regency is effective. However, implementation aligns with this objective, and the development of clean water resources is not optimal. The supporting factors for policy implementation are the participation and support of the community and stakeholders. The inhibiting factors include communication, resource capability, and the attitudes of implementers and employees. This conclusion suggests that management by a single region may lead to conflicts of interest in water regulation between the residents of the two regions. Consequently, there is a need for collaboration and cooperation between the government and stakeholders to establish an integrated water resource management pattern. This approach should involve the participation of religious leaders and the business sector in both countries, utilizing the general provisions of the UNDP (UN). This cooperation presents an opportunity owing to the strong cultural and emotional connections between the two countries' populations.

**Author Contributions:** Conceptualization, M.L.P.I.B.M. and H.W.; methodology, M.L.P.I.B.M.; software, M.L.P.I.B.M.; validation, H.W. and A.R.H.; formal analysis, M.L.P.I.B.M. and H.W.; investigation, M.L.P.I.B.M., H.W. and A.R.H.; resources, M.L.P.I.B.M.; data curation, H.W. and A.R.H.; writing—original draft preparation, M.L.P.I.B.M. and H.W.; writing—review and editing, M.L.P.I.B.M., H.W. and A.R.H.; visualization, M.L.P.I.B.M.; supervision, H.W. and A.R.H.; project administration, M.L.P.I.B.M. and H.W.; funding acquisition, M.L.P.I.B.M. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Acknowledgments:** The authors would like to thank Universitas Diponegoro, Semarang, Indonesia, for supporting this research and publication. The authors would also like to thank the reviewers for their constructive comments and suggestions.

**Conflicts of Interest:** The authors declare no conflict of interest.

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