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Ground Water Regulation in India

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ABSTRACT

India is blessed with vast biodiversity. There are plenty of species of plants and animals. In India with a population of almost 140 crore people are mostly indulged in agriculture. So for personnel use as well as for irrigation purpose safe water is the basic requirement. In India people basically get water from surface water and groundwater. Ground water get recharged primarily from rainwater. India is also blessed with paramount precipitation which eventually recharges the groundwater. But in dim view despite of blessed with vast diversity and paramount precipitation India is facing it's worst water scarcity. There are many reasons which append to scarcity of water but the foremost reason for water scarcity is water pollution. Other reasons are overuse of water, wastage of water, increased human consumption, climate change etc. Water pollution is the foremost reason for water scarcity because pure and safe water is what is needed for consumption and due to water pollution the water becomes toxic which may be fatal if consumed. Due to modernization and industrialization water pollution has been increased abruptly. Waste discharge to rivers, dumping of garbage and radioactive wastes in water bodies, disposal of heavy metals and industrial waste are some of the many reasons for water pollution. The pollution and the scarcity of water has increased so much in India that it is now high time to regulate and control the situation before it becomes ungovernable and make people aware of the distress that has been occurred due to water pollution.

Keywords: *Underground Water -Water Scarcity- Ground water extraction - Ground water regulation.*

I. INTRODUCTION

(A) Significance of Groundwater in India

Ground water is an essential requirement for human needs and also counts on a country's economy. It is primary source for irrigation purposes, industrial needs, for drinking and for personnel use of human beings in their daily life. In an average 1/3rd of the freshwater consumed by humans is groundwater and in some parts of the earth the percentage can reach up to 100%. Groundwater can be used based on the needs of human being. Groundwater is far

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beneath the soil, so it has preserved its purity and is protected from contamination and so is safer from water of any other water body. When rainfalls need for groundwater is less so groundwater will be used less and when the region will be in dry condition people will mostly rely on groundwater. Groundwater also plays an important role for environment by keeping the water level of lakes rivers and other water resources. It is also important for wildlife and plant bodies as when the place is in dry condition it provides environment with groundwater flow from bottom of water bodies³. It helps in keeping water levels higher in dry seasons.

(B) Current situation of Groundwater in India.

In India 90% of groundwater is used for irrigation and agricultural purposes. And other than that ground water is mostly used for drinking in India. But half of the population of India is deprived of safe drinking water and many people die due to scarcity of safe drinking water. India is facing its worst water crisis. For scarcity of safe water India is suffering both socially and economically. NITI Aayog⁴ is describing the current situation of India as the worst water crisis in history of India. A health risk bigger than we can think of is coming if the current situation will not come under control. Large percentage of freshwater be it surface water or ground water has become contaminated and filthy. Nearly around 70% of the fresh water of the country is contaminated⁵. Overpopulation in India has resulted in overconsumption of water. It has resulted in draining of freshwater reservoirs of India, which are lower than ever before. According to a report⁶, at least around half of the population of India is suffering from extreme water Stress. And around 2,00,000 Indians are dying every year due to consumption of filthy, contaminated, and harmful water. Studies by government shows that at least by 1/3rd of India's groundwater reserves are being pumped at faster rate than it could be refilled by rainwater. Moreover, according to a study, aquifers are exhausting in the most populated area and economically productive areas⁷.

Even where groundwater is available in abundant amount for irrigation purposes and personal uses, the aquifers are mostly contaminated according to state water authorities and India's central ground water board. Almost 1/4th of groundwater of India contains fluoride concentrations at much higher level as per safety guidelines for safe water by WHO⁸. Many aquifers present in different regions of India are also contaminated with contaminants like

³ The Importance of Groundwater -D- Longwood University.

⁴ National Institution for Transforming India.

⁵ By latest assessment of national institution for transforming India.

⁶ NITI report released by Nitin Gadkari, Ministry of Water Resources.

⁷ World Bank Study, 2014.

⁸ World Health Organisation.

nitrate, pesticides, arsenic, lead, cadmium, chromium, etc., that also with concentration of these contaminants at levels much higher than safety limits. So, we have to make regulations for the use of groundwater and minimise wastage of freshwater let it be by individual factories or organisations. We also have to look into the matter of how contaminants are being added to the groundwater and if it is taking place because of negligence of any person or organisation, steps must be taken to secede such acts and make them penalised as well for such acts. Awareness of the grave situation must be made to general public to make them aware about how important water for us is and how we could utilise water in right manner and minimise wastage of water in our daily lives.

(C) Availability and utilization of Groundwater

About 71 % of the earth surface is covered with water and oceans hold around 96.5% of earth's water. Basically, we are mostly surrounded with saline water which is not consumable. Only around 3% of water is freshwater out of which 2.5% is locked up in glaciers, polar icecaps, atmosphere, and soil. So, we cannot only rely on river water for our daily needs. Water is our essential requirement for drinking as well as for our livelihood. For this we need to extract water from soil which is generally called groundwater. Ground water comprises 30% of total freshwater in mother earth⁹. Groundwater is also the primary source for industrial use and for irrigation purposes. Groundwater is present almost everywhere. It gets recharge when it rains or from melting of snow, through water leakage from lakes, rivers, glaciers and when more water is given for irrigation purposes than it is needed. The ground water may be found deep down the soil or shallow depending upon various reasons like physical characteristics of the place meteorological conditions and the recharge rates. Around 43% of water used globally is groundwater¹⁰. Groundwater supplies half of all drinking water in the world¹¹. But in today's world, groundwater level is decreasing gradually as we are utilising water from underground aquifers at a faster rate than it can be refilled by rainwater and other sources. In many parts of the world water levels are sinking rapidly. The use of ground water has been since earliest civilisations through springs and wells. Due to significant hike in population over last 50 years, the utilisation of the groundwater has risen substantially. In certain coastal area so much underwater has been drawn that saline water from the seas has started encroaching, turning well water brackish and unconsumable. In some areas the exudation of aquifers has caused

⁹ USGS- The World's Water.

¹⁰ Sibert et al., 2010

¹¹ UNESCO- WWAP, 2009

serious subsidence or high decrease in water table level¹².

(D) Management of Groundwater

Management of groundwater in India is a very difficult task as it includes managing of interactions with the natural physical environment and society of people at large. As India is very vast, the distribution of groundwater is uneven throughout the country. This suggest that a single management strategy cannot be applied throughout the country. To come up with a solution for management of groundwater, there are many things to take into account like the geomorphic set-up, hydrologic, climatic, hydrogeologic settings, water utilisation pattern, availability of groundwater for various regions of India and their socio-economic set-up.

Any scientific strategy for management of ground water includes amalgamation of

- 1.) Supply side measures which focus on availability of ground water and its increasing extraction,
- 2.) Demand side measures which focus on conserving, protecting and controlling the use of available resources.

Various development coming under these categories are:

- Development of Groundwater in Alluvial Plains,
- Development of Groundwater in Coastal Areas,
- Development of Groundwater in Hard Rock Areas,
- Development of Groundwater in Water-logged Areas,
- Development of Flood Plain Aquifers,
- Artificial recharge and Rain Water Harvesting.

A method for evaluation of groundwater has been developed by the amalgamate use of numerical model and spatial model utilizing geographic information system¹³. This methodology has been used on the sub-basin of Banganga River of India. At first the groundwater potential zones have been set fort by spatial modelling. Many thematic maps of the basin has been utilized to know the potential zones of groundwater like geology, soil, slope factor, drainage, geomorphology and landcover. Many scenarios have been made by changing the discharge of wells and purposing the location for harvesting new rainwater. Results have shown that discharge of wells in potential zones have decreased the stress on the various aquifers. The locations suggested by this study for rainwater harvesting has resulted in reducing

¹² The atlas of water, R. Clarke, J. King, Earthscan Publication.

¹³ International Journal of Applied Earth Observation and Geoinformation 13 (1), 127-139, 2011.

the overall decline of groundwater.

(E) Effect of Groundwater Model Bill 1970/2005

In the nineteenth century there were many deficiencies in legal framework for regulation of Ground Water. The pre-existing rules neither included any effective measures to protect the aquifer level nor it could make any stringent laws for regulation of groundwater. This situation arose because the landowners did not have to submit to measures for protection of broader aquifer-level. Thus, there was neither any legal framework for collaboration between landowners sharing aquifers nor any basis for local bodies of the governance to take any further steps for the protection of the groundwater resource and its benefits which should be shared among all.

Ground water Model Bill 1970/2005 was a failed reform model. Generally, it depicted an understanding of the need to address a pertaining problem before it transforms into a crisis. In 1970 it was a wake-up call for everyone to understand the need of conserving groundwater and taking groundwater regulation seriously. But the framework in ground water Model Bill 1970/2005 did not mention about many crucial problems that were identified at that time for which it was highly criticized. And now the problems regarding the same have increased dramatically in the time span of few decades. Ground water challenges are much more crucial than they were before few decades and so the legal framework has also evolved along with the time since 1970.

Some of the many limitations of Ground water Model Bill 1970/2005 are:

- 1.) The bill failed to state the problem caused due to interlink between control over landownership and groundwater. This caused it unable to propose any regulatory scheme for regulation at an aquifer level. Also, it made it unable from moving towards water regulation based on unitary nature of water and the need of basic principles for regulation for surface water and groundwater.
- 2.) The bill extended the control of the state on the utilization of Ground Water through the registration of sources of Ground Water and the introduction of permission for extraction of ground water in the places where it is over-exploited. Although steps were taken to tackle the problem of over exploiting of groundwater, but it was ineffective, and it failed.
- 3.) The institutional framework for regulation of groundwater as per the bill failed to provide a single institution with a general mandate to take care in all aspects and in all dimensions for groundwater regulation. The framework aimed at the establishment of

a state level institution, the state authority for Ground Water, but had no legal provision for any institutional presence at the panchayat¹⁴, block or district level in rural areas or municipal level in case of urban areas.

In whole the bill did not work for tackling the problems which are present in current scenario regarding regulation of Ground Water. Indeed, it was concluded by the Planning Commission that the bill did not comply to tackling the problems and to deal with the gradually worsening situation that we are facing¹⁵.

(F) Need for Noble Conceptual Framework for Regulation of Ground Water.

If we will analyse the situation, the present legal framework for Ground Water is unsuitable and not up-to mark. Thus, it is a need as well as a want for the current situation to change the basic legal aspects related to ground water. This is definitely an extremely difficult task as it will need to deal with link between human society and natural physical environment. It will affect the lives of many people and their livelihoods as well as ground water is the primary source for irrigation purposes and also massively used for industrial activities. A new legal framework must be formed which should be abundant with provisions to tackle with all the issues related to regulation of Ground Water. So, the main institution concerned with ground water at the federal level, the Central Groundwater Authority, was put up under the Environment Protection Act 1986¹⁶. An appropriate legal framework must be put up to ensure that every person is provided with enough pure, safe, basic water for daily needs.

II. ACT OF GOVERNMENT

(A) Ground water Under Constitution

It becomes difficult to define the nature of rights in natural resources such as 'WATER' where equitable distribution is required for sustainable development, which makes the enforcement of such rights a matter of question. Considering the present socio – economic - political situation in order to regulate water specifically ground water, it should be treated as a resource for common property and regulated in state specific manner over which positive group right can be exercised by individuals in a broad manner as prescribed under such regulation.

When it comes to regulation of natural resources such as water Decentralization is necessary because the management requires to be region specific. So, the problems of water regulation

¹⁴ Panchayats are defined under article 243(d) of the Indian Constitution as institution of self-government for the rural areas.

¹⁵ Planning Commission, Mid-Term Appraisal – Eleventh Five Year Plan 2007-2012 (OUP 2011)

¹⁶ Ministry of Environment and Forests, Gazette Notification SO38 and SO1024 of 14 January 1997 and 6 November 2000.

depend on the nature of availability in every region separately.

Ground water management in India is considered as a national priority problem, simultaneously an institution was framed for such sector as “Central Ground water Board”. Still when it comes to initiation and regulation states comes in the first row.

List II of the Seventh Schedule of the Constitution¹⁷ of India i.e., the State List contains water as an item such as water supplies, water storage, waterpower etc. So accordingly, the regulation lies on the part of state under the provision of Indian constitution¹⁸. And if there comes a requirement of legislation for any of these mentioned items, constitution empower the states of India to look after it rather than the Centre.

(B) State to make laws

The assessment for ground water extraction from an area as compared to the precipitation in such place explains the ground water development. The responsibility of conducting ground water level surveys across India lies under the authority of central government. Besides, under the aspect of Environment protection it provides power to central ground water authority that they can issue guidelines to states.

So, the Centre can only give guidelines for ground water regulation, to which it depends on the state that they want to adopt it or make some modification to such guidelines in accordance to their requirement.

III. LEGISLATION

(A) Model Bill, 1970

Through the Ministry of Agriculture, The Ground Water (Control Regulation) Bill¹⁹ was established by Government of India in 1970. It was circulated to the states with a guideline to enact Acts regarding ground water by making necessary modification in order to have a proper ground water regulation separately for each state in India. But unfortunately, till date there are only few states who succeed in enacting such laws and implementing these regulations, for Ex-Bombay Irrigation (Gujarat Amendment) Act 1976²⁰ enacted by the state of Gujarat, where some states failed in doing so such as Tamil Nadu repealed the Act²¹ through an Ordinance.

This 1970 regulation was called the Model Bill and regulated the water resources. Those were

¹⁷ Constitution of India

¹⁸ Constitution of India

¹⁹ Agriculture the Ground Water (Control 7 Regulation) Bill 1970

²⁰ Bombay Irrigation (Gujarat Amendment) Act 1976

²¹ Tamil Nadu Ground Water Development & Management Act

normal set of guidelines given to the states. Accordingly, the states needed to frame their own regulation by making modification through new amendments. Later in 1992, 1996 and 2005 the said model bill was updated and tried to make the regulation more precise and enforceable. The update made in 2005 tried to mandate the application of those regulation by the authority made under state Government

Currently Ground law regulation has not been specified under any central law. Indian easement Act, 1882²² which is a British Era Law effective in India have provisions under which it gives right to landowners over the water under the land within their possession and the right to collect and dispose those water. India's water information system as not followed by proper regulation and appropriate regulatory authority is going through major crisis.

The said authority possessed the power to search & seize any machinery under the Code of Criminal Procedure²³ in case of any dispute arising out of any new well or drilling machine. Accordingly, those new wells and drilling machine needed to be registered under the authority for such regulation. Rainwater harvesting was also suggested by the authority to be adopted by the state government under their development scheme.

States such as Goa, Bihar, Delhi, Jammu Kashmir, Bihar, Karnataka, Kerala etc have enacted ground water legislation followed by the Model Bills.

IV. CHALLENGES

(A) Right over Ground Water

The complexity in the question of right over the ground water makes it more complicated to be regulated by state specific Acts. It becomes more difficult to regulate the ground water which comes under the private land in possession of individuals

Excessive ground water extraction increasing rapidly in the absence of prominent regulatory framework in India. State's failure to implement the laws in specified manner gives rise to such scenario. We can take failure of Tamil Nadu in implementing the law in 2013 which was established. in order to create an authority through which extraction of ground water would have regulated and certainly the law got repealed through an ordinance, speaking of which there can be numerous examples of such failure can be cited in India.

(B) Deterioration of the water level

In 2010 a report of Hindustan Times reportedly explained that agricultural use is one of the

²² Indian Easement Act, 1882

²³ Code of Criminal Procedure

major spaces where ground water in form of fresh water gets utilized. Accordingly, 90% of such water was estimated to be involved in such sector. Besides over the years such extraction continuing rapidly because of usage occurring in urbanization and industrialisation.

Comparing the situation of estimated 10 years, in 2018 about 52% wells which were regulated by the Government showed a declination of ground water level. This question was put forth in parliament on June 27, 2018.

According to a survey only 18% of wells in Rajasthan are observed to be in a safe level²⁴.

Ground Water Governance in India, 2013²⁵ Explained that there was no enabled authority imposed under the Acts made by the state above mentioned to regulate the ground water extraction. Only Land and Trees Act, 2002²⁶ made by Andhra Pradesh Government has given the power to regulate ground water along with surface water with regard to environment concern.

Talking about Maharashtra Government where An Act was Enacted in 1993²⁷ accordingly repealed by Maharashtra Ground Water (Development Management) Act 2018²⁸ which is further delayed.

V. NEED OF IMPROVED REGULATION

After analysing above regulations their prospects and problems faced accordingly to those regulation, we can make certain observations,

- Uniformity in law where the question arises over ground water regulation is quite impossible because of the unequal distribution of water resources in different areas. Most probably sector specific or region-specific laws are not sufficient enough to regulate such natural resource which will result in sustainable development.
- Separate laws and legislation that are implemented explaining the same impact followed by different policies such as forest policy, industry policy, water policy so on which will rather create confusion. So, it is necessary to look after these previously implemented legislation and can take measures to improvise those taking necessary amendments before implementing a new one. So, reviewing the existing legislation is necessary.

²⁴ Reply to Lok Sabha question on June 27,2019

²⁵ Ground Water Governance in India 2013

²⁶ Andhra Pradesh Land 7 Trees Act, 2002

²⁷ Maharashtra Ground Water Regulation, 1993

²⁸ Maharashtra Ground Water (Development Management) Act 2018

- As the question of rights over these ground water makes it more difficult regulation for private rights are quite of a concern than public usufructuary rights
- As the regulation for ground water falls under the state capacity, still there is an immense need of review and guidance over those legislation to make it in a more effective way else it will give rise to the deterioration of the resources
- When the question of dispute relating to ground water arises, settlement for the same requires a effective forum. In other hand where environment mental disputes are complicated enough that the traditional courts are not competent enough. So, there is a need to specific courts in that regard.
- As discussed, that ground water being treated as a common property resource it is rather suggested to focus on sustainable development and equitable distribution so that state legislation will become more impactful.

VI. CONCLUSION

When it comes to the regulation of Ground Water in India, a country full of such natural resources considers it as a region-specific resource listed under state list. which enables the state Government to make necessary regulation regard to such resource, where central Government does not have any specific legislation for this regard it can only give Guidelines through Authorities. Model Bill, which was passed in the year 1970²⁹ made certain states amend their own regulation but still there is no uniformity in all these acts or not properly implemented. Later Central Ground Water Board was framed under which authorities were given the power to provide guidelines and monitor the ground water extraction but still the high extraction of groundwater and the mismanagement is increasing continuously.

States in India either have an Act which is implemented or state where acts are there without implementation, lastly some states are still there having no Act in such regard or having bills without any proper implementation as Act. Where sustainable development is under question resource such as ground water has high impact on the environment whose miss management will stand as an obstacle in the past path of sustainable development. India's failure for such governance should be taken into consideration where development is key for the sustainability.

²⁹ The Ground Water (Control Regulation) Bill 1970