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A Glimpse of World Water Scenario to Apprehend the Emergence of Water Laws

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ABSTRACT

The water scenario world over is bleak. Various regions of the globe are either water-poor or water-rich. In addition, human beings pollute water resources and thus make them unavailable for use. On the other hand, our demand is growing, and the gap between demand and supply is enhancing. The solution lies inappropriate water sharing and water management measures, enhancing supply, efficient utilization and preserving our water sources from getting polluted. However, various projects involve transboundary rivers and international waters. Such projects require national policies, bilateral and multilateral discussions, existing and some new international rules, and in decision making, the geopolitics of groups of countries should not dominate. Human psychology, local customs and faiths are often hindering aspects in implementing the rules. However, we are gradually realizing the natural hazard and tuning our habits and thinking. Above all, implementing healthy things requires mutual faith and a sense of fellow feeling among adjacent and relevant countries, and finally world over.

Keywords: *Water poor and affluent region, Water pollution, National and international water laws, Transboundary rivers, Water wars*

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INTRODUCTION

Water is the most versatile and naturally occurring liquid on the Earth. It is tasteless, odourless and practically colourless. Though the terrestrial climate makes the liquid form dominant, it is unevenly distributed over the entire globe on its surface, in the subsurface region and our atmosphere in the forms of liquid, solid and vapour in varying amounts and proportions a seasonal fluctuation. Climate change due to deforestation, atmospheric pollution, greenhouse effect, ozone hole formation and global warming, which cumulatively cause a change in rainfall pattern, often distorts further the said distribution unfavourably (Doorenbos & Pruitt, 1977; Falkenmark, 1986; World Bank, 1992; McKinney & Schoch, 1996; Wright & Nebel, 2002; FAO, 2003; Nhantumbo & Salomão, 2010). The term water is conventionally reserved for the liquid state. It is the main constituent of the Earth's streams, ponds,and lakes and oceans. The body fluid of living organisms is water-based (Zurita *et al*., 2015; Rassolov *et al*., 2019). Most living organisms contain more than 70% water.Though provides no calories and organic nutrients, safe drinking water or potable water is essential to human and other life forms. It is also used in cooking, washing and sanitation. Water is also central to many sports and entertainments like swimming, boat racing, water polo games, diving and sportfishing.The present article reviews partially the global water (Yasir, 2016; Efron *et al*., 2017; Rohilla *et al*., 2017; Kubovich, 2018; Bajaj *et al*., 2021; Gumas, 2021) scenario, the relative situation in India and its neighbourhood, some transboundary water sharing projects, and the norms, regulations and mechanisms involved in water sharing and management. The ultimate objective is to understand the essence of local, national, and international laws and formulate new laws in light of climate change and the future growing demand for domestic and agricultural supply of water.

The physical states, substance category, properties and uses

Water is an inorganic chemical substance that is transparent and nearly colourless. At standard ambient temperature and pressure (SATP), it is liquid. The liquid is transparent. A smaller depth is colourless; its intrinsic bluish tint is perceived only at high depths and results from absorption and scattering of white light. In addition to the liquid form, solid and gaseous states are also well-known forms on our planet. In nature, apart from the already mentioned water streams and reservoirs, this species forms glaciers, icebergs, snow, dew, fog, clouds and atmospheric humidity.Water occurs in nature and is an inorganic substance with a definite chemical composition. However, by the definition of geologists, the liquid form is not considered a mineral. Ice is solid and has a regular internal structure, and, by definition, is a mineral. The mining engineers prefer to call it a mineral commodity as it is found underground and used by man. Because water is either a reactant or a product of most of the biochemical reactions in our body or other living organisms, biochemists prefer to view water as a biomolecule.A molecule of this natural chemical species contains one oxygen atom covalently bonded to two hydrogen atoms, and the molecule is polar, in which the hydrogen atoms are positive charge centres. It can form hydrogen bonds extensively, which in turn explains the high

values of water's melting point, boiling point and latent heats of melting and boiling, and the anomalous expansion of water. Water is also a suitable solvent for many organic and inorganic solvents, apart from the aforementioned properties. Many of its uses are linked with these properties.

By now, we should recall the fact that primitive life originated in aqueous media via chemical evolution. So there is no wonder that water is the significant substance found in almost all life forms. Normal functioning of our body requires maintaining a definite range of water levels. The waste products generated within our body are removed by urination. To maintain a balance of body fluid, we frequently need to drink water. Cooking, washing and sanitation require water.The role of water in the world economy is crucial. Of the total freshwater usage, about 70 % goes to the agricultural sector. Our hydel projects, which generate hydroelectric power, are a clean energy source and are extremely environment friendly. In many parts of the world, fishing in the sea and freshwater is a good food source. Sea lanes and other waterways do a large portion of the long-distance trade of commodities and manufactured items. Being a suitable solvent for many substances, it finds wide application in industrial and laboratory processes. Large quantities of ice, steam and water are used in industrial and domestic cooling and heating.

Distribution of water sources, present demand and future trend, pollution and plannings

71% of Earth's surface is covered with water. Of the total water on the Earth, 97%is saltwater, and only 3%or less is freshwater. Human use of water is mainly confined within this freshwater. The freshwater is renewable and renewed via a water cycle consisting of evaporation, condensation, rainfall, melting of ice, and solidification at mountain tops. A significant portion (about 70%) of the freshwater is in ice form as glaciers, icebergs, and polar ice caps (in Antarctica and Greenland). Nearly 20% of freshwater is groundwater. Less than 10% of freshwater (i.e., <0.3 of total water) is contained in rivers, lakes, other water bodies, and the atmosphere. Our atmosphere contains about 1% of the freshwater. In many parts of the world, groundwater is not being renewed adequately. It is a matter of concern that a small portion of total water is usable for us and not renewed adequately. We are also polluting our water sources and rendering them unusable. Today seawater is also polluted. Consumption of sea fish is one of the causes of heavy metal toxicity, particularly mercury toxicity. At present, adequate sanitation is not accessible to about 1 billion (100 crores) people. Some observers have pointed out that by 2025 half of the world population will face vulnerability based onwater. Moreover, by 2030, in some developing regions (including India), the demand forwater will be 50% higher than the supply.

Thus, we need to protect our existing freshwater sources and the seas and oceans. Methods should be developed to refill the underground sources. Methods of efficient utilization should be developed. The water streams of rivers may be partially diverted to water scare areas. We must also search the provisions of reuse. The availability of the natural resource water that runs the water-based hydro projects is highly sensitive to the season; a trouble-free nonstop operation requires adequate storage and efficient water utilization.

India & its neighborhood

India is a water scare country. The scarcity of water in Pakistan is also acute. On the other hand, China is both water-poor and water-rich. China's current population (1.364 billion) is marginally higher than the current population of India (1.295 billion). Within the next seven years,India is likely to surpass China's population. By 2050, India's population will be about 2billion (200 crores). China's renewable water sources are double in size, compared to that of India. However, China is competing with India for resources along the Brahmaputra River. Many dam buildings and diversion plan of China are a significant source of tension between China and India. India's capacity for surface water storage is only one-eleventh of the storage capacity of China.

Moreover, China's positionin international order could encourage it to use water to gain leverage over India. China's desire for enhancing the relationship between Washington and New Delhi and regional power may encourage China to adopt destructive upstream activities. Additionally, China does comply with any international agreement because it is not a part of any. A combination of strong leadership and bilateral cooperation with supply-side and demand management can reduce the tension and influence the future for a Sino Indian water conflict.In June 2000, a dam burst in Tibet caused a downstream flash flood in Arunachal Pradesh. It lead to 30 casualties, seriously damaged Indian infrastructure and thousands injured. India was unaware of the impending flood as there was no hydrological data exchange between the two countries. Some officials in the Indian Governmentbelieve that China intentionally caused the flood and can use water to gain leverage over India.

Nepal's landlocked central Himalayan country (The Federal Democratic Republic of Nepal) is highly power-starved, particularly when its hydel projects fail during dry seasons. However, India has come forward with great care and supplies the deficit power to alleviate its neighbour’s distress.

Indus water treaty

The Indus Water Treaty (IWT) is a treaty waterdistribution between Pakistanand India, that was negoitatedby the world bank (then the International Bank for Reconstruction and Development), signed in Karachi on September 19, 1960, by President of Pakistan Ayub Khan and Prime Minister of India Jawaharlal Nehru.According to this agreement, control over the three eastern rivers, namely,theSutlej, the Ravi and the Beas were given to India and the other three western rivers, theJhelum Pakistan, the Chenab, and the Indus. The eastern rivers are allocated for exclusive use by India before they enter Pakistan.India was allowed by the treaty,to use them forgeneration ofpower, transport and irrigation since Pakistan's rivers flow through India first. As per the treaty's provisions, India can use 20% of the total water carried by the Indus River. From Western rivers, India was permitted for “non-consumptive" uses of the waters and a certain amount of storage. However, India has not built any storage dam on any of the three rivers so far.

The treaty resulted from Pakistani fear that India could potentially create droughts and famines in Pakistan, especially at times of war. However, India wasnever partin any water war against Pakistan. Most disputes and disagreements have been settled throughlegal procedures permitted within the

treaty'sframework. It is considered one of the most successful water-sharing endeavors in the world. Some experts feel the necessity of some updates and to include climate change aspects. The two countries agree to cooperate in matters and exchange data relation with the treaty. The treaty creates the Permanent Indus Commission with a commissioner appointed by each country to look after the whole set of related activities. The commission has survived 3wars and has held 112 half-yearly meetings in 56 years.

However, Pakistan has unlawfully objected to India's run-of-the-river projects on the Jhelum (the Kishan Ganga projects) and the Chenab (the Baglihar project). Additionally, without taking consent from India, Pakistan has constructed Left Bank Outfall Drain (LBOD) to go around its polluted water and saline through the Great Rann of Kutch area without passing through its Indus delta. The LBOD released water that improves the flooding in India and pollutesthe bodies of water that are the source of water to salt farms, spreading over a huge area.

Despite all these, India has taken the IWT as a symbol of India-Pakistan cooperation. India has never reneged on its commitment to provide 43 million acre-feet (MAF) of water daily to Pakistan; a fact consistently acknowledged even by Pakistan Bureaucrats. However, a section of Pakistani media is consistently misreporting that India is "stealing Pakistan's water". It is common for a section of Pakistani authorities to unofficially tell the journalists that India shall be blamed for its bad water situation. We find here that politics is also involved in water sharing.

After the 2016 Uri attack, the treaty was reviewed by India and proposed several changes. In September 2016, public interest litigation (PIL) was filed about the treaty's validity on technical grounds. Our people of J&K are not happy with Pakistan's objections on India constructions on Jhelum and Chenab rivers because further development of the state has halted due to the no-performance of the projects.

Brahmaputra river

The Brahmaputra River is known as YarlungZangbo in China. It has its headwaters in Tibet, and it flows from China to India to Bangladesh, where it meets the river Ganges before draining into the Bengal Bay. India relies heavily on Tibetan water as it receives about 30% of its water supply from Tibetan water. Bangladesh and India depend on the Brahmaputra River for livelihood and agriculture. So, the Chinese water diversion plans and dam building along Yarlung Zangbo is a source of tension between China andIndia The 2006 flash flood in Arunachal Pradesh reminds the possibility of any suspicious role of China in future. It is due to Beijing's intentions are not clear as there is no hydrological data transfer between the two countries, and China is not willing to enter any international treaty.

The south China sea

We shall now discuss in short, the multifaceted problem involving the South China Sea. It is a marginal sea encompassing an area of about $3.x10^6$ square kilometres and is called by various names by the adjacent countries or surrounded islands and is a part of the Pacific Ocean. For example, in Vietnamese, it is the east sea, Filipino name is West Philippine Sea. Its sea bed is believed to hold huge oil gas reserves and one-third of the world's shipping sails through this water body.The sea and its mostly uninhabited islands are subjected to competing sovereignty claims by several countries and often refer to historical claims to hegemony over the sea. The area is also crucial for fishing and also as the control of important shipping lines. China claims the 'nine-dash line' area as its territory, which overlaps with the exclusive economic zone claims of Indonesia, Brunei, Taiwan, the Philippines, Malaysia and Vietnam and covers most of the South China Sea. Other disputes include islands and maritime boundary claims among China, the Philippines, Vietnam, Malaysia, Taiwan, and Indonesia.

On the disputes, China disagrees with abiding by a ruling based on the UN guidelines on sea law and instead favours bilateral negotiations with other claimants. China has been making historical claims of the region since 1947 through its 'nine-dash line' for the claim of the South China Sea. Many non-claimant nations and the USA want the South China Sea to remain as international waters and conduct the "freedom of navigation" operations. Here also, China disregards a recent UN ruling.

CONCLUSION

(i) Indiscriminate groundwater use forces arsenic and fluoride pollution in certain geographical regions, and judiciously formed local laws can prevent this problem.
(ii) Local laws should control the significant utilization of water and direct its use for essential purposes only in the most optimum manner.
(iii) There should be national laws about the allotment of water if a sufficient quantity of suitable quality water is not locally available in different country regions.
(iv) There should be international understanding and governance about sharing the transboundary river water and exploiting the sea for practical purposes.

Human psychology, local customs and faiths are often hindering aspects in implementing the rules. However, we are gradually realizing the natural hazard and accordingly tuning our habits and thinking. Above all, implementing healthy things requires mutual faith and a sense of fellow feeling among adjacent and relevant countries, and finally world over. Finally, we believe that our rational thinking, sense of fellow feeling, and respect to our framed or to-be-framed laws at levels will sort out the scarcity of this essential non-alternative life-sustaining commodity of good quality we will abstain ourselves from using it as a weapon in a water war.

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