Chapter 2

Historical Development and Conservation of Water Resources: Law and Policy

In the previous chapter, the researcher explained the nature of the problem, concepts and conflicts relating to conservation and management of water resources. The description of theoretical framework pertaining to control of reducing water resources mismanagement and issues involved therein. This chapter contains the details relating to the evolution of ways of water resources management, safety-valves providing protection of pollution of water from various polluting agents.

Indian Culture and Water Resources

We the people of India have a rich culture and heritage. Our history evidences that we always had respect for natural resources and paid due attention to the management of natural resources. The age old prioritisation of water use had been well defined and we remained strict to the regime of water resources management densed by our forefathers. The socio-legal and cultural history presented different stages of the development and growth of water laws in India. It is a matter of fact that each historical situation demand new efforts. These efforts need not be novel, they indeed need to have a continuity with the past laws and they surely break new grounds in each historical situations. The continuous emergence of the problem relating to the conservation of water resources and proposed solutions thereby at different historical periods prepare the grounds for the growth of new normative structure and regimes. The motiivation and grounds to build an ecologically sound and equitable society could be traced in our cultural, social and legislative history.

Thousands of tanks, irrigation canals and dams have been build over a long period and many tanks also have been dried up. Historical school of the legal philosophy propounded that the "civilization task of the law is to discipline
power and to contain it to move towards the creation of a just society." The colonial history of the legal regime relating to the conservation of water resources made it clear that there was complete lack of accountability in planning, administration and adjudication. The history of water resources management shows that there were many legislations but had been controlled by planned ambiguity with a regime of sanction highly variable. We inherited bodies of common law principles from the colonial rules which have been proved inadequate to promote equity, efficiency and productivity of water as a source. Hence, it is imperative in such conditions to study the legislative framework grown at different stages in point of time and space. Therefore, the researcher has investigated the causes of stagnation of water law regime with the historical perspective. By going into historical details of the laws it is intended to have a look at the pattern of their development and coherence among them, resulting in the present legal set up. Such a clarification of laws would provide insights into their shortcomings and needs of alteration with the help in understanding the sufferings of people on account of this legal regime, and their imperishment as regards to water resources.¹

In this chapter the researcher intends to explain the evolution of water law and policy in India from prehistoric to present times, briefly outlining customary systems and religious causes of Hindu and Islamic Jurisprudence. It is also within the ambit of this chapter to describe and examine precolonial developments and focusing on colonial and post colonial issues and the complexity of regulating water in India. The resulting fragmentation of water law pertaining to conservation and management of water resources has not been overcome. Water law remains patchy today partly because it is a state subject

**Allocation of Water in India**

India is a subcontinent surrounded by sea water. About 85% of the available water is used for agricultural purposes, 8% for domestic purposes and

5% for Industry. Its long history can be traced back to the Indus Valley Civilization that emerged on the banks of the river Indus. Over the last 5,000 years, society has evolved under multiple kingdom. It was often conquered by invaders from other countries, each bringing its own system of governance. Part of this story is recovered in historical accounts and records of visitors to India and part is unrecorded, giving a patchy, incomplete picture of the evolution of water resources management.

Water Resources Management in Ancient Society

"In India as in other oriental countries the law (Vyavhara) is an integral part of religion and ethics." This is particularly true of pre-colonial India where water resources were much in abundance compared to its population and demands. Thus, sources of law concerning water may be broadly kept into two categories: the laws found in religious texts, and customary practices.

The Indus Valley Civilization flourished around 2500 BCE. Water was vital for the civilization and was used primarily for human personal use and irrigation. The most important structure in the city of Mohenjodaro was the Great Bath, which had water channels leading to and from it. Its remains can still be seen today. The Indus Valley civilization gave way to Indo-European invaders who were initially less settled in their lifestyles.

In societies of food gatherers, humans protected their environment because that was their resource base. Trees, groves, and water bodies were seen as sacred. As society evolved, specific trees and ponds were seen less as supernatural and the focus shifted to the earth, fire, wind, water, and sky. Varuna

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3. Ibid
was the God of Waters and Indra was the God of thunder and rain. This often accompanied agricultural development that led to deforestation and changes in land use and forests then lost their supernatural powers. Gadgil and Guha⁷ explain how forests and forest creatures were sacrificed to the sun god in the Mahabharata and see this as a way for the Pandavas to convert forestland into agricultural land. Drinking water was obtained from rivers, springs, and artificial wells.⁸

Agriculture was the principal source of employement and fields often required irrigation. Navigation was also a significant use of rivers.⁹ Between 500 BCE and 300 CE, the large food surpluses implied no real shorage of water and supported trade development along water channels.

At this time, Jainism and Buddhism were born as counter religious forces to promote conservation of natural resources. Mahavir Jain and Gautama Buddha, who lived in about the sixth Century BCE, promoted right conduct and belief, and respect for fellow creatures. With the spread of agricultural settlements along the banks of rivers and on fertile lands, labour was needed to undertake specific tasks. Food gatherers were incorporated into the settled system of agriculture, through conquest or otherwise, as the lowest castes. Some agrue that these lower castes subsequently began to follow Buddhist beliefs with its idea of non-violence. After the devastating war of Kalinga, the victorious Emperor Ashoka himself embraced Buddhism and preached non-violence and Ahimsa¹⁰ to his people. Ashoka also called on his officers to build reservoirs and plant trees.

By 400 CE, there was a decline in Buddhism and Jainism and this was accompanied by a decline in agricultural production—possibly because of water shortages, decline in soil fertility, and/or the growth of human population. During the reign of the Gupta's and thereafter until about the 1000 CE, the lack of

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⁹ Id. at P-34

¹⁰ Id. at P-100
resources led once more to worshipping individual animals and trees and a focus on conservation. This was a period of low trade and urbanization. From around the ninth century, the development of new tank technologies and improved dams and canals in South India paved the way for the development of large-scale peasant agriculture that displaced pastoralism.\(^1\)

**Water Resources Management and Hindu Jurisprudence**

Hinduism is considered a living tradition that expresses universal truth. Each creature is made of parts and is part of the community and the cosmos. Harmony is achieved when human actions or *karma* match the nature of the human. Human actions are governed by *dharma* (law and order) that is concretized in the sacred books of the Hindus—the *Vedas*, which include the *Shrutas* and the *Smritis*. The Laws of Manu within this tradition, provide indications of the water law of the time. Water was considered indivisible. Those who could were obligated to develop water works for the benefit of others. Kings should protect public waters and collect fees for crossing waters. Diversion or obstruction of waters was discouraged and the laws imposed a system of social reprimands and punishments for those who polluted the water or who stole or diverted. Destruction of embankments was illegal. The law encouraged the use of water bodies as boundaries between villages to ensure that as many villages as possible had access to water. Water bodies of enemies, however, could be destroyed in times of war. A water controller was in charge of water administration.

Arthashastra also provides a detailed account of governance in the Kautilian period. It reflects the legal and political system from around 350 BCE to about 150 CE. The *Arthashastra* discussed the use of water for the development of water works, irrigation, and transport, specifying that all water belonged to the king and that users were to pay a water tax to withdraw water from irrigation systems installed by the king\(^2\). The system of taxes was very elaborate. When


new tanks and embankments or renovation works were undertaken or when water works were cleaned and made ready for use, there was a 5, 4 or 3-year exemption from taxes. There were limited provisions for private ownership and these included immovable properties such as reservoirs, embankments and tanks, with the owners having the right to sell or mortgage these. Where such tanks were not in use for a period of 5 years, ownership rights lapsed. All those who leased, hired, or shared such a body had the responsibility to maintain them. Private owners were allowed to give waters to other parties through irrigation works in exchange for produce. The taxes that owed to the King were specified in great detail\textsuperscript{13} and these were collected by the Chief Superintendent of Crown Lands.\textsuperscript{14}

The \textit{Arthashastra} stated that in irrigating one's own field, no harm is to be caused to others. It prohibited the release of water from dams without a legitimate reason, the obstruction of the legitimate use of water from dams without a legitimate reason, the obstruction of the legitimate use of water by others, the obstruction or diversion of the watercourse, and the building of water works on the land belonging to someone else. Where damage was caused to another party as a result of overflowing waters, compensation was owed to the other party. The \textit{Arthashastra} provides a list of damage types and the corresponding compensation or penalty due. These included the death penalty (death by drowning)\textsuperscript{15} Water routes could be used for the purpose of transport and trade\textsuperscript{16} and the principle of good neighbourliness was a civic duty.

The \textit{Arthashastra} explains that there were four sources of law: The \textit{Dharma} based on truth; evidence provided by witnesses; customs and traditions accepted by the people; and royal edicts adopted by the king. The \textit{Arthashastra} submits that where a king rules over a territory, he should ensure \textit{dharma}, and \textit{dharma} only exists when there is order. Hence, if customs already exist in specific places, the king should allow the continuance of the custom. Once the

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\textsuperscript{14} Id. at p. 315.

\textsuperscript{15} Id. at p. 233.

\textsuperscript{16} Id. at p. 623.
king makes a rule, however, he should ensure enforcement. The *Arthashastra* elaborates in great detail on foreign policy, but does not say much explicitly about water. It leaves room, however, for treaties to develop joint water works.

Specific legal norms in this respect began to emerge with the inception of the Vedic social order, where the *dharma* became, the test-stone, though not always, for all laws for their validity.\(^\text{17}\) In order of superiority the enumerated four-fold foundation of *dharma* are: the Veda (Revelatory texts), Tradition (indirect perception of Divine precepts founded on memory), "good customs" (sadachara and shistachara or way of living of good people and custom of those who have undergone Vedic instruction), and inner contentment (*svasya priyam atmanah and atma-tusti*). The rules of dharma operated, though with certain modifications time to time in their action,\(^\text{18}\) laid down duties of individuals according to their *varna* (caste or status) and *ashrama* (stage of life). Leaving aside the controversies about *dharma* as begin true source of law or nature of such laws as being 'positive', *dharma* as begin true source of law or nature of such laws as being 'positive', legal precepts relating to water are first to be traced out from these sources. A of religious legal texts provides insight into the following main principles.\(^\text{19}\)

**Property Rights and Water According to Dharamsutra**

The *dharma-sutra* (aphorismic form of teaching imparted by a master to his disciples) of *Apstamba*, an authority on civil and criminal law, lays down that one who has taken the property of another unintentionally shall be reprimanded, if the property be, among other things, water. But if the same is done intentionally his garments shall be taken away.\(^\text{20}\) As per other *sutra*—the king, as a sovereign, has immunity from consequences of such acts, he could ake or receive water from anywhere without its being considered a theft.

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Punishment for Destruction of Embankments

Embankments seem to be first technique used for artificial management of water. It could serve two purposes: guarding a kingdom from harmful effects of water, and storage of water. Because of their importance in the states security and prosperity, protection of embankments was taken very seriously and the law provided severe punishments, including capital punishment, for its destruction (whether on ponds, lakes or river). Manu, for example, laid down that one who destroys embankment of a tank should either be drowned or put to death by beheading. Similarly Vishnu-Sutras also provide that a king should give capital punishment to one who destroys embankments. Also there were heavy fines for destruction of water channels by raising embankments or unauthorised use of tanks built for the common good of people.

Rules Relating to War

Unlike the seriousness of the act of destroying an embarkment, exploitation of water for destructive purposes was permissible in times of war. Manu, the earlier law giver, for example, says that "A king who wishes to conquer his enemy should first of all destroy dams in his (enemy's) territory.

Much latter Kautilya renders same advice by saying that "when on war, the tracts of land of enemy should be flooded with water by breaking dams and embankments.

Rules on Inter-Village Water Supply

Out of eighteen "heads" of disputes mentioned by Manu one relates to boundaries between villages. The law book of Manu provides that boundaries between two villages should be determined by tanks, ponds, channels, and other sources of water. This is naturally with a consideration of inter-village water


supply so that constant flow of water between two such units could be maintained.\(^{23}\)

**Other Rules**

There are many rules emphasising the religious values of water and providing for self-restraints or sanctions to be observed by its users. The dharma-shastra of Vashishta, for example, in its chapter IV maintains that intellect of a man perishes who urinates in water. Such dictates, observed as religious custom in effect, even today in some parts of the country, demonstrate the need for preserving water's quality of purifying everything.\(^{24}\)

**Enforcement of Water Laws in the Vedic Society**

During the regime of Chandra Gupta Maurya, Harshvardhana and Gupta's there was a Hindu Vedic society and the country united with a centralised bureaucracy, and brought under one rule. One highly organised bureaucracy, for example, incharge of administration during Maurya period was Agronomoi with duties *inter-alia* to supervise irrigation. The concerned officer superintended rivers and inspected sluices through which water was let-out from branches, so that every one could get equal supply. The construction of reservoirs, tanks, canals and wells were regarded as a part of state functions. Similarly there are also instances of regulation of water transport and levy of tolls for goods carried through water routes and for that sanctions like stoppage of goods etc., were stipulated for non-compliance of those regulations. Further, as a process of recognition of king's rights in water, in post-Gupta times the practice of land grants gave ownership of available water resources as well to the donee even then all these had little or no impact on local customary rules and practices. As, for example, in South India a different system of irrigation management is found in which a special category of land called *eripatti* or tank land was donated by individuals to the state for common use. The villagers depended on these tanks,


\(^{24}\) *Ibid.*
for irrigation, where rain water was stored and shared by all. Water distribution was strictly supervised by a tank-committee appointed by the village and a fixed amount of water was permitted to be used while excess was taxed. The revenue from the tank was set apart for its maintenance.

In this way in ancient period one witnesses existence of legal regime of water but it is impracticable to compile various rules and customary practices. Because during that time the socio-economic system was maintained through small republics with self-sufficient and autonomous villages. The task becomes even more difficult given the vastness of the country and its political and demographic divisions. The problem gets further complex for lack of sufficient literature on agricultural aspects, thus, hindering the process of even a single sociological compilation of corpus-juris (of water) for any social group in India. for that period.

**Water Laws and Islamic Jurisprudence**

During medieval times there was inducted another set of legal principles, governed by the holy Quran and Sunna (the doings of Prophet Mohammad), in the existing system by an ethnic group with different socio-economic background. Water, in Islam, is considered as perfect, indispensable and priceless element as the holy Quran declares that “we made from water every living thing. Thus providing a fundamental guideline on which every rule concerning water is to be based. Depending upon its quality there are mainly three types of water in Islamic system. These are aabe-tahoor (water which purifies the things), aabe-tahir (pure-water), and ghair-tahoor (impure or dirty water). The principles, basically moral in nature, recognise the resource as a common property to all. They declare free access and use of water as birth right of everyone.


rules of appropriation prohibit sale of water,\(^28\) restricting seizure and hoarding of the resource up to level of ankles. For irrigation purposes priority is accorded to high areas as against the lower ones.\(^29\) The right to fisheries is a universal right in all waters irrespective of its ownership.

From the tenth century onwards. Islamic rulers governed Northern India. Subsequently, the Mughals came to power in the sixteenth century and stayed in power until European colonialists took power. This implies that Islamic rules were probably introduced in this period. Islamic law principles\(^30\) include that water is a gift of God, that no individual or ruler can own water, and that everyone should have access to water.\(^31\) These principles include a right of thirst, which gives humans and animals the right to quench their thirst from any available water point.\(^32\)

The influence of Muslim rule in India on water regulation has not been conclusively ascertained.\(^33\) Islamic rulers refrained from significant intervention in existing arrangements, generally applying Islamic law to the Islamic population while allowing non-believers to follow their own systems. Possibly, the relatively high availability of water in India precluded conflicts with Islamic norms.\(^34\) This may also explain the relative lack of attention towards water regulation during this era.\(^35\)

\(^31\) Naff, T., & DellaPenna, J.W. Can there be a confluence ? A Comparative consideration of western and Islamic fresh water law. Water Policy, 2002, 4, 465-489  
\(^34\) Iqbal Ahmad Siddiqui, 'History of Water Law in India.' In Water Law in India, (ed.), Chhatrapati Singh, ILI, New Delhi, 1992, pp 289-319.  
\(^35\) Ibid.
Replacement of Ownership of God by Ownership of Government

The rule of East India company and thereafter British rule introduced new legislative thinking in India. The colonial rules reorganised administration, including water resources in this country. The programmes and policies of colonial rules were strictly guided by the doctrine of "colonial logic" and "increase of wealth", especially in relation to control over Ferries (water routes) and improvement in agrarian conditions.\(^{36}\)

Colonization brought three major influences—a transformation from a resource gathering and food production economy into a commodity-oriented economy; a change in long-standing social relations and customs as local social relations became less important and social cohesion declined; and the development of the market and the importance given to wealth.\(^{37}\) Commercial production became more important than subsistence, exploitation more important than conservation, and the individual more important than the community. While colonization in India was less aggressive than in Africa, the British deforested large tracts in order to access coal and timber and to promote agriculture. The state gradually took ownership of forests and community irrigation and usufructuary schemes were dismantled. Water logging and salinity problems increased and small-scale irrigation schemes broke down leading to impoverishment of the small farmers.

The British introduced the concept of government control over surface waters. In the early stages, legal and administrative changes were motivated by the need for colonial expansion and to amass wealth, the East India Company focused on advancing trade and traffic, and law developed through practice and the judicial process. Until 1857 the British did not interfere with local rules and

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customs unless it interfered with their policies. The Presidency areas were completely subject to British rule, mofussil areas experienced a plural system of law, and further away local systems of law existed. A few laws were enacted such as the Bengal Regulation VI of 1819 to regulate ferries and the Charter Act of 1833 was an initial attempt to codify the laws in India. Following the 1857 revolution, the British began to consolidate power focusing both on famine relief and the need to maintain the resource base of trade. The British began to invest in and regulate canals and irrigation facilities.

British colonial water law had two main strands. First, control over water and rights to water were regulated through the progressive introduction of common law principles, emphasizing the rights of landowners to access water. For surface water, riparian rights allow a landowner the right to take a reasonable portion of the flow of a watercourse. For groundwater, landowners had a virtually unlimited right to access water under their holdings. Common law principles, enshrined in the Indian Easements Act (1882), evolved over time but have substantially survived until the present day. Second, a series of regulatory statutes were enacted, including laws to protect and maintain embankments, to acquire land for embankments, and to entrust the Controller for implementing such laws (e.g., Embankment Regulation 1829; Bengal Embankment Act 1855. Other laws regulated canals for navigation purposes and levying taxes on the users, river conservation, and rules on ferries and fisheries (e.g., Northern India Ferries Act 1878; Indian Fisheries Act 1897). Regulations recognizing local practices and rules in villages were also enacted.

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Water Management Qua Irrigation

Though practice of irrigation is very old in India, the largest legal, administrative and public work infrastructure in pre-independent India, to an extent surviving even today, was created by the British. In view of the unequal distribution of rainfall over the year it was necessary to have a well regulated system of irrigation. The expansion of public works necessitated into legal concern for accomplishing the needed ends. However, as it may be seen latter, such a network served mostly colonial purposes, through exploitation of agriculture rather than doing justice to the subjects. The country has three principal type of irrigation: lift irrigation, storage, and river irrigation represented by wells, tanks or reservoirs and canals respectively.

Two major irrigation codes of that time are the Bengal Irrigation Act, 1876 and the Bombay Irrigation Act, 1879. These Acts covered fairly larger operations by extension. Earlier two enactments, the Bengal Act VIII of 1867 and Act VI of 1869, operated for irrigation works in irrigation and to facilitate the recovery of water-rates. The overall arrangement was that the Secretary of State was supposed to purchase all waters for use from the East India company and the money due from users of those waters was given to the secretary. The powers to regulate uses of water were vested in the company.40 But in the course of time the Company sold irrigation works to the government vide Act VI of 1869 of Bengal Council. Interestingly, the new law incorporated provisions of the previous enactment and vested all powers with the concerned officers to do things which officers of the Company were empowered to by these laws.

The considerations under Bengal Irrigation Act, 1876 were to extend the earlier two enactments in view of the expanding public works and compensation issues. The act, by and large, adopted model of another enactment, the Northern-India Canal and Drainage Act, 1873. Though the latter was mainly concerned with canal and Navigation it also contained elaborate provisions for water-supply. The Bengal Act broadly dealt with: construction, maintenance and

40. Proceedings of Government of India, Legislative Department, March No. 81 Appendix AA18.
protection of "public water" works, like canals, water courses and drainage; governments' use of water from natural resources to such works for "public purposes", supply and regulation of waters by users and their rights; determination and collection of water-rates; acquisition of compulsory labours for such works in emergency; and penal provisions for violation of certain statutory rules. In general the irrigation laws vested in the respective governmens the rights to use waters from natural source for "public purposes," making provisions for compensation for damage out of such use. But, as the law provided, any such damage could be compensated only if the same was capable of beign ascertained at the time of award. There are express provisions, but only in Bengal Act, for compensation in cases of damage due to loss of drinking water-supply. The Government was under obligation in such cases to provide, within a convenient distance, an adequate supply of goods drinking water. Almost similar provision have bee incorporated in Bombay Irrigation Act, 1879 but with provisions of summary decisions in certain cases.

In this way all rights and privileges to the native people for access and use of "natural waters" were available in the customary system, and once the state proclaimed undertaking such rights in "public" interests, these rights were subjected to the discretion of state and its officers. This was the nature of provisions ensuring access and uses of water supply, out of an irrigation facility, to the subjects.

**Legislative Control Over Navigation**

Initially the legislative steps with regards to canals, as distinct from canals in irrigation system, were mainly to ensure smooth shipping and navigation. The multipurpose canal legislation are latter developments because of expansion of irrigation works. Two main colonial enactments on the subject are the Bengal Canals Act, 1864 and Northern India Canal and Drainage Act, 1873. The first contained provisions for empowering the state to construct and improve canals
and regulate navigation by levying tolls on canals and other lines of navigation. The Northern-India Canal and Drainage Act, 1873 was the modified and re-enacted version of the Punjab Canals and Drainage Act, 1871 with wider application and detailed provisions for construction, maintenance of canals and regulation of navigation and water uses. The Northern-India Canal and Drainage Act, in distinction to other earlier water codes, made express provisions for the entitlement of state to use and regulate all "natural waters". 41

Importantly one of the dominant motives behind the repeal and re-enactment of Punjab Canals and Drainage Act, 1871 had been to remove the clause for imposing water rates upon land irrigable but not irrigated. For shipping, the state, through Canal Officer, was empowered to detain or remove any vessel in a canal which contravened the rules. Again penal sanctions are provided for violation of statutory rules.

The Northern India Canal and Drainage Act (1873), regulated irrigation, navigation and drainage. While this Act did not directly assert the state's ownership over surface waters, it recognized the right of the Government to 'use and control for public purposes the water of all rivers and streams flowing in natural channels, and of all lakes.' This led to the progressive strengthening of state control over surface water and the concomitant weakening of people's customary rights. This tendency was progressively strengthened. The Madhya Pradesh Irrigation Act, 1931 provided that: 'All rights in the water of any river, natural stream or natural drainage channel, natural lake or other natural collection of water shall vest in the Government.

**Regulation of Water Supply for Domestic Use**

In addition to provisions for water-supply in other enactments the Jharia Water Supply Act, 1914, seems to be the only separate code for such supply for "domestic purposes" to Jharia coal fields in Bihar. It extended to some parts of

41. *The Preamble*, Northern India Canal and Drainage Act, 1873.
Orissa. For construction and maintenance of water supply structures in the region the concerned authorities are vested with adequate powers. Under the Act, a user had to apply to the authority for getting facilities through grant, while certain acts like defilement, misuse of such waters, are treated as criminal offences.

**Conservation of River-Water:**

The Madras Rivers Conservancy Act, 1884, operative even today, with its application to some parts of Orissa, provided for "conservancy" of rivers in the respective regions. Under the Act the state may, from time to time, bring notifications, stating that conservancy of a river is required. After that on survey, the state is empowered to prohibit cultivation on a land in the "river bed." All these functions under the Act is to be discharged by the "Conservator." Any violation of such rules is punishable.

Colonial legislation also introduced the division of responsibilities between the centre and the regions/states with regard to water. The Government of India Act (1935) empowered the provinces to take decisions on water supply, irrigation, canals, drainage and embankments, water storage and hydropower. Conflicts between provinces and/or princely states were subjected to the jurisdiction of the Governor General who could appoint a commission to investigate the sufficiently important conflicts.\(^{42}\)

**Discernible Colonial Influence**

Since independence in 1947, most states have regulated territorial water bodies, embankments, drinking water supply, irrigation, floods, water conservation, water pollution, rehabilitation of the displaced, fisheries, and ferries. While significant novel aspects were introduced, the evolution from colonial water law was slow. Many colonial acts have not yet been superseded and the basic structure of common law rights linking water rights and land rights has not yet been comprehensively reworked. Since the early 1970s, signs of

\(^{42}\) Ss 130-134 of the Government of India Act, 1935.
more fundamental changes have emerged, possibly attributable to the fast
decreasing per capita availability of water, increasing pollution of existing water
supplies, the fast increasing use of water for irrigation, and increasing
competition among water users for a larger share of finite supplies. Another
colonial trend that has continued is the increasing displacement of customary
and local rules and practices by formal state or central laws. While formal law
and policy making does not directly relate to customary practices, new water
rules and policies have the direct or indirect effect of displacing or replacing
existing local institutional arrangements and rules.

**Progressive Development of Laws of Water Conservation and
Management in the Republic of India**

Water law in the post-colonial period is shaped by the legacy of colonial
times, constitutional and federal developments, specific rules on surface and
groundwater, irrigation, human rights, social and environmental issues, issues
about dams and questions of water cooperation with neighbouring countries.

After independence, the Constitution retained the basic scheme chosen in
1935 and gave the states a leading role in water regulation. Water was thus
included in the state list in recognition of the fact that different water issues arise
in different part of the country.\(^{43}\) Yet this does not imply that Union has no role to
play in water. For instance with regard to the adjudication of inter-state water
disputes, even though no agreement could be found on a specific mechanism at
the time of the adoption of the Constitution, Article 262 allowed Parliament to
legislate on this issue. This led to the adoption of the Inter-State River Water
Dispute Act 1956.

There are restrictions regarding the use of inter-state rivers (Schedule 7,
List 1, Entry 56). The Union is entitled to legislate on shipping and navigation on
national waterways, on tidal and territorial (Schedule 7, List 1, Entries 24, 25, 57).
The Inter-State Water Dispute Act 1956, creates specific tribunals for addressing
inter-state water disputes. This Act has been used in landmark disputes

\(^{43}\) Constitution, Schedule 7, List 2, Entries 17, 21.
concerning the Cauvery, Krishna-Godavari and Narmada rivers. The Krishna-Godavari dispute began in 1951, a key issue was whether initial agreements about diversions from the river were justified given legal and political changes following independence. The Cauvery dispute between Karnataka and Tamil Nadu is more than a century old and relates to water sharing. The Narmada dispute focused on the use of available water by riparian states and provided the framework for the construction of the Sardar Sarovar dam, situated in Gujarat, but whose submergence zone is mostly in Madhya Pradesh and Maharashtra.

The Parliament also enacted the River Boards Act (1956) to allow the Central Government to establish river boards to advise state governments on the regulation or development of an interstate river or river valley. River boards can advise on conservation, control and optimum utilization of water resources, the promotion and operation of schemes for irrigation, water supply or drainage, or the promotion and operation of schemes for flood control.

Further, the Union has taken action in the context of article 252 of the Constitution that allows Parliament to adopt an act in a field where states are competent provided the states have given their assent. This was the basis for the adoption of the Water Act 1974. Again the Union has used less formal mechanisms to prod states into adopting certain measures. Thus, in view of the lack of progress in the provision of drinking water in rural areas, the Union came up in the early 1970s with a set of guidelines for rural drinking water supply. This was never 'imposed' on states but the guidelines have been implemented and mainstreamed through the provision of finance by the Union government for drinking water schemes in states. The Union has often used financial resources as the stick that ensures states follow the policies wanted by the Union. Thus, both in the early 1970s and earlier this decade, the Union fully funded for a time specific drinking water programmes to ensure states would adopt the new policy

framework embodied in the funding.\textsuperscript{46} The Union has other water-related powers that it can exercise, for instance, in the context of the impact assessment of large projects that require an environmental clearance.\textsuperscript{47}

**Relation Between Union and States**

The constitutional division of powers between the Union and states constitutes the basic framework for formal water law. However, over time, an additional important component has been added with the adoption of the 73rd and 74th amendments to the Constitution that significantly strengthened democratic governance at the local level. In rural areas, panchayat institutions are now given specific powers in the water context. This includes powers and responsibilities over drinking water supply, minor irrigation, water management and watershed development as well as fisheries.\textsuperscript{48} Similarly, municipalities have been given powers over water supply for domestic, industrial and commercial purposes.\textsuperscript{49} The momentous changes proposed in the constitutional amendments are yet to be implemented at the local level. Yet, they constitute some of the most significant changes brought to the Constitution because they have the capacity to effectively recast the distribution of power in favour of democratically elected local bodies.

The Constitution is also important in other ways in water conservation and management, for instance, it is through the existing fundamental right to life that judges have read the existence of a fundamental right to water.\textsuperscript{50} On the other hand, a number of fundamental rights have direct bearing on water regulations. Thus, the constitution specifies, for instance, that the prohibition of discrimination which includes sex, religion, and caste discrimination extends to the use of wells

\textsuperscript{46} In the 1970s, the Accelerated Rural Water Supply Programme Guidelines were first implemented with 100\% funding from the Union. Similarly, the Swajaldhara Guidelines were implemented from 2003 with 100\% funding from the Union. As quoted by Philippe Cullet in, "Water Law, Poverty, And Development : Water Sector Reforms In India," Oxford University Press, 2009, p. 37.


\textsuperscript{48} Constitution, art 243G and Eleventh Schedule.

\textsuperscript{49} Constitution art 243W and Twelfth Schedule.

\textsuperscript{50} Subhash Kumar V State of Bihar AIR 1991 SC 420.
and tanks maintained wholly or partly out of state funds or dedicated to the use of the general public.\textsuperscript{51}

**Regulatory Norms for Indigenous Water Transport**

The maintenance, development and operation of inland water ways is central subject. The National Waterways Act, 1982, makes provisions for the development of inland water transport in public interest and their regulation in Ganga-Bhagirathi-Hoogly system. In carrying out its responsibilities the central government is empowered under the Act to undertake a number of functions, like to clear, widen, deepen, divert or otherwise improve channels, control removal of materials from the bed of natural waterways or appurtenant lands, remove or alter any obstruction or impediment which may impede safe navigation or otherwise endanger infrastructural facilities or conservancy measures. The Act saves application of Major Ports Act, 1963, and the Inland Vessels Act, 1917 dealing with their respective subjects. The National Water Ways Authority Act, 1985, has constituted a corporate Authority and provides for development and regulation of all national waterways. The Damodar Valley Corporation Act, 1948, also makes provisions for regulation of navigation in Damodar river in addition to water supply for irrigation.\textsuperscript{52}

**Governance of Coastal Waters :**

The Territorial Waters, Continental Shelf, Exclusive, Economic Zone, and Maritime Zone Act, 1976, defines the limits of Indian Territorial Waters. Earlier such things were governed by the Territorial Waters Jurisdiction Act, 1878. After the international convention on Law of the Sea in 1982 these matters are considered as per the principles laid down by the convention.\textsuperscript{53}


\textsuperscript{52} Iqbal Ahmad Siddiqui, History of Water Laws in India in Water Law in India, (ed.) Chhatrapati Singh, ILI, New Delhi, 1992, pp. 289—319.

\textsuperscript{53} Ibid.
Control Over Polluting Factors

The Water (Prevention and Control of Pollution) Act, 1974 and the Environment (Protection) Act, 1986, are the most important of the central laws concerning water resources. It was for the first time that separate legislative measures were taken at the national level. Parliament adopted minor amendments to the Water Act in 1978 and revised the Act in 1988 to more closely conform to the provisions of the Environment (Protection) Act of 1986. Prior to these laws the related matters were dealt with in different central and local laws like the Factories Act, 1948, the Madras River Conservancy Act, 1884 which is applicable also to Orissa, the Indian Penal Code 1860 and the Criminal Procedure Code, 1973. In fact as a result of rapid industrialisation and Urbanisation immediate after independence, the previous laws made by Parliament Under Article 252 of the Constitution for controlling pollution of rivers and streams had assumed considerable importance and urgency in the years preceding the aforesaid legislations.

As the situation grew grim some serious efforts became a necessity. The central ideas behind the water-pollution Act is to restore wholesomeness of water, and, it is intended to ensure that domestic and industrial effluents are not discharged into water courses without adequate treatment. "Pollution" under the Act is defined to mean such contamination of water or such alteration of the physical, chemical or biological properties of water of such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may or likely to create a nuisance or render such water harmful or injurious to public health or safety or to domestic, commercial, industrial, agriculture or other legitimate uses or to the life and health of animals or plants or aquatic organisms.54 The Central and State Pollution Control Board, with almost similar functions, have been created to carryout the purposes of the Act. The Central Board may advice the Central

54. Section 24 of the Water (Prevention and Control of Pollution) Act, 1974 defines, prohibition on use of stream or well for disposal of polluting matter, etc.
Government on water pollution issues, coordinate the activities of State Boards, sponsor investigation and research relating to water pollution and develop comprehensive plan for the control and prevention of water pollution. The Central Board also performs the function of a State Board for the Union Territories. Since 1982, the Central Board has been attached to the Ministry of Environment and Forest Government of India.

Any new discharges or outlet may only be made with previous consent of the Board which may refuse or give its consent. The Board may also make applications to a court seeking to restrain pollution of water in a stream or well, and there upon the court may give orders as it deems fit. Minimum punishment for violation of provisions is imprisonment upto six years, and fine, but cognizance of an offence may be made only a complaint by the Pollution Control Board. An order is appellable within 30 days to the concerned authority. The 1988 amendment introduced a new section 33 A which empowers State Board to issue directions to any industry, operation or process and to stop or regulate the supply of water, electricity or any other service. The 1988 amendment modified Section 49 to allow citizens to bring actions under the Water Act. Now a State Board must make relevant reports available to complaining citizens, unless the Board determines that the disclosures would harm 'public interest'.

The Environment Protection Act, 1986 deals with the issue in wider perspective aiming at protection and improvement of the "environment." This Act came as a sequel to the decision at the United Nations Conference on Human Environment, held at Stockhom in 1972 for taknig appropriate steps for protection and improvement of human environment. The definition of "environment" in the Act includes water also. For the purposes of this Act the central government is empowered to lay down standards for emission or discharge of environmental pollutants from various sources. Any violation of rules under the Act is punishable, but cognizance of any such act can only be taken on a complaint made by central government or by notice of a person making a complaint to the central government. The Water (Prevention and Control of pollution) Cess Act,

55. Section 2 (a) of the Environmental Protection, Act, 1986.
1977 was enacted to cope with the financial constraints of Pollution Boards in discharging their statutory functions. After the implementation of the Water Cess Act 1977, many industries challenged the imposition of the cess. The Hon'ble Patna High Court, in TISCO case, held that a cess imposed under the Water Cess Act is by way of the compulsory exaction of money by a public authority for a public purpose. The court further stated that acess is to be imposed for the purpose of treating the effluent of the factory and other sewage so that the common public may not have to use contaminated water or polluted water. The issue of interpreting the Water Cess Act also came before the Hon'ble Kerala High Court in GRSMO case, the Hon'ble court stated that rules that sought to ensure regulation of the release of effluent into rivers are in the interest of the public and are therefore valid.

**Enactments Legislated by the State**

Almost every state has come out with legislations regulating water and water based resources within their jurisdictions. The exercise of this federal power was quite natural on their part to give shape to the regional or local priorities and programmes and to utilise the maximum potential of these resources. The state enactments may be divided as under:

**Embankments**

These enactments are, by and large, based on the model of Bengal Embankment Act, 1882. The states that have adopted the Act are Assam, Jammu & Kashmir and Orissa. The statutes empower the state for construction, maintenance, improvement, and protection of embankments and regulation of water distribution.

**Drinking Water Supply**

Some concern has been noticed for promoting public health by providing safe water for domestic purposes. The laws, primarily meant for cities provide for

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maintenance, development, and construction of facilities, and are in
coe-existence with the municipal laws in the concerned areas. One such
legislation, the Calcutta Metropolitan Water Supply and Sanitation Authority Act,
1966, passed with a view to promote public health, deals with the subject
elaborately. It establishes an Authority to be a body corporate with wide range of
powers for fulfilling the objectives of the Act. Unlike other water supply
legislations, it also regulates exploitation of sub-soil waters. Various provisions in
it regulate tube-wells, public or private, and control withdrawal of underground
water. There are provisions also for prevention of pollution in any water, including
a water course, water source or channel within the district, by treatment of
industrial wastes before their discharge into any sewer, canal, river or other water
channel. A person intending to have supply of water from such water works has
to obtain sanction through application of the concerned authorities, who have
total discretion to grant or withdraw it. This feature is common to all such laws.

**Irrigation**

The laws include those on construction, maintenance and regulation of
tanks, canals, drainage and other irrigation works. The state is entitled to use
waters from a natural source in "public interest" or for "public purpose", as the
case may be in various Acts. In all such laws the right to use waters out of
irrigation works may be acquired by permission in writing or "rational distribution
of water" in some statutes. Further, although none of the legislations speaks of
the customary rights in water, the Kumaon and Garhwal Water (collection,
Retention and Distribution) Act, 1975 expressly abolishes all existing rights if any
(whether customary or otherwise vested in any individual or village communities)
to use water in areas to which this Act extends.\(^{59}\) The laws on irrigation are
backed by statutes on irrigation cess, betterment contribution, etc.

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\(^{59}\) Section 3 of the Kumaon and Garhwal Water (Collection, Retention and Distribution)
Act, 1975.
Floods

Though there is no comprehensive law as such on floods, the Assam Acquisition of land for Flood Control and Erosion Act, 1955, the U.P. Flood (Emergency Powers) Evaluation and Requisition Act, 1951, and the Bihar Irrigation and Flood Protection Act, 1959, provide for certain related aspects. These respective statutes deal with development measures in connection with flood, protection of life and property from damage caused or threatened to be caused by floods, by removal of persons or classes of persons from any area, diversion of flow of flood waters in public interests, removal of any obstruction, provisions for accommodation, boats and compensation and levy of betterment charges from beneficiaries of flood work on certain lands. In addition to these laws many irrigation, embankment, and drainage statutes deal with minor aspects of floods.

Water Conservation

Conservation of water resources is the most important aspect in its management and the laws providing for maintaining water quality, keeping it unpolluted, are basically concerned with the problem of water management. But so far there has not been adequate legislative activities in this respect. There are only a few legislations like the U.P. Bhoomi Evam Jal Sanrakshan Adhiniyam, 1963 in this area which is otherwise grossly neglected. The laws mainly make provisions for soil by conservation and improvement of water resources, empowering the respective state governments to declare any area to be notified area and to restrict, regulate, or prohibit certain activities prejudicial to the purposes of the Act. All these are to be performed in coordination with soil and water conservation Boards established under the Acts, which has to prepare conservation plans alongwith the District Committees and Panchayat Samitis.

River Water Pollution

The problems of water pollution in general attracted only meagre concern in colonial times through rudimentary provisions in local laws for protecting the
quality of water. While the Madras Rivers Conservancy Act, 1884, which also extended to the ex-Madras Presidency parts of Orissa, had the major objective to keep the natural course of rivers intact and prevent their waters from diversion. Such a condition was there in post-constitutional era too till Orissa Government passed a separate legislation, the Orissa River Pollution Prevention Act, 1954 for maintaining cleanliness of “river” waters in the state through a “river Board”. This enactment made the said Board, expressly, duty bound to carryout objects of the Act, and to have due regards to orders, judgements, declare by a court of law, prior to its commencement, which declared wastes of effluents of a factory poisonous, noxious or polluting. No person, under the law, is permitted to discharge or cause to be discharged any sewage, effluent of trade, directly or indirectly, into a river except under a license to be granted by the River Board in pursuance of the purposes of the Act, which is its sole discretion. Similar legislative exercise was made by Maharashtra with the Maharashtra Prevention of Water Pollution Act, 1969. These aforesaid legislations and many other local provisions continued to provide for the subject till enactment of the central Water (prevention and Control of Pollution) Act, 1974, which incorporated the model and substantial portion of the contents of Maharashtra Prevention of Water Pollution Act, 1969.60

Resettlement and Rehabilitation

The expediency of improving standards of life and enhancement of public welfare has resulted in launching of many of the so-called "public utility" projects in the area of water resources management. Such a drive by states has confronted with many issues concerning right to life which could not be equited with compensation alone. To this effect, and to make good the losses and minimise sufferings of people in such cases, there has been wide ranging concern for giving special treatment and rehabilitation of evacuees affected by execution of public utility projects. It is done both at national and international

levels. The international Labour Organisation (ILO) Convention, 107 (also cited as Indigenous and Tribal Populations Convention, 1957), for example, provides for socio-economic and cultural heritage of members of "tribal" and "semi-tribal" populations. The Convention specially makes provisions for recognition of rights of individual and collective ownership of such people over their traditional lands. And also, that except as provided under the convention these populations shall not be removed without there free consent or as exceptional measure. But in cases of removal they have to be provided with lands of at least equal quality of previous holdings suitable for their present needs and future development, in addition to other measure. In India the state of Orissa has brought out a Rehabilitation and Resettlement Policy by its Resolutions No. 35054 and 18473 on 6-12-1973 and 20-5-1978 respectively. The policy makes provisions for better cost of lands acquired above market price in addition to other things. The government of Maharashtra, in the same way enacted the Maharashtra Resettlement of Project Displaced Persons Act, 1976 which is further amended and modified by Maharashtra Resttlement Project Displaced Persons (Amendment and Validation) Act, 1985. And the state of Madhya Pradesh passed the Pariyojan Ke Karan Visthapit Vyakti (Punarsthapan) Adhiniyam, 1985 dealing with the problem more elaborately. All these legislations were an outcome of widespread concern and agitation in various states attracting people's attention to the issue. They incorporate provisions for resettlement in lieu of compensation and impose duty on the state in this respect. Earlier such aspects were dealt with in various general and specific laws like Land Acquisition Act, 1894, which had proved totally ineffective and inadequate, taken into account the nature of problems. Moreover, laws of such kind provided only for compensation for damage of whatever nature and magnitude amidst limitations in awarding the same. 61

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Legal Framework Relating to Irrigation and Groundwater after Independence

Since independence, states have enacted irrigation laws that generally follow the pattern of colonial legislation. Surface water irrigation legislation until the 1990s displays little novelty in terms of basic legal principles. The Rajasthan Irrigation and Drainage Act, 1954 maintains the right of the state to determine whether surface water is to be used for irrigation or drainage schemes based on whether the scheme serves 'public purposes'. In Madhya Pradesh, not only has the 1931. Irrigation Act been maintained but also the 1949 Regulation of Waters Act vested 'all rights in the water of any natural source of supply' in the Government, as does the Bihar Irrigation Act, 1997.

Since the Central Government does not have jurisdiction over groundwater, the measures that it can take are limited. The rapid depletion of groundwater as a result of extraction for irrigation and other uses over the past 50 years has led to policy development in this area. The central government formulated the Model Bill to Regulate and Control the Development and Management of Ground Water (2005). The Supreme Court directed the Union Ministry of Environment and Forest to constitute the Central Ground Water Board as an authority under section 3(3) of the Environmental Protection Act, 1986 to regulate indiscriminate exploitation of underground water in the country. The main features of Model Bill 2005 are: (1) establishment of a groundwater authority under the direct control of the government; (2) the authority is given the right to notify areas where it is deemed necessary to regulate the use of groundwater; (3) the final decision is taken by the respective state government; (4) in any notified area, every user of groundwater must apply for a permit

62. Sec 5 of Rajasthan Irrigation and Drainage Act, 1954.
from the authority unless the user only proposes to use a hand pump or a well from which water is withdrawn manually; (5) decisions of the authority in granting or denying permits are based on factors that include such technical questions as the availability of groundwater, the quantity and quality of water to be drawn, and the spacing between ground-water structures; (6) the authority also takes into account the purpose for which groundwater is to be drawn, without prioritizing domestic uses over other uses, Sec (6(5) (a)); the Model Bill only provides that the purpose is to be taken into account, while Sec 6(5)(h)—the only provisions referring to drinking water—only considers it as an indirect factor; (7) all wells, even in non-notified areas must be registered. The model bill provides for the grandfathering of existing uses by only requiring the registration of such uses. Where water scarcity already exists, an act modelled after these provisions does not provide an effective basis for controlling existing overuse of groundwater and provides only a basis for ensuring that future use is more sustainable.

Overall, the model bill constitutes an instrument seeking to broaden state control over the use of groundwater by imposing the registration of all groundwater infrastructures and providing a basis for introducing permits for groundwater extraction in regions where groundwater is over-exploited. Besides providing a framework, for ascerting government control over the groundwater use, the model bill also express limited concerns for the sustainability of use. It does not, however, propose a clear break from rules of access linked to land ownership.

**Development of Dams as Resource of Water**

In the past 6 decades, hundreds of big dams have been built in India to promote development. Many dams have been controversial, starting from the first major post-independence irrigation project, the Bhakra dam, which was hailed as a milestone for a long time and has come under increasing criticism in recent
years.\textsuperscript{64} The rationale for big dams remains to increase the irrigation potential to foster food security, to generate power, and, in many cases, to provide drinking water. The rationale for big dams has shifted over time in keeping with the increasing criticism concerning dam-induced human displacement and environment degradation. Today, after the crisis in big dam building caused by the Sardar Sarovar Project controversy, dams are again being proposed as an alternative to carbon-based sources of energy in order to mitigate climate change and global warming.

The legal regime on dams includes the Guidelines for Environment Impact Assessment of River Valley Projects (1985), which provide a general framework for assessing the impacts of planned projects, and the more comprehensive Notification on Environment Impact Assessment of Development Projects (1994), which provides a framework for assessing the environmental impacts of planned big hydropower and irrigation projects. The notification has been amended repeatedly until a new Notification on Environment Impact Assessment was adopted in 2006, further weakening the process of environmental impact assessment. In particular, the validity of a clearance was increased from 5 to 10 years, with the possibility to further increase this validity by another 5 years.

Regarding human displacement, the main act that applies is still the Land Acquisition Act (1984), enacted with the interests of the colonial government rather than the interests of the displaced in mind. It gives the government significant control over the process of eviction and the displaced very few rights. There is no obligation to provide land-for-land compensation. After nearly 2 decades of debates, a Draft National Policy on Resettlement and Rehabilitation for Project Affected Families (2004) was proposed, followed by the more progressive Draft National Development, Displacement and Rehabilitation Policy

(2005) that provides, for instance, for land-for-land compensation. This was superseded by the National Rehabilitation and Resettlement Policy of 2007 that backtracks on the proposals. There is only one case—the Sardar Sarovar dam—where the Tribunal set up under the Inter-State Water Disputes Act decided that the displaced should be given land-for-land compensation (Narmada Water Disputes Tribunal 1979). This proved controversial and Madhya Pradesh, for instance, proposes cash compensation instead of land-for-land compensation.

**History of Trans-national Co-operation**

India has entered into a number of treaties with its neighbours. Some of these agreements are to be in place for periods that range from a short time (30 years for the Ganges), to a long time (199 years in the case of the Kosi), to an indefinite time period for the Indus. Each agreement reflects the issues most important at the time of the negotiation. The earliest Indus agreements focused on sharing, while the more recent agreements focus on irrigation, power, and flood control.

The Indus Waters Treaty signed in 1960 by Pakistan and India led to the establishment of the permanent Indus Committee and the division of the river and its tributaries between India and Pakistan.\(^6\) Cooperation has been relatively stable in water sharing, despite the stress in other issue areas.

India shares four key rivers with Nepal—the Kosi, Gandaki, Karnali, and Mahakali. The agreements on the Kosi allegedly benefit India and there is tension between the two countries regarding water sharing. The 1996 Mahakali Agreement was a more balanced agreement and included a flood forecasting and warning system.

With Bangladesh, the Joint Rivers Commission was established in 1972. The two countries share about 50 rivers but the bulk of the stress has focused on

the Farakka Barage. In 1996, both countries attempted to negotiate a settlement with respect to this river. But since the agreement does not cover the other riparians, its long-term effectiveness is unclear.

A key issue is that although China is the upper riparian on several rivers flowing into India, there are no watercourse agreements with China. Recent development is that the waters in Tibet could be diverted to meet the needs of northern China. If that does occur, this would lead to considerable stress between the two countries. In 2002, a memorandum of understanding was signed between China and India for sharing relevant information and may form the basis for future cooperation.

**Changing Scenario of Water Resources Management, Law and Policy Reforms**

Over the past two decades, institutional changes as well as legal and policy reforms in the water sector have been dramatically transforming the landscape of water. The regulation of freshwater uses has been a subject of increasing attention. This is due in part to increasing water scarcity and, in part, to the inadequacy of existing policy, laws and principles in the water sector.

The existing water law framework in India is characterised by the co-existence of a number of different principles, Rules and Acts adopted over many decades. These include common law principles and irrigation Acts from the colonial period; parallel realms of water jurisprudence that emanate from traditional water management systems and community ownership of water commons, as well as the more recent regulation of water ownership, conservation and quality, and the judicial recognition of a human right to water.

The lack of a comprehensive water legislation in India has ensured that, to-date, water law is made up of different instruments, principles and judicial decisions which are not necessarily fully compatible with each other. To illustrate, the claims that landowners have over groundwater under common law principles
are today difficult to justify in the context of the realisation of the human right to water since groundwater has often become the main source of drinking water and land-based access rules do not contribute to fostering access to drinking water for all.\textsuperscript{66}

There is very little disagreement over the fact that water law needs to be reformed to address ever-increasing water scarcity and ensure equitable access to water, particularly drinking water. This recognition has led to a flurry of activity over the past couple of decades on the part of national and international agencies to propose new water law principles, Rules and Acts. The process of reform which can be said to have formally started in the late 1980s with the adoption of the first national water policy has, since then, led to the introduction of a number of changes at the national level and in a number of States. This process of water law reform is now picking up for a variety of reasons which include a strong policy push from international aid agencies.\textsuperscript{67}

Water-sector reforms have been proposed to foster better management of water resources. Since the public sector is seen as unable to deliver better management, water-sector reforms propose comprehensive governance reforms, including the setting up of independent water regulatory authorities and private-sector participation.\textsuperscript{68}

The following subsections address the current situation and the likely developments regarding water policies and the controversial river linking project.

\textbf{(a) Current Situations and Developments :}

By the 1980s, it became evident that while water was largely a state subject, the lack of national policy on water was a major impediment to the development of coherent water policies. This led to the development of the National Water Policy (1987) that was reformulated in 2002. The two documents


\textsuperscript{67} \textit{Ibid.}

\textsuperscript{68} \textit{Ibid.}
are similar, focusing on developing a data bank, estimating the available water, prioritizing water (with access to drinking water accorded priority), developing groundwater rules, meeting drinking water needs, developing irrigation facilities, encouraging the participation of stakeholders in water management, monitoring water quality, promoting conservation consciousness, developing a flood control and management system, using cost effective measures to minimize erosion, maintenance and modernization of water works, ensuring the safety of structures built on water bodies, developing relevant science and technology, and training of personnel.

The national water policy has been supplemented by state water policies. The national and state policies are based on similar principles: water as a natural or economic resource that can be harnessed to foster the productive capacity of the economy, from irrigation water for agricultural production to water for hydropower; and priority of use that should be allocated in the following order: drinking water, irrigation, hydropower, ecology, agro-industries and non-agricultural industries, navigation and other uses (National Water Policy 2002)\(^{69}\), Rajasthan State Water Policy 1999. Domestic uses of water have overriding priority in water allocation. Nevertheless, some policies also provide that this priority list can be changed if circumstances so require, thus ensuring that there is little substance in the prioritization (Maharashtra State Water Policy 2003; Rajasthan State Water Policy 1999).

The policies generally provide that beneficiaries and other stakeholders should be involved from the project planning stage.\(^{70}\) The participatory provisions link participation with decentralization, focusing on the need to devolve the control of irrigation systems to users. This is premised on the perceived inability

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70. Item 6 (8), National Water Policy 2002.
of the state to deliver appropriate benefits to farmers. The basic idea is to transfer part or full control of irrigation systems to users by both allowing and forcing them to maintain and finance irrigation systems and share water among themselves.\(^\text{71}\)

The policies generally promote the use of 'incentives' to ensure that water is used 'more efficiently and productively' (Maharashtra State Water Policy 2003: S-1 (3)). This implies increased private sector involvement in water control and use from planning to development to administration of water resources projects.\(^\text{72}\) Urban water supply is singled out for private sector participation.\(^\text{73}\)

The water policies propose the introduction of water rights. Water rights are not new per se and there is a vast corpus of relevant law. The policies restate that the state is the 'sole owner of the water resources' even while they proposing to create water rights in favour of users.\(^\text{74}\) These rights are said to be the necessary premise for participation in the 'management' of water resources, for the setting up of water user associations, and for the introduction of trading in entitlements. Trading is specifically proposed in certain policies.\(^\text{75}\)

The policies also introduce wide-ranging legal and institutional reforms, of which three are significant: the introduction of a legal framework for the formation of water user associations to decentralize water governance; the introduction of laws providing for the establishment of a water resources authority whose primary characteristic is to be largely independent from existing irrigation and other water resource departments; and the regulation of groundwater.

\(^{71}\) Item 17 (1), Uttar Pradesh Water Policy 1999.
\(^{72}\) Item 13 National Water Policy 2002.
\(^{73}\) Item 9, Rajasthan State Water Policy 1999.
\(^{74}\) Item 17 (1) (d), Uttar Pradesh Water Policy 1999.
\(^{75}\) Item 4 (2), Maharashtra State Water Policy 2003.
(b) Legislative Reforms:

National and international influences have influenced broad-ranging 'water sector reforms' carried out partly through projects seeking, for instance, to introduce changes in specific places, such as reforms in water services in specific cities, or in specific activities such as the introduction of participatory management in irrigation. While these reforms are linked to the water policies highlighted in previous discussion, they were at first often not backed by legislative changes. Over time, there has been an increasing emphasis of regulatory changes to ensure the diffusion of water reforms, their predictability and stability.

While water law reforms are largely state specific, they are similar because they are based on similar national or international policy interventions:

1. States like Andhra Pradesh, Rajasthan and Maharashtra foster the participation of farmers in irrigation schemes along the principles of 'participatory irrigation management.'

2. Several states, including Andhra Pradesh and Maharashtra have adopted sweeping legislation seeking to restructure the water institutional framework.

The rationale for setting up a new water authority is to remove some power from existing water bureaucracies and to ensure that reforms are successfully implemented.

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(c) River Linking Hypothesis

Recent water sector reforms and accompanying water law reforms will radically change the law and policy framework governing the water sector in India. The Md. Kapahi project seeking to link rivers in different basins throughout the country constitutes the single most important development in this area. The rationale for his project is that while some parts of the country are facing water shortages, other parts have excess water. Inter-basin transfer will seek to export from basins with excess water to basins with water shortage, and will help capture and store rainwater. This project will promote big dam building and coincides with the World Bank view that India still has relatively little capacity to store water and that major investments are required in small and big projects, including large dams.

It was first proposed in August 1980, when the Ministry of Water Resources prepared a National Perspective for Water Development. Two years later, the National Water Development Agency was established to prepare follow-up studies. In 2002, the Supreme Court ordered in a public interest litigation case that the government should complete linking the rivers in India by 2014.\(^7\) This led to the appointment of a Task Force. Based on approvals from the Technical Advisory Committee and the Planning Commission, as well as on an environmental impact assessment under the Environment Protection Act of 1986, it was decided that such river linking projects could commence. The first Memorandum of Agreement between Uttar Pradesh and Madhya Pradesh was signed in 2005 to link the Ken and Betwa rivers. Proponents of the scheme believe that the river linking project will ultimately have some 30 links between 37 rivers, will include 3,000 storage facilities, will cost up to US$200 billion and could perhaps provide irrigation to 35 million hectares.\(^8\)

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\(^7\) Write Petition (Civil) no : 512/2002.

Arguments in favour of river inter-linking are better distribution of water, flood protection, and promotion of economic activities in water poor areas. The arguments against such interlinkage are that there is never surplus water in a river, it is hugely expensive and not cost effective, will lead to suboptimal use of water resources, and that changed structures of channels may lead to increasing the salt gradient, water loss, seepage and saline pollution of soil in the transporting section.

Clear criteria should be met to justify such a transfer. While Madhya Pradesh, Haryana, Rajasthan and Tamil Nadu support the scheme, Kerala, Bihar, West Bengal, Assam, Punjab, Chandigarh and Goa oppose it. some states are conditionally in support. An additional problem is that these rivers are not all national rivers and newspapers articles in Bangladesh have regularly critiqued this unilateral approach. Within India, activists argue that there are major social and ecological shortcomings to the scheme. Apart from the specific problems associated with inter-basin transfers, the proposed inter-linking which suggests the building of a number of big dams and canals is also subject to the same criticisms that apply to big dam projects generally.


(d) Interaction Between National and Global Policies in Water Resources Conservation/Management

The focus on water resources management has been taken up in the context of the notion of integrated water resources management (IWRM). IWRM constitutes to a large extent the framework that informs water sector reforms. Policy-makers have identified it in recent years as 'the only way forward'.86 One of its generally accepted definitions is that of 'a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.'87 This is general enough to be acceptable by most people as a point of departure. However, the concept suffers from the same shortcomings that have been identified with the notion of sustainable development. It neither has clearly defined contours nor are there specific legal consequences that are attached to it. IWRM has thus been defined as an ideal concept rather than a set of specific guidelines and practices.88

The proposal for IWRM has been linked to attempts to remedy identified shortcomings of existing water sector practices. In particular, IWRM advocates the need for a comprehensive view of water which avoids a sector-by-sector approach. Thus, IWRM promotes basin-wide water planning, something that most people agree with in principle. Similarly, IWRM seeks to move beyond the consideration of water in isolation from environment and economic factors. It also promotes coordinated management and development of land and other

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resources. This includes, for instance, links with the power sector since the increasing importance of groundwater makes electricity a prime determinant of access to water, leading to calls for linking reforms in the power and the water sectors.\(^9\) Linking the two can be problematic if this is taken as implying that the same reforms introduced in the power sector should be adopted for water given their different nature. This is not a theoretical concern since the first water regulatory authorities introduced in India are partly inspired by the model of the earlier electricity reforms.\(^9\)

Yet, IWRM is much more than a simple attempt to take a comprehensive view of water, it also seeks to comprehensively rethink its management. A number of management-related points have a central place in IWRM. In fact, notwithstanding the broad framework for IWRM, its central thrust is on issues related to the management of water. IWRM focuses on the development of participatory planning and implementation processes and calls for the decentralization of decision-making in reaction to the perceived failure of national administrative structures to deliver appropriate benefits to users.

IWRM focuses on the management of water resources within the context of a limited supply of water to ensure efficiency and equity without depleting the resources.\(^9\) IWRM is, for instance, not comprehensive in its understanding of water because it largely reduces water to an economic good. This was, for instance, clearly laid out in an early version of chapter 18 of Agenda 21 stating

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that IWRM ‘is based on water as a natural resource and an economic good’.\textsuperscript{92} The final version is less specific and states that IWRM ‘is based on the perception of water as an integral part of the ecosystem, a natural resource and a social and economic good’.\textsuperscript{93}

IWRM has been embraced by the international community as the standard for moving forward in the water sector.\textsuperscript{94} It has been used as the basis for interventions in the water sector in various parts of the world. However, its relevance for all countries has been questioned in its present form. Some proponents of IWRM have, for instance, criticized its actual implementation. The problems identified include the fact that, in practice, the broad aims of IWRM are reduced to a limited set of measures focusing on demand management.\textsuperscript{95} These include the introduction of a water policy and a water legal framework, the recognition of river basins as the appropriate unit for managing water resources, the treatment of water as an economic good and the creation of tradable water rights, and the promotion of participatory water resource management.\textsuperscript{96} In other words, countries like India where most people self-provide water and where access to water is still largely informally organized are not yet ready for the type of demand management strategies that IWRM requires.

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\textsuperscript{95} IWMI-TATA, IWRM Challenges in Developing Countries : Lessons from India and Elsewhere (IWMI, Water Policy Briefing, 2007).
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International Policy Documents:

A number of international policy documents steer ongoing water sector reforms, a reflection of their importance throughout the world. Yet, there is no specific binding instrument that guides the reforms and fosters their implementation.

In reality, there have been no negotiations for an international agreement on water sector reforms. This can be attributed to several factors.

1. International water law is comparatively underdeveloped and states took many years to agree on what is essentially a framework convention whose scope is limited to shared watercourses. The 1997 Convention has not entered into force.

2. Water sector reforms are largely concerned with the management of water resources at the national level. This is not, however, a definitive statement on the matter since biological resources are just as much under the sovereignty of individual states and this did not preclude agreement on cooperation in their conservation and sustainable use under the aegis of the Biodiversity Convention.

3. It is unlikely that the principles put forward in water sector reforms would meet with the approval of a majority of states if they had to be incorporated in domestic law as part of the implementation of an international treaty.97

The absence of binding international law instruments concerning water sector reforms is even more striking when the corpus of non-binding instruments is examined more closely. With regard to substantive principles, it is possible to identify a number of documents that propose the same vision for water sector reforms, starting with the Dublin Statement. This is true of the series of declarations adopted at the end of the sessions of the World Water Forum, as well as documents arising out of the Bonn International Conference on Freshwater or the Plan of Action of the World Summit on Sustainable

Development.\textsuperscript{98} This is also the case of documents that are not water-focused such as the action plan adopted by the G8 in 2003.

The same principles have been repeated in a number of documents arising from international meetings since the beginning of the 1990s. This seems to indicate an important degree of consensus on the direction that reforms in the water sector should take.\textsuperscript{99} This apparent broad consensus nevertheless warrants further remarks, in particular concerning the seminal Dublin Statement adopted at the International Conference on Water and the Environments.

The drafting history of chapter 18 of Agenda 21 reveals that several of the issues emphasized in the Dublin Statement were already present in earlier drafts of chapter 18. Thus, the draft available to the fourth and last session of the Preparatory Committee for UNCED prepared before the Dublin Conference did include the idea that water must be considered as an economic good. However, the formulation used clearly put the environment and human needs ahead of the economic dimension of water. It stated that—

Priority must be given to the sustenance of land/water ecosystems, with particular attention to wetlands and biodiversity, and the satisfaction of basic human needs for drinking water, health protection and food security. For any water utilization beyond this, freshwater resources have to be considered as an economic good with an opportunity cost in alternative uses.\textsuperscript{1}


This philosophy still informs the language of chapter 18 of Agenda 21, which states that ‘water should be regarded as a finite resource having an economic value with significant social and economic implications reflecting the importance of meeting basic needs.’ This does not coincide with the language of the Dublin Statement that simply called for water to be considered as an economic good in all its dimensions. It is thus surprising that the principles contained in the Dublin Statement are today often referred to as the Dublin-Rio principles. This would be of little consequence if these principles had been subsequently widely debated in UN forums. In practice, however, international water policy has evolved since 1992 largely through meetings organized outside of a UN context.

The World Water Council is usually described as a think-tank and is constituted in the form of an association under French law. Its objectives include the development of 'a common strategic vision on integrated water resources management on a sustainable basis' as well as the promotion of 'the implementation of effective policies and strategies worldwide'. One of its main activities has been the organization of the world water forums. The Global Water Partnership (GWP) was set up by the World Bank, UNDP and the Swedish International Development Agency. The arrangement was formalized in 2002 with the setting up of a GWP Organization whose mandate is to support the GWP Network. The GWP is based on the 'simple concept' that 'freshwater resources are finite and their various uses are interdependent, but most of the water management activities carried out at the national or international level do not recognize these interdependencies'. This is reflected in statutes of the GWP Network which determine that the single objective of the Network is to develop and promote the principles of integrated water resource management.

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One of the objectives behind the setting up of these two new bodies has been to provide new platforms where a greater number of entities involved in the water sector can be involved, in particular private sector water companies. ¹ One of the impacts has been to marginalize the role of the UN system in water policy through the emphasis of these new bodies that are deemed more effective because they are not limited to public sector actors.

The importance of the World Water Council and the Global Water Partnership has been reinforced by their cooperation. They have thus jointly contributed to an initiative focusing on the financial aspects of water sector reforms. This is in line with the decision of the World Water Council to make financing one of its top priorities. The first initiative to emerge was the World Panel on Financing Water Infrastructure. This panel published a report which has been key in further entrenching the idea that water is an economic good and that cost recovery is central to successful reforms, in particular to attract private sector financing. The second report focused on water financing and local governments and financing water for agriculture. It built on the idea of proximity by arguing that water services are a local issue best provided by local entities and proposes, for instance, a series of measures to ensure finance flows directly to the local level.

The various documents, reports and resolutions of the past 15 years provide the impression that there is consensus among all actors involved in water around the proposed water sector reforms. A lot has been done to bolster the legitimacy of the reforms through a careful use of words. Thus, the 1992 Dublin meeting was an 'international conference', the World Water Council organizes 'world forums' and sets up a 'world panel' on financial issues.

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Contribution of International Financial Institutions and their Policies

The water policy of the World Bank has dramatically evolved over the past two decades. It is in the early 1990s that a shift away from water resource development and towards water resource management was undertaken. This was driven by concerns for the sustainability of water uses. The proposed solution is better management of water, itself only possible if water is conceived as an economic good. It is also at this point that the Bank moved towards encouraging the provision of water through private ownership and operation backed by an effective regulatory framework. This coincided with the adoption of the first formal water policy. Over the past fifteen years, the Bank has been putting 'an overwhelming emphasis on more efficient service delivery and management of water'.

The 1993 Policy Paper and the 2004 Water Resources Sector Strategy have provided the broad framework within which Bank interventions take place. The 1993 Policy Paper proposed a new approach to manage water. The basic framework proposed was to treat water as an economic good, to decentralize management and delivery structures, to put greater reliance on pricing and to foster stakeholder participation. It also suggested that the Bank would foster the development of a 'strong legal and regulatory framework', an early indication of the type of interventions that have been undertaken by the bank since then.

The 2004 Strategy has updated the policy message in view of the experience with water sector reforms over the previous decade.


Bank policy is further specified in the context of the operational policy on water management. The operational policy sets a series of clear priorities for World Bank engagement. It first emphasizes the need for designing water resource investments, policies, and institutions. These must be based on principles that achieve cost recovery, water conservation, and better allocation of water resources. Additionally, the involvement of water users in planning and management is promoted. The Bank specifically focuses on the division of responsibilities between public and private entities and considers that a variety of organizations, from community organizations to private firms contribute to what it conceives as decentralization.

The Bank thus directly acknowledges that it includes in its role the promotion of the development of new water laws at the national level. While the Strategy does not directly promote law conditionality, it indirectly justifies and fosters its use in Bank loans as a way to ensure that borrowing countries implement the proposed reforms.

This is not necessarily surprising given that the Bank has been an active participant in the forums that have contributed to the establishment of the policy framework for water sector reforms at the international level. It had, for instance, a leading role in the setting up of the Global Water Partnership. It not only co-founded it but also provided a majority of its funding at the outset.7

In India, the two main relevant institutions are the World Bank and the Asian Development Bank. Their internal policies applicable to the loans they make are based on the same broad principles. These policies have been increasingly influential in India where a majority of states have been involved in either a World Bank or Asian Development Bank loan in the water sector since the early 1990s.

Indian states that have accepted international funding have had to comply with the financial institution's own policies, thereby influencing state level policy

and law making. Additionally, some water sector projects include policy and law conditionality which directly calls on states to introduce new measures or laws or amend existing instruments. This is, for instance, the case of the ADB’s Chhattisgarh Irrigation Development Project that imposed on the state of Chhattisgarh to enact an amended participatory irrigation management act and went as far as specifying some of the provisions that needed to be included in the amended act.\(^8\) Similarly, the World Bank's Madhya Pradesh Water Sector Restructuring Project imposes on the state to 'prepare and submit for consideration for adoption' an appropriate draft enabling legislation for the establishment of a State Water Tariff Regulatory Commission.\(^9\) The conditions also include a list of some of the functions of this Commission which will review and monitor water sector costs and revenues and ensure the setting of bulk water user fees to enable water sector operations to be financially viable.\(^10\)

These are significant developments because this reflects a direct involvement of international institutions in law making at the national level.\(^11\)

Besides the amendment or adoption of laws, conditionality also arises in the context of less broad-ranging but potentially very significant measures that can be adopted by the concerned governments. The Kerala Urban Sustainable Development Project imposes, for instance, on the state government the conversion of existing standposts either to individual metered house connections or to metered standposts.\(^12\) An even more brutal condition is the one that was imposed on the governments of Rajasthan and Karnataka to implement a water supply disconnection policy while increasing water tariffs.

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National Water Policies

The development of water policies is an area where international agencies have played at least an important catalytic role. The 1998 World Bank review of the water sector specifically lamented the fact too few states had formulated water policies and called on them to do so within the context of the National Water Policy.\textsuperscript{13} Additionally, the Bank also suggested at the time that some of the features of the National Water Policy should be 'improved' to reflect the new economic policy put in place during the 1990s.\textsuperscript{14} A revision of the National Water Policy was in fact adopted in 2002 and most state water policies have been adopted over the past decade.

Most water policies seek to establish basic principles for all activities related to water and ensure consistency throughout the various sectors. The National Water Policy is understandably the most important of the existing policies. The 2002 revision of the policy provides insights on the changes that have taken place in water policy thinking since 1987. The current version of the policy puts, for instance, stronger emphasis on the principles underlying integrated water resource management. The focus on encouraging private sector participation is also an addition of the revised policy.\textsuperscript{15} While a number of differences can be identified not only between the 1987 and 2002 policies but also between the various state policies, there is a broad uniformity with regard to the basic principles which are put forward. As a result, a number of commonalities can be identified in the existing policies.

Highlights of Water Policies

The National Water Policy laments the fact that an insufficient percentage of the water is currently harnessed for economic development and calls for

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'non-conventional' methods of water utilization such as inter-basin water transfers and seawater desalination as large-scale, high technology solutions to improve overall water availability.\(^{16}\) This message is further reinforced in the recent World Bank report stressing that India has not developed enough big water infrastructure.

The national policy provides, for instance, that water should be allocated in the following order: drinking water, irrigation, hydro-power, ecology, agro-industries and non agricultural industries, navigation and other uses.\(^{17}\) Several state policies follow a relatively similar ordering scheme. The main exception is the Maharashtra policy, which puts industrial use before irrigation. This appears to be a direct response to the World Bank's critique of the fact that industrial use is often the last priority even though value-added is usually greater than for water used in irrigation.\(^{18}\) Additionally, in Himachal Pradesh while the environment is specifically mentioned as one of the priorities, something that all state policies do not do, tourism and environment are put as a single priority, thus sidelining the most important environmental issues that arise in the context of water. Overall, there is a clear emphasis on drinking water as the first priority in water allocation.\(^{19}\)

This is reinforced in some policies by a call for the government to provide adequate safe drinking water facilities to the entire population.\(^{20}\) Nevertheless, several of these policies provide that this priority list can be changed if circumstances so require, thus ensuring that prioritization is no more than a

\(^{16}\) National Water Policy 2002, s 3 (1-2).

\(^{17}\) National Water Policy 2002, s 5.


\(^{19}\) Kerala State Water Policy 2007, s 2 (1) uses the broader term 'domestic use'.

paper promise.\textsuperscript{21} This is probably welcomed by people who argue that this administrative prioritization of drinking water eliminates flexibility and results in less than optimum utilization of scarce water resources between hydropower and irrigation'.\textsuperscript{22} The water policy of the state of Orissa, however, reacts to this trend and specifically provides that any change to the prioritization adopted will require the adoption of a new water policy.\textsuperscript{23}

Again policies emphasize the need for involvement and participation in the planning, design, development and management of water schemes. The inclusion of participatory provisions is meant to benefit users, beneficiaries and other stakeholders. The Uttar Pradesh policy sheds interesting lights on the substance of participation. It high-lights that one of the important measures that need to be adopted is to ensure that local bodies should be involved in the operation, maintenance, and management of water infrastructure with a view to eventually transfer the management to these bodies. This confirms that participation in water policies is not the notion of a right of users of water to participate in the adoption of policies and laws on water, the design of schemes that they are meant to benefit from as well as operational aspects. Additionally, the scope of this limited participation under some policies is narrow. Thus, in Rajasthan, the participatory section of the water policy only addresses irrigation water. Further, participation is restricted to farmers who are users of irrigation water and it covers only the 'management of irrigation systems, particularly in

\textsuperscript{21} Himachal State Water Policy 2005, s 7, Uttar Pradesh Water Policy 1999, s 5 (1) and Rajasthan State Water Policy 1999, s 8. Note that Rajasthan State Water Policy (Draft) 2005, s 8 sought to reverse this by ensuring that drinking water remains the top priority even where re-ordering takes place but Rajasthan State Water Policy (Draft) 2008, s 1 does not include this mention anymore.


\textsuperscript{23} Orissa State Water Policy 2007, s 1 (1).
water distribution and collection of water charges’. The idio-syncratic understanding of participation in water policies is confirmed by the fact the Himachal Pradesh water policy lists under different sub-sections of the same section on participatory approaches, the participation of local communities and private sector participation.

Further, the devolution of power at the local level is only envisaged in certain specific activities. In a number of areas, the state either seeks to maintain its de facto prerogatives or extend them. Some water policies reassert that the ownership of water resides with the state. Some policies affirm the right of the government to provide for the transfer of water from one river basin to another. This is now being taken up in the context of the river inter-linking scheme. At the state level, an increasing number of states are seeking to control and regulate groundwater whose use has been largely linked to land ownership until now. In other words, decentralization in certain areas is accompanied with attempts as strengthening Union/state government control in other areas.

Recent water policies generally promote the use of incentives to ensure that water is used 'more efficiently and productively'. The main consequence which flows from this is the call for private sector involvement in all aspects of water control and use from planning to development and administration of water resources projects. An area which is singled out for private sector participation is urban water supply. Private sector participation is linked to the introduction

27. National Water Policy 2002, s 3 (5) and Draft State Water Policy of Assam 2007, s 8 (2).
of water charges for all users as part of a strategy to ensure cost recovery. The basic principle is that water users should pay at least for the operation and maintenance charges linked to the provision of water. One of the consequences is the generalization of meters as well as, in some cases, proposals, to introduce mechanisms that automatically cut supply in case of non-payment.\textsuperscript{31} In the future, the idea is to move towards full cost recovery which implies that users will have to pay capital costs as well.\textsuperscript{32} The draft water policy of Assam specifies that at least 50 per cent of capital costs should be recovered.\textsuperscript{33}

Some water policies propose the creation of water rights in favour of users. The absence of clear and enforceable water rights is seen as leading to water use inefficiency and conflicts. These rights are seen as a necessary premise for participation in the management of water resources, for the setting up of water use associations.

Current water policies call for wide-ranging legal and institutional reforms. These include the introduction of various amendments to existing laws as well as the introduction of new laws. Three main aspects are singled out. These are the introduction of a legal framework for the formation of water user associations to decentralize water governance, the introduction of laws providing for the establishment of a water resources authority whose primary characteristic is to be largely independent from existing irrigation and other water resource departments, the creation of water rights in favour of users and the regulation of groundwater.\textsuperscript{34}

Most water policies focus on changes to governance in the water sector. New ways to manage water are at the core of most water policies. One of the main changes that are proposed is a move from supply-driven to demand-driven

\textsuperscript{31} Draft State Water Policy of Assam 2007, s 8.
\textsuperscript{32} National Water Policy 2002, s 11.
\textsuperscript{33} Draft State Water Policy of Assam 2007, s 9 (3).
\textsuperscript{34} Karnataka State Water Policy 2002, s 7, Kerala State Water Policy 2007, ss 2 (15) & 2 (3)
approaches.\textsuperscript{35} This is accompanied by an emphasis on the commercialization of water systems. Water policies do not, however, put similar emphasis on broader issues of human rights, environmental sustainability and social equity. Exceptions like the Kerala State Water Policy whose first principle is that water is a human right, show that there exist opportunities for rethinking the development of water policies among different lines.\textsuperscript{36} The recent Orissa policy also moves forward in recognizing the need to consider environmental flows in project planning.\textsuperscript{37}

**Water Resources Law and Environment**

Over the past few decades, in keeping with the rapid development of Environmental law, environmental considerations have been integrated in direct and indirect ways in water instruments. This emphasis on environmental issues can be partly attributed to a greater awareness concerning environmental impact of water policies and the importance of appropriate environmental policies for the water sector.

Environmental considerations are relevant in the context of water, there is a general link between water abstraction for human use and ecological functions. This is an aspect which was sidelined for decades when the mantra of water policies was that water flowing to the sea was 'wasted' water.

From this point of view, the 'unused' water potential can be extremely high as most rivers of the world still flow to their deltas. In India for instance, the figure of 'unused' water is put at 90 percent.\textsuperscript{38} Again environmental and water objectives can meet in a number of cases. Thus rainwater harvesting has clear benefits for both the environment and access to water. Rainwater harvesting provides a way to restrict stress put on existing water resources thus contributing

\textsuperscript{35} Himachal State Water Policy 2005, s 11 (3).

\textsuperscript{36} Kerala State Water Policy 2007, s 1 (2).

\textsuperscript{37} Orissa State Water Policy 2007, s 7 (2).

to better overall availability for ecological or human needs. Rainwater harvesting includes not only rooftop individual harvesting but also all the ingeneous ways that people have devised over time to collect rain from check dams to tanks. This is beneficial in terms of human needs as well as for the environment since it contributes additional temporary water bodies while fostering better recharge of groundwater. This is specially in parts of the world like South Asia that receive most of their rainfall in a short concentrated span of a few months. Rainwater harvesting has in fact become on of the key environment-related activities in India.  