

Ecoregion-Based Environment Policy to Resolve Water Resource Conflicts at the Surakarta Ex-Residency

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Abstract: - Introduction: This research studies the severe case of water resource conflicts at the Surakarta Ex-Residency, Indonesia. The researchers were interested in studying this case as they wanted to provide a solution to the water resource conflicts that happened at the Surakarta Ex-Residency through an eco-region-based environmental policy principle. This research aims: (1) To describe the water resource conflicts at the Surakarta ex-Residency, Central Java, Indonesia, (2) To identify the governmental policies on water resource management that cause water resource conflicts, and (3) To formulate ecoregion-based water resource management policy model to resolve water resource conflicts. Methods: This was socio-legal research with doctrinal and non-doctrinal approaches. Results: The research results show that the water resource conflicts between the society and the Municipal Waterworks that have control over the water resources happened due to policies that allowed water management for commercial interests. Conflicts also happened between Regional Governments, as a result of an inaccurate understanding of regional autonomy. This leads to the formulation of water resource management policies that are merely based on regional egos. Discussion: The Regional Government's policies on water resource management contribute to the emergence of water resource conflicts. This is because such policies are directed to various orientation forms, namely economic orientation, privatization, and the unsynchronized water resource management regulations between Regional Governments. The water resource conflict resolution policy with the ecoregional approach is carried out through a mutual agreement between Regional Governments, that will be followed up by each of those Regional Governments. Conclusion: The legitimization is in the form of Regional Regulations that regulate the imposition of responsibilities as well as the rights on the water resource management.

Key-Words: - Conflict Resolution, Ecoregional Approach, Policy, Water Resource, Surakarta, Environment.

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1 Introduction

Indonesia is a country that is blessed with abundant water resources. Unfortunately, it is not free from water-related issues. This is because the country's

population factually increases in rate. These people surely require an adequate water supply to live well. However, the water supply and the water reserve that is used to fulfill humans' needs keep on

decreasing and depleting due to deteriorating environmental conditions and due to exploitative developmental activities.

The Indonesian population will keep on growing. Its growth rate is around 1.5%. It is predicted that the Indonesian population will reach 280 million people by 2025. This will surely lead to consequences in formulating policies on water resource management and usage. Water resources are necessary to fulfill the people's daily needs as well as to support national economic growth, [1].

The debates on water resource management and its conflicts of interest regarding (1) The state's tendency to privatize water resource management. This gives private companies a great opportunity to be involved in managing and distributing water to society; (2) The great control of international institutions on water resource management, as part of the effort to change the water crisis into a market opportunity to obtain profits; (3) The inherited destruction of the management system developed by the former controlling regime will not only cause water scarcity, but it will also impact the economic, social, and political aspects of Indonesia's agricultural society, [2].

A current problem related to water resource usage is the ever-decreasing quality and quantity of water resources. The clean water supply decreases due to water management policies that are directed toward water privatization. Another problem regards the decreasing quality of both groundwater and surface water. This is due to domestic and industrial water usage that lacks awareness of environmental sustainability, [3].

Another problem includes water scarcity and drought during the dry season. On the contrary, there is an uncontrollable water supply or floods during the rainy season. These are complex and complicated issues that the government and society continually face, as these unresolved water problems reoccur annually. Such a condition may cause a water crisis if left unresolved, which will in turn decrease agricultural production that requires adequate water supply. Conflicts on water resources always happen in several areas, especially conflicts on clean water resource management. This is because people have no awareness of the protection of clean water resources. In this case, people lack the understanding of protecting the Bengawan Solo river watershed area, which is one of the suppliers of clean water in several regencies in the Ex-Surakarta Residency area,

According to the Head of the Water Resource Management Service of Central Java, Nidhom Azhari, there is a concerning rate of water volume

shrinkage in Kedung Ombo dam, Boyolali. Then, The data of the Ministry of Environment of 2010 states that the Gajah Mungkur dam also experienced volume shrinkage. Table 1 shows the detailed statistics of the Kedung Ombo Dam and Gajah Mungkur Dam.

Table 1. Statistics of the Kedung Ombo Dam and Gajah Mungkur Dam

Location	Characteristics	Details
Kedung Ombo Dam, Boyolali Regency, [4].	Original Volume	Water 500 million m ³
	Current Volume	Water 200 million m ³
	Water volume shrinkage percentage	42.67% (723.16 million m ³)
	Function	To water around 0.63 km ² of agricultural land in Grobogan, Kudus, Pati, Demak Regencies, and Semarang City.
Gajah Mungkur Dam, Wonogiri Regency, [5].	Original Volume	Water 400 million m ³
	Current Volume	Water 100 million m ³
	Width of the Dam in 2000	66.2354 km ²
	Width of the Dam in 2003	53.155 km ²
	The Change in the Dam's Area	13.0804 km ²
	Function	To water around 1.23 km ² of land in Sukoharjo, Karanganyar, and Sragen Regencies.

If the volumes of those two largest dams in Central Java fail to increase, there is a concern that the water supply is not enough to water the agricultural lands around it. This condition may threaten the food resilience of the people in those areas.

Inadequate water resource management may potentially cause conflicts in the agricultural, industrial, and domestic sectors. It may also lead to trouble in fulfilling the people's needs for clean and drinkable water. Water resources were initially used by the farmers for agricultural activities. But they were then shifted to fulfill the urban population's need for clean water. This leads to the decrease of water resource debt and is prone to cause conflicts of interest. This condition is even worse if that shift causes a decrease in the cropping index or if it causes crop failure. Such a condition will certainly trigger the farmers' anger.

Such conflicts have happened in some regions, where farmers gather to destroy the drinkable water installation of the *Perusahaan Daerah Air Minum* (PDAM/Municipal Waterworks). According to these farmers, this installation symbolizes the usurpation of the water that they have received from

generation to generation; thus causing crop failure, [6]. Indonesia is a country that has ratified the Sustainable Development Goals 2030, where one of its goals is to decrease poverty and famine, [7]. Therefore, the issues that happen in the Ex-Surakarta Residency area prove that the government is not truly serious about carrying out the Sustainable Development Goals 2030.

Realizing the intensity of the water resource conflicts and the importance of finding solutions, scientific communities propose solutions through research on the new approach to managing water resources. Such research is also aimed at resolving water resource-related conflicts. The ecoregional approach is one of the many proposed methods of water resource conflict resolution. This approach is a manner of managing water resources by emphasizing the importance of water and natural resource conservation without focusing on the administrative boundaries of regional areas. Apart from that, this approach can assess the natural aspects of the environment such as the condition of the ecosystem, [8].

In writing this paper, the authors also used several previous research for literature review to ensure that this research yield more valuable results. Two previous researches were conducted by the authors themselves (with the same author composition). This is because this research is a continuation of previous research. In this case, the authors conducted a continuation research to obtain more valid and comprehensive results. Each author was focused on different themes of research related to the Bengawan Solo River.

In a previous research entitled "Analysis of the Issues on Bengawan Solo River Basin Management Policies", the authors discussed how the Bengawan Solo River has been polluted. Researchers found that the perpetrators were companies that only had an orientation for profit. These evil companies utilized the weak enforcement of Law No. 17 on Water Resources. The writers recommend stricter law enforcement to eradicate the pollution of the Bengawan Solo River, [3].

Another research that became part of comprehensive and sustainable research is a study entitled "Critical Analysis of River Basin Management Regulation in Bengawan Solo for Water Tourism: Local Legislation in 7 Regencies." Here, the researchers comprehensively analyzed local regulations (regional regulations) in seven regencies in which the Bengawan Solo River flows, namely Surakarta, Wonogiri, Sukoharjo, Karanganyar, Bojonegoro, and Sragen regencies. In this research, the authors discussed regional

regulations on the usage of the Bengawan Solo River for water tourism. It was found that some areas cannot organize water tourism due to severe pollution. The authors also found that no regional regulations specifically regulated sanctions for corporations that commit environmental pollution, [3].

Another previous research that the authors used as a reference in this literature review was an article written by Suprpto. This article analyzed the Bengawan Solo River from the aspect of societal conflicts to seize Bengawan Solo River water resources. This research is crucial as the largest source of conflict in the management of the Bengawan Solo River is the distribution of water resources. It is a highly urgent issue. The total population that resides proximate to the river flow reaches 2,500,000 people. Thus, conflicts on the division of water resources are prone to cause violence.

Then, another research related to this issue was the dissertation of Sutopo which explained the relationship between the condition of the Bengawan Solo River and the conflict from the perspective of environmental security. It was found that the root of the conflict was the increasingly limited amount of enjoyable water resources due to massive pollution. Society demands an end to pollution to recover the quality of water, [9].

The aims of this research are: (1) To describe the water resource conflicts in the Surakarta area, Central Java, Indonesia, (2) To identify the governmental policies on water resource management that cause water resource conflicts, and (3) To formulate ecoregion-based water resource management policy model to resolve water resource conflicts. These three objectives are hoped to provide a breakthrough by creating a new perspective on the importance of managing water resources in the Surakarta area so that it can provide a chance to save the lives of future generations.

2 Methods

This was a socio-legal research method with a doctrinal and a non-doctrinal approach. In the doctrinal approach, the law was conceived as a normative instrument. Meanwhile, in the non-doctrinal approach, the law was conceived as an empirical symptom that was observable in the realm of experiences in the Bengawan Solo rivers. The data analysis was carried out through the following stages: (1) In the first stage, the researcher analyzed the cause of conflicts, the polarization, and the stages. Then, the researcher identified the tendency

for conflicts to arise; (2) Then, the researcher inventoried the water resource management policies that caused conflicts and analyzed the synchronization of the various stipulations that regulate water resource management. In this research, the authors also compared this issue with the condition of other rivers in Indonesia (the Brantas River in Indonesia). Through these approaches, the authors may obtain a suitable solution for the research problem.

3 Results

3.1 A General Description of the Water Conflict in Surakarta Ex-Residency

The water resource conflicts in the Surakarta Ex-Residency may be divided into two, namely vertical and horizontal conflicts. The former happens between the people and the Regional Government or between the people and the water-managing institutions. Meanwhile, the latter happens between city/regency regional governments and also between the city/regency governments and the water-managing institutions.

Based on the previous research, water resource conflicts are triggered by people's attitude that lacks care for the environment. An attitude of care for the environment has a great role in creating environmental conflicts if it is not carried out properly. Environmental conflicts, including water resource conflicts, will always exist in the Surakarta area, [10]. Water resource conflicts can be simulated as shown in Figure 1.

The plot in Figure 1 shows that the research on environmental preservation also encompasses water resource preservation. On one hand, the spread of the correlation has a high variation, but it is dominated by a correlation that shows a positive effect

On the other hand, the existence of a negative correlation in the plot Figure 1 leads to a chance for the occurrence of water resource conflicts, [10].

An indicator of the existence of water resource conflicts is the decreasing river water quality at the Surakarta ex-residency due to pollution. Table 2 indicates the pollution that happens in several rivers in the Surakarta ex-residency area.

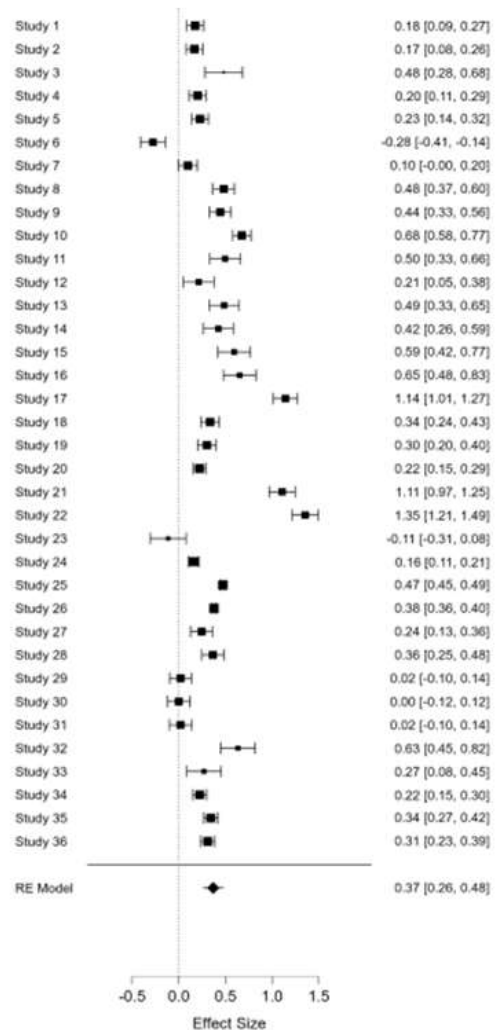


Fig. 1: Water Conflict Plot Based on Meta-Analysis Research

Table 2. River Water Pollution Index in the Surakarta Area

No.	Name of River	Pollution Index	Pollution Level
1	Jurang Gempal River, Wonogiri Regency	5.09	Mildly Polluted
2	Nguter River, Sukoharjo Regency	7.74	Mildly Polluted
3	Banmati River, Sukoharjo Regency	16.20	Severely Polluted
4	Peren River, Sukoharjo Regency	16.21	Severely Polluted
5	Ngombakan River, Grogol, Sukoharjo Regency	19.76	Severely Polluted
7	Bacem River, Sukoharjo Regency	5.56	Mildly Polluted
8	Premulung Creek, Surakarta City	13.77	Severely Polluted
9	Pepe Creek, Surakarta City	19.77	Severely Polluted
10	Jurug River, Surakarta City	16.21	Severely Polluted
11	Cengklik Dam, Boyolali Regency	2.03	Lightly Polluted
12	Jombor Dam, Klaten	4.81	Lightly Polluted

Table 2 shows the water quality in the Surakarta ex-residency area. Most of the rivers are polluted. Such a condition is caused by several factors. First, it is due to a conflict between policymakers and society. Second, it is because society fails to comply with the existing regulations, [3].

A water resource conflict happened in Boyolali Regency, Central Java, Indonesia. A vertical water resource conflict happened between farmers and the regional government at Kener Village, Boyolali. Another happened between Tlatar water spring users and the Municipal Waterworks of Boyolali Regency. The conflict happened because the Municipal Waterworks of Boyolali Regency prioritized the distribution of water to fulfill the needs of the urban population. Meanwhile, there was a decrease in the water distribution to the Kener Village. This happened even though from generation to generation, the Kener villagers obtained water to fulfill their agricultural needs from the Umbul Tlatar spring.

A water conflict also happened in Ngemplak District, Boyolali. The people who are associated with *Gabungan Perkumpulan Petani Pengguna Air (GP3A/Alliance of Water-Using Farmer Association)* demanded the reparation of damaged waterways due to the development of a highway project. The damaged waterways reached 8 km². Due to this, farmers experienced difficulties in watering around 1 km² of land. Thus, they faced the Boyolali Regent and they planned to carry out a demonstration to demand the revitalization of damaged irrigation canals. In a dialog with the society, the Boyolali government promised to repair the damaged irrigation canals and asked the people to restrain themselves from demonstrating – or worse, from destroying the facilities of the highway developmental project. The people promised to support this highway project if the damaged water canals were immediately repaired.

A vertical water resource conflict also occurred between the people who are spring water users at Kawangdowo District, Klaten Regency, with a water-managing institution, Timore Limited Company popularly known as AqDa. The water users experienced losses as the river that watered their rice field areas dried up due to the excessive Sigidang spring water exploitation by Timore Limited Company. The water users of Polonharjo Regency also protested and demonstrated in front of the Timore Limited Company office, demanding the guarantee that water will still flow to their area to water their rice fields. They also demanded that the employees be recruited from the surrounding people

and that there be regional income transparency to achieve regional welfare.

A water resource conflict also occurred at Karanganyar Regency, where Ondo-Ondo spring water users at Tawangmangu District protested the distribution of water to another, namely to the area that is part of Magetan Regency, East Java. The water users, namely the farmers, demanded the Karanganyar Regional Government immediately stop the water distribution to other areas or to fairly distribute the water, by prioritizing the local farmers. If their demands were not fulfilled, they threatened to close the water distribution to Magetan Regency by force.

Meanwhile, a horizontal conflict happened between the Klaten Regional Government and the Municipal Waterworks of Surakarta City. The conflict happened because the Klaten Regional Government increased the water tariff to the Surakarta area to Rp. 4.1 billion. Meanwhile, the Surakarta Regional Government is only capable of paying Rp. 1.5 billion. The Klaten Regent threatened to limit or stop the water distribution from Umbul Cokro, Klaten to the Surakarta area if the Municipal Waterworks of Surakarta City failed to pay the demanded price. The Regent also threatened to divert the water distribution to expand the Klaten people's agricultural irrigation and to anticipate drought during the dry season.

A vertical conflict also happened when the Karanganyar Regency Government increased the water tariff from the Plesungan spring that flowed to the Municipal Waterworks of Surakarta City – from Rp. 9,000,000/month/well to Rp. 37,000,000/month/well. The Municipal Waterworks of Surakarta City object to this rise as it will cause a rise in the price of the water it manages. Apart from that, the Plesungan Spring is located at the border of the Karanganyar Regency and Surakarta City. For years, the people who live at the border of these areas have used the water for mutual benefit. Formerly, the Plesungan Spring was under the authority of the Central Java Provincial Government.

The water resource conflict also happened in Gupit Village, Nguter District, Sukoharjo Regency, where part of the water source in that village is polluted by waste of a textile factory which disposed of its waste through several irrigation channels and small rivers that then ends in the Bengawan Solo River watershed. Worse, these polluted water bodies emit a terrible odor. Conflicts in the Bengawan Solo River watershed started from water resource conflicts that happened to villages in Sukoharjo Regency and Surakarta City, [3].

From the data above, it can be analyzed that the people of Surakarta, Indonesia, are placed under traditional and charismatic dominations. Thus, the legal regulation interpretations are not only determined by the governmental apparatus but also by the dominating forms that exist in that society, [11]. In facing the issues of conflict, the people have an autonomous power. This power exists and arrives necessarily from the people themselves. Thus, it is called original power. Without going through various procedures or requirements, the autonomous power actualizes itself spontaneously to resolve conflicts according to the people's collective lives, [12]. A requirement of collective life is an atmosphere of order in the relations between members of society. If society requires order and good organization, the autonomous power will display itself in the form of the power to regulate the society itself. Then, it will present itself as a principle in the relations between members of society, [13].

In a changing society, a social dichotomy that was formerly non-existent now exists – namely, macro institutions or megastructures, such as capital owners, governmental bureaucracy, organizations, etc. These mega structures tend to alienate as well as disempower small structures or individuals. Such a condition creates dichotomies between interests, namely between public interests and private interests. This is prone to create crises. To resolve these crises, some use mediating institutions to settle issues between these two realms. These mediating institutions include familial, governmental, communal, and religious institutions, as well as non-profit organizations, [14].

Society holds an important role in resolving water resource-related conflicts, to undergo a solidarity mission. It is society's natural responsibility, as humans pursue a social life, instead of a solitary one. Meanwhile, the society and the regional government still lack an understanding of the importance of water resources. This was shown by their incomppliance with the stipulated regulations. Apart from that, environmental protection-based laws tend to be ignored, even though, if applied, they can change people's behaviors to care for the environment, [10]. The legal regulations that the society uses are parallel to its type of solidarity. The collective life will be guided well if there is freedom for its members to form connections with other people, [15].

In the Brantas Rivers of Indonesia, the water resources were resolved by several projects by the government. The government built several dams and reservoirs and distributed water from dams and

reservoirs. In the legal policy, the regional government in the area of Brantas River decided to inspect several corporations and force them to build waste management from their factory. The water resource conflicts may also be resolved by the water advocacy activists as paralegals. They have adequate skills, capabilities, knowledge, and willingness to facilitate the effort to retrieve the rights of the people who are victims of water conflicts, [16].

In undergoing their work, they cooperate with society to carry out advocacy activities, initiated with a dialog on the ongoing issue. Apart from that, they try to facilitate the people in thinking of a way out of the problem. After that, they carry out cooperative actions to demand the people's rights, supported by the presence of the institutions and the network of institutions/organizations that advocate for water resources, [16].

The water resource conflicts in the Surakarta area are not resolved through litigation, but it is carried out through negotiation outside of court. Conflict resolution outside of court is known as alternative dispute resolution (ADR) and such a manner of resolution model is closer to the settlement of conflict resolution model, which contains authority and law, that may be demanded of the conflicting parties by the mediator. In this case, the traditional approach towards conflict management and regulation is generally based on mediation and settlement negotiation. This approach may only work if the conflicting parties agree to negotiate and if they have something real to offer, [17].

Even so, the success of this alternative dispute resolution model highly depends on the disputing parties as well as on the mediator that accompanies them. The parties involved in the dispute resolution negotiation process are demanded to think, prioritize conscience, and have a transparent, heart-to-heart discussion without the effort to hide their interests behind their backs. Because of that, so long as the parties still have interests, a thorough resolution will not be achieved.

3.2 Policies on Water Resource Management Conflict Resolution

The Preamble of the Republic of Indonesia's 1945 Constitution sternly stipulates that the objective of stately life is based on law. This means that the law has supreme power. There are no other powers above the law. In the effort to create a state based on law and to achieve a stately life, the law becomes the director, the engineer, and the planner to form a legal society and achieve justice and welfare.

The guarantee of the legal state and the state of justice fails to provide certainty to the protection of the environment and water resources. Water resource conflicts and water management conflicts occur in almost all regencies in the Surakarta ex-Regency. But there is a conflict that brings negative impacts to society which happened in Sukoharjo Regency. This conflict was the installation of an illegal waste pipe from a textile factory that is directly disposed of to the river without going through a reduction process beforehand, [3]. Such a conflict brings the impact of pollution to several Regencies that are passed by this river. Based on this case, people question the guarantee of the rights of justice and the rights of sustainability of water resources.

The rights to water resources are part of human rights. Thus, this right is not only regulated in Article 33 Clause (3) of the Republic of Indonesia's 1945 Constitution but it is also regulated in Article 28H. Article 33 clause (3) of the 1945 Constitution states, "The earth, water, and riches contained in them are maximally used for the people's welfare." Then, clause (4) states, "The national economy is established based on economic democracy, with the principles of togetherness, efficiency, justice, sustainability, environmental friendliness, and independence, by still maintaining the balance of national development and unity."

In this case, water resources are not economic goods, as it regards the interests and the needs of many people. Thus, as the organization with the highest authority, the state must position itself as the mandate-holder of power. It must run its roles in regulating, controlling, and utilizing water. It may do so by managing water with the orientation of mutual benefit. It must be carried out fairly to create social welfare for many people. In the perspective of law enforcement, according to Lawrence Friedman, to achieve success in enforcing the law, there must be consideration for the legal substance, legal structure, legal culture, and legal impacts, [18].

The issuing of Law No. 7 of 2014 on Water Resources has resulted in some problems. Article 9 clause (1) states, "The right to use water may be granted to individuals or business entities with the permission of the Government or the Regional Government according to their authorities." This clause opens the opportunity for privatization of the water resource management by private entities and the neglect of the roles of state-owned or regional government-owned business enterprises as mandated by Article 33 clause (2), which states, "Production sectors that are crucial for the state and that has control over the lives of many must be

under the control of the state." Then, Article 45 clause (3) states, "The water resource businesses ... may be carried out by individuals, business entities, or through a cooperation between business entities."

The Law on Water Resources may potentially create horizontal conflicts, [19]. Article 48 clause (1) states, "The water resource business in a river area that is carried out by building and/or using distribution canals may only be used for other river areas if the water supply surpasses the people's needs at that river area." This article departs from the understanding that rivers are understood using the administrative perspective, though, in reality, rivers may flow beyond administrative borders, such as between regencies or even between provinces. This stipulation is against the human rights that are regulated in Article 28H clause (1) of the 1945 Constitution.

Water is not mere H₂O. But it must be understood in the context of an ecosystem, where water is one of the life-supporting systems. The paradigm in water management regulations must consider and anticipate the water's sustainability and regeneration, [20]. Economic development is allowed so long as it does not damage water in the ecosystem function. Because of that, the water resource bill must sternly stipulate that water users do not necessarily possess that water resource. This is because as a natural resource, water is not man-made; but it is a blessing from God. Water resources may be used, but they cannot be owned – or worse, exploited. Thus, water users need to be responsible for preserving water, [21].

The rampant number of water resource conflicts in Indonesia cannot be separated from the developmental orientation and the governmental perception of the existence of water resources in Surakarta. These water resource usage conflicts happen not only due to the limited water potential, but also due to the conflict of interests with the developmental sector, the control of the society and the private entities of the water resource, arrogance of interregional power, and water resource management approach errors. An alternative conflict solution includes involving the society in planning and managing the water resources and an ecosystem-based approach to watershed management with the following principle: one river basin, one plan, one integrated environmental management system, [22].

The causes of water resource conflicts are also inseparable from human behavior. A very visible cause is the terrible regulation of regional spatial planning and the lack of supervision over the activities in that area. So far, especially during the

regional autonomy era, there has been a wrong understanding of interregional spatial planning.

The upstream area that is the largest water supplier is left to think alone in formulating its spatial planning and supervising the behavior of the people – who usually prefer to farm seasonal crops or who often explore protected forests. In consequence, there is high sedimentation of the earth's surface at the upstream area, bringing sedimentation to the flowing river.

Meanwhile, downstream, the Regional Government is faced with disempowerment in managing their city's spatial planning and their citizen's activities. The river that flows at the center of the city is surrounded by buildings, thus there are no more open green spaces that function as safety belts. Strangely, these buildings often possess building permits. Worse, there are also illegal non-permanent buildings that jut into the river, narrowing the river's flowing area.

The government does not dare to act upon these illegal homes or buildings that unreasonably obtained permits. Worse, there is a high sedimentation rate and a lack of efforts to carry out countermeasures against the increasing amount of weed and the regular mounds of trash. These problems disturb the river's function as the media that channels water. Then, in the rainy season, the river can no longer function well, and the high debt of water causes floods.

In the regional autonomy era, there is already an emphasis on the importance of interregional cooperation. But at the practical level, there are still many regions that fail to fully understand it. It is difficult to carry out this interregional cooperation, especially when it regards environmental and natural resource management, including water management. There are still many conflicts in water management between regions.

There are many governmental policies at the national, provincial, and city/regency levels that contribute to the emergence of conflicts. Thus, it is difficult to resolve the water resource conflicts that occur. If there are categorizations, these policies tend to be directed at various forms of pragmatic orientations, including economic orientation, privatization, unsynchronized legal regulations, regional egos, and lack of a just and even distribution of water resources, which are described as follows:

First, is economic orientation. This includes the conflict that involved the Surakarta City Government and Klaten Regional government, as well as the Surakarta government and the Karanganyar Regional Government. It started from

the Decrees of the Klaten Regent and the Karanganyar Regent that drastically increased the price of every cubic meter of water, causing continuous conflicts.

Second, the spirit of privatization. Almost all conflicts that happen in the Surakarta area are inseparable from the interest in the privatization of water resources. It includes the conflict between PT. Aqua and the Klaten people, where the company obtained the permit to exploit a local spring, caused a drastic decrease in water debt for the people. There is limited water for the people's farms, making the people worry that their crops will fail.

Third, unsynchronized legal regulations. A policy model that causes conflicts is apparent in the conflict between the Surakarta City Government and the Klaten Regional Government. The Surakarta Mayor argued that there is no legal basis for the Surakarta government to have to pay for the water. Even, the Surakarta Mayor has repeatedly stated that the main problem is not the amount of money that has to be paid, but whether or not the legal basis that becomes a reference of this decree exists. Even though there are already related regulations, for example, the Regional Decree of the Central Java Province No. 7 of 2002 on Taxation on Surface Water Intake and Usage and Klaten Regional Decree No. No. 7 of 2012 on the Third Party Contribution to the Region. The legal basis for interregional cooperation of Subosukawonosraten is regulated in the Inter-City/Regency Common Regulation No. 10/2001, No. 590/398/2001, No. 42/2001, No. 5/2001, No. 54.a/2001 also No. 590/1414/2001 which were signed on October 30th, 2001. This legal basis is then extended with the Common Regulation of Surakarta, Boyolali, Sukoharjo, Karanganyar, Wonogiri, Sragen dan Klaten Mayors/Regencies No. 11.D/2006, No. 36/2006, No. 26/2006, No. 8/2006, No. 26.a/2006, and No. 1/2006 that was signed on October 30th, 2006 and that applies forever. Among the things that this Common Regulation stipulates is cooperation in the clean water sector.

Fourth, the regional ego becomes another cause behind water-related issues at Surakarta ex-Residency. Since 1998 or post-Reformation, using the footsteps of regional autonomy, the areas that have water springs have the right to manage the water resources that they have. This authority places them in a highly profitable position, both economically and politically. Not all aspects of regional autonomy support the existence of water resource management in the regions, one of them is how regions do not have the authority to manage water resources that originate from watersheds.

Fifth, there is an uneven distribution of water resources for the people. It is a fact that the case of uneven distribution causes water resource conflicts. This case has involved conflicts between farmers and also between farmers and the water irrigation managers. This triggers protests or even prolonged conflicts.

Sixth, regulation introduction is seldom held. This leads to the non-compliance of business owners, the government, and society. Regulations are made to create order and peace in a structure, [23]. Some citizens of Surakarta City suggest that they have made peace with the condition and regard that the existing regulations cannot give them a solution to preventing water resource conflicts around them.

Seventh, there needs to be regulations that not only regulate law enforcement but also those that become a solution to water resource conflicts. These regulations can be made like a regulation that adopts the principle of sustainable city development.

4 Discussion

Concerning water resource management in Japan, [24], to support the agricultural sector, the water supply is taken from rivers, groundwater, and water reservoirs. Irrigation network facilities are developed to distribute the water to agricultural locations. The farmers have a high awareness of operating, maintaining, and using water. Thus, there are seldom any conflicts in the water resource usage. In implementing the operational, maintenance, and water usage activities, the farmers of each area (*chiku*) form organizations that aim to manage and regulate the water assets, named "*tochikairyoku*". This organization associates with water-using farmers whose scope of responsibility includes carrying out operational, maintenance, and water distribution managerial activities. In the amendment of the law that regulates the water resources in Japan, this organization has legally been accommodated, [25].

a research entitled "Watershed of Begawan Solo Upstream above Gajah Mungkur Dam, Wonogiri", showed that the Begawan Solo upstream watershed is highly strategic, considering that the area watered by the Gajah Mungkur dam is very extensive. Its role is crucial in the Regional Autonomy era, as the water flows in several regions. It is the mainstay to water the agricultural land in Sukoharjo, Klaten, Surakarta, Karanganyar, and Wanogiri Regencies. The watershed development is directed at developing and rehabilitating facilities to control floods and erosion, supply clean water, and increase

crop production. But, behind that, there are conflicts of interest in water allocation and distribution, that involve different water user sectors that involve several cities and regencies along the Begawan Solo watershed, [26].

To resolve the conflicts of interests related to interregional water allocation and distribution, the regulations and the usage of water at the Gajah Mungkur dam and the Begawan Solo watershed cannot be separated. On the contrary, it should be holistically interrelated based on the ecosystemic approach. There cannot be partial regulations on the watershed areas from the upstream up to the downstream, as they are interrelated. Thus, to prevent prolonged interregional conflicts of interest, in the era of regional autonomy, there needs to be a centered regulatory policy with coordination and authority divisions between the Central, Provincial, and City/Regency Governments, [26].

Decentralization opens up the chance for interregional conflicts if these regions tend to be economically unequal, [27]. This may be seen from the low Regional Original Income, the income of the real sectors, and social inequality, seen from the high poverty rate. Apart from that, the high population rate also highly burdens the regions to push socio-economic development. Apart from the factors above, lack of coordination and unclear legal regulations also have the potential to create conflicts in interregional water usage or water distribution. The current decentralization policy still potentially causes water-related conflicts; thus, the government should formulate a clear legal regulation that is agreed upon by the related parties.

The ecoregional approach is a new paradigm in spatial developmental planning, [28]. This approach is one of the pioneering thoughts of sustainable development. It is understood that the development planning theories or concepts in an area keep on shifting according to the changes in the people's social, economic, cultural, and political conditions. In the middle of the shift of developmental concepts or approaches in the context of natural resources, including those of water resources, there is also the emergence of conservatory concepts, whose approaches are no longer aimed merely at achieving economic welfare, but have shifted towards the direction of the sustainable developmental concept. The essence of sustainable development is to internalize environmental aspects in planning developmental activities. The Sustainable Areal Planning Approach is an implementing instrument of development in the current era. It may be manifested through the Ecoregional Approach. The main characteristic of this approach is the planning

that is adapted to ecologic boundaries. It follows the natural characteristic similarities as well as natural phenomena – or ecoregions – instead of following administrative boundaries, [25].

Law No. 32 of 2009 on Environmental Protection and Management has placed the ecoregional model as a principle. As a consequence, it must be implemented as a basis that is complied with by regional governments in formulating policies on environmental protection and management, including policies on regional water resource management. The ecoregional principle means that environmental protection and management must consider characteristics of natural resources, ecosystems, geographic conditions, local people's culture, and local wisdom.

The ecoregional approach places water resource issues in a more extensive and more comprehensive scope, that does not acknowledge administrative areal boundaries. Thus, the water resource management issues cannot be understood based on the interests of regional egos, as its management is interregional.

The efforts to resolve water resource issues with the ecoregional approach are carried out by involving related areas, namely regional areas and especially upstream and downstream areas. Regional governments must have a mutual understanding to think about water management, based on a mutual agreement, written in the form of a memorandum of understanding between regional governments.

The water resource management with the ecoregional approach has attracted the attention of many. It is carried out by connecting water resource management issues with environmental ones. The water management that produces water-related services (in the downstream area) has the responsibility to carry out areal conservation (in the upstream area) for the environmental services it provides. This is so that the water – as a source of life and as a life necessity – may be sustained.

The ecoregional approach may be carried out through some steps. It starts by creating a mutual agreement between regional governments, that contain the system of water resource management, the mutual responsibilities, the rights and responsibilities of each party, and also the compensation obtained by the regional government at the upstream area. This mutual agreement is then implemented by each regional government. The legitimization is in the form of Regional Decrees that regulate the imposition of responsibilities and the rights of interregional water resource

management, beyond administrative areal boundaries.

In formulating a policy on water resource conflict management, the ecoregional approach must be supported by the society's involvement through participative approaches. In formulating the water resource developmental laws, the thoughts that are rooted in the participative approach must be accommodated. It is an implication of the strong efforts in implementing a democracy-based developmental model. Because of that, the legal renewal that will be implemented must position the law in a social community and with humanity as its main focus.

The participative approach is a deconstruction that places society in a detrimental position in managing environmental issues. In the legal sector, the participative approach is apparent in formulating regulations, implementing laws, and monitoring resolutions of natural resource disputes. Democratization in the law formulation is characterized by the entrance of the people's spirit. It is manifested in various forms, both directly or indirectly through houses of representatives. The participative approach places society as a subject in determining the management and the resolution of water resource issues. It is born from the demands of the democratization spirit that places the society as the holder of sovereignty.

Socio-political processes in this state have deconstructed various buildings and orders. They have been liquidated to their original form, namely "the people". The people have liquidated the Houses of Representatives and the election mechanisms of leadership. Slowly, Indonesia experienced a change from this deconstruction– from an artificial society to something more natural, [29]. This spirit of pure, people-based democracy becomes the great current that will push change in this country, including legal changes, especially in water resource management.

In the future, to propose suggestions for carrying out legal renewal related to natural resources and the environment, the people's autonomic power must be further accommodated. Organizations of interest, such as non-governmental organizations and environmental organizations must be placed in a better position to encourage the growth of civil society, [30]. Based on that, the society must be encouraged and they must be filled with the spirit to increase and strengthen their bargaining positions, including in resolving conflicts that happen in the diverse and complex communal life.

The legal policies on water resource development must place the society at greater access to strengthen the people's autonomy, to reach a civil

society. Social access includes access to public information, access to participation, and access to justice. The people's rights to the water resources must be better accommodated. Then, the state's obligation to guarantee the fulfillment of that right must be better implemented.

5 Conclusion

The water resource management conflicts at Surakarta ex-Residency have simultaneously increased with the increase of the water demand. Vertical water resource management conflicts happened between the society and the companies that have control over water and springs, due to profit-oriented water management policies. Apart from that, there are horizontal conflicts, such as those that happened between Regional Governments as a result of an inaccurate understanding of regional autonomy, that resulted in water resource management that is based on regional egos.

The governmental policies that resolve water resource management conflicts at the city/regency, provincial, or central levels contribute to causing water-related conflicts. This is because these policies are directed to various pragmatic orientations and regional egos, namely: (1) economic orientation, (2) privatization, and (3) the unsynchronized laws that regulate water resource management between regional governments that prioritize the interests of their regions.

The water resource conflict management policy with the ecoregional approach is carried out through several steps. There must be a mutual agreement between the Regional Governments, which is then followed up by each Regional Government. The legitimization is in the form of Regional Decrees that regulate the imposition of responsibilities and rights in water management. The water resource management policies must give greater access to the people. The people's access accommodates the people's rights and the government's obligation to guarantee the good fulfillment of those rights.

Then, it is suggested that there must be: (1) A mutual agreement between Regional Governments in the Surakarta ex-residency area must be formulated in managing water resources. It includes the usage of water resources and their preservation through conservation that must be carried out by each regional government; (2) There needs to be a review of the profit-oriented water resource management policies from the regional governments that direct to privatization, considering that the water resource is a limited non-economic resource, meanwhile, the current water resource management

is profit-oriented; and (3) The regional government needs to have the courage to take over the water resources that have so far been managed by private-owned entities and that do not have orientation for social welfare. In this case, the state-owned business entity, namely the Municipal Waterworks, must take over its management. This may also be carried out by partnering with private-owned entities, with the Municipal waterworks as the more dominant party in managing the business or in obtaining profit. All this is aimed at achieving maximum welfare for the people.

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Nomenclature:

No.	Abbreviation	Meaning
1	m ²	Meter square
2	m ³	Cubic meter
3	km ²	Kilometer square
4	km ³	Cubic kilometer
5	Rp.	Rupiah (Indonesian currency)

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- Budiono: Conceived the research and provided materials and data for the research.
- Marjanah: Provided materials and data for the research as well as designed the methods.
- Yuspin: Selected research data as well as analyzed and interpreted the data.
- Hernanda: Analyzed the data and provided a description of the results.
- Absori and Mirielle: Wrote the introduction and arranged the script according to the instructions.
- Nurhayati: Analyzed and interpreted the data and wrote the paper.
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The authors have no conflicts of interest to declare.

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