

Comparative Study on Water Resource Protection Legislation between China and India

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Abstract: In the trend of global warming, the problem of water resources in India appears increasingly serious. In the current situation of COVID-19, water shortages and water pollution are threatening the improvement of medical conditions in India. At present, India lacks a systematic water law to govern the various uses of water in the country and to regulate agricultural, industrial, and domestic water use. By comparing with China, a neighbouring country of India with a similar situation, this paper puts forward some suggestions on the legislation of water law in India. This paper also draws lessons from the relevant provisions of international climate treaties and obtains theoretical support from the Kyoto Protocol and Paris Climate Agreement, making the legislative proposals in this paper more scientific and reasonable. This paper puts forward some suggestions on the codification of Indian water law from two aspects of entity and procedure. In terms of substance, the water law contains the protection standards and penalties consistent with the national conditions, and in terms of procedure, it emphasizes the protection methods of water resources. Besides, India can also participate more in the joint governance of neighbouring countries in the context of international rivers. This paper puts forward recommendations for Indian legislation in a comparative and demonstrative way and helps alleviate water pollution and water shortage in India from a global and future perspective.

1. Introduction

During the Great Pitcher Festival, many people gather to bathe in a sacred river, such as the Ganges River. That brings huge risks for the cross-infection of the Covid-19. The virus spread when people celebrate by the river without masks. On May 11, many dead bodies were spotted on the Ganges River. The reason why bodies floated on the river is the growing crisis of India's burial places and crematoriums. However, it seriously damaged sanitation and hygiene. Lack of enough clean water would also bring the system of medical services in India into crisis.

The Coronavirus outbreak in India this year has been severe. India's already serious water problems are now even more severe due to the combined impact of climate change and the pandemic. At the same time, the drought brought by climate change will make a large amount of water evaporation. In a high-temperature environment, the demand for drinking water increases sharply. The phenomenon of drought in some regions and severe floods in some regions will also make the water pollution problem more serious. Climate change is being felt in the form of unprecedented changes in almost all major ecosystems in India, including adverse effects on the water balance in different parts of the country resulting from changes in precipitation and evapotranspiration [1].

However, not every country faces the same situation as India when it comes to COVID-19. Its neighbor country, China, paints a different picture. China built Mobile cabin hospitals to solve the problem of shortage of medical facilities. Those hospitals can accommodate abundant patients and undertake the task of sewage disposal. In addition, the government has formulated relevant policies to

guide the discharge of medical wastewater. It can be said that effective measures were taken at the early stage of epidemic prevention can prevent the risk of the spread of the epidemic in time.

It will take long-term effort and practical advice for the Indian government to solve water problems. What efforts can be made by the United Nations and the international community is the focus of this paper. In this paper, effective and feasible solutions will be proposed by comparing the different measures taken by China and India in the face of water problems.

2. Existing problems in water resources in India

India is not paying enough attention to water at the strategic level. According to the Constitution of India, water resources management is the responsibility of state governments. Therefore, major amendments in the national laws will be required to ensure uniform enforcement of regulations [2].

2.1. India is not paying enough attention to water at the strategic level

India is facing a particularly difficult challenge as the water crisis is threatening millions of lives and livelihoods. Some 600 million Indians-about half the population-face high to extreme water scarcity conditions, with about 200,000 dying every year from inadequate access to safe water. By 2030, the country's demand for water is likely to be twice the available supply. As a result of rapid development, increasing population, and inequitable distribution, the water demand far outweighs supply (UNICEF et al. 2013). Nearly 163 million people among India's population of 1.3 billion lack access to clean water close to their homes [3]. However, India's water laws are not comprehensive. In India about the environment law, involving a total of two laws for the protection of water resources and prevention and control, the first is that in 1974 the Water (to Prevent and Control Pollution) Act (hereinafter referred to as the "Water Act"), the second is the environmental protection act, 1986, in the Water Act, the regulation committee in the prevention and control of water pollution, to achieve the prevention and control of water pollution. To keep the nation's water resources healthy, the Environmental Protection Law provides a macro framework for environmental protection, that is, a system that can make a rapid response to the behaviour of destroying the environment. India attaches great importance to the development of water resources, in their "Strategic Development of Water Resources" files, India's overall water resources condition and are analysed in detail planning for water resources development plan, however India as a country with sufficient water resources, the uneven distribution of water resources, per capita water resources shortage, there are some problems on water resources management. This is mainly because India does not pay attention to the strategic position of water resources. First of all, the legislation on water resources is not perfect enough. There is only one Water Law for water pollution prevention and control. In addition to all the laws, regulations, and regulations that make up water law, there are a large number of additional regulations that regulate access to and use of water for domestic use or irrigation. However, in practical application, these rules are also mixed with some unwritten rules, such as the caste system, which has long regulated the allocation of water resources. These unwritten rules operate in parallel with formal water rules and regulations. This leads to a lack of clarity and rigor in the actual regulations. Secondly, in the actual management, many problems have been exposed and have not been well solved. Water law in India is largely state-based. This is due to the Constitutional scheme which, since the Government of India Act 1935, has in principle given the States the power to legislate in this area. Thus, the Cantons have exclusive authority to regulate water supply, irrigation, and canals, drainage and DAMS, water storage, hydroelectric power, and fisheries. Indian institutions for water dispute resolution are ambiguous and opaque. State governments dominate the allocation of river waters. The Inter-state Water Disputes (ISWD) Act of 1956 was legislated to deal with conflicts and included provisions for the establishment of tribunals to adjudicate where direct negotiations have failed. However, states have sometimes refused to accept the decisions of tribunals, so arbitration is not binding [4].

The Supreme Court went a step further and took the water right directly from Section 21. It states that "water is a basic human need for survival and is part of the right to life and human rights under Article 21 of the Indian Constitution". Although the courts have clearly recognized basic water rights,

their implementation has not been encouraging. Under the Water Act, the function of the National Commission is to plan and ensure the implementation of an integrated program for the prevention, control, and mitigation of pollution in the country's rivers and Wells. These rules show that legislature had hoped to keep the water quality standard, to protect the existing water resources, requires institutions is not only to protect the common heritage of the people, such as lakes, ponds, reservoirs, and streams of water but also to prevent them from extinction, have enough legislative authorization of the authorities to protect the natural resources and prevent its abuse. Over the decades, however, the authorities have been indifferent to actively participating in the protection and preservation of water bodies, while abolishing laws in this area.

Therefore, India must attach importance to the strategic position of water resources and reformulate its water policy.

2.2. India's legislation of water resources is not structured

In contrast to China and India, the emphasis on the legislation of water resources is also different. The Water Act is the main law in India to prevent and control water pollution. But this law is only related to water pollution and does not address water shortages. Comparatively speaking, China's water act design is more comprehensive than India's.

India's Water Act to control pollution was enacted in 1974. China's Water Act was enacted in 2002. However, India's water law was last updated in 2021, while China's water act was last updated in 2016. In addition to the Act on Water Pollution Prevention and Control, the water issue is also mentioned in the Environmental Protection Act enacted in 1986. In addition to comprehensive water laws, China also has laws such as river protection law, Soil, and Water Conservation law, and flood prevention law. In general India's legislation pays little attention to water.

In contrast to China, India does not have a comprehensive water law but governing specific aspects. India's water law mainly focuses on pollution prevention and control, environmental protection, and other fields, and lacks a comprehensive law to regulate water resources. China's legislation is more comprehensive and specific, covering water resource protection, disaster prevention and control, water price, and other factors.

India's control of water resources is mainly reflected in The Water (Prevention and Control of Pollution) Act, but less in other laws. This shows that India does not attach great importance to the strategic position of water resources. In neighbor China, where the situation is similar, appointed more laws related to the water issue.

China's water law has detailed regulations on water resources allocation, water resources development, related projects, and residential water use. China has many rivers, and the monsoon climate in China can cause seasonal flooding. Thus, China appointed numerous water laws in different fields. China has developed a legislative system guided by water laws and supplemented by other regulations. When facing national water regulations and emergencies, the solutions are more mature and efficient.

2.3. India does not actively participate in international water protection treaties

In terms of international treaties, India has joined the South Asian Association in addition to joining the United Nations. The Association has related international treaties on environmental protection: The SAARC Convention on Cooperation on Environment, which stipulates various environmental issues. However, the treaty only classifies environmental issues, and made detailed regulations on procedural issues such as the frequency of meetings and cooperation methods but did not specify how to take specific measures to protect the environment.

Except that, India has not joined other international treaties that specifically focus on water resources. Therefore, in this regard, India needs to participate more actively in international water management conferences or international treaties.

International treaties related to water resources include the United Nations Waterways Convention, which is a global water resources treaty.

The 1997 Convention on The Law of the Non- Navigational Uses of International Watercourses

is the only universally applicable treaty regulating shared freshwater resources. This is a framework convention, which means that it provides a framework of principles and rules that can be adapted and adjusted to the characteristics of special international watercourses. The treaty requires all countries to participate fairly and reasonably in the use, development and protection of international watercourses.

In addition, there are Regulations for International Water Resources Management Institutions, Helsinki Rules and other treaties and rules. In addition, there are also United Nations water resources mechanisms. There are many treaties for water resources protection. However, India participates in only a few of these. In some treaties involving rivers, India may be concerned about whether it will do harm to its own national interests, and therefore did not participate, but in the long run, the future water resources, especially freshwater resources, are gradually scarce. Only under protection can the existing water resources be better protected, and sustainable development can be achieved.

3. Proposed solutions to existing problems

3.1. Give water resources an important strategic position

Water is not only a major necessity for life but also a kind of important strategic resource. Water is so vital, but its distribution is extremely uneven across the world. Some countries rich in water must manage water, water scarcity countries should pay more attention to the status of water resources. Water is difficult to manage for many reasons. It is not equally distributed geographically, so it needs costly infrastructure for transportation. It is difficult to store because it evaporates and leaks. It gets polluted easily, as it is a good solvent, rendering it unfit for human consumption without expensive treatment [5]. Thus, India should build a control system to use water rationally.

First, India needs a comprehensive water law system to guide the distribution of water resources. In contrast to China's water law, India needs to define water distribution, exploitation, pollution control, river source protection, and water conservation across the whole country.

India needs a clear division of tasks when it comes to water planning. Local governments implement measures through directives from the central government. The governments in river basins need to strengthen cooperation in comprehensive river governance. In terms of time, the Indian government needs to develop a long-term program for water resources and check its implementation through annual targets.

The development of water resources still needs to make detailed and feasible projects. India is rich in hydropower but has a fragile natural environment. In the development of hydropower resources, such as the construction of dams, attention should be paid to the protection of nature. Indian water law can provide for hydropower development, cooperate with environmental protection authorities and learn from other country's experiences.

India still needs to legislate on how to save water. The policy document should provide a framework for decision-making on water management, rather than rigid rules and dogmatic norms, which should be accepted as the guiding principle for policy formulation [6]. The most important use of water in India is by agriculture. Flood irrigation wastes a lot of water and pollutes the groundwater. Groundwater is the key source for irrigation, industrial and domestic uses in India. It is extensively relied upon in different parts of the country without taking into consideration, hydrological nature and availability of water resources resulting in depletion of groundwater at an alarming rate [7]. Therefore, changing farming techniques could save numerous waters. In addition, the government can regulate industrial and residential water use by setting water prices.

When dealing with an emergency, a feasible guiding law can provide a reference for dealing with the emergency. India faces the threat of floods and mudslides. The Indian government should draw on the experience of other countries and formulate detailed disaster prevention and defence laws. Recently, India is facing a severe COVID-19 pandemic. Water utilities are underperforming in India despite investments to improve infrastructure and capacity. Most of the urban areas get water only a few hours a day, and the 24/7 water supply is still a far cry [8]. Enough clean water can improve medical conditions and help curb the spread of the virus to some extent.

3.2. Strengthen water protection legislation

The water law provides a valid legal guarantee for the protection of water quality, strengthening the legal control of water pollution, especially chemical pollution, and reducing activities that may cause water pollution in terms of public health. In essence, this kind of water conservation is completely human-centered, that is, for the benefit of people, rather than for the environment itself. India's water legislation needs to focus on the following aspects.

First, the state shall formulate a strategic law for the water resources of the whole country. The development, utilization, preservation, and protection of water resources shall be carried out through comprehensive water law. However, India lacks a comprehensive water law until now. A water law can serve as a professional guideline for water management and flood protection in India. At the same time, the phenomenon of wasting water should also be regulated. The water law should specify the punishment method and intensity for unreasonable use of water. The provisions of Water Law in China on legal liability include an order to stop illegal acts, restoration of the original state, fine, administrative punishment, or even criminal punishment. Indian water law can refer to the experience of other countries to establish enforcement procedures and penalties. The Indian government can also set up a special team to monitor the implementation of the water law to provide technical support for local water conservation.

Second, the state shall require a restriction in the use of water, vigorously promote measures for water-saving, spread new technology and techniques to conserve water, develop the water conservation industry and agriculture and service industry, and establish a water-conservation society. The Indian governments shall incorporate the urban water supply undertaking into their plans for economic and social development. The growing demand for food to feed the increasing population of India has made it necessary to bring more land under cultivation with assured irrigation facilities. Irrigated agriculture in India consumes far more water per year than residential use, and the core of the problem lies in India's approach to flooding. Flood irrigation refers to an extensive agricultural irrigation method in which water is allowed to flow on the ground and the crops are irrigated by gravity. Drip irrigation can greatly save irrigation water and reduce soil salinization. Besides, approximately 10-15% of the population is engaged in industries directly dependent on water such as textile, leather, food processing, etc. The Indian government could set up pilot plots and gradually roll out water-saving irrigation techniques. In terms of industry, India has developed a light industry and large water consumption in the production process of the textile industry.

Third, the state shall protect water resources and adopt effective measures to preserve vegetation, plant trees, grow grass, conserve water sources, prevent and control soil erosion and water pollution, and improve the ecological environment. The protection of water resources is inseparable from the protection of the ecological environment. Water law should be based on the hydrologic status of wetlands in India for development and utilization planning.

Last, In the case of inter-watershed diversion, an overall plan, and a scientific justification must be conducted and consideration given to the demand for water in the watershed which supplies the water and in the watershed which receives it, while avoiding damages to the ecological environment. Depending on the seasonal hydrologic patterns of India's major rivers, such as the Ganges and Brahmaputra, the government could devise plans to divert water across basins to alleviate the country's unequal water distribution. In China, which also has a monsoon climate, a south-north water diversion plan has been developed to alleviate water shortages in northern China. India can rationally develop its rivers according to its hydrological data and formulate some legal provisions to plan the use of hydropower and water resources.

3.3. Promote international collaboration towards water governance

India currently participates in a few international treaties on water resources, and several major environmental-related international agreements are related to climate, but there is a lack of special treaties on water resources. India's participation in water resources treaties mainly focuses on the development of rivers with neighboring countries.

In addition to the UN convention, nations have engaged in regional-level cooperation over water, the most prominent effort being through the United Nations Economic Commission for Europe (UNECE) [9]. Through the UN and the Shanghai Cooperation Organization that India has joined, as well as the cooperation mechanisms between countries like the BRICS countries, India can advocate mutual assistance in international water facilities and learn from other countries' experiences.

First, India can actively participate in international climate conferences and discuss with other countries how to solve domestic water problems in the context of global warming. Control domestic floods by learning from world experience. The BRIC countries are all developing countries. Among them, China, India, and Brazil have similar climatic conditions. India can actively seek suggestions from China and Brazil to reflect these experiences in water resources legislation.

At the same time, India can also actively sign the UN-organized environmental treaties and use international treaties to restrict its own environmental development and resource protection. Use international standards and international practices in domestic legislation to enhance the scientific nature of the legislation.

Second, Water conservation needs global governance. The water cycle touches all parts of the globe and is not the responsibility of one country. For India, strengthening the governance of international rivers will not only help improve the ecological environment in the river basin at home but also contribute to the development of water resources in downstream countries. In addition, India should actively implement international standards for disinfection and cleaning of domestic medical water. Clean water has made a significant difference in improving medical conditions and helping to contain the spread of the disease in the country.

Third, Water resource protection is not only the task of India alone but also the focus of common concern of all countries in the world. In addition, there are soil erosion, flooding, and climate change in recent years. These problems have crossed the boundaries of countries or regions, affecting every country, every nation, and every person in the world, becoming a global issue. Solving these problems requires coordinated efforts and cooperation from all countries and regions in the world. Therefore, with the help of international organizations, it is very important for environmental issues.

In addition to actively signing international treaties related to water resources, India should also actively participate in water conservation conferences organized by the United Nations and actively cooperate with neighboring countries. Because India and neighboring countries are in the same watershed, many freshwater resources are related, it has a relationship with neighboring countries. Cooperation can sometimes be more effective in protecting India's water resources than a larger international association. In the same sense, water cooperation could easily lead to water diplomacy, as a natural continuation of friendly relations between two states, or with a third party acting as a catalyst to capitalize on water-related coordination in expanding the range of issues on which states work together [10]. For example, the South Asian Association, which India is a member of, has too few existing environmental protection treaties and no specific laws on water resources protection. Therefore, a specific international convention for the protection of water resources can be formulated, in which countries are organized to formulate Specific measures for water resources, or regularly organize water resources protection meetings, strengthen the awareness of water resources protection in one's own country and neighboring countries, and jointly protect water resources.

4. Conclusion

Against the backdrop of such a severe epidemic this year, India has performed poorly in the face of the twin challenges of climate change and COVID-19. As India's neighbor, China has a lot to learn from India in dealing with these issues, especially water resources. Therefore, by comparing the laws of China and India, this paper finds that India does not pay enough attention to the strategic position of water resources. Secondly, India does not have a structured and comprehensive water resources law, which provides no detailed solutions to water resources problems. In the end, India joined only a handful of international water treaties.

Given these existing problems, this paper points out that India needs to attach importance to the strategic position of water resources, need a more perfect law on water resources, and pay more attention to the protection of water resources in policy and practice management. Secondly, the national water resources strategy should be formulated in legislation, and the policy of water conservation should be strictly implemented nationwide to develop and utilize water resources rationally. Finally, it is hoped that India can actively participate in various water resource protection conferences held by international organizations and sign some international treaties on water resource protection according to the actual situation of the country, to better protect its water resources under the common strength of the world.

India has not adequately protected its water resources and will be unprepared to face the changing climate in the future. Through this study, we can clearly understand the existing problems in India and put forward targeted solutions. India's water problems are not only concerned with its own problems, have always been a global environmental problem, in the unknown future, but we also don't know what will be in the face of climate change, whether it is devastating, therefore, for India, attaches great importance to water resources is a way to protect our environment, and for the global environment is a kind of protection.

References

- [1] Water in India: situation and prospects. Aidan A. Cronin; Anjal Prakash; Satya Priya; Sue Coates. *Water Policy* (2014) 16 (3): 425–441.
- [2] Ahmad, Rasheed (2017). Water Worldwide-US Water Regulations and India's Water Challenges. *Journal American Water Works Association*, 109(3), 64-67.
- [3] Water Shortage Challenges and a Way Forward in India. *Journal-American Water Works Association*, 111(5), 42-49.
- [4] Inter-state Water Disputes in India: Institutions and Policies. Alan Richards & Nirvikar Singh, Pages 611-625 | Published online: 21 Jul 2010.
- [5] Qian, Y. Sustainable Management of Water Resources. *Engineering* 2016, 2, 23–25.
- [6] Kumar, M. Dinesh (2017). Water management in India: the multiplicity of views and solutions. *International Journal of Water Resources Development*, 0, 1- 15.
- [7] Groundwater Regulation in India: Applicability of Public Trust Doctrine and Right to Participation in Decision Making to achieve Right to Water. Gayathri D Naik (2018).
- [8] Water Governance in India: Evidence on Water Law, Policy, and Administration from Eight Indian States. Lee Kuan Yew School of Public Policy, National University of Singapore, Singapore 117570, Singapore. *Water* 2019, 11(10), 2071
- [9] Petersen-Perlman, Jacob D.; Veilleux, Jennifer C.; Wolf, Aaron T. (2017). International water conflict and cooperation: challenges and opportunities. *Water International*, 42(2),105-120.
- [10] Kata Molar, Rosa Cuppari, Susanne Schmeier, Siegfried Demuth (2017). Preventing Conflicts, Fostering Cooperation-The many Roles of Water Diplomacy.