

India's capital is marked by different settlement types, defined by diverse degrees of formality, legality, and tenure. As part of a larger project on urban transformation in India, Cities of Delhi seeks to carefully document the degree to which access to basic services varies across these different types of settlement, and to better understand the nature of that variation. Undertaken by a team of researchers at the Centre for Policy Research (CPR), New Delhi, the project aims to examine how the residents of the city interact with their elected representatives, state agencies, and other agents in securing public services.

Through three sets of reports, the project provides a comprehensive picture of how the city is governed, and especially how this impacts the poor. The first is a set of carefully selected case studies of slums, known as jhuggi jhopri clusters (JJs) in Delhi, unauthorised colonies, and resettlement colonies. The second set of studies explores a range of different processes through which the governing institutions of Delhi engage with residents. The third, of which this is one, focuses on selected agencies of governance in Delhi. All reports are made public as they are completed.

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The Delhi Jal Board (DJB)

Seeing beyond the Planned

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Introduction

Delhi's jhuggi jhopri clusters (JJs), resettlement colonies, and unauthorised colonies are largely without piped water supply. In its absence, residents of these and other informal settlements—estimated to house three-quarters of Delhi's residents¹—have come to rely on a patchwork of alternative water sources, most important among them water tankers and groundwater tubewells. The Delhi Jal Board (DJB), the state government institution responsible for water supply in the majority of the city, has a complicated relationship with these two arrangements, which each represent a combination of sanctioned and informal elements. This report recounts the practical functioning of both systems and explores in detail the role that the DJB has played in their evolution. We find that, although the DJB has made efforts to improve its administration of water tankers and tubewells, the reality on the ground remains one of limited supply and inequitable distribution.

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Before the DJB: Independence to 1998

Until 1958, an agency called the Delhi Joint Water and Sewage Board was responsible for water supply and disposal of sewage in the city.² A year after it was formed in 1957, the Municipal Corporation of Delhi (MCD) took over control of this body and renamed it the Delhi Water Supply and Sewage Disposal Undertaking (DWS&SDU),³ forming an agency that would manage these two functions for the next thirty years.⁴ The DWS&SDU was managed by the MCD's Delhi Water Supply and Sewage Disposal Committee, one of the Corporation's six statutory committees. And although the agency was a part of the MCD, it had a "large degree of autonomy".⁵

From the beginning, the government struggled even to understand Delhi's water and sewerage requirements, a failure reflected in the historical record. Targets for water and sewerage set in the first master plans of Delhi dramatically underestimated need, calling for water and sewerage capacity of 160 and 142 million gallons per day (MGD) respectively by 1981.⁶ In contrast, real 1981 requirements reported in the second master plan were 496 and 397 MGD respectively. At the time, Verma (1982) cautioned that the "over-centralisation" of water distribution made the growing city "vulnerable" to large water shortages in case of lapses.⁷

In 1996, the DWS&SDU was moved from the MCD and brought under the aegis of the Government of National Capital Territory of Delhi (GNCTD), the state-level government of Delhi that had been established in 1992. This transferred all management and infrastructure related to water and sewage from local to state government, including the

work of water supply, maintenance and cleaning of sewers, maintenance of sewage, sullage pump house, de-silting, design and planning of drains, etc., [...and] all immovable and movable properties of MCD connected with the transferred work.⁸

Two years later, the Delhi Jal Board (DJB) was established as an agency of the GNCTD through the DJB Act, 1998, replacing the DWS&SDU.

This brief history captures a key move that would be reflected in many areas of Delhi's urban governance in the 1990s: the shift from municipal to state control.

The DJB: 1998 to Present

The DJB, just as the DWS&SDU did before, manages water and sewage related infrastructure in Delhi with few exceptions. The DJB is responsible for bulk water supply for all of Delhi, and for local distribution in all areas except those under the jurisdiction of the New Delhi Municipal Council (NDMC) and the Delhi Cantonment Board (DCB). In these areas, as it was under the DWS&SDU, local municipal bodies manage distribution. For the areas of jurisdiction under the three MCDs (North, South, and East),⁹ together constituting nearly 95 per cent of Delhi, the DJB is responsible for distribution of water in addition to bulk supply. Sewage is managed similarly: the DJB is responsible for collection, treatment, and disposal of sewage from all areas except those under the NDMC and DCB. In these areas, local bodies collect sewage and the DJB carries out treatment and disposal.

According to 2012-13 budget estimates, the DJB's resources are heavily skewed towards sewerage: 71.04 per cent of total expenditures went to sanitation services and 28.96 per cent to water supply.¹⁰ DJB budget documents show that the share of expenditure devoted to water supply decreased between 2010-11 and 2012-13, from 42.09 per cent in (according to actual '10-11 expenditure) to 28.96 per cent (according to '12-13 budget estimates).¹¹ One of the DJB's main sources of income is grants from the GNCTD, and the Board's funding accounts for a significant portion of the GNCTD's annual spending. GNCTD budget data for 2013-14 indicates that of state's total approved annual plan outlay of Rs 160 billion, 10.41 per cent was allocated to the DJB. In comparison, the three MCDs were together allocated 11.76 per cent.

THE DJB ACT, 1998

When it comes to water supply in ‘unplanned’ settlements, the DJB’s foundational legislation leaves much to the discretion of the Board. The Act begins with a clear mandate that the DJB “treat, supply and distribute water for household consumption or other purposes to those parts of Delhi where there are houses, whether through pipes or by other means”.¹² It continues, however, with an expansive caveat:

this clause shall not be construed to require the board to do anything which is not in the opinion of the Board practicable at a reasonable cost, or to provide water supply to any premises which have been constructed in contravention of any law or in which adequate arrangement for internal water supply, including internal storage, as may be required by the Board, does not exist.¹³

In other words, according to the Act, the DJB is not *obligated* to supply water to ‘unplanned’ settlements.¹⁴ At the same time, it is important to note that the legislation does not *inhibit* the DJB from supplying unplanned settlements. In an interview, a senior DJB official explained that decisions about whether or not to supply a settlement with water are not based on “whether a settlement is legal or not” and that “the only constraint is the availability of water”.¹⁵ In unplanned settlements on land owned by a government department or agency, the official continued, the DJB provides water connections when the land-owning agency asks them to do so. This usually happens, the official said, when the concerned agency decides that the settlement will not be demolished, and the installed infrastructure will “not be wasted”.¹⁶ Together, the legislation and the official’s comments suggest that the DJB can expand its services to any settlement—planned or unplanned—as long as the Board considers it practical.

Despite this flexibility, unplanned settlements remain disproportionately poorly serviced. In July 2004, the DJB’s internal “Reform Project” report observed that:

Improving water supply and sanitation services to the *poor* also remains an urgent priority. Most poor people reside in the resettlement colonies, urban villages, rural villages, JJ clusters and unauthorized colonies. Many of these are only partially covered by the water distribution system. Even though efforts are being made to improve this situation, it is difficult to plan for service delivery in these areas as they are hampered by lack of adequate information on coverage and a monitoring system. There are a number of isolated pockets such as unauthorised colonies and JJ clusters that are not sewered. People who do not have access to water and sanitation services resort to a variety of coping measures to meet their needs viz. private handpumps & tubewells, private vendors, soak pits, open defecation imposing substantial cost—financial, health and time. *Hence, there is a need for targeted interventions to cater to the water and sanitation needs of the poor.*¹⁷ [Emphasis in original]

Little progress has been made in the decade since, even amidst repeated calls for more equitable distribution from a range of government and other bodies.¹⁸ The DJB’s failure to provide equitable water supply can be traced in part to the way it measures success. The Board marks the extension of water supply in terms of aggregate infrastructure rather than the number of people who receive quality water. For instance, the Board’s website states: “Delhi Jal Board has ensured average availability of 50 gallons per capita per day of filtered water through an *efficient network of water treatment plants, booster pumping stations and about 9000 kms of water mains & distribution system*”¹⁹ (Emphasis added). This data presented by the DJB gives a high-level picture, but tells us nothing about distribution and consumption of levels of water across settlements in the city. In other words, while this might indicate that every person in Delhi receives a reasonable

supply clean water, it also might reflect a situation in which half the city's citizens receives 100 gallons each per day, and the other half no water at all.

The "Roadmap for Reforms" section of the "Reform Project" report set out three broad and ambitious goals to be met by 2015:²⁰

1. DJB transformed into an efficient and customer oriented utility
2. 24/7 water supply and wastewater service to the whole of Delhi including slum areas
3. universal access to water and sanitation services to be provided by a customer oriented, accountable service provider in an efficient, equitable and sustainable manner

These goals suggest that, although the DJB is not legally obligated to supply water to unplanned settlements, it is working to expand water and sewer line services to all residents of Delhi. The Delhi Human Development (2013) report, however, refutes these claims. The report demonstrates that even though the city's piped water supply coverage increased from 75 per cent to 81 per cent (between 2001 and 2011), access to water in unauthorised colonies and JJsCs remained largely "unsatisfactory".²¹

In the absence of piped water, residents of the city's unplanned settlements rely on surface water, water tankers, and ground water extracted through tubewells (also called borewells). These are all systems that fall within the purview of the DJB. The DJB Act asserts that the DJB's second function is to

plan for, regulate and manage the exploitation of ground water in Delhi in consultation with Central Ground Water Authority and also give advice in this regard to the New Delhi Municipal Council, the Delhi Cantonment Board or any other local authority, except with the prior approval of the central government.²²

In other words, even though residents of these settlements often do not have conventional piped water, their access to water is still enmeshed with the DJB Act.

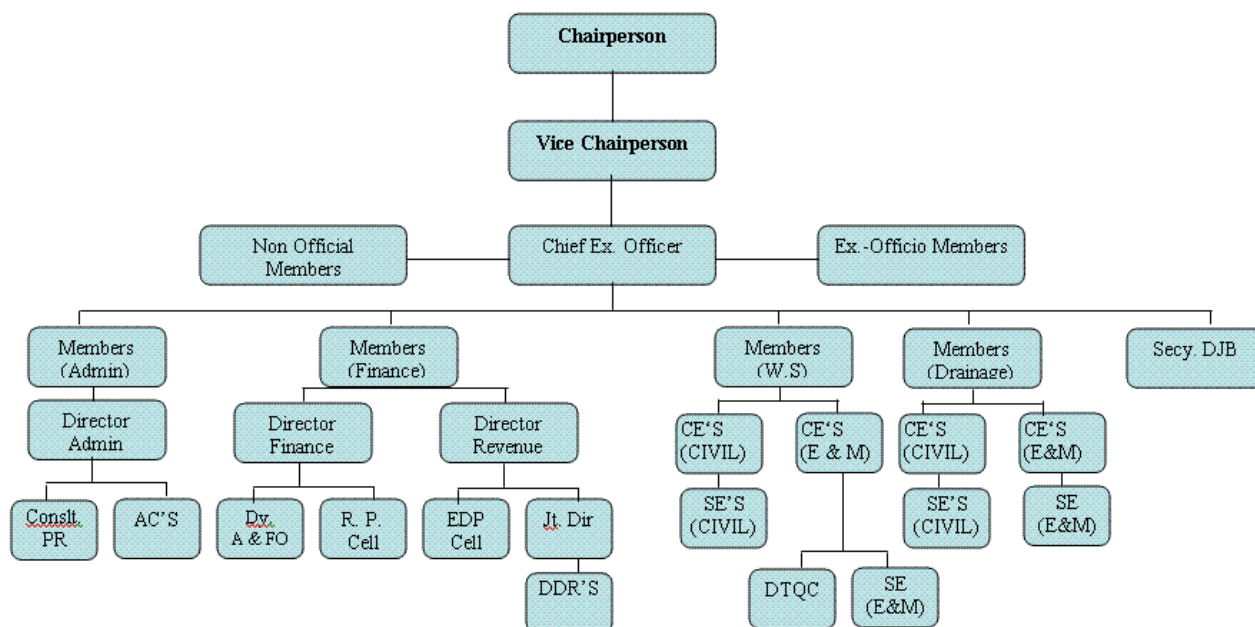
ORGANISATIONAL STRUCTURE

The structure of the DJB's governing board is similar to that of other GNCTD agencies like the Delhi Urban Shelter Improvement Board (DUSIB). The DJB is governed by a board composed of elected representatives, representatives from administrative bodies such as the MCD, the New Delhi Municipal Corporation (NDMC), and the Delhi Cantonment Board (DCB), and various nominated members for areas such as water supply, drainage, finance, and administration.²³ Significantly, the board also includes representatives from the Ministry of Urban Development and the Central Ground Water Authority.²⁴ The Board's composition—representatives from the local government bodies, central government, and even elected representatives from the state government—suggests that while the DJB is an agency of the state government, it is designed to work closely with all three levels of government.

The DJB is headed by a Chief Executive Officer who manages four departments: water supply, drainage, finance, and administration. The organisational chart of the DJB²⁵, available on the DJB's website, is presented on the following page.

The DJB divides Delhi into 70 revenue zones, according to the boundaries of Delhi's 70 assembly constituencies.²⁶ Further, the DJB has 21 zonal offices (Central-I, Central-II, North-I, North-II, North West-I, etc.), each covering between two and five DJB revenue zones.²⁷ The water supply and drainage departments are each headed by two chief engineers: one civil, the other electrical and mechanical.

These two engineering departments have a hierarchy seen across government engineering bodies. Under each chief engineer (CE) there are superintending engineers (SEs), each of which usually covers more than one zonal office. Each zonal office is headed by an executive engineer, who supervises assistant engineers (AEs); AEs manage junior engineers (JEs), the lowest rank of engineers. At every zonal office, there is a zonal revenue officer (ZRO), also known as the administrative officer,



who has administrative responsibilities for the zone including billing and metering.²⁸

According to March 2014 data,²⁹ the DJB had 20,712 employees. Of these, 16,288 (about 78 per cent) were “regular” staff, and the remaining were either “ad hoc” or on “contract”. Overall, 59 per cent of the staff employed at the DJB are *beldars* of different types.³⁰ *Beldars* are widely understood to be unskilled staff whose main responsibility is to assist skilled staff by performing manual tasks. This suggests that even today, the DJB is highly dependent on manual labour and its level of mechanisation is low. The disaggregated data on *beldars* reveals that while a little over 46 per cent are tasked with electrical and mechanical work, more than 20 per cent are “Sewer Gang (or S.G.) *beldars*”, deployed specifically to carry out sewer-related manual work.

The staff includes only 798 engineers across ranks. Each has a background in either civil or electrical and mechanical engineering. When this number of total engineers at the DJB is compared to the populations for which the DJB is responsible for the bulk supply and distribution of water, we arrive at an approximate ratio of 1 engineer for 21,000 people.³¹

While it is difficult to define an ideal ratio, 1 engineer per 21,000 residents is evidently inadequate. One need only compare DJB's 2015 goal of universal 24x7 water supply and wastewater service with the fact that many unplanned settlements remain entirely without either.

Water Supply in Unplanned Settlements

Delhi government documents indicate that in 2000, more than three quarters of the city's residents were estimated to be living in "unplanned" settlements.³² Though this figure has not been updated in the last 15 years, the pattern of settlements is likely to have remained the same. Most of these settlements have no piped water supply and residents access water from non-piped sources, which vary across settlement type. Our extensive fieldwork in JJs and newly established resettlement colonies in Delhi reveals that many residents identify DJB water tankers as a principle source of water, while residents of unauthorised colonies and more established resettlement colonies identify tubewells as their main source of water. This data, together with the population numbers, mean that tubewells and water tankers represent an essential water source across the city, arguably supplying more residents than the piped distribution system.

WATER TANKERS

The Delhi Jal Board explains on its website that water tankers are used to supply "potable water in water deficit areas".³³ According to its policy, the DJB employs tankers based on two criteria: (i) at fixed and predetermined points, selected in consultation with local area representatives, in localities that have no piped water connection; and (ii) in cases of short supply of water, specifically when there is a major breakdown of water supply or there is extra demand during summer. It is worth pointing out that it remains unclear why 'local area representatives' are consulted for selecting distribution points. And, more importantly, who these 'local area representatives' are. Are they formally elected public representatives such as MLAs? Or are they community representatives such as the *pradhans*³⁴ found in many unplanned settlements?

It is true that most JJs and newly established resettlement colonies receive water from tankers because they have no piped water and meet the first condition set out by the DJB. Both 'planned' and unplanned

settlements, however, depend on water tankers during periods of short supply. This challenges the popular perception that, as one news report puts it, "The most urgent problem ... is getting water to the sprawling neighbourhoods of illegally constructed buildings, home to 40 percent of the city's residents and largely without water lines".³⁵ Rather, the reality is that tankers serve residents affected by the DJB's shortfalls across the spectrum of planned and unplanned settlement.

The government acknowledges the importance of tankers. In 2003-04, a planning document of the GNCTD observed that:

To provide drinking water in unauthorized colonies where piped water supply has not been provided, to supplement water supply in J.J. Cluster & Resettlement colonies, to serve areas of short supply existing at the tail end of distribution system and to check water borne diseases, the Delhi Jal Board is supplying water through tankers.³⁶

In 2011, a report from the Comptroller and Auditor General of India (CAG) stated that 24.8 per cent of households in Delhi were being supplied water through tankers in the absence of pipelines.³⁷

TANKERS: SYSTEMS

In 2003-04, about 1000 water tankers were deployed by the DJB.³⁸ These included two categories of tankers: those that belonged to the Board (referred to as 'department tankers') and those hired by the DJB. At the time, it was estimated that there were about 600 'department tankers' and 400 privately owned, hired tankers. The number of these private tankers was to be reduced from 400 to about 200 in a phased manner during the winter season, and further reduced after the completion of the Sonia Vihar Water Treatment Plant.³⁹

In the recent past, some questions have been raised about these privately owned tankers. The companies, mostly small-scale, running these tankers are known to fill these tankers with unregulated ground water. Earlier, many of these private tankers were not

registered with the DJB and there were allegations that tanker companies were overexploiting ground water. In September 2013, a committee constituted by the National Green Tribunal to prevent illegal use of ground water decided that “all the water tankers supplying water for potable / non potable purposes shall get themselves registered with Delhi Jal Board.”⁴⁰

The DJB's own tanker network has not been without problems, as well. The DJB owns two types of tankers, which the Board refers to today as ‘department tankers’ and ‘GPS enabled SS (Stainless Steel) tankers’. Until a few years ago, all DJB owned tankers belonged to the category of ‘department tankers’. These tankers were typically blue and had a capacity of between 8,000 and 10,000 litres.⁴¹ Until recently, it was common to see water spilling from DJB tankers while they travelled around the city, and at distribution points, where immensely high pressure outlets led to regular overflow.

Newspaper reports suggested another reason for leakages in the tanker system: a “tanker mafia”, widely understood to be a nexus between DJB officials and private water tanker operators, and even drivers of water tankers. These parties would collude to divert department water tankers from their designated routes and sell their contents to private tanker operators, who would in turn sell the water commercially.

In the late 2000s, the DJB started to acknowledge that these tankers’ poor design and limited oversight led to much wasted water. In 2011, the DJB began to consider equipping tankers with technology that could respond to the leakages resulting from both design flaws and the ‘mafia’. In June 2011, a seven-year contract to implement a solution was awarded to Delhi Integrated Multi-Modal Transit System Ltd. (DIMTS), a joint venture between the GNCTD and IDFC Foundation. In 2013, DIMTS introduced new GPS enabled stainless steel water tankers as part of a new ‘Water Tanker Distribution Management System (WTDMS)’.

Today, DJB's fleet includes more than 400 of these new tankers, the backbone of the WTDMS. In addition to

reducing accidental spillage through new, well-designed tankers, this new system is designed to improve the distribution of water in various ways. First, GPS enables the DJB to track a tanker from the time it is filled until delivery, reducing the possibility that it can stop to sell water to private water suppliers. Second, the drivers of these water tankers have been given smart cards, which they must use to fill tankers at designated DJB filling points. This helps with quality control, ensuring only treated, potable water is put in the tankers. Third, sensors inside the tankers monitor the level of chlorine in the water.

Apart from creating these internal monitoring systems, the WTDMS brought new transparency to water delivery, publishing detailed water tanker schedules on the DJB's website. A systematic comparison of the schedules released under the WTDMS shows marked improvement.⁴²

Unlike the older schedules,⁴³ the new schedules are largely standardised and include exhaustive information, detailing where tankers will be parked for distribution, arrival and departure times, filling point, contact in case of delay, vehicle number, and contact numbers for complaints in case of ‘non-delivery’ or any other problem. Every area has at least two contact numbers, and each schedule clearly notes the number of tankers allotted to an area and the designated number of visits per week. The schedule for one zone ran to 32 pages, listing 2,500 distribution locations;⁴⁴ the 2010-11 schedule for the same zone listed only 200.

In addition to publicising these schedules, as part of the WTDMS, the DJB established a 24x7 call centre for public grievances in September 2014.⁴⁵ Since then, the system has expanded to include a mobile application and an online interface where complaints can be registered.⁴⁶

TANKERS: ON THE GROUND

We do not know how well the DJB has followed these schedules. Although the WTDMS has brought the possibility for an entirely new level of transparency and possibility for redress to tanker distribution, these remain

largely inaccessible to residents. Much of the information on these new schedules is available only in English, dramatically restricting its usefulness in many unplanned settlements. It also remains unclear whether these schedules have been systematically communicated to the residents they concern.

Residents we spoke with in unplanned settlements report that they bring complaints in person to their local DJB office. There were very few accounts of residents calling the DJB office or using other grievance systems when water tankers do not arrive as expected.

When they do arrive, residents are sceptical of water quality. The tankers are meant to carry clean, potable water, but the supply chain is rife with opportunity for contamination. Tankers are most often filled at the DJB's booster stations where water flows into the tanker from a cloth sock attached to an inverted L-shaped pipe. The function of the cloth sock is to reduce spillage and ensure that the water falls directly into the tanker. The opening in the top of the tanker is much larger than the dispenser, allowing impurities like dust and leaves to mix with the water. Older tankers that have not been replaced with stainless steel units are often rusted and corroded, further contaminating the water they carry.

The poor quality of DJB's water supply and the need to improve it has been highlighted in several important reports,⁴⁷ and is well understood by residents in unplanned settlements.

In Madanpur Khadr, a JJ Resettlement Colony in southeast Delhi, for example, some residents refused to use the water supplied by the DJB tankers. Some reject the water because they see so many people put their hands in the tanker, while others will not use it because they have found other contamination. One woman told us that, "DJB tanker mein chhipkali gir jaati hai, kabhi keede mare hue nikalte hain. To hum wo pani nahi peete." ("In DJB tankers, sometimes there are dead lizards and insects. So we don't drink that water.")

Residents' reluctance to use water from DJB tankers can be seen in the rise of private water suppliers in the settlement, who sell water at the rate of Rs 10 for 20 litres of drinking water.⁴⁸ Instances like this highlight that the current conundrums of extending water supply are not just about quantity but also about quality, and hence, human health and dignity.

As critical as water quality is the ease with which residents can access it, and where a tanker stops in a settlement is essential to its effectiveness as a mechanism of distribution. While the DJB suggests that a tanker's distribution points are selected in consultation with local area representatives, it does not share details of the process. In an interview, a senior DJB official told us that the executive engineers who prepare water tanker schedules "constantly interact" with MLAs and resident welfare associations (RWAs). The official told us that when it comes to water tanker distribution, "the local MLA has a strong role to play".⁴⁹

Our fieldwork raises two important issues in this regard: (1) in the absence of any comprehensive guidelines for selecting distribution points, distribution is highly dependent on the discretion of the local elected representatives, and, (2) such discretion often results in highly inequitable distribution of water.

For instance, in Kusumpur Pahari JJC, we found that a *pradhan* determined the points of distribution across the settlements, essentially by fiat. Residents found the system inequitable. By designating a distribution point right in front of his own house, for example, the *pradhan* ensured better access for his family. Although the *pradhan* himself had no formal power to direct water tankers, he was able to exercise control through his close ties with the area's MLA, a member of the Congress party.

Such a system is subject to political contestation and is vulnerable to any larger development in electoral politics. After the election results in May 2014, in which the BJP candidate won the parliamentary constituency, the *pradhan* was asked to hand over water distribution to

BJP supporters in the settlement. The *pradhan* told us “wo sochte hain ki ye Congress ka hai ye kaise gadi lagayega.” (“They think ‘he [*pradhan*] is from [the] Congress [party], so how can we let him manage the water tankers?”). He added that a meeting happened in the concerned DJB office after which he got a call from the DJB and was told not to manage the distribution anymore, as the newly elected “Member of Parliament’s people and supporters” would take over the task.

The situation we found in Kusumpur Pahari, in which water tankers only stop outside the houses of local representatives’ supporters, was common across the unplanned settlements where we conducted research. In theory, the schedules made accessible under WTDMS should prevent this kind of patronage. In practice, residents of unplanned settlements cannot actually access these schedules, barred by language and lack of Internet. Here, all the measures taken for transparency and better access fail: without a set distribution procedure to ensure that everybody gets an equitable share, residents push and shove in a desperate attempt to get water, just as they did before the advent of the WTDMS.

TUBEWELLS

DJB’s water tankers are perceived as a relatively reliable, albeit challenging, source of drinking water in Delhi’s JJs and JJ Resettlement Colonies. In the city’s unauthorised colonies, however, residents report that water tankers do not meet their basic water needs and many have dug private tubewells, also known as bore wells.⁵⁰ Residents most often rely on the ground water they access through these wells for non-drinking purposes.

We do not know how many of these private tubewells have been sunk across the city. One 2012 estimate placed the number around 100,000,⁵¹ while in July 2014, an official estimate released through an RTI (Right to Information) request counted 465,000 tubewells.⁵² These private wells should not be confused with the DJB’s own tubewells, groundwater from which becomes part of the

DJB water supply to the city, distributed from booster pumping stations through pipelines or tankers. The DJB has dramatically increased its reliance on tubewells over the last decade, from 2,300 wells in 2003⁵³ to 4,128 in 2014,⁵⁴ but they still account for a tiny portion of tubewells in the city.

All private individual tubewells are supposed to be registered with the DJB, yet the Board’s 2014 data records only 960 privately sunk, approved, and registered tubewells, out of several hundred thousand reported to be in operation. We trace this remarkably low rate of registration to the daunting, complicated policy framework that governs groundwater extraction in Delhi.

TUBEWELLS: POLICY

Many, if not most, of the several hundred thousand private tubewells in Delhi operate outside of stated government policy, a regulatory regime implemented incrementally across the city. First, in 2000, the Central Ground Water Authority (CGWA)⁵⁵ ‘notified’ the South and South West districts of Delhi, prohibiting the installation of any structure for extraction of ground water. In 2006, the Authority extended this notification to the East, New Delhi, North East, North West, and West districts of Delhi, calling them “overexploited areas”. Then, in 2010, the GNCTD issued a blanket order, stating that in all of the NCTD area,

no person, group, authority, association or institution shall draw ground water through bore-well or tube-well (both new as well as existing and drawing without prior permission of Central Ground Water Authority) for domestic, commercial, agricultural and or industrial uses without the prior permission of the “Competent Authority” that is to say, the Delhi Jal Board or the New Delhi Municipal Council as the case may be.⁵⁶

In other words, in the parts of Delhi under the jurisdiction of the MCDs—95 per cent of the city—tubewells could only be installed or operated with permission from the DJB’s Deputy Commissioner (Revenue) for a given area.

In each district, an “Advisory Committee” was formed to look into the matters concerning ground water. This committee is supposed to meet at least once a month to discuss issues related to ground water regulation and management in the concerned revenue area and give recommendations to the Deputy Commissioner (Revenue). Further, the order appointed the Deputy Commissioner (Revenue) as “Authorised Officer” for the purpose of regulation of ground water development and management in the respective revenue areas. He was also charged with identifying violations, sealing illegal wells, and launching prosecution against offenders based on the recommendations of the Advisory Committee.⁵⁷ The order clearly states that only groundwater boring cases recommended by the “Advisory Committee” are to be forwarded to the DJB for grant of permission.

Once an application has reached the DJB, according to the order, it must undergo another round of scrutiny before any decision is made:

If any person, group, authority, association or institution, intends to draw ground water through bore-well or tube-well (both new as well as existing and drawing ground water without permission of Central Ground Water Authority), he shall take prior permission from Competent Authority. Such permission shall be obtained through submission of an application to Zonal Offices of the Competent Authority, in the form specified by the Competent Authority.⁵⁸

In other words, in addition to sanction by the advisory committee, an application must also be approved by an executive engineer of the DJB before being passed on for permission.

In 2012, the CGWB released a set of guidelines and criteria for evaluation of requests for ground water extraction in notified areas:⁵⁹

1. There must be no public water supply system in the area.

2. The applicant must have a certificate from the water supply agency stating that there is no such supply in the area.
3. The applicant household cannot already have a tubewell or borewell.

In addition, the applicant has to submit an undertaking on non-judicial stamp paper, stating the following:⁶⁰

I, resident of do hereby solemnly affirm and declare as under:

1. *That I am the owner/lease of premises of*
2. *That in the above said premises/ building there is no supply of water by the Municipality/Govt. Agency/(ies) in the premises /area.*
3. *That I/we intend to install bore-well for abstraction of ground water for drinking/domestic use only. In the event of installing bore-well, the maximum diameter shall be restricted to 110 mm (four & half inches) and the capacity of the pump shall not exceed 1 H.P.*
4. *That I/we undertake that in the event of any instructions/directions from the Central Ground Water Authority/Deputy Commissioner/District Collector or any other authorized officer(s) of the Govt., we shall discontinue the usage of the said dug well/bore-well/ tubewell if so required.*
5. *That I/we further undertake that I/we shall be held liable for any such civil/criminal action that may be initiated against me /us for violation of any of the terms and conditions of this Undertaking.”*

The application and undertaking must be submitted at least 30 days before work begins, along with the name and address of the agency drilling the well.

Once the permission for a tubewell has been granted, the applicant is supposed to construct the well according to the technical specifications mentioned in the application materials. The criteria also state that the owner of the tubewell must use the water it produces exclusively for drinking and domestic purposes, and mandates that the owner of the tubewell shall undertake artificial recharge to groundwater through rainwater harvesting in the premises.

In summary, any resident of Delhi wanting to install a private water tubewell must first submit an application and affidavit to the relevant Zonal Office of the Delhi Jal Board. Then the Executive Engineer at the concerned Zonal Offices of Delhi Jal Board (the “Competent Authority”) recommends the granting of permissions for digging tubewells. At the same time, the “Advisory Committee” for the concerned district also gives its recommendations. Based on these recommendations, the Deputy Commissioner (Revenue) of the concerned revenue district makes a decision about the application.

This complicated process seems designed to ensure that no one attempts it, effectively rendering the majority of tubewells illegal. Both the numbers—far less than one per cent of tubewells in operation have been registered—and anecdotal evidence from our fieldwork are testament to this fact.

TUBEWELLS: ON THE GROUND

Residents of Delhi’s unplanned settlements are generally aware of the fact that most privately dug tubewells are operating without permission. In early 2014, there was a clear recognition of this issue when the Delhi government newly formed by the Aam Aadmi Party introduced a process to bring legal status to these unregistered private tubewells already in operation. The Delhi Jal Board formed a special task force to oversee this process of ‘regularisation’.

During the time, we followed the events surrounding regularisation of tubewells in a few blocks of Sangam Vihar, an agglomeration of at least 30 unauthorised colonies located in South Delhi.⁶¹ Residents of K Block told us that seven private tubewells were ‘taken over’ by DJB on 6 January 2014, when nearly 50 people, including officials from DJB, BSES Rajdhani (electricity company), and police officers (from the Sub Divisional Magistrate’s office) came to the block. The tubewells were taken away from the private households who had been operating them, the old electricity connections were cut and new electricity connections were established. No compensation was given to those who had originally sunk the wells. The private owners of the borewells

taken over by DJB had to sign an undertaking in Hindi, translated below:

I ____ S/o ____ do hereby solemnly affirm as under:

- 1. That I am running the bore well situated at _____ illegally*
- 2. That I am handing over the bore physically and voluntarily to the official of DJB in running condition*
- 3. That I will co-operate with the officials of DJB to run the bore and not disconnect the power supply*
- 4. That this is my true and correct statement*

Once taken over by the DJB, a blue-grey electric meter was installed at the location and a sticker was put on it which states: that it is an asset of the DJB; that the water is not for drinking purposes and it should be boiled before use; that the water is being given free of cost; and the phone numbers to be called in case of complaints. Some stickers include the address of the tubewell and the phone numbers of the concerned assistant and junior engineers.

These seven tubewells, along with five extant DJB wells, were handed over to K Block’s residents’ welfare association (RWA), which was charged with distribution of their water. The RWA set a new monthly rate of Rs 100, down from the Rs 1,000 - 1,500 residents had paid to private operators.

A similar takeover of private tubewells happened in F-2 Block of Sangam Vihar. Here one of the private owners whose tubewell had been taken over by DJB expressed anger that he had not been compensated, after having invested his own money in digging and operating the well.

After this series of regularisations carried out by DJB’s special taskforce, the GNCTD released a public notice on 23 April 2014.⁶² This notice was released at the time the Delhi Legislative Assembly was in “suspended animation” and the Lieutenant Governor (LG) of Delhi was heading the GNCTD. This notice asked owners and users of tubewells in Delhi to voluntarily disclose

details of their wells within three months.⁶³ The notice, however, did not mention what would happen after these applications were filed. It remained unclear whether it would be followed up by a process of inspection, or one of regularisation.

While regularisation of tubewells may have been welcomed by a majority of residents as there was a reduction in the price at which water could be accessed at from these tubewells, concerns do remain regarding the amount and quality of ground water being they provide. In this context, the same senior DJB official acknowledged that the quality of water from tubewells was “iffy”.⁶⁴ In recent years, Delhi’s ground water table is known to be rapidly depleting; further unregulated abstraction of ground water could accelerate this process. Ground water quality is an especially acute concern in unplanned settlements, where residents have often built individual toilets without a proper sewer connection.

Conclusion

Like other Delhi state agencies,⁶⁵ the DJB has been limited in its ability to deliver services to informal settlements by foundational structures — like the hierarchy of ‘planned’ and ‘unplanned’ settlement — that have marginalised those who live in these communities. But it has also reproduced those structures, failing by and large to include these settlements within its formal distribution network, even when it is not barred from doing so by law. The DJB has made efforts to regulate the distribution solutions that have predominated in the place of piped water, yet the Board continues to treat these water sources as signifiers of exceptional circumstances rather than the norm. This attitude has ensured that, even in the face of improvement, these arrangements remain informal, and at times illegal, making equitable distribution difficult.

NOTES

1. Economic Survey of Delhi, 2008-2009, page 169, citing DUEIIP (Delhi Urban Environment and Infrastructure Improvement Project) 2021.
2. Gangadhar Jha, 'Growth of Delhi and of Municipal Functions', Chapter 3 in *Local Finance in Metropolitan Cities: A Study of Delhi* (Mittal Publications, 1988).
3. Ibid.
4. Bansil, P. *Water management in India*, New Delhi, Concept Publishing, 2007.
5. Out of the six committees in the corporation, this is one of the three committees that has seven members each, out of which four are elected and the remaining three are nominated. For details, see Gangadhar Jha, op. cit.
6. Master Plan of Delhi 1962, page 43
7. Verma, B.L., "Delhi Water Supply and Sanitation", *India International Centre Quarterly*, Vol. 9, nos. 3 & 4, 1982, pp. 308-321.
8. MCD v. Banso Devi in the High Court of Delhi, 4 June 2010, C.M. (MAIN) No. 296 of 2010 & C.M. Appl. No.4064 of 2010; available online at: <http://delhicourts.nic.in/June10/MCD%20VS.%20BANSO%20DEVI.pdf> (accessed 27 March 2015)
9. The Municipal Corporation of Delhi was trifurcated into three urban local bodies, namely, the North Delhi Municipal Corporation, the South Delhi Municipal Corporation, and the East Delhi Municipal Corporation in 2011.
10. Economic Classification of the Budgetary Transactions of Delhi Jal Board 2012-13, Directorate of Economics & Statistics, GNCTD
11. Ibid.; and Economic Classification of the Budgetary Transactions of Delhi Jal Board 2011-12, Directorate of Economics & Statistics, GNCTD.
12. Section 9, (1), (A), DJB Act, 1998
13. Ibid.
14. DJB Act Notes, prepared by Subhadra Banda for the Cities of Delhi project, Centre for Policy Research, New Delhi, July 2013.
15. Interview with a senior official of the DJB on 5 July 2013.
16. Ibid.
17. Page 8, Reform Project - Delhi Water Supply & Sewerage Sector - DJB, July 2004. Downloaded from - http://delhijalboard.nic.in/djbdocs/reform_project/docs/docs/doc_project_prep_docs/introduction/DJB-ReformProject%20-%20Final.doc
18. Devesh K. Pandey, 'Not enough water for Delhiites: CAG', *The Hindu*. (31 December 2013). Available at: <http://www.thehindu.com/news/cities/Delhi/not-enough-water-for-delhiites-cag/article5522216.ece>
19. Details available at: http://www.delhi.gov.in/wps/wcm/connect/DOIT_DJB/djb/home
20. Roadmap for Reforms: Key Milestones, Annexure I, Page 31, Reform Project - Delhi Water Supply & Sewerage Sector - DJB, July 2004. Downloaded from - http://delhijalboard.nic.in/djbdocs/reform_project/docs/docs/doc_project_prep_docs/introduction/DJB-ReformProject%20-%20Final.doc
21. Delhi Human Development Report (2013), Chapter 5: Shelter and Basic Services, The report's claims on the unsatisfactory levels of water supply are predicated upon the 'perception survey' available at: <http://delhi.gov.in/wps/wcm/connect/d184bd004110b07e9850f9136af5079a/05+chap+05>.
22. Section 9, (1), (b), DJB Act 1998
23. Section 3, DJB Act, 1998
24. Ibid.
25. Available at: http://delhijalboard.nic.in/djbdocs/r_t_information/docs/docs/organisational_chart.htm (Downloaded on 30 March 2015)
26. Details on DJB website.
27. Details available at: http://delhijalboard.nic.in/djbdocs/about_us/charter.htm
28. Interview with a top official of the DJB on 5 July 2013.
29. Details on DJB website.
30. There are a total of 12,262 employees of the DJB who are "beldars" of different kinds.
31. According to Census 2011, the populations in the three DMCs, together was at 16,645,937. The ratio is arrived at by dividing 798 by 16,645,937.
32. Categories of settlements in Delhi presented in Economic Survey of Delhi, 2008-2009, page 169, citing Delhi Urban Environment and Infrastructure Improvement Project (DUEIIP)-2021.

33. Details available at: http://www.delhi.gov.in/wps/wcm/connect/DOIT_DJB/djb/our+services1/schedule+of+water+tankers (Accessed on 10 March 2015)
34. The pradhan is an unelected, widely recognized, informal representative of a significant number of residents in a community. In this case, he also heads a recently registered NGO and was well known by residents.
35. NDTV Delhi Associated Press, 'Water Shortages lead to 'Tanker Mafia' in New Delhi'. (8 September 2014). Available at: <http://www.ndtv.com/article/cities/water-shortages-lead-to-tanker-mafia-in-new-delhi-588479>
36. Details available at: <http://delhiplanning.nic.in/Write-up/2003-04/Volume-II/Water%20supply%20&%20sanitation.pdf>
37. Comptroller and Auditor General of India (CAG). Chapter 3: "Thematic Audit of Water Management in Delhi" in Audit Report No.2 of the year 2013, p. 79-153. Accessible at: http://www.indiawaterportal.org/sites/indiawaterportal.org/files/chap_3.pdf
38. Details available at: <http://delhiplanning.nic.in/Write-up/2003-04/Volume-II/Water%20supply%20&%20sanitation.pdf> (Accessed on 20 March 2015)
39. Ibid.
40. Details available at: <http://delhi.gov.in/wps/wcm/connect/978de300422b4cf4a335a3d0bfe93f66/Advertisement+English.pdf?MOD=AJPERES&lmod=-305003583> (Accessed on 25 March 2015)
41. Minutes of the 81st Meeting of the Delhi Jal Board held on 30.03.2006, Available at: <http://www.delhi.gov.in/wps/wcm/connect/de9ad700421a4124bc6cbf2ac334b5d9/81.pdf?MOD=AJPERES> (Downloaded on 20 April 2015)
42. We compare these new water tanker schedules, posted on the DJB website in early 2014, to an older set of schedules from 2010-11. We consider the schedules for five randomly selected zones of the DJB: North West 1, South West, North East 2, South, and West Delhi. Some of these zones have more than one schedule, all of which are prepared by the concerned executive engineer. For the purpose of this comparison, only one schedule per area has been selected.
43. Downloaded from the DJB website in December 2013.
44. Based on the water tanker schedules provided for the NW-1 division on the DJB website. Available at: http://www.delhi.gov.in/wps/wcm/connect/DOIT_DJB_new/djb/schedule+of+water+tankers/north+west-i, accessed on 30th April 2015
45. "Important Initiatives Taken by the Delhi Jal Board", press release dated 2.12.14. p. 2. Available at: http://www.delhi.gov.in/wps/wcm/connect/b409de00466fdc658124adf5a4ed47e7/pr_02-12-2014_1.pdf?MOD=AJPERES&lmod=-1749480591
46. "Important Initiatives Taken by the Delhi Jal Board", press release dated 2.12.14. p. 2. Available at: http://www.delhi.gov.in/wps/wcm/connect/b409de00466fdc658124adf5a4ed47e7/pr_02-12-2014_1.pdf?MOD=AJPERES&lmod=-1749480591
47. See, for instance, Chapter 3, on Thematic Audit of Water Management in Delhi", in CAG Report 2013 and Chapter 5: Shelter and Basic Services, in Delhi Human Development Report 2013.
48. Interaction with a women's group in Phase II, Madanpur Khadar JJ Colony on March 11 2015.
49. Interview with a top official of the DJB on 5 July 2013.
50. We use the term tubewell throughout this section to maintain consistency.
51. Radhika Bordia, 'The disappearing water of Delhi. More serious than you think'. NDTV. (27 July 2012). Available at: <http://www.ndtv.com/article/india/the-disappearing-water-of-delhi-more-serious-than-you-think-248213>
52. Mail Today, 'Borewells suck Delhi future dry'. India Today (8 July 2014). Available at: <http://indiatoday.intoday.in/story/borewells-suck-delhi-future-dry/1/370283.html>
53. Shivani Daga, 'Private Supply of Water in Delhi', Markets & Regulation. Centre for Civil Society – Internship Papers 2003. Available at: http://ccs.in/internship_papers/2003/chap18.pdf
54. District wise Ground Water Data with respect to borewells and tubewells of Delhi downloaded from the DJB website; Note: Compilation updated as on 28.01.2014, by EO to CE (Water) Projects.

55. Earlier known as the Central Ground Water Board (CGWB).
56. Government of NCT of Delhi, Department of Environment. Order: Direction under Section 5 of the Environment (Protection) Act, 1986. F8(348)/EA/Env/09/1041-1061. Dated 18.05.2010.
57. Government of NCT of Delhi, Department of Environment. Order: Direction under Section 5 of the Environment (Protection) Act, 1986. F8(348)/EA/Env/09/1041-1061. Dated 18.05.2010.
58. Government of NCT of Delhi, Department of Environment. Order: Direction under Section 5 of the Environment (Protection) Act, 1986. F8(348)/EA/Env/09/1041-1061. Dated 18.05.2010.
59. Central Ground Water Authority (CGWA), Ministry of Water Resources, Government of India. "Criteria for Evaluation of Proposals/Requests for Ground Water Abstraction (with effect from 15/11/ 2012)", 2012.
60. Central Ground Water Authority (CGWA), Ministry of Water Resources, Government of India. "Criteria for Evaluation of Proposals/Requests for Ground Water Abstraction (with effect from 15/11/ 2012)", 2012. Page 10.
61. Each block of Sangam Vihar, and in some cases sub-blocks of blocks, are listed as separate unauthorised colonies in GNCTD's list of unauthorised colonies.
62. Public Notice issued in public interest by Department of Environment and Forests, Government of NCT of Delhi, dated 23/04/2014, DIP\0067\14-15
63. "Application For Voluntary Disclosure of Existing Bore-Wells/ Tube-Wells" appended with the Public Notice issued in public interest by Department of Environment and Forests, Government of NCT of Delhi, dated 23/04/2014, DIP\0067\14-15
64. Interview with a top official of the DJB on 5 July 2013.
65. See Shahana Sheikh and Subhadra Banda, 'The Delhi Urban Shelter Improvement Board (DUSIB): The Challenges Facing a Strong, Progressive Agency'. A report of the Cities of Delhi project, Centre for Policy Research, New Delhi (May 2014)