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Effectiveness of Legislative Controls on Groundwater Extraction***

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***Invited paper**

EFFECTIVENESS OF LEGISLATIVE CONTROLS ON GROUNDWATER EXTRACTION

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ABSTRACT

The Indian sub-continent has emerged as the world's largest exploiter of groundwater resources. In India, the extent of area irrigated using groundwater has already surpassed the area irrigated with surface water. While this has indeed facilitated food security for the nation, the cost of achieving this is unsustainable groundwater development, threatening the very future of this food security. Nearly two-thirds of the country has reached conditions of "groundwater scarcity" to "acute groundwater scarcity".

Most often, this unchecked groundwater extraction is attributed to lack of appropriate legal framework to support its management and control. Realizing that the absence of legal frameworks has led to the present dismal state of over-exploitation of groundwater resources, different State Governments have formulated legislations to manage and control groundwater extraction. This paper suggests that the manner in which these regulatory measures are being formulated still leaves several opportunities to strengthen groundwater management. Foremost among these is a clear definition of ownership of groundwater and provisions to support demand side management of groundwater use. Currently, as per the provisions available, all landowners enjoy absolute and unlimited rights to abstract groundwater, irrespective of the size of the overlying land owned.

Since there is no cap on the volumes of groundwater abstracted and it is not a directly priced commodity, the only incentive for these landowners to exercise any restraint on their indiscriminate use of groundwater would be in terms of savings in energy costs. In this regard, the existing energy policies, especially power pricing policies, have been particularly kind to farmers, who account for the largest proportion of groundwater use in India. Unless energy policy is addressed in earnest and legal frameworks modified accordingly, groundwater legislation as currently passed will have little impact on the ground.

The other issue is regulating groundwater extraction from the existing wells. The legislations passed in the different states do not include any provisions to control the present levels of groundwater development unless; the conditions have crossed the sustainable extraction limits. The measures in such cases are most often, to close down the wells, which is not possible under the given conditions of limited administrative set-up. Instead of such drastic measures, which anyway are impractical, it is necessary to look for demand side management of groundwater use through improved groundwater irrigation practices, extension, cropping pattern changes, etc.

With the above backdrop, this paper presents a historical perspective to groundwater management and with this background reviews the Andhra Pradesh Water, Land and Trees Act (APWALTA) 2002, framed and passed in the context of growing groundwater depletion in the state. In several respects, this Act tried to be innovative and has provided for formation of a robust Regulatory Authority. This paper explains why the effectiveness of the Act would be constrained. Emphasis of the Act is more on registration of wells and drilling agencies and also includes provisions for punitive measures for not complying with such provisions. However, the

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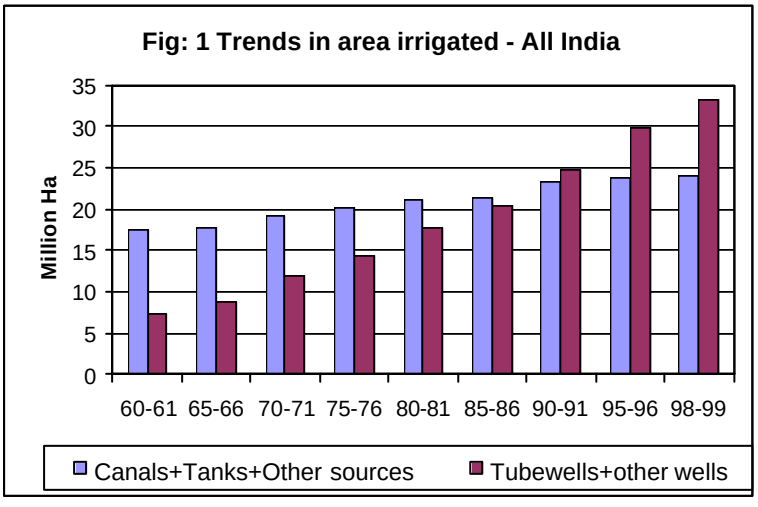
benefits that well/rig owners would accrue from registering are not mentioned. The administrative network to identify defaulting well owners among the 2.2 million well owners in A.P. is not clear. Linkages with local community institutions/NGO sector, etc for this purpose is also not considered. Issues such as the identification and promotion of demand side management and linkages with power policies are clearly absent. We suggest that although APWLTA is a step in the right direction, there are several lacunae in the legislation that constrain its effectiveness.

1.0 INTRODUCTION

Groundwater abstraction in India is the highest in the world. It is estimated that India pumps some 200 billion cubic meters of groundwater annually (Shah Tushaar, 2002), much of which is used for agricultural purposes. Groundwater irrigated agriculture in India accounts for over 60% of the total area irrigated, of which, tube well irrigation has registered the fastest growth at 13.7% CAGR (compounded annual growth rate) during the period between 1960 and 1999 (Ministry of Agriculture and Cooperation; www.agricoop.nic.in). This is in stark contrast to the canal irrigated areas, where although huge public investments are made for the construction of large irrigation and multi-purpose projects, the growth rate during this period was a mere 1.4% CAGR.

The use of groundwater for irrigation had been in vogue for several decades. During the early 50`s, when the total cultivated area was about a third of the total land mass of the country and 17% of this was irrigated, groundwater accounted for 25% of the total irrigated area. By 1999, the net sown area in the country increased to 48% of total landmass with one-third of it being irrigated, groundwater irrigated area has increased to 60% (www.agricoop.nic.in). While groundwater irrigation maintained a steady upward growth, surface water irrigated area has remained fairly stagnant since 1990 (Fig 1 and Table 1).



Source: CMIE, Agriculture report, 2002

Table 1: Rate of growth in area irrigated at 5-year intervals

Period	Growth rate (CAGR)	
	Surface water irrigation	Groundwater irrigation
60-65	0.4	3.5
65-70	1.7	6.6
70-75	1.0	4.0
75-80	0.9	4.1
80-85	0.4	2.9
85-90	1.7	3.9
90-95	0.3	3.8
95-99	0.2	2.2

Surface water is area irrigated by Canals+tanks+other sources; Groundwater is taken as area irrigated by tube wells and other we

Although this level of groundwater development helped the nation achieve food self-sufficiency, it has led to steady depletion of groundwater resources. In many parts of western India, fossil waters are being now used, pumped from depths of over 300m. There has been a secular annual decline in groundwater tables ranging between 0.3m in Punjab to 20m in Rajasthan (Samra, 2002). The present levels of groundwater extraction portend serious future limitations on agriculture, which it is now flourishing.

It is therefore necessary to initiate measures to rationalize groundwater use and facilitate improvement in its productivity. However, groundwater regulation is faced with several challenges, principal among which are lack of clear definition of groundwater ownership and energy policies that leave little incentives for the farmers to adopt conservation approaches.

2.0 GROUNDWATER OWNERSHIP

Absence of clear definition of groundwater ownership is perhaps the major factor that led to the present levels of high groundwater development. In India, rights to groundwater are tied to land ownership. Individual landowners have the right to construct wells in whatever manner they desire and extract as much as they can. This practice has its origin in the "Dominant Heritage" principle in the Transfer of Property Act IV, 1882 and the Land Acquisition Act, 1894. Therefore, the owner of the land is the *de facto* and *de jure* owner of groundwater underneath. The amount of water that is legally possible to extract does not depend on the amount of land owned. Any landowner can abstract any amount of water.

Although this unlimited right to water is in theory restricted by the India Easement Act, 1882 and Irrigation Laws, which "proclaim the absolute rights of government in all natural waters", this has however not altered the view of the well owner that he has unlimited access to groundwater (Moench, 1999).

Therefore most researchers and policy planners have called for a complete review of the groundwater law in India and the separation of land and water rights. The arguments put forward are equally supportive of state owned property (Chandrashekar H, 1998, Sharma SC, 1998) as locally owned community property regimes. The NGO sector looks at participatory processes for self-restraint, self-regulation and self-governance. The argument in support of this is the lack of adequate administrative mechanisms in Government agencies, lack of accountability and the past track record of the bureaucratic ineptitude. Some suggested a three-tired or even four-tiered structure to bring about an interface between State-owned to community owned property regime (Turnquist, 1998). Others have argued for a system of correlative use rights vested in cooperatives with actual ownership of water being held in a public trust system by the state (Singh, 1998). Although several such ownership models have been suggested, none have yet taken any shape beyond suggestions in research papers.

3.0 IMPACT OF ENERGY POLICIES ON GROUNDWATER DEVELOPMENT

The Green Revolution initiated during the mid `60s ushered in several revolutionary changes including demand for irrigation. Since canal-supplied surface water is limited by the designed command area of the canal systems, farmers began to opt for groundwater irrigation, which offered the farmers more flexibility in terms of use and operation.

During the early periods of groundwater boom in India, diesel pumps were the prevailing technology for lifting groundwater as groundwater depths were shallow, infrastructure to support electric pumps was still under-developed, and diesel was provided on subsidy. The resulting increase in numbers of diesel pumps led to increased diesel consumption, necessitating higher import of petroleum crude, and thus adding to the burden on the national foreign exchange reserves. The Government of India therefore decided to promote electricity supply for agricultural use by strengthening the on-going Rural Electrification program during 1976-78. Ambitious targets were set for agricultural pump set energization and many states achieved these. This led to a spurt in groundwater irrigated area as additional electricity driven pumps were installed.

Groundwater irrigation again received a boost during the `80s when all states in the country began to move from metered supply power tariff regime to a flat rate based power supply for agricultural consumers. This change was necessitated because, as the numbers of the agricultural pumps were increasing, the cost to read the widely scattered meters, bill the farmers and collect the revenues accordingly was rising extremely rapidly. According to some studies undertaken by the Rural Electrification Corporation, the cost of metering accounted to 24% to 38% of the revenues being collected from this consumer segment. It was therefore decided to slash these administrative costs and supply farmers on flat rate, billing them based on the rated capacity of the pumps.

Although this move helped the power supplying utilities to significantly reduce transaction costs, the resultant zero marginal cost of pumping acted as an incentive for farmers to pump more water because it did not cost the farmer any additional expenditure. By this time, the groundwater levels began to fall and in many parts of the country, diesel operated pumps were becoming economically less feasible. Further, during the mid 90`s, following the economic liberalization policy, subsidies on diesel and administered pricing policy was withdrawn. This made diesel more costly but electricity continued to receive huge subsidies. Therefore, the number of farmers investing in bore wells with electric pumps began to rise at an increasing rate, as it was also relatively easy to get power connections. Around 2000 there were more marginal and small landowners owning pumps compared to just 7-8 years ago, when it was usually the large landowners who owned pumps (Narayana, 2002).

Realizing that flat-rate tariff was incentivizing over extraction of groundwater, it was decided in a National Conference of Power Ministers in 1989, that agricultural consumers would be charged a minimum of Re 0.50 per unit (kWh). However, by this time, all states had already shifted to flat rate and there were no meters on the pumps to measure the quantity of electricity being supplied to the farmers for them to charge at the unit rate decided. Therefore, this decision could not be implemented.

Power tariff to the agriculture sector has also become a powerful tool among the vote-garnering politicians. This became all too evident when in 1991, the Tamil Nadu Government, in complete contravention to the decision taken in the Power Minister's Conference, made power supply free of cost to farmers. This was followed by a similar move by Punjab, two years later. Incidentally, Punjab and Tamil Nadu are the two agriculturally highest productive States in the country, in terms of value of production per unit area (Agroclimatic Regional Planning Unit, Working Paper, 1996). It is important to mention here that, following free supply of power, the groundwater abstraction levels shot up in both Punjab and Tamil Nadu. In Tamil Nadu the water levels fell by 70m within 15 years (Mudrakarta, 1999), much of which happened after power supply was made free. Similar depletion was noticed in Punjab as well (Samra, 2002).

Thus we can see from the above that maintaining the status *quo* on *de facto* groundwater ownership with landowners and supplying cheap energy has resulted in a steady increase in its development, leading to the present status of over-exploitation in most parts of the country.

4.0 PAST ATTEMPTS AT REGULATING GROUNDWATER USE

The fact that groundwater development needs regulatory interventions is not a recent understanding (see box). Incidentally, over three decades ago, in 1969, the Ministry of Agriculture, under whose jurisdiction groundwater fell, made perhaps the first attempt in this direction. This Ministry proposed a model Groundwater (Regulation and Control) Bill and since all waters, excepting inter-state flowing surface waters, are state subject, circulated it to State Governments for suitable action.

Box 1: Initiatives attempted in the past to regulate groundwater use

Year	Developments
1969	Draft of the Model Groundwater (Regulation and Control) Bill circulated to all States of the Union
1988	Legislation to regulate groundwater in Gujarat brought into force by amending the Bombay Irrigation Act. This Act was actually passed in 1976, but was not brought in force and is still not being implemented.
1992	Modified Groundwater (Regulation and Control) Bill proposed by the Ministry of Irrigation by amending some of the provisions in the earlier circulated Bill and sent to all States.
1993	Maharasthtra Groundwater (Regulation for Drinking water purposes) Act enacted
1996	Andhra Pradesh Groundwater (Regulation for Drinking Purposes) Act enacted
2000-03	Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, West Bengal and other States began formulating respective state groundwater legislations; most of them have been passed.

The salient points of the model bill were as follows:

1. The State Governments were to acquire powers to restrict the construction of groundwater abstraction structures (including wells, bore wells, tube wells, etc) by individuals or communities for all uses except drinking water,
2. For discharging the various functions to be acquired by the Government under legislation, a Groundwater Authority was to be constituted by each State,
3. This Authority would review applications for sinking wells for purposes other than domestic use, keeping in view the purpose for which water is to be used, existing competitive users and the availability of groundwater,
4. Individuals or organizations engaged in the business of sinking wells and tube wells to be registered with the Authority, which is to be vested with powers to cancel permits/licenses if their activities contravene the norms laid by the Authority,
5. This Authority was to be provided with complete legal support to enforce the different provisions. It was also provided that the orders issued by the Authority would fall outside the purview of Civil Courts and that Civil Courts were to be barred from granting injunctions on any decision taken by the Authority.

We can see from the above that the Bill envisaged regulatory functions as early as 35 years ago, when the groundwater abstraction rates were several times lower than today. However, this Bill

did not find political favor because, groundwater is an important agricultural input, which offers livelihood support to millions of population, it was not politically acceptable to place regulation of this in the hands of a powerful Authority that would be beyond the control of even the civil courts and hence none of the states made any decisive move to adopt it. Only Gujarat attempted to implement some of the provisions suggested by amending the existing Bombay Irrigation Act in 1976 but took another 8 years to actually pass it (1988). However, on the field, it is yet to be enforced even till date (Moench, 1998). Overall, as Dhawan commented, "*there is little hope for effective implementation of such laws, which are inherently difficult to enforce in the Indian conditions of small land holdings, inadequate administrative set-up in the country and eroded state of ethics*" (Dhawan, 1989, quoted in Moench, 1998).

Following the refusal of the States to adopt the earlier circulated bill, the Ministry of Water Resources (to whose jurisdiction, groundwater was subsequently transferred) made some modifications and again circulated it to all States. This new bill, while retaining the basic essence of the earlier version, included drinking water resources and added some provisions to safeguard the interests of the small and marginal farmers. It also elaborated on the structure and activities of the regulatory body. By this time, the crisis of groundwater began to surface with increased severity, especially in terms of groundwater availability for drinking purposes. In regions like Konkan of Maharashtra, where there is abundance of rainfall, local grass root elections were being fought on the issue of water supply, especially for drinking purposes[2]. Maharashtra was the first state to respond to this modified Bill and formulated legislation that sought to regulate development in relation to drinking water through the Maharasthra Groundwater (Regulation for Drinking Water Purposes) Act, 1993. Similar Act was enacted in Andhra Pradesh in the year 1996. However, these Acts focused on protecting drinking water sources and in the recent past few years, many State Governments have passed legislations that seek to regulate groundwater, in its entirety, not merely in relation to drinking sources. Andhra Pradesh repealed the AP Groundwater (regulation for drinking purpose) Act, 1996 and passed the AP Land, Water and Trees Act, 2003. Other States such as Karnataka, Maharashtra, Tamil Nadu, Goa, West Bengal, etc also have enacted their respective state laws between 2000 and 2003. However, the limitations with respect to administrative inadequacy to implement these laws still hold true. Further, these Acts were recently passed (2000-03) and it is too early to assess the results.

Punjab is perhaps the only state that has realized that implementation of this legislation would not be practical and suggested deferment. This state instead looked at alternative mechanisms such as crop diversification, restrictions on new electric connections in over-exploited and dark areas, promoting artificial recharge to rejuvenate the depleting aquifers and promoting better irrigation methods such as micro-irrigation technologies.

5.0 LEGAL SYSTEMS OF GROUNDWATER ACCESS

Broadly, the different systems by which groundwater is accessed are as follows:

1. Right of capture:

Under this system, owner of land has the absolute right to abstract groundwater in quantities that is not limited by the overlying land owned. This is the system prevailing largely in India. In other countries such as Thailand, Fiji, Pakistan, etc also this is the system being followed. In all

[2] During field survey in Sindhudurg district in Konkan during 1994, in relation to some other research, the author learnt that the earlier Panchayat (rural local body) election was fought entirely on the issue of providing drinking water and initiating water harvesting and conservation

these countries where the rule of capture prevails, the administration is trying to assert itself, often with little effect.

Texas in the US is perhaps the only example, where although the "Rule of Capture" prevails, the authorities have not attempted to usurp groundwater ownership or bring in any regulatory framework. Instead, the efforts attempt to bring in rationalization of groundwater through education and communication with an intention of promoting self-restraint and self-regulation (Burchi, Nanni, 2002). In India, although several States have passed their respective state legislation to directly control and manage groundwater, Punjab is the only State, which is looking at alternative methods.

In Pakistan, the Administration is liberally using military power by deploying the army to check illegal tapping of electric power and has increased the costs of power supply. The consumers have responded by resorting to use of diesel powered pumps (Qureshi, Akthar, 2002). This measure is beset with several disadvantages. Firstly, the trust of the local communities in the Government would wane. Secondly, an excessive shift towards diesel pumps will have ramifications for the national economy. There would be higher demand for diesel and therefore increase in imports of crude petroleum. Diesel pumps have low efficiency (Qureshi, Akhtar, 2002) and pollute the environment with excessive emission of greenhouse gases such as carbon monoxide and carbon dioxide. Incidentally, in India, rural electrification was stepped up in the late 60`s to mid 70`s to provide cheaper and cleaner power to farmers to lift groundwater.

2. System of 'Prior Appropriation'

This is a system of accessing groundwater on a first-come-first-served basis. This system is largely in vogue in many states in the western US, which began in 1840`s as a result of the "Gold Rush". Under this system, the person who first appropriates water acquires priority of right over any later – junior appropriator (Burchi, Nanni, 2002). This rule is applicable to flowing groundwater while the rights over percolating groundwater are excluded from this system and the legislation is framed accordingly.

3. Community owned rights

This is a system adopted in most of the Islamic countries. The Islamic laws state that water is the gift of God and everybody has equal rights to it. Nobody can bar access to water. However, ownership of wells can be private and owner of the well has priority access to the water. This law very explicitly prohibits commercialization of water resources. Nobody is allowed to appropriate water with a view to make commercial gains from it.

4. Permit system

The permit based groundwater abstraction probably originated from the Mexican model wherein, under the 1917 Constitution, groundwater appropriation by users was permitted subject to regulation if use hampers the public interests. The Constitution also provides for declaring zones as "protected" for strict enforcement of regulation (Burchi, Nanni, 2002). Argentina also has a system of allocating pre-determined volumetric rights over groundwater through a permit system that was in place much before 1960`s when India began to seriously look at regulating groundwater use.

As the first step towards a permit system, the government or regulators must make the transition from de *facto* ownership rights enjoyed by the well owners to state controlled usufruct rights. Several countries enacted legislation in this regard (Spain in 1985, France in 1992 and Italy in 1992 are some of the examples).

Notwithstanding groundwater permits, which seems close to the much discussed water rights in India, it necessary to appreciate that this model would be easy to implement and manage in countries where the number of pumpers is low. In the countries mentioned above, the total number of pumps would probably be equal to that one may find in just a few districts in any of the peninsular or northwestern states of India. In the Indian context, this system would be very difficult to implement because there are over 66 million farmers in the country and almost a third of them owns a pump. Regulating the groundwater abstraction by these nearly 22 million pumps in the country requires an administrative set-up that the nation can ill afford.

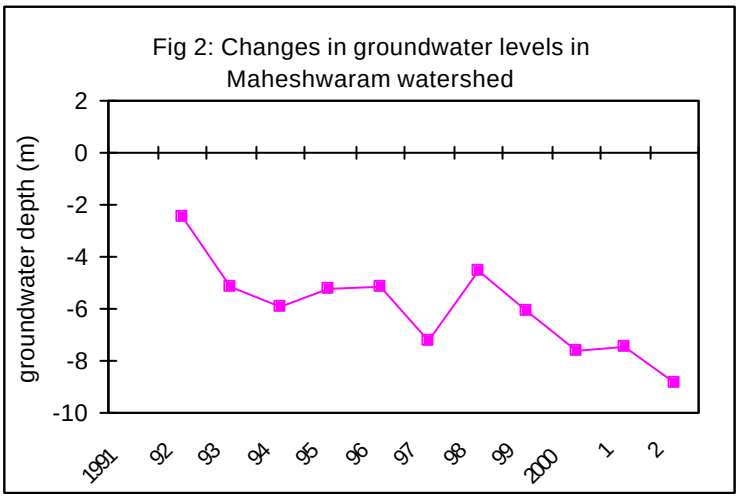
However, much of the legislation being passed in the different countries seems to be oriented in this direction. It is as yet premature to predict the effect of such legislation but the apparent signs show little would be achieved unless we change the way we look at the problem and avoid blind duplication of efforts made by other countries.

With this background, the Andhra Pradesh water, Land and Trees Act, (APWALTA), 2002, which is a comprehensive legislation on water conservation and green cover in Andhra Pradesh is being examined in the following sections, with the discussions focusing on groundwater regulation and management.

6.0 THE ANDHRA PRADESH WATER, LAND AND TREES ACT, 2002

Andhra Pradesh, as most other States of India, is experiencing serious problem of groundwater depletion. Much of the State (85%) is characterized by hard rock geology that lacks primary porosity and occurrence and movement of groundwater is mainly controlled by secondary porosity developed due to weathering and fracturing. The extent and storage of secondary porosity is limited. The technological innovations in tubewell installation and groundwater pumpsets supported by power subsidies and easy access to institutional finance have been instrumental in the now widespread groundwater development. The total well population increased from 0.8 million in 1975 to over 2.2 million wells by 2001. The area irrigated by groundwater increased from less than 1.0 million ha to over 2.6 million during this period. The present stage of groundwater development, if we take the net utilizable potential, is 86% (AP Water Vision). Researches by Indo-French Center for Groundwater Research (IFCGR) in Maheshwaram Mandal of Ranga Reddy district have shown that groundwater decline has been to the extent of 1.18m Marechal, 2002). Researches by International Water Management Institute (IWMI) at the same location put this estimate at 1.3m (Scott, 2003) (see figure 2).

Fig 2: Changes in groundwater levels in Maheshwaram watershed



Source: Scott Christopher, Narayana Peesapaty, Marechal Jean-Christophe, 'Water Balance Tools to support Water and Energy Decision Making', USAID Supported WENEXA, 2003

6.1 Summary of the Act

Given the fact that groundwater levels are falling at alarming rates, a strong need was felt for appropriate legislation to take legal measures to control over-development of this

resource. The step in this direction was enacting the Andhra Pradesh Water, Land and Trees Act (APWLTA, 2002). APWALTA, passed in April 2002, seeks to regulate exploitation and use of groundwater as well as surface water, conservation of water sources, and management of land and environment by constituting and appointing a Water, Land and Tree Authority which has the following functions:

1. Promote water conservation and enhancement of tree cover in the state
2. Regulate exploitation of ground and surface water in the State
3. Make regulations for the functions of the Authorities at district and mandal[3] levels, constituted under this Act
4. Advise the government on legislative and administrative measures for conservation of natural resources
5. Advise the government on measures such as incentives or disincentives relating to taxes, levies, fees or other charges to promote conservation of natural resources in the State
6. Advise on strengthening public participation in conservation of natural resources such that equity in access to water in different basins and sub-basins and regions is maintained
7. Advise on any matters that may be referred to it by the government

6.2 Constitution of the Water, Land and Trees Authority

The Act specifies that a Regulatory Authority, called the Water, Land and Trees Authority be constituted that would perform the above-mentioned functions. Given the spread of the State and the diversity of the management issues, the Act specified a three-tier structure with appropriate regulatory powers at state, district and mandal levels. Policy and decision making, legislation and administration related to water, trees and natural resources in the State are brought under the Authority allowing for decentralization by installing authorities at lower levels and for delegation of powers to bodies or persons at lower levels. The constitution of the Authority is as given in Table 2 below:

[3] The mandal is the lowest administrative unit in A.P, and comprises some 10 – 20 villages (approximately 100 km2). As such it is smaller and reaches lower (fewer villages) than most talukas or tehsils in other Indian states.

Table 2: Constitution of Authority (Designation)

State level	District level	Mandal level
CHAIRPERSON		
Minister, Panchayat Raj, Rural Development and Water Supply	The District Collector	The Mandal Revenue Officer
Vice Chairperson/Ex-Officio Members/members		
1. 3 MLAs, with one from main opposition political party 2. Chief Secretary to Government 3. Secretary, Agriculture 4. Secretary, Irrigation and Command Area Development 5. Secretary. Municipal Administration 6. Secretary, Rural Water Supply 7. Secretary, Panchayati Raj 8. Secretary, Environment, Forests, Science and Technology	1. Mandal Parishad Presidents and Zilla Parishad Presidents 2. Joint Director, Agriculture 3. Superintending Engineer, Irrigation 4. Superintending Engineer, Rural Water Supply 5. Deputy Director, Groundwater 6. Deputy Director, Mines and Geology 7. Deputy Conservator of Forests or Divisional Forest Officer 8. Project Officer, ITDA/MADA/PTG *explain 9. Regional Officer, Pollution Control Board 10. Chief Executive Officer, Zilla Parishad 11. An official from Hyderabad Water Supply and Sewerage Board (HMWSSB)* 12. One official from Municipal Administration department 13. Director, Urban Forestry, Hyderabad Urban Development Authority (HUDA)*	1. Mandal Parishad Development Officer 2. Sarpanch of the Mandal Headquarter Gram Panchayat 3. 2 Mandal Parishad Territorial Constituency members 4. Asst Executive Engineer, Irrigation Department 5. An officer from Groundwater Department 6. Assistant Director, Agriculture 7. Assistant Project Director, ITDA 8. Range Forest Officer of the nearest Range
Members		
1. Vice Chancellor, Acharya NG Ranga Agriculture University 2. 3 experts in the field of water, soil conservation and economics, nominated by the Government 3. 3 non-official persons interested in conservation of natural resources	3 non-official persons as prescribed by the State Authority	3 non-official members
Ex-Officio Member Secretary		
Secretary, Rural Development	Project Director, Drought Prone Area Program/District Water Management Agency	Assistant Executive Engineer, Rural Water Supply

* For Hyderabad and Ranga Reddy Districts

The Act specifies that this Authority shall be a corporate body with perpetual succession and a common seal, acquire, hold and dispose of property, both movable and immovable for the purposes of this Act and may sue or be sued by the said name. The Authority would appoint Designated Officers, drawn from other government departments/universities who would have the executive powers. These Designated Officers would have subordinate staff appointed by the

Authority. The Designated Officers would be advised by Technical Experts/Officers on technical matters.

6.3 Groundwater Protection Measures

This is by far the largest responsibility of the Authority specified in the Act. The first and foremost item under this chapter is the statement that "*all groundwater resources in the State shall be regulated by the Authority, subject to any special directions issued on this behalf by the Government*. The step in this direction is taken by making it mandatory for owners of all well (fitted with water lifting devices or otherwise) to register their wells with the Authority. This means, the basic controversy surrounding the ownership and usufruct rights of the well owners would be eroded. For getting the wells registered, there is a prescribed fee and formats to be filled up.

Anyone desiring to sink a well must take permission from the Authority, which would sanction the same, provided the proposed well is at a distance of 250 m or more from the nearest available drinking water source. Further, if the well owner intends to use an electric motor to lift water, (s)he must also get a certificate from the power supplying utility that the power connection has been sanctioned. This procedure of getting permission to sink a well too needs a payment of a fee through a prescribed format.

In order to ensure that groundwater is not over-exploited the Authority is to provide spacing criteria for adjacent wells. (It is presumed here that appropriate data and methods for setting distance norms are available with the Authority and it is equipped with manpower and infrastructure to verify that the new well adheres to these norms). In cases where the Designated Officer finds that groundwater extraction levels have crossed sustainable limits (s)he may declare the area as over-exploited and ban further extraction. The Designated Officer may also ban development of new wells in the area if extraction has already reached sustainable limits and new development would hamper the resources in the future.

The Act allows for the Authority to prohibit pumping groundwater in certain areas through the Designated Officer, on advice from a Technical Expert based on examination of the status of groundwater if the available resources are being extracted in a manner deemed to be damaging or detrimental to the aquifer. The Technical Officer[4] is to use the standard methodologies for groundwater estimation and must be competent with the appropriate technical background to undertake this

The Act also stipulates that all individuals/agencies/groups owning drilling rigs and/or engaged in the business of sinking wells must be registered with the Authority on payment of a prescribed fee and report every well that has been sunk. If the Authority observes that any given licensee has undertaken any activity contravening the regulations established by the Authority, it is empowered to cancel the license.

The Authority is empowered to make necessary enquiries or examination in connection with protecting drinking water source. For this purpose, the Authority or any Officer, duly authorized, to enter upon such lands that may need to be visited for this purpose, undertake surveys or take water level measurements, conduct pumping tests and geophysical surveys, conduct well logging, install and maintain water levels recorders and water gauges on the wells and do all other such things as may be necessary for pursuing such inquiry.

[4] The terms Technical Officer and Technical Expert are used, presumably interchangeably, in the Act

The Act also provides for prohibiting groundwater pollution and stipulates corresponding penalties. To prevent conversion of water bodies from their intended use, the Authority is empowered to declare such threatened locations as “heritage bodies”, evidently to provide a higher degree of protection. With regard to industrial or commercial water use, a ceiling “on water use per unit of production” can be prescribed. The Authority may also levy a cess or surcharge on the water used for production activities. In addition, the Act also seeks to promote water harvesting.

Other stipulations and provisions made in the Act include payment of compensation to a well owner if his/her well has to be capped to protect a drinking water source, prohibition of groundwater contamination, promotion of reuse of water etc.

6.4 Provisions for Penalties and Appeals

There are provisions for penal actions for contravening the provisions of the Act or the directives given by the Authority. Any person contravening the provisions or obstructing the discharge of the provisions laid in the act invites a penalty of a minimum of Rs 1000 upto a maximum of Rs 5000. Persons responsible for abetment of such acts also are liable for this punishment. Penalties for unlawful damages, alteration or obstruction of public water supply system or a water body, encroachment into water bodies like tanks, lakes, etc, contaminates groundwater, directly disposes wastewaters into the aquifers, etc would attract imprisonment, which shall not be less than one month and can extend to a term of six months or would attract a fine of Rs 2000 upto a maximum of Rs 50,000. The Act also stipulates that the equipment and machinery used for such acts, which invites penal action, also to be seized.

The Act also provides for aggrieved parties not happy with the decision of the designation officers or the authority to appeal for review, unless the decision is taken in good faith.

6.5 Issues addressed and overlooked

The very formulation of the Act to comprehensively manage water (not merely regulate on a piece-meal basis) is noteworthy. This Act does not limit itself to water alone but encompasses associate matters related to tree cover and land management in the State, indicating that the Government is taking an integrated approach that promises not just short-term benefits but long-term sustainability if appropriately implemented. It is important that the Authority constituted under this Act has a three-tier structure with powers and responsibilities exercised at State, District, and Mandal levels, a structure that promises deeper coverage down to the grass roots level.

The presence of a Cabinet Minister as the Authority chairperson (with Minister of Panchayati Raj, Rural Development and Rural Water Supply) shows that the Government is placing very high importance on the Authority. However, this is rather unusual for a Cabinet Minister to be heading the Authority. For instance, in Tamil Nadu, it is to be headed by a senior Government official to be appointed by the Government. In Maharashtra, it is a retired High Court Judge who would be heading it. It is also very unusual for the Minister of Panchayati Raj to be heading this Authority because; groundwater should fall under Minister of Irrigation as much of groundwater is being used for irrigation purposes.

We can see from the table 2 presented earlier that the Authority also includes three members from the State Legislative Assembly, of which one is to be from the main opposition party.

While this may show that there is a good representation of the elected representatives in the Authority, it is necessary to remember that the past efforts towards groundwater use and regulation were almost always thwarted by political compulsions. Therefore, the presence of a Cabinet Minister and three other Members of the State Legislative Assembly leaves ample scope to compromise the Authority's freedom. The Authority may avoid taking hard decisions, especially if the time for such decisions is close to election or if it hurts the short-term interests of farmers, more so, if such decisions are to be taken in the constituency from where the Minister or the other MLAs are elected. Settling political scores and vendetta are also clear possibility, which diminishes the confidence on effectiveness of this structure.

The other members of the Authority at the State level largely comprise serving senior bureaucrats, at Secretary rank and above, of the different associated departments. This could become a serious limitation because, Secretaries are the busiest bureaucrats in the State, making it difficult to schedule meetings convenient to all of them or atleast to the numbers required to fill the quorum. Therefore, although the Act stipulates that the members are expected to meet once in three months, this may be difficult.

An important omission in the constitution of the authority is participation of the power sector. The present rates of high groundwater abstraction have largely been triggered because of the power supply policies. By including the appropriate transmission and distribution officials in the Authority, a vital gap in terms of dovetailing the policies of power sector and water sectors could have been bridged.

This leads us to the other important issue, which is the stipulation that all well owners are to be registered with the Authority and new owners are to seek permission from the Authority, both of which involves a payment of a fee. This seems to be difficult to implement because of the following reasons:

1. Farmers had, for generations, been treating groundwater as their own property. The Act does not attempt to change this perception
2. They have never paid to the Government for using groundwater. The fees for registering the well would most certainly be treated as payment for using groundwater and there will be resistance.
3. The mechanism to communicate the provisions of the Act to the farmer is not clear. This could lead to arbitrary implementation, leading to further resistance
4. The Authority does not have the manpower to physically verify, if all wells are registered. This will give opportunity to other farmers not to take the initiative of registering their wells.
5. The advantages that the farmer would accrue from such registration are not explained
6. According to a metering study by APTRANSCO (at transformer level in 1997-98), about 28% to 32% of the connected load is from illegal connections (Narayana, 2002). Such farmers would certainly not be willing to expose their ownership of well and would have further incentive in preventing other (legitimate connection holders) from registration.
7. In case of applications seeking permission for sinking a new well, it is interesting that this Act specifies that such owners should get prior sanction of electric connection, if the said owner is desirous of using an electric pump. This is quite an interesting provision, because, usually, the sanction for electricity connection is taken after the well is sunk and it struck enough water.
8. The Authority is to lay spacing norms that would specify the distance between two adjacent wells. However, currently, there is no database of existing wells in the State, making it impossible to show the position of the wells with reference to their adjoining

wells. In 2001, the AP Electricity Regulatory Commission (APERC) had ordered APTRANSCO to list all wells in the state and draw up an inventory of all groundwater abstraction structures. However, after some initial progress, this activity was dropped. It is necessary that the Authority initiates a proper database with Global Positioning System (GPS) coordinates to record all wells in the state, plot them on the map and use this to sanction new wells.

From an implementation perspective, it is indeed a serious matter of concern that that Authority is yet to make itself fully visible. In a press release dated August 28, 2002, in two leading newspapers viz., Deccan Chronicle and The Hindu, there was an announcement that the State Government had decided to tap 38 freshwater lakes around the twin cities of Hyderabad and Secundrabad. This was the time when the Authority had already been officially appointed and it should be the decision of the Authority and not the Government because management of surface and groundwater resources falls under the purview of the WLT Authority. Further, in connection with this decision, the Hyderabad Metropolitan Water Supply and Sewerage Board and Minister of Commercial Taxes were quoted. This raises the basic question of delimitation of competencies between the Authority on the one hand and the State Government and other existing Boards on the other. The Act is not clear in this regard.

Although this Act is supposed to be in full implementation, new bore wells are being drilled with disregard to the sanctions and permissions as stipulated in the Act[5]. Discussions with farmers as well as with urban residents have revealed that only some have heard of the Act, but have no clear understanding or the details, while others have not even heard of it.

6.6 Proposed Mechanism for Implementation

The Act that seeks to regulate a natural resource, which had for generations been an open access one, needs to be made friendly to the user. Instead, this Act appears to represent top-heavy, highly bureaucratic legislation, which is not only difficult for the Authority to implement but also leaves scope for user evasion. For effective implementation, the first step should be to ease up the structure of the Authority. The presence of so many high-ranking bureaucrats is quite unnecessary. The presence of political representatives in an Authority would lead to avoidable hurdles from within, especially when hard decisions are to be taken.

Implementation of the Act requires interpretation of the legal provisions and the Authority should be unbiased while discharging its responsibilities. In this regard, the Maharashtra model of appointing a retired High Court Chief Justice is worth considering.

Thirdly, the presence and participation of groundwater board needs to be emphasized. The groundwater boards monitor groundwater and therefore should play an active role in the Authority. Perhaps, the Secretary, Irrigation may be replaced by the Director, State Groundwater Department and made ex-officio member secretary at the State level (currently, he is not even a member of the Authority).

The text and tenor of the Act looks as if the intended result is to move towards some sort of permit system. If volumetric restrictions on users were to be imposed, the Authority, as it is

[5] Personal observations during field visits to Ranga Reddy district, Nalgonda district as well as in Medak district, new bore wells were being drilled by a few individuals for domestic use within their houses. Enquiries revealed that these owners have neither taken permission from the Authority nor were they even aware that they should be taking such permission. The rig owners were however aware of the Act but were evasive in answering this.

structured currently, will need to be expanded several times over to monitor the 2 million wells in the state. Instead, the Authority could well use local community institutions created to manage groundwater. However, such provisions are not made in the Act. The fact that a three-tired structure is made for the Authority indicates that such measures are not even contemplated.

An important omission in the Act is the focus (or the lack of it) on demand side management of groundwater use. The Act envisages a policing function for the Authority, although it is ill equipped in terms of both database as well as infrastructure to achieve this. Instead, if the Authority were to liaise with local community institutions created for this purpose and the Authority limits itself to managing these, through which it manages groundwater, the institutional mechanism could have been more effective than the efforts it needs to make in getting the wells registered. For this, it is necessary for the Act to declare groundwater as public or community owned property and not individually owned property. The institutions created for managing groundwater abstraction should also be entrusted the responsibility of managing power delivery (either as cooperative or rural power enterprises operated by individuals or groups of farmers). By giving the community an immediate stake in groundwater management the checks and counter-balances within the rural socio-economic milieu can be managed to ensure that groundwater use is regulated. All necessary forward and backward linkages to support irrigation efficiency, cropping pattern changes, water conservation and harvesting, etc could be introduced through these institutions. Instead of focusing on demand side management of groundwater use and institutional mechanism to achieve this, this Act takes a top-heavy policing attitude with a plethora of clauses devoted for registration of wells, methods for getting permission for new wells, etc.

7.0 CONCLUSION

The AP Water, Land and Trees Act reflects the seriousness of the Government to manage and regulate groundwater exploitation in the State; however, the means and institutions established revert to old-school approaches with the government playing the role of big-brother. It is necessary to appreciate that given the large number of scattered wells in the state, the government-controlled management system is less likely to deliver the desired results than a more participatory, community-led approach. This model could be made more effective by making appropriate provisions for the local communities to play a much greater role, with the Authority playing both advisory and high-level regulatory roles.

Further, the Act also needs to revisit on the structure of the Authority, making it less political and bureaucratic, giving the power sector a prominent role, and making the Groundwater Department more prominent than simply a source of data. Indeed, the entire culture of groundwater data secrecy in the State must be reversed. At present, the Groundwater Department jealously guards its trove of data, in part because it has no other relevant role in the groundwater matters of the State. Openly distributing and discussing the groundwater resource status at district and mandal levels will introduce transparency and accountability that will facilitate the provisions of the Act.

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