

A Comparative Research Of Water Resources Protection Between Indonesia And Pakistan

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Abstract: Viewed from the legal aspect, the government's attention to water resources can be seen from the management, sustainable water resource development, and public participation principles. This research discussed these three aspects by adding the advantages and disadvantages of water resource management in Pakistan. This research was library research with a legislative approach and using comparative research. The research results showed that there were three aspects of water management in Indonesia. The first was the principle that water resources are part of Human Rights. Furthermore, water resources are an important part that cannot be separated from an environmentally friendly sustainable development strategy. Then, community participation was stated in Articles 2, 4, Articles 62, and 63 of Law 17 of 2019. Meanwhile, there were three basic aspects of the management of Pakistan's water resources. First was the principle of Pakistan's water management, which was stated in the country's constitution in 1973 and adopted by the UN Resolution, which ensured fair and equal access to clean water and sanitation for all its citizens. The second aspect of sustainability of the Pakistani government was to establish a planting policy strategy with the concept of More Crops per Drop or more plants per drop, which was continued with national-scale technical actions. At the same time, the third aspect was in terms of public participation. The government stated it in the National Water Policy of 2018. The advantages of Pakistan's water resource management law were based on Islamic law, the internationalization of water resource management, and the establishment of a special agency that deals with water resources. The weakness of the law was that Pakistan did not have a master law on water resource management that applied nationally. Secondly, there was no national legal update and a tiered water resource management structure that could cause national disparities between regions.

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1. Introduction

Until now, the function of water tends to decline and cause damage to the environment, not only impacting the decline in the quality and quantity of water but also impacting the balance of the environment regionally and globally (Mulyanti, 2022). Climate change that can increase the intensity of rain and changes in land use increase the risk. Therefore, we can conclude that water is a resource that is needed, affects small aspects of life, and has an impact on global space. Hence, it is not wrong that there is an expression that has developed in this modern era, namely that in the future, water will be more expensive and valuable than oil.

The function, role, and existence of water are decreasing, and the needs of humans and other living things are increasing. In addition, there are also many threats to international trade that have made water a trade object, like other merchandise, but also exacerbated by the exploitation of water for commercial purposes without paying

attention to the conservation of water resources (Weningtyas & Widuri, 2022). In essence, water is a substance that cannot be replaced. Therefore, the right to water is a basic right for human life (Pawestri, 2019).

One country that has implemented many water resource protection policies is Pakistan. Even since 2018, the Pakistani government and its people have committed to the motto of emphasizing more sustainable use of water resources and proposing the concept of “producing more plants per drop of water”. In addition, something more interesting to consider is the government’s attention to the resolution issued by the UN regarding water and sanitation management for all citizens. Besides that, Pakistan has a Minister of State who specifically handles water. Based on temporary research, researchers found several things that required attention from Indonesian law regarding water resource management in Pakistan, which can be implemented in the Indonesian legal system. Given that the management of Indonesian water resources has entered a new chapter with the enactment of Law 17 of 2019 concerning Water Resources. The regulation will certainly have a significant impact on the existence of water in Indonesia in the future. This study sought to discuss the management of water resources based on the regulation by comparing it with the water resource law enforced in Pakistan. The research object focused on the legal aspects covering the principles, sustainable water resource conservation, and public participation aspects, as well as examining the weaknesses and strengths of water management in Pakistan.

2. Materials and Methods

The first approach in legal research was the statute approach. This approach is a research approach carried out by reviewing all laws and regulations related to the legal issues the researchers handle. Then use comparative approach was carried out by comparing the rules of the Indonesian state with one or more other countries on the same matter. Researchers could also compare court decisions in several countries with the same case.

3. Results and Discussion

The government must maintain and preserve the water ecosystem so that it can always be utilized by humans and the surrounding environment by using legal instruments and supporting infrastructure. Legal instruments as the main tool to support the preservation of water resources have long been established by the government. However, along with the development of the times and the needs of the state and society, these regulations have changed and been replaced with new regulations. Although there are no regulations that guarantee the success of a program, with these regulations, we can assess how the state manages, preserves, and ensures justice in the use of water for all its citizens by addressing increasingly complex problems. This research focused on several objects contained in Law 17 of 2019, including;

Water Resources Management Principles In Indonesia

Recognition of Water as a Human Right: If life is a human right, then systematically, for humans to live, the main element that must be fulfilled as a basic need is water. Therefore, the government is obliged to ensure the availability of clean water for the basic needs of the community and protect the right to water for all citizens. The international legal instrument on Civil and Political Rights explicitly states that restrictions or reductions are possible for various categories of human rights, although it must be done

contextually. It shows that the human rights perspective/instrument allows the implementation of human rights fulfillment to be compromised with other matters that support human life and the environment, such as large-scale security disturbances, disturbances to “public order,” serious disturbances to public/community health and safety, natural disasters, and so on as long as the basic prerequisites for the goals of a democratic society are upheld and carried out solely for the sake of realizing social welfare (Jatmiko, 2018). Recognition of water as a human right is contained in Article 6, paragraph (1) of Law No. 17 of 2019 concerning Water Resources. This article emphasizes that everyone has the right to obtain water to meet basic daily needs for a healthy, clean, and productive life. It is a legal basis that emphasizes the importance of water as a basic right of citizens that the state must guarantee.

This opinion is basically the same as the concept of the theory of maritime law *mare liberum* by Hugo Grotius in 1609, which is applied to international maritime law. The meaning of this theory is that the sea is an area that is free to be used by all nations (Amy Azuan Abdullah et al., 2023). However, if we analogize this concept to the main object of the sea, namely water, that water is also a common object that everyone can enjoy for their living needs. This concept is very relevant to the view that was previously developed during the Roman law era in the natural law school, which was stated with the *res communis* concept, which means the concept of the general public and the common heritage of humans, which includes air, flowing water, sea and coast (Amsir, 2021). According to Roman law, there are several provisions regarding the law of objects. The most important are natural objects that cannot be owned by anyone, such as air, water, rivers, and so on (Husna TR, 2016). This concept is implicitly contained in Article 28 H of the 1945 Constitution, which states that everyone has the right to have a good and healthy living environment. Regarding the regulation of legal certainty over water resources in the Indonesian constitution, it is also regulated in Article 33, paragraph 3 of the 1945 Constitution, which firmly states that the earth, water, and natural resources contained therein are controlled by the state and used for the greatest prosperity of the people. Therefore, it can be used in the management and utilization of water resources for the people’s greatest prosperity (Sri et al., 2019). Let us look deeper into the concept of utilization and citizen rights over water resources contained in the 1945 Constitution, both in Article 28 H and Article 33, paragraph 3. It is an implementation of the concept of justice Thomas Aquinas developed, who calls it commutative justice (*Justitia commutativa*), which is justice received by someone without looking at the services of each party (Adlhiyati & Achmad, 2020). The teaching of the adage of justice that is quite relevant to this concept is *Iustitia est constans et perpetua voluntas ius suum cuique tribuere*. The meaning of this adage is that all that has been a human’s right is given voluntarily, directly, and continuously (Astriani, 2020). There is a more assertive and straightforward statement that states justice between generations. According to Edith Brown Weiss, the meaning contained in this principle is that every generation of humanity in the world has the right to receive and occupy the earth, not in a bad condition, due to the actions of the previous generation (Wahanisa & Adiyatma, 2021).

The Sustainability and Conservation of Water Resources Concept

The increasing population is followed by increasingly massive environmental damage and industrial development and increasing needs for land and other natural resources, so the exploitation of natural resources is inevitable, causing an imbalance between the availability of water resources and the need for water (Ikhsan et al., 2021). Making the preservation and benefits of sustainable resources a major topic that cannot be avoided at present and in the future, which must be considered and prioritized by the community, especially the government.

It is due to errors in water management reflected in the high level of water pollution, inefficient water use, very large fluctuations in river water discharge during the dry and rainy seasons, weak institutions, overlapping management between sectors, sectoral egos, and legal instruments that have not been able to guard management properly (Jundiani, 2018). The research results estimated that Indonesia will experience a clean water crisis in the coming years caused by several things, namely supply and demand, in the form of an imbalance between availability and increasing needs (Gusdini et al., 2016). Global climate change, which is basically greatly influenced by modern human behavior and industrialization, increases forest damage both on a national and international scale, greatly affecting groundwater reserves in forest areas and certain regions (Harriyanto et al., 2017).

The seriousness of the government in fulfilling water resources in the concept of sustainable development is stated in Law No. 11 of 2020 concerning Job Creation. Regional governments with the autonomy that has been determined show that the development so far is considered less than optimal in managing water resources, especially in terms of fulfilling the right to water for the community (Kusumaputra, 2021). This regulation adds to the firmness of the management of Indonesia's water resources towards a more commercial direction as economic goods by changing several articles in Law No. 17 of 2019 concerning Water Resources. Article 8, paragraph 4 of the Water Resources Law, which the Job Creation Law amended. There is an opportunity for natural resources for commercial interests. If so, then water is no longer a public interest, but water for private interests used for commercial interests (Fauzani et al., 2021). This commercialism will inevitably bring conflict in the future. The conflicts include quantity conflicts related to the potential for scarcity in certain areas and excess in other areas, conflicts in the quality of water resources due to pollution or industry and environmental damage, organizational conflicts due to fragmentary and sectoral management or administrative areas, value conflicts related to the view of control and utilization of water resources as public or private goods and global economic commodities (Triana, 2014).

Public Participation

According to Taylor and de Leo, local wisdom is a way of life that is inherited from one generation to another in the form of religion, culture, or customs that are common in the social system of society (Rummar, 2022). Local wisdom has a high life value content resulting from a compromise between concrete objects and human conscience, resulting in aesthetic products that are worthy of being continuously explored, developed, and preserved as an antithesis of socio-cultural change and modernization. Local wisdom is a

product of past culture that is continuously used as a guide to life. Although it has local value, the values contained therein are considered universal (Astuti, 2019). Local wisdom is a source of values that is based on tradition, so it becomes a philosophy of life that is firmly held by its adherents to carry out the sustainability of the indigenous generation (Mujtaba et al., 2024).

Article 4 of Law 17 of 2019 concerning water resources regulates the scope of water resource regulation that involves community participation. Furthermore, more detailed regulations regarding community participation in water resource management are regulated in Article 62 of Law 17 of 2019. In other words, the community also has the right, supported by law, to access water resources for the community's basic needs. Second is giving the community access to the water resources they control for basic living needs (eating, drinking, and bathing) (Anggraini, 2020).

Meanwhile, the concrete form of this participation is public consultation, deliberation, partnership, conveying aspirations, supervision, and/or other involvement in accordance with the provisions of laws and regulations. One form of this aspect is the local wisdom of Tudang Sipulung, Kombongan, and Empo Sipitangari from Bugis, which is a form of agreement between three customs to protect and utilize water resources jointly. From the Yogyakarta region, there is local wisdom, namely Wono Deso and Tlogo Deso, for water protection (Astriani, 2020). The Indonesian state and the law preserve this local wisdom because it is a form of culture that is very useful for development, society, and the economy.

Water Resources Management of Pakistan

Pakistan has 143 water storage reservoirs, varying in size and scale. Tarbela, Mangla, and Chashma reservoirs, in particular, stand out as significant entities, collectively accommodating a storage capacity of 18.92 million cubic feet (MAF) (Roser, 2021). The ecological, economic, and social well-being of Pakistan depends on the diversity of water resources (Gunawan et al., 2022). Ice and snowmelt in the upper Indus Basin, changes in monsoon rainfall, and complex groundwater circulation in the lower reaches make water supplies uncertain. The rivers in the western part contribute 75% of surface water, while the rivers in the eastern part contribute 1.5%. The rest is a consequence of rivers and rainfall in Pakistan (Chaves et al., 2020). The decline in mean annual rainfall is also putting pressure on water resources by reducing recharge (Ahmad et al., 2023).

Basic Principles of Water Resources Management

The basic principles of water resource management in Pakistan are outlined in the country's constitution, namely The Constitution of the Islamic Republic of Pakistan in 1973. Water resource management in the country's constitution is included in the management of natural resources and the basic needs of citizens' lives, as well as the state's obligation to meet the citizens' basic needs. The state's obligation is the Right to Water, which requires that the state is not only obliged to provide water freely but also obliged to build mechanisms that facilitate public access to adequate water supplies (Nadia et al., 2008).

Stakeholders in countries and governments are very aware of the many limitations of natural resources and geological factors that are less supportive of achieving these goals,

so many aspects must be met and worked on in the future. The initial process as the first stage is to establish an Integrated Water Resources Management (IWRM) institution, which is a comprehensive approach that aims to encourage harmonious development and effective management of water, land, and interrelated resources. The main goal is to optimize the people's economic and social welfare in a fair and balanced manner and ensure the preservation and sustainability of important ecosystems. By adopting IWRM, decision-makers seek to overcome the limitations of a fragmented approach to resource management, which often leads to inadequate services and unsustainable resource use (Sial, 2023). This integrated process recognizes that water resources are closely related to the environment, which functions as a valuable natural asset that supports human well-being and ecological health. The main objective of IWRM is to promote a coordinated and inclusive approach that protects the long-term viability of ecosystems while maximizing the benefits derived from water and related resources for the wider community (Adquisiciones et al., 2019).

The concept of sustainable water resources development

As an agricultural country compared to the global average, Pakistan's agricultural sector uses a very large amount of water for agriculture (almost 95%), which indicates a serious imbalance in water allocation, in addition to urbanization, industrialization, population growth, and climate change are real threats in the future (Mujtaba et al., 2024). Following up and in order to overcome these problems in the future, the Pakistani government has recently established a government policy entitled More Crop Per Drop or More Plants Per Drop (Ahmad et al., 2023). It is a strategy and action in the future to increase the quantity and quality of water to support and meet the needs of sustainable development.

The first strategy carried out by Pakistan in water resource management is to increase groundwater extraction substantially by 20% by 2040 (Raheem et al., 2024). This increase in groundwater extraction projects a significant spike, reaching 4650 MCM/year. The target is estimated to meet the water needs for agriculture in the Punjab region in one rice planting season. Both governments implemented high-efficiency irrigation systems called High-Efficiency Irrigation Systems (HEIS), which were applied to agricultural land throughout Pakistan (Nasir et al., 2021). Pakistan is considered a water-stressed country and is rapidly transitioning to water scarcity. The quality of drinking water is also rapidly deteriorating (Ishaque et al., 2024). The impact of this water shortage will continue to worsen over time and will worsen if mitigation measures are not implemented immediately and as effectively as possible throughout the country (Ishaque et al., 2022). One indicator of Pakistan's success that is not found in other countries in the concept of sustainable development of water resource management is the increasing agricultural production and the rapid increase in the number of people who have shifted to the agricultural sector in recent years, where this sector requires 70% of the total water reserves (Janjua et al., 2021). This success is based on government policies using drip irrigation systems and government support in increasing the economic value of agriculture and the shift of crop types to high-value crops, as well as campaigning for a contract farming system with various facilities from the government.

Community Participation in Water Resources Management

The democratic aspect of Pakistan's water resources management can be found in Pakistan's National Water Policy (NWP) 2018, which reflects several aspects, namely, the inclusion in Decision-making And the recognition of various stakeholders' roles. This policy emphasizes the importance of the involvement of the central government, provinces, local communities, the private sector, and civil society organizations in water resources management. It shows an inclusive approach that is in line with the principles of democracy, where various parties have a voice in decision-making. Second Decentralization of Authority: this policy supports the strengthening of the role of provinces in water resources management in accordance with the principle of decentralization, which is an important element in democracy. With decentralization, decision-making becomes closer to the affected communities. Third is public participation; community involvement in decision-making and policy-making is highly considered in Pakistan's federal system, as it provides spaces for the community to express their aspirations according to their authority. Fourth is the Importance of Awareness and Education. This policy emphasizes the need to increase public awareness of water conservation and the importance of public involvement in water management. The public awareness campaign mentioned in the policy provides space for communities to play an active role in preserving water resources. Fifth is the Empowerment of Local Communities through the establishment of Water User Associations (WUAs) and community-based organizations. The NWP encourages community participation in irrigation management and water distribution at the local level. It reflects participatory democracy, where communities are directly involved in managing the resources that affect their lives. Sixth is Transparency and Accountability. The policy calls for the establishment of a transparent monitoring system to monitor water use and distribution at the national and provincial levels. By involving all stakeholders in monitoring, the policy seeks to enhance accountability. Seventh, Focus on Vulnerable Groups; the policy recognizes the need to ensure equitable access to water for all, especially for rural communities, women, and other vulnerable groups. Democracy demands equal treatment and the elimination of discrimination, which is an important part of this policy. Roles of Institutions Strengthening Democratic Institutions: The policy recognizes the importance of strengthening institutions such as the Indus River System Authority (IRSA) to ensure equitable distribution of water.

Weaknesses of Pakistan's Water Resources Management Law

Absence of a Comprehensive Law

It is a fundamental problem in the legal sector of water resources management. Regulation of water resources and management of water resources is delegated to the provincial or state governments of Pakistan, while the federal/central government handles it if there is a dispute between regions in water resources management. The mechanism is contained in the 1973 constitution of Pakistan, in the 18th amendment in 2010. In addition, the provincial government determines the legal regulations at the level of laws. This condition can be said to be a legal vacuum. In fact, the central government establishes

regulations at the level of laws on water resources management that can be used as guidelines by all states so that potential conflicts and problems related to the use of water across provincial boundaries can be reduced or prevented early on.

Statutory-level regulations (Umbrella Law) regulate the authorities mandated by the provincial government so that the government can determine regulations related to water resources that do not conflict with and go beyond the authority that has been determined. This umbrella law is very much needed, especially in a federal state that has a greater potential for conflict in the regulatory sector and can spread to conflicts between provincial regions, such as those that have been going on between the states of Sindh and Punjab where water resources are the main object and source of horizontal conflict. This kind of conflict seems small, but at its source, it can cause divisions between regions and become a source of national-scale conflict.

The Pakistani government still considers water resources as ordinary resources that do not contribute to the national scale, unlike other natural resources such as mines and forests. It seems that water resources are still not an urgent matter that needs to be handled seriously. In fact, in various regions, many conflicts originate from water management by local governments.

No Legal Updates

Legal update efforts, especially in water resources, should be a top priority in the coming years. Several regulations that are still valid currently, namely the Canal and Drainage Act 1873 and the Punjab Irrigation Act 1879, are still in use nowadays. Both laws are more than a century old and originated from the British colonial era. These regulations are no longer able to accommodate the conditions that exist in the current era, such as climate change, water pollution, urbanization, increasing population, industrialization and deforestation, and increasing agricultural and plantation needs. The slowness of the central government in paying attention to water resources has caused several serious national problems, such as inter-regional conflicts, acute water pollution on a national scale, especially for drinking and household needs, and unfair and uneven distribution of water between regions. Prolonged water crisis, flooding during the rainy season, and drought/water shortages during the dry season.

Water resources management structure

In the 18th amendment to the Constitution of Pakistan 1973 in 2010, Article 155 mandates water resources management to the provincial or state government. This national scale policy does not have negative consequences in realizing fair water resource benefits for the entire community. Researchers found that there would certainly be conflicts between regions related to the distribution of water utilization, especially for all citizens' basic needs. Conflicts can be caused by differences in quantity or even quality of water resources, which can certainly differ between one region and another. Surely, a sense of nationalism with high self-belonging will influence local governments and residents to maintain their natural resources, especially during water crises and long droughts. Such conditions can create gaps between provinces that can trigger disputes, conflicts, and divisions between regions.

The tiered national scale water resources management structure also gives provincial governments the authority to form water resource management regulations that apply to their respective regions, which will also have a negative impact on the region or other regions.

Prioritizing repression over conflict prevention

Researchers saw that Article 155 of the Pakistani constitution describes a conflict resolution mechanism or a way to resolve conflicts. It is a good policy, but there will definitely be water resource conflicts, and there must be a resolution mechanism. However, researchers considered that this mechanism should not be included in a country's constitution because it regulates technical matters, which should be regulated in technical legislation so that regulations can be more comprehensive and clearer regarding administration and procedures. In addition, conflict is the effect or result of a policy or real event whose certainty is unclear, which may or may not happen at all. Both researchers saw that the Pakistani government prioritized focusing on repressive resolution/action rather than preventive orientation or preventive action. It caused many state policies to be inefficient in solving problems. Hence, the government spent a lot of energy and money on building conflict facilities rather than on building and preserving water resources. In contrast, the root of the problem was water resources.

Advantages of Water Resource Management in Pakistan

Islamic Law Influence

As an Islamic country, the influence of Islamic law and management of water resources can certainly be very large or dominant. The strong basic principles of Islamic law have so far become the foundation and binder of national and state unity. Islamic law provides fundamental aspects that reflect universal values, sustainability, and a holistic approach between tribes and nations. Islamic values based on faith and piety instill responsible behavior in the world and the hereafter, both in terms of damage and benefits with rewards in the afterlife.

Islamic law instills more morality, ethics, and good morals in other people, animals, and the natural environment so as not to damage nature, with its universal, flexible, and dynamic sharia. It will not be left behind by the development of the times. Even the basic concept of Islamic law in protecting nature and the relationship between humans and nature has been widely adopted by environmental thinkers and policymakers in modern times. Islamic morality and ethics, in accordance with the Shari'a, teach that nature/environment is a mandate from God given to humans as noble creatures and are considered most capable of protecting and preserving the environment for the life of nature in future generations/very much in accordance with the principles of sustainable development in the modern era.

Internationalization of water resources management

The Pakistani government can be said to be a model country with limited geological conditions that convince it to start a major project for the future welfare of its citizens by providing water needs facilities. It is implemented by ratifying and implementing UN

resolution A/RES/64/292 of 2010 concerning water and sanitation management in national policies that have been in place for the past few years by making policies that can be assessed to develop potential and preserve existing natural resources.

In addition, Pakistan also has a potential legal framework in the form of an international agreement related to water resources. Pakistan has made an international agreement with India called the Indus Waters Treaty (1960), which is an international agreement and is still in effect today and is directly supervised by the UN under the World Bank. This agreement provides a clear division between Pakistan and India over the Indus River and its tributaries, ensures fair allocation, and avoids conflict.

Organizational Institution Sector

Pakistan is serious about dealing with water shortages by establishing several national agencies that specifically handle water resources on a national scale. One of the national bodies of the Indus River System Authority (IRSA) was established in 1992. It can be said that this institution is the essential institution and holds the main national key in handling water resources management, as well as being a bridge in water resources management between provincial areas in terms of supervision, distribution, and conflict resolution between provinces.

The authority for water distribution under the control of IRSA is the distribution of water between provinces by relying on water reserves in the Indus River, which passes through four main provinces of Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan with allocations that have been agreed upon in the 1991 Water Apportionment Accord, by allocating water availability for each region, especially during droughts/long dry seasons or when the water discharge exceeds the specified threshold.

4. Conclusions

In this research, the advantages and disadvantages of Pakistan's water resources management were examined. The research results showed that there are three aspects of water management in Indonesia. The first principle, namely the Indonesian state, emphasized that water resources are part of human rights. In addition, the Indonesian government emphasized that water resource management is an important part that cannot be separated from the strategy of environmentally friendly sustainable development, which can be seen from the Concept in the 1945 Constitution, Law 17 of 2019 concerning Water Resources, Law 11 of 2020 concerning Job Creation and the National RPJM policy for 2020-2024. The third aspect, namely community participation in water resource management, is stated in Article 2, Article 4, Article 62, and Article 63 of Law 17 of 2019. Meanwhile, there were three basic aspects of Pakistan's water resource management. First was the principle of Pakistan's water management, which was stated in the country's constitution in 1973 and adopted by the UN Resolution, which ensured fair and equal access to clean water and sanitation for all its citizens. Second, the sustainability aspect of the Pakistani government established a planting policy strategy with the concept of More Crops per Drop or more plants per drop, which was continued with national-scale technical actions. In comparison, the third aspect was in terms of public participation. The government states in the National Water Policy 2018 that the main points are inclusivity, decentralization, participation, education, empowerment of local communities, transparency, and accountability, focusing on vulnerable groups. The advantages of Pakistan's water resource management law were that it was based on Islamic law, internationalization of water resource management, and the establishment of a special agency that handled matters related to water resources. Meanwhile, the legal weaknesses were that Pakistan did not have

a master law on water resources management that applied nationally. Secondly, there was no legal update that applied nationally, and the tiered water resources management structure could cause national disparities between regions.

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