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Inhibiting Factors for Collaborative Water Governance: A Case Study of Mount Merapi Ecosystem in Yogyakarta, Indonesia

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ABSTRACT

The ecosystem around Mount Merapi, Indonesia, has many potential water sources. Still, poor management and a decrease in springs may lead to a water crisis in 2029 that could affect millions of residents in Yogyakarta, Indonesia. This study aims to identify the inhibiting factors for collaborative water governance under the threat of a water crisis. This research used qualitative descriptive research with data collected through interviews, documents, and observations. The analysis involved data reduction, presentation, and conclusion drawing/verification to explore Yogyakarta's water management aspects. The study suggests that collaborative water governance involving multiple stakeholders, including non-government actors, is crucial for effective water management. The local government dominates water management, while private and community groups have minimal involvement. There is a need for more specific regulations that comprehensively regulate water management and conservation efforts in the regions. Water management in Yogyakarta is classified under traditional governance due to the limited involvement of non-government actors and the minimal participation space provided by the regional government. A comprehensive regulation is needed to address water conservation, and complete collaboration among stakeholders is necessary to overcome obstacles in the water management crisis.

INTRODUCTION

The ecosystem around Mount Merapi in Yogyakarta, Indonesia, provides prosperity through water sources. Residents use the water source in three areas: Sleman Regency, Yogyakarta City, and Bantul Regency. Referring to data from the Water Resources Sector, the Department of Public Works, Sleman Regency, has 600 springs. Of that number, only 182 springs are used. The Public Works Department also said that Sleman Regency has 2,082 weirs. From that figure, the number of public works dams is 853, and there are 1,229 area village weirs.

Despite having abundant potential water sources, Sleman Regency and Yogyakarta City are in the shadow of a water crisis. The Sleman local government has identified a decrease in the number of springs. During the celebration of World Water Day in 2019, the Sleman local government recorded 40 threatened water sources. The subsidence of the groundwater level further clarifies the shadow of the water crisis. Data from the Department of Public Works, Energy, and Mineral Resources of DIY noted that the decline in groundwater levels in Yogyakarta reached 30 cm per year. Meanwhile, in Sleman, the decline occurred between 15 and 30 cm per year.

The groundwater subsidence occurred at 28 points in the Yogyakarta-Sleman groundwater basin. Some are in Mlati District, Ngemplak District, Godean District, Moyudan District, Umbulharjo District, Kotagede District, and Mergangsan District. The study of the Water Resources Department of the Sleman Public Works Department also leads to the same phenomenon. Based on the water balance analysis results, Sleman Regency is expected to experience a water crisis in 2029. If this is not addressed, millions of Sleman and Yogyakarta City residents will be threatened with a water crisis.

Water is interpreted as a collective good. However, water can be a commodity. Endaryanta (2007) explains that water is a private good, sometimes related to local commodification. Water privatization and the relationship between the

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private sector and the government in granting a spring water license can impact the local community's socioeconomics.

Poor water management can also trigger water crises at the local level. This water management is related to local government institutions and the issue of the need for more stakeholder involvement in water management (Basco-Carrera, 2018). Related to water management, the concept of water governance is believed to overcome the problem of water availability for the public. This concept emphasizes collaboration, cooperation, and participation from the government, the community, and the private sector (Blanc et al., 2018). So, this study aims to find out how to implement inhibiting factors for Collaborative Water Governance in Sleman Regency and Yogyakarta City during the threat of a water crisis. The author's contribution to this research is to fill the void in the study of the implementation of water governance at the local level, which has yet to be widely studied.

Studies on implementing water governance, especially at the local level, have focused more on dissecting or studying water governance theoretically. The authors explain the diverse water governance concept (Ummah & Kusumah, 2020). Some of the models offered involve collaborative water governance (Bakker & Cohan, 2011). The Governance System Model (Pozzoli et al., 2014) and the Three-Layer Water Governance Model proposed by the Dutch Water Governance Center (Havekes et al., 2013).

At the level of the big concept, collaborative governance is part of the water governance approach. The concept of "water governance" is inextricably linked to the paradigm shift in government governance. The state is no longer the leading actor in managing and making public policies in the governance paradigm. Three actors manage the public sector: the government, private, and community. *The UN defines "water governance"* as the range of political, social, economic, and administrative systems to develop and manage water resources and deliver water services at different levels of society (UN-Water, 2014). In the context of public policy, "water governance" is a concept that brings together how water management policies are not only the domain of the government but also require the presence of civil society and the private sector (Donoso, 2018).

Araral & Wang (2013) proposed that water governance has several analytical framework approaches, including (a) Public Sector economics, which can be understood through market and government failures. Market failure occurs when dependence on free markets leads to inefficient social outcomes, (b) Institutional Economics is based on the transaction/ contract, (c) Public Administration focuses on organizational and management governance, which are the determinants of the water management bureaucracy, such as member capacity, finance, and human resource management.

Meanwhile, Rogers and Hall (2003) formulate the principles of effective *water governance* using (1) Approach; and (2) Performance and Implementation. For Approach Principles, it includes: (a) Open and transparent: Institutions must be open in their work and transparent in the policy formulation stage, including financial matters; (b) Inclusive and communicative: government policies must ensure a vast open space for public participation; (c) Coherent and integrative: Coherence requires political leadership in complex water management systems; (d) Fair and ethical: Every actor should have equal opportunity. In addition, Performance and Implementation Principles include (a) Accountability: Every processing stage at the executive and legislative levels must be clear; (b) Efficient: balanced political, social, economic, and environmental aspects; (c) Responsive and sustainable: Policy is a basic need, has a purpose, and impacts the future.

UN-Water in 2014 also formulated water governance indicators, namely: (1) Institutional capacity, which includes effective water management institutions/institutions and has agreed rules both nationally and internationally; (2) Ability to formulate and implement participatory-based policies; (3) Availability of specific legal instruments and having a planned implementation strategy; (4) Beneficial for all levels of society.

To meet these indicators, UN-Water also has a target of strengthening water governance as well as a prescription against obstacles to the implementation of the governance paradigm, namely (a) Public participation in policy-making; (b) Satisfactory distribution of water and sanitation services; (c) Accountable and sustainable; (d) Create a solid framework of rules; (e) Transfer knowledge and developing technological capabilities.

Meanwhile, according to Bakker and Cohen (2011), you must implement a collaborative water governance model to implement water governance. According to Bakker and Cohen, the requirements for implementing collaborative water governance are that multiple stakeholders, including non-government organizations, are involved in high-intensity decision-making. There is clear and significant delegation, including for non-governmental actors related to water management.

METHOD

This research uses an approach to qualitative descriptive study. Data is collected in three ways: interviews, documents, and observations (Arikunto, 2005; Moleong, 2013). In-depth interviews were conducted with key informants from local government representatives, civil society elements, and private parties related to water management in Sleman Regency and Yogyakarta City. The data collected in this interview will explore several aspects related to water management in the two areas above. In the first aspect, there is a delegation of tasks in water governance. Second, does water management involve many stakeholders, including communities and NGOs concerned about water? Third, explore

the extent to which stakeholders in the Sleman Regency and Yogyakarta City governments openly participate.

Meanwhile, the documents studied are mainly regional-level regulations (Regulation of Regional Regulations, Regional Regulations of Sub-districts, and Mayor Regulations) related to water management. During the observation, the researcher will look at the condition of the previously mapped area threatened by the water crisis in the Sleman Regency and Yogyakarta City.

After data collection, the next step was data analysis. Qualitative data analysis activities have three streams: data reduction, data presentation, and conclusion drawing/verification (Miles and Huberman, 1992; Sugiyono, 2014). First, data reduction means selecting or focusing on the data found in the field. Data reduction takes place continuously during a qualitative research-oriented project. Second, is data presentation, when a set of information is compiled, thus giving the possibility of concluding. The expression of qualitative data is in the form of narrative text in the form of field notes supported by photographs and similar images. Finally, the analysis results can be used to take action (Cresswell, 2014). This study concluded by taking the essence of a series of categories of research results based on observations and interviews.

FINDINGS AND DISCUSSION

A collaborative water governance model is needed to implement water governance. The requirements for collaborative water governance are met when multiple stakeholders, including non-government organizations, are involved in high-intensity decision-making (Bakker and Cohen, 2011). There is clear and significant delegation, including for non-governmental actors related to water management.

A. Actor Mapping

Analyzing the actors with interest (stakeholders) in water management in Sleman Regency and Yogyakarta City is part of the results of this study. Referring to Law No. 17 of 2019 concerning Water Resources, the state appears dominant in water management (LEAP UNEP, 2019). It is stated in Article 9, Paragraph 1, that the Central Government and Regional Governments (Provincial and Regency/City) are given the authority to regulate and manage water resources. In Sleman Regency and Yogyakarta City Special Region, the local government is the leading actor in water management. Several Regional Apparatus Organizations and Regional Owned Enterprises are essential actors in water management. Regional Apparatus Organizations that deal with or have the authority to manage water are the Public Works, Housing and Settlement Areas Office, and the Environment Agency. At the same time, the Regional Owned Enterprises involved are Regional Drinking Water Companies. Apart from actors from the local government, other parties are also interested in water management, both in Sleman and Yogyakarta City. In general, actors outside the government can be grouped into two. The two actors are the private sector and the community/Non-Government Organizations (NGOs)

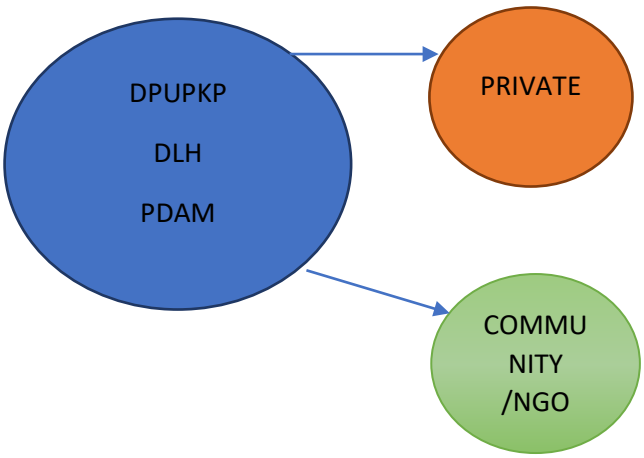

Figure 1. Local Actors in Water Management in Yogyakarta.

During the threat of a water crisis, the Regional Government is the leading actor in water management in Sleman and Yogyakarta City (Figure 1). A large blue circle indicates this. Meanwhile, private and community groups/NGOs do not intersect. Water management should involve multiple actors in collaborative water governance (Bakker and Cohen, 2011). It is not only limited to involving many actors but each interested party is involved in water management. As suggested, clean water development in an area can also be carried out by forming partnerships through corporate social responsibility (CSR) programs (Risky et al., 2022).

B. Public Participation

Both Good Water Governance and Collaborative Water Governance require public participation in water management. Public involvement is minimal in water management in Sleman Regency and Yogyakarta City. In water management, the Banyu Bening Community, one NGO concerned with water conservation, sees the local government as positioning residents as objects, not subjects. Having been active since 2012, the Head of the Banyu Bening Community, Sri Wahyuningsih, admitted that he is rarely involved in programs related to water management. The Banyu Bening community also views the problem of the threat of a water crisis in DIY as something real if the local government does not carry out mitigation and conservation. The massive construction of hotels in the Sleman area is one of the contributors to the threat of the water crisis. Based on data from the Central Statistics Agency for 2017, the five-star hotels in Sleman Regency are in Depok District. In total, there are 19 starred hotels and 33 non-starred hotels. The Central Statistics Agency also noted that Depok District has 103 minimarkets, 16 supermarkets or hypermarkets, and two shopping centers. Nastain et al. (2022) state that the government's role must be maximized in developing regional potential, including community empowerment programs.

The Regional Government admits that the authority issue makes public involvement not optimal. The Head of Water Resources, Public Works, Housing, and Settlement Areas, Muhammad Arif Asnawi, highlighted the local government's authority in water management. According to him, the new regulation on Water Resources reduces the power of the Regional Government. Currently, the authority for water management is mainly in the hands of the central and provincial governments. Thus, the local government feels its authority is to support the central and provincial governments. Regarding public involvement, the agency claimed to involve the local community in water management around the reservoir (Embung Management Farmers Organization) and the springs (Spring Management Organization).

C. Regulatory Clarity

Clarity of regulations (Regional Regulations/Mayor Regulations/Regent's Regulations) is essential in implementing Good and Collaborative Water Governance. Regulations serve as guidelines for water management. The research study has no derivative rules from Law No. 17 of 2019 concerning Water Resources. For example, in Sleman Regency, regulations related to water management are Per Regional Regulation Number 6 of 2013 concerning Irrigation. Meanwhile, Yogyakarta City recently issued Mayor Regulation No. 18 of 2022 concerning the Provision of Business Raw Water in the City of Yogyakarta. There are two notes related to regulations related to water management in Sleman and Yogyakarta City. First, no Regional Regulation is a derivative of Law No. 17 of 2019 concerning Water Resources. Second, Regional and Mayor Regulations regulations must comprehensively regulate water management, including water conservation efforts, in Sleman and Yogyakarta Regencies.

CONCLUSION

Referring to the application model of Collaborative Water Governance with several existing indicators (Baker & Cohen, 2011), it can be concluded that water management in Sleman Regency and Yogyakarta City is included in Traditional Governance. This conclusion is based on the need for more involvement of actors outside the government in water management. In Yogyakarta City and Sleman Regency, the Regional Government appears dominant in water management matters. In particular, community groups or NGOs play an insignificant role. Regarding participation, the space the Regional Government provides to involve public elements is minimal. Meanwhile, in the regulatory aspect, a comprehensive regulation needs to be implemented for governance, including water conservation in Sleman Regency and Yogyakarta City.

Then, in line with that, when viewed from the perspective of development communication, of course, complete collaboration is needed from stakeholders as the subject of its development. Communication is essential to development (Salim et al., 2022). The concept of sustainable development in the current situation can also be used as a basis for maximizing various crucial obstacles related to the crisis in water management in the Special Region of Yogyakarta, especially from the process of planning and implementation to the evaluation of development by the government, private sector, or community. This condition is also similar to one of the development communication strategies according to the Academy for Educational Development (AED) (Maharani, 2012), namely a participatory strategy that focuses more on one's experience and participation as a piece of knowledge or skill.

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