(UP) STANDS UP FOR GROUNDWATER

In what could set a precedent for groundwater regulation across India, the Uttar Pradesh (UP) Ground Water Conservation (Protection & Development) Bill, 2010, recently unveiled a draft of the government's plan to putting a price for water. The UP draft groundwater regulation bill is the first to address big users of water – the bulk users from commercial and industrial enterprises.

According to the Central Groundwater Water Board (CGWB), the state's demand for groundwater has nearly doubled in recent years. While the UP gross domestic product is expected to grow 64% by the year 2020[1], over 60% of the industrial water demand is currently met by groundwater.[2] The Uttar Pradesh State Water Policy envisions that by 2025, groundwater use will increase by 137% (from 27 Billion Cubic Meters (BCM) to 65BCM) and the number of over-exploited blocks will be over 20% (177 blocks out of 820 blocks). The Act also states that "industries, barring some selected industries, shall be required to bear the development cost of the resource and its maintenance along with the cost of water to reflect the scarcity value of this resource". It goes on to add, "For industrial use extensive water conservation and pollution control shall be exercised to keep the requirement low and prevent pollution of both ground and surface water. Treatment of industrial discharge and reuse of water shall be strictly enforced." [3]

The draft bill is a step in the right direction. The draft Bill says the use of groundwater by commercial and industrial bulk users will be regulated; users will be charged; water cannot be abstracted in dark areas; and, users must recharge the aquifer through rainwater harvesting.

In light of the new regulations, industry is responding with a plea. The UP chamber of Indian Industries Association (IIA) has submitted a memorandum requesting subsidies and representation within the newly formed Ground Water Authority (GWA) to ensure the Act would "not hinder our progress by turning into means of exploitation," said IIA president Anil Gupta.[4]

Rainwater Harvesting and Recharge

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[1] According to the Associated Chamber of Commerce and Industry of India,

[2] UP govt to bring law to regulate exploitation of ground water. Times of India, May 22nd. http://articles.timesofindia.indiatimes.com/2011-05-22/india/29570907_1_rain-water-ground-water-authority-metre

[3] The Uttar Pradesh State Water Policy accessed from http://swaraup.gov.in/Downloads/up_wp.pdf on 10July2011

[4] Rawat, Virendra Singh. "UP Inc wary of Groundwater Bill, 2010" Business Standard, September 21, 2010.

The Central Ground Water Board (CGWB) estimates there is 70.18 Billion Cubic Meters (BCM) of groundwater available across the state. Each year, around 70% of this is replenished through rainfall and surface water runoff. The availability of groundwater in UP may come as a surprise to industry leaders in light of recent legislation, but water demand is specific to industry location, and 50 of the 820 blocks in UP have been deemed by the CGWB as critical or over-exploited.[5] According to the CGWB, the state's demand for groundwater has nearly doubled in recent years.

Mandates for users to replenish groundwater levels in semi-critical and critical areas are unprecedented. For bulk users in UP, including commercial, government, and industrial, it will be made "mandatory [to] adopt area specific rain water harvesting/recharging techniques through registered service provider. Minimum amount of rain water harvesting/recharging to be fixed by the Authority." The same rules apply for all residential, government, commercial and other premises having an area of 100 square meters or more, and any water user using a pump set more than 7.5 H.P. (Hydropower; rate of cubic meters per second). In other words, what comes out must go back in.[6] Details in the revised plan are scheduled to specify to what scale rainwater harvesting and recharge activities will occur. Currently, only 15.45% of the total rainfall in UP is being used for ground water recharge.[7] This implies enormous potential, effectively shifting the responsibility of groundwater conservation to bulk users.

However, the UP is made up of different hydrological situations – the Bhabar, Tarai, Central Ganga Plain, Marginal Alluvial Plain and the Bundelkhand regions vary greatly in soil type, groundwater levels, and rainfall. Even the water rich Gangetic Alluvial Plain has experienced declining water levels resulting in salt encrustation and unproductive cropland.[8] A universal policy for rainwater harvesting and recharge is unsuitable. Rather, the Act promises to set rules based on locality and recharge potential. Average rainfall across the state is approximately 1279 mm annually, but a number of studies show that there is a noticeable decrease

Water mapping:
Proper aquifer mapping of the geophysical and hydrogeomorphic landscape across UP is a prerequisite to planning and management. Regulation built around 3-D aquifer mapping translates valuable information regarding disposition, salinity and overall quality of water tables. The State Water Mission calls for the establishment of an Aquifer Management Authority to collect and disseminate related data. Such efforts will require technical assistance from the Irrigation Department, Groundwater Department, and Minor Irrigation Department, and SWaRA.

[5] Central Groundwater board. State Profile: Uttar Pradesh, http://www.cgwb.gov.in/gw_profiles/St_UP.htm
[6] (UP) Ground Water Conservation (Protection & Development) Bill, 2010.
[7] Times of India.

[8] R.S. Singa. *Groundwater Management in Uttar Pradesh: Present Scenario and Emerging Challenges*. "Sustainable Groundwater Management: Action and Implementation Strategies for Uttar Pradesh." Club of Lucknow, 2010.

in rainfall during the last 20-25 years, especially in Bundelkhand.

Increasing the recharge rate will require careful coordination between the GWA, regional service providers, and users. This reigns especially true during the monsoon months from July to September/October when the UP is dampened with approximately 85-90% of its annual rainfall.[9] To achieve promising results, the state government must elevate technical and advisory support for extensive water mapping, charting groundwater levels across the state and setting metric-focused goals for replenishment.

Regulation

In recent decades, regulatory intervention has increased for two principle reasons: to authorize the state's control over water resources and to protect the growing importance of groundwater, which provides 80% of the rural domestic water supply and 70% of the agricultural demand. [10]

The first circulation of the Model Bill for the Regulation and Control of Ground Water by The Ministry of Water Resources was released in 1970. The Bill was re-circulated in 1992, 1996, and most recently in 2005. Uttar Pradesh would be the twelfth state to enact groundwater legislation, following Andhra Pradesh, Goa, Tamil Nadu, Kerala, West Bengal, Himachal Pradesh, Bihar, Chandigarh, Dadra and Nagar Haveli, and Union Territories of Lakshadweep and Pondicherry.[11] Overall, governments are seeking to widen control, introducing the need for permits in critical and over-exploited areas. In these regions, all new drilling is banned, and all existing wells must register for permits within 120 days of the commencement of the Act. The IAA is asking to extend this period to 6 months with no registration fees for the first 5 years.

In the coming months, the UP government is slated to enact official rules on the basis of existing groundwater levels, wells in use, competitive users, depth and design of well, purpose of water use, quality and quantity of water to be withdrawn, likelihoods in adverse effects, and rainwater harvesting potential. Decisions regarding permits will follow a similar principle, mandating withdrawal rates in accordance to groundwater potential and neighboring users.

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[9] UPonline. http://www.uponline.in/Profile/geography/climate.asp. Retrieved 5 July 2011.
[10] Cullet, Phillipe. *Water Law in India: Overview of Existing Framework and Proposed Reforms.* International Environmental Law Centre, 2007-01.
[11] Press Information Bureau. Government of India. Accessed July 10, 2011, http://pib.nic.in/newsite/erelease.aspx?relid=57628

Water Law

The control and regulation of water still lies largely in the hands of the State, who can make decisions surrounding groundwater on the basis of 'public trust,' despite objections from the public. As the guardian and trustee of groundwater it may grant water rights and regulate landowners use. However, common law principles differ greatly between surface water and groundwater. Early common rule over riparian rights granted users the right to water from a stream flowing past their land equally with other users, upstream and downstream, unaltered by flow, quantity, and quality.

Over time, common law standards for groundwater have evolved little, resulting in the overexploitation of groundwater by landowners (see box 2). As a trustee of water, the State holds immense power to control, regulate, and use groundwater as it sees fit. Or more simply, it owns the right to act on public interest. Since colonial times water regulation has side-stepped a 'water for all' approach and opted for a 'water for landowners' strategy. Under this domain, the "public" consists of those with entitlements to land. Their ensuing right to freely pump groundwater is the casual side-affect of the former.

Under the Madhya Pradesh Irrigation Act of 1931, the state holds legal sovereignty over any "natural collection of water," while the access and use of groundwater is the undivided right of landowners. Controversy began to mount in the mid-twentieth century as new technology allowed owners to appropriate their water, as well as their neighbors. [12] One of the more famous cases between the Perumatty Gram Panchayat and the Coca-Cola Co. articulates the defects of millennia law. Coca-Cola was extracting water at an significant rate, causing severe water shortages that drained fragile sources of drinking and irrigation water. The Perumatty Gram Panchayat refused to renew Coca-Cola's license on the grounds that it was not in the public's interest to renew a functionary license. As the issue was later brought to the courts a Kerala judge recognized groundwater as both a 'public trust' and a 'right to life' under Article 21 of the Constitution. Since April 2003 the plant has remained closed. While the court's recognition of water rights is clearly stated, its implementation within policy remains absent. Thus, the claim to water at the community level is largely overridden by defensible legislation, granting state-control over water resources. No such mandate, including the present, extends defensible authority to local Panchayats over groundwater.

The Supreme Court has recognized that water is a public trust once in its history.

Tube-wells: Irrigation expansion during British colonial rule was central to government control. Since 1930, the number of state tubewells in UP has grown significantly. At the end of the first Five-Year Plan the number of tubewells stood at 9,200, later increased to 20,000 following a World Bank-funded pilot project, and, in the early 1990s, another 5,000 were added under the Dutch-funded tubewell project. Today there are 28,000 state tubewells, 17,000 deep tubewells, and 400,000 shallow private tubewells.[1] Undivided, the state has the largest irrigated area among all Indian states with over 17.4 million hectares of culturable land under irrigation.[1]

[12] Cullet, 4.

However, regulation has changed little since colonial rule, bestowing full legal rights to landowners for groundwater withdrawal. The growing numbers of users, especially bulk users, and their contribution to groundwater depletion has led to a realization that the regulatory mechanisms in place are unsuitable in the face of the growing demand for water.

Drinking Water

Drinking water has been a central priority in Indian water policy for some time. At the onset of independence in 1954, the National Water Supply and Sanitation Programme was established. Following the European framework, drinking water was managed separately from agriculture and industry and included water for drinking, cooking, bathing, food preparation, and sometimes, for livestock. Due to concerns over per-capita availability and quality standards, drinking water quickly expanded to the Central Public Health and Environmental Engineering Organization (CPHEEO) in 1953, and later expanded to the ministry of Urban Development in 1973. Then in 1986, the National Drinking Water Mission (now Rajiv Ghandi National Drinking Water Mission) was established to target rural areas. Each authority coordinated technical and health initiatives with an understanding that unsafe drinking water was most often a technical issue with serious health implications. However, the priority over safe drinking water was undercut by infrastructural development, in particular, the piped water system. Often, water sources are used for both irrigation and drinking water, which are categorized differently for acceptable levels of contaminates by the Bureau of Indian Standards and the World Health Organization (WHO). While quality standards across rural and urban landscapes are fairly similar, criteria for contaminants among piped water differ greatly. Agencies responsible for ensuring quality standards set reduction goals, while actual achievement levels are amiable at best. Setting a binding and enforceable framework for drinking water is ongoing.

In rural areas, water livelihoods are generally dependent on two key features in regards to drinking water supply: quality and terms of access. In rural landscapes, particularly regions of UP, the quality of drinking water is susceptible to excess fluoride, iron, salinity, nitrate, arsenic, and wastewater contaminants. In UP, The Ministry of Rural Development has deemed 41% of those habitations with excess contaminants unsafe due to high arsenic levels.[13] Meanwhile, decreasing per capita availability has sparked a nationwide initiative, the Rajiv Ghandi National Drinking Water Mission (RGNDWN), that aims to deliver clean, potable water to every rural resident. The program has established a 40 liter per-capita, per-day (lpcd) baseline for habitations (villages of 100 people or more). The minimum levels of availability are broken up among uses: three liters for drinking, five liters for cooking, fifteen liters for bathing, seven liters for

[13]UPonline (see previous, 9).

washing utensils and house, and ten liters for other domestic purposes. However, quantity itself is not a prerequisite to healthy drinking water supplies. The RGNDWN elevates its services to access after minimum levels of water are provided by mandating sources should be placed within 500 meters of the household, or 50 meters in mountainous areas. While these national priorities are setting baselines, many states are raising the bar by setting goals of 80 lpcd in Gujarat, 70 lpcd in UP, and 60 lpcd in Rajasthan. The Uttar Pradesh municipality has added that it vows to provide "sufficient supply of pure and wholesome water" to all users so long it deems capable.[14] Lack of coordination and uniformity among States and between national and state plans remains a significant problem on the supply-side.

Most agencies have also adopted the philosophy, pushed largely by World Bank projects, that drinking water is managed most effectively as a socio-economic good. Thus, shifting emphasis to demand-side schemes to encourage the management of water assets through community ownership. Such projects rest on the belief that townships must become self-sufficient networks, capable of financing, operating, and maintaining water assets. All state and district authorities are required to demand 10 % of initial capital costs from villagers and charge for any upgrades in supply quantities or infrastructural improvements. Uttar Pradesh has gone beyond the AWRSP guidelines and handed over all operation and maintenance responsibilities for drinking water schemes to gram panchayats. More recently, the Uttaranchal Rural Water Supply and Sanitation Project moved to altogether withhold the involvement of the Union and state government in the provisioning of drinking water. These developments are indicative of the policy shift within recent decades whereas previous policies characterized by subsidized water and centralized water management duly resulted in high costs and inefficiency.

Drinking water at the hands of local panchayats is not necessarily a socially effective means of delivering safe and abundant drinking water. The willingness-to-pay model proposed by various World Bank rural water projects, and advanced by Union and state governments, omitted the most affected populations - the poor. Or rather, those individuals that are incapable of fulfilling payments to local panchayats. In practice, these deprived communities are not influenced by cost recovery principles and decisions regarding maintenance and upkeep are directed at those that pay, thereby extinguishing traditional common law principles. This caveat exposes another issue bundled around current drinking water schemes - the privatization or acquisition of public hand pumps and tube wells effectively isolates landless and poor communities to unsafe and insufficient drink water supplies. In 1996, the Uttar Pradesh Rural Water Supply and Environmental Project (Swajal Project) aimed to provide safe drinking water to 1,200 villages in 19 different districts through a public participation model. Just a few years after the completion of the project in 2002, the public stand posts had either

[14] Uttar Pradesh Municipalities Act 1916, s 7(j).

closed due to lack of financing or had become inaccessible due to land acquisition. [15] As the Swajal projects indicate, the two party systems between water agencies and those able and willing to pay for cost recovery schemes is excluding in nature, harming the socially weakest. Furthermore, this includes those that have by desperation paid the 10% contribution fee by allocating more financial resources to water and forgiving other basic necessities. To expect the wealthier and higher caste members of rural communities to disseminate common resources equitably among all users is a tall order considering existing social divisions. Water law specialist Philippe Cullet adds, "'decentralisation' is another word for increased concentration of power in the politically savvy and wealthier members of the local community [and] is not progressive unless accountability at the local level is ensured."

At the same time, a draft memorandum of understanding between the Union and state governments for the eleventh plan recognizes there is constitutional obligation to provide safe drinking water to India's rural population. [16] In recent decades, the government has prioritized rural drinking water with an implicit understanding that water is a human right. Nonetheless, the reduced role of government and the development of privatized water schemes threaten to dilute existing legislative rights. Such progressions indirectly bypass the equal rights to poor and landless communities suffering from insufficient access to water. The devolution of powers to user groups will be seemingly ineffective without well-defined water rights and accountability between bureaucracy and communities.

Groundwater Pollution

Subsidies continue to function as a vast and amiable tool for incentivizing industrial growth in India. In the Singauli industrial district of UP, subsidies have been extended to some of the worst polluters. Thermal power plants alone were responsible for 88%, or 27000.9 Million Cubic Meters (CBM), of the state's total wastewater discharge between 1990 and 2001, according to the Central Pollution Control Board (CPCB). In Singrauli, six thermal plants supply 10% of India's energy while releasing 720 kilograms of mercury each year according to a 1991 report by the Electricite de France (EdF). A recent study by The Industrial Toxicology Research Centre (ITRC) in Lucknow also examined mercury contamination in the Singrauli population and found that the mean levels of mercury in blood and hair samples were significantly higher among the 1200 local participants than the control group. Moreover, nearly 20% of the UP industries categorized as Highly Polluting Industries (HPI) have failed to comply with CPCB standards since 2008, leaving Singrauli the ninth most polluted industrial area in India.

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[15] Cullet, Philippe. "Water Law, Poverty, and Development: Water Sector Reforms in India. "Oxford University Press (2009). Pages 157-158.

[16] Memorandum fo Understanding Between State Governemnt Uttar Pradesh and the Department of Drinking Water Supply, Ministry Rural Dvelopment, Government of India (2007) s. 2.

The proposed bill includes terms of penal action for polluters that discharge wastewater, including sewage, into groundwater systems. Offences are punishable for minimum one month and up to one year in prison for non-compliers, and Rs 5,000 and Rs 10,000 fines for first and second-time offenders. Offences committed by companies include the liability of "every person who at the time of commission of offence was in charge of, or responsible to the company for the conduct of the business of the company." The GWA may also seize or terminate equipment used for illegal drilling and extraction. While these regulations certainly bear compliance, positive and performance based incentives for recharge are lacking.

UP in Focus

The UP Groundwater Act is a conservative step in the right direction. Mandates for rainwater harvesting/recharge and drilling bans in notified areas certainly follow recommendations laid out in the 1970 model bill. However, the exemption of legal entitlements to water resources leaves much to be desired. Non-landowners and small pump-well users must continue to surrender their trust to the State. In the balance teeters the integrity and availability of groundwater for all users. Meanwhile, industry continues to grow alongside groundwater stress, and a memorandum by the UP chamber of Indian Industries Association (IIA) threatens to curb withdrawal and recharge provisions for bulk users. Pending the official rules of the Act, extensive data and water mapping must weigh in against industry priorities. Specifically, rules should include area-specific guidelines for rainwater harvesting/recharge and withdrawal rates. Legislation is only a small piece of mitigation efforts, and coordination among the GWA, Service Providers, and users are essential to ensuring an equitable groundwater situation in UP•

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