Infopack

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EDITORIAL

Shifting Ground Water !

- Piyush Pant

Over the years, the Ground Water scenario in India has become very depressing. While the demand for the use of water, both for domestic and irrigation needs, has been increasing manifolds, the level of ground water is decreasing with alarming speed. As per observation made by Central Ground Water Board, during the last decade (1995-2004), significant decline (more than 20 cm per year) in the ground water levels during pre-monsoon period has been observed in certain parts of 362 districts in the states of Andhra Pradesh, Assam, Bihar, Chattisgarh, Delhi, Gujrat, Haryana, Himanchal Pradesh, Jharkhand, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal. Besides, highly intensive development of ground water in certain areas in the country has resulted in over exploitation (i.e. the annual ground water extraction is more than the annual replenishable resource) leading to the decline in the levels of ground water.

As a matter of fact ground water in India, all along, has remained a natural resource freely available to all. Its use has never been subjected to any sort of regulations. That's why it has been over-used and misused. Though considered to be free of ownership, in practice the owner of the piece of land has always taken it for granted that the ground water available under his or her land exclusively belonged to him or her (Under Indian Easement Act, 1882). Thus, in a way, the privatization of ground water was an early phenomenon in India but it was purely at the individual level. Even today the landowner really has unlimited right to take out the ground water below his land, without giving a thought to the fact that the boundaries of the ground water storage may go beyond the person's land. Unregulated digging of bore wells was the manifestation of this early form of ground water privatization. It worked in proportion to the amount of wealth a person possessed ---- the more rich you are, the more wells you can sink, the deeper you can go, but, alas! at the cost of harming others. Things have reached to such a pass that the Supreme Court of India had to issue direction, in 1996, that a Central Ground Water Authority (CGWA) should be set up which should regulate the indiscriminate boring and withdrawal of Ground Water in the country.

But the privatization of ground water being advocated by World Bank and Asian Development Bank and being implemented, on their behalf, by the Govt. of India and the state governments is more dangerous and devastating in nature. For example, take the case of the then CM of Andhra Pradesh and the blue-eyed boy of World Bank Mr. Chandrababu Naidu. Mr. Naidu wound up the Irrigation Development Corporation of Andhra Pradesh which led to lakhs of new bore wells being sunk across the state with disastrous results. Other state governments also appear keen to dance to the tunes of WB and ADB. Without learning a lesson from other's follies, many of them have already made amendments in their water policies to ensure bigger roles for private players, mainly big multinational corporations.

What is to be noted is that this new form of privatization facilitates the snatching away of water resources from the hands of people by the private players. Concepts like Water Users' Association (WUA) and Pani Panchayats are nothing but devices to divide the people into categories like users and non-users, rich and poor and making them confront each other.

In this issue of ***INFOPACK*** the summary of legislations enacted on Ground Water by various state governments and meant to serve the interests of the private players has been given, besides the report of the Expert Group on "Ground Water ownership and management".

Popular Information Centre

National Water Policy 2002

By:

Government of India, Ministry of Water Resources

April 1, 2002

Bird's Eye View

This 9-page document of Ministry of Water Resources says that the objective of the National Water Policy is to govern the planning, development and management of water resources in the country in order to meet the people's demand for water in a sustainable manner.

The document at first refers to the **Need for a National Water Policy**. It says that-

a) Water is a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socio-economic aspects and needs of the States. It is one of the most crucial elements in developmental planning. As the country has entered the 21st century, efforts to develop, conserve, utilize and manage this important resource in a sustainable manner, have to be guided by the national perspective.

b) Planning and implementation of water resources projects involve a number of socio-economic aspects and issues such as environmental sustainability, appropriate resettlement and rehabilitation of project-affected people and livestock, public health concerns of water impoundment, dam safety etc. Common approaches and guidelines are necessary on these matters. Moreover, certain problems and weaknesses have affected a large number of water resources projects all over the country. The development and over-exploitation of groundwater resources in certain parts of the country have raised the concern and need for judicious and scientific resource management and conservation. All these concerns need to be addressed on the basis of common policies and strategies.

c) So far, the major consumptive use of water has been for irrigation. While the gross irrigation potential is estimated to have increased from 19.5 million hectare at the time of independence to about 95 million hectare by the end of the Year 1999-2000, further development of a substantial order is necessary if the food and fiber needs of our growing population are to be met with. The country's population which is over 1027 million is expected to reach a level of around 1390 million by 2025 AD.

d) Another important aspect is water quality. Improvement in existing strategies, innovation of new techniques resting on a strong science and technology base are needed to eliminate the pollution of surface and ground water resources, to improve water quality. Science and technology and training have to play important roles in water resources development and management in general.

e) National Water Policy was adopted in September, 1987. Since then, a number of issues and challenges have emerged in the development and management of the water resources. Therefore, the National Water Policy (1987) has been reviewed and updated.

The document also talks about **Water Resource Planning**. It says that-

a) Water resources available to the country should be brought within the category of utilizable resources to the maximum possible extent.

b) Non-conventional methods for utilization of water such as through inter-basin transfers, artificial recharge of ground water and desalination of brackish or sea water as well as traditional water conservation practices

like rainwater harvesting, including roof-top rainwater harvesting need to be practiced to further increase the utilizable water resources. Promotion of frontier research and development, in a focused manner, for these techniques is necessary.

c) Water should be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a national perspective, after taking into account the requirements of the areas/basins.

The document further points out that in the planning and operation of systems, **Water Allocation Priorities** should be broadly as follows:

- Drinking water
- Irrigation
- Hydro-power
- Ecology
- Agro-industries and non-agricultural industries
- Navigation and other uses.

However, the priorities could be modified or added if warranted by the area / region specific considerations.

It also mentions about some of the important strategies regarding **Project Planning**.

These are:

a) Water resource development projects should as far as possible be planned and developed as multipurpose projects. Provision for drinking water should be a primary consideration.

b) In the planning, implementation and operation of a project, the preservation of the quality of environment and the ecology balance should be a primary consideration. The adverse impact on the environment, if any, should be minimized and should be offset by adequate compensatory measures. The project should, nevertheless, be sustainable.

c) There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchments area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. The planning of projects in hilly areas should take into account the need to provide assured drinking water, possibilities of hydro-power development and the proper approach to irrigation in such areas, in the context of physical features and constraints of the basin such as steep slopes, rapid run-off and the incidence of soil erosion. The economic evaluation of projects in such areas should also take these factors into account.

d) The drainage system should form an integral part of any irrigation project right from the planning stage.

e) The involvement and participation of beneficiaries and other stakeholders should be encouraged right from the project planning stage itself.

The document also talks about the measures regarding **Ground Water Development** and **Drinking Water**.

Ground Water Development

1. There should be a periodical reassessment of the ground water potential on a scientific basis, taking into consideration the quality of the water available and economic viability of its extraction.
2. Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented by the Central and State Governments. Ground water recharge projects should be developed and implemented for improving both the quality and availability of ground water resource.
3. Integrated and coordinated development of surface water and ground water resources and their conjunctive use, should be envisaged right from the project planning stage and should form an integral part of the project implementation.
4. Over exploitation of ground water should be avoided especially near the coast to prevent ingress of seawater into sweet water aquifers.

Drinking Water

Adequate safe drinking water facilities should be provided to the entire population both in urban and in rural areas. Irrigation and multipurpose projects should invariably include a drinking water component, wherever there is no alternative source of drinking water. Drinking water needs of human beings and animals should be the first charge on any available water.

The document talks about:

Irrigation

1) There should be a close integration of water-use and land-use policies.
2) Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings and rational pricing.
3) Irrigation being the largest consumer of fresh water, the aim should be to get optimal productivity per unit of water. Scientific water management, farm practices and sprinkler and drip system of irrigation should be adopted wherever feasible.

Resettlement and Rehabilitation

Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of population. A skeletal national policy in this regard needs to be formulated so that the project affected persons share the benefits through proper rehabilitation. States should accordingly evolve their own detailed resettlement and rehabilitation policies for the sector, taking into account the local conditions. Careful planning is necessary to ensure that the construction and rehabilitation activities proceed simultaneously and smoothly.

Participatory Approach to Water Resources Management

The document says that management of the water resources for diverse uses should incorporate a participatory approach by involving not only the

various governmental agencies but also the users and other stakeholders, in an effective and decisive manner in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users' Associations and the local bodies such as municipalities and Gram Panchayats should particularly be involved in the operation, maintenance and management of water infrastructures / facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups /local bodies.

National Water Policy is in favour of Private Sector Participation

The document says that private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible. Private sector participation may help in introducing innovative ideas, generating financial resources and introducing corporate management and improving service efficiency and accountability to users. Depending upon the specific situations, various combinations of private sector participation, in building, owning, leasing and transferring of water resources facilities, may be considered.

As for the **Water Quality**, the document says that-

1) Both surface water and ground water should be regularly monitored for quality. A phased programme should be undertaken for improvement in water quality.
2) Principle of "polluter pays" should be followed in management of polluted water.
3) Necessary legislation is to be made for preservation of existing water bodies by preventing encroachment and deterioration of water quality

As for the **Water Zoning**, it says that economic development and activities including agricultural, industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. There should be a water zoning of the country and the economic activities should be guided and regulated in accordance with such zoning.

Regarding **Conservation of water**, the document points out that:

1) Efficiency of utilization in all the diverse uses of water should be optimized and an awareness of water as a scarce resources should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.
2) The resources should be conserved and the availability augmented by maximizing retention, eliminating pollution and minimizing losses. For this, measures like selective linings in the conveyance system, modernization and rehabilitation of existing systems including tanks, recycling and re-use of treated effluents and adoption of traditional techniques like mulching or pitcher irrigation and new techniques like drip and sprinkler may be promoted, wherever feasible.

Flood Control and Management

1) There should be a master plan for flood control and management for each flood prone basin.
2) While physical flood protection works like embankments and dykes will continue to be necessary, increased emphasis should be laid on non-structural measures such as flood forecasting and warning, flood

plain zoning and flood proofing for the minimization of losses and to reduce the recurring expenditure on flood relief.

3) There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimize the losses of life and property on account of flood.
4) Each coastal State should prepare a comprehensive coastal land management plan, keeping in view the environmental and ecological impacts, and regulate the development activities accordingly.

Water Sharing / Distribution amongst the States

1) The water sharing / distribution amongst the States should be guided by a national perspective with due regard to water resources availability and needs within the river basin. Necessary guidelines, including for water-short states even outside the basin, need to be evolved for facilitating future agreements amongst the basin states.
2) The Inter-State Water Disputes Act of 1956 may be suitably reviewed and amended for timely adjudication of water disputes referred to the Tribunal.

Performance Improvement

There is an urgent need of paradigm shift in the emphasis in the management of water resources sector. From the present emphasis on the creation and expansion of water resources infrastructures for diverse uses, there is now a need to give greater emphasis on the improvement of the performance of the existing water resources facilities. Therefore, allocation of funds under the water resources sector should be re-prioritised to ensure that the needs for development as well as operation and maintenance of the facilities are met.

Maintenance and Modernization

1) Structures and systems created through massive investments should be properly maintained in good health. Appropriate annual provisions should be made for this purpose in the budgets.
2) There should be a regular monitoring of structures and systems and necessary rehabilitation and modernization programmes should be undertaken.
3) Formation of **Water Users' Association** with authority and responsibility should be encouraged to facilitate the management including maintenance of irrigation system in a time bound manner.

Conclusion

In the end, the document points out that the success of the National Water Policy will depend entirely on evolving and maintaining a national consensus and commitment to its underlying principles and objectives. To achieve the desired objectives, State Water Policy backed with an operational action plan shall be formulated in a time bound manner say in two years. National Water Policy may be revised periodically as and when need arises.

Report of the Expert Group on "Ground Water Management and Ownership"

By:

Government of India, Planning Commission, New Delhi

September 2007

Bird's Eye View

The objective of this document is to review the issue of groundwater management and ownership. It also attempts to deal with the questions like what policies, institutional and legal framework can promote sustainable use of ground water.

This 61-pqge document is divided into eight chapters and also contains seven tables and two boxes. Besides, it also contains six annexures.

In Chapter-I an introduction of the report is given. Chapter-II takes stock of the availability and use of groundwater and outlines the extent, causes and consequences of overexploitation. Subsequently, the scope and efficacy of ground water recharge is discussed in Chapter-III. Chapter-IV reviews the legal position and the emerging role of Central Government in groundwater management. Chapter V and VI discuss respectively the domestic and international experiences in groundwater management and draw lessons from them. In Chapter VII, a number of initiatives to promote groundwater sustainability have been suggested. Chapter VIII gives conclusion of the report.

In the introduction, the document says that in the water sector, the Mid-Term Appraisal (MTA) of the Tenth Five Year Plan, carried out by the Planning Commission and considered by the National Development Council (NDC), has expressed concern about the rapid decline of groundwater levels in some parts of the country.

The document further says that the Planning Commission constituted an Expert Group under the Chairmanship of Dr, Kirit S. Parikh, which was required to address the following:

- to take stock of the groundwater situation in the country in regard to availability, present use and projected demand;
- to identify reasons for fall in ground water levels in certain parts of the country;
- to review the efficacy of ground water recharge schemes implemented so far;
- to study the effectiveness of legislation where enacted;
- to review the present legal position regarding ground water ownership; and suggest modifications keeping in view international practices;
- to suggest other measures to tackle the ground water management problems.

The document points out that the primary source of fresh water is rainfall and ground water and the demand of fresh water in the country has been increasing over the years. Currently, total water use (including ground water)is 634BCM (Billion Cubic Meter), of which 83% is for irrigation. The demand for fresh water is projected to grow to 813BCM by 2010, 1093BCM by 2025 and 1447BCM by 2050, against utilizable quantum of 1123BCM.

The document further says that an imbalance in demand-supply of water has occurred in some parts of the country, as manifested in declining water tables. It says that there is a need to address this problem immediately as little control has been exercised on ground water pumping with landowners having the right to draw unlimited amount of groundwater from beneath their land without being liable for injury to neighbours. The aim of the new approach would be to attain greater "sustainability of groundwater" defined as, "use of ground water in the manner that can be maintained for an indefinite time without causing unacceptable

environmental, economic or social consequences". As the use of water keeps growing, the main question arises - how to promote sustainable use of water, given that we have a Constitution, federal structure, legal framework and very small land holding? This gives rise to the following questions:

- Who has the right over ground water?
- What is the Constitutional position?
- Since water is a State subject, what can the Central Government do?

The document further says that there are other issues also which have to be addressed. The issues are:

- What is the potential of deep water aquifer?
- How much can be used annually?
- How to exploit it and how much will it cost?

In chapter-II, the document mentions about emergence of scarcity of ground water resources. It says that out of the volume of 1869 BCM, which appears as average annual potential flow in river, only 1123 BCM is assessed as the average annual utilizable water - 690 BCM from surface water and 433 BCM from ground water. But the demand will outstrip availability in another 35-40 years as the demand for use of water is in much greater. The Central Ground Water Board has estimated the present annual ground water draft as 230.6 BCM.

The document further says that the extent of extraction has increased significantly over the years, as indicated by the growth in the number of wells and tube-wells served by ground water. It is estimated that there are 19 million wells in the country, out of which 16 million wells are in use and are drawing about 231 BCM of water - 213 BCM for irrigation and 18 BCM for domestic and industrial use - out of net annual ground water availability of 399 BCM. Another important point to note is that by the year 2025, the demand for domestic and industrial uses is projected to rise to 29 BCM from the current of 18 BCM.

The document also points out that in most parts of the over-exploited areas; the prime cause of over-exploitation is the rising demand for groundwater from agriculture. In some parts, it is the growing urbanization and industrialization. Further, in many groundwater irrigated areas, decisions on cropping pattern and cropping intensity, which are the predominant determinants of agricultural demand for groundwater, are being taken largely independent of the case of groundwater availability. Thus, water intensive crops have tended to be grown even in the face of scarcity of groundwater, if these crops are perceived to be relatively remunerative. Such distortions occur partly due to the legal/regulatory regime governing groundwater and partly to the minimum support price policy and agricultural trade policy currently being followed.

The document also says that the problem has been compounded by the availability of cheap/subsidized or even free power in many states, since power is a main component of the cost of groundwater. Moreover, electric supply is not metered and a flat tariff is charged depending on the horsepower of the pump. This makes the marginal cost of power zero and provides farmers with little incentive to use power or water more efficiently. Power subsidy has undoubtedly encouraged greater use of groundwater.

It further says that overexploitation leads to a) increase in pumping depths, reduction in well/tube-well yields and rise in the cost of pumping ground water and b) widespread and acute scarcity of ground water in summer months for irrigation and drinking uses. This forces farmers to deepen

their wells and install larger pumps. Rich farmers may cope with this challenge relatively easily, but small and marginal farmers, many of whose wells are supported by shallow aquifers, often find it difficult.

The document also points out that another fallout of groundwater over exploitation has been contamination of groundwater due to geogenic factors, resulting in increasing levels of fluoride, arsenic and iron. Groundwater in some parts of West Bengal and Gujarat, which are contaminated by arsenic and fluoride now, were safe at the time of independence. Since 85% of rural water supply programme depends on groundwater as the source, effects on health of rural population due to such contamination is a matter of great concern. Further, overexploitation may potentially lead to reductions in essential base flow rivers and streams, and diminished spring flows.

On both counts stated above (i.e. reduced quantity and lower quality) agricultural sustainability suffers. It may be observed that over-exploitation has occurred in agriculturally crucial states, such as Punjab, Haryana, Gujarat, Maharashtra and Andhra Pradesh. Further, to the extent the depletion of groundwater raises demand for electricity, it undermines the viability of the power sector, as power for agricultural use is highly subsidized.

In chapter III, the document talks about to the Government Schemes for groundwater recharge, its motivation and results. It says that for developing model artificial recharge structures suited to different agro-climatic and hydro-geological set-ups, the Central Ground Water Board (CGWB) initiated 165 artificial recharge schemes under Central Sector during Ninth Plan with active involvement of State Governments and UTs.

The document further says that the studies to assess the impacts of the scheme provide evidence that artificial recharging yields encouraging results in terms of arrest of rate of decline in groundwater levels, reduction of run-off, increased availability of groundwater especially in summer months, increase in irrigation, revival of springs, improvement of the environment through increase in soil moisture and improvement in groundwater quality.

The document says that an important revelation of these studies is that the investment per hectare of land irrigated for many of these schemes is comparable to investment in surface irrigated particularly when the cost of delays, which typically occur in the surface irrigation schemes, is adequately accounted for.

The document further says that besides these schemes, there are many examples of water harvesting and recharge projects reporting substantial improvement in water availability and agricultural production. Well known among them is the restoration of water flow in the river Arvarl in Rajasthan, Similar cases are the, construction of roof-top rain water harvesting structures in some important buildings in NCT of Delhi. Jaipur, Amritsar and Nagpur.

Yet even with the full development of artificial recharge, groundwater availability would remain limited. If it is treated as an open access resource and its extraction continues at the present rate then in the end it would lead to over extraction. It is therefore, critical to find ways to limit the use of ground water in order to keep it sustainable.

In chapter IV, the document talks about the legal position regarding groundwater. In this context, the Expert Group has examined the legal position, particularly:

- The legal provisions concerning groundwater use by individuals.

- What can be done to ensure sustainable use of groundwater under our law? Who has the power and obligation to take needed actions?

The document says that the Indian legal system in respect of groundwater has two important characteristics. First, the system is mixed or pluralistic, and includes statutory provisions, presidential court decisions, doctrines and principles deriving from the British Common Law system, international agreements, religious (personal) law and customary law and practices. This scenario contributes often to dispensable complexity. Secondly, different parts of the system are not well integrated with each other, resulting in overlapping of regulations in many areas.

The document further says that the right to groundwater in India seen as following the right to land. The source usually referred to in support of this is the Indian Easement Act 1882. The Indian Easement Act, 1882 links groundwater ownership to land ownership and this legal position has remained intact since then. In the Act, "easement" is defined as a right which the owner or the occupier of certain land possesses, as such, for the beneficial enjoyment of that land to do or to do something, or to prevent and continue to prevent something from being done, in or upon or in respect of certain other land not his own.

The right of every owner of land to collect and dispose within his own limits of all water under the land which does not pass in a defined channel and all water on its surface which does not pass in a different channel. The definition of the right suggests that if your neighbour extracts too much water and contributes to lower the water level you have the right to prevent him doing it. Symmetrically, the neighbour can prevent you from over exploitation. Thus there are limits to an individual's right to exploit groundwater, which has been tested recently in the Coca-Cola case in Kerala.

The document further indicates that as regards to groundwater regulations, especially depletion, the Supreme Court of India has passed several orders in 1996, where under it has issued directions to the Government of India for setting up of Central Ground Water Authority (CGWA) under Environment (Protection) Act, 1986 and to declare it as an authority under the Environment Protection Act and delegate powers under the said Act to the CGWA for the purposes of regulation and control of groundwater development. The Honourable Court further directed that the CGWA should regulate indiscriminate boring and withdrawal of groundwater in the country and should give necessary directions with a view to preserving and protecting the groundwater.

The document here points out the areas of activities of the CGWA. These are:

- Notification of areas for regulation of groundwater development in severely overexploited areas in the country;
- Regulation of groundwater extraction by industries in over-exploited areas in the country;
- Registration of drilling agencies for assessment of pace of development of groundwater and regulation of well drilling activities;
- Representation in the National Coastal Zone Management Authority and other Expert Committees of the Ministry of Environment and Forest;
- Undertaking countrywide mass awareness programmes and training in rain water harvesting for groundwater recharge.

The document also says that since the Center's power to legislate on groundwater is based on environmental grounds, the National Environment

Policy has suggested the following measures regarding the to groundwater:

- Take explicit account of impacts on groundwater tables of electricity tariffs and pricing of diesel;
- Promote efficient water use techniques, such as sprinkler or drip irrigation among farmers. Provide necessary pricing, inputs and extension support to feasible and remunerative alternative crops for efficient water use;
- Support practices of contour bounding and revival of traditional methods for enhancing groundwater recharge;
- Mandate water harvesting in all new constructions in relevant urban areas as well as design techniques for road surfaces and infrastructure to enhance ground water recharge;
- Support R&D in most effective techniques suitable for rural water projects for removal of arsenic and mainstream their adoption in rural drinking water schemes in relevant areas.

The document also talks about the National Water Policy. It says that the revised National Water Policy (2002) has the following recommendations relating to ground water:

- Exploitation of groundwater resources should be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. The detrimental environmental consequences of overexploitation of groundwater need to be effectively prevented by the Central and State Governments. Groundwater recharge projects should be developed and implemented for improving both the equity and availability of ground water resource;
- Integrated and coordinated development of surface water and groundwater resources and their conjunctive use should be envisaged right from the project planning stage and should form an integral part of the project implementation;
- over exploitation of groundwater should be avoided especially near the coast to prevent ingress of sea water into sweet water aquifers.

The document further talks about the Model Bills prepared and circulated by the Centre to the States from time to time. The purpose of such bill is to form a template for the states in their own regulations of rain water harvesting, notification of areas, requirements for applications for permits prior to digging and drilling of new wells, registration of existing wells and all existing water users. The bill suggests that quite far reaching power would be vested with the State Governments, on behalf of the private landowners, and the State Ground Water Authorities are to be established for handling of management and development questions. The salient features of the Model Bill are:

- States to establish a Ground Water Authority;
- Authority to have powers to notify areas for control and regulation of ground water development;
- Authority to grant permit for extraction and use of ground water in notified areas;
- Existing users in notified areas and new users in non-notified areas to register with the Authority;
- Penalties prescribed for offences;
- States to implement rain water harvesting for ground water recharge.

The document further says that some of the State Governments have enacted ground water legislation given:

- As individual's right to use groundwater is limited by the need to contain environmental consequences, such as lowering of the water table, of such use, the Central Government has the obligation to see that groundwater use does not lead to environmental degradation.
- The State Government has the right to legislate on water including groundwater.
- The Model Groundwater Bill suggested by Center for States to adopt and enact is required to be made more effective for the following reasons:
  a) It relies on restricting the number of the wells through permits
  b) Even if the number of tube-wells is restricted, farmers can change the power of the pumps and draw more water, thus may lead to inequitable distribution.
  c) Also, this bestows right to use groundwater on those who have already sunk a well excluding others. It is thus inequitable.

The document points out that the enforcement for regulation/reduction/ restriction in the groundwater usage should be made effective by the State Government through users' group/community participation/involvement of Panchayat. The users group shall be responsible for regulating the groundwater usage among various sectors i.e. irrigation, drinking and industrial. Such regulations by the users group will be made effective on the advice of the State Ground Water Board.

The Central Ground Water Board along with the State Ground Water Board will assist the State Government in controlling the over exploitation through negative and positive incentives such as restricting institutional loans, limiting electricity supply, strengthening the oversight of the Community specially that by the user group.

In Chapter V of the document, an attempt has been made to examine some individual States' approach to and experience with groundwater.

Kerala

The document says that the net annual ground water availability in the state has been assessed as 6.23 BCM. The present annual draft for irrigation is 1.82BCM and 1.10 BCM for domestic and industrial uses. The stage of development is assessed as 47%.

The document further says that the Kerala Ground Water (Control and Regulation) Act, 2002 came into effect in December 2003 and the Kerala Ground Water Authority was constituted one month later. This Authority can recommend to the Government to notify any area within the state for the purpose of regulating groundwater extraction in that area, in public interest.

The document also says that every owner of existing wells in a notified area should apply to the Authority in a prescribed form for registering the well. Dug wells used for domestic purpose are exempted. Every owner of existing well in a notified area should apply to the Authority on a prescribed form for registering the well. After site inspection, the Authority can grant or refuse registration. A permit for the Authority will be required for constructing a new well or deepening or enlarging an existing well. Permit is also required for energizing an existing un-energized well if the horsepower exceeds 1.5HP in the case of dug wells and 3HP in the case of bore-well.

Tamil Nadu

The document says that in 1987, the Chennai Metropolitan Area Ground Water (Regulation) act, 1987 was enacted and in 2003, the State enacted the TN Ground Water (Development and Management) Act 2003.

The salient features of the Chennai Metropolitan Area Ground Water

(Regulation) Act 1987 (amended as on November 2002) are as under:

- Any person desiring to sink a well in the scheduled area shall apply to the competent authority for the grant of permit.
- No person shall extract or use ground water in the schedule area for any purpose other than domestic use.
- The use of ground water for agriculture is allowed only from wells, which existed before enforcement of this Act, and new wells meant for agriculture must obtain the permit of the Authority.
- Contravention of the Act by either an individual or a company entails a fine of Rs.2000 on first instance. For the second and the subsequent offences, the fine is Rs.5000 or imprisonment for 6 months.
- The competent authority has power to break open and enter the property, seal the well and recover the cost of such action from the violator.
- There are prescribed license fees for extraction of ground water for other than domestic purpose ranging from Rs.500 to Rs.5000 for different pump capacities.

The document further says that the Tamil Nadu Ground Water (Development and Management) Act 2003 extends to the whole state except the areas under the Chennai Metropolitan Area Ground Water (Regulation) Act 1987 and is to be implemented by the TN Ground Water Authority (TNGWA). This Act relies heavily on permit system. Some of the important features of this Act are as under:

- The Act exempts wells used for domestic purposes (extracting devise up to 1HP) wells sunk by State and Central Governments for scientific purposes and wells of small and marginal farmers.
- The authority (TNGWA) has power to notify areas for development, control and regulate groundwater extraction; monitor the groundwater regime in the mining area and may direct the disposal of mine water suitably; alter, amend or cancel terms of certificate of registration, permit or license.
- Enter upon any premises (including break open the door), to inspect, take specimen and copies of relevant records, serve notice and seize and take possession of wells.
- All wells sunk in the state on or after the date of commencement of this Act (including notified and non-notified areas) have to be registered with the authority.
- Electrical energy from TN Electricity Board (TNEB) will not be supplied for energizing wells sunk in contravention of the provisions of the Act.
- Penalty for failing to comply with the act is fine of Rs.1000 for the first offence, for second or subsequent offence Rs.2000, and for continuous contravention of the provisions the fine is RS.500 per day.

The restrictions posed on the notified area are:

a) Every groundwater user to obtain a certificate of registration from Authority for recognizing their existing groundwater use.

b) Sinking of wells without permission is prohibited.

c) Transport of groundwater without the permit from authority is prohibited.

d) Carrying on the business of sinking wells without license from the authority is prohibited.

The document further says that while subsidized power has stimulated irrigation it has also led to over extraction of groundwater. From the year

1991 upto March 15, 2003 free power was being provided in Tamil Nadu for agriculture. Before that from 1970-71 to 1991 the tariff was ranging from 8 paise per unit to Rs. 50 per annum for motors upto 10hp and Rs. 75 per annum for motors higher than 10hp. From March 2003 the energy charges were raised to RS.250/hp. However, because of agitation against increased costs the Government restored to pay the farmers through Cash Support Scheme under which for a half yearly period the Government was directly subsidizing farmers at the rate of Rs.500 for pumps below5hp and Rs.625 for pumps above 5hp.

The document also says that a study by the Madras Institute of Development Studies (MIDS) brings to light some important characteristics of groundwater irrigation in the state, specifically:

a) Once individuals have access to groundwater irrigation, the incentive they face to contribute to community water systems (tanks, ponds, lakes) erodes, concomitantly disturbing the safety net present for the poor who are dependent on the community water system.
b) Small farmers are unable to keep up with the competitive well deepening resulting in heavy indebtedness.
c) The price paid for water is often dictated by the nature of water supplier. If the state is the water provider the price paid is insignificant. On the other hand, farmers pay up to one third of their gross produce or Rs.40 per hour towards water when supplied by a private well owner.
d) The existing power subsidies are heavily biased in favour of the wealthy.

The groundwater development in the state is showing mixed results. Though the ground water development has helped the agriculture sector in the beginning, it is showing lot of strains due to poor groundwater yields, thriving informal groundwater markets which has put financial strains on farmers and overexploitation leading to lowering of water quality making water unfit for irrigation due to pollution from industries in some basins. The energy subsidy has helped wealthy farmers and has not resulted in reaching the poor and needy.

Punjab

The document points out that Punjab is a predominantly agrarian state having 85% of its geographical area under cultivation with an average cropping intensity of 188%.The water demand for the kind of agricultural practices followed in the state is very high and a large part of it is for groundwater. Out of the 137 blocks in the state, only 25 are safe; 103 are over-exploited.

Punjab is not in favour of groundwater legislation as it apprehends that such a step will cause hardship to farmers. Instead, the state is in favour of following initiatives:

- Crop diversification - extending minimum support price to other crops to wean away farmers from paddy cultivation, which is water intensive. Contract farming for sowing alternative crop of chick-pea has been successfully tried.
- Large scale artificial recharge.
- Electricity supply - controlled, regulated and metered supply in critical areas.
- Micro irrigation - promotion of drip and sprinkler to conserve water.
- Encouraging industries.

The state is also contemplating complete ban on new tube wells and restricting horse power to 10HP so that the deeper aquifers are not tapped. The pumps need to be replaced with energy efficient pumps.

Andhra Pradesh

The Andhra Pradesh Water, Land and Trees Act (WALTA), enacted in the year 2002, aims at controlling and regulating the use of ground water and propagating tree-plantation on farm. Some of the critical provisions in the area of Ground Water management are:

- Registration of all the bore-wells with concerned Revenue Authorities at the Mandal level.
- Prior permission fro digging of new bore-wells from Revenue Authorities.
- Registration of all the rigs with the Government.
- Prohibition of water pumping in certain areas.

The Government of Andhra Pradesh constituted a Commission on Farmer's Welfare (Jayati Ghosh Commission) in September 2004.The Commission has made several recommendations on various issues affecting agriculture and farmers. A notable recommendation was that the State Government should take over all existing bore-wells after paying compensation to the current owners and thereafter provide water from these bore-wells on payment of water cess. The State Government has not accepted this.

Gujarat

The document says that the per capita availability of water in north Gujrat and Saurashtra-Kutch is very low (130cubic.meter to 424cubic.meter), putting tremendous pressure on ground water. It also says that the life of tube-well is also much less in Gujarat. While it costs Rs.10 lakhs to drill a tube-well and lasts only for 10 years against a normal 30 years. Groundwater is saline and also fluoride contaminated.

To ensure the sustainability, however, the State has taken a wide range of conservation initiatives. Some of these are:

- Under Sardar Patel Participatory Water Conservation programme, 54000 check dams have been constructed to improve the quantity as also quality of ground water by recharge. A total expenditure of Rs.1000cr. has been incurred of which beneficiary contribution is Rs.300cr.
- 1700 ponds have been deepened at a cost of Rs. 105 crore with 10% beneficiary contribution. 1.5 lakh farm ponds have also been constructed. These measures have helped in alleviating drinking water problem and developing dairy.
- Along the coast, tidal regulators, check dams, recharge reservoirs, 'nala' plugs have been constructed and afforestation done in 5867ha. To check salinity ingress.
- Restriction of electrification of tube-wells in over exploited, dark and saline areas and restriction of new tube-well construction to decelerate rate of groundwater depletion. A significant innovation having a bearing on groundwater management in Gujarat is the Jyoti Gram Yojona, under which separate electric supply is given to domestic and agricultural users. This has helped in curtailing the excessive pumping of groundwater through illegal means. Further, greater reliability of power supply - albeit for limited hours - has led to more efficient use of groundwater.

Maharashtra

The document states that Maharashtra is mainly an agricultural state with 82% of the rural population relying on agriculture. Subsequent to 1972, occurrence of frequent droughts, development of cheap drilling devices and availability of relatively low cost institutional finance, and energization led to proliferation in irrigation dug-wells. The number of such wells rose from about 7 lakhs in 1974 to 15.6 lakhs in 2004 and the area under well irrigation increased from about 10lakh ha. to 29 lakhs ha. during the same

period.

It was however found that public drinking water supply sources in many parts of Maharashtra were getting affected due to sinking of wells and unregulated extraction of water from such wells and made it difficult for the authorities to provide minimum prescribed drinking water to the local population. In view of such situation, the Government of Maharahtra enacted and enforced "Maharashtra Ground Water (Regulation for Drinking water purposes) Act, 1993", for the purpose of protecting the availability of drinking water supply.

The main provisions of the Act include the following:

- Prohibition of sinking of wells without prior permission for any purpose within 500m of a public water source.
- Appropriate authority also have the rights to prohibit restrict or regulate from time to time extraction of water from permitted wells to suit the public interest.
- Prohibit sinking of well for any purposes in an over exploited watershed.

The document further says that 1993 Act has not been successful in advancing its prime objective of ensuring protection of drinking water sources. Given the inadequacy of the 1993 Act, Government of Maharashtra (GoM) has formulated the "State Water Policy" in 2003. The Policy lays down the following directives for assessment, development and management of groundwater resources of the State:

- The groundwater resources should be so developed as not to exceed the limits of annual replenishability.
- Conjunctive use of surface and ground water shall be envisaged right from the project planning stage and shall form an integral part of the project
- Over exploitation of ground water shall be avoided near the coast to prevent the ingress into sweet water aquifers.

The document says that the GoM is also preparing a draft Act for Development & Management of Ground Water. The Maharashtra Water Resources regulatory Authority has been set up, which is proposed to function as the State Ground Water Authority. Under the proposed Act, it is envisaged that in over-exploited watersheds Water Resources Committee would be set up comprising stakeholders to regulate and manage ground water.

In this chapter the document also talks about the experiences with water market in India. It says that in a water market, an individual can have access to water from others for a fee. Water markets that exist in India are informal and are generally limited to localized water trading between adjacent farmers and the practice is quite common especially for groundwater. In water scarce pockets of Gujarat, Tamil Nadu and Andhra Pradesh, a substantial area is irrigated through groundwater markets. There is no systematic estimate at the national level of the magnitude of water trading. The area irrigated through water markets has been projected to be about 50% of the total gross irrigated area with private lift irrigation systems.

Trading of ground water has no legal basis in India. States, however, have been tolerant of the practice, possibly because of the difficulty in enforcing any kind of restriction. There is however some evidence of decline in groundwater table caused by competitive water withdrawal due to intense water marketing (Moench 1992). Besides, there is an equity question;

rich sellers can get a payment from the very group whose water rights get infringed by the seller's activities (Saleth 1994).

The document further talks about the overall assessment of States' approach and experiences. It says that despite repeated circulation of the Model Groundwater Bill by the Central Government, States have generally showed lethargy in legislating on groundwater. The States believe that legislation could cause hardship to farmers and has hence favoured alternative strategies focusing mainly on conservation. Commonalities among state legislation include:

- Excessive reliance is on state imposed control mechanisms and very little emphasis on cooperative management;
- Sanctions are over limited area and over limited period of time. Penalties are coercive, heavy-handed and in the nature of criminal sanctions;
- Typically, the process involves licensing procedures to regulate digging of wells.

The approach of state legislations, based on model groundwater bill of Central Government, however, has the following inherent shortcoming:

a) It relies on control mechanism to restrict the number of wells, which typically slows down the process.
b) Even if the number of tube-wells is restricted, an individual farmer can render the regulation ineffective by increasing the power of the pump-set and drawing more water.
c) Procedures for appeals against sanctions provide scope for misuse of power, corruption and waste of time.
d) Also, the Bill bestows right to use groundwater on those who have already sunk a well, while excluding others.

The document further says that the MIDs study in Tamil Nadu has shown that small and poor farmers are affected more by controls on groundwater exploitation and benefit less from power subsidies as compared to wealthy farmers who buy water from their neighbours during restricted hours of power supply to farmers.

In chapter VII, the document says that given the experience in groundwater management, new initiatives to depart from the current system may be considered in the following:

a) Policy and Legal Environment,
b) Technical
c) Electricity pricing and supply
d) Incentives for efficient use,
e) Cooperative management , and
f) Institutional changes.

The Policy and Legal Environment

The document says that the National Water Policy (NWP) 2002 and the National Environment Policy include a wide range of measures covering both demand-side and supply-side management. These policy measures should form cornerstone of the groundwater management strategy and legislation should adequately back them.

The document further says that ground water has been considered a private property and till recently there has been no real clash of interest between various users. The Indian Easement Act 1882 links groundwater ownership to land ownership and this legal position has remained intact since then. While the right to use groundwater is to be governed by the ownership of

the land above it, the extraction rights can and should be curbed by the state if the use of groundwater is considered excessive. But the new legislation to amend the Easement Act to make ground water a community or state property is complex.

While no change in basic legal regime relating to ownership /user rights is being suggested, some changes in state legislation to make the regime effective is considered necessary. Few states have legislation on the regulation and management of ground water through adoption of model groundwater bill. But it has been observed that this bill is difficult to enforce and can be rendered potentially ineffective.

The document says that the Centre's intervention will be required when the groundwater level falls below the replenishable level. The Central Ground Water Authority, under the provisions of Environment Act, 1986, will be empowered to make such declarations and it would be the responsibility of the State Government to ensure that any exploitation in the area is regulated as well as to step up its efforts toward artificial recharge. Since water users would have to necessarily curb their extraction following such declarations, it would hurt them economically one way or the other. For example, farmers may be compelled to cut down on irrigated area or change cropping pattern and municipalities may be compelled to cut down domestic supplies and so on.

The document further says that farmers in most States are given electricity free of cost or at a low price. Even where the price is not very low, supply is not metered and a flat tariff is charged depending on the horse power of the pump. This makes the marginal cost of power zero and provides little incentive to economize on power and water. It is often suggested that metered power at an appropriate tariff will induce farmers to cultivate less water intensive crops and reduce over extraction of water by farmers.

Another problem with metered water supply with high electricity price is that it will restrict water markets. Well owners who sell water to their neighbours without wells, constituting mainly small and marginal farmers, would sell less or charge a higher price. This is observed in Gujarat where farmers who are charged flat tariff and those who are given metered supply co-exist in the same district. Farmers with metered supply charge 30% to 60% more for water compared to farmers with flat tariff. If the tariff is lower, this premium would be smaller. If the tariff is high so that farmers reduce the extraction of water, the small and marginal farmers have to pay more and get deprived of water. On the other hand, if the tariff is low, impact on ground water use will be small.

The document further suggests ways to sustain the use of ground water. It says that the elements of a successful arrangement for sustainable use of ground water can be as follows:

- The CGWB/SGWB should monitor ground water situation through scientific methods (such as by use of piezometers) and make their findings public. They should assess the average annual recharge that take place in the aquifers and be responsible for preparing a suitable plan and guidelines for aquifer water management. These would provide technical and managerial support to user groups.
- The Panchayat would organize a village Ground Water Cooperation Committee (GWCC) under suitable existing water management schemes like Swajaldhara, Watershed Development Programme, Accelerated Rural Water Supply Programme (ARWSP) etc. which will allocate water rights and oversee that farmers restrict their use of

ground water within their rights.

- The modalities for enforcement may be left to the GWCC.
- When artificial recharge is carried out and the amount of extractable water increases, the rights may be revised. Alternatively all or part of the additional water may be assigned to community tube-wells for supplying water to small and marginal farmers.

Summery and Conclusion

In the last Chapter titled "Summery and Conclusion", the document says that ground water utilization in the country has expanded significantly in the past few decades. Over-exploitation of the resource in certain parts of the country has led to rapid decline in water table. This has begun to threaten not only the food security of the country, but also the environment. Further, the depletion of groundwater resource has been hurting the small and marginal farmers the most, in many cases threatening their livelihood. The problem is getting intensified and more widespread over the years.

The document further suggests that the issue can be addressed by augmenting groundwater supplies in shallow aquifers by a) artificial recharge of groundwater, b) by tapping the huge 'static' water reserves in deeper aquifers, and c) limiting extraction of groundwater.

The document further points out that recent court ruling have emphasized the role of State as the trustee of all natural resources, including groundwater, which by nature are meant for use and enjoyment of public at large.

It says that attempt must therefore be made to balance the landowner's right to capture groundwater with the public interest in managing groundwater resources for all users, including the environment, and to ensure that both the present and future needs of the communities dependent upon these resources are accounted for.

The document further says that as overexploitation of groundwater is gaining momentum, environment is increasingly coming under the threat. So, even though states have the primary responsibility of ensuring ground water sustainability, the Government of India is expected to play an expanded and more effective role especially in overseeing and supporting state level activities in groundwater management. The technological and managerial expertise of the Central Government does not appear to have groundwater regime, possibly because of lack of incentive under the current management practices to seek such support.

Experience with regulation in some states shows that it is not possible to have significant control over use of groundwater through legal provisions because of difficulties in enforcement. Further, current regulations tend to discriminate against new users. Some modification of the current framework will make regulations more equitable and easier to implement. The main theme of such a transition would be a shift to focus (1) from controls by states to management by user groups and (2) from attenuating crisis after it occurs, to averting crisis.

In the light of the above, the Expert Group emphasizes the need for all states to introduce a modified groundwater legislation encompassing inter alia the role and responsibility of water user groups and the Government. Involvement of Panchayat Raj institutions, it says, should be a key part of the strategy.

Legislation

By:

INSAF, New Delhi

Bird's Eye View

This 12-page document compiles the various aspects and features of water scenario in India particularly that of ground water. It also talks about the development and management of water resources by the Government of India. It says that the primary responsibility for the development of water belongs to the individual States while the Central Government oversees the implementation of National Policy on resource development and exploitation of groundwater, as well as manages inter-state and international rivers and river valleys.

The document says that the Ministry of Water Resources (MoWR) is the principal agency responsible for water in India and as such, oversees the planning and development of the resource from policy formulation to infrastructure support.

Following a severe draught across the country in 1987, the Centre framed a National Water Policy (NWP). Though the policy recognized the need to limit individual and collective water withdrawals without identifying its institutional mechanism needed to define and enforce such limits. The 1987 NWP was modified in 2002, including recognition of the role of private sector participation and the need to shift from development of new projects to performance improvements in existing ones.

The document further talks about rights over surface water and ground water. It says that India does not have any specific law defining ownership and rights over water sources. The rights are derived from several legislations and customary beliefs.

The document points out that rights over water in rivers and lakes are defined by Land and State Irrigation Acts, which explicitly state that the Government has absolute right over this water. According to the Northern India Canal and Drainage Act, 1873, the Government has the right to use and control for public purposes the water of all rivers and streams and lakes.

Irrigation Acts or their rules specify who can use canal water, and for what purpose. Only user rights - no ownership rights are granted. User rights are granted only to people who have land in command areas.

The document further says that several court judgments in post-independent India have affirmed that all natural resources are meant for public interest and these resources cannot be converted into private ownership. However, the legal position on whether groundwater is a resource meant for public use is fuzzy, and India has no law that explicitly defines groundwater ownership (Orissa did amend its irrigation Act to assert State right over groundwater, but this has been challenged in the Court).

The document further points out that some grounds, for determining groundwater rights, are provided by the Indian Easement Act of 1882. It says that Section 7 (g) of the Indian Easement Act states that every land owner has the right to 'collect and dispose' of all water under the land within his own limits, and all water on its surface that does not pass in a defined channel. Hence, by the Act, the owner of a piece of land does not own the groundwater under the land or surface water on the land; he only has the right to collect and use the water.

However, it is customarily accepted across India that a well in a piece of land belongs to the owner of that land, and others have no right to extract water from the well or restrict the landowner's rights to use the water.

The document further says that interpretations of the Transfer of Property Act of 1882 and the Land Acquisition Act of 1894 also support the position that the landowner has proprietary rights to groundwater; it is connected to the 'dominant heritage' and cannot be transferred apart from the land. But the right to property in India is not absolute. It is not a fundamental right and the Government has the power to restrict in the interest of the larger public good. Thus, the Government enjoys the right to take over anybody's land to construct dams, build roads, etc. While the Government has to follow due process and pay the compensation, its right to acquire the property itself is unchallengeable.

Hence, the Government has the right as well as the duty to regulate use of groundwater in the interests of justice, equity and environment protection. This duty was emphasized by a Supreme Court order that directed the Centre to constitute a groundwater authority and accordingly the Central Ground Water Authority was set up in 1986.

The document further talks about the right to water. It says that the Constitution guarantees every citizen fundamental rights to equality, life and personal liberty. Article 15(2) of the Constitution further states that no citizen shall be subjected to any restriction with regard to the use of wells, tanks, bathing ghats. Various Courts have upheld that the rights to clean and safe water is an aspect of the right to life. But as yet, no laws or policies have been formulated asserting that water is a fundamental and inviolable right enjoyed by every citizen of the country.

The document points out that 'right to water' can be obtained in India only on a case-by-case basis, by going to Courts.

The document also observes that people's accessibility to affordable and potable water is gradually being obstructed. In this connection it cites many instances, particularly the move by some States to privatize the distribution of water for drinking purposes both in urban and rural areas. It refers to the sale of river Sheonath to a private party by Chhatisgarh Government. Similarly, the setting up of bottling plants by Multi National Soft-drinks Companies and their abilities to corner prime ground water sources.

As for the responsibility of providing water to the people, the document says that there is no legislation in India that specifically says that Governments have to provide water. It has been simply accepted that the Central and State Governments will discharge this function. Under this it mentions various irrigation and drinking water related programmes and schemes undertaken by the Governments since independence.

The document also mentions that under the 73rd and 74th Constitutional amendments, States may transfer power and responsibilities with regard to minor irrigation, watershed development and water supply for domestic, industrial and commercial purposes to Panchayati Raj Institution.

The document also talks about the regulation of ground water use. It says that groundwater is the main source of water across India, for all purposes. Around 80-90% rural drinking water needs are met by ground water, and groundwater serves around half of India's net irrigated area.

The document further says that groundwater extraction has risen exponentially since 1950s due to Green Revolution technologies, increased cultivation of cash crops, and electricity subsidies for irrigation pump-sets. Extraction exceeds natural recharge in many parts of the country.

In response to an emerging crisis that threatens the life and livelihoods of millions, the Centre, in 1970, framed a Model Groundwater (Control and Regulation) Bill for adoption by the States. Revised in 1972, 1996 and 2005, the Bill provides the framework to regulate use of groundwater in India. Some States like Karnataka, Maharashtra and Tamil Nadu have passed legislation based on this Model Bill.

Following are the provisions of the revised version of the Model Bill proposed by the Centre:

- Compulsory registration of borewell-owners.
- Compulsory permission for sinking of a new bore-well.
- Creation of a groundwater regulatory body.
- Restrictions on the depth of borewells.
- Establishment of protection zones around sources of drinking water.

The document also mentions some of the mandates set up by the Bill. These are:

- Periodical reassessments of groundwater potential on a scientific basis, considering quality of water available and economic viability.
- Regulation of exploitation of ground water sources so that extraction does not exceed recharge.
- Development of groundwater projects to augment supplies.
- Integrated and coordinated development of surface water and groundwater so that they are used conjunctively.
- Prevention of over-exploitation of groundwater near the coast to stop the ingress of seawater.

The document further points out that implementation of these mandates is entirely in the hands of government authorities; the people who use groundwater have no role in decision-making or implementation. This is quite contradictory to customary belief regarding ownership of groundwater.

In conclusion the document says that groundwater cannot be controlled solely by government. It can be controlled only with the close involvement of all primary stakeholders -- those who use groundwater excessively as well as those who suffer because of over-use.

A Decade of the Maharashtra Ground Water Legislation: Analysis of the Implementation Process

By:

Sanjiv Pansalkar and Vivek Kher

Law, Environment and Development Journal (LEAD)

Bird's Eye View

The 22-page document is aimed at understanding the experience of implementation of the groundwater Act.

The document says that norms of customary usage of common property resources have usually evolved under conditions of resource abundance. It says that groundwater available in Indian underground aquifers is actually common pool resource. As such, though a common pool resource, landowners were deemed to have unfettered right to groundwater under their lands and these rights were limited only to the extent that they should not in any way affect similar rights of other individuals. As there was insufficient understanding about the movement of water in the aquifer system, rights to groundwater subsumed under the property rights to land was the legal position in India for a considerable period of time. From about 1970, efforts have been made to change the law governing groundwater. The evolution of law on groundwater is still in a flux. Maharashtra is among the few states in India which modified the law pertaining to groundwater to effectively address this issue and thereafter seriously tried to implement the modified law.

In the first section of this document a quick summary of the overall groundwater situation in Maharashtra pertaining to the evolution of the efforts to redress the problems caused by groundwater scarcity, culminating in enactment of the Maharashtra Groundwater (Regulation for Drinking Water Purpose) Act 1973, is presented.

In section II, a brief summary of the provisions of the Act and the Rules framed there-under is presented. In this section, the document says that the situation of groundwater in India has become particularly aggravated in the draught prone areas of the country covering most of Western and Southern regions. Four casual factors for the situation can be identified. These are:

- Development and wide acceptance of deep rock drilling technology and proliferation of drilling contractors;
- Increasing commercialization of agriculture (cultivation of sugarcane, banana, fruits and vegetables, cotton etc) based on groundwater in these regions endowed with good soils and habited by skilled peasantry;
- Inadequate recharge of groundwater due to insufficient and uncertain rainfall, and often successive years of draught;
- Electricity subsidies and fixed electricity tariffs for farmers which reduce the marginal cost of extraction of groundwater to merely zero, and hence encourage them to maximize their current revenue by using and even trading in groundwater.

The document points out that Maharashtra falls precisely in this zone. However, it also says that post independence, as the farming community took increasingly to commercial crops, the pace of groundwater exploitation for agriculture increased rapidly. Circa 1972, AFPRO, a Non-Governmental Organization with Swiss Development Aid, brought modern drilling technology to Maharashtra for addressing drinking water scarcity. The advantage of this technology is reaching deep aquifers was quickly recognized by the entrepreneurial commercial farmers all over the state. AS a result, between 1972 and mid-nineties, deep bore-wells were constructed in large numbers in the water scarce regions of the state. And a mushroomimg of drilling contractors to complete the job

instantaneously has resulted in excessive exploitation of groundwater with deleterious effect on the resource. This has had tragic consequence on availability of groundwater for meeting the subsistence needs of bulk of the rural population. The tragedy is that such access to groundwater is heavily tilted in favour of those who can afford to invest relatively large amounts in groundwater development or can avail of credit from banking or cooperative institutions.

The document further says that initially with a view to systematically and efficiently access the groundwater, the State formed Groundwater Survey and Development Agency (GSDA) to assess different parts of the state for the groundwater situation. As the groundwater conditions continued to deteriorate, the State decided to discourage creation of new wells and tube-wells. Simultaneously, the second step of the State in discouraging groundwater exploitation was to declare that the banking sector would not lend any farm credit for sinking wells/tube-wells and installation of pumps. These moves were also backed by National Bank of Agriculture and Rural Development (NABARD) which framed guidelines for restricting flow of banking credit for groundwater development. But during the draught of the early nineties in Maharashtra, the State realized that these measures were far from effective to cope with the rapacious overexploitation by commercializing agriculture and the state was forced to take serious steps to halt further damage to its groundwater resources and in furtherance of that objective enacted the impugned legislation.

The document further says that keeping in view the importance of conserving and using the precious groundwater resources for meeting the needs of the populace, the Centre framed the Model Bill in 1970 which was revised in 1972, 1992 and 1996. In its present form the Model Bill (2005 version), which is meant to cover the whole problem of groundwater over-extraction, requires registration of owners of tube-wells, allocation of water rights, registration of drilling contractors and prior permission before drilling a tube-well.

In section four, the document says that the Maharashtra Groundwater (Regulation for Drinking Water Purposes) Act 1993 has been modeled on the Model Bill of 1970 referred above. The document also mentions some of the important provisions of this Act. These are:

- Section (3) of this Act requires provision of a minimum of 500 meters distance between a public drinking water source and any new well.
- GSDA shall advise the District Collector about possible scarcity of drinking water in identified locales depending on rainfall upto 30 September and the readings of groundwater levels in wells in that locales.
- Section (6) authorizes the GSDA to advise the Collector to declare identified watersheds as overexploited watersheds and section (7) authorizes the Collector to impose a complete ban on any further construction of new wells or tube-wells in such overexploited watersheds.
- Section (8) empowers the Collector to prohibit a farmer from extracting water from his pre-existing well during certain periods for purposes other than drinking water needs.
- Section (11) gives the collector authority to close down a well, remove pumps, disconnect power supply or otherwise take such measures that

stop contravention of the provisions of the Act.

The document also mentions that the Government of Maharashtra (GoM) has introduced amendments to this Act in 2000 in the State Legislature. Later in 2005, these moves culminated in the GoM passing an Act regarding water resources with wider ramifications and stronger teeth.It was termed the Maharashtra Water Resources Regulatory Authority Act, 2005 (MWRRA). The provisions of the Act would substantially strengthen the control of the State over all water resources.

This Act empowers the Authority to make a state water use plan, assign priority for use of water, determine water allocation to various users, prevent people not allotted any water from using it, regulate owners of the lift irrigation equipments, require all drilling contractors to register, require prior permission before drilling new tube-wells and even charge differential price for water to farmers who have more than two children.

The document further says that the experience in implementation of the Act was studied through a survey in Vidarbha. Following are some of the responses based on the survey:

- Most of the people surveyed felt that they had an acute problem of accessing drinking water.
- There was a general yet very vague awareness of what the Act was all about. Specific provisions were by and large not clearly known and understood. Awareness about procedure under the Act was in general low.
- Few people seemed to be aware that the Collector can take cognizance of an offence under the Act only if the Gram Panchayat as a whole made a written representation and it was verified by the Technical Officer, namely the GSDA.
- UNICEF had prepared posters to create awareness about the Act and the rights of the people. These were printed and meant for wide display in villages. It is amazing to note that in quite a few cases, these posters did not reach the villages at all, and even where they reached, they were not displayed.

The document further points out the lacunae and constraints in making the Act an effective instrument. It says that the first and the most important aspect that weakens the strength of the Act is that its provisions are enforceable either in watersheds declared as overexploited or if a specific locale is notified as scarcity affected in a particular year.

Secondly, this Act does not make itself relevant for any overexploitation of groundwater being done by wells located beyond specified distance of five hundred meters from a PWS.

Thirdly, the Act has not provided for registration of wells or for mandatory applications for compulsory licensing of drilling companies or agencies. Thus the Act does not try to control the problem from arising, but only takes steps if a problem has been created.

The document also says that the fundamental problem in making the legislation effective is its weak social legislation. It must be noted that nowhere in India does the obvious need for stopping rapacious exploitation of groundwater enjoy popular recognition and support. People are used to the earlier regime of unfettered right to groundwater and find nothing ethically incorrect if farmers take all necessary steps to protect their crops.

Whatever its legal merits, people certainly feel that this is a sacred right and they must guard it.

The study has concluded that the GoM has been particularly insensitive and deliberately negligent towards the development of water resources in Vidarbha. The document says that it is a state that is unwilling to take any proactive steps in helping them to take higher income yielding crops, and on top of it the State now comes down heavily if they use what they have always regarded as theirs. Thus people are unable to appreciate the logic or justification for preventing legitimate owners of wells from using them to irrigate their farms. This perception that everyman is entitled to use his well the way he wishes is very strong and legitimized.

In the conclusion, the document also says that this paper has traced the emerging situation of groundwater availability along with the evolution of water regulations in Maharashtra. It further says that right to groundwater has been customarily regarded as an unassailable right of the farmer in whose land the well is situated. This pre-existing provision has led to a strong social consensus in favour of irrigators even if that compounds the difficulty in fetching groundwater for people. Thus this case illustrates how social ethos evolving around one set of property regime becomes a stumbling block to regulation in social interests but which affect that regime.

Absence of this legitimacy makes the Gram Panchayat, where the formal action against offenders is initiated, reluctant to take necessary action against the offenders. Instead people rely on compromise solutions and keep pressuring higher officials for an upgrade of the system. While the State's power over all water resources has been vastly increased in the MWRRA, it remains moot if this fundamental problem of social legitimacy and absence of support for enforcement of the regulation will not go away. Even within the existing situation, some steps are possible to make the implementation possible.

For example, in the first place, there is a need to strongly encourage a groundwater recharge movement that has begun barely a year or two back. After all, arresting run off under the "pani adwa-pani jirwa" did make a huge difference to the severity of the crisis. One can visualize the salutary impact of the rainwater harvesting movement if it is taken to scale by popular movement, civil society and responsible PRI. Secondly, we believe that urgent steps at promoting low cost drip systems in orange belt are necessary. These systems will reduce the overall water needs and hence slow down the disastrous impact of continuous withdrawal. An option like this and apparently proactive steps in the promotion of these technologies will go a long way in perhaps favourably impacting the attitudes of the people. Thirdly, we believe that it may be important to check the tendency to obtain an upgrading of the PWS or water through tanker supply when the village community is unwilling to take any steps to retard further deterioration of its aquifers. We suggest that the Rules and procedures be modified partially for this.

The Himachal Pradesh Ground Water (Regulation and Control of Development and Management) Act, 2005

(As Assentd to by the Governor on October 27, 2005)

Bird's Eye View

The document says that this Act has been produced to regulate and control the development and management of ground water and matters connected therewith. It says that the Act shall be enacted by the Legislative Assembly of Himachal Pradesh in the Fifty Sixth Year of the Republic of India as well as will be enforced on such date as the State Government may by notification, in the Official Gazette, appoint.

The document also gives definitions of some of the important words and phrases related to this Act. The words are:

a) "artificial recharge of ground water" means the process by which groundwater reservoir is augmented beyond the natural condition of replenishment;

b) "drinking water" means water for consumption or use by human population for drinking and for other domestic purposes including cooking, bathing, washing, cleansing and other day to day activities and also consumption by the livestock;

c) "exploitation limit" means such limits where estimated annual ground water extraction is more than 80% of the estimated average annual groundwater recharge;

d) "royalty" means the royalty payable to the State Government under section 12 of this ACT;

e) "user of ground water" means a person or an institution including accompany or an industry or an establishment, whether Government or not, who or which use ground water for any purpose excluding domestic use.

f) "well" means a structure sunk for the search or extraction of ground water by any person, except by the authorized officials of the State of Central Government, for carrying out scientific investigations, exploration, development, augmentation, conservation, protection or management of groundwater and shall include open well, dug well, bore well, dug-cum-bore well, tube-well, filter point, collector well, infiltration gallery, recharge well, disposal well, or any of their combinations or variations, except any manually operated device for extraction of ground water.

The document says that the State Government shall, by notification in the Official Gazette, establish, with effect from such date as may be specified in the notification, an Authority to be known as "The Himachal Pradesh Ground Water Authority", which will function under the overall control and supervision of the State Government.

It also says that it is necessary for the Authority to expedient in the public interest to control and or regulate the extraction of groundwater in any form in any area, it shall advise the State Government to declare any such area to be notified area for the purposes of this Act.

The document further points out that the persons likely to be affected by the notification issued under sub-section (3), may file objections or suggestions within 30 days from the date of publication to the State Government which shall be decided by it within 30 days, after public hearing and thereafter, final notification shall be issued within 30 days.

If in the opinion of the Authority, the availability of the groundwater has improved in a notified area, it may advise the State Government to denotify

such area.

The Authority shall take steps to ensure that exploitation of groundwater resources does not exceed the natural replenishment to the aquifers and wherever, there is mismatch, steps shall be taken to ensure augmentation of groundwater resources in addition to regulatory measures.

Any user of groundwater desiring to sink a well within notified area, for any purpose shall, on payment of such fee as may be prescribed , apply to the Authority for grant of a permit, and shall not proceed with any activity connected with such sinking unless a permit has been granted by the Authority.

Every existing user of groundwater in a notified area shall, within a period of two months from the date of establishment of the Authority shall, make an application on such form containing such particulars and fees, as may be prescribed to the Authority for the grant of certificate of registration recognizing its existing use.

In granting or refusing a permit or a certificate of registration under sub-section(2), the Authority shall have regard to, --

- the purpose or purposes for which water is to be used;
- the existence of other competitive users;
- the availability of water;
- quality of groundwater with reference to its usage;
- long-term groundwater level behaviour
- any other factor relevant thereto.

The document states that every existing user of ground water in the notified area during pendency of decision of the Authority under sub-section (2) shall be entitled to the continued use of the ground water in the same manner and to the same quantity as he was entitled prior to the date of application.

It also says that if a registered well becomes defunct, this shall be immediately brought to the notice of the Authority by the user of ground water and such well may be used for ground water recharging if in the opinion of the Authority it is found fit.

The document further points out that every rig owner operating in the state shall register his machinery with the Authority in such manner and on payment of such fee as may be prescribed and shall follow the instructions issued by the Authority

At any time after a permit or certificate of registration, as the case may be has been granted the Authority may, for reasons to be recorded in writing, alter, amend or vary the terms of the permit or certificate of registration, as the case may be.

Provided that no change shall be made in the permit or certificate of registration, as the case may be unless the user of groundwater is afforded an opportunity of being heard.

Every user of groundwater in a notified area shall pay to the State Government a royalty for extraction of groundwater at such rates and in such manner as may be prescribed:

Provided that a user of ground water who irrigates less than one hectare of land, whether owned or leased or both, shall be exempted from payment of royalty under this section.

The State Government may, assign such proportion of the royalty, as may be prescribed for development of ground water resources.

The document further says that the Authority or any person authorized under Section 17 of this Act in this behalf shall have the powers, to require, by order any user of ground water who does not comply with the provisions of this Act or the rules made there under to close down any water supply or destroy any hydraulic work found to be in contravention of the provisions of this Act or the rules made there under.

Provided that where the user of ground water does not comply with such order within a period of sixty days from the date of issue of the same, the Authority or any person authorized in this behalf may carry out the necessary work and recover the cost from such users of ground water; to direct an appropriate body to assess exploitation limit of groundwater in different areas and submit periodic report for consideration of the Authority.

The power conferred by this section includes the power to break open the door of any premises where sinking, extraction and use of ground water may be going on:

Provided that the power to break open the door shall be exercised only the owner or any other person in occupation of the premises, if he is present therein, refuses to open the door on being called to do so.

No persecution, suit or other legal proceedings shall be instituted against any officer/official of the Government or any member or other employee of the Authority for anything done or intended to be done in good faith, under this Act, or the rules made thereunder.

The document further says that if any user of ground water fails to supply information required under the provisions of this Act or the rules made thereunder or obstructs the Authority or any other person authorized by the State Government to exercise any of the power under this Act. He shall be punished for he first offence with fine which may extend to one thousand rupees and for the second and subsequent offence with fine which may extend to two thousand rupees.

If any user of ground water sink, construct or uses well in contravention of the provisions of this Act or the rules made thereunder., he shall be punished for the first offence with imprisonment for a term which may extend to three months or with fine which may extend to five thousand rupees, or with both and for the second and subsequent offence, with imprisonment for a term, which may extend to six months, or with imprisonment for a term, which may extend to six months, or with fine which may extend to ten thousand rupees or with both.

The Kerala Ground Water (Control and Regulation) Act, 2002 also has the same provisions as the above mentioned Himachal Pradesh Ground Water (Regulation and Control of Development and Management) Act, 2005. The differences between these two Acts lie only in the objective and preamble.

The document says that The Kerala Ground Water (Control and Regulation) Act, 2002, has been produced and would be enacted in the Fifty-third year of the Republic of India and would extend to the Whole of the State of Kerala.

The document says that the objective of this Act is to provide for the conservation of groundwater and for the regulation and control of its

extraction and use in the State of Kerala.

In the Preamble of this Act the document talks about the important factor for production of this Act. These are:

- Whereas it is expedient to provide for the conservation of Ground Water and for the regulation and control of its extraction and use in the State of Kerala;
- Whereas in certain areas of the State the tendency of indiscriminate extraction of groundwater is continuing;
- And whereas it is felt that the erratic extraction of groundwater is found to result in undesired environmental problems in such areas;
- And whereas the groundwater is a critical resource of the State;
- And whereas it is considered necessary in the public interest to regulate and control any form of development of groundwater in the State of Kerala;

The document further says that the Act shall come into force on such date as the Government may by notification in the Gazette, appoint: Provided that different dates may be appointed for different areas and for different provision of the Act and any reference in any such-provision to the commencement of this Act shall be constructed as a reference to the commencement of such provisions.

The Karnataka Ground Water (Regulatioon for Protection of Sources of Drinking Water) Act, 1999

(Received the Assent of the President on the Seventeenth day of October, 2003)

Bird's Eye View

The document says that this Act has been passed to regulate the exploitation of groundwater for the protection of public sources of drinking water and matters connected therewith and incidental thereto.

This Act was enacted by the Karnataka State Legislature in the Fiftieth Year of the Republic of India.

Chapter I of the Act deals with the definitions of various terms like 'appropriate authority', 'drinking water purpose', ground water', 'State', 'local authority' etc.

In Chapter II, the document talks about the Protection Measures for public sources of drinking water. These measures include:

- No person shall without obtaining permission from the appropriate Authority under sub-section (3), sink any well for purpose of extracting or drawing water within five hundred metres of public source of drinking water; provided that nothing in this sub-section shall apply to sinking of a well on behalf of the Government or a local authority for being used as a public drinking water source.
- Any person desirous of obtaining permission under this section shall make am application to the appropriate Authority in such form and accompanied by such fees as may be prescribed.
- Every permission granted under sub-section (3) shall be subject to the condition that the appropriate authority may, for reasons to be recorded in writing by order prohibit, restrict or regulate from time to time the extraction of water from such well, if in its opinion it is necessary to do so in the interest of protection of public sources of drinking water. Further, it shall be subject to such other conditions and restrictions as may be prescribed.

Regulation of extraction of water from wells in water scarcity area: Upon declaration of any area as water scarcity area under section (4), the Authority may for the duration of the period of water scarcity regulate the extraction of water from any well in such area by restricting or prohibiting such extraction for any purpose, where such well is within a distance of 500 metres of the public source of drinking water.

Prohibition for sinking wells in over-exploited watershed: No person shall, without obtaining permission of the appropriate Authority under sub-section (3) sink well for any purpose within the area of over-exploited watershed.

The document says that every application for permission shall be made to the Authority in such form and accompanied by such fees as may be prescribed.

The Authority may, on receipt of the application and having regard to the requirement of water for purposes of providing drinking water and in the interest of general public either grant permission to sink well or reject the application.

Closing down the existing well: The document says that notwithstanding anything contained in this Act or any other law for the time being in force, if on the advice of the Technical Officer, the Authority is satisfied that any existing well in the area of an over-exploited watershed is adversely affecting any public source of drinking water and such cannot be adequately protected by action under section 8, it may, after giving the owner of the well a reasonable opportunity of being heard, require him by order to stop the extraction of water from, and close, seal off, such well forthwith either temporarily or permanently having regard to the extent to which it is adversely affecting the public source of drinking water.

Where such owner or person fails to comply with any order made under sub-section (1), the authority may, after giving such owner or person due notice in that behalf, enter upon the land and close or seal off the well and the cost incurred thereof shall be recoverable from such owner or person as an arrears of land revenue.

It further says that where an order of closing down or sealing off the well is made under section 9, the owner of such well may apply to the Authority in the prescribed manner for payment of compensation.

And the Authority on obtaining the evidence as it may deem necessary, make an order for payment of compensation to the owner at the market rate determined in accordance with the provisions of the Land Acquisition Act, 1894.

The document says that any person aggrieved by any order, made by the Appropriate Authority under any of the provisions of this Act may, within a period of thirty days from the date of receipt of the order by him, appeal to the deputy Commissioner, if the order is made by any officer other than the Deputy Commissioner and to such Authority, as may be prescribed, if the order is made by the Deputy Commissioner. On receipt of such appeal, the Appellate Authority shall, after giving a reasonable opportunity to the appellant of being heard, pass such order as it may think fit. Every order made by the Appellate Authority in such appeal shall be final and shall not be called in question in any court.

The Act further says that no suit, prosecution or other legal proceeding shall lie against any Government or any Government Official appointed or

authorized under this Act in respect of anything done or intended to be done in good faith under this Act or in pursuance of any order made or directions issued under this Act.

The document further says that whoever contravenes any of the provisions of this Act or obstructs any person in the discharge of his duties under this Act or contravenes any order or violates any rule made under this Act, shall, on conviction, be punished with imprisonment which shall not be less than one month but which may extend to six months or with fine which shall not be less than one thousand rupees but may extend to five thousand rupees or with both.

In case of continuing offence, the offender shall be punished with an additional fine which may extend to rupees hundred for everyday during which offence continues after the conviction.

The document also points out that the Government may by notification and after previous publication make rules to carry out the purposes of this Act.

Every rule made under this Act shall be laid, as soon as may be, after it is made, before each House of the State Legislature while it is in session, for a total period of thirty days, which may be comprised in one session or in two or more successive sessions, and if before the expiry of the session in which it is laid or the session or sessions immediately following, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be, that any modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

In the last, the Act talks about power to remove difficulties and says that if any difficulties arises in giving effect to the provisions of this Act, the Government may, as occasion arises, by order, do anything, which appears to it to be necessary or expedient to remove the difficulty.

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