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ANALYSIS OF LEGAL ASPECTS AND GOVERNMENT POLICY IN THE MANAGEMENT OF RIVER WATER QUALITY(CASE STUDY CISADANE RIVER, TANGERANG CITY)

Idi Namara[1,a], Djoko M Hartono[2,b],
Ayomi Dita Rarasati[3,c], Fadhila Muhammad LT[4,d]

*Corresponding author:
idi.namara@ui.ac.id

[1,2,3,4]Dept of Civil Engineering, Universitas Indonesia, Depok, Indonesia

[a]idi.namara@ui.ac.id, [b]djokomh@eng.ui.ac.id, [c]ayomi@eng.ui.ac.id,
[d]fadhila.muhammad@ui.ac.id

Abstract

The purpose of this study is to determine the level effectiveness, implementation and sustainability of three hierarchial regulations related to Water Quality management at Cisadane River, Tangerang City. Regulations related to the quality of river water that will be studied is the Government Regulation No. 82/2001 [1] on Management of Water Quality and Water Pollution Control, Banten Provincial Regulation No. 10/2012 [2] on Protection and Environmental Management, and Tangerang City Regional Regulation No. 2/2013 [3] on Management of Water Quality and Water Pollution Control. Reviewed aspects is the role of government, institutional management, technical operations, financial and funding, and public participations. Overall aspects analized using SWOT method. The result of this study show that the regulations related to the management of river water quality have not been able to be applied properly. Evaluation need to be done thorough of all stakeholders so that the rule can be applied, especially given that the Province of Banten not have regulations on water quality management, and given the Government Regulation No. 82/2001 [1] has to be revised.

Keywords: Cisadane Watershed; River water quality control; Government policy

1.0 INTRODUCTION

Problems that occur along Cisadane rivershed are erosion, uncontrolled public space, water availability, fluctuations in water flow in the dry season and the rainy season, and problems about quality of the river water. Cisadane River located in the west of Java through two provinces and five District/City, Bogor Regency and Bogor City in West Java Provinces, and South Tangerang City, Tangerang City and Tangerang Regency of Banten Provinces. Thus, Cisadane river management is under the responsibility of the central government [4]. This research will be focussed on Cisadane water quality management in downstream area, which located in Tangerang City.

Tangerang City is located at 106°036'- 106°042' and 6°06 '- 6°013' S. Tangerang City has an area of 184.24 km^2 (including Soekarno Hatta International Airport, 19.69 km ^{2}). Tangerang City is divided into 13 districts

and 104 village, where 5 (five) District are located in the of Cisadane basin. These districts are Cibodas, Pinang, Karawaci, Tangerang, and Neglasari, as shown in Fig.1.

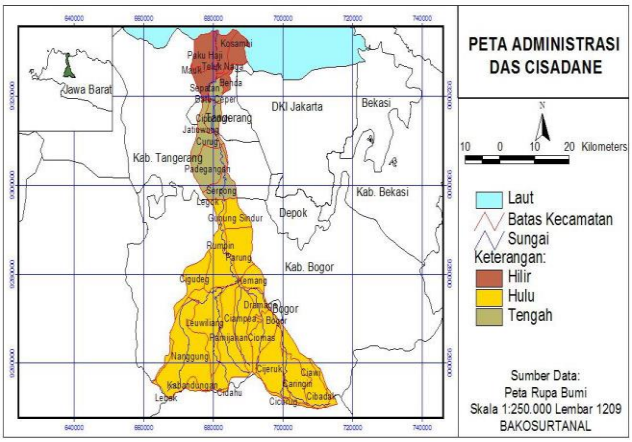

Fig. 1. Location of research in DAS Cisadane Segment Kota Tangerang (source: Bakosurtanal)

Until now, no single authorities arranging the role of the provincial government and city governments in water quality management. Standard rules and framework about water river utilization also not available. Until now, the management of Cisadane water quality still segmented.

This research is motivated by the poor quality of Cisadane water river in Tangerang City of Banten province. Although the Governments (central and local Government) have issued rules about the management of rivers and river water quality control, the level of effectiveness in the implementation of the policy is still considered low. Regulations related to the quality of river water that will be studied is the Government Regulation No. 82/2001 [1] on the Management of Water Quality and Water Pollution Control, Banten Provincial Regulation No. 10/2012 on the Protection and Environmental Management [2], and Tangerang Regional Regulation No. 2/2013 [3] on the Management of Water Quality and Water Pollution Control. The purpose of this study was to determine the hierarchical relationship regulations, effectiveness of implementation, and sustainability of these regulations.

Aspects that will be reviewed is the role of government, institutional management, technical operations, finance, and public participation in the implementation of predefined rules. Overall descriptive aspects will be qualitatively analyzed using SWOT analysis method.

2.0 RESULTS AND DISCUSSION

Based on Focussed Group Disscussion (FGD) and a survey conducted, the data obtained and examined using SWOT analysis. SWOT analysis is conducted to identified and evaluate the internal (stength and weakness) and the external factors (opportunity and treaths) in application of regulations.

Table 1. Strength Analysis

No.	Internal Factors	Mean Score
1	**Institutional Aspects**	
1.1	Related agencies that oversee the implementation of water quality management regulations already exist	2.27
1.2	Federal Regulations on water quality management and water pollution control already exist	2.27
1.3	Local Regulations on water quality management and water pollution control already exist	2.80
1.4	Tangerang City has enacted regulations on the management of domestic waste	2.53
1.5	Tangerang City has declared Cisadane riverbank as a protected area	2.13
2	**Financial Aspects**	
2.1	Funding support from national budget is available	2.60
2.2	Funding support from local government is available	2.53
2.3	Funding income from retribution for industrial waste water	2.60
2.4	Funding income from the usage of raw water source for industry	2.40
3	**Technical and Operational Aspects**	
3.1	Water quality management support facilities have been built gradually	2.33
3.2	A communal bathrooms in watershed area already built in rivershed area	2.67
3.3	Most industrial facilities have a wastewater treatment facility	2.33
3.4	A communal wastewater treatment facility already built	2.33
3.5	Tangerang City government has built offsite WWTP	2.20
4	**Communicational Aspects**	
4.1	Local government has own communicational channel	2.33
4.2	Ministry of Environtmental has own communicational media	2.07

4.3	Existention of socialization program and associated Campaign regulation of water quality management and pollution control	1.87
4.4	There are online monitoring of water quality at several points along the watershed that is accessible to all stakeholders	2.00
4.5	Existing regular activities with the theme of Cisadane (Cisadane Festival)	2.53
5	**Human Resources Aspects**	
5.1	Capabilities of human resources that understand the laws, regulations and policies and the quality has been quite good	2.13
	STRENGTH MEAN SCORE	**2.35**

From Table 1 above, all strength aspects mentioned give low to average score to overall strength total score. Institutional aspects shown that the respondent considers that the regulations have not been implemented properly. From financial aspects, the funding support from government preferred over income from water retribution. From technical and operational aspects, the government has built sanitation and treatment plant faciities.

Table 1. Weakness Analysis

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	WEAKNESS	
1	**Institutional Aspects**	
1.1	Too many concerned agencies (stakeholders) work on management and utilization of Cisadane riverflow	3.40
1.2	Inter-agency coordination in the implementation of the regulations are still not maximal	3.20
1.3	The division of administrative regions (Cisadane flows through two provinces and five District / City) affected the application of policies	3.60
1.4	Private or third parties have not been involved to the fullest	3.07
1.5	There is no joint monitoring nor evaluation	3.20
2	**Financial Aspects**	
2.1	River water quality management requires enormous funds	2.67
2.2	Income from retribution fund not fully generated	2.53
2.3	The master plan and business plan of the river water quality management not yet available	2.67
3	**Technical and Operational Aspects**	
3.1	River water from upstream already have poor quality	3.27
3.2	The effluent water from the primary drainage channel has not been managed in advance (waste water flows directly into river)	3.13
3.3	Waste management services not yet fully covered	3.13
3.4	The distance from wells (source water) to the household septic tank is insufficient	2.80
3.5	Densely populated areas has not been managed specially	2.73
3.6	Most households have no infiltration/treatment for grey waters	2.67
3.7	The existence of industrial wastes (mainly from home industries) that has not been through the treatment process	2.73
3.8	Difficulty of land provision for the construction of waste treatment facilities	3.27
4	**Communicational Aspects**	
4.1	Campaigns carried out by government agencies are not socialized evenly	2.53
5	**Human Resources Aspects**	
5.1	HR who are responsible to oversee the appliance of water quality is not adequate / limited in number	2.87
5.2	Guidance of water quality management is not up to the basic problems	2.40
	WEAKNESS TOTAL SCORE	**2.94**

From Table 2, the respondent considers that coordination among stakeholders is almost zero. From financial aspects, the funding income from water retribution not fully generated to support the operational activities. From technical and operational aspects, the sanitation and treatment plant facilities not yet fully operational. From communicational aspects, the respondent considers that the existing communication lines are not used properly, even the regulations have not been well communicated. Even the respondents assessed that the human resources which involved in water quality management still inadequate. All weakness aspects mentioned above give high correlation score to overall weakness total score.

Table 2. Opportunity Analysis

No.	External Factors	Mean Score
1	**Institutional Aspects**	
1.1	Ample opportunity to establish partnerships with the private sector/institutions/NGO's in the management of river water quality	2.87
1.2	The implementation policy of "Waterfront City" as the motivation for physical and environmental improvements at Cisadane watershed	3.07
2	**Financial Aspects**	
2.1	An opportunity to estabilished partnership with international donors foundation	3.00
2.2	An opportunity to estabilished partnership with company's CSR programs	2.87
3	**Communicational Aspects**	
3.1	The existence of national and local media can be a communication link to the community	3.13
3.2	Opportunities to fully utilize social media extensively in establishing communication with the entire community or stakeholders	2.73
4	**Technical and Operational Aspects**	
4.1	The improvement of water quality has been plotted in regional mid-term development plan (RPJMD Kota Tangerang)	2.47
5	**Aspects of Public Participation, Private and Gender Equality**	
5.1	Community self-reliance is quite high	2.93
5.2	The possibility of private sector to participate in managing water pollution	2.67
5.3	The possibility to improving citizen partisipation in the management of river water quality	2.47
5.4	The possibility to fully utilize of female denizen partisipation to reduce the domestic waste	2.40
6	**Ssocio-cultural Aspects**	
6.1	Socializing and communicating culture / mutual cooperation is still pretty good	2.47
7	**Demographics and Environmental Aspects**	
7.1	Source of raw water (river flow) is quite adequate	2.33
7.2	Water fluctuation in the rainy and dry seasons are relatively stable, despite the recent frequent extreme weather	2.87
	OPPORTUNITIES MEAN SCORE	**2.73**

From Table 3 above, many opportunity available in order to improve the quality of water river. From institutional and financial aspects, there are many NGO's and CSR available. The "water front city" policy will motivated all stakeholders and populations along the watershed to improve and maintain the water facilities, to process the industrial waste water, and to reduce the domestic waste.

Table 3. Threats Analysis

1	**Institutional Aspects**	
1.1	Regional cooperation among cities / regencies and between provinces is not optimal	2.80
2	**Financial Aspects**	
3	**Communicational Aspects**	
3.1	Mass-based activities have not frequently performed	2.67
4	**Technical and Operational Aspects**	
4.1	The threat of landslides on the banks of the river that has not been improved by retaining wall	2.67
4.2	Sedimentation rate on Cisadane river is still relatively high	2.53
4.3	Domestic waste flows into the drainage channel	2.53
4.4	Solid waste is located on the banks of the river and on the roadside has the potential to pollute the river water	2.87
5	**Aspects of Public Participation, Private and Gender Equality**	
5.1	Resident resistance (risk of air pollution from sewage treatment site near the settlements)	2.40
6	**Socio-cultural Aspects**	
6.1	Lack of public awareness in the management of river water quality	2.60
6.2	River water quality management and pollution control waste has not been considered as an important needs	2.67
7	**Demographics and Environmental Aspects**	
7.1	The population is relatively scattered throughout the Tangerang City area with a high population density	2.60
7.2	The population growth of Tangerang City is fairly high	2.40
7.3	There are a flood prone areas along the riverbanks	2.47
TREATHS MEAN SCORE		**2.60**

From Table 4 above, treaths on river water quality management from external factors is still existed. Inter-regional cooperations, sedimentation on river,

residence resistances and lack of public awareness needed to encounter immediately.

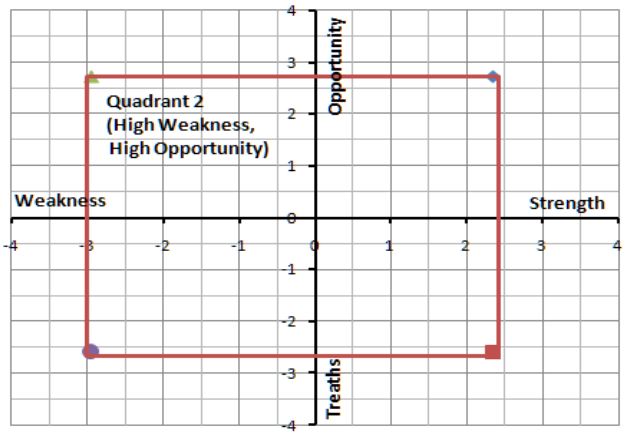

Fig. 2. Graphics of SWOT Analysis

From the SWOT analysis, the regulations related to the management of river water quality have not been able to be applied properly. Figure 2 shows the results of the study plotted in quadrant 2 (High Weakness - High Opportunity). Evaluation needs to be done so that the rule can be applied, especially given that the Banten Provincial Government do not have regulations on water quality management, and given the central government regulation No. 82/2001 has to be revised. However, the high value of external factors (opportunities) give hope that the policy can be implemented well in the future. The following is the results of the study are described in detail.

Aspects of the role of government

According to Article 5 of Regulation No. 82/2001 [1], responsibility for the management of Cisadane is in the central government. In the management of water quality, the government acts as the manager and controller of water pollution, with the ecosystem approach, including planning, implementation, monitoring and evaluation. In fact, the central government is not capable of carrying out this role given limited resources. Coordination limited only on the corridor of a particular program, and did not happen simultaneously. For example, Article 42 of Regulation No. 82/ 2001[1] stated that is forbidden to dispose solid waste or gas into the water and or water sources, but in fact, due to lack of supervision, there are still many people who dump waste directly into river or city drainage that enter the river. Businesses company also disposing industrial waste to the river, without sanction. Better cooperation and coordination needed to be done between central and local government in order to conserve, control and monitor Cisadane water quality.

Institutional and managerial aspects

Tangerang City Environmental Agency (Badan Lingkungan Hidup) have main tasks in the field of Environment [3], including management of water quality, primarily in Cisadane river. But there are 18 (eighteen) government agencies using Cisadane as target of activity, including Ministry of Public Works, Agency of Public Works and Spatial Planning (of Banten Provinces and Tangerang City) and Regional Planning Board (on planning and physical development of the Cisadane watershed), the Environment Agency, the Department of Water Resources and the Regional Water Company (in terms of utilization of raw water), and other agencies. It would require a common vision, sharing information coordination, and cooperation among government agencies, private sectors and citizens.

Technical implementation aspects

Technically, the government have built infrastructure or facilities that support the preservation of the water quality of the river, including the communal WWTP, normalization of drainage channels collectors, integrated sewage treatment plants, retaining wall along the embankment of Cisadane, arrangement of city park along the river and other infrastructure.

Unfortunately, the physical intervention have not been able to improve the quality of river water. Many factors still affecting the river water quality degradation, such as high sewage (both domestic waste and industrial waste) into the body of the river, or centralized WWTP is not optimally operated. [5].

Financial Aspects

It takes a very large fund to manage river water quality. For example, for normalizing 26 kms of Cisadane river, Rp. 1.8 trillion has been allocated from national budget, and in the early stages (2016) along 5 kms, Rp. 150 billion has been prepared. The budget will be used for reinforcement of river embankment. To supporting program in the future, water retribution, fund-raising and CSR participation is needed.

Aspects of public participation

Public participation in support of the program is still very low, for examples, high domestic sewage flows into Cisadane, and not too many people actively involved in water management. But the city vision of Tangerang as Watrfront City raised publics hopes that someday Cisadane will be clean and can be enjoyed by everyone. Local behaviour of mutual assistance supported by the high value of community self-reliance

became a factor that can be taken into account. Necessary communication, good coaching and socialization program more aggressively in order to further support the community programs Cisadane river water quality improvement.

3.0 CONCLUSION

From the research that has been done, can be concluded that:

1. Regulations related to the management of river water quality has not been applied properly. The role of government, institutional and managerial aspect, technical implementation aspect, financial aspect and public participation aspect, the regulations is not fully implemented. Reorganization and strengthening of policies needed to be done.

2. Communication line to enforce the rules among agencies, private sector and publics must be opened.

3. The city vision of Tangerang as Waterfront City raised publics hopes that someday Cisadane will be clean and can be enjoyed by everyone.

References

[1] Government Regulation No. 82/2001 on Management of Water Quality and Water Pollution Control

[2] Banten Provincial Regulation No. 10/2012 on Protection and Management of Environment

[3] Tangerang City Regional Regulation No. 2/2013 on Water Quality Management and Water Pollution Control

[4] Government Regulation No. 37/2012 on Watershed Management

[5] Namara, Idi,. Kurniati,. Raka Rantu, L.J., "Evaluasi Pendekatan Proyek Fisik Pemerintah terhadap Pengelolaan Kualitas Air Sungai Cisadane Kota Tengerang," in Proceeding of Seminar Nasional Teknologi dan Rekayasa, Universitas Negeri Malang, 2 (1) 2016. Pp II 57 – 62

[6] Government Regulation No. 38/2011 on River

[7] Government Regulation No. 42/2008 on Management of Water Resources