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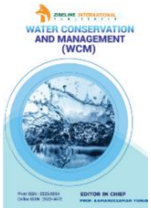

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RESEARCH ARTICLE

IDENTIFICATION OF STAKEHOLDERS DRIVEN IN THE WATERSHED USING MACTOR : A STUDY OF KEY ACTORS IN THE CILEUNGSI RIVER, WEST JAVA

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ABSTRACT

The world has faced many problems as a result of population growth. One of the main issues is the problem caused by the continuous decline in water quality. Indonesia's Water Quality Index (WQI) shows an increasingly deteriorating water quality condition year after year. The Cielungsi River is one of the upper sub-basins of the Bekasi River Basin. The Cileungsi watershed consists of the sub-watersheds of Cibadak, Ciherang, Cijonggol, Cikeruh, Cileungsi, and Citeureup. The land use and activities in the upstream of the Cileungsi River are quite diverse, and in some watersheds, housing development activities have already begun. The role of key stakeholders in determining water pollution control is the efforts of prevention, pollution control, and water quality restoration to ensure compliance with the established water quality standards. This study uses a prospective analysis method with the help of MACTOR which identifies key stakeholders, namely the BPDAS KLHK Bureau, the Natural Resources Bureau of the Ministry of Public Works and Public Housing, the Directorate of Water Pollution Control of the Ministry of Environment and Forestry, BBWS - Ciliwung Cisadane, and the Provincial Environmental Agency.

KEYWORDS

ciluengsi river, pollution, prospective analysis, stakeholder, water

1. INTRODUCTION

Water is one of the environmental components that has a very important function for human life and other living beings. The existence and quality of water must be maintained for the benefit of current and future generations (KLH, 2010). River water is one of the raw surface water sources. River water has great potential and an essential role in meeting water needs. The water quality of rivers has characteristics that are vulnerable to pollution, as river bodies become dumping grounds for waste, leading to polluted river water and necessitating policy interventions to control water pollution. The world has faced many problems as a result of population growth. One of the main issues is the problem of declining water quality that continues to increase. About one third of global biodiversity has decreased as a consequence of increasing water pollution problems. The Water Quality Index (WQI) of Indonesia has shown a tendency of deteriorating water quality from year to year. The National WQI achievement shows values that have fluctuated from 2011 to 2017.

In the period from 2011 to 2017, the IKA value has not shown significant changes in quality improvement, even the national IKA value in 2016 of 60.38 decreased by -1.70 to 58.68 in 2017. The provincial area that has experienced a decline in IKA value includes West Java. Water pollution control is an effort to prevent, manage pollution, and restore water quality to ensure compliance with established water quality standards (KLH, 2001).

The issue of water pollution control in Indonesia, especially regarding the policy of granting permits for liquid waste disposal into rivers, is one example of a licensing problem that is tangled and difficult to unravel. The Cileungsi River is one of the rivers located in the administrative area of Bogor Regency, West Java, which stretches from south to north and merges with the Cikeas River to become the Bekasi River, then flows into the North Coast of Java. The Cileungsi River is one of the upper sub-watersheds of the Bekasi watershed (Trihono, 2011). The Cileungsi watershed consists of the sub-watersheds of Cibadak, Ciherang, Cijonggol, Cikeruh, Cileungsi, and Citeureup (West Java DLH, 2020). Land use and activities in the upstream of the Cileungsi River are quite diverse, and in some watersheds, residential development activities have already begun.

Therefore, appropriate monitoring and management are necessary so that these activities do not adversely affect the water quality of the Cileungsi River. Various activities, whether large or small industries, mining, plantations, agriculture, households, and natural activities have an impact on aquatic biota and human health. The quality of river water continues to decline due to pollution from various types of waste originating from industrial waste and household waste.

2. THEORETICAL FRAMEWORKS

Based on the complex environmental problems, particularly related to the decline in river water quality due to population growth and land use

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changes in the Cileungsi River Basin (DAS), environmental governance theory becomes an important foundation in this context. It emphasizes that water resource management cannot be carried out sectorally by the government alone, but requires active involvement from various stakeholders such as government agencies, industrial actors, civil society, and academia. Each stakeholder has different levels of interest, influence, and responsibility in supporting pollution control policies and restoring river water quality.

To address these challenges, this research employs a prospective analysis approach that refers to strategic thinking for long-term policies. The main tool used is MACTOR (Matrix of Alliances and Conflicts: Tactics, Objectives, and Recommendations), a method developed by Michel Godet and his team. MACTOR is used to map the relationships among actors, identify their relative positions and influences concerning policy issues, and analyze the levels of convergence and divergence towards common objectives. Within this theoretical framework, actors with strong influence and low levels of dependence are positioned as strategic stakeholders that should be the focus of policy interventions.

This research also adopts a prospective structural paradigm that views environmental management systems as a complex social structure consisting of a network of relationships and power among key variables. This approach provides a deep understanding of power structures, reciprocal relationships, and the potential for collaboration or conflict among stakeholders. Ultimately, the entire theoretical framework is based on the principles of sustainable development, which demands the integration of environmental, social, and institutional aspects to ensure the sustainability of watershed functions for current and future generations.

3. Methodology

This research was conducted from October 2023 to June 2024 at the Cileungsi River. A prospective analysis approach was used to process the primary data received and the data obtained from FGD. Prospective analysis is a technique for reviewing future policies. In this study, prospective analysis to using the Matrix of Alliances and Conflicts: Tactics, Objectives, and Recommendations (MACTOR) tool (Delgado-Serrano et al., 2015 ; Djoudji et al., 2022 ; Martelo et al., 2017). The primary data obtained is processed using the Prospective Analysis method approach. Prospective Analysis is a method used to review a policy in the future. In this study, the prospective analysis using the MACTOR tool (Methode Acteurs, Objective, Reports de Force) (Martelo and Pitre, 2017). In this case, it is used to map the strength of the relationships between actors and factors in developing a typology of potential stakeholder clusters driven by the Cileungsi River. The application of the Mactor method in the decision-making process that considers the position and intensity of variables based on the influence and roles, positions, and attitudes of stakeholders towards a policy to be selected has clarified the validity of the research results and its strength in determining the maximum variables that must be involved in achieving the objectives. Respondents were selected based on the results of an initial Focus Group Discussion (FGD).

The MACTOR method works by filling out the position matrix or the 1MAO matrix (Actor-Objective Matrix) and the 2MAO matrix. The next matrix to complete is the MID matrix (Direct Influence Matrix), which describes the influencing variables. After filling in the MID and 1MAO matrices, MACTOR will calculate the 2MAO matrix using computer software. The working system of MACTOR, as referred to by (Alejandro 2011; Arcade et al. 2003 ; Garza and Cortez 2011 ; Mafruhah et al. 2020 ; Martelo and Pitre 2017 ; Rees and MacDonell 2017 ; Villegas and Alejandro 2011), is explained by the following formula:

$$MIDI_{A\to B} = MIDI_{A-B} + \sum_{C} [\min(MID_{A\to C}, MID_{C\to B})]$$

To determine the balance of power in the relationships between actors, it is first necessary to calculate the direct and indirect effects of the actors. If MA is defined as the total direct influence of actor A on others, then:

$$M_A = \sum_{B} (MIDI_{A,B}) - MIDI_{A,A}$$

and if we define DA, the total direct and indirect effects received by A from other actors are as follows:

$$D_A = \sum_{B} (MIDI_{B,A}) - MIDI_{A,A}$$

Next, the relationship strength equilibrium coefficient will be calculated using the formula:

$$r_A = \left[\left(\frac{M_{A-MIDI_{A,A}}}{\Sigma_A(M_A)}\right] \mathrm{x} \left[\frac{M_A}{M_{A+}D_A}\right]$$

In the next step, ACTOR will calculate the 3 MAO matrix, which is the foundation and important in the discussion of MACTOR, with the formulation as follows:

$$3MAO_{A,i} = 2MAO_{A,i} \times r_A$$

Through the 3MAO matrix, various features can be generated, including mobilization coefficients, which indicate different actors involved in a given situation as described in the following formula:

$$Mob_A = \sum |3MAO|$$

Agreement and disagreement on a goal are then layered using the following formula:

$$Ag_A = \sum_{a} (3MAO_{A,i}(3MAO > 0))$$

$$DisAg_A = \sum_{a} (3MAO_{A,i}(3MAO < 0))$$

Another feature that can also be derived from the 3MAO matrix is the convergence matrix (3CAA), which depicts how much the actors agree on an issue, and divergence (3DAA), which illustrates the opposite or disagreement. The convergence matrix (agreement) is produced through the formula:

$$3CAA = \frac{1}{2} \sum \left(\lceil 3MAO_{Ai} \rceil + \lceil 3MAO_{B,i} \rceil \right) \left(3MAO_{A,i} \, X \, 3MAO_{B,i} > 0 \right) \Big)$$

Meanwhile, the divergence matrix (disagreement) is written with the formula:

$$3DAA = \frac{1}{2} \sum \left(\lceil 3MAO_{Ai} \rceil + \lceil 3MAO_{B,i} \rceil \right) \left(3MAO_{A,i} \, X \, 3MAO_{B,i} < 0 \right) \Big)$$

Furthermore, the results of the convergence and divergence calculations among these actors will produce the final actor of MACTOR, namely the ambivalent coefficients for each actor, calculated using the formula:

$$3EQ_i = 1 - \left[\frac{\left(\Sigma_k \| 3CAA_{i,k} - 3DAA_{i,k} \| \right)}{\left(\Sigma_k \| 3CAA_{i,k} + 3DAA_{i,k} \| \right)} \right]$$

In addition to using a prospective analysis approach, this research also formulates the results of the stakeholder FGD related to salt trade in mapping the opinions of key stakeholders.

The Seelig method developed by (Agustina et al., 2020) is used to conduct Focus Group Discussions (FGD) and was developed by (Paulus and Fauzi, 2017). Variables for stakeholders driven by the Cileungsi River are analyzed by addressing sixteen stakeholders and four action policy goals. This research uses the prospective structural paradigm method to explore the structure, dynamics, and network of reciprocal relationships between the most important variables among stakeholders driven by the Cileungsi River in West Java. Data was collected using the Focus Group Discussion (FGD) method to identify influential stakeholders and determine their roles in regional development, as well as workshops to fill in the software used in data analysis. The discussion will be conducted using the world cafe method to encourage interaction, knowledge sharing, and experience transfer among participants. There are 11 participants in the FGD, representing the stakeholders. The people come from various stakeholders.

4. Results And Discussions

The results of this study are greatly determined by the accuracy of the informants in identifying the relevant stakeholders believed to influence the governance of the sustainable River Cileungsi stakeholders in supporting the environment. To achieve this, in the initial phase of the FGD, participants were given an orientation by experts regarding the concept of sustainable development and the important role of salt in strategic positioning and value. After that, a list of stakeholders was created based on the participants understanding, knowledge, and experience. The discussion results identify sixteen stakeholders who are considered to influence the governance of stakeholders driven by the sustainable Cileungsi River and four objectives (Table 2). The variables of stakeholders and objectives are shown in Table 1 and Table 2. Stakeholders are actors involved in the governance activities of stakeholders driven by the sustainable Cileungsi River in supporting the environment (Erlinda 2020 ; Martelo and Pitre, 2017 ; Rees and MacDonell 2017).

Table 1 : Stakeholder

No	Long label	Short label
1	Directorate of Water Pollution Control of the Ministry of Environment and Forestry	PPA
2	Bureau BPDAS KLHK	BPDAS
3	Natural Resources Bureau of the Ministry of Public Works and Public Housing	SDA-PU
4	BBWS - Ciliwung Cisadane	BBWS-CC
5	Provincial Environmental Agency	DLH
6	Department Works Office of Public Housing	DPUPR
7	Community-KPK2C	KPK2C
8	Public-Figures	Mtokoh
9	Business Actors - Paper Industry	PUIK
10	Business Actors - Textile Industry	PUIT
11	Business Actors - Candy Food Industry	PUIMP
12	Business Actors - Tanning Industry	PUIPK
13	Business Actors - Soyabean Cake and Tofu Industry	PUITT
14	Academics - PPLH IPB	PPLHIPB
15	Academician -Labling IPB	LABLINGIPB
16	Forum-DAS	FDAS

Source : Analysis, 2025

Table 2 : Objectives variables

No	Long label	Short label	Stake
1	WWTP Installation Obligations	KIP	Industry
2	Wastewater Disposal Restrictions	PPAL	Government
3	Development of Dam and Setling Pond Infrastructure	PIBSP	Government
4	Improved Eco-Drainage	PEKO	Public

Source : Analysis, 2025

Furthermore, the results of the prospective analysis using the MACTOR software show the interdependence among visualization actors, as shown in Table 3.

The stakeholders with the five largest influences are PPA, BPDAS, SDA-PU, BBWS-CC, DLH, and DPUPR with a score of 302, while the stakeholders that show a strong dependency are Mtokoh with a score of 332 and KPK2C with a score of 322. This matrix shows that PPA has a very strong and decisive influence on the success of each scenario in sustainability and supports the success of environmental handling of the Cileungsi River, followed by the strength of the Ministry of Environment and Forestry, followed by BPDAS, SDA-PU, BBWS-CC, DLH, DPUPR. Meanwhile, stakeholders in the form of Mtokoh are the weakest stakeholders in influencing the stakeholder scenario driven by the sustainable Cileungsi River, which supports the success of the Cileungsi River.

Table 3 : Interdependence matrix between actors

MDII	PPA	BPDAS	SDA-PU	BBWS-CC	DLH	DPUPR	KPK2C	Mtokoh
PPA	18	18	18	18	18	23	32	32
BPDAS	18	18	18	18	18	23	32	32
SDA-PU	18	18	18	18	18	23	32	32
BBWS-CC	18	18	18	18	18	23	32	32
DLH	18	18	18	18	18	23	32	32
DPUPR	10	10	10	10	10	12	20	20
KPK2C	10	10	10	10	10	12	13	13
Mtokoh	0	0	0	0	0	2	3	3
PUIK	18	18	18	18	18	22	30	30
PUIT	18	18	18	18	18	22	29	29
PUIMP	18	18	18	18	18	22	28	28

Table 3 (cont) : Interdependence matrix between actors

PUIPK	18	18	18	18	18	22	26	26
PUITT	18	18	18	18	18	22	26	26
PPLHIPB	0	0	0	0	0	0	0	0
LABLINGIPB	0	0	0	0	0	0	0	0
FDAS	0	0	0	0	0	0	0	0
Di	182	182	182	182	182	239	322	332

Table 3 : Interdependence matrix between actors (continue)

MDII	PUIK	PUIT	PUIMP	PUIPK	PUITT	PPLHIPB	LABLINGIPB	FDAS	Ii
PPA	24	25	26	27	27	4	6	4	302
BPDAS	24	25	26	27	27	4	6	4	302
SDA-PU	24	25	26	27	27	4	6	4	302
BBWS-CC	24	25	26	27	27	4	6	4	302
DLH	24	25	26	27	27	4	6	4	302
DPUPR	13	14	15	16	16	4	4	3	175
KPK2C	11	11	11	11	11	4	4	3	141
Mtokoh	3	3	3	3	3	2	1	1	24
PUIK	22	23	24	25	25	4	6	4	283
PUIT	22	22	23	24	24	4	6	4	277
PUIMP	22	22	22	23	23	4	6	4	272
PUIPK	22	22	22	22	22	4	6	4	266
PUITT	22	22	22	22	22	4	6	4	266
PPLHIPB	0	0	0	0	0	0	0	0	0
LABLINGIPB	0	0	0	0	0	0	0	0	0
FDAS	0	0	0	0	0	0	0	0	0
Di	235	242	250	259	259	50	69	47	3214

Source : Analysis, 2025

This explanation can also be seen in Figure 1, which maps stakeholders in the influence and dependence quadrants (Erlinda 2020 ; Rees and MacDonell 2017 ; Rivera and Jiménez 2017).

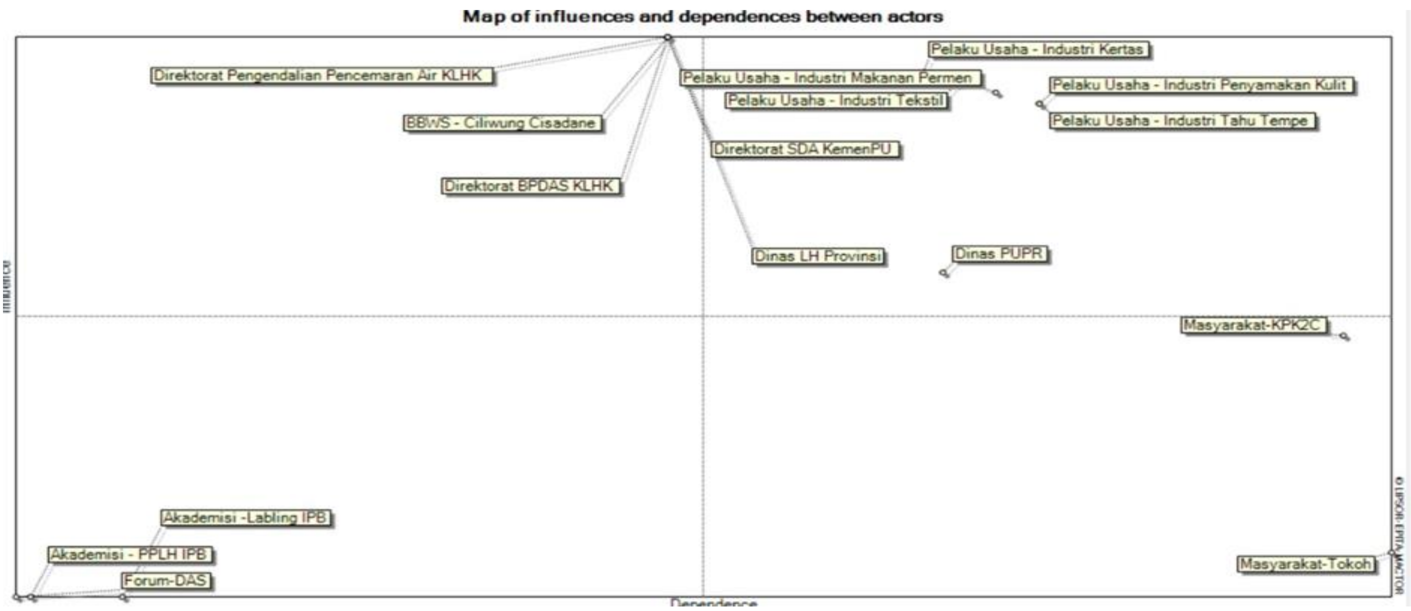

Figure 1 : Map of influences and dependencies between actors.

MACTOR works by filling in the position matrix or the 1MAO matrix (Actor-Objective Matrix) and the 2MAO matrix. The next matrix that needs to be completed is the MID (Direct Influence Matrix), which describes the influencing variables. After filling in the MID and 1MAO matrices, MACTOR will calculate the 2MAO matrix using a computer program.

Figure 1 shows that PPA has a very strong and determining influence on the success of each scenario on the stakeholders driven by the sustainable Cileungsi River, followed by the strengths of BPDAS, SDA-PU, BBWS-CC, DLH, and DPUPR located in quadrant I (top left). All stakeholders in this quadrant have a significant influence and low dependence on the sustainable Cileungsi River scenario that supports the environment. On the other hand, in quadrant 3 (bottom right), Mtokoh Swift has a high level of dependence and a very small influence on the sustainable trade governance scenario supporting the Cileungsi River. In quadrant 2 where PUIK, PUIMP, PUIT, PUITT, PUIPK, and DPUPR are relay stakeholders. These relay stakeholders depend on the driven stakeholders in quadrant 1, but have a significant influence in quadrant 3 through the impact of actions taken by quadrant 1 stakeholders on quadrant 2 stakeholders. Meanwhile, the FDA, LABLINGIPB, and PPLHIPB occupy quadrant 4 as autonomous stakeholders without impact functions (Alva and Díaz 2018 ; Erlinda 2020 ; Forero and Adalmer 2013).

Based on Table 4, the stakeholders with the highest mobilization scores are PPA, followed by BPDAS, SDA-PU, BBWS-CC, DLH, and DPUPR,

respectively. This means that from a goal perspective, these stakeholders will play an active role in the dynamics of trade governance. The level of mobilization (bottom row) indicates which goals are expected to be the main issues that trigger stakeholder reactions. In this case, PPAL with a score of 52.3 is considered an important objective by the actors, followed by KIP with a score of 50.6, PIBSP with a score of 31.7, and PEKO with a score of 28.2 (Erlinda 2020). The position of 3MAO can also be seen in the form of a bar graph in Figure 2.

Table 4 : 3 MAO

3MAO	KIP	PPAL	PIBSP	PEKO	Mobilisation
PPA	6.9	6.9	1.7	1.7	17.2
BPDAS	3.4	5.2	6.9	3.4	18.9
SDA-PU	3.4	1.7	6.9	6.9	18.9
BBWS-CC	1.7	5.2	6.9	6.9	20.6
DLH	6.9	5.2	5.2	5.2	22.3
DPUPR	1.3	1.3	2.7	2.7	8
KPK2C	1.5	1.5	1.5	1.5	6
Mtokoh	0	0	0	0	0.1
PUIK	-5.5	-5.5	0	0	11.1
PUIT	-5.3	-5.3	0	0	10.5
PUIMP	-5	-5	0	0	10.1
PUIPK	-4.8	-4.8	0	0	9.6
PUITT	-4.8	-4.8	0	0	9.6
PPLHIPB	0	0	0	0	0
LABLINGIPB	0	0	0	0	0
FDAS	0	0	0	0	0
Number of agreements	25.2	26.9	31.7	28.2	
Number of disagreements	-25.4	-25.4	0	0	
Degree of mobilisation	50.6	52.3	31.7	28.2	

Source : Analysis, 2025

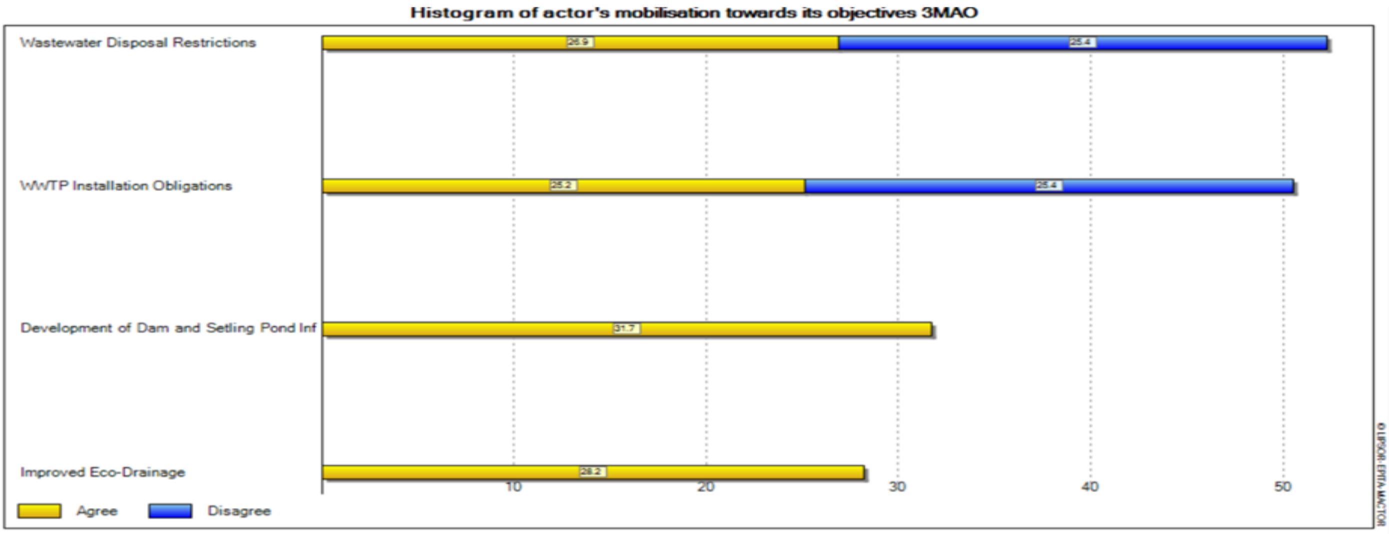

Figure 2 : Histogram 3MAO

Table 5 below shows the level of convergence among stakeholders. Where the highest degree is the convergence between DLH. The conditions of this convergence table show how strong the convergence situation among stakeholders is (Erlinda 2020 ; Rivera and Jiménez 2017). This convergence trend is illustrated in Figures 4 and 5, which are graphical representations of Table 5. The position of convergence can also be seen in the form of a map in Figure 3.

Table 5 : Degree of convergence between stakeholders

3CAA	PPA	BPDAS	SDA-PU	BBWS-CC	DLH	DPUPR	KPK2C
PPA	0	18	18	18.9	19.7	12.6	11.6
BPDAS	18	0	18.9	19.7	20.6	13.4	12.5
SDA-PU	18	18.9	0	19.7	20.6	13.4	12.5
BBWS-CC	18.9	19.7	19.7	0	21.5	14.3	13.3
DLH	19.7	20.6	20.6	21.5	0	15.2	14.2
DPUPR	12.6	13.4	13.4	14.3	15.2	0	7
KPK2C	11.6	12.5	12.5	13.3	14.2	7	0
Mtokoh	8.6	9.5	9.5	10.3	11.2	4.1	3.1
PUIK	0	0	0	0	0	0	0
PUIT	0	0	0	0	0	0	0
PUIMP	0	0	0	0	0	0	0
PUIPK	0	0	0	0	0	0	0
PUITT	0	0	0	0	0	0	0
PPLHIPB	0	0	0	0	0	0	0
LABLINGIPB	0	0	0	0	0	0	0
FDAS	0	0	0	0	0	0	0
Number of convergences	107.5	112.7	112.7	117.8	123	80	74.1
Degree of convergence (%)	0						

Source : Analysis, 2025

Table 5 : Degree of convergence between stakeholders (continue)

3CAA	Mtokoh	PUIK	PUIT	PUIMP	PUIPK	PUITT	PPLHIPB	LABLINGIPB	FDAS
PPA	8.6	0	0	0	0	0	0	0	0
BPDAS	9.5	0	0	0	0	0	0	0	0
SDA-PU	9.5	0	0	0	0	0	0	0	0
BBWS-CC	10.3	0	0	0	0	0	0	0	0
DLH	11.2	0	0	0	0	0	0	0	0
DPUPR	4.1	0	0	0	0	0	0	0	0
KPK2C	3.1	0	0	0	0	0	0	0	0
Mtokoh	0	0	0	0	0	0	0	0	0
PUIK	0	0	10.8	10.6	10.3	10.3	0	0	0
PUIT	0	10.8	0	10.3	10.1	10.1	0	0	0
PUIMP	0	10.6	10.3	0	9.8	9.8	0	0	0
PUIPK	0	10.3	10.1	9.8	0	9.6	0	0	0
PUITT	0	10.3	10.1	9.8	9.6	0	0	0	0
PPLHIPB	0	0	0	0	0	0	0	0	0
LABLINGIPB	0	0	0	0	0	0	0	0	0
FDAS	0	0	0	0	0	0	0	0	0
Number of convergences	56.3	42	41.3	40.6	39.8	39.8	0	0	0
Degree of convergence (%)									

Source : Analysis, 2025

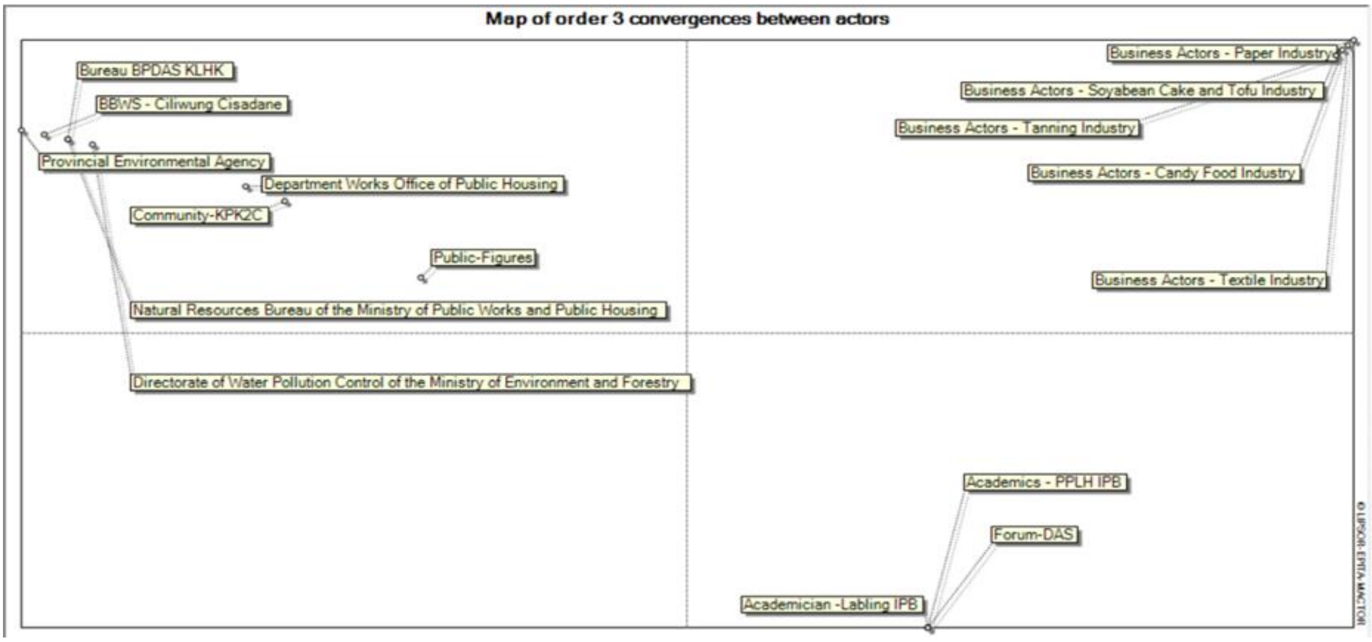

Figure 2 : Map of convergence between stakeholders

Table 6 : Degree of divergence between stakeholders

3DAA	PPA	BPDAS	SDA-PU	BBWS-CC	DLH	DPUPR
PPA	0	0	0	0	0	0
BPDAS	0	0	0	0	0	0
SDA-PU	0	0	0	0	0	0
BBWS-CC	0	0	0	0	0	0
DLH	0	0	0	0	0	0
DPUPR	0	0	0	0	0	0
KPK2C	0	0	0	0	0	0
Mtokoh	0	0	0	0	0	0
PUIK	12.4	9.8	8.1	9	11.5	6.9
PUIT	12.1	9.6	7.8	8.7	11.3	6.6
PUIMP	11.9	9.3	7.6	8.5	11.1	6.4
PUIPK	11.7	9.1	7.4	8.2	10.8	6.1
PUITT	11.7	9.1	7.4	8.2	10.8	6.1
PPLHIPB	0	0	0	0	0	0
LABLINGIPB	0	0	0	0	0	0
FDAS	0	0	0	0	0	0
Number of divergences	59.8	46.9	38.3	42.6	55.5	32.1
Degree of divergence (%)	0					

Source : Analysis, 2025

Table 6 : Degree of divergence between stakeholders (continue)

3DAA	KPK2C	Mtokoh	PUIK	PUIT	PUIMP
PPA	0	0	12.4	12.1	11.9
BPDAS	0	0	9.8	9.6	9.3
SDA-PU	0	0	8.1	7.8	7.6
BBWS-CC	0	0	9	8.7	8.5
DLH	0	0	11.5	11.3	11.1
DPUPR	0	0	6.9	6.6	6.4

Table 6 (cont): Degree of divergence between stakeholders (continue)

KPK2C	0	0	7	6.8	6.6
Mtokoh	0	0	5.5	5.3	5.1
PUIK	7	5.5	0	0	0
PUIT	6.8	5.3	0	0	0
PUIMP	6.6	5.1	0	0	0
PUIPK	6.3	4.8	0	0	0
PUITT	6.3	4.8	0	0	0
PPLHIPB	0	0	0	0	0
LABLINGIPB	0	0	0	0	0
FDAS	0	0	0	0	0
Number of divergences	33	25.5	70.2	68.2	66.4
Degree of divergence (%)					

Source : Analysis, 2025

Table 6 : Degree of divergence between stakeholders (continue)

3DAA	PUIPK	PUITT	PPLHIPB	LABLINGIPB	FDAS
PPA	11.7	11.7	0	0	0
BPDAS	9.1	9.1	0	0	0
SDA-PU	7.4	7.4	0	0	0
BBWS-CC	8.2	8.2	0	0	0
DLH	10.8	10.8	0	0	0
DPUPR	6.1	6.1	0	0	0
KPK2C	6.3	6.3	0	0	0
Mtokoh	4.8	4.8	0	0	0
PUIK	0	0	0	0	0
PUIT	0	0	0	0	0
PUIMP	0	0	0	0	0
PUIPK	0	0	0	0	0
PUITT	0	0	0	0	0
PPLHIPB	0	0	0	0	0
LABLINGIPB	0	0	0	0	0
FDAS	0	0	0	0	0
Number of divergences	64.4	64.4	0	0	0
Degree of divergence (%)					

Source : Analysis, 2025

Table 6 shows the divergence of several stakeholders, where the level of divergence is high, for example PUIK, with a score of 70.2. This means that this stakeholder has very different interests from certain stakeholders, which indicates that the tendency for conflict between these institutions is relatively small (Erlinda 2020 ; Rivera and Jiménez 2017).

Table 6 shows the magnitude of divergence or differences among the actors. In the matrix above, PUIK has the highest level of inconsistency compared to the other actors. This explanation can be clearly seen in Figure 4.

Figure 4 shows the direction and magnitude of divergence among actors and also presents the 'distance' between actors with each other, illustrating how far or close these actors can collaborate with one another. (Erlinda 2020 ; Rivera and Jiménez 2017 ; Villegas and Alejandro 2011). This condition illustrates to us the extent of the distance, the same interest groups among the stakeholders.

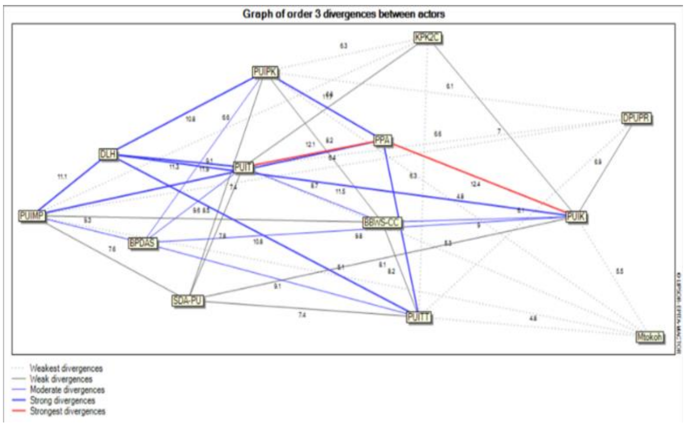

Figure 3 : Map of Divergence between stakeholders

5. Conclusions

This study successfully identified strategic stakeholders and a priority scale sequence, namely the main stakeholders in the sustainable governance environment driven by the Cileungsi River that successfully supports sustainable development. These stakeholders are quite comprehensive, the PPA, having a very strong and determining influence on the success of any scenario in sustainability and supporting the success of the Cileungsi River environment, followed by the strength of the BPDAS, SDA-PU, BBWS-CC, DLH, DPUPR.

The findings of this research provide a very strong foundation for all parties involved in policy-making to focus their policies on actors in the determinant quadrant and relay quadrant, which significantly influence other variables. The main stakeholders that have the potential to affect this success are the PPA, which has a very strong and determining influence on the success of every scenario in the sustainability of the Cileungsi River driven by stakeholders and supporters.

The results of this research show that all key stakeholders can be involved in decision-making through good governance systems supported by development policies. The findings of this study are based on an institutional perspective, and it is hoped that the results can serve as a foundation for managing the structure, resources, authorities, and relationships among parties that have a strong and determining influence on the success of each scenario in sustainability driven by stakeholders and supporters of the Cileungsi River.

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