Watering the Slums:
How a Utility and its Street-Level Bureaucrats Connected the Poor in Bangalore

by

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ABSTRACT

This dissertation is about how urban water utilities behave and what makes them interested in serving the poor. The infrastructure literature tends to treat public service agencies as monolithic entities and to ignore the great diversity of tasks and behavior patterns within them. As a consequence, common explanations for why utilities fail poor people tend to focus on attributes of the external environment in which utilities sit and not on the potential to elicit interest from within. This research corrects for this bias by applying a "street-level bureaucracy" approach to a study of a large urban water utility. The aim is to quash the notion so common in the water literature of a unified agency operating on the supply side and to rekindle an interest in the actions of workers.

To do this, I examine the case of the Bangalore Water Supply and Sewerage Board (BWSSB) and its contrasting outcomes within the same case. Over a five year period from 2000 to 2005, the utility revised its operational policies to accommodate the legal and financial realities of slums and connected 5,000 households or five percent of the slum population to the water network. Although the BWSSB demonstrated an unusual commitment to the poor, its efforts were not an unmitigated success. Progress was slow and staff failed to connect households to the network in many of the slums targeted. This dissertation digs deep inside the utility to explain these contrasting outcomes holding the city, the agency, and the sector efficiency constant.

I find that while external pressures were necessary to prompt a business-as-usual utility to take action in slums, variation in outcome can be explained by the different facets of engineering life in BWSSB service stations and the different kinds of relationships forged between frontline staff and slum dwellers. Specifically, a "willingness to supply" by engineers and the attainment of neighborhood deals were necessary conditions for a successful program outcome. This dissertation shows how these two conditions were met and highlights the critical role of the utility's Social Development Unit on both counts. It also shows how, in the process, certain kinds of conflict and resistance to reform had surprisingly positive effects. The main policy implications are that incentives must be aligned within utilities to elicit engineer buy-in and that well-staffed social development units are necessary to diffuse a new slum program to utility employees, to broker deals with slum dwellers, and to harness the benefits of resistance.

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"Just once in a while, let us exalt the importance of ideas and information."
- Edward R. Murrow

"Strife stirs up even the shiftless to toil. This strife is wholesome for man."
- Hesiod

"Whiskey's for drinking, water's for fighting about."
- Mark Twain

CHAPTER 1:
Introduction

1.1 Subject and Approach

A Puzzle and a Comparison

This dissertation started with a puzzle. I was struck by the paradox that if the world's slum dwellers were willing to pay for improved services, why weren't utilities willing to supply such services to them? Numerous studies had revealed a consistent pattern of willingness to pay for improved water supply among the world's poor (e.g. Whittington *et al.*, 1990). It was also clear that slum dwellers relegated to the consumption of vended water spent far more than middle class residents on the volumetric cost of water and associated coping costs (World Bank, 1994).[1] But, despite all the compelling evidence that slum dwellers could afford their service, most water utilities in developing countries remained disinterested in serving them.

To unravel this paradox, I turned it on its head. Instead of compiling a list of all the reasons why most utilities were *not* willing or able to supply to slums, I decided to focus on the few that *were* targeting the poor and understand how they *had* achieved some modicum of success. To do this, I selected what appeared to be a rare success story. Contrary to the poor performance of most water utilities in this regard, the Bangalore Water Supply and Sewerage Board (BWSSB) was doing rather well. In 2000, the utility had connected three slums to its piped network through a

[1] A World Bank (1994) review of vending in sixteen cities across the world showed that the unit cost of vended water is anywhere from 4 to 100 times higher than that of water supplied by utilities through piped networks. In addition, coping costs to compensate for bad supply disproportionately affect the poor. Such costs include informal payments and bribes, investments in expensive storage and pumping facilities, health costs, and the value of time lost in collecting water and in illness (WSP, 1999a).

donor-driven pilot project. Upon completion, the utility had then created an in-house Social Development Unit (SDU) tasked with bringing the pilots to scale. Despite the departure of the original donors in 2002 and the improbable odds of scaling up a pilot project successfully, the new SDU had thrived. In slum after slum, engineers were installing networks and residents were connecting as paying customers. By 2005, after three years of post-pilot operations, the utility had laid pipes in an additional 26 slums. In total, just over 5,000 households had connected to the network with several thousand more poised to be next (see Table 1.1).

Table 1.1: Beneficiaries of BWSSB Slum Program

	Individual Connections	Shared Connections	Households	People
3 Pilots	600	9	690	4,000
26 Post-Pilots	4,330	12	4,378	25,500
Total	**4,930**	**21**	**5,068**	**29,500**

Source: Author's calculations using SDU data; numbers of people are rounded.

Not unexpectedly, the success of the BWSSB was generating a lot of interest in India even though the details of the case remained poorly understood. No other water utility in the country had taken this approach and people wanted to know more. After all, the utility's success was surprising. Public utilities do not usually possess the skills or the knowledge needed to develop "pro-poor" policies, make needed organizational changes, incentivize frontline staff, and partner with a stratum of civil society scattered in low-income clusters. Yet somehow Bangalore had done all this and done it well. Policy makers were particularly intrigued because no donors were involved in the post-pilot phase, practically no additional staff was hired, and with the exception of shared water connections, no slum-specific technologies or products were on offer. Of the

5,000 slum households that connected, 97 percent opted for individual connections paying the same tariffs as everyone else in the city. Through in-depth empirical research, I felt I could explain Bangalore's success while providing general insights into my initial puzzle.

The Bangalore case, however, was not an unmitigated success. Early probing revealed that although the BWSSB had achieved far more than most water utilities do in slums, the results were still decidedly mixed. On the one hand, the utility had indeed connected 5,000 households, or five percent of the slum population, living in 3 pilot and 26 post-pilot slums scattered across the city. These new customers continued to be served with water and receive maintenance. On the other hand, the utility had failed in just under half of the 46 slums it originally targeted. For one reason or another, 20 slums had either refused or been denied utility service. Moreover, even in the successful slums, only 66 percent of households, on average, had connected to the network. Thus, even where utility connections were on offer, a large segment of the slum population was still not being served.

Fortuitously, these mixed outcomes set up an intriguing comparison. Although I had been looking for a success story, this was even better: Not only did I have a case of good performance in the public sector but I also had contrasting outcomes within the same case. I could compare these intra-case outcomes—the successes versus the failures—holding the city, the agency and the sector efficiency constant. Why had the program worked well in this slum but not that slum? Why had some households connected but not others? Answering these questions would yield important insights as to how utilities behave, allowing me to keep one eye on my initial puzzle and the other on my quest for explanations for good performance. Examining intra-

organizational variation in outcome would enable me to identify the real patterns behind resistance to or support for reform as they played out on the ground.

The "Street-Level Bureaucracy" Approach

In order to explain variation in outcome holding the city of Bangalore and its water utility constant, this study burrows deep inside the organization. The beauty of a comparative study like this one is that it immediately draws attention way from policy elites and agency managers to the frontline workers who actually vary from one outcome to another. While "the utility" and senior management in Bangalore's slum program remained constant, the actions of the SDU and the individual engineers in the field differed by slum. Moreover, a preliminary examination of outcomes indicated that success or failure did not correlate perfectly with slum type, including, for example, whether a slum was relatively better off or already had access to water. For both these reasons, I suspected the behavior of utility employees would be particularly important to understand.

Therefore, the cast of characters in this study is dominated by the head of the SDU and the field-based engineers from the Maintenance Division of the utility, which was charged with rolling out the slum program. In particular, I hone in on the Assistant Engineers in charge of "service stations"—the lowest unit in the organization's field operations—and their staff, including water inspectors, valve men, meter readers, and so on. These frontline workers represent the outermost permeable edge of the organization and are the physical embodiment of a state *in* society. They are literally "on the streets" and "in the trenches" making hundreds of decisions on a daily basis

which affect the extent and quality of the network in city neighborhoods as well as the levels of service citizens receive. Together with the head of the SDU, these service station engineers and their staff implemented the new slum program and understanding their behavior is central to explaining why policy decisions made at the top of the utility were or were not translated into actions on the ground.

This dissertation follows the approach taken by Lipsky (1980) in his groundbreaking study of "street-level bureaucracy" and by others before and after him who pay similar attention to the place of frontline workers in public service organizations (*e.g.* Kaufman, 1960; Wilson, 1989). The aim of this kind of research is to examine how rules are experienced by workers inside organizations and to explain what makes them dedicated to the job. The central premise of the literature on street-level bureaucracy is that these workers "have wide discretion over the dispensation of benefits and the allocation of public sanctions" in schools, police departments, lower courts and other service agencies where employees interact frequently with citizens.[2] As a result, their decisions, including the routines and devices they concoct to cope with uncertainty and work pressure, effectively add up to agency policy. The best place, therefore, to understand policy outcomes is on the streets and in the offices where these decisions are made—not in the legislatures, supreme courts, and agency headquarters where policy elites sit.

Although much of this literature is based on empirical evidence gathered in the United States, the approach is equally relevant for a study of a developing country (Tendler, 1997). Just as the street-level bureaucracy approach was once useful in American political science to correct for a longstanding bias towards the study of policy elites, it is useful today in international

[2] Quoted from Lipsky (1980), p.xi.

development to compensate for, on the one hand, an oftentimes superficial understanding of the mechanisms behind supply-driven planning and, on the other hand, an "excessive faith in the actions of the 'user' or 'client' of public services."[3]

The street-level bureaucracy approach corrects for these biases in at least two ways. First, it rekindles interest in the actions of workers, especially government employees. Dedicated attention to bureaucrats shows them to be just as heterogeneous as users, and their actions to be just as key to fixing government. A central problem in the development literature is that it retains "a generally unsophisticated conceptualization of organizations, one which takes no cognizance of the varying tasks organizations face in producing goods and services, and the reasons why persons in those organizations would choose or choose *not* to modify their actions and routines to produce those goods" (Wunsch, 1991: 15). Although new public management has addressed this problem elsewhere, the mainstream development community has not paid enough attention to intra-organizational variation and the adaptation of practices by frontline workers.

Second, the approach refocuses attention on the dynamics between workers and users rather than on research relegated to one domain or the other. What distinguishes street-level bureaucrats from their head office counterparts is their social embeddedness in communities. Therefore, any study of their behavior must pay close attention to their relations with clients as well. Though scholars such as Korten (1981) and Montgomery (1988) once wrote extensively about the relationships between bureaucrats and people in development, this link between workers and citizens is no longer as appreciated even though it is crucial to improving performance. For example, the development community has shown little interest in the larger setting of trust

[3] Quoted from Tendler (1997), p.5.

between workers and users even though trust is necessary for the user involvement so praised in development circles to be at all effective in the first place (Tendler, 1997).

By honing in on street-level bureaucrats, this dissertation aims to contribute in both these ways: to examine the actions of workers and to focus on the dynamics between workers and users. Though it is by no means the first study to apply a street-level bureaucracy approach to a public service organization in a developing country, it is one of but a few in the urban water sector (Watson, 1999; Davis *et al.*, 2001; Caseley, 2003; Crook and Ayee, 2006). Thus, at the very least, this dissertation contributes to a growing body of research on frontline workers in urban water utilities that takes into consideration the distinct attributes of water and the politics of its provision in large, poor cities. What differentiates this study from the others is the comparative aspect of contrasting outcomes within the same case. This allows for deeper investigation of the behavior of frontline workers and their relationships with the poor because it allows some variables to be held constant. As a result, this study, much more than the others, is really an ethnographic account of street-level engineers and non-engineering staff in large water utilities.

Significance of the Research

Overall this research is significant for three reasons. First, it provides a framework for analysis of a positive event in the public sector. The "failed state" in developing countries has long been lambasted in the literature and critics of all stripes have taken particular glee in "bureaucracy bashing" (Olsen, 2005). In development policy circles, the emphasis has frequently been on why things fail and consequently on identifying the sources of rent-seeking, corruption and weak

incentives, among other problems (e.g. Krueger, 1990; Scott, 1998). In contrast, we know much less about why some government agencies or programs actually perform well and very little about how public water utilities reach the poor. This study follows in a line of rich empirical research that has refocused attention on the successes of the public sector (e.g. Wade, 1997; Tendler, 1997; Watson, 1999; Joshi, 2000; Davis *et al.*, 2001; Caseley, 2003). Rather than drafting a laundry list of failures in supply and pointing to solutions to mitigate these problems, these researchers have elegantly flipped the conventional approach on its head. They look instead at how agency staff and service users actually respond to supply failures and use their responses to identify which problems really matter and how solutions might be devised (Gulyani, 2001).

Second, the Bangalore case provides a unique opportunity to deconstruct the monolithic view of public agencies. The development literature tends to treat public agencies as cohesive bodies rather than as organizations composed of individuals faced with varying incentives, rules, and norms (Wunsch, 1991; Ostrom *et al.*, 1993). Even in the best studies of how infrastructure agencies motivate staff, outcomes are categorized by agency type and not by variation from within (*e.g.* Wade, 1997). The scope for intra-organizational analysis, however, is very large. By focusing on internal variation in outcome, we can learn from what March *et al.* (1996) call "samples of one or fewer", eliminate the noise of political diversity which clouds the analysis of multiple case studies, and begin to isolate the organizational conditions required for agency programs to flourish. A theme throughout this dissertation is that it is important to build on local instances of success within an organization and to disseminate the patterns that led to such positive outcomes across the organization, rather than to view public agencies as monolithic entities and judge them by their failures (Connors, 2005).

Third, this study moves beyond the limiting debates in the water sector over public *versus* private provision. The conventional approach, particularly among donors, has been to look at failures in public supply and advocate privatization as an alternative response. In the 1980s and 1990s, privatization and market-driven arrangements were commonly advocated as the solution to a long-standing crisis in public sector planning. Water was declared a commodity to be purchased and solutions along a continuum from management contracts to outright privatization were seen as the most efficient ways to reform service delivery (Shirley, 2002). More recently, there has been a reversal in this trend. Private sector participation in the water sector has been questioned as the hallmark solution given a series of low-performing concessions and an ideological backlash inspired by social movements more concerned with equity than efficiency (Budds and McGranahan, 2003; Hall *et al.*, 2005). Instead of joining this important but limiting debate on optimal macro structures, this research digs deep inside a water utility to explain the dynamics of provision from the perspective of the staff in the trenches. The aim is to identify the conditions under which these workers perform well in slums and the conditions under which they do not. Although the focus is on workers in a public sector bureaucracy, many of the findings are relevant for all utilities, regardless of asset ownership or management arrangement.

1.2 Why do Utilities Fail the Poor? A Literature Review

After decades of public sector planning in developing countries, the record on access to water services speaks for itself: public utilities serve only a fraction of the population and the urban poor are disproportionately underserved—although, in some cities, the non-poor are not that much better off in terms of either water consumption or costs incurred (Gulyani et al, 2005). A

concerted push in the 1980s resulted in huge improvements in water access for over a billion people and, as a result, 83 percent of the world's population now uses improved drinking water sources (WHO/UNICEF, 2005).[4] In South Asia, for example, drinking water coverage improved from 71 to 84 percent between 1990 and 2002. In urban areas, this figure increased from 90 to 94 percent and India alone provided service to 88.5 million people in urban areas. Nevertheless, 1.1 billion people around the world still lack access to an improved drinking water source and 2.6 billion people lack even the most basic sanitation facilities.[5] This deficit is particularly significant for Asia which, in spite of its economic success as a region, has the largest number of unserved people and 60 percent of the world's one billion slum dwellers (UN Habitat, 2003).

The infrastructure literature contains a well-developed set of arguments as to why the problem of serving the urban poor remains so intractable and why, despite huge improvements in the numbers, slums remain woefully under served. While not exhaustive, the following sections sketch these arguments and some of the primary debates. They bear reviewing in some detail because they reveal how development professionals usually think about the problem of serving slums and what we already know about how the main stakeholders behave. I have organized the material into five sections, each one corresponding to a dominant explanation for poor performance. These five dominant explanations are: (1) ineffective government supply, (2)

[4] Improved sources of drinking water are defined by the United Nations as: piped water into dwelling, yard or plot; public tap or standpipe; tubewell or borehole; protected dug well; protected spring; collected rainwater; and bottled water from an improved source. Vendor-provided water, tanker truck water, and unprotected ground and surface waters are considered unimproved (WHO and UNICEF Joint Monitoring Program, 2006).

[5] A note of caution on why such statistics, while useful, can also be misleading. Improved water supply does not guarantee safe water supply—it just assumes a greater likelihood that a source is clean because of the level of technology. But some times, public tap water in slums (an "improved" source) is frequently less reliable and of lower quality and quantity than vendor-provided water (an "unimproved" source). An emphasis on accessibility and affordability can undermine the importance of quality. In Bangalore, for example, while 82.9 percent of households have access to water within 200 meters, this is of very uneven quality and reliability. In fact, only 22.5 percent of households have access to treated, safe, piped water within their housing unit (UN Habitat, 2003, p.275).

political expediency, (3) unaffordable service, (4) competition for scarce resources, and (5) the inherent nature of slums. For each explanation, I compare the dominant view with any contrasting perspectives and then speculate as to some of the missing elements in the debate. I purposely ignore solutions devised by either the poor themselves or by small-scale providers in the absence of utility supply; however ingenious, they are not the subject of this research. Instead, my focus is on utility-supplied piped water networks. The aim of this section is to set the stage for the subsequent empirical analysis which necessarily builds on this literature in its examination of why the BWSSB performed well, in spite of similar conditions. A review of the prevailing views is also a good way to show how the street-level bureaucracy approach provides different kinds of insights from the ones generated here—a point I return to in Chapter 6.

(1) The Problems of Government Supply

First, one of the dominant explanations for low access rates among the poor is that public supply has resulted in gross under provision and inefficient performance. Since the 1950s, most governments in developing countries have used state owned businesses to deliver infrastructure services and have prohibited competition. A prevailing view is that the combination of state ownership and monopoly has weakened the incentives for good performance by government agencies (Irwin and Brook, 2003). The result has been a low-level equilibrium trap of low prices associated with low quality, a limited pace of expansion, operational inefficiency, and widespread corruption (Spiller and Savedoff, 1999).

The basic normative argument is that government agencies do not have the right incentives to deliver services efficiently to anyone, let alone the poor. Moreover, government agencies simply do not have the capacity to do so. It is difficult for them to retain the best workers for public sector work and lifetime guarantees of employment tend to lead to stagnation of employee skill sets. Thus, the twin problems of perverse incentives and weak capacity make government supply inherently ineffective. The solution, this literature tends to conclude, is not in government supply but in private sector provision.

Others take a different view. For them, government control is vital because of certain inalienable characteristics of piped water. Water is a "commodity with a difference"—an ordinary market good but one with very important public goods aspects (Boland, 2000). Water yields significant public health and productivity benefits (particularly in dense urban areas) and is essential to life, perhaps even a basic human right. In addition, piped water is conducive to a natural monopoly precluding market competition. Its provision benefits from substantial economies of scale; the inherent quality of network infrastructure means provision is contingent on service to contiguous neighborhoods; and substitutes are usually inferior and often difficult to obtain in cities with acute water scarcity. Finally, piped networks are easy to tap and illegal connections have attributes of a common-pool resource whereby exclusion is difficult and yield is subtractable (Ostrom and Gardner, 1993; Tovey, 2002). For all of these reasons, many policymakers and citizens concerned about the peculiarities of water and their ability to regulate it well strongly believe that piped water should be provided directly by government. Such sentiments run particularly high in South Asia where government supply has been by far the dominant policy choice.

These debates in the literature are valid but miss two basic points, namely that *neither* publicly nor privately owned utilities are particularly well suited to serving low-income households and that many of the barriers to service provision persist *regardless* of whether a utility is publicly or privately operated (Budds and McGranahan, 2003). Both face the risks of operating in a natural monopoly market and both have the capacity to operate efficiently. To dismiss the prospect of the private sector serving the poor based on a skimpy record of success to date is in many ways to do the same disservice as is repeatedly done to the public sector based on its own abysmal record. Badly designed transactions with weak incentives for private providers should hardly come to symbolize the potential of all private sector operators to serve the poor. Thus, although it is important to distinguish the difference between public and private utilities, deciding the ultimate winners and losers in this debate is of limited use and, like a pendulum, likely to elude final rest.

Moreover, in their rush to weigh in on the debate of public versus private, many studies miss the opportunity to explain and correct poor performance without jumping to the other side. Instead, more research is needed to understand how to reform bad performing utilities and to implement strategies that work well for the poor, regardless of the public and private actors thrown in the mix. For example, in a study that points to the over-centralization of government as the chief culprit, the solution is not necessarily to throw the baby out with the bathwater. Though the author questions the ability of centrally directed, hierarchical bureaucracies to undertake "complex, uncertain, and resource-strapped tasks" (Wunsch, 1991: 10)—tasks incidentally which characterize service delivery to the poor—he does not deem all government supply a problem. Rather, this view is a specific indictment of the parastatal functional agencies widely established

in the 1960s and 1970s, of which the Bangalore utility is a good example. The solution to this ineffective institutional arrangement is not to leap to privatization but to examine human behavior in public water utilities that have performed well and to correct for poor performance in this way.

(2) Political Expediency and Willingness to Supply

A second common explanation revolves around political expediency and questions whether politicians are in fact willing to supply to the poor. Since elected leaders have a strong bearing on how utilities behave—including who they serve—the argument is that utilities do not serve the poor because it does not behoove politicians to regulate that they do. The very nature of politics and fixed term elections creates the problem of "political convenience" whereby politicians focus on that which is most expedient to their political careers (Gakenheimer, 1989). Indeed, across the world, elected leaders express a natural preference for the new over the old, and for visible projects which show their concern for public service in conspicuous ways. This results in significant under provision of social services and a damning philosophy of "build-neglect-rebuild" in the infrastructure sector (World Bank, 2005). Political convenience thus explains why the world's poor suffer when the pipes they need are below ground and their crumbling assets are not visible to the majority of their elected leaders' constituents.

This problem is compounded in developing countries where few elected officials feel any compunction to respond to the calls of social reformers and where slums represent large vote banks. Though sanitary engineers once drove the movement to connect the poor in the now

industrialized countries, the same momentum does not exist today. Advances in modern medicine and civil engineering have greatly reduced the health risks once incurred by epidemic diseases and other "threats from below" allowing for middle-class indifference to the plight of the poor (Chaplin, 1999). In addition, voter turn-out in India's slums is unusually high. Politicians thus have a perverse interest in actually keeping the poor in slum-like conditions and perpetuating clientelism in order to maintain their vote banks.

In India, political expediency also explains the puzzle as to why basic services have failed the poor in a country which regularly holds democratic elections to multiple tiers of government and which sees significant political participation by its poor citizens (Keefer and Khemani, 2005). Despite a democratically active lower class, political convenience triumphs and campaign promises to provide public goods are no longer even credible. Political incumbents and contenders who seek public office on a platform to provide better public service generally lose elections in favor of candidates who make credible promises to redistribute resources through targeted transfers to individual citizens, for example through subsidies and employment guarantee schemes (Keefer and Khemani, 2005).

Although such common explanations tend to paint politicians as caricatures of themselves, there is some truth to these arguments. Certainly, all reforms must pass an election test and political commitment to raising water prices and breaking debilitating low-level equilibrium traps has been extremely weak. This is especially true in India where emotive associations with water as the source of life and an essential commodity for the "common man" have kept prices artificially

low, thereby starving utilities of the cash they would need to fund investments and network expansion for slums.[6]

Yet the reluctance of politicians has been exaggerated and they have certainly borne too much of the blame. Utility staff may be just as unwilling to supply to slums because of existing power structures which benefit them directly. Indeed, water utilities do often pursue objectives other than the "public interest". For example, a study of rent-extracting behavior by utility staff in Jakarta shows how a water system based on a limited number of public taps, relatively few household connections, and private vendors can generate substantial monopoly rents (Lovei and Whittington, 1993). And in Guayaquil, spatial sub-monopolies have been shown to exclude the poor from networks and obligate them to resort to costly vended water, the profits from which are then redistributed to the "water mandarins" sitting in urban utilities (Swyngedouw, 2005). Although both these explanations are equally rooted in a quest to explain venal behavior, politicians are certainly not the only ones to blame.

(3) Pricing Out the Poor

A third conventional explanation for low access is that given low wages, poor people simply cannot afford to pay the full price of piped water supply. The construction of piped networks and the treatment, transmission and distribution of water are expensive, and high standards in water utilities often preclude low-cost technological innovations more suited to the urban poor (Brando

[6] In Bangalore in 2002, the starting tariff for water was Rs.6 (12 cents) per kiloliter (1,000 liters) with an average tariff of Rs.16 (33 cents) per kiloliter. In contrast, the production cost per kiloliter of water was at least Rs.20 (42 cents), excluding financing costs. See Chapter 2, Footnote 9 on the use of exchange rates in this dissertation.

and Gakenheimer, 1987). As a result, connection charges and tariffs are often very high. This means that many poor households will not connect to a network even once they have access to it. For example, in a large cross-country study, Komives *et al.* (2001) find that at the global level, only 40 to 50 percent of the poorest urban households who have access to in-house water taps, sewer connections, and telephones in their communities actually have connections in their homes.[7] The common explanation for such findings is that, barring a choice not to connect for legal reasons, the poor do not connect because piped water supply is simply too expensive.

However, recent work illustrates the difference between affordability and financing. The poor are priced out not so much because they cannot afford the overall fees and tariffs but because they cannot always pay the steep connection fees or the monthly water bills all at once. Research has shown this in two ways. First, many studies have shown that poor people who buy water from informal providers pay much higher prices per liter than the rates charged by water utilities (Irwin and Brook, 2003). Tanker and vendor water can easily be up to 20 times the cost of utility supply. Moreover, the poor incur high coping costs for the low levels of services they do receive. Storage costs to compensate for intermittent or limited supply and health costs from water of low quality can be very expensive.

Second, studies on willingness to pay (WTP) using the contingent valuation method have shown that affordability is not the main problem in extending services to the poor. Households place a surprisingly high value on the time they spend collecting water, a value roughly equivalent to the wage rate for unskilled labor (Whittington *et al.*, 1990). While these studies confirm the idea that

[7] "Access" in this study refers to a household's ability to obtain an infrastructure connection. For example, a household has "access" to a sewer service if there is a network in the neighborhood.

the full costs of conventional water and sewerage systems are unaffordable to the vast majority of households, they also show how only modest subsidies are required to achieve relatively high coverage levels using alternative technologies, such as condominial sewerage and improved ventilated pit latrines (Whittington *et al.*, 1993). Although some notes of caution have been sounded on the reliability of the contingent valuation method and its predictive validity compared with actual behavior (*e.g.* Davis and Whittington, 1998; Griffin et al., 1995), these WTP studies provide compelling evidence that with connection fee financing and low-cost technologies, affordability is not the main hurdle to delivering water to the poor.

(4) Competition for Scarce Resources

A fourth conventional explanation for low access in slums is that competition for scarce resources, like water and finance, lies at the heart of utility disinterest. In terms of water resources, this explanation is partly right. Water scarcity is a concern in many large cities of the developing world and in India, a real crisis is looming as river sharing arrangements limit availability for cities and surface water quality deteriorates (World Bank, 2005). Aquifer depletion is rapid and at its worst in concentrated areas such as cities. The growing incidence and severity of water conflicts is a good indicator of the crisis. In 1999, the National Commission on Water showed that overall water balances in India were precarious at best and that demand would exceed all available sources of supply by 2050 (World Bank, 2005). Indeed, in most Indian cities there is not even enough water to meet basic needs per connection, let alone to expand the network to new customers.

Yet, water scarcity is rarely if ever invoked as a reason to prevent new connections for middle class housing, which is expanding at break-neck speed in India's large cities. Network expansion to the non-poor occurs without any regard to available supply even though they consume far more per capita than the poor. Thus, although water scarcity is very real, it is often used by policymakers as a pretext rather than as an explanation for utility disinterest in the poor.

Scarcity of finance, however, is a more convincing explanation for low access among the poor. Network infrastructure is extremely expensive and this creates a disincentive for providing water services to an income group that cannot possibly repay the full costs of the investment. The "infant utilities" in developing countries, starved of cash and faced with low city-wide coverage rates, simply do not have the funds to subsidize the investment needs of the poor (Baietti and Curiel, 2005). Virtually all Indian water utilities are in bad financial condition. Although many have cleaned house financially through recent public sector reforms, revenues are barely sufficient to cover operations and maintenance costs, let alone production, system rehabilitation, depreciation and debt service. Sadly, local governments are not doing much better. Although a significant portion of their expenditures goes towards capital spending for the provision of urban infrastructure, poorly developed tax systems and slim budgetary transfers make financial resources scarce (Arimah, 2005). To make matters worse, city revenue shortfalls are compounded by the widespread discretion of city executives and the lack of transparency in budgetary expenditures which together limit whatever influence the poor might have exerted through democratic and participatory processes to garner scarce resources for themselves (Devas, 2003). Between cash-strapped water utilities and local governments, the poor do not have a lot of financial backers.

Although absolute financial scarcity is a problem, I think the record shows that the real issue is more one of bad targeting. The existing system of cross-subsidies built into almost every tariff structure ensures that most water subsidies do not reach the poor. The absolute value of subsidies going to free public taps, for example, is very small compared with subsidies going to domestic connections (Foster et al, 2003). Up to 95 percent of water subsidy resources in South Asian cities are used to keep tariffs low for utility customers, about 70 percent of whom live *above* the poverty line. Moreover, the increasing block tariff structure used widely in South Asia has been shown to have a regressive effect on the poor (Whittington, 1992). It penalizes shared connections and indirect purchasing from vendors or neighbors, both of which push consumption into higher volume tariff blocks. Thus, water utilities are in part cash-strapped because the available subsidies are going to those customers who need it least.

The problem of bad targeting is compounded by that of "elite capture." Interest groups who have long benefited from subsidies now feel a sense of entitlement to cheap water, even though they were never the intended beneficiaries of the increasing block tariff design. Although financial scarcity is an issue for the sector overall, solutions to the twin problems of elite capture and badly targeted water subsidies are perhaps more important for the poor than increasing the total amount of available finance.

(5) The Nature of Slums

Finally, a fifth set of prevailing explanations for utility disinterest in the poor centers on the inherent qualities of slums which make them so difficult to serve. Although in many cities the

term "slum" connotes a specific, legally distinct area, slum-like conditions prevail in many of the neighborhoods where the urban poor live. Specifically, the legal, economic, political and physical conditions which have come to define a slum in the popular imagination do in reality make it more complicated to serve the poor. Engineers, for example, are often concerned with the technological complications of serving dense and irregularly planned settlements. In addition, slums vary tremendously and are deeply political. They can be small pockets of extreme poverty or settlements of gigantic proportions home to thousands of families and migrant workers. Residents who live in them are supported by tight political networks with different slum lords, community leaders, gangs, and elected officials for every neighborhood. Not only do these slum traits require different technologies, standards, fee structures and delivery styles from the ones offered to the non-poor, but they also vary significantly across and within poor neighborhoods defying the possibility of a standard approach for all slums.

One of the most important characteristics of a slum is its legality or tenure status. Though each country defines its slums differently, most slum dwellers can lay only tenuous claims to land and few have any formal documents to prove their claims. This is important because illegal, uncertain, and contested land rights are frequently cited by government officials as a legitimate excuse to contravene official water policy, even when minimum water needs are enshrined in the law. The property requirements demanded of slum dwellers in order to obtain a legal water connection are almost always impossible to meet. The result is exclusion from the network and a proliferation of illegal connections.

There is considerable debate in the housing literature as to whether actual property rights or perceptions of security of tenure matter more for the poor. Despite his seminal work advocating land titles for the poor, De Soto (2000) himself acknowledges that property rights alone will not miraculously cure a slum of its slum condition. When property rights are suddenly introduced into slums, they generally fail to work because they are bestowed without paying much attention to existing social contracts. If anything, legalization with its promise of sudden wealth and transformation of land markets tends to adversely affect the poor (Varley, 1987). Because of this, many scholars have argued that what matters most to improving the lives of the poor is a sense of security of tenure, not actual property rights (Payne, 2001; Razzaz, 2003).

The debates between De Soto and others, however, miss the point when it comes to basic infrastructure. Though slum dwellers may indeed invest in housing depending on their security of tenure and probability of eviction, functional service agencies such as water utilities abide by their own rules and regulations. If they require property rights and documentation before extending services, slum dwellers will not gain access to piped water supply no matter how secure they feel. Instead, utilities will continue to ignore the urban poor as slums remain stifled by "the paradox of the informal economy," namely that state efforts to obliterate the informal sector through the expansion of rules and controls exacerbate the very conditions that give rise to such activities in the first place (Portes, 1995). What the tenure debate has mostly failed to consider is the perspective of infrastructure providers themselves.

A final peculiarity of slums helps explain low coverage rates. Slums are known to have reversed the natural order of development in cities. Instead of the usual "planning-servicing-construction-

occupation" sequence adopted in formal housing, slum dwellers work the other way around (Durrand-Lasserve, 1998). First they occupy the land, then they build, then they install infrastructure, and only at the end do they acquire ownership. This finding is important because it provides another explanation for why utilities do not go in early in the life of a slum (De Soto, 1989). With limited resources, access to piped networks is not an early priority for slum dwellers. The problem arises when, after years of utility disinterest, slums enter the period in their development cycle when they are ready for higher-cost infrastructure networks to be laid. At this point, it can be quite difficult to reverse the service philosophy of the utility towards the city's slums.

Although this argument does not necessarily mean that utilities are not capable of reversing a position, the literature tends to blame utilities when this does not happen. This is not fair. Instead, we should think about spreading network connections in slums not as an obvious catch-up strategy but as the diffusion of a *new* idea—or at the very least, as the diffusion of an old idea to be delivered to new customers in a different way. This dissertation explains how this happened in Bangalore and how a business-as-usual utility was moved to connect slums and learnt how to do it for the first time.

1.3 Methodology

Fieldwork

The data and findings presented in this dissertation are the result of months spent in the field. I first identified my case during an initial scoping visit to India in September 2003. I then returned to Bangalore for a total of 10 months, spread over two long stays, starting in February 2004 and ending in May 2005. I spent the remainder of those two academic years reading the literature, conducting secondary research, transcribing interviews, and writing preliminary case studies.

A Comparative Study

I stumbled upon the case of the Bangalore Water Supply and Sewerage Board (BWSSB) almost by chance but sensed immediately the promise of this tidy comparison and the avenues it opened to understanding street-level engineering. A comparative study was possible in Bangalore because slums had weathered the advances of the water utility differently. By early 2005, the Social Development Unit (SDU) of the utility had approached 46 slums over a three year period starting in 2002. In each case, the aim of the SDU had been either to convert households with illegal connections or free public taps to paying customers, or to install a new network and connect slum households for the first time. Although I doubted from the outset whether the nature of the SDU's interventions or "the treatment" had been exactly the same for all 46 slums, I could still examine contrasting outcomes holding the city, the organization, and the sector constant. The way the SDU approached slums and service station engineers would thus be one of my study's most important independent variables.

Although outcomes naturally varied along a continuum from outright rejection of the SDU's efforts (either by engineers or by slum dwellers) to the smooth installation of household connections, I could lump the slums into one of two ultimate outcome categories: "success" or "no success" (see Table 1.2). Of the 46 slums approached by the SDU, 26 were a "success" by which I mean the majority of households in that slum had opted to connect to the network, had paid their connection fees, and were receiving water. This successful outcome was the dependent variable I was most interested in explaining. The remaining 20 slums had not connected, by which I mean either trunk infrastructure had not been laid or users of free taps had not been converted to paying customers. I lumped slums which had clearly rejected the utility's advances or where engineers had feared to tread (what I called "failures") together with slums where negotiations had stalled but hope glimmered that they might yet be revived (what I called "laggards"). Although failures and laggards were obviously very different outcomes, they were both categorically not successes. I grouped them together on the premise that ultimately they shared the same outcome at that point in time, and that such variation was in fact a hint of interesting findings to come. Although the total number of slums targeted and the ratio of successes to failures/laggards shifted considerably during the first years of the SDU's post-pilot efforts, by sheer luck they did not change during the final months of my research enabling me to develop explanations in a steady environment.

Table 1.2: Outcome of the SDU's Intervention by Slum

	Success	No Success	Targeted
Pre-existing network	11	7	18
New network needed	15	13	28
Total No. Slums	**26**	**20**	**46**

A note on classification. I use the categories "success" and "no success" purely with respect to outcomes. As in a conventional Boolean approach, an object within a domain is either in or out of a set (Ragin, 1987). In this case, a slum within the domain of slums targeted by the SDU either has a majority of its households connected to the network or it does not. But a slum is only a "failure" or a "laggard" in as much as rejected advances or stalled negotiations do not advance the stated goals of the utility and achieve a majority connection rate. Such outcomes, however, are not necessarily bad in any absolute sense. As the dissertation explains, many engineers and slum dwellers had very good reasons to reject, debate, or go slow on the SDU's efforts. A failure to one party may well be a success to another. In addition, none of the successful slums were pure successes. As with any urban neighborhood where utility connections are not mandatory, not every household can be expected to connect. Indeed, on average, only 66 percent of households in the successful slums did so. This means that even in the successful cases, 34 percent of households elected not to connect to the network as paying customers.[8] The categories of "success" and "no success" are thus useful only to a point. They set up a nice study but, as

[8] It is common in slums with partial coverage for households to buy water from their neighbors. Thus, it is highly likely that at least some of the other 34 percent of households were able to purchase water from their neighbors, itself an improvement over public taps and, especially, vended water. From the perspective of the utility, however, such outcomes are a mixed blessing. Water consumed through such neighbor-to-neighbor sales is at least paid for, but the beneficiaries avoid the connection fees and minimum charges which boost utility revenue.

with most comparative research in the social sciences, the deeper one probes, the more outcomes defy easy classification or crisp set memberships.

Research Questions

What explains the different outcomes of the utility's slum program? What did the SDU do differently in the successes from what it did in the failures and laggards? Why were some engineers willing to target slums and not others? Why did slums react differently to the advances of utility staff? What makes slum work appealing to utility employees?

These are the research questions behind this dissertation. The purpose of my many months in the field was to explain Bangalore's contrasting outcomes from the perspective of the primary actors who experienced the program on the ground. The magic of this kind of naturalistic inquiry is that real-world participants direct the change, not the researcher as in a laboratory (Patton, 2002). Holding the city, the sector, and the organization constant, this study hones in on the men and women in the trenches who directed all the action on the ground but who rarely receive the attention they deserve: the professional engineers, social development professionals, meter readers, valve men, slum dwellers, community organizers, city councilors, political henchmen, and so on. They are the focus of my attention in this study of street-level bureaucracy and how water utilities behave towards the poor.

Study Design and Inquiry Strategy

My primary method of obtaining information was through participant observation. As in the anthropological tradition, full participant observation combines data from eyewitness observations and a full immersion in experiencing the research setting with interviewing, focus groups, surveys, and casual conversations. The aim is to provide rich, detailed, and concrete descriptions of people and places through "thick description" before proceeding to interpretation (Geertz, 1973). Although this dissertation is in no way a work in cultural anthropology, the approach of the anthropologist furnishes a useful model for an intensive field investigation of street-level bureaucrats (Kaufman, 1960).

The extent of my participation deliberately increased over time. I found this approach particularly compelling given that in a natural setting, the very presence of a researcher asking questions can be an intervention that reduces the natural unfolding of events. While my lowly student status would hardly have scuttled the slum program at its core, my close association with senior staff at the utility and my continued presence as a foreigner during often tense negotiations in slums were surprising enough to engineers and slum dwellers alike. At the outset, observation alone provided an ideal unobtrusive strategy to help me formulate knowledgeable hypotheses, develop an intuitive feel for the local politics of water in Bangalore, and crack the circumspect tolerance with which I was initially regarded.

I started by "shadowing" the head of the SDU on her work trail, following her from BWSSB headquarters to slums, NGO offices, and engineer service stations. This woman's unusual articulateness and cultural sensitivity made her an excellent "key actor" for descriptive research.

During my first five month stay, I accompanied her on many field visits allowing me to observe firsthand her work with engineers, meter readers, valve men, plumbers, NGO staff, slum dwellers, community leaders, and politicians. In addition to these site visits, I conducted several lengthy open-ended interviews with her at agency headquarters. This was my primary method of gaining initial entry to an organization normally reluctant to share sensitive information, particularly with foreigners.

As I gained people's trust and lost any initial naiveté, I shifted from being a mere observer to being an active participant engaged with subjects on all matters pertaining to the attainment of water connections in slums. In particular, I gradually introduced interviewing as a core component of my inquiry strategy. I received written permission from the Chairman of the utility to approach his staff directly and relied on the good graces of members of other organizations to allow me to interview them. I conducted over 30 interviews with utility staff from senior management and chief engineers at headquarters down to the engineers and non-engineering staff who man the local service stations. By the end of my fieldwork I had, in addition, interviewed the head of the SDU 12 times and accompanied her on nearly 20 field visits. I also interviewed key staff from other relevant organizations such as the city council, state government, infrastructure parastatals, elite and grassroots NGOs, donors, and private planning firms (see Appendix A).

Interviews were intentionally designed to capture an ethnographic flavor. First, they were primarily open-ended in order to develop new ideas and because of the sensitivity of the subject.

Structured questionnaires were not appropriate given the reluctance of participants to divulge unofficial practices in slums or to confess ignorance of basic facets of urban poverty. Second, I always started my interviews with a focus on the positive achievements of individuals as a way to get people to speak freely about their experiences rather than react out of a presumed need to defend or justify themselves (Michael, 2005). Given my quest for explanations for failure as well as success, it was particularly important that I maintain a positive tone. Third, I always met people in their professional setting in order to experience the research from their perspective. For example, I would meet service station engineers in their field offices, construction engineers at construction sites, community based organizations in community halls, slum dwellers in private homes, senior management at utility headquarters, and city bureaucrats at city hall.

Fourth, I devoted considerable amounts of time to writing well-crafted fieldnotes. These "inscriptions" of my research incorporated direct transcription of my interviews as well as personal reflections and scene depiction (Emerson et al, 1995). I initially recorded interviews but rapidly found that many individuals, particular engineers, were uncomfortable with recording and withheld information despite my guarantee of anonymity to most human subjects.[9] I abandoned voice recording in favor of manual note-taking for all but a few high-profile subjects more accustomed to opinionated pronouncements on water and unafraid of repercussions.

[9] My fieldwork was approved by MIT's *Committee on the Use of Humans as Experimental Subjects*, which waived the need for informed consent because the research did not alter the natural experiment or pose any risk. Instead, prior to the start of each interview, I read out a Statement of Purpose and Consent promising anonymity to all subjects not linked to a unique identifier (see Appendix A). For example, mid- to low-ranking engineers are identified throughout the dissertation merely by their rank. While this is true for senior officials as well, their unique status precludes anonymity. There is after all only one chairman. The same applies to the engineers who manned the four service stations in my focused comparison—their ties to distinct places make anonymity impossible. However, I respected any requests to maintain information "in confidence" or "off the record."

An essential part of my research strategy was the use of multiple sources of evidence to corroborate or "triangulate" the same facts from different sources (Yin, 1994). This was particularly important given the danger of interviewers (especially foreign ones) accepting explanations colored by the language of politics when political or ideological considerations are irrelevant or trivial to the explanation (Weiner, 1964). Observation and interviews were supplemented by written documentation collected in the form of published reports, internal memos, baseline surveys, meeting minutes, government statistics and press clippings produced by various government, NGO, academic and media organizations. I benefited particularly from a vast amount of data and analysis on the water utility compiled by the Bangalore Water Supply and Environmental Sanitation Master Plan Project funded by AusAID from 2000 to 2002.

The Small-N, Focused Comparison

In my final phase of fieldwork, I designed a focused comparison of six slums scattered across four service stations in order to get beyond the generalizations participant observation had led me to thus far. Although the project's impact was small by international upgrading standards, there were too many slums for me to explore and interpret in any real depth through qualitative research. In total, some 5,000 households or 30,000 people scattered across three pilots and 26 post-pilot slums benefited directly from the utility's connection drive. Although the exact number of households in the remaining 20 slums was not known, the SDU estimated it was more than double the total number of households in the slums in which connections had been installed. Moreover, a few thousand households in the successful slums had opted not to connect leaving me with contrasting outcomes even within the so-called successes. The focused comparison was

designed as a result of these research problems in order to help me crystallize early hypotheses about relationships and conjectures about significance. Although the findings presented in this dissertation are peppered with references to the other slums and service stations I visited first, many of the specifics examples come from this sub-analysis.

I chose four successful and two non successful slums to represent the major outcomes of the SDU's interventions (see Table 1.3). I specifically wanted to include "negative cases" or cases with outcomes different from the one of primary interest. Although small-N comparative researchers often intentionally select cases that do not differ from each other with respect to the outcome under investigation, relevant negative cases can prove, broaden, or change the findings otherwise established (Patton, 2002). Moreover, negative cases are necessary to identify the sufficient conditions for a given outcome. For example, if a researcher argues that a specific combination of causal conditions is sufficient for a successful outcome, then it is important to demonstrate that these conditions were not met in the negative cases (Ragin, 2004). For all these reasons, I chose two relevant negative cases even though I knew it would be difficult to collect data on aborted efforts.

My sampling was purposive and designed to hold a few independent variables constant. I was particularly interested in holding the slums as constant as possible. For example, all six slums were either in the East or the West division of the utility; all were mid-sized ranging from 250 to 750 households; and all spoke a mix of Tamil and Kannada. Of course, the nature of a slum has a huge impact on the outcome of a slum program. Slums are extremely heterogeneous and, even within my small sample, I could hardly control entirely for community characteristics that might

shape outcomes. But the primary purpose of my research was to burrow through the water utility to the staff on the frontline and, to the extent possible, I chose to focus on the attitudes, behavior and activities of utility staff (including the head of the SDU) as my main independent variables.

Other variables differed but in a way that enabled comparison with respect to outcomes. For example, one engineer was held constant across a success and a no-success; another engineer was held constant across two successes (an original pilot and a post-pilot success); two NGOs experienced both a success and a no-success each; and both the no-success and the success sub-samples contained at least one slum with new trunk infrastructure and one slum with older water mains. Sampling was not intended for statistical analysis but, rather, to go into depth on the central dynamics at play both within the utility and between a typical service station and a typical slum.

Table 1.3: Characteristics of Six Slums in Focused Comparison

	Sudamanagar	Anandapuram	Mominpura	Gajendranagar	Byapanahalli	Chamundi
Outcome	Success	Success	Success	Success	No Success (Laggard)	No Success (Failure)
Pilot/Post	Pilot	Post-Pilot	Post-Pilot	Post-Pilot	Post-Pilot	Post-Pilot
Station	JB Nagar	JB Nagar	JJ Nagar	Machalibetta	Machalibetta	Rajajinagar
Network	New Network	Conversion	Conversion	New Network	New Network	Conversion
Division	East	East	West	East	East	West
NGO	AVAS	World Vision	None	KKNSS	AVAS	KKNSS
CBO	WATSAN	Women group	Active leaders	Active leaders	Women group	None
Households	290	750	385	349	625	276
% Connect	67%	64%	57%	93%	0%	0%

For each slum I strove to understand the concerns, assumptions, and questions of engineers, slum dwellers, and NGO staff through a stakeholder evaluation (Weiss, 1998). I spent considerable amounts of time in the slums for which I used research assistants to translate from Tamil and Kannada. In order to determine baseline data on water availability, historical development, and political affiliation, we administered a long questionnaire with at least five randomly selected households in each slum. I then arranged for a focus group in each slum through either the SDU or a local NGO. No representative of the utility or the NGO was present during these discussions. On average 20 residents attended these meetings which generally lasted several heated hours and culminated in walking tours of water access points. I always used two assistants, one deliberately tasked with noting any discrepancies in the translation of the other. I interviewed separately the local point person for the NGO in five of the slums; no NGO operated in the sixth. Perhaps most importantly, I used semi-structured interviewing to meet and discuss these cases at length first with the head of the SDU and then with the four engineers responsible for the service stations in which these six slums were situated. In two stations, I was able to interview the water inspectors and meter readers responsible for the slums in question. Finally, I distributed a request for specific data on service stations (including connection, revenue, and collection figures), which the engineers returned at a later date (see Appendix A).

Limitations of the Study

Because of language and safety barriers, I was never alone in the slums. Being in the company of engineers and the SDU was not necessarily a problem as it was an essential part of my research strategy and allowed me to observe firsthand the dynamics of their interaction with slum

dwellers. But in their absence, I explored slums in the company of NGO staff, community leaders, and my translators. To some extent I could never shake these trappings and immerse myself as fully in the slums as in the utility. It was therefore difficult to get the full range of perspectives from residents. Though I administered my initial questionnaire using random selection, my sample was tiny. Moreover, subsequent focus groups suffered from selection bias (Krueger and Casey, 2000). These were arranged in advance by NGOs or by me using resident names supplied by the SDU. The majority in attendance was composed of women's groups and community leaders already involved in water issues. To correct for this bias, particularly in slums where I sensed divisive politics, I would later walk the slum striking casual conversations with residents who had not attended or even known about the focus group. However, non-users of BWSSB water and holders of divergent views were sometimes difficult to locate and the absence of their voice remains a limitation of the study. To the extent that this limitation might have biased my results, my findings may have over-estimated the extent and quality of outreach activities by utility staff in successful slums.

Most of the quantitative information presented in this dissertation is based on best estimates. Data on slums are notoriously inaccurate, if they exist at all. Government agencies conduct surveys infrequently and results are usually out-of-date, methodologically flawed, and inconsistent. The NGOs best-placed to know their slums well only occasionally maintain data sets of their own. At best, the data used here should be treated as ballpark figures intended to convey a general impression of slums. The true essence of a slum emerges from being there and talking to those who live, work and breathe slum life. I chose to focus my energies on this task rather than on the important but expensive and time-consuming task of precise measurement.

Therefore, my data on slum size and household beneficiaries are approximate, either the product of sweeping government surveys or the knowledgeable estimate of local residents and NGOs.

Likewise, data on BWSSB slum operations are only roughly right. The utility is a numbers-driven organization particularly obsessed with keeping track of the numbers of connections, amount billed, revenue collected, and targets met. But within service stations, these numbers are not segregated by geographic area or domestic customer segment. It was thus difficult to collect slum-specific data. My information on slum operations was delivered to me by area engineers new to slum work, unaccustomed to being asked for data by slum segment, without computers, and concerned with reporting figures to an outsider. Therefore these data are probably inflated and in some cases unreliable. I have endeavored to present data honestly and noted these issues throughout the text.

Due to my intense immersion in a difficult and at times emotional research setting, my findings may be subject to bias as a result of sympathy or suspicion (Lofland and Lofland, 1995). My tenure as a participant observer occupied two out of the three first years of post-pilot operations, during which time I became close to many of the primary actors, especially the head of the SDU and the street-level engineers, during real-time changes. I even became involved in the reform process myself, returning after completion of fieldwork to serve as a consultant to a Government of Karnataka committee tasked with drafting the state water policy for the urban poor. While recognizing this potential limitation, I have tried to use the comparative method to protect myself from problems of bias. Contrasting outcomes provide concrete evidence for my findings. To the extent that I remain convinced of the possibilities for street-level engineering in slums and focus

on positive outcomes, I can only confess a proclivity to a Hirschmanian "bias for hope" in development research.

1.4 Chapter Outline

The remaining chapters are structured as follows:

- Chapter 2 presents essential background material on the utility and on slums. In the first section, I introduce the reader to the BWSSB as an organization and to its workers. In particular, I pay close attention to the service station engineer and his staff. In the second section, I describe the nature of slums in Bangalore and how residents usually obtain public services. The aim of this chapter is to describe the situation on the ground prior to reform and to convey the complexity of the task later assigned to street-level bureaucrats.

- Chapter 3 explains the advent of the slum program against the backdrop of contemporary Indian political economy and urban governance in Bangalore. It traces why the utility's policy on slums was altered at the top of the organization because of external pressures bearing down on it from both the city and the state. This analysis of changes in the agency's environment and of the precedents on which the slum program was built is important. We cannot explain why outcomes differed unless we understand first how reform reached the utility and in what guise.

- Chapter 4 explains how reform was unfurled within the agency and the different ways street-level bureaucrats responded to decisions made at the top of the utility's hierarchy. It examines how senior management and chief engineers first conceived the new slum program and how they communicated their new policies to street-level staff. I pay particular attention to how certain aspects of the engineering job and specific activities by the new Social Development Unit made the proposition to work in slums more or less appealing to service station engineers. This examination of the vertical forces at play within the utility is important because the elicitation of engineer "willingness to supply" was necessary for a successful program outcome.

- Chapter 5 examines how utility staff reached out to slums for the first time. In addition to engineer commitment to the program, neighborhood deals between slum dwellers and engineers were necessary for a successful outcome. This chapter shows how these deals were struck. I start by explaining how brokers were critical to the exchange of information and the building of trust between the two sides, and end with an examination of the range of reactions from conflict to cooperation that characterized even the most successful neighborhood deals. This chapter is important because it brings the relationship between service providers and the poor to life, and makes the case for a reconsideration of resistance not as a hindrance, but as a pathway to participation.

- Chapter 6 concludes the dissertation by summarizing the main findings and addressing their policy implications for pro-poor utility reform.

CHAPTER 2:
The Size and Complexity of the Task

2.1 Introduction

Prior to the slum program and the fanning out of street-level bureaucrats across the city, water supply in slums was, of course, not a *tabula rasa*. No one survives without water and in one way or another Bangalore's slum dwellers had access to enough water at least to get by. Implementation of the utility's program, therefore, required breaking the particular supply arrangements each slum had achieved over years if not decades of relationships with the government agencies, politicians, and private providers who did deliver water. Moreover, the engineers and service station staff themselves were well-ensconced in an agency saddled with plenty of other tasks and constrained by scarce resources. Implementation of the program required changing their behavior as much as anybody else's. Therefore, in order to appreciate the size and complexity of the task later entrusted to street-level bureaucrats, some background information is needed. This chapter sets the stage for the subsequent analysis of the focused comparison by presenting the situation on the ground prior to reform. In particular, the following sections play close attention to the organizational culture of the utility and the central dynamics at play in slums.

2.2 A Profile of the Utility

Operations amid Scarcity and Constraints

The Bangalore Water Supply and Sewerage Board (BWSSB) is a public water utility entrusted "to make provision for water supply, sewerage and sewage disposal" in the city of Bangalore,

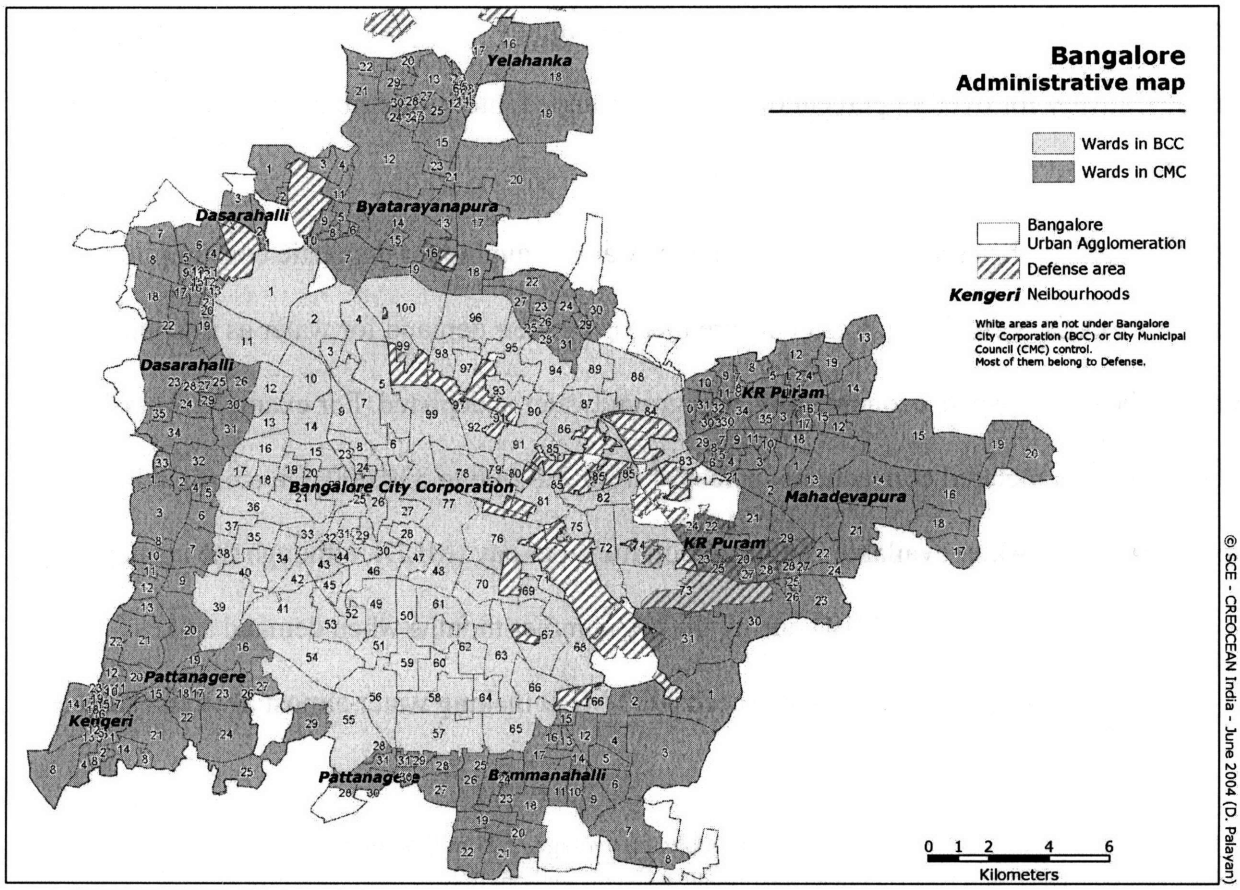
capital of the southern state of Karnataka.[1] It was created in 1964 by the State Government at a time when parastatals were considered a more professional and efficient form of government than units of city government said to be hamstrung by machine politics. Its governing Act defines the agency's primary tasks as: providing water supply, sewerage networks and sewage disposal; ensuring sufficiency of domestic water supply to standards set by state government; and levying and collecting water on a no-loss no-profit basis. Like many utilities, the BWSSB operates in the face of severe challenges such as (i) insufficient funds for lumpy investments, (ii) explosive population growth and geographic expansion, (iii) water shortages, (iv) high leakage and non-revenue water, (v) transitory leadership, (vi) hiring and promotion constraints, and (vii) political interference, primarily in tariff setting. It is important to understand these conditions of the environment in which the utility is situated because they have a strong impact on both the culture of the organization and the later treatment by staff of the added "slum problem."

Currently the utility's service area is limited to the urban core of the Bangalore City Corporation (BCC), excluding neighboring City Municipal Councils (CMCs) and other urbanized parts of Metropolitan Bangalore (see Figure 2.1). The distribution network within the service area is fairly well developed and covers approximately 270 square kilometers. As per the 2001 Census, 4.3 million people live in the Corporation area in nearly 950,000 households. The BWSSB supplies water to approximately 350,000 domestic connections (including bulk apartment connections) and 10,000 non-domestic connections.[2] In addition, it supplies water to over 100 connections for industry, defense and railways; over 15,000 public taps; and approximately

[1] Prelude to the Bangalore Water Supply and Sewerage Act, 1964 (Karnataka Act No. 36 of 1964), p.1.
[2] In theory, these figures include both water and wastewater connections. However, sewers have not been laid in all parts of the city and it is difficult to know what portion of the 350,000 domestic connections includes both. I suspect it is rather high since Bangalore has a well-developed network of sewers and the BWSSB has been operating as a combined water and wastewater agency for over 40 years. All monthly bills include a sanitary fee.

2,000 emergency truck loads per month.[3] All connections are metered but nearly a quarter of utility water goes to public taps which are free of charge to users. AusAID project documents estimate that within the Corporation area over 70 percent of households have access to some form of BWSSB water, although for many this supply comes from public taps used in conjunction with other off-network sources (AusAID, 2002a). The remaining population uses wells, hand pumps, illegal connections, arrangements with neighbors, or the services of small-scale independent providers who operate freely in spite of the utility's monopoly on piped supply, usually by pumping groundwater free of cost.

Figure 2.1: Map of Bangalore City Corporation



Source: SCE-CROCEAN India, June 2004.

[3] As per the BWSSB, Handbook of Statistics, 2001-02 and 2002-03.

The BWSSB obtains its water primarily from the Cauvery River located 100 kilometers away and 500 meters below city level. This water is both extremely expensive and limited. It requires continuous pumping to reach the city and is subject to competition from other users in both urban and rural areas of Karnataka and neighboring Tamil Nadu. There are no other obvious natural sources of water. The two original sources from the Arkavathi River, a tributary of the Cauvery and much closer to the city, are miniscule in comparison to present demand and no river runs through Bangalore.[4] Though it is still optimistically called "the city of lakes," most of these have dried up or are now unusable. Many residents use groundwater as a source of supply and the BWSSB maintains a small borewell division of its own, although usage is greater than the present recharge rate and the water table is sinking rapidly.[5] The agency is completely dependent on the Cauvery for over 99 percent of the water pumped into its distribution system.

Potable water is thus scarce and the volume of water available for domestic consumption on a per capita basis is declining. Residents are increasing their demand for water as the population grows, the city prospers economically, and groundwater is depleted. For example, from 1991 to 2003 domestic metered connections increased from 213,000 to 330,000. On a normal basis, the total quantity of water available is 850 million liters per day (MLD), although the agency is able to muster an additional 100 MLD during the dry summer months when demand spikes.[6] However, normal demand regularly exceeds 900 MLD making water almost always a scarce

[4] These sources at Heseraghatta and T.G. Halli supply, on average, 2.75 million liters per day or only 0.3 percent of total water receipts. See BWSSB Annual Performance Report 2003-4, p.9.
[5] The BWSSB maintains nearly 6,000 working borewells of which approximately half are energized and half are hand pumps. There are approximately 100,000 private borewells in the city as well. See BWSSB Annual Performance Report 2003-4, p.22.
[6] See The Deccan Herald. "Taps won't run dry this summer: BWSSB," Sunday March 21st, 2004.

commodity (Sastry, 2004). To address this issue, the BWSSB has already commenced a new project, funded by the Japanese, to increase its supply from the Cauvery River. Available supply is thus set to increase as work on the new water intake station is completed. Nevertheless, present supply remains scarce.

To make matters worse, a significant amount of the water pumped into the distribution system is lost or otherwise unaccounted for. Officially, unaccounted for water (UFW) is approximately 45 percent though utility staff tacitly agree that the real figure is even higher.[7] This has had a direct impact on the financial performance of the BWSSB each year. Specifically, high UFW worsens the problem of water scarcity, requiring even more water as the city grows. In order to fund the capital works needed for source augmentation, or to fund leakage reduction programs, senior management is constantly looking for ways to increase tariffs or obtain more subsidies in an environment which makes it difficult for them to do either.

The utility derives its annual revenues from sanitary charges and water tariffs set for domestic, industrial, and commercial consumption. The tariff structure is based on a layered system of cross-subsidies whereby high-volume consumers cross-subsidize low-volume consumers. All connections are charged according to metered consumption. The BWSSB Act stipulates that revenues must cover costs and gives the agency the power to vary charges from time to time in order to do so. In contrast to other utilities in India, the agency is able to cover its operating

[7] Unaccounted for water (UFW) is the total bulk water input less the metered water consumption and the assessed volume supplied at public taps. High UFW is usually the result of both physical and commercial losses such as faulty metering, billing errors, and illegal connections. Non revenue water (NRW) is a similar measure but includes any water that might be accounted for but is non-revenue producing (such as water supplied knowingly through public taps but given free of charge to users). The BWSSB measures only UFW.

costs. However, production cost recovery is under 80 percent.[8] In 2002, the AusAID Project calculated that the unit cost of production was over Rs.20 (42 cents) per kiloliter, taking into account the effects of leakage and unaccounted for water but excluding financing costs.[9] Yet the weighted average monthly tariff was only Rs.16 per kiloliter (33 cents), leaving the agency with a revenue shortfall of a quarter of total revenue collected.[10] To cover its total costs in the end, the BWSSB relies on both grants and loans from international donors, the city council, state government, and national lenders, although these are frequently not repaid.[11]

While the agency does not cover its own total costs, this should be placed in perspective. First, the BWSSB performs relatively well. Most Indian water utilities do not even cover their operating costs, let alone release detailed financial statements to the public. This utility does both and is credit worthy enough to raise the loans needed to cover any deficits in its capital account. Moreover, the occasional deficit in the BWSSB's revenue account is usually due to factors beyond its control, like electricity price hikes and revisions of public servant pay scales. Second, in a country where all water utilities operate on the principle of cross-subsidy, Bangalore already has the highest domestic tariffs. In a survey conducted by AusAID of BWSSB customers, respondents were not willing to pay any more for piped water unless service improved considerably first (AusAID, 2002a). It is thus difficult for the utility to raise domestic tariffs in

[8] This figure excludes consumption from public taps—the inclusion of which brings cost recovery down to circa 75 percent (AusAID, 2002a: p.73).
[9] For most of 2003-2005, the exchange rate hovered around Rs.45 to $1 and I use this rate throughout most of the dissertation. However, during the AusAID study from 2000-2002, the exchange rate was closer to Rs.48 to $1.
[10] In 2000-1, the BWSSB had an estimated operating revenue shortfall of Rs.533 million ($11 million), about 26 percent of total revenue collected (AusAID, 2002a: p.74).
[11] While large, the loans allocated to the BWSSB pale in comparison to the size of the subsidy needed to combat successive droughts in rural areas of the state. The loans to the utility tend to get wrapped into the overall sector cost the state knows it has to bear. For the whole of Karnataka, the value of the subsidy to the water sector over a ten year period from 1990 to 2000 was Rs.31 billion ($645 million) and the total recovery rate for water and sanitation less than one percent (Saleth & Sastry, 2004).

order to improve overall financial performance. Raising non-domestic tariffs is altogether out of the question. Non-domestic customers who buoy the cross-subsidy system pay anywhere from two to three times actual production costs, a fact already driving many industries away from network supply. The BWSSB cannot afford to alienate industry further—without cross-subsidization, its revenue structure would simply crumble. In this context, the prospect of raising tariffs is extremely dim, even though, with some difficulty, water tariffs are occasionally revised.[12]

The agency's cost structure is divided across capital, operating and financial costs. Operating costs consume the lion's share of the agency's budget, including maintenance and repairs, salaries and administration, and power supply. Huge amounts of power are needed to operate the 100 kilometers of transmission lines as well as the internal distribution lines that are not gravity-fed. Power is both expensive and unreliable in Bangalore, consuming more than 60 percent of operating costs.[13] In total, operating costs consume more than two thirds of total costs.

On paper, the BWSSB is supposed to supply both water and pipes to the entire city. The Act stipulates that the agency shall make provision, first, for a "supply of wholesome water in pipes *to every part [of Bangalore] in which there are houses* for the domestic purposes of the occupants thereof" and second, for "the pipes affording that supply" as long as this does not require the utility "to do anything which is *not practicable at a reasonable cost*".[14] The Act

[12] Water tariffs in Bangalore have been occasionally revised between 1996 and 2003. The compound annual growth rate of tariffs over this period has been 11.5 percent (iDECK, 2004: p.66).
[13] At peak prices, power costs can absorb over 70 percent of monthly revenue. For example, in March 2005, power costs consumed Rs.220 million ($4.8 million) out of the BWSSB's monthly revenue of Rs.280 million ($6.2 million).
[14] BWSSB Act, p.17, italics mine.

further directs the agency to supply non-piped water to areas where it is not possible to lay pipes at a reasonable cost, as long as this alternative public supply can also be provided at a "reasonable cost" and within a "reasonable distance" of every house.

Notwithstanding any obligations to provide water to all parts of the city in which there are houses, the *proviso* of "reasonable cost" offers the utility a practical loophole. Indeed, the utility does not pay for any new distribution mains to new neighborhoods out of its own budget. Its capital works division handles new infrastructure through direct "deposit contribution" of funds from third parties, such as the city council or private developers. The BWSSB, therefore, will never initiate an expansion program without the required funds in hand. All networked neighborhoods are connected by distribution pipes that have been paid for by a third party and residents themselves pay the full costs of the materials and labor for connecting their individual homes to the distribution network. In older neighborhoods, these pipes have been funded through various historical infrastructure investment patterns, but in large part by the municipality and the city's land development agency, the Bangalore Development Authority (BDA).

Throughout the city, levels of service are low and consumers suffer from inequitable and intermittent supply. The average domestic customer receives water for three to four hours on alternate days although many "pockets" of the city receive even less. For example, the old city of Bangalore, which is very densely populated, only gets water about two days per week (SCE-CREOCEAN, 2003). In contrast, the southern and western zones have much better supply due to their proximity to high-pressure trunk mains. In addition, the quality of both the network and the water itself is extremely variable. Portions of the distribution network are more than 100 years

old and some have severe encrustation and corrosion. Newer distribution lines are of extremely variable quality depending on materials and workmanship. Water quality is variable but the percentage of samples taken that do not comply with bacteriological standards is worrisome. The result of all this is high coping costs for residents in the form of storage, treatment, and pressure systems installed on individual premises.

Hierarchy and Culture

The utility itself is stratified by layers upon layers of hierarchy. These are extremely important to understand because they explain a great deal about intra-organizational dynamics. In total more than 2,700 people work for the BWSSB, which ranks its employees according to a category of A, B, C or D (see Table 2.1). Each category represents the status of employees: A and B represent senior managers, engineers, accountants, and personnel officers; C and D represent technical and administrative assistants, and other low-skilled staff working both in offices and in the trenches.[15] The organization is extremely bottom heavy: together categories A and B contain only 10 percent of total staff in comparison to the more than 90 percent who sit in categories C and D. These latter are heavily unionized and their sheer numbers ensure that their voices are heard within the organization. Despite an organizational culture of extreme deference to the bosses "at the top," engineers frequently grumble that it is the drivers, the water inspectors, the meter readers, the sweepers, and so on who actually run the organization. Certainly to an outsider, these lower-level employees appear to take great liberties with respect to on-the-job

[15] Group "C" includes assistants, storekeepers, typists, drivers, sanitary overseers, draughtsmen, meter readers, work inspectors, and lab assistants. Together assistants and meter readers make up more than 60 percent of this group. Group "D" includes attendants, watchmen, mechanics, fitters, sanitary workers, sweepers, gardeners, and general "helpers." Helpers alone number more than 50 percent of this group.

performance and attitudes. Though they are clearly committed to the routine of daily operations and to the organization as a provider of jobs, a genuine embrace of change and improving service is much rarer. This is not surprising given an environment of small rewards and the threat of reform to job perks, but it makes the later, genuine commitment of certain C and D workers to the slum problem all the more striking.

Table 2.1: Number of BWSSB Employees by Category

Category	No. Employees	Percentage
Group "A"	43	2%
Group "B"	230	8%
Group "C"	1303	47%
Group "D"	1208	43%
Total	2784	100%

Source: BWSSB Annual Performance Report 2003-4.

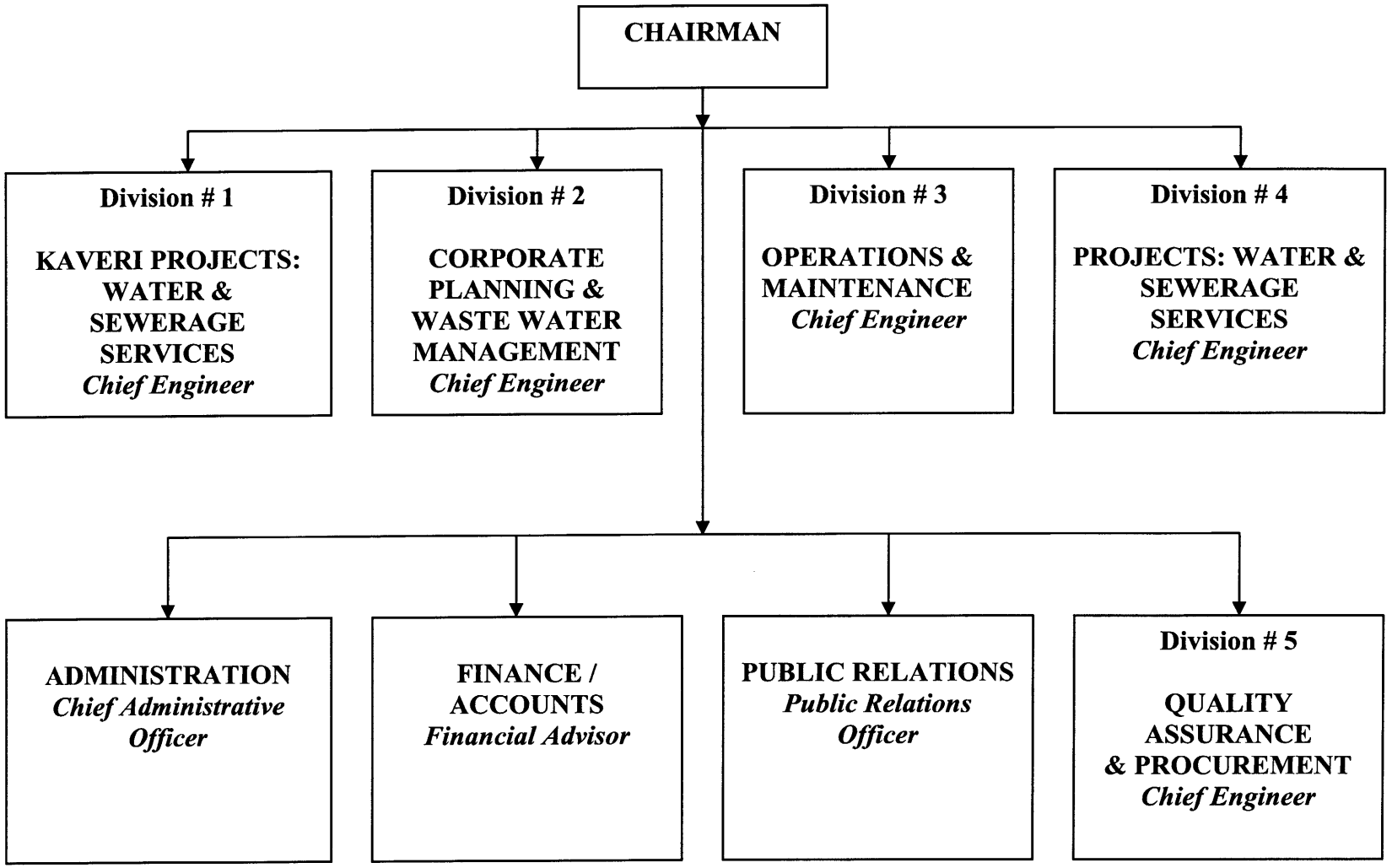
Compared to other Indian utilities, the BWSSB is extremely lean and has one of the lowest ratios of number of staff to number of connections in the country. Moreover, the number of employees is steadily decreasing. For example, the number of employees fell ten percent in ten years from over 3,200 in 1991-1992 to less than 2,900 in 2000-2001. After years of over-staffing and the doling out of "compassionate appointments" to dependents of employees who died in service, the agency now faces frequent hiring freezes imposed by the state government. Though such freezes prevent the recruitment of needed qualified engineers, they also protect management from the often onerous staffing demands of unions. For expert engineering services, the utility relies increasingly on deputation of government employees from other agencies to fill sanctioned posts as well as on short-term contracts with international water conglomerates or with the in-house

consulting division of the national business conglomerate, Tata Consulting Engineers Ltd, which has offices inside BWSSB headquarters.

Structurally the BWSSB is divided into five engineering divisions, each headed by a Chief Engineer (see Figure 2.2). The Maintenance Division is responsible for the operation and maintenance of the distribution network within the city, including ground-level reservoirs and overhead tanks. The Cauvery (or "Kaveri") Division is responsible for the operation and maintenance of water treatment plants and transmission facilities from the Cauvery River. The Projects Division is responsible for the construction of mains and distribution networks. The joint Corporate Planning and Wastewater Management Division is responsible for both corporate strategic direction and sewage treatment. And the Quality Assurance Division monitors the quality of operations as well as procurement, stock levels, and the utility's borewells.

Management is legally vested in a Governing Board which consists of seven members appointed by the State Government, including the Chairman of the BWSSB. Most of the other members are bureaucrats who run large agencies of their own. For example, the top bureaucrats at both the state Urban Development Department and the Bangalore City Corporation sit on the Board. The Board meets at least once a month to discuss policy and operations. Proposals must be circulated in advance with a brief note explaining any proposed changes and must be approved by at least two thirds of Board members, after which they are deemed agency resolutions and become policy. For day-to-day matters, however, the Chairman runs the agency with the five Chief Engineers and with a small team of managers, including the Financial Adviser, the Chief Administrative Officer, and the Public Relations Officer.

Figure 2.2: Organization Chart of the BWSSB



Engineers, however, are the heart and soul of the BWSSB. As with most organizations staffed by trained engineers, a strong "engineering culture" pervades the agency (Kunda, 1992). Though they comprise only 8 percent of total staff, the approximately 200 engineers on payroll embody the professional specialization of the utility.[16] Engineers join for life and are rarely fired from their jobs. On average, an engineer can expect to devote up to 35 years to the agency. Unlike the elite Indian Administrative Service (IAS) officers stationed in Bangalore to run the bureaucracy, almost all are originally from Karnataka. Nearly every single one is male, though it is hard to say to what extent a "male culture" infuses daily practice. In interviews, senior engineers and BWSSB insiders confessed that the quality of new recruits has varied considerably over the years. In particular, the older batches of recruits are said to be both better trained and more committed to a pure ideal of public service than more recent intakes.[17] This is perhaps not surprising given the new economic opportunities for young, talented engineers in India. Nonetheless, despite these differences, they all share an affinity for engineering construction and design. They crave "real" engineering projects and scoff at the maintenance work to which so many are assigned.

Engineers are also hierarchical in their relationships to each other. Each of the five divisions is staffed by layers of engineers in a pyramidal hierarchy which, like the utility as a whole, is very bottom-heavy. Engineers enter the organization as Assistant Engineers and progress over a lifetime to become first Assistant Executive Engineers, then Executive Engineers, and later, for a

[16] There is an additional category of "Junior Engineers" which I have excluded from this figure. They number less than 30 in total, are recruited with considerably lower skills, are ranked as C-level employees, and can only rise through the engineering ranks with considerably more years on the job than Assistant Engineers. I never met any in my service stations and they do not figure in this story.

[17] In 1980-81, the utility started recruiting directly from local technical institutes as opposed to from the state's public works cadres staffed by graduates of engineering colleges. Local technical institutes issue two-year engineering diplomas and require much less preparation and training than a four-year college degree.

select few, Assistant Chief Engineers and Chief Engineers. In theory each title corresponds with a separate position but due to years of overstaffing, many engineers wait years and years to be promoted only to receive higher status and pay without a commensurate increase in responsibilities. Obtaining promotions and new positions across the organization is the main reward for engineers who can expect to hold anywhere from five to ten different jobs at the agency over the course of their professional lifetime. Hiring and promotions are governed by archaic rules dating back to 1981 and a system of "seniority-cum-merit" which stipulates the minimum number of years of service required before promotions will even be considered.

The professional orientation of management differs profoundly from that of the core engineering staff who have different aspirations and allegiances. The "big four" of senior management (Chairman, Financial Advisor, Public Relations Officer, Chief Administrative Officer) are all career civil servants appointed by the state Urban Development Department in consultation with the reigning political party. The Chairman is a senior officer from the elite IAS, whose members are recruited and trained nationally but designated for a lifetime of service within a particular state. The other managers are less senior and drawn from the state civil service cadre. But together they have two crucial traits in common: they are outsiders and they are not engineers. They come and go depending in large measure on political elections, cabinet shuffles, and staff transfers. Each rarely lasts more than a few years in office whereas engineers devote a lifetime to the organization. Although management works closely with senior engineers to lead the agency and all staff are legally deemed "public servants," the rifts and tensions between them are palpable.[18]

[18] All members, officers and servants of the Board are deemed "public servants" when acting on behalf of the agency, as per the meaning intended in the Prevention of Corruption Act, 1947.

Such rifts in professional loyalties are further tested by the utility's organizational structure. For a start, its status as a parastatal agency lends it an ambiguous aura of independence. Because of the mismatch between its functional jurisdiction over the city of Bangalore and its institutional home in the state of Karnataka, the agency is both embedded in government and uniquely free.[19] The creation of the new agency in 1964 took responsibility for water and sewerage away from the City Council and handed it to the State Government.[20] This was done with the intention of freeing agency staff from clientelism and professionalizing the organization, despite Nehru's enduringly accurate characterization of the relationship between city and state in India as one of "authoritarian paternalism."[21]

Indeed, the state retains a heavy hand. Although the agency's responsibility is limited geographically to the city, senior management is appointed by and reports directly to state government, and all major policy decisions must be vetted by the state. This is done either indirectly, through the Governing Board staffed by state appointees, or directly, through petitions to the state-level Urban Development Department to which the agency reports. Urban residents

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[19] There are some 60 parastatals in Karnataka ranging from service providers to state owned enterprises. The BWSSB is one of the few bearing this spatial mismatch in Bangalore although it is not the only one. With respect to service delivery, the Bangalore Development Authority, the Bangalore Metropolitan Transport Corporation, Bangalore Telecom, and the Bangalore City Police all face similar problems, though none apart from the Police have the same extent of workers embedded in city neighborhoods as the BWSSB. The electricity board, recently corporatized as the Karnataka Power and Transmission Corporation Limited, is perhaps similarly embedded but it supplies the entire state, not just Bangalore. The City Corporation, though also run by IAS officers, has important decentralized powers of its own.

[20] Recently, there have been calls in Bangalore to transfer responsibility for water and sewerage back to the city council as part of a move for better local government and more professionalism. India passed the 74th Constitutional Amendment in 1992 with the intent of strengthening Urban Local Bodies as "vibrant democratic units of self-government." The amendment encourages states to decentralize select functions listed in the Twelfth Schedule of the Constitution. These functions include urban planning, water supply, urban poverty alleviation and slum improvement. States retain, however, near total discretion as to whether and how to implement the amendment. Like most states, Karnataka has done very little. Yet calls for decentralization in the spirit of the amendment have been widespread among senior policy advisors and retired bureaucrats, including specific suggestions that "water supply and sewerage services should be made a wing of the [city council]" and that "the Board of BWSSB should be abolished and the staff transferred" (Ravindra et al, 1997: p.10).

[21] Nehru as quoted in Pinto (2000), p.219.

as a constituency have no direct say in matters governing parastatals.[22] Their only votes are cast in favor of a city councilor, who has no voice beyond city government, and a state representative, whose urban voice in the legislative assembly is heavily diluted by the rural majority from the rest of the state.[23] All of this dampens the extent to which the BWSSB must act in response to the pressing concerns of city leaders elected by city residents. Instead, it is the state leaders who are the master puppeteers.

However, given a busy schedule in the state assembly and the disinterest of rural legislators in city affairs, it is not surprising that, with the exception of sensitive tariff revisions, the agency is left largely to its own devices. On the whole, the combination of no local control and indirect state interference gives the BWSSB a degree of independence which it uses both to experiment with new ideas and to flout accountability.

Yet in the field, local influence throws up its own test of loyalties. On the one hand, engineers and their staff have much stronger allegiances than their managers to local problems and local leaders. While senior managers navigate the waters of state politics, exposed frontline staff are constantly subject to the demands of residents and local politicians. Because they must work in the city for life, often for long stints in the field-based Maintenance Division, engineers come to care more about appeasing local concerns. On the other hand, local interference is still

[22] This problem is even worse outside Bangalore. For example, the Government of Karnataka intervenes much more heavily in the affairs of the Karnataka Urban Water Supply and Sewerage Board (KUWSSB), which provides technical assistance to the rest of the state's urban corporations and municipal councils. Its tariffs are set by the State Urban Development Department and the Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC), who also stipulate acceptable funding patterns for new water supply schemes including for example what share of the total cost local bodies must bear.

[23] Elected representatives at the city-level are called "councilors" or "corporators." One is elected for each of the 100 wards in Bangalore. The elected official from the state is a Member of the Legislative Assembly or "MLA." There are only 15 MLAs, out of 224, from constituencies within the area of the Bangalore City Corporation.

considered unofficial "meddling" by the managers who set the performance targets that engineers must ultimately meet. Torn between local and agency priorities, street-level bureaucrats must learn to achieve a fine balance.

Maintenance Engineers and their Service Stations

The Maintenance Division ("Maintenance") is divided into field offices scattered across the city to which Bangaloreans have open access. It is by far the largest division of the utility with 60 percent of total staff and 30 percent of all engineers. While the Chief Engineer of Maintenance and his immediate staff sit at headquarters, all other Maintenance employees work out of these neighborhood offices. The city is divided into five geographically discrete divisions: North, East, South, West, and Central (see Figure 2.3). These five divisions are further sub-divided into 17 "sub-divisions," each one yet further divided into anywhere from three to four "service stations."[24] Each division is headed by an Executive Engineer, each sub-division by an Assistant Executive Engineer (AEE), and each service station by an Assistant Engineer (AE), or an AEE who has been promoted but for whom there is no position to fill. At the time of my research, there were 57 established service stations and seven newly created ones. A total of 45 engineers ran these 64 stations, many heading more than one (though none more than three at a time and usually while waiting for a position to be filled).

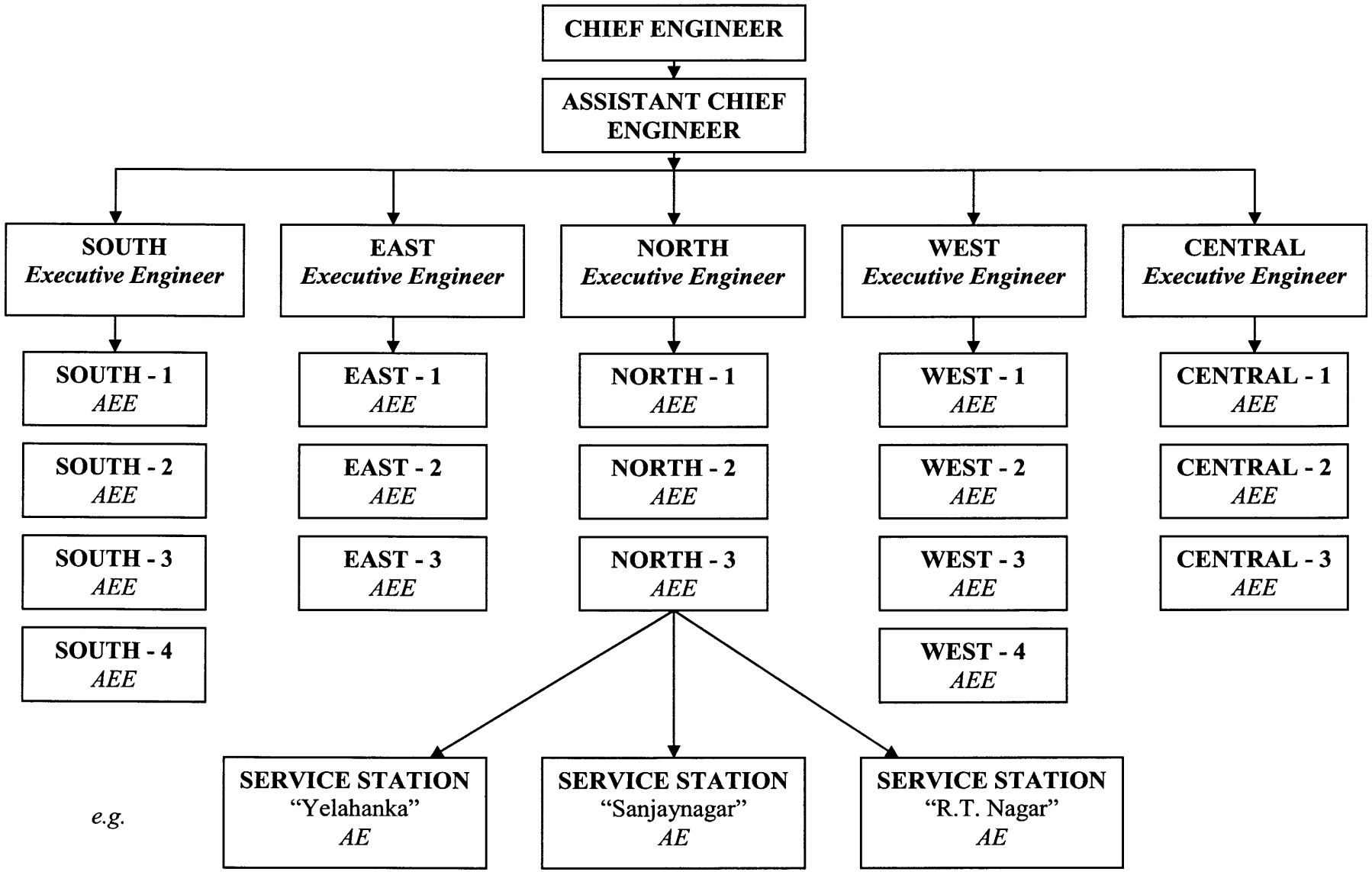
The service stations are the lowest field unit in the Maintenance hierarchy and represent the closest point of contact with customers. Though headed by engineers, they are manned primarily

[24] These divisions were restructured in late 2005 after I left. There are now six divisions and over 20 sub-divisions. In this dissertation, I use the original structure present at the time of my fieldwork from 2003 to 2005.

by non-engineering staff. While I use the term "street-level bureaucrats" more in reference to the skilled engineers who run service stations, all service station employees operate on the frontline. These frontline workers include water inspectors, meter readers, sanitary workers, helpers, fitters, linesmen, drivers, typists, mechanics, telephone attendants, sweepers, bill collectors, watchmen, and so on. All of them interact with customers, both in the office and on the street, and make hundreds of decisions on a daily basis which affect service outcomes.

From the perspective of citizens, the approximately 60 service stations represent the BWSSB even though far more work and far more staff are needed to supply piped water to Bangalore. This is where citizens go to register complaints, pay their bills, submit applications for new connections, and raise any other issue. The tasks of the AEEs and AEs who run them are to supervise daily water flow, address maintenance concerns, and bill and collect for water consumption. They must also approve and process applications for new connections. Every application for a new domestic connection must be processed through a plumber whose rates and protocol are regulated by the BWSSB. Plumbers assist customers in compiling the many necessary documents—application form, sanctioned house plan, three copies of house drawings, and receipts for both the payment of a road cutting charge and the city property tax—but engineers provide final approval and issue the meters which plumbers then install.

Figure 2.3: Organization Chart of the Maintenance Division



Maintenance as an activity is generally reactive in nature. Engineers and their key staff spend much of their days, including weekends, attending to customer complaints, plugging sudden leaks, chasing stock levels, distributing scarce water supply, and organizing emergency measures during power cuts. There is little time for scheduled maintenance and hardly any scope for real engineering work, such as network expansion or system re-design. This is due in large measure to the operational constraints described earlier, as well as inadequate funding for maintenance activities, the absence of training on asset management, and poor data on existing networks (AusAID, 2002a).

Because practices are not standardized across divisions, each service station develops a distinct technical and managerial culture of its own. In particular, engineers do not have detailed job descriptions which spell out exactly what it is they must do. On the one hand, this is a reflection of the absence of any human resources management at the agency. In a study conducted by AusAID, BWSSB employees revealed that their "work allocation statements" were as old as 1964 when the agency was first created (AusAID, 2000a). These statements list only vague tasks and do not specify duties, responsibilities, or outputs. No participants in the study had ever seen a more detailed job description. Moreover, work allocation statements do not even exist for non-engineering staff who must rely on customary practices and verbal instructions from superiors to know what it is their job entails (AusAID, 2001b). On the other hand, the absence of job descriptions is also a reflection of the fact that all service stations are different. After all, the nature of the task depends in large measure on key service station variables, such as size, water scarcity, age of pipes, and the mix of domestic versus non-domestic connections in that particular area. What service station engineers do depends on what needs to be done.

On the face of it this gives engineers a good deal of worker discretion. Although they report in regularly to sub-division superiors, service station engineers maintain a lot of freedom as to how they structure their days and what matters they choose to attend do. For example, even though they have limited powers to approve new repair works they tend to proceed with maintenance as needed and bill their sub-division superiors after the fact. Despite being similarly constrained by a system of crumbling assets and scarce resources, individual Maintenance engineers find room to shape their service stations in unique ways.

Ambiguity and discretion in Maintenance seem to sit well with the agency. Twice the BWSSB has deliberately rejected attempts to reform its human resources strategy. In the late 1980s, the National Productivity Council was commissioned by the Chairman to study agency positions and make recommendations about cadre management. Among its many findings and recommendations, the study also produced various precise job descriptions, none of which were accepted by the agency. In 2002, upon completion of several studies and reports, the AusAID Project also proposed crafting a human resources strategy for the BWSSB. This effort by outsiders to solidify job descriptions was again resolutely squelched by senior members of the Maintenance Division, in particular, who feared erosion of their cherished discretion.

Nonetheless, hierarchical reporting ensures a certain consistency of behavior among service station engineers. Unlike other utility divisions, Maintenance requires a certain amount of regular, structured reporting from its street-level bureaucrats. Most of this reporting centers on the agency's Demand, Collection and Balance (DCB) system which monitors consumption,

billing, and collection efficiencies for the utility as a whole. This is far more than a mere reporting system. It is the fulcrum for understanding engineer behavior in service stations and represents the only real opportunity for communication and information sharing across the hierarchical divide. Each month, engineers must provide data on the total volume of water metered and billed for, the total amount of revenue collected, the number of new connections, and the share of outstanding arrears collected. These data are aggregated first by sub-division, then division and finally for Maintenance as a whole. Although engineers appear at times obsessed with this DCB system, at the expense, for example, of delivering service outputs, this behavior is understandable. Their performance is judged almost entirely on how well they collect these data and how well they meet the monthly revenue targets set by their superiors. While there is ample room for worker discretion, engineer schedules in fact revolve around meter reading periods and bill collection deadlines.

Most importantly, service station engineers operate in a demanding environment with few rewards. Despite the monthly performance reviews in relation to DCB achievements and substantial on the job discretion, there are few incentives either for engineers or their staff to go the extra mile and really improve service outputs. This is for three reasons. First, the agency is severely constrained in not being able to determine the structure of personnel compensation. In line with state rules, there is little room for recognition of and rewards for good performance. Thus, in order to elicit good performance, management must rely on moral suasion and other non-monetary incentives, which are not always very effective. Second, there are no real penalties for bad performance though engineers are warned if they fail to meet the minimum DCB targets. Third, there is no formal feedback on their work and analysis of DCB data is limited to senior

engineers sitting in division offices and in headquarters. Incentives are even worse for lower-level frontline staff who work long hours in a reactive environment and face limited prospects of promotion. For example, only occasionally is a meter reader made a water inspector, and a helper can only graduate to the level of a fitter or mechanic after ten years of service. It is thus particularly intriguing that a utility such as the BWSSB operating within such constraints should produce street-level bureaucrats willing to add the slum problem to their heavily loaded and poorly rewarded work plates.

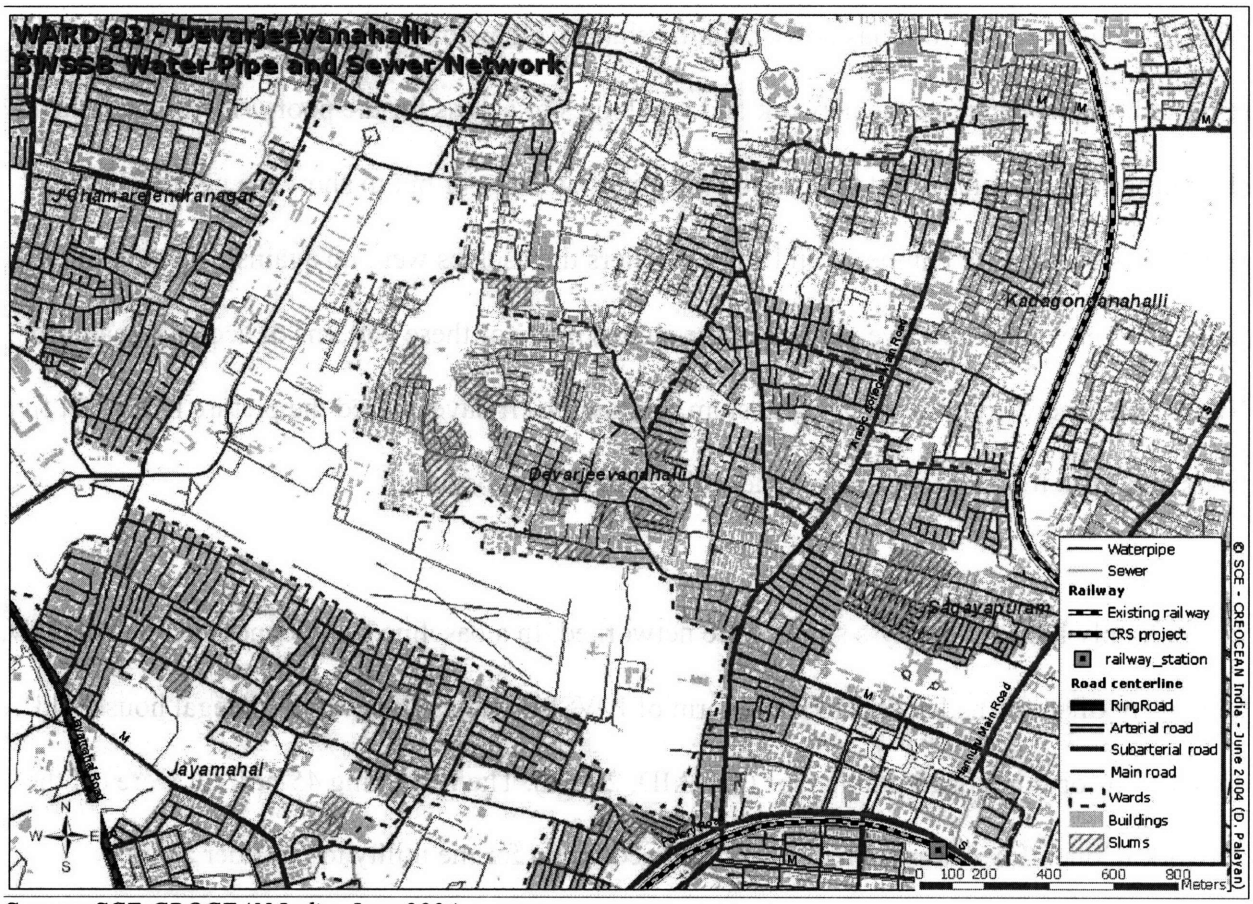
Network Access in Slums

The existing piped network has not served the slums well historically. This section briefly reviews both the extent of the network and typologies of access for the poor *prior* to the utility's slum program. The aim is not to describe the plight of the poor but to show the particular constraints both utility engineers and slum dwellers themselves were up against. As the program ultimately only benefited five percent of the slums, many of these patterns of access remain true. Nonetheless, new investments and the slum program itself have altered the picture in the last five years and I use the past tense here to describe access patterns of old.

In 2000, only half of the city's slums were networked. In a baseline study conducted by AusAID, 55 percent of slums had access to some form of BWSSB water, either through legal household connections or sanctioned public taps (AusAID, 2001a). The remaining 45 percent were off the network in one of two ways. First, it was quite common for the utility to consider an area covered even if distribution pipes had not been laid in any slums. Maps based on pipe data

provided by the utility show quite clearly how large slums could go un-served in the middle of otherwise covered areas (see Figure 2.4). These "pockets" of slums had no tertiary network of their own even if distribution mains were close by. Second, some slums were located in parts of the city which had no distribution network at all. In 1995, the city's boundaries had been extended bringing the total number of wards from 73 to 100. Most of the newly added wards were minimally if at all connected to the network. As a result, slum dwellers living in the center of the city were much more likely to have access to BWSSB water than those living on the periphery.

Figure 2.4: Map of DJ Halli Slum Surrounded by BWSSB Network



Source: SCE-CROCEAN India, June 2004.

Yet where there were pipes, there was water. For slums living in the vicinity of BWWSB pipes, this water came primarily from illegal household connections and nearby public taps. While a fraction of slum households with money and land title had legal connections of their own, the vast majority of household connections in slums were illegal. Utility staff estimate that in 2000 there were anywhere from 20,000 to 30,000 illegal connections, though not all in slums. But most slum households with access to BWSSB water were served through public taps of varying proximity to individual homes. A detailed study by AusAID concluded that in 2000, there were over 18,000 functional public taps in the city, of which nearly a quarter were in slums (AusAID, 2000b). Roughly 15,000 of these taps were standpipes fed by the utility's own Cauvery River water, with the remainder in the form of handpumps and borewells fed by groundwater. More than half of the taps that supplied BWSSB water were illegal (TARU, 1998).

This system was not altogether "bad." A reliance on public taps had both advantages and disadvantages. On the one hand, public taps had all the features of unreliable supply, namely intermittent provision, irregular pressure, and unpredictable service including sudden breakdowns (Zerah, 2000). Private investment by slum dwellers in storage vessels and associated coping costs could sometimes be more than the cost of an individual connection, and the ratio of users to public taps was high ranging from 10 to 70 households per tap.[25] On the other hand, subsidies through public taps were comparatively well targeted. Since most tap users were poor, as much as 60 to 80 percent of subsidy resources channeled through this route actually reached the poor (Komives et al, 2005). In contrast, subsidies channeled through the domestic tariff structure for legal connections reached only the middle and upper classes.

[25] The Indian norm for supply to slum households is 50 users per tap and 40 liters per capita per day (lpcd) minimum supply. While Bangalore's slums fall within the norms for lpcd and just within the norms for households per tap, it is generally acknowledged that the Indian norm should be higher in urban areas than it presently is.

Slum dwellers without any access to BWSSB water used groundwater pumped through hand pumps and mechanized borewells, sometimes connected to mini water supply schemes. They also used water sold by private tankers or street vendors. Vended water markets were particularly strong in the more arid parts of the city, like the northern zone, where groundwater levels had been seriously depleted and where borewells had sunk as low as 300 feet.[26] But both groundwater and vended water were costly. While groundwater itself was free, maintaining borewells was not and the price per liter of vended water was significantly higher than the price charged by the utility.

For their part, utility engineers had few incentives to ameliorate supply prior to the BWSSB's slum program. Slums were simply not seen as the agency's problem. This was due, in part, to a lack of funds and directives from the agencies ostensibly in charge of slums (see Section 2.3). But the utility's complacency was also due to an organizational culture premised on the professional ambitions of engineers reluctant to work on technically simple and socially complex tasks. Moreover, the BWSSB's Act makes no mention of any service obligations to slums, except through indirect references to the problem of illegal tapping of lines.

To compound the problem on the supply-side, slum dwellers had few incentives to connect through legal channels. First, the administrative procedures were complex. Engineers could only legally approve new connections upon receipt of a complete application including a sanctioned house plan, a property tax receipt, a road cutting charge receipt, and a plan of the proposed house pipes in relation to the BWSSB's own distribution lines. Not surprisingly, few slum dwellers

[26] See article by C. Manjunath, "In hi-tech Bangalore, taps run dry" in Tehelka, May 22nd, 2004.

were able to meet such requirements. Of all the slums in the city, only 53 had formal tenure and very few of these actually paid property tax (Sudhan, 2005). Given this obstacle, very few slums approached the agency directly for new connections.

Second, utility water was relatively expensive. The old tariff structure with its minimum charge did not target the poor well and was a huge disincentive for low-income residents contemplating a new connection. Prior to the start of the slum program, this minimum charge amounted to Rs.115 ($2.50) per month for 15,000 liters of water. But most slum dwellers consumed far less than 15 kiloliters per household per month. As a result, the cost recovery rate for low-volume consumers, was actually higher than that for high-volume consumers from wealthier classes.[27] Given this regressive effect, the average slum dweller living near the network was some times better off financially using a combination of free tap water and a small volume of vended water, even though the per liter cost of vended water was admittedly high.

Given these limited incentives for slum dwellers to connect and negligible obligations on the part of the utility, the quality of communication between utility staff and slum dwellers was not good. Indeed, prior to reform, the scope for direct interaction between slum dwellers and BWSSB staff was truly minimal (AusAID, 2000b). Slum dwellers who were legally connected were much less likely than middle-class citizens to approach the utility directly with their complaints. They had less time, less information, and far fewer resources to know what to do about breakdowns in

[27] For example, a resident who consumed 10 kiloliters had a cost recovery rate of 45 percent whereas residents who consumed 15 kiloliters covered only 30 percent of their costs. This is because both paid the minimum charge. Of course for poor households who shared a connection the opposite was true. Their joint consumption pushed them into higher volume slabs in the increasing block tariff structure, thereby raising the price per kiloliter of water but actually reducing their cost recovery rates (AusAID, 2002a). For a more detailed analysis of the incidence of the water subsidy in Bangalore see WSP (2003) and Komives et al (2005).

supply—even for legal public taps. For those who did interact with the BWSSB, the experience was less than satisfactory. A 1995 study shows that only 33 percent of slum dwellers who had a problem were satisfied with the utility's response (Paul, 1995). Moreover, the study reveals that the payment of bribes or "speed money" was particularly high in Bangalore. For example, every third slum dweller who took a problem to a public agency paid speed money in comparison to only one in 17 in the city of Pune in the neighboring state of Maharashtra. In this context of limited access to both networks and staff, slum dwellers were left to fend for themselves or seek the support of local political leaders.

2.3 Paani et Circenses

Meaning in Metaphor

A Roman phrase offers an apt metaphor for the politics of water provision in India. In the first century A.D., the satirist Juvenal coined the phrase *"panem et circenses"* or "bread and circuses" to describe the method by which Roman emperors exerted control over the populace.[28] Specifically, the phrase referred to the provision of unlimited free wheat and costly circus games to the exclusion of other important things like public works or human rights. Juvenal deduced that such provision was in essence a political strategy to make the people forget more important matters and focus on feasting and revelry instead.

Although such a metaphor can only go so far, there are interesting parallels in India where the state delivers water of low cost and low quality and produces a carnival of political activity at

[28] Good descriptions of the origins and meaning of "panem et circenses" can be found online at: http://en.wikipedia.org/wiki/Panem_et_circenses and http://www.capitolium.org/eng/imperatori/circenses.htm.

each election cycle.[29] *"Paani"* is the Hindi word for water which, in the absence of utility provision for the urban poor, tends to be delivered in small doses by patrons and politicians in return for allegiance and votes. Free public taps of exceedingly low quality produce just enough water to quell any potential unrest. Any extra taps are usually delivered on the eve of an election as a means of political suasion. Moreover, political promises for any real improvements in water supply lack credibility among voters. In India, electoral competition revolves around distributing resources as private transfers (e.g. interest free loans or subsidies on commodities) rather than as shared public goods (e.g. reliable water systems or public transport) (Keefer and Khemani, 2004). Though democracy is not at all a charade, elections overwhelmingly produce private gains for voters at the expense of public works. Slum dwellers themselves frequently mock the cash handouts doled out during election campaigns in an atmosphere which can have circus undertones.

But the metaphor of *"panem et circenses"* is particularly compelling for two reasons. First, despite the rhetoric of free bread, the system of free or heavily subsidized grain distribution in Rome was actually limited to a minority of citizens who were not necessarily poor and it was probably never enough to feed a family. The same can be said of water distribution in Bangalore. In both cases, rhetoric comes up trumps. It is more important for the state to be *seen* as a provider of free or subsidized basic services, even if the services are of low quantity and the subsidies are badly targeted. Second, though circus games in Rome were used to keep the population peaceful, they also presented opportunities for citizens to voice themselves. While elections are popularly conceived as serving this purpose, scholars have missed the extent to

[29] The Latin phrase has some derogatory meaning and I do not mean to imply through the use of this metaphor that water and elections in India are at all frivolous, or that citizens in their pursuit of such activities are somehow shallow or decadent.

which the process of water provision itself provides a forum for the poor to express their voice. This dissertation builds on these angles of the metaphor, and the following sections elaborate how "water and circuses" have traditionally played out in Bangalore in order to illustrate the complexity of the task subsequently given to the utility's street-level bureaucrats.

The Scale of Slums

Like all cities in India, Bangalore is home to many people living below the poverty line and in areas known as "slums."[30] A baseline survey conducted by AusAID shows that 37 percent of the city's population is income poor (AusAID, 2002b). This means that 1.5 million people out of the 4.3 million living in the jurisdiction of the Bangalore City Corporation (BCC) are poor. Yet less than half of the urban poor live in areas officially classified as slums. The rest live as household staff in middle class homes, on the streets, or in small unrecognized clusters of poverty scattered throughout the city. Though equally in need of basic services, these segments of the urban poor tend to be excluded from donor and government projects that target physical manifestations of poverty. The slum program at the BWSSB is no exception to this tendency. As a result, this chapter focuses on poverty in slums, to the exclusion of poverty elsewhere in the city.

The exact proportion of the population living in slums depends on who you ask. Part of the problem in presenting the scale of slums is the sheer inconsistency of the data. Figures vary

[30] In India, "slums" are defined under Section 3 of the Slum Areas (Improvement and Clearance) Act of 1956 as areas where buildings are unfit for human habitation or where there is "...dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals."

wildly both across and within agencies (see Table 2.2).[31] For example, the most recent Census of India concludes that within the City Corporation there are 733 "slum enumeration blocks," home to 345,200 people or 8 percent of the population.[32] In contrast, the Karnataka Slum Clearance Board maintains there are fewer slums but with more people. Projecting population growth rate from a 1999 survey, the agency has officially identified 367 slums with a resident population of 591,700 people or 14 percent of the population. To compound such discrepancy, the Slum Board's own records vary. This is due in part to sloppy bookkeeping and in part to frequent changes as new slums are identified and old slums are resettled. Outside of government, NGOs consistently estimate a share closer to 20 percent, though this widely cited figure may better characterize the situation in metro Bangalore than in the city center.[33] For the sake of simplicity, this dissertation rounds the figures provided by the Slum Board, the official agency in charge of slums throughout the state. I assume that about 600,000 people, roughly 15 percent of the population, live in slums inside the City Corporation. Although the problem of slums, let alone of urban poverty, is perhaps more overwhelming than such numbers suggest, the utility itself used the Slum Board's records and engineers only ever worked in identified slums.

[31] How each city chooses to classify its own slums depends on the agencies designated to look after them and to collect data. Usually more than one agency does so resulting in different survey methods and results. Figures are frequently inconsistent and should be taken as approximations rather than at face value.

[32] In 2001, for the first time, the Census of India developed slum enumeration blocks for towns with a population greater than 50,000. These blocks are measured with the proviso that they must not cut across ward boundaries or non-slum areas. The Census defines slums as: (1) all areas notified as "slum" under any local or state act, (2) all areas recognized as "slum" by state or local government but not notified as such, and (3) a compact area of at least 300 people with poorly built tenements and without adequate infrastructure as determined by the Census Charge Officer.

[33] Bangalore faces the additional hurdle of jurisdictional confusion. Many reports use the data loosely, and frequently confuse the City Corporation area with greater metro Bangalore. The population of metro Bangalore, including the eight surrounding municipalities (CMCs), is 6.4 million with over 1 million slum dwellers. The best study on slums in Bangalore is by Schenk (2001), but it does not present data for the Corporation area alone.

Table 2.2: Slum Population in Bangalore City Corporation

Source	No. of Slums	No. Slum Dwellers	% of Population
Census of India (2001)	733	345,200	8 %
Slum Board (2004)	367	591,709	14 %
Author's Rounding	n/a	600,000	15%

Source: Data from Karnataka Slum Clearance Board, 2004 and Census of India, 2001.

Aside from their shared poverty, slum dwellers vary enormously as people. Slums are inhabited by a mix of migrants and the Bangalore-born. Migrants come to the city from rural areas of Karnataka as well as from the neighboring states of Andhra Pradesh, Tamil Nadu and Kerala. Slums mirror these migration patterns, and house many linguistic, professional, religious, and caste groups. According to Census data, 41 percent of slum dwellers are employed as workers while 59 percent do not work, though these figures most certainly reflect a common tendency to under-report employment in the informal sector.[34] Most of those employed are low-status workers, such as tailors, sweepers, cleaners, construction workers and unskilled manual laborers. Many women work from home sewing piece work and rolling *"agarbathi"* or incense sticks. The average monthly income of a slum household is Rs.3,300 (about US $70) per month (AusAID, 2001a). The gender split across slums is fairly even and the average household size is 5.2 persons. Bangalore's slum dwellers do not usually segregate by religion at the slum level, though street clustering along religious or linguistic lines is common. Tamil and Kannada are the dominant languages in slums but Urdu and Telugu are also widely spoken.[35]

[34] See Census of India (2001), Report on Karnataka, Chapter 3 "Slums in Karnataka," Table 3.2, p.569.
[35] Kannada is the indigenous language of the state of Karnataka, while Tamil is the language of its large southern neighbor Tamil Nadu. However, many Tamilian slum dwellers were born and bred in Bangalore—the fact that they speak Tamil is more an indication of their ethnic origin rather than of their migrant status. Telugu is the language of Andhra Pradesh, while Urdu is spoken by the state's many Muslims.

The majority of Bangalore's slum dwellers come from the lower ranks of India's entrenched caste system.[36] Members of the lowest castes, the so-called "scheduled castes" or "Dalits," are entitled to certain benefits and quotas in public service, such as dedicated seats in city council or the occasional free meter connection to a network service. In a study on slums, it is important to understand that although in theory everyone has the same rights and duties under the Indian Constitution, and scheduled castes have been singled out for affirmative action, in practice social backwardness and lack of access to basic services keep the Dalits in poverty. Though Bangalore's slums are a product of modern urbanization, entrenched poverty among Dalits has been a historical and accepted pattern for over 3,000 years.[37] This explains at least some of the seeming complacency with which extreme poverty is regarded by bureaucrats as well as some of the hesitancy with which slum dwellers approach officials.

Physically, slums are as varied as their inhabitants. Some are quite new, but about 50 percent of the city's slums are at least 30 years old and less than a quarter have emerged since the 1980s (Schenk, 2001). The oldest slums tend to be located in the central and eastern parts of the city where old Bangalore first developed. Most slums are small to medium-sized pockets of poverty ranging from less than a hundred to a few thousand inhabitants. More than 40 percent of Bangalore's slums have fewer than 1,000 inhabitants. A few very big slums skew the overall

[36] The four main castes of the Hindu caste system are first, at the top, the Brahmins, the priests and arbiters of what is right and wrong; the Kshatriyas, the soldiers and administrators; the Vaisyas, the artisans and commercial class; and finally the Sudras, the farmers and peasant class. Beneath these four is a fifth group of people considered too lowly to even have a caste. These are the untouchables or the "Dalits," also known as the "scheduled castes" because of the special mention they are accorded in the Constitution. A separate group of indigenous tribes constitutes the "scheduled tribes" or "Adivasis," though they figure more prominently in rural politics than in city slums. A quarter of the Indian population is Dalit or Adivasi. Dalits perform the most menial jobs, and are considered polluting. India's Muslim and Christian populations do not abide by the caste system. See http://www.dalitnetwork.org/.

[37] Although most Indians no longer abide by the hierarchy of occupations traditionally associated with each caste, the vast majority still adhere to the spirit of the caste system in both family and professional life, as well as the entrenched inequality it entails. Indeed, both caste and ethnic conflicts have intensified under modernization as groups compete for political and economic gain (Weiner, 1978 and 1991).

average size to approximately 1,500 inhabitants, but the predominant pattern is one of smaller slums in comparison to the large swathes of extreme poverty that cut across the mega cities of Mumbai, Delhi and Calcutta. Slums on the periphery of the city tend to be larger in size than the smaller pockets in the city center. Surprisingly, they also tend to be more densely populated than their inner city counterparts, perhaps as a result of increased pressure for land as Bangalore developed over time. As the utility's slum program targeted slums in the heart of the city, it is important to remember that, on average, these slums were smaller and less densely populated than other potential slums.

By number, slums are relatively evenly distributed across the city and consequently across the utility's Maintenance divisions as well (see Table 2.3). However, the utility's North, West, and South divisions have much greater slum populations than the older central core and the affluent eastern district. This corresponds to the fact that, on average, slums are larger and more densely populated in the more recently developed periphery.

Table 2.3: Distribution of Slums across BWSSB Maintenance Divisions

Division	No. of Slums	No. of Households	Slum Density (Households)	Population	Slum Density (Population)
Central	43	8,988	209	45,457	1,057
East	58	11,402	197	65,177	1,124
West	79	30,720	389	196,218	2,484
North	80	18,187	227	104,022	1,300
South	101	32,703	324	180,126	1,783
Total	**361**	**102,000**	**282**	**591,000**	**1,637**

Source: Adapted from AusAID Project Proposal Extension of Services to the Poor, July 2002.

Competition and Collusion

The inconsistencies and vagaries of slum data are but symptoms of a deeper problem, namely that of competition and collusion among agencies and elected officials in Bangalore. This problem stems primarily from two sources. First, not all slums are created equal. Legally, "declared" slums enjoy certain benefits while "undeclared" slums are relegated to a sort of purgatory somewhere in between the formal and informal sectors. Second, there are many agencies in charge of slums. This overlapping structure of government creates friction and competition between agencies as well as opportunities to shirk responsibility for the provision of water. This section elaborates these features of competition and collusion in Bangalore.

The fractured division of public responsibility for slums is exemplified by the fact that opportunities for service improvement differ depending on whether slums are legally "declared" or not. Slum "declaration" is a Byzantine mechanism to formalize the status of slums. Through it, the Karnataka Slum Clearance Board (the "Slum Board") classifies slums according to certain grades specified in the agency's governing Act.[38] Various classifications mark a slum as either eligible for basic facilities, liable for clearance, or designated for redevelopment.[39] Out of the 367 slums identified by the Slum Board in 2004, only 209 have been formally declared (see Table 2.4). The remaining slums have been merely "identified," which means they are in the agency's database but are not eligible for any improvement works. In addition, there are slums which have not even been identified and which remain altogether off the books.

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[38] The Slum Board was established under the Karnataka Slum Areas (Improvement and Clearance) Act in 1973 and commenced operations in July 1975.

[39] The grades of declaration are as follows: grade "3" is the first step for preliminary declaration and means the slum is eligible for basic facilities; "11" means the Slum Board has designated the slum for clearance; and "17" means the Slum Board can acquire the land and redevelop the sit for the existing slum dwellers. Each of these classifications can be marked as "P" for preliminary or "F" for final.

Table 2.4: Declared Slums in Bangalore by Assembly Constituency

National Parliament Constituency	State Assembly Constituency	No. Slums	No. Declared	% Declared
Bangalore South	1. Gandhinagar	17	12	71%
	2. Chickpete	8	6	75%
	3. Chamarajpet	30	20	67%
	4. Binnypete	19	14	74%
	5. Jayanagar	48	24	50%
	6. Rajajinagar	19	7	37%
	7. Basavanagudi	10	7	70%
	8. Malleswaram	25	22	88%
	Total	**176**	**112**	**64%**
Bangalore North	9. Shivajinagar	6	1	17%
	10. Yelahanka	21	12	57%
	11. Varthur	33	21	64%
	12. Jayamahal	21	15	71%
	13. Bharthinagar	24	18	75%
	14. Shanthinagar	18	5	28%
	Total	**123**	**72**	**59%**
Kanakpura	15. Uttarahalli	68	25	37%
	Total	**68**	**25**	**37%**
Totals		**367**	**209**	**60%**

Source: Data from Karnataka Slum Clearance Board, 2004.

The process of slum declaration is extremely bureaucratic, rife with corruption, and completely disconnected from both the needs of slum dwellers and the realities on the ground. It is also alarmingly ambiguous. On the one hand, declared status is coveted by slum dwellers because declared slums are entitled to certain benefits, including potential land rights. On the other hand, it is feared because certain grades of declaration can actually result in eviction as opposed to an improvement in security of tenure. Regardless of these problems, declared status should not be taken as representative of the level of infrastructure and housing in a given slum. The declaration process can take decades and lags far behind actual development over time. In practice, undeclared slums may receive just as much attention as their declared counterparts if powerful political influence is exerted in their favor. Likewise, relatively well-off areas may be labeled as

slums whereas truly depressed and dilapidated areas may never even be identified for lack of political lobbying (Naidu, 1990). Nonetheless, slums are classified in this manner and in a state which has taken a predominantly legal approach to slum improvement, declaration status does matter in the courts.

A second feature of competition and collusion is that there are many government agencies in charge of slums. While water supply is formally in the domain of the water utility, slums are formally in the domain of several agencies including the Karnataka Slum Clearance Board (KSCB), the Bangalore City Corporation (BCC), and the Bangalore Development Authority (BDA), all of whom own land on which slums are located. Responsibility for the task of delivering water *to* slums is therefore blurred. Because so many actors are involved, slums have tended to fall through the cracks in this delivery model as accountability is eagerly passed around. As the judgment in a recent public interest litigation case concluded "the BDA, the BCC, and the KSCB [have] failed to address the [slum infrastructure] problem and instead shifted the blame on each other."[40]

Fractured ownership of slum land is the basic reason for overlapping responsibility in government. Table 2.5 lays out the ownership pattern of Bangalore's slums as a whole. Citywide, nearly half of all slums are located on private land owned either by a few wealthy residents or by an absentee landlord. The Slum Board ostensibly looks after all slums on private land, while the City Corporation and the Bangalore Development Authority manage the slums situated on their land. This is why slums are often referred to as "BDA slums" or "Corporation slums." The

[40] The ruling on the Public Interest Litigation (PIL) for JP Nagar Slum was issued by the Karnataka High Court in September 2003. See Deccan Herald, News Page, Sept 3rd, 2003.

remaining slums are situated on land owned by various branches of government including Defense and Railways. However, as a quick history of land ownership in my sample shows, it is common for a slum to have had multiple owners and responsible agencies in the course of its development (see Table 2.6). Today, land ownership is distributed fairly evenly across Bangalore precluding any neat geographic segmentation of the city by agency (see Figure 2.5).

Table 2.5: Land Ownership of Slums in Bangalore City Corporation

Land Ownership	Number of Slums	Percentage
Private Land	156	41%
Bangalore City Corporation	77	20%
Bangalore Development Authority	66	18%
State Government	47	12%
Other (includes Railways, Defense)	20	5%
Slum Board	2	<1%
Not Known	9	2%
Total	**377**	**100%**

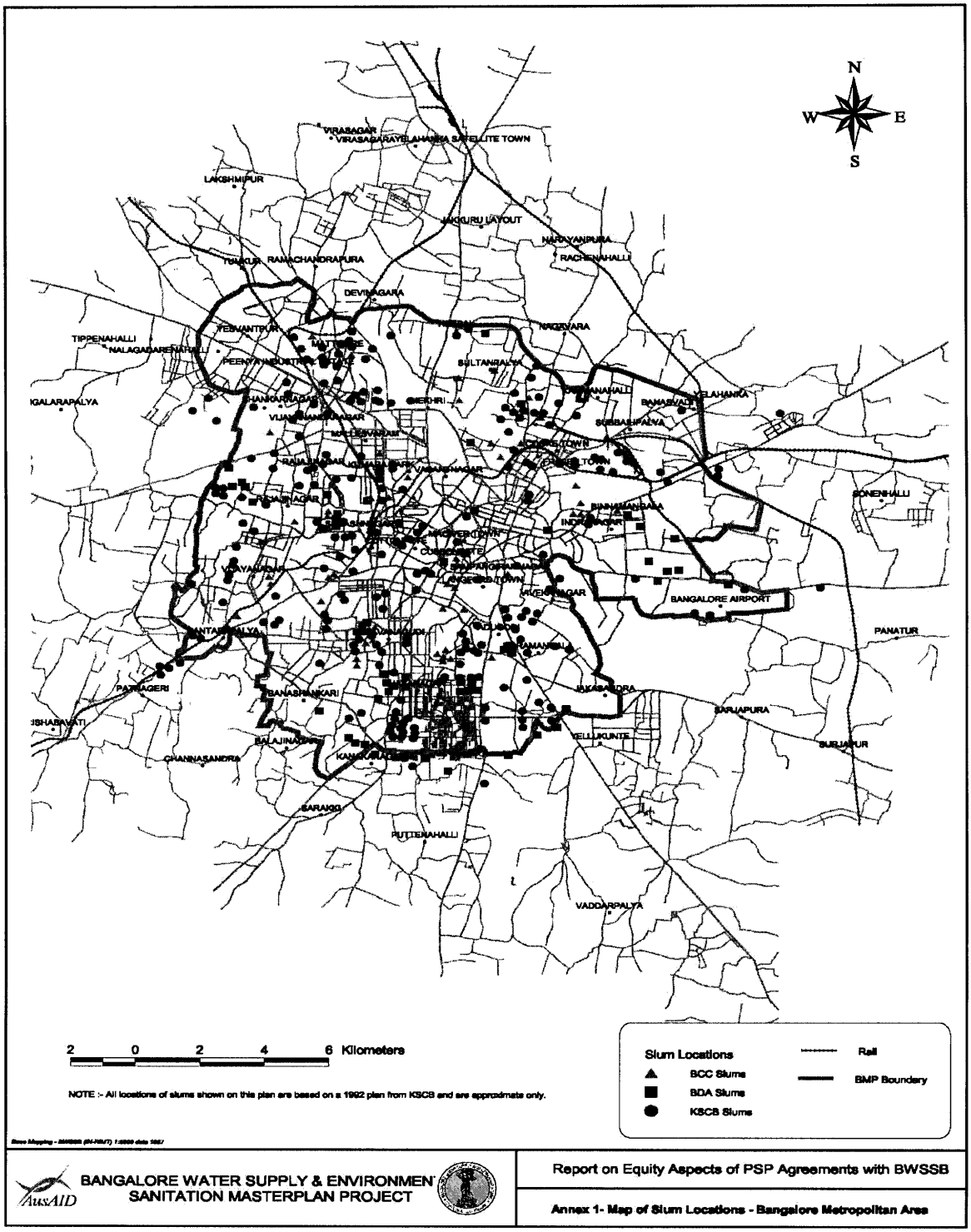
Source: Author's calculations based on data from Slum Board, 2003; numbers do not add due to rounding.

Table 2.6: Land Ownership of Slums in Focused Comparison

Name of Slum	Type of Land	Land History
1. Sudamanagar	Private	Formed in 1976 on army land; between 1980 and 1992 was under Slum Board; in 1992 land was bought by a private trust; no land titles.
2. Anandapuram	BDA	Old slum settled 80 years ago for quarry work; on army land until 1973; under Slum Board until 1983; now BDA; registered but no titles.
3. Mominpura	BCC	Formed in 1970; has always been on BCC land; BCC allotted plots but no titles.
4. Byapanahalli	BDA	BDA acquired land from a private owner in 1978; residents of 4 neighboring slums resettled here in 1980s; BDA allotted plots but no titles.
5. Gajendranagar	Slum Board	Originally BCC land; given to Slum Board in 1978; Slum Board allotted plots and built houses in 1993; residents have own titles.
6. Chamundi	BDA	Formed in 1980 on BDA land; plots resized multiple times; all were registered in 1998 but only a portion of residents have titles.

Source: Author's data.

Figure 2.5: Map of Identified Slums in Bangalore



The Slum Board is the nodal agency for slum improvement throughout the state. Though it owns less than one percent of slum land, it is responsible for all slums on private land and for coordinating slum development across the city. Its founding Act authorizes the Board to "declare" an area a slum, to execute improvement works, to recover capital and maintenance costs, to demolish buildings, to clear slums, and to acquire land for rehabilitation. Its main objectives are to clear and redevelop slums; to provide basic amenities like drinking water, street lights, roads, and drains; to build housing; to prevent unauthorized construction in slums; to identify and declare slums; and to undertake periodic surveys.[41] As a policy, the Slum Board only provides basic amenities to declared slums but in practice it will provide to undeclared slums under pressure from powerful political leaders.

The agency, however, has achieved rather little. In the last 20 years it has built only 30,000 houses across the entire state. Most of its work is concentrated in areas outside of Bangalore and work within the city is often piecemeal and reserved exclusively for families from the scheduled castes. Much like the utility, the Slum Board is staffed by engineers and frontline workers, and there are no social development experts working in the organization. The predominant organizational culture is one of counting and building, not one of understanding the social dynamics at play in slums. Moreover, the Slum Board is not a prestigious agency and sits rather low in the tacit hierarchy of bureaucratic postings. Senior-level commissioners who head the agency come and go with great frequency. For example, during my two years of fieldwork, the agency had four different commissioners. It does not have a lot of clout in the system and by its own admission has but a meager budget with which to try and tackle an enormous problem. It is

[41] See Karnataka Slum Clearance Board, Annual Report for the Year 2002-2003, p.3.

also widely perceived as particularly corrupt. As a result, it tends to attract staff more interested in cream skimming than actual work.

The Slum Board does not work well with the water utility and has generally prioritized housing over infrastructure. This has occurred for two reasons. First, although the Slum Board is also a parastatal agency, it reports to the Department of Housing, not the Department of Urban Development to which the utility reports. It is thus more aligned with housing experts than with network infrastructure professionals. Second, it is difficult to design and construct water networks unless you have access to raw water. Cauvery River water is the exclusive domain of the utility which sources the water, treats it, pumps it to the city, and then distributes it. When the Slum Board needs water for a given slum, it has to contract the BWSSB, at a significant premium, to build water networks and supply the area. The result, of course, is that such an outcome is rare. As trained engineers, Slum Board staff are understandably more enthusiastic about designing houses they can actually build than contracting out networks to another government agency.

The Bangalore City Corporation, known locally as the *Bangalore Mahanagara Palike* (BMP), has its own reasons for ignoring slums. Though it owns the land on which 20 percent of the slums are situated, it pays little attention to developing infrastructure for them. This is in part because the Corporation has no dedicated slum division of its own and manages all of the services typically associated with city government. For example, it manages storm water drains, solid waste, street lighting, sidewalks, and drain cleaning throughout the city. Maintenance work in slums for the sectors the Corporation is in charge of is carried out by its own engineers

alongside routine works for non-slum areas. Despite their dominant presence on the ground, city engineers attend to slum infrastructure only as incidental matters arise. Though money is occasionally devoted to slum improvement, this is rare and is usually at the behest of an elected ward councilor with money to spare. For example, in the 2004-2005 budget of the Engineering Department, only one slum was singled out for development. Though the Corporation flirted briefly with a slum tax, no share of the receipts was ever earmarked for slum development and it was successfully challenged in the courts in 2002.[42]

Instead, the Corporation has taken an approach that fits well with the emphasis in Indian politics on allocating resources as private transfers rather than as public goods. Every year the Corporation allocates 18 percent of its revenue account (after deducting operating costs) to activities or investments which target the poor, in particular the "scheduled castes" and "scheduled tribes."[43] But this money is almost always allocated towards income-generation and employment schemes rather than to infrastructure. In 2004-5, for example, the Social Welfare Department allocated money under the 18 percent scheme towards computer training, driver training, house construction, the purchase of tailoring machines, and economic assistance for the unemployed.[44] The Engineering Department also allocates funds under this 18 percent scheme, but these are similarly directed towards private gains at the expense of public goods. Typical activities include the distribution of asbestos sheets for housing and free connections to

[42] In 1994, the Government of Karnataka authorized the Bangalore City Corporation to collect a "slum cess" on top of all building permits issued. The idea was that the Corporation would keep 30 percent for its own use, and remit the balance to the state government. The tax was collected for ten years but no amount was ever handed over to the state government and no amount was ever budgeted for slum development in the city. It was challenged in the courts in 2002-3 and then abolished (Ramaswamy, 2003: p.2).

[43] Specifically, the Corporation uses its 18 percent funs to target the "Economically Weaker Section" which, in addition to scheduled castes and tribes, also includes other members of the so-called "backward classes."

[44] The funds allocated in 2004-2005 for these activities were Rs.5 million for computer training; Rs.8 million for driver training; Rs.24 million for house construction; Rs.30 million for tailoring machines; and Rs.60 million for economic support for the unemployed.

electricity and water networks.[45] In the mistaken belief that the access problem in slums is just about money and in the correct assumption that private transfers reward politicians at the ballot box, the Corporation distributes free meters to the poor without ever improving the networks per se. To make matters worse, corporators freely admit that the budget process is only a gimmick. As one corporator stated in 2005, "more than 50 percent of the projects in the last two budgets alone have been non-starters."[46] Year after year, such schemes have not improved the availability and quality of piped water inside slums.

The theme of competition and collusion is further illustrated by the system of identity cards for slum dwellers who depend on certain forms of identification to legitimize their status in urban life. The most important forms of identification for a slum dweller are (1) the voter card issued by the Corporation on behalf of the national Election Commission and (2) the ration card issued by the state's Department of Food and Civil Supplies. The former entitles slum dwellers to vote and the latter to the public distribution system. Both serve as a vital proof of residence. Slums dwellers living in slums under Slum Board management are also issued with Slum Board ID cards. No single identification system unites slum dwellers.

Primary responsibility for slums has wavered over the years between the Corporation and the Slum Board. When the Slum Board was founded, the idea was that upon provision of basic amenities and settlement of land disputes, it would hand over developed slums to the Corporation which would in essence normalize relations with a given slum by including it in regular maintenance schedules and collecting property tax. In practice, this rarely happened, in

[45] The funds allocated in 2004-2005 for these activities were Rs.20 million for free electricity connections, Rs.30 million for asbestos sheets, and Rs.45 million for water connections.
[46] Corporator quoted in "Only a gimmick, say corporators" in The Deccan Herald, March 27th, 2005.

part because of ongoing conflict over land and in part because the Slum Board rarely provided basic amenities for an entire slum. Instead, the BDA and the Corporation each managed their own slums while the Slum Board looked after all the rest.

To the Government of Karnataka's credit, it did try to consolidate responsibility and improve the powers of the Slum Board to act effectively. In 2000, the state attempted to create a single agency for slums. It ordered the transfer of responsibility for all slums to the Slum Board and proposed the creation of a single window cell at the agency for all housing and infrastructure issues.[47] In 2001, the Slum Act was also amended to empower the Slum Board to give land rights to slum dwellers.[48] Though the BDA promptly declared its intention to hand over its slums to the Slum Board, the Corporation has been reluctant to let go of its vote banks. Consequently, despite good intentions, a noticeable shift in primary responsibility has yet to occur.

In conclusion, the status quo in Bangalore exempts any one agency from dealing head on with the problem of how to provide network infrastructure to slums. A slum's chances of securing infrastructure have come to depend not only on where it is situated in relation to existing networks, but on who owns the land and on whether it is declared, identified, or altogether off the books. Moreover, the prevalence of multiple service providers has diffused the power of the slum dwellers to rally for attention and better services because there is no one organization to go to. This problem has been compounded by the striking lack of trained social development professionals in any of these agencies. Negotiating these structural hurdles with agency staff can

[47] This Executive Order was issued by the Government of Karnataka's Urban Development Department in 2000.
[48] The Ordinance to amend the Act was issued on November 17th 2001. In addition to empowering the Slum Board to give tenure rights to slum dwellers (i.e. by transferring sites to their name), it added the agency to list of government agencies empowered under the Public Premises Act (1974) to evict encroachers.

easily seem futile to slum dwellers. Instead, as in many countries, the channels through which the poor do lobby for better services are local democracy and patronage politics.

Local Democracy and Patronage Politics

The fragmentation of responsibility for service provision to the urban poor is both exacerbated and appeased by the dynamics of "micro" politics on the ground. This section briefly reviews these political dynamics in order to show how thick with politics the air is in slums—air that utility staff were asked to breathe.

Who are the politicians and leaders in slums? At the risk of over simplifying, power networks in slums can be broken down into three layers. Slum dwellers establish networks with: (1) community leaders such as organizers, headmen, and religious figures; (2) elected politicians such as City Councilors, Members of the State Legislative Assembly (MLAs), and Members of the National Parliament (MPs); and (3) external actors such as NGO staff, bureaucrats, and policemen. Political actors also include what Manor (2004) calls the "political fixers," the enablers of the democratic process who shuttle between localities (such as slums) and powerful figures (such as bureaucrats and politicians). In a study of Delhi's slums, Jha et al (2001) find that slum dwellers interact the most with community leaders. In their study, over 80 percent of slum households interacted with local leaders and between 16 to 23 percent interacted with elected politicians. Notably, less than 10 percent of households had any direct contact with bureaucrats.

The dynamics of micro politics on the ground affect the fragmentation of government responsibility for slums in opposing ways. In one way, political leaders and elected representatives exacerbate the problem because they benefit from such behavior. In order to secure votes or curry favor, they bestow a small number of water taps or household connections as private rewards for slum dwellers. It quite suits them to assume the mantle of best provider of service in the absence of effective agency provision. This *deus ex machina* approach to development has its perils. It can reduce slum dwellers to vote banks, glorify politicians, undermine agency accountability, and erode any sense of public duty among utility staff. Most importantly for water supply, this pattern of short-term solutions does little to improve the core problems of network infrastructure and fuels the build-neglect-rebuild cycle so common in the sector.

Indeed, across the developing world, patronage politics creates a dependency between "squatters" and "oligarchs" that is hard to break (Collier, 1976). Politicians need votes and slums ensure higher voter turnout than middle class neighborhoods. On average in India, over 60 percent of slum dwellers vote in contrast to the 30 percent from the rest of the city. As one person I interviewed put it so well, "slums are where your kingmakers lie."[49] The result is a perverse need to keep people in slums or, even worse, create new ones. Indeed, the creation of new slums was common in Bangalore during the 2004 elections. As one newspaper reported:

> *"If politicians have their way, Bangalore might well turn out to be one huge slum... [They] are trying to turn every available open space in their "domain" into a slum, the traditional vote bank. They are even supplying construction materials. What is even more disturbing is that these leaders have even threatened BMP [city council] officials who have tried to stop them."*[50]

[49] Interview with member of BATF, May 25th 2004.
[50] From "Politicians pitch for slums for pocketful of votes" in The Deccan Herald, March 10th, 2004.

But in another way, political leaders and elected representatives can be constructive for service delivery. Slum dwellers often work well with local elected officials towards positive collaboration and genuine improvements. In a socio-economic system that tends to isolate and exclude the informal sector and lower castes, democratic elections and patronage politics are essential for survival. They enable the urban poor to exert voice and penetrate the lower-levels of a bureaucracy otherwise immune to their pleas. As Dewit (2001) writes in reference to Bangalore:

> *"Political barter can be seen as 'vote banking,' but another perception of the direct exchange between a slum and a councilor or MLA in whose constituency the slum is situated could be that of direct democracy at work... The give and take relationship that develops may not be as harmful as the term 'political patronage' suggests."*[51]

The case for pro-poor politics has been particularly well developed by Benjamin (2000) and Benjamin and Bhuvaneswari (2001). In research on Bangalore, they have shown how the City Corporation is the main institutional arena for the urban poor with the 100 elected councilors playing a key role. A notable feature of urban politics in this city is that the socio-economic distance between local politicians, lower-level bureaucrats, and slum dwellers is not so great. In part because of a caste and gender quota system among city councilors and in part because of the low status of the city council in a highly centralized state, the Corporation is dominated by the poor and lower middle classes—not the middle and upper classes more closely aligned with state government and elite IAS bureaucrats. Though the poorest of the poor tend not to hold office themselves, extensive social and ethnic connections bind them to city politicians and street-level bureaucrats in ways that help them obtain basic services. What Benjamin and Bhuvaneswari

[51] Dewit (1996), p.109.

describe is a kind of "porous bureaucracy"—one that allows the poor to subvert formal planning processes by demanding and receiving services from the lower-echelons of power.

Meanwhile, competition between politicians actually benefits slum dwellers. In India, this competition comes in two shades. First, politicians vie for influence along traditional party lines. In Karnataka, there are three main political parties: the Congress Party, the Bharatiya Janata Party, and the Janata Dal (Secular), all of which are active in Bangalore's slums. Competition between these parties for votes frequently results in absurd outcomes. For example, in the run-up to an election, a party will order its workers to dig a well adjacent to a well dug by a different political party.[52] Second, politicians compete with their colleagues elected to different tiers of representation. Each slum neighborhood belongs to a city ward which elects a Municipal Councilor, a state assembly constituency which elects an MLA, and a national district which elects an MP. Each of these elected officers is entitled to significant discretionary funds to spend in their constituencies. For example, an MP is entitled to Rs.20 million (nearly $500,000) per year. Although such schemes have been criticized as contrary to the spirit of the constitution, they create free alternatives to the services government agencies would otherwise provide at a cost.[53] In this way, political competition with both public sector agencies and other elected leaders enables slum dwellers to play these options off against each other in the hopes of securing the best deal (Davis, 2004).

[52] For example, see "Water politics digs different theme" in The Deccan Herald, April 7th 2004.
[53] For a good critique see Gopakumar et al (1998).

Community Associations and NGOs

In addition to bureaucrats and elected officials, community associations and NGOs are also a fixture of slum life. These organizations fulfil a range of functions from arranging service provision themselves to exerting pressure on government agencies and politicians for a variety of causes. Bangalore has a long history of community mobilization in slums and there are many active grassroots organizations in the city. In particular, an active federation of slum dwellers, Karnataka Kolageri Nivasigala Samyukta Sanghatane (KKNSS), has lobbied hard for slum dwellers' housing and land rights, with some success in the courts.

Yet the record on the effectiveness of these grassroots organizations in the water sector has been limited. First, community associations are not that widespread. In a survey conducted by a local NGO of over 300 community leaders in Bangalore, only a slim majority belonged to associations, Dalit societies, or trade unions (CIVIC Bangalore and Jana Sahayog, 2004). Nearly 49 percent of slum leaders said they had no affiliation with any association whatsoever, confirming an observed preference among slum leaders for party politics over community associations as their main lobbying channel. Although women's self-help groups have been widely promoted in Karnataka and have been particularly effective at mobilizing savings and credit societies, they have not addressed the water problem.[54] Second, most NGOs in Bangalore focus predominantly on health, education, and microfinance. Given the characteristics of network infrastructure and the difficulty in finding substitutes, very few NGOs have looked to address the problems of basic water supply. Though NGOs are a fixture of slum life in

[54] See for example speech by Chief Minister SM Krishna on February 5th 2004, outlining the State Budget 2004-2005, Sun Publishing House, Sections 36 to 43.

Bangalore, they have not been prominent actors in the delivery of piped water supply to the urban poor.

2.4 Conclusion

This chapter described the state of the water utility and of slums prior to reform. It explained how engineers of all ranks operated in an environment of scarce resources which deeply affected utility practice. Much like the literature tells us, there was neither a lot of water nor a lot of cash to spare, and the BWSSB had all the trappings of a typical public sector utility stuck in a low-level equilibrium trap. The agency was also extremely hierarchical with a strong engineering culture and a professional quest for technical tasks. What differentiated the BWSSB from other city agencies, however, was its allegiance to the state government and the relative discretion of service station engineers. Beholden to the state Government of Karnataka rather than the city of Bangalore, the parastatal was both unusually insulated from the demands of local residents, including slum dwellers, and unusually loose in its definition of the service station job. In combination with an engineering bent and the absence of any legal obligation to serve the poor, this meant that prior to the utility's connection drive, staff had practically no experience in slums. Maintenance engineers supplied the city's public taps with treated water but hardly ever interacted with slum dwellers themselves.

Instead, slum dwellers relied on a complex web of local democracy and patronage politics to supply them with the public taps, illegal connections, and borewells needed to survive. Although the relationship between slum dwellers and politicians was not always bad, the absence of any

visionary planning or formal utility supply in Bangalore left residents either to fend for themselves or to work through their elected representatives to receive basic services. This is interesting because despite all these typical problems of political expediency, competition for scarce resources, and lack of property rights, we know that the utility later performed well in at least some slums. This raises the question of whether any of these problems to which utility disinterest is so commonly attributed actually changed during the slum program, or whether in fact positive outcomes emerged because of changes in something else.

CHAPTER 3:
Pressures and Precedents

3.1 Introduction

Before turning to the comparative study and the role of street-level bureaucrats, it is important to establish some final elements of context. This chapter explains why the utility commenced operations in slums. It focuses on why the decision to connect the city's poor was initially made in what could conventionally be called a supply-side initiative. After decades of indifference, why did the utility change its attitude towards slums? The answer to this question is essential background material for the subsequent analysis of how reform was unfurled within the agency with different results. We cannot explain why outcomes varied without understanding first how reform reached the utility and in what guise.

Organizations sit squarely in environments. Though they assume rational functions of their own, they depend greatly on their surrounding environments for support and legitimacy (Scott, 1998). No organization is so irrationally isolated from the outside world that it ceases interchange with it. For public sector organizations, the dependence on the wider political environment is particularly stark. Though such organizations are usually not directly accountable to the people they were created to serve, they are highly dependent on politicians, as well as on lobbying groups and whichever styles of government such groups happen to favor. Because public sector organizations are so deeply embedded, they must learn to adapt to outside change. Their very survival depends on successful mastery of what Argyris and Schon (1996) call the "learning imperative," the need to adapt to changing environments, to anticipate and respond to impending threats, to conduct experiments, and to build images of the future.

Bangalore's water utility mastered the learning imperative in just this way. It responded to a changing environment in order to survive, embracing innovation as a means towards this end. This chapter chronicles the new pressures and precedents which bore down on the utility propelling it to address the complex task of supplying water to slums for the first time. The first section paints a backdrop of contemporary Indian political economy and explores the shake-up in urban governance in Bangalore. It shows how city agencies were increasingly subject to new calls for public sector reform, in particular to address a looming infrastructure crisis. The second section goes beyond the general to a series of specific events which prompted the utility's own slum initiative. It examines what these triggers were and how they jolted the agency out of its longstanding complacency towards the poor. With this as final context, the remaining chapters explain the contrasting outcomes by showing how the program was designed and how it percolated down through the utility in different ways.

3.2 A City in Transition

"India Shining"

In the run-up to national elections in May 2004, the reigning political party, the Bharatiya Janata Party (BJP), launched a massive advertising campaign to promote its economic success. In print and television ads diffused across the country, Indians were portrayed as proud and industrious workers striving to build a new country. Images of modern industry, technological hubs, and prosperous farmers were flashed across the screens and in newspapers under the slogan of "India Shining." The ad rankled many critics who saw in the campaign both blatant political

opportunism as well as a tactless snub of large segments of society who were, in fact, not doing very well. Certainly, the BJP could hardly take sole credit for the effects of more than a decade of successful liberalization policies, many of which had been put into effect under the leadership of the BJP's archrival, the Congress Party. And, certainly, rural farmers and other subsets of India's poor were experiencing a growing wealth gap as the urban middle classes reaped the benefits of globalization and economic growth (Das, 2002). But the campaign and its slogan captured the essence of very real changes happening in Indian society—changes perhaps most obviously manifest in the city of Bangalore.

Bangalore has undergone an extraordinary transformation since the mid 1990s from a serene if industrious city into a global technology center dubbed the "Silicon Valley of India." For years, Bangalore was better known as a leafy city home to a large percentage of the Indian armed forces and the related defense industry. Today, the city is also home to large multinational corporations like Microsoft, Intel, SAP, and Oracle. Hugely successful Indian entrepreneurs in the IT and biotech sectors grew their small start-ups into global players—companies like Infosys, Wipro, and Biocon—using Bangalore as their base. Infosys alone employs over 40,000 people in India, a third of them in Bangalore. Citing a study by *Wired* magazine, the 2001 Human Development Report ranked the city as one of the top hubs for technological innovation in the world (UNDP, 2001). Moreover, the city hosts thousands of small and medium sized firms ranging in function from back office business processing to software development on the cutting edge of technological innovation. The media estimates that on average eight new IT companies are registered in Bangalore every week.

The rise of Bangalore to global preeminence is strongly correlated with the rise to power of SM Krishna, Chief Minister of the State of Karnataka from 1999 to 2004. Of course, a city's success cannot be attributed to a single administration and the recent surge in economic activity in Bangalore is not the first time the city has experienced growth. Thanks to steady public sector investment in technology and defense, the city more than doubled its population between 1951 and 1971, almost doubling again in the subsequent decade to emerge as early as the 1980s as one of India's six largest urban regions. The policies put in place in these years undoubtedly set the stage for the city's subsequent boom, ripening both firms and workers for the technological taking (Heitzman, 2004). But SM Krishna had a qualitatively new kind of quest to put the city on the global map. Under his leadership, the state carefully lured high-tech firms putting in place a range of incentives to reduce the barriers to doing business in India. Though his administration did not ignore rural Karnataka, SM Krishna's greatest legacy was the complete transformation of Bangalore. The result was a popular association of the Krishna administration with urban bias and with neglect of the lower-classes—an association which ultimately proved fatal politically in the 2004 elections. But while he reigned, SM Krishna joined in the national pursuit of economic growth and trade liberalization which had triumphed in New Delhi since the early 1990s. More than anything, he gave the country a platform on which to showcase the new "India Shining."

Bangalore's Achilles' Heel

The physical consequences of Bangalore's rapid economic growth have been unforgiving. The city's population has increased dramatically both in absolute number and in socio-economic diversity. Real estate prices have skyrocketed as housing supply races to meet demand. As the

city's footprint expands, farmers are being displaced by industrial zones and luxury private housing in a fashion which exacerbates income and social inequalities. Pressure on natural resources has intensified as has demand for already scarce resources, not least water collected from a distant river source. Rapid growth has taken its toll, and many of the negative effects of urbanization—congestion, pollution, and loss of open space—are being felt acutely by residents and officials alike. Power shortages are a way of life; water is supplied every other day for a few hours; raw sewage flows through open drains, most of it untreated; roads are full of holes and gridlock traffic is habitual during rush hour. As in one common refrain, "Bangalore is a mess."[1]

By 2000, the problem of bad infrastructure came to dominate the local press and political discourse, with cries for reform escalating both in pitch and in frequency in subsequent years. This happened for several reasons. First, crumbling assets are particularly egregious in a city with vast economic potential. While SM Krishna was successfully luring new companies, the city's municipal infrastructure was threatening to drive them away. As one journalist put it, "to a person who visited Bangalore 20 years ago, it appears that town planners went into a slumber just when the sleepy town was waking up to become an important city in global business."[2] It is difficult to do business in a city that is a "mess" and firms have long been forced to bear high coping costs. The largest companies have resorted to a gated-community approach to their own development, building closed urban spaces in which to conduct operations. They draw their own water, treat their own waste, and transport their own employees. The cost of doing business in this way is high, and the reality of infrastructure as the city's Achilles' heel hit home in the early

[1] "The Future of Indian Cities is Here" in Business Today, Aug 17th 2003.
[2] "Electronic City in India bursting at the seams" in International Herald Tribune, Jan 21st 2005.

2000s when companies began threatening to leave and did indeed begin developing IT campuses and building manufacturing plants elsewhere.

Second, the very idea of an asset in disrepair lends itself to apportionment of blame. Naturally, this suits political temperaments quite well. The problem of bad infrastructure dominated press coverage and city politics because it made for great political fodder. In Bangalore, camps formed along natural political fault lines: party versus party, city versus state, urban versus rural. Political infighting over the state of urban infrastructure was hardly unique to Bangalore and followed a pattern common to India's largest cities. Nonetheless, because of the suddenness in the decline of urban services, and the very real threat of corporate flight, the problem of bad infrastructure gained an exceptional amount of political traction in Bangalore during this time.

If the problem of low quality infrastructure came to dominate for a variety of reasons, solutions were equally divergent. During SM Krishna's tenure as Chief Minister from 1999 to 2004—a period which corresponds with the rise and early implementation of the utility's slum program—the infrastructure crisis played itself out in two opposing ways. Interestingly, both ways put enormous pressure on the water utility to change. On the one hand, measures taken to address the crisis were shaped by the needs of politicians and businessmen. As the infrastructure literature tells us, politicians need quick-fix and highly visible solutions, such as "ribbon-cutting" events, which enable them to be seen as doing something proactive about a problem. Reforming government agencies and other long-term gestation projects are significantly less appealing measures. The result of this political tendency in Bangalore was, predictably, a preference for new construction projects over maintenance of existing assets, particularly those underground or

out of sight. Measures taken were also skewed towards the needs of the new captains of industry and their workers at the expense of the rest of the city. State government expenditure on new projects was allocated to flyovers, a new airport, an IT corridor project, an export promotion park, and a new ring road. The predominant focus was on "roads, rather than public transport; garbage and pollution, rather than public housing; mosquitoes and public toilets, rather than public health."[3] Because most of its assets are underground and treatment plants are long-term gestation projects, the water utility was largely unaffected by the political imperative. The corporative imperative, however, came down hard. Because corporations and their workers depend on water and sewerage services to prosper, the utility was one of the first agencies to come under fire in Karnataka's bid to retain high-tech firms.

On the other hand, the inherent bias in these solutions towards the middle class and the corporate sector created a backlash and generated calls for improvements for the rest of the city. Academics and journalists were particularly critical of the skewed development agenda which they claimed had been carried out by stealth, had undermined local democracy, and would exacerbate inequalities (*e.g.* Pani, 2005). Politicians elected from rural areas and from poor urban constituencies seized on the opportunity. They carefully groomed a popular image of a state at war with itself, one caught in a series of battles between urban versus rural and rich versus poor. There was, of course, some truth to these allegations attributable in part to the new corporate influx, and in part to the fact that politicians in state government are "mainly elected by people in rural areas and feel disinclined to support the demands of urban areas."[4] But the battle imagery was simplistic and contrived, and many of the accusations of urban bias leveled at the Krishna

[3] "Singapore is not Bangalore's Destiny" in Economic and Political Weekly, April 29th 2000.
[4] S. Rai, "Urban neglect tarnishes Bangalore" in International Herald Tribune, Sept 14th 2005.

Government were in fact dramatized for political purpose. For example, on average, over 80 percent of the annual state budget under Krishna still went towards salaries, pensions, subsidies, and sops, most of which were targeted at rural areas and farmers.

Nonetheless, the power of the backlash was very real. Heads of agencies, like the water utility, who reported into the state government, became extremely sensitive to accusations of bias. They realized that in this political climate, pro-poor measures adopted by their agencies would serve as a useful line of defense against the barrage of accusations of elitism. Being *seen* to be doing something about the poor became a way for the state government to appease some of the general unrest associated with reform.

Civil Society and the Third Force

With Bangalore's meteoric ascent to global city status came a profound shake-up in systems of urban governance. This reflected a real change in government and civil society, in particular the tools available to each and the kinds of alliances forged between them. In the world of government, SM Krishna deliberately set out to reform agencies in key sectors. He unleashed advocates of reform long stifled within the *"babu"* culture of bureaucracy, and handpicked progressive IAS officers to head public sector agencies with the mandate to turn them around.[5] With great effect, he revitalized the moribund office of the *"Lok Ayukta,"* the state agency in charge of responding to citizen complaints and inspecting public authorities, by amending its

[5] "Babu" is a derisive term used to describe the stereotypical Indian bureaucrat, one characterized as complacent, inefficient, and corrupt. India has the world's largest bureaucracy and the average bureaucrat is seen as largely unaccountable to the country's citizens who do wrestle with gross inefficiency in their everyday dealings with government.

founding act to give it yet more powers of exposure and investigation. The new head, a retired judge of the Supreme Court, was appointed in 2001 and worked tirelessly to expose corruption in government. Through undercover raids, he unearthed countless scams perpetrated by both senior and junior bureaucrats, keeping government workers on high alert (see Figure 3.1).

Figure 3.1: Lok Ayukta Uncovers Corruption in Government

PWD engineer trapped

TIMES NEWS NETWORK

Bangalore: The Lok Ayukta officials have nabbed National Highways Authority of India's engineer-in-chief B.N. Chandrashekaraiah with Rs 3 lakh in his briefcase and Rs 30,000 in his pocket. They also trapped technical assistant Pushparaj with Rs 60,000. Chief accounts officer Nagraj Sheregar fled his office as the raid party approached.

Chandrashekaraiah was due to retire on July 31. Hehad withdrawn Rs 5 lakh from his general provident fund about a month ago to give it to his son-in-law. Pushparaj said the money was intended for his house construction.

The officials said raids at Chandrashekaraiah's house have yielded a booty, but did not elaborate. Chandrashekaraiah, however, was able to call up his house and alert before the raid took place, thanks to the carelessness of some officials. From Pushparaj's house, they recovered about Rs 90,000.

Chandrashekaraiah earns about Rs 10 lakh every month above his salary.

Lok Ayukta N. Venkatachala said his office had received a complaint about rampant corruption in the public works department, especially because of the fast approaching deadline of March 31 for disbursing funds.

Robert Maria Clement

Lok Ayukta N.Venkatachala inspects the money seized from engineer-in-chief of National Highways Authority on Wednesday.

Source: The Times of India, Bangalore, March 31st 2005.

Reforms, of course, do not materialize instantly and are not the byproduct of one man. Many believers had long labored behind the wings to modernize Karnataka's government agencies. In the urban sector, a core group of progressive senior IAS officers had been transferred around urban agencies since the late 1980s, retaining between them the leadership of key parastatals and the City Corporation. In line with a national agenda for reform, they had labored quietly and non-antagonistically to introduce change and efficiency to these agencies for well over a decade. But by the late 1990s, as national economic reforms accelerated, parallel attempts to shake "the sclerosis" in government also picked up speed (Shourie, 2004). Though Karnataka's new administration under the leadership of SM Krishna did not introduce reform to Bangalore, it did create new opportunities for a regional expression of this national acceleration, much the same way as Chandrababu Naidu's administration famously did in neighboring Andhra Pradesh.

However, more than the actions of one administration, the presence of globally dominant IT and biotech firms in the city radically altered the political landscape. Public sector organizations changed because they found themselves operating in a totally new environment, one in which the private sector's concerns with infrastructure mattered. For example, soon after SM Krishna came to power in 1999, he formed the Bangalore Agenda Task Force (BATF), an alliance between government and the private sector created to work with seven of the city's main service providers to encourage growth, development and reform. Everywhere in state government such corporate influence was on display in ways both praised as an effective panacea for the problems of urban management, and bitterly maligned as an insidious interference in local affairs better left to representative democracy (Ghosh, 2005). Regardless, the outcome was a strong injection of corporate influence in government. More than ever before, individual business leaders

assumed a greater say in government affairs, and "management speak" became the *lingua franca* of reform.

This new political landscape had a particularly dramatic effect on the world of NGOs as businessmen and their affiliates, including a new breed of social reformers, began unseating traditional grassroots activists. Previously, most NGOs in Bangalore were grassroots organizations deeply rooted in communities, particularly of the poor. The city has a long history of NGO activism and many local groups had been working in slums for decades in fields ranging from housing to public health. NGOs like AVAS, Mythri, APSA and DEEDS had a long-standing presence in slum communities where they worked closely with residents on day-to-day affairs. They established self-help groups, campaigned for better housing, encouraged women's empowerment, and experimented with alternative technologies. Although the level of engagement and capacity varied greatly, on average these NGOs commanded a great deal of trust and respect from slum dwellers. Their employees were firmly rooted in the community's actual needs and knew many of the residents and local leaders on a personal basis. Moreover, it was some of their pioneering leaders who in 1980 founded the State Federation of Slum Dwellers, KKNSS, to act as a lobbying group for slum dwellers' rights. Tapping into traditional party politics, the Federation successfully mobilized mass demonstrations of tens of thousands of slum dwellers to call attention to the plight of the urban poor.[6] And it successfully fought slum evictions by filing petitions with both the High Court of Karnataka and the Indian Supreme Court. However, despite significant advancements made in terms of policies and court-ordered

[6] In 1982, KKNSS staged its first mass demonstration of 25,000 people against evictions. In 1985, it organized another protest of 40,000 people to prevent another round of evictions ordered by the then Chief Minister. In 1996, it organized a massive rally of more than 100,000 people demanding a separate budget for slum development.

stays against eviction, decades of citizen voice and pressure from these kinds of NGOs failed to elicit any real improvements from service providers.

Meaningful pressure from civil society to improve government performance and accountability has come only recently from a new breed of "elite" NGOs. In contrast to the grassroots quality of traditional NGOs, these new organizations were founded by an array of accomplished scholars and professionals committed to changing urban governance in India on a grand scale. The new social activists were worldly, highly educated, and, in many cases, personally and professionally aligned to the IT sector and the new captains of industry. Unlike their grassroots counterparts, they commanded direct channels of communication to the Krishna administration and thereby to senior IAS officers. Organizations like Janaagraha and the Public Affairs Center, among others, became strongly associated with their champion founders who exerted a strong appeal over dynamic teams of employees and volunteers, and garnered a great deal of public support for their efforts both locally and on the international stage (see Figure 3.2).

Figure 3.2: Showcasing Participatory Democracy in Bangalore

Of the People, *By* the People and *For* the People
Now, Bangalore shows the way for participative democracy

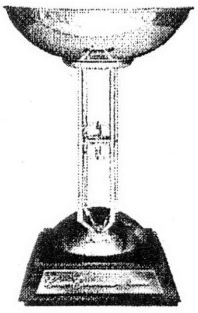
under the vision of

Swati and Ramesh Ramanathan

founders of 'Janaagraha'

PRESTIGE GROUP &
ROTARY BANGALORE MIDTOWN
confer the

Citizen Extraordinaire Award 2004



If India is shining and Karnataka is vibrant, Bangalore has been an integral part of this change.

In the new avatars that the city has emerged - as the '*Silicon Valley*', the '*Software Capital of India*', and as the choice destination for seekers of knowledge and opportunities from around the world, the toll on its infrastructure and upkeep has been sudden and heavy. Just at a time when the scars could deepen to leave an indelible sore sign, there comes a healing touch.

A resurgent citizenry of the city heeded to the outcry of '*Janaagraha*' - a collective participative voice force. Founded on the principles of democracy based on personal freedom, collective action and transparency, the initiative to build bridges between the electorate and the elected and engage both in action-oriented interactions, Janaagraha is an affirmation that is widely acknowledged from every stakeholder in the city - school children to multinational corporates.

The results are to be seen in the change that one perceives in the city, as one walks, commutes and dwells.
The much touted 'Singapore model' is clearly in the making.

The spotlight for this is on a committed couple -
Swati and Ramesh Ramanathan.

Prestige GROUP

The Citizen Extraordinaire Award is a recognition jointly mooted by the Prestige Group and Rotary Bangalore Midtown. The Award is to encourage individuals who have made tangible contributions to the growth of Bangalore.

In 2002, the Award was bestowed upon Sri S.M.Krishna, the Hon'ble Chief Minister of Karnataka. The Award in 2003 went to Sri Jayakar Jerome, Commissioner of BDA.

Prestige Group, the nation's first builder to receive DAI-Excellent rating from CRISIL, is in the forefront of developing luxurious houses and world-class hi-tech work environments. It has made major inroads into entertainment and lifestyle infrastructure by developing multi-facility cineplexes, food courts and health spas in Bangalore, accentuating its metro character by creating landmarks year after year.

Rotary Bangalore Midtown, with members representing diverse vocations has taken great strides in the transformation of the lives of Bangaloreans, for over 25 years now. Lending their helping hands, they have sponsored schools in slums and rural outskirts, donated high-tech ambulances to hospitals, built homes to thousands of homeless, extended medical assistance, immunised lacs of children against the dreaded Polio and is providing assisted shelter to aged. *Beginning today, Rotary International celebrates its 100 years of service to mankind.*

Together, Rotary Bangalore Midtown and Prestige Group have identified themselves with the growing aspirations of Bangalore. And feel honoured to confer the coveted Citizen Extraordinaire Award 2004 on **Swati and Ramesh Ramanathan,** founders of *Janaagraha.*

Source: The Times of India, Bangalore.

Civil society in this new guise penetrated the elusive bureaucracy of the past demanding accountability in very concrete ways. Drawing on the language of new public management and participatory action, this new "third force" began showcasing the concept of good governance to Bangalore (Heitzman, 2004). These NGOs rallied citizens to their cause, issued report cards on service delivery agencies, fed information to an active local press, and generally encouraged Bangaloreans to get involved in their government and hold it to account (*e.g.* Paul, 2002). By tapping into national opportunities, such as the Right to Information Act, and using their own IT expertise, they demanded disclosure of information and helped design the systems for doing so. Using sophisticated mobilization tactics, high-quality analytical research, and political connections with senior tiers of government, this third force has radically transformed the environment in which public service agencies operate. Although their primary concerns have not been with the city's slums or the urban poor, they have made sincere attempts to include the poor in their political discourse.[7] Overall, their campaigns to improve efficiency in taxation, encourage transparency, generate freedom of information, and generally make cities more livable have resonated with Bangalore's exploding middle-class in a way grassroots NGOs never did.

3.3 How New Problems Become Opportunities

External Jolts

While general reform pressures simmered in Bangalore, events specific to the water sector began bearing down on the utility. First, the utility narrowly escaped privatization, the *quid pro quo* of

[7] For example, Janaagraha held dedicated community meetings for slum dwellers to assess their preferences for infrastructure investments during the launch of its ward works campaign in 2003. The Public Affairs Center deliberately included the urban poor in all three of its report card exercises in Bangalore, sampling slum dwellers and eliciting their views on service providers.

which was the need for management to deliver results and demonstrate a genuine commitment to public sector reform. Then, external actors made a series of decisions which jolted the utility out of its longstanding complacency towards the poor, obliging it for the first time to consider the provision of household connections in slums. These external jolts included the implementation of a pilot program by a foreign donor and the approval of two resolutions in the City Council, one to stop payment for public tap supply and the other to implement a citywide network expansion program. While the pilot program set a timely precedent, the city's resolutions served as crucial triggers for reform because of the impetus they gave to fixing the slum problem and the way they enabled the initiative to be financed.

These events were not simultaneous, but they happened in quick succession creating a kind of tipping point after which internal policies had to change. Notably, they were all prompted by decisions external to the water utility. Although changes in the agency's approach to slums would never have happened without the willingness to innovate on the part of all staff, the initial thrusts to shake the status quo came from outside. In this context, it is important to remember that as a rule, the chairman of the utility and his close associates in finance, human resources, and public relations are all outsiders. As one critic put it, when these bureaucrats enter the organization "they know nothing about water except how it's spelled."[8] Under SM Krishna, reform-minded technocrats were brought in to fill these management positions and they too can be seen as external agents bearing down on the organization and its core engineering staff.

This phenomenon of externally-driven reform is well known. External projects, like pilots, provide both the legitimacy and the right of way reformers inside organizations lack. These kinds

[8] Interview with water professional, April 22nd 2005.

of environmental jolts provide opportunities to introduce reform to stagnant agencies. Especially when they are labeled as crises, jolts have the potential to "infuse organizations with energy, legitimize unorthodox acts, and destabilize power structures" (Meyer, 1982: 533). In Bangalore, the threat of privatization and the destabilizing implications of the city's resolutions had just such a crisis effect on senior management and the chief engineers who make utility policy.

Less well known is how the effects of external jolts translate into organizational learning. This dissertation attempts to explain how. The following sections start this process by examining each of these jolts in some detail, tracing their origins and the ripple effects each had on the thinking of those at the top of the utility's hierarchy. Though they first presented themselves as problems, these events eventually became opportunities for the agency to experiment with new ideas and to respond to a new environment in pursuit of the "learning imperative."

The Threat of Privatization

The threat of privatization of the water utility was the first major stimulus for reform. Being a large and growing city, Bangalore had long caught the eye of multinational corporations in the lucrative water business, but it was not until the late 1990s that their keen interest in the Bangalorean water market was finally met with enthusiasm from several high-ranking government officials. At the time, the Chief Secretary for Urban Development, the senior bureaucrat in state government to whom the Chairman of the water utility reports, was personally drawn to a neo-liberal philosophy and felt that the reform climate in Bangalore would lend itself well to the privatization of certain state enterprises. He was also particularly worried about rising

levels of unaccounted for water (UFW) at the utility in what appeared to be rampant water loss. He hoped that privatization would introduce efficiency to the organization and cut the tremendous loss of water. In his endeavors, he was supported by certain engineers favorably inclined towards private sector participation. These engineers from the Corporate Planning Division had long labored from within the utility to introduce private sector participation to the organization. With the support of the then Chairman, they were the ones who first outsourced computerization of the utility's assets and in the 1990s began discussions with a private sector operator for a build-operate-transfer (BOT) project to construct a new bulk water supply facility.

Though the idea of a full-blown concession was discarded as premature, the possibility of private sector participation in another form circulated in the halls of power for some time. Shortly after SM Krishna was elected in 1999, he appointed a dynamic IAS officer to head the utility. Though relatively junior, this charismatic individual had just returned from a year at Harvard where he had studied privatization in the water sector, and was appointed with this goal in mind for Bangalore. With discussions over the separate BOT project in full swing, Krishna's government signed a memorandum of understanding with two French multinationals: Vivendi (now Veolia) and Lyonnaise des Eaux (now Suez). In this memorandum, the parties agreed to develop a proposal for a delegated management contract for distribution and maintenance in two pilot zones.[9] Starting in 2000, these private companies spent more than two years in Bangalore working diligently on the preparation of the bid.

[9] The proposal put forth by the two French companies was to divide the city into two pilot zones, one for each company. One zone was in the West, with approximately 50,000 connections for 1.15 million people. The other zone was in the South, with 56,000 connections for about 1.2 million people.

The reactions at the utility to the possibility of privatization are interesting because they differ from that which is usually described in the literature. We tend to think about reactions to privatization and other radical new ideas as dependent on worker status or rank within an organization. For example, in India, studies have shown that opposition to the privatization of public sector undertakings has been voiced most strongly by managers with their relatively larger share of benefits, and by politicians who rely on the vote banks secured through bloated employment rolls (Makhija, 2006). In contrast, the Bangalore case shows how reactions to privatization can be differentiated not just by status or rank but by professional specialization or what employees actually do. Inside the organization, engineers perceived privatization as either a threat or an opportunity depending in large measure on what division they worked for or retained the closest professional affiliation with. After all, where you stand depends on where you sit.

As a result, coalitions for and against privatization formed along the lines of the utility's own division of labor. Engineers in Corporate Planning were overwhelmingly in favor of privatization, regardless of their rank. Their affinity for private sector participation can be explained by the nature of their job. These engineers are generally highly skilled technically and value their role as visionaries. After all, their job is to envisage the future of the utility and its network. The very nature of their assigned task breeds a kind of openness and willingness to experiment. Developing projects to meet the demands of a growing city requires frequent interaction with new people and exposure to new ideas in doses Maintenance engineers never receive. For example, the construction of wastewater treatment plants necessitates engaging with the private sector and experimenting with new technologies. Corporate Planning engineers were thus accustomed to private sector operators and valued their potential contribution.

In contrast, engineers in the Maintenance Division were much less enthusiastic about privatization. Unlike their counterparts in Corporate Planning, these engineers foresaw a future of competition and loss that would significantly reduce their overall welfare. Their reaction can also be explained by the nature of the tasks assigned to them. Privatization would disturb the equilibrium they had worked hard to achieve in order to survive in an environment of scarcity and constraints. To begin with, the use of pilot zones would immediately pit Maintenance engineers against the new private players. Performance in terms of service outputs would now be compared across zones. These engineers knew that they could never compete with a private provider on service, and that the new French operators with their business efficiency, monetary incentives, and immunity from political meddling would outperform them in the tasks of distribution and maintenance.

In addition, privatization would reduce opportunities for "cream skimming." The very creation of pilot zones would have stripped more than a third of the city away from Maintenance's control. Most of the utility's lower-level engineers sit in the Maintenance Division, where the best opportunities are for cream skimming for staff of their rank. Indeed, all frontline staff including linesmen and meter readers make their money in the field. This is where small amounts of untraceable money circulate and where "speed money" changes hands. In contrast, engineers in Corporate Planning and in Projects, take their cuts from large capital investment projects including, of course, those to put to tender in the private sector.

Finally, project preparation was already drawing too many skeletons out of the closet. In an attempt to get the price right, private operators bidding for new contracts always conduct careful due diligence of their acquisition targets. This process exposes cream skimming and tries to put it in numerical form. For Maintenance engineers, the single biggest threat during the scramble for privatization was the attempt to quantify the extent of unaccounted for water. Understandably, the private operators wanted to differentiate how much water was being lost through physical leaks from the amount attributable to commercial losses. But in doing so, they were revealing the extent to which engineers in charge of distribution had in fact re-distributed water to homes and businesses for personal gain.

Analyzing these reactions according to worker tasks rather than rank is also important for another reason, namely that tasks and allegiances vary over time. And as they vary, so too do reactions to new ideas. For example, the new Chairman of the utility was initially brought in with the specific task of turning the agency around, preferably though privatization. When he assumed command, this was his primary goal. But, over time, his tasks and allegiances changed in such a way that the idea of privatization changed from solution to threat. This shift can be explained by the way performance is judged in public administration. As important as any formal assessment mechanism conducted by superiors is the immediate environment in which bureaucrats sit. For the new Chairman, his new staff would judge him on a daily basis as to whether he could accommodate their needs and speak their language. Because of this, the Chairman, the man appointed to usher in a new era of privatization, gradually changed his tune. Once he was ensconced in the utility, his new priority became to ally himself with the engineers, the majority of whom worked in Maintenance. Over time, he came to take their side and eventually opposed

privatization. Though his allegiance with Maintenance angered and alienated Corporate Planning, it was done to grease the wheels of the organization and to prolong the longevity of his tenure. Such structural determinants of reactions to change are important to understand and considerably more helpful than popular explanations that reform in Bangalore was simply "personality-driven."

Foreign Aid and Diversion Tactics

While engineering factions battled it out inside the utility, a new foreign aid project offered those opposed to privatization with a useful diversion tactic. In 1998, the Australian Aid Agency (AusAID) began looking for a new development project in India. Initially, advocates of privatization within both the utility and the state government latched on to this search as an opportunity to develop a coherent framework for the future direction of the utility. Their original intention was to use an external agent, such as AusAID, to study privatization and give it the legitimacy it lacked in the minds of the majority of utility staff. However, as AusAID began developing a potential water project in Bangalore, Maintenance engineers embraced the project as the perfect diversion. Their support of AusAID's grand plans to reform the utility would show them to be just as concerned with the future direction of the utility as engineers in Corporate Planning. Yet the promise of research studies and a planning program, as opposed to implementation of actual projects, would buy them time while providing the perfect illusion that they were in fact responding to demands for better performance.

This diversion tactic played itself out exactly as Maintenance engineers had hoped. In May 2000, a coalition of Indian and Australian consulting firms won the bid for the Bangalore Water Supply and Environmental Sanitation Masterplan Project.[10] In its final form, the AusAID Project was a sweeping and ambitious attempt to reform the utility. The project promised to develop a comprehensive strategy or "master plan" for Bangalore's water and sanitation needs, including proposals to reduce unaccounted for water, clean house financially, reduce staff, improve water pressure, reform human resources, and improve collection efficiencies.[11] Hundreds of studies were commissioned to reform these physical, technical, financial and personnel aspects of the utility. But the project was never more than a planning exercise. Though an army of consultants descended on the utility, there was precious little implementation of anything. And when the French companies began asking penetrating questions on UFW, Maintenance engineers were able to relay with great tact that the AusAID team, as the new arbiter of exchange, was now in charge of compiling information and answering all such questions.

Most importantly, the AusAID project offered up the possibility of public sector reform as an alternative to privatization. Just as management's allegiances were shifting and Maintenance engineers were stiffening their resolve, AusAID consultants started to deliver volumes of hefty reports full of potential new directions for the agency. These concrete proposals ultimately served as the *coup de grace* of the flailing privatization bid. Midway through the AusAID Project, the Chairman was able to state publicly that privatization in Bangalore was not going to

[10] The initial bid was led by TARU Leading Edge from New Delhi and Sinclair Knight Merz from Australia. The final project team was led by SKM and Egis Consulting, in association with Brisbane City Enterprises, Feedback HSSI, STUP Consultants and TARU Leading Edge.

[11] The term "master plan" was contentious. Though it was seen as appropriate by Australian planners, their Indian counterparts disliked the echoes of both colonial master planning and Nehruvian socialism. The Chairman of the BWSSB proposed the term "strategic planning" instead, but Australia controlled the purse strings and, in the end, persevered with the original term proposed by its own consultants.

happen.[12] But this victory for Maintenance came at a price. Senior management seized the chance to prove to the greater public and to a pro-privatization state government that despite the failure of the bids, the utility was on a course towards genuine reform, only this time in the public sector. Such a turn of events is not entirely surprising. Governments have been known to use the threat of privatization as a means of spurring a public agency to reform (Davis, 2005). Although the intent was different here, the effect was the same.

Innovation at Large

The result of these citywide transitions and specific sectoral pressures was the beginning of concrete reforms at the agency, including a host of visible citizen-centric measures. During the AusAID master planning exercise, the agency began a concerted effort to improve service delivery for its existing customers. Under the dynamic and unusually long tenure of the Chairman appointed by SM Krishna, the agency embarked on many new ventures to work with citizens, including for example new phone and online complaint monitoring systems with heavy penalties for engineers in the event of non-compliance. It began to release annual performance reports of very high quality replete with detailed operational and financial information. Perhaps its most prized innovation was the series of monthly water forums or *"adalats"* held throughout the city in Maintenance sub-division offices where citizens could air their grievances in person,

[12] I am more interested in the threat of privatization and the reactions it elicited from utility staff than explaining its ultimate demise. However, to be thorough, the bid floundered for several reasons, not just because of internal opposition. In interviews, the most commonly cited reason was a technical one, namely that both sides could not agree on certain aspects of the final contract, including the management fee. For example, the private operators wanted to retain their water savings from improved distribution management to supply new connections, an arrangement which would benefit them financially. Engineers, on the other hand, argued that this water should be reallocated to water scarce wards outside of the pilot zones. Details aside, it is not surprising that a technical explanation gains currency in what was in reality a highly political process. I had to dig deep in my interviews to get beyond this dominant explanation. In reality, political opposition was a huge impediment, even though it surfaced towards the end and was widely cited to have been whipped up by politicians cut out of substantial side payments.

meet face to face with engineers, discuss water problems as a community and generally assert their voice. The utility remained, of course, a government agency full of bureaucratic hurdles but the progress made during these years towards becoming an organization open to complaints, suggestions and information sharing was both significant and substantive.

Pilots as Precedents

One relatively small component of the AusAID master planning exercise, but one of the only components involving implementation rather than planning, was a series of three pilot projects in slums. On paper, the central objective of the pilots was to test whether and how water and sanitation services could be delivered by the utility to slum households using private connections as opposed to public taps. In reality, the main purpose of the pilots was to meet the demands of the donor. The Indian and Australian consultants who won the final bid designed the project in line with many of the conditionalities typically associated with foreign aid. Among other things, some component of the project had to address urban poverty.[13] As an aid project, the master planning effort in Bangalore could not remain a purely technical exercise, even though most of the work subsequently entrusted to consulting firms clearly was just that.

In the utility, senior management and engineers agreed to the pilots for a different set of reasons. The danger of starting such a precedent was not lost on them. For decades, engineers had limited service to slums to the provision of water through a fragmented network of public taps. A new approach based on direct connections threatened to increase the work load of Maintenance,

[13] This need for a "humanitarian" dimension to the project was particularly important to the Australian Government in the wake of nuclear testing in India in 1998, which had caused widespread outrage in Australia.

antagonize local politicians, and disrupt the entire system of petty rent-seeking so common among street-level bureaucrats. But the idea of experimenting in slums was also compelling for three reasons. First, pro-poor pilots provided engineers with the final piece of their diversion tactic. Though the majority of privatization debates had nothing to do with the poor, a few vociferous opponents had campaigned against it on this very issue. For example, the Federation of Slum Dwellers (KKNSS) had been actively opposed to the bid proclaiming that any such effort would be "disastrous for the poor".[14] Moreover, the French private operators were proposing their own slum strategy for the pilot zones. Given these developments, utility employees opposed to privatization could ill afford to remain indifferent to the plight of the poor. A slum program could be used to deflect accusations of elitism and provide evidence of a public sector strategy equal to that of the private operators. Though the pilots were designed entirely by external consultants, they provided the chief engineers inside the utility with the opportunity to demonstrate some kind of commitment to slums.

Second, the pilots presented a compelling "low-risk" proposition. A third party donor would bear the entire cost through grants and a dedicated project team would look after all the details and complexity of implementation. Such a ring-fenced and time-bound experiment with service provision to slums could hardly be more convenient. It dovetailed nicely with the short-term diversion needs of engineers opposed to privatization and would not necessarily be scaled up in such a way as to disturb the peaceful equilibrium Maintenance engineers had established in the field. The pilots could thus be a finite experiment with limited risk. If they went badly, the utility

[14] Interview with KKNSS leader, March 10th 2005. KKNSS drafted a memo to the BWSSB indicating the reasons for their opposition to privatization and highlighting the bad record of private concessions throughout Latin America with respect to connecting slums and maintaining services at affordable prices.

could quietly dismantle the initiative once external consultants had left and the threat of privatization had subsided.

Third, the pilots gave the engineers an opportunity to tackle a new problem. When AusAID consultants first floated the idea of a series of pilot projects in slums, the outcome of privatization was still very much uncertain. One of the areas of debate was exactly how much water the utility was losing each month. Specifying the exact amount of unaccounted for water (UFW) was difficult to do objectively because of the scarcity of reliable data. Figures ranged from as low as 35 percent to over 50 percent. But the problem was also revealing of the tensions inherent to utility reform. Different parties had a vested interest in pushing the figure in opposite directions. On the one hand, private operators were intent on demonstrating a high UFW in order to structure a better contract. With a high figure, they would be better rewarded when they ultimately lowered water loss in their pilot zones. On the other hand, engineers were intent on downplaying UFW. This would avoid acute embarrassment for the utility at a time when poor government performance was frowned upon in Bangalore, and enable them to hide the extent to which water was being lost through leaks of their own doing. One way to advance the debate on UFW was to start looking at slums. Though AusAID studies later showed that illegal connections and public taps in slums were in fact not the primary sources of UFW, they were popularly cited as such by engineers. Thus, a final reason why engineers accepted the AusAID pilots was as a way to tackle the UFW problem for which they were coming under fire.

Engineer enthusiasm aside, a few key traits of the pilot projects might have limited their long-term impact. They were finite in duration and funded through dedicated grants from a third party;

they generated considerable ambivalence on the part of engineers; and they were insulated from mainstream utility operations. Such limited potential is not uncommon for pilots. Insufficient resources, resistance from key stakeholders, and untested implementation conditions are often some of the central challenges to scaling up pilot projects (Davis, 2004). But these pilots were designed and implemented by an Indian consulting firm which showed unusual dedication to the job. Project leaders were adamant that utility policies and procedures be changed such that the pilots set a meaningful precedent, one which they envisaged could really be scaled up.

To avoid cherry picking and the problems of untested implementation conditions, project leaders carefully selected three slums as broadly representative of the target population in the city (see Table 3.1). The first, *Cement Huts*, was a declared slum situated on a small and highly congested piece of land in the center of the old city. It was a small slum, with around 600 people living in just over 100 households. Residents were extremely poor and had no title to the land. It was selected in order to address the challenges of insecure tenure, high density, and low ability to pay, as well as to test the appeal of shared connections. The second slum, *Sudamnagar*, was not declared and was situated on private land. However, the land belonged to a trust which had leased the land to residents for decades providing them with some security of tenure. It was a planned and orderly layout, home to about 1,600 people living in just under 300 households. It was selected to represent slums that were medium-sized, undeclared, and susceptible to severe water shortages. The third slum, *Chandranagar*, was a fully declared slum with a partially planned layout on the steeply sloped edge of a valley. It was the largest of the pilots, home to 3,600 people living in 550 houses. The range of incomes was especially high with residents

employed in a wide variety of industries. This last slum was chosen for its income diversity as well as the technical challenge it posed to supplying water up steep inclines.

The overall experience of the pilots was very positive. On average, 70 percent of households opted to participate, and, in total, more than 600 households connected to the network. Community participation was a central component of the project. Residents were consulted in frequent meetings and given a choice about what kinds of services they wanted. A local water and sanitation (WatSan) committee was established in each slum as the institutional focal point for community participation, and each was paired with an NGO appointed and paid for by AusAID. These NGOs assisted the AusAID team with data collection and organizing community meetings. As a whole, the pilots demonstrated that slum dwellers could work with the utility in the pursuit of legal household connections.

Table 3.1: Characteristics of the AusAID Pilot Projects

Parameter	Pilot Settlement		
	Cement Huts	**Sudamanagar**	**Chandranagar**
Location\BWSSB Division	Central Division	East Division	West Division
Category of slum – Slum Clearance Act	3 P	Not a recognised slum, Trust land leased to residents	3 F
Site conditions	Highly congested	Planned layout on gently sloping land	Partially planned layout on steeply sloping land
Size	Small slum (x sqm)	Medium (X sqm)	Large (X sqm)
Number of households	106 households	299 households	924 households in 554 houses
Population	634	1,631	3,600
Household Income	< Rs. 1000 to Rs. 4,000 per month	Rs 2,000 – Rs. 6,000 per month	Rs. 1,000 to Rs. 10,000 per month
Dominant Occupation	Rag picking, casual labour	Casual labour, service	Labour, artisans, household industry
Challenges posed	Less secure tenure, highly congested site, low ability to pay, need for community infrastructure and management arrangements.	Absence of documents to prove ownership of site, willingness and ability to take individual connections, severe water shortage.	Large steeply sloping settlement with high soil erosion and drainage problems. Severe water scarcity. Diverse socio-economic composition of households.
Water Supply			
Service level	Metered connections shared between 10-12 households.	200 individual connections (66% of houses)	400 individual connections (73% of houses)
Pipe Material	Cast iron and PVC	Cast iron pipelines for distribution, HDPE for house connections	HDPE distribution lines and house connections
Sewerage			
Service Level	Community Toilet	Individual	Individual
Pipe Material	UPVC	Stone ware	Stone ware
Drainage	Box and V drains	Box and curb drains	Box, curb and V drains
Roads	Concrete	-	Stone paved and concrete
Solid Waste Collection	Community bins, disposal by BMP	Community managed door to door collection	Community managed door to door collection
Management Systems	WATSAN Committee manages the toilet, tap committees manage the taps	WATSAN Committee supervised work and managed the contract for house connections.	WATSAN Committee supervised work and managed the contract for house connections.
Total Project Costs	Rs. 14,69,200	Rs. 31,00,000	Rs. 89,28,000
Masterplan Project Contribution	Rs. 14,59,000	Rs. 24,00,000	Rs. 77,28,000
Per Capita Investment	Rs. 2,300	Rs. 1,470	Rs. 2,146
Community Contribution	RS. 10,200 (1%)	Rs. 7,00,000 (22.5%)	Rs. 12,00,000 (14%)

Source: AusAID 2002c.

Despite the positive experience, the pilots did not set the utility on an irreversible course towards a citywide slum program. They provided limited organizational learning and any initiative to scale up would be plagued by the problem of untested implementation conditions. For example, several project components were beyond the scope of the utility altogether. In addition to installing new water and sewerage networks, AusAID had paid contractors to construct drains, improve roads, build a community toilet, and establish solid waste management systems even though the water utility cannot actually deliver these other services. Though community participation had been elicited in the pilots with great success, it was unclear whether such participation could be expected in the future when only water and sanitation services were on offer. In addition, street-level bureaucrats working in service stations were largely exempt from pilot project participation. Implementation was left to project leaders, hired contractors, resident WatSan committees, and designated NGOs. Although the three Maintenance engineers in charge of the service stations in which the pilots were located did officially approve the connections and pay the occasional visit, they were not involved in community mobilization or in physical design and their colleagues elsewhere had virtually no contact with the AusAID team at all.

Finally, the pilots did not solve the problem of insufficient resources. The cost of street-level infrastructure was borne entirely by AusAID. Residents simply had to pay for individual connections to the network, the so-called "community contribution," and subsequent monthly water charges. In one way, this tested slum dweller willingness to pay quite well. As a citywide practice, residents only ever pay for connections fees and the associated materials and plumbing charges. Third parties always absorb the cost of laying distribution networks so the slum connections on offer were in effect priced in line with city norms. But in another way, the pilots

were a blatant exception to the rule. Apart from AusAID and a handful of other donors and NGOs in the past, no third party had ever paid for the extension of pipes to slums before. Upon completion of the pilots and the depletion of limited AusAID funds, no obvious party was likely to step forward and suddenly pay up on behalf of the rest of the slums.

However, the pilots were important because of the way they institutionalized a slum-specific policy for the first time. In order to address the onerous connection requirements, the pilot team submitted a proposal to the utility's Governing Board to deem informal lease documents and other "proof of occupation" as an adequate basis for granting new connections (AusAID, 2002c). The intention was to abandon the need to furnish land titles and property tax receipts in slums. The Board accepted the use of lease documents for the pilots, and agreed to consider ration cards, identity cards, election cards and even electricity bills at a later date. Though the legal implications of this decision were unclear at the time, the Board opted to treat the land tenure constraint as a purely operational issue as opposed to a legal problem better left to the state.

The pilots also set several important precedents. They demonstrated that slum dwellers were willing to pay regular tariffs for individual connections, that group connections for high-density and low-income slums were a viable option, and that NGOs were willing to assist the utility in areas such as community mobilization where engineers lacked skills. They also proved that private contractors, usually reluctant to work in slums, would do so under good supervision and with adequate compensation. The many lessons garnered during the pilots created a potential platform for learning and expanding the scale of operations in slums—if the utility chose to use the precedents in this way.

The Problem of Public Taps

When responsibility for water supply in Bangalore was transferred from the city council to the utility in 1965, the new agency assumed the task of distributing water for public consumption through a network of free, public taps. The utility was not, however, responsible for meeting the costs of this service. As per the 1964 Bangalore Water Supply & Sewerage Act, "the Board may, subject to the payment by the Corporation of such charges as the Board may determine, provide gratuitous supply of wholesome water to the public within the City of Bangalore and may, for that purpose, erect public hydrants or other conveniences."[15] For years this arrangement persisted and the Corporation paid the bill from local government revenues. Pricing was determined through joint gauging of the water flow undertaken by the utility and the Corporation every few years. The last gauging exercise took place in 1997 when engineers estimated that the average public tap supplied 22,000 liters of water per day, billed at a cost of Rs.3,000 per tap per month.

Over the years, the City Corporation began accumulating arrears and defaulting on its debt to the utility. In March 2002, it passed a resolution to cut funding for public taps altogether. By this time, it owed the utility a total of Rs.1.5 billion ($33 million). In a letter to the State Government, the Corporation confirmed that it had experienced great difficulty in paying the water bills and asked the utility "to at least provide water through street taps to the public and that the cost of the same should be borne by the Water Board."[16] The reasons for this decision are not entirely clear. Interviews with the mayor and council members suggest that the decision was taken in the belief that local government revenue was insufficient to finance public taps and that increasingly erratic

[15] See the Bangalore Water Supply & Sewerage Act, 1964, Chapter 38, "Public Water Supply".
[16] Letter No. MD:PR:8:2002-03, dated May 15th 2002, issued by the City Corporation Commissioner's Office to the Principal Secretary of the Department of Urban Development. Translated from Kannada.

water supply had altered the original terms of the agreement.[17] The private consensus was that the local government was simply paying too much. Publicly, council members stated that the utility had the social responsibility to provide water for slum dwellers and should fund public taps through its own cross subsidies.

This development left the utility with a serious dilemma. On the one hand, given the utility's mandate to operate on a no-profit no-loss basis and general pressure to reduce unaccounted for water, management could not afford to continue the practice of supplying water free of cost.[18] Engineers estimated that water supplied by the utility to public taps amounted to a staggering 20 percent of all water going into the distribution system.[19] If no one paid for them, public taps would simply become another source of lost revenue. Already, only 7,000 of the estimated 15,000 public taps scattered across the city were legally authorized.[20] On the other hand, dismantling the system of public taps was completely unrealistic. Initially, the Corporation gave quiet approval to the utility to disconnect the public taps over time. It agreed to leave the matter entirely to the agency. But disconnection drives to date had met with bitter and effective resistance. It was clear to management and the chief engineers that a citywide disconnection drive would incite large-scale opposition from the community, most likely with the support of

[17] Civil servants posted to the City Corporation prior to this decision stated privately in interviews that they believed this decision was a grave misstep, one out of line with years of a consistent approach towards public water supply.
[18] The BWSSB is loss-making with respect to non-revenue accounted for water, such as water supplied through public taps but no longer paid for. All UFW is of course loss-making. Water provided through domestic connections (including for non-slum dwellers) is not considered loss-making because of effective cross-subsidies. In its budget for 2001-2 and in revised budget estimates for three subsequent financial years, the BWSSB had an average surplus of Rs.35 million ($770,000) in its revenue account.
[19] In 2003-4, the BWSSB let 25,000 million liters per month (mlm) of water into the system. According to utility engineers, roughly 65 percent of that water is accounted for and 35 percent is UFW. Of the accounted for water, public taps consume 5,000 mlm (30 percent), while domestic consumption totals 8,900 mlm (55 percent). Defence, non-domestic, industrial and railways consume the remaining 15 percent. Similar figures apply in more recent years.
[20] There are in fact about 21,000 known public taps, of which 6,000 have been disconnected or plugged. Around 15,000 taps are still operational of which only 7,000 are legally connected with the express permission of the BWSSB. The remaining taps are illegally connected to the network, and the utility does not bill for these.

the very councilors who had voted in favor of terminating payment for taps in the first place.[21] Neither disconnection nor apathy was feasible. In Board meetings, management began thinking through how to curb this loss of water and revenue, ideally transforming users of public taps to paying customers with legal connections.

Network Expansion as Boon and Bane

A second trigger finally catalyzed the utility into action. In 2002, in part as compensation to the utility for their vote to end payment for public taps, city councilors agreed to fund the extension of water and sewerage networks to the entire Corporation area. Although 27 new wards had been added to the city in 1995, these had yet to be serviced with new lines. Moreover, 28 of the old wards had been expanded during the redistricting and were now only partially networked. Though piecemeal efforts had been underway, the councilors eventually realized that it would require an abundance of tenders and contracts to link the so-called "new" and "partially added" wards to the existing network. This would be a lengthy procedure open to frequent delays and siphoning. To simplify and accelerate expansion, the Corporation voted to foot the bill for a blanket citywide network expansion program.[22] It agreed with the utility's Projects Division in charge of capital investments to divide this work into three major contracts, nine wards at a time, with a fourth contract designated for partially added wards.[23] Through these contracts, the newly

[21] In fact, in May 2003, the state federation of slum dwellers, KKNSS, organized a protest outside the BWSSB in the fear that the utility would actually shut down all public taps. The Honorary President of KKNSS, N.P. Swamy, called on management to measure the impact of such a decision on slum dwellers. To make his point, in his speech he compared revenue lost through free public taps to revenue lost to corruption in contracts and tenders.
[22] To pay for the costs of this program, the city government took a loan from the national urban lender, HUDCO, and accepted a grant from the Government of Karnataka (on the condition that it freeze hiring).
[23] The three packages were awarded to separate contractors for a total sum of approximately Rs.1,200 million or $26 million. The fourth package for the partially added wards was worth just under $4 million.

added areas of the city would be provided with supply, feeder and distribution pipes such that every house could, in theory, connect to the network.

From the perspective of city residents, this resolution was an obvious boon. Whereas piecemeal projects to extend the pipes would have been slow, this "Package Program," as it came to be known, promised to deliver pipes to every street in the city. But from the perspective of utility management, network expansion was also a potential bane. Though projects were under way to increase the available supply of water, engineers were still operating under severe shortages and new pipes meant new customers that the utility might not be able to supply.

This concern was magnified by the problem of slums on the periphery. Even if slum households could not afford to connect to the pipes through individual connections, network expansion in the outer wards increased their chances of securing access to utility water through other means such as public taps, political interference, and illegal connections. Although the actual policy directives with regards to laying pipes in slum streets were vague, the utility was intent on avoiding a future run on illegal connections and demands for yet more loss-making public taps. The only way to mitigate this risk was to serve the poor directly.

Thus, the twin problems of public taps and network expansion were the final triggers for reform. Taken together, on top of everything else, they pushed management to accept that they had to do something about slums. As the Chief Engineer of Maintenance explained, "The writing is on the wall now and we must extend concessions to slum dwellers."[24] The only question was how.

[24] Interview with Chief Engineer of Maintenance, Dec 23rd 2004.

3.4 Conclusion

This chapter explained how the utility came to accept public sector reform as a survival strategy in a changing Karnataka. In the late 1990s and early 2000s, a new state administration under Chief Minister SM Krishna and a qualitatively new kind of civil society composed of elite NGOs began putting real pressure on government agencies to improve performance. They were particularly keen for agencies like the water utility to reverse a downward trend in the quality of urban infrastructure and to address a growing wealth gap. A new chairman was appointed to reform the utility and improve water supply as part of a larger government offensive to retain high-tech firms and maintain Bangalore's newfound status as a global city.

While these general pressures for reform simmered in the environment, a series of external jolts in the water sector propelled the utility to respond to the specific problem of inadequate supply in slums. First, the threat of privatization and the start of a large foreign aid project obliged management to begin internal reforms including the disclosure of financial information and the holding of citizen complaint hearings. A small but important part of the aid project was the implementation of a pilot project in three slums, which managers and engineers accepted in order to be seen to be doing something about the urban poor and about unaccounted for water. Though the pilots did not set the utility an irreversible course towards scaling up, they did set several important precedents, including approval by the Governing Board for the first slum-specific policy to abolish the land title requirement for household connections in slums.

Then, the City Council approved two resolutions which had a profound impact on the utility. The first resolution to discontinue funding for public taps left the utility with a network of taps it

could not afford to supply free of charge and the second resolution to extend the network to previously unserved areas left the utility with the possibility of a run on illegal connections it did not have the water to supply. These resolutions were the final triggers for action on the slum front as the utility realized it could no longer afford to remain disinterested in the city's poor.

On the whole, senior management embraced the specific idea of working in slums in order to appease accusations of elitism, to keep privatization at bay, and to tackle two momentous city resolutions. While all of these new problems triggered a sense of urgency at the utility, knowing what to do about it was less obvious. The following chapter explains how managers and chief engineers first designed the new slum program and how it percolated down through the utility to the frontline in different ways.

CHAPTER 4:
Eliciting Interest from Within

4.1 Introduction

The following two chapters follow the reform process once senior management committed to moving in the general direction of a slum program. This chapter looks to the managers and engineers inside the utility to understand how reform folded within the organization and the next chapter examines the interaction between street-level bureaucrats and residents as the utility reached out to slums for the first time. While the utility as an organization is, of course, porous and there is constant engagement between staff and external actors, I attempt to separate analytically the vertical forces at play within the utility from the horizontal forces at play between utility staff and slum communities. This is not to say that the two spheres do not influence each other. They do, and a central theme of the next chapter is precisely how the interaction between utility staff and communities generated continuous feedback loops which not only affected individual engineer enthusiasm for reform, and thereby the success rate of the program, but also led to revisions in overall utility policy as dictated by senior management. Nonetheless, in an attempt to trace how reform trickles down through urban water utilities, it is useful to focus first on how a willingness to supply slums was elicited from within.

This chapter then is an analysis of intra-organizational reform. The first section (Section 4.2) examines how senior management first conceived the impending slum program as a result of new pressures and precedents in Bangalore. It traces their early decisions, in particular the creation of an in-house slum unit and the formulation of several slum-specific policies, and

assesses the depth and quality of support accorded to the new program by those at the top of the utility's hierarchy. These early policy and operational decisions are important to understand because they constitute the programmatic element which can be held constant across the comparative study. Management's decisions applied equally to all slums and to all utility staff, and they give us a good starting point from which to explain intra-organizational variation in outcome.

The remainder of the chapter traces how the mandate to engage in slum work trickled down through the organization and explains why engineers responded differently to the same program. To understand how broad pronouncements made at the top level of an organization translate into the day-to-day activities of frontline staff, we must examine how an agency welds together the behavior of its dispersed workers (Kaufman, 1960). This chapter examines how management's decision to extend household service to slums was conveyed to service station engineers charged with the actual physical task of connecting the slums, and explains why some dispersed engineers embraced broad pronouncements made at the top while others did not.

I focus especially on one of the most important independent variables to affect program outcome: the willingness of service station engineers to supply to slums. The analysis here of how engineer buy-in was achieved in Bangalore is divided into two parts. The first part (Section 4.3) examines the incentives, resources, and attributes inherent to the service station job that influenced engineer willingness to supply. In particular, I comb through my wider observations and my small sample of four engineers in the focused comparison to identify aspects of the professional environment, area resources and slum traits, worker disposition and personal preferences, and

non-preference characteristics that influenced willingness to supply, and to point to the direction of their effects.[1] The second part (Section 4.4) examines the role of the SDU and the kinds of information exchange between the head of the unit and service station staff. In particular, I show how the SDU increased willingness to supply by communicating, marketing, and disentangling slum work for engineers, and by doing these things well.

A central contribution of this chapter is an exposition of the diversity of tasks, incentives, and behavior patterns within water utilities. The aim, in part, is to compliment a large body of work in the water sector on "willingness to pay" studies (*e.g.* Whittington et al, 1993). While it is important to spell out the complexity of ascertaining demand, it is equally important to quash the notion so common in the water literature of a unified agency operating on the supply side. Though the concept of "willingness to charge" has been floated before, it has not been applied with any fine-grained attention to intra-organizational dynamics (WSP, 1999b). Instead, research largely outside the water sector on techniques of staff integration, manipulation, and organizational controls provides some useful direction (*e.g.* Crook and Ayee, 2006; Kaufman, 1960; Lipsky, 1980; March and Simon, 1993; Wade, 1997; Wilson, 1989; Yin, 1979).[2] By separating out frontline workers from management, by grasping the multiple grades and affiliations within a utility, by situating dispersed field workers in their local environments, and by understanding how information flows within an organization, we can begin to explain why

[1] I deem all engineers who supplied at least one slum willing to supply. The converse, however, is not true. Not all of the rest of the engineers in the population of engineers targeted by the SDU were in fact un-willing to supply. Some were willing but simply unable to. I distinguish these categories analytically and interviewed some engineers in the "willing but unable" category based on their identification to me by the head of the SDU. But admittedly this method is neither statistically exact nor entirely unbiased.

[2] I say largely outside the water sector though Wade (1997) and Crook and Ayee (2006) write about irrigation and environmental sanitation, respectively, both of which are in the larger water resources sector.

Bangalore's street-level engineers did or did not buy-in to reform commitments made by their superiors.

4.2 Program Design at the Top

Implementing a New Idea

When senior staff at the utility began toying with the idea of working in slums, they assumed scaling up the pilots would be straightforward. Their only precedent with slum work was the AusAID Project and to a Governing Board and chief engineers unfamiliar with slums, replicating the pilots seemed like a good place to start. Indeed, the AusAID team had already drafted a proposal on how to develop a full-blown slum program. Known as *"Kaveri Agamana,"* this proposal purported to show how to connect over 58,000 slum households in Bangalore over five years "building on the achievements and institutional learning of the Masterplan Project" (AusAID 2002c:16).

But the pilots were a heavily nurtured experiment that had benefited from policy exceptions and resource allocations divorced from the real world in which service provision actually happens. As a result, the *Kaveri Agamana* proposal written by AusAID consultants was much better at documenting what had already happened than at providing an action plan. A large section of the proposal reviewed the successes of the pilots and listed the many ways in which the AusAID team imagined project learning to have been "institutionalized" at the utility, including through engineer training programs, gender sensitization workshops, and the compilation of voluminous project manuals. Though the authors of the report identified some of the most important elements

of future project design, these were left unhelpfully vague. For example, while the proposal specified how to conduct a baseline survey and prepare engineering designs for slums, it did not go into any detail as to how to "develop partnerships" or "negotiate with communities," let alone integrate these crucial tasks into everyday engineer activities, even though these tasks were noted as critical. Written prior to the start of the citywide network expansion program, the proposal was also formulated on the assumption that a third party would fund the cost of laying pipes on slum streets. This being expensive, the authors wrote the entire proposal with a foreign donor in mind. The result is a proposal for a discrete project, one with a finite period of implementation and one that was never envisaged as being genuinely absorbed by utility engineers into their everyday operations and maintenance work.

Untested implementation conditions and vague directives meant that neither the pilots nor the proposal provided a particularly useful blueprint for a new slum initiative managed solely by the utility. Though senior management circulated the AusAID proposal to donors for several years, its immediate usefulness to them was extremely limited. Implementing the new idea would require considerably more innovation and experimentation than management had anticipated. After all, implementation "is an ongoing process of decision making by a variety of actors, the ultimate outcome of which is determined by the content of the program being pursued and by the interaction of the decision makers within a given socio-political context" (Grindle, 1980: 5). Thus, it is hard to capture a single event which launched the slum program or to separate a design phase from an implementation phase. Nonetheless, we can capture the early decisions taken by senior management to shape the new idea. These give credence to my claim that the

utility was moving in a distinctly new direction and set the stage for the coming analysis of varied engineer response.

The Creation of the Social Development Unit

Of utmost importance to the initial process of reform was the establishment of the Social Development Unit (SDU) at the water utility. Though the creation of a dedicated slum unit was ultimately approved by the Governing Board, the idea was initially the brainchild of AusAID consultants. During the pilots, they had insisted on hiring an in-house counterpart to external staff in order to ensure some degree of institutional memory after the pilot projects were completed. At their behest, the utility recruited a social development specialist, on secondment from the state government's Women and Child Welfare Department, to work alongside the project team. The *Kaveri Agamana* proposal outlines the intended role of the social development specialist very clearly: "After the completion of the project, [the specialist] will continue to provide necessary support and guidance to the WatSan committees in the pilot areas, coordinate activities for replication of the pilots, and mainstream Masterplan Project lessons into the activities of the BWSSB. This [position] is a valuable resource, particularly in view of the fact that *no other water utility in the country* has professional capacities in this area."[3] Both AusAID consultants and utility staff were particularly proud of this last point. Indeed, my interviews suggest that the Governing Board first agreed to hire this specialist and then retain her upon pilot completion in part to display how progressive the utility was at a time when it desperately needed to be seen as such. The decision may also have been a signal of the value management

[3] AusAID (2002c), p.11.

placed on the knowledge built during the pilots—knowledge that in fact was not particularly well institutionalized beyond what the social development specialist alone had learned.

The SDU was officially created in 2002 as the organizational home for the social development specialist who, management envisaged, would then launch the new slum initiative at the utility. However, a brief description of the unit as it was created illustrates the ambiguous and tepid support extended to social development as a practice by senior management. On the one hand, the new SDU occupied a comparatively high-profile place in the agency's organizational structure. The specialist was to report in directly to the Chief Engineer of Corporate Planning, a legacy of the AusAID Project which that division had overseen, and was given frequent and direct access to the Chairman, the kind of relationship most engineers covet. Moreover, the professional rank of the new head of the SDU was on a par with the rank of Executive Engineer. This enabled the specialist to command considerable respect in the organization, especially from mid- and lower-level engineers. The rank of this officer and the special attention accorded to the unit were positive conditions under which to usher in change, particularly in an organization in which non-engineers are rarely given such prestige. Research elsewhere has shown that the creation of a prestigious slum unit staffed by high-ranking outsiders is a useful way to start a slum program (Botton, 2004).

On the other hand, the effectiveness of the SDU was severely curtailed from the outset. The unit was staffed by the single social development specialist heading it. It had no operational budget and no support staff. In the beginning, management only allocated sufficient resources to cover the costs of her salary and her office. It took several months of subtle pressure before the

specialist was even able to convince management that a car and driver were also essential tools of the trade, mobility being key to intense fieldwork in slums. In addition, the SDU had no direct reporting relationship with the Maintenance division of the utility. This immediately proved problematic because connecting new households is technically the task of service station engineers. Though personality-driven explanations are not always helpful, we must bear in mind that the perseverance and drive of this particular specialist were crucial in overcoming these significant limitations and capitalizing on management's initial caution.

Policy on Paper

On paper, the utility made several critical changes to agency policy. These policies were put in place with the overall aim of relaxing procedures for the urban poor and as a way to kick start work in slums, albeit in a yet to be determined form. Though these changes to agency policy had also originally been suggested by AusAID consultants, the utility's Governing Board approved each one of its own accord, sometimes long after the consultants had left. Taken together, these policies constitute the first attempt by senior management to design a slum program for Bangalore and to bolster the new slum unit.

First, the Governing Board adopted a resolution to consider various forms of identification other than land title as an adequate basis for granting connections to slum dwellers, and agreed to amend the regulations accordingly.[4] During the pilots, informal lease documents had been accepted in lieu of formal land title and in 2003, the Board amended the regulations to include a

[4] In 2003, the Governing Board approved a proposal to amend Regulation 5.1 of the Bangalore Water Supply Regulations (1965), which specifies which documents are required for applications for house connections.

wider range of identity cards. Ration cards, identity cards, election cards and even electricity bills were deemed sufficient because they state where the beneficiary lives. As a result of this quietly radical policy, slum residents no longer needed to possess legal land titles in order to be eligible for connections to the network. In addition, the Board agreed to "relax the need for sanctioned plans, [City Corporation] tax paid receipts, and road cutting permission," significantly reducing the overall complexity of the application process for slum dwellers.

Second, the Board agreed to innovate with service levels. Rather than demand individual connections from all customers, it agreed to extend the policy exception granted in the case of the pilot in Cement Huts and allow shared connections for groups of households. Cognizant of the way increasing block tariff structures penalize high-volume consumers, the Board also agreed to price shared connections differently, allowing each household 7,200 liters per month at the lowest slab rate. Management was very clear in its preference for individual connections but recognized that shared connections might be more suitable in highly congested areas—especially "when [their installation] leads to closure of a public fountain."[5] For this reason, approval for shared connections was to be granted on a strict case by case basis. As the proposal submitted by the SDU to the Board for approval in early 2003 states, "individual household connections will have to be encouraged in all cases as they are easier to manage since responsibility for payment rests with one user."[6] Nonetheless, shared connections were a legal option enabling households to split the connection fee and significantly reducing the barriers to entry for the poorest slums.

[5] Internal Board memo, "Reforms proposed for providing sustainable water supply to urban poor," 2003.
[6] Ibid.

Third, the Board approved a new connection fee structure specifically for slums. Although slum customers would have to abide by the same tariff structure as everyone else, the connection fee was significantly reduced essentially down to the cost of the meter.[7] The actual price dropped from Rs.1,740 ($38) to either Rs.800 ($18) or Rs.550 ($12) depending on plot size.[8] On paper, the Board's resolution states that to be eligible for this slum rate, beneficiaries should have an annual household income of less than Rs.8,000 ($178), "own or possess or reside" in their premises, and hold a ration card issued by the Food and Civil Supplies Department. In practice, the SDU and service station engineers abandoned the idea of means testing altogether. Very few slum households earn that little and measuring plot size as a proxy variable for poverty proved much simpler than trying to ascertain household income.

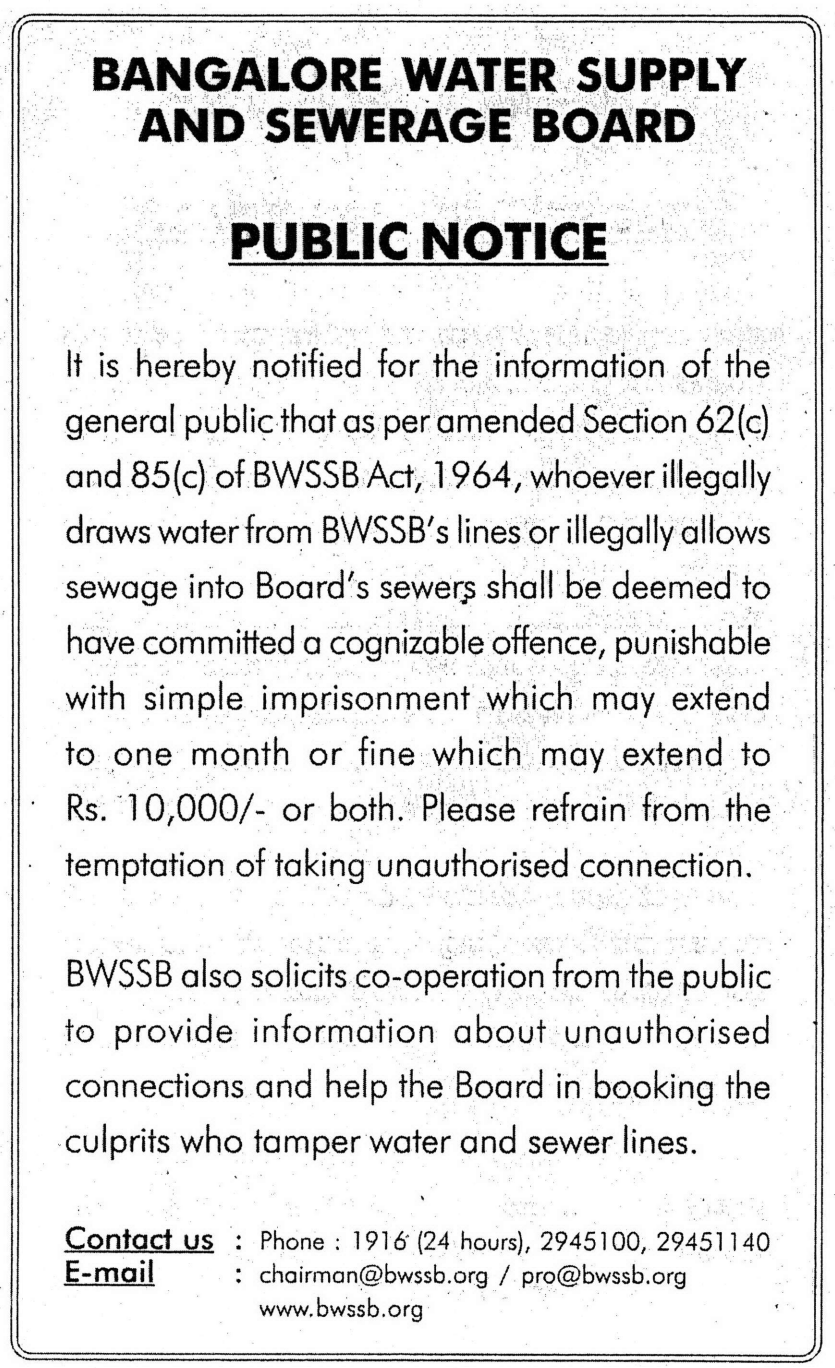
Fourth, the Board increased its legal bargaining power with slum dwellers. Many would no doubt oppose the disconnection of public taps and the utility needed the legal teeth to justify its new approach. In June 2003, management approved two fundamental changes to the BWSSB Act. First, the Board amended Sections 62(c) and 85(c) making illegal connections punishable by fine and imprisonment. Public leaflets announcing this decision were distributed in slums as a way to turn heads and, in a way, announce the coming of the SDU (see Figure 4.1). Second, the Board deleted Section 38 of the BWSSB Act, which specified how the utility could provide water through public taps subject to payment by the City Corporation. Since the city had stopped paying for public taps, the Board chose to delete any mention at all of a public water obligation.

[7] The original proposal was "to provide individual water connections to [slum] households from [the] Board free of cost" but this was not accepted by the Board.

[8] The connection fee structure for slums is as follows. A house with an area of less than 150 square feet is now required to pay only the meter cost of Rs.550; houses measuring between 150 and 600 square feet pay Rs.800; and houses larger than 600 square feet pay the full Rs.1,740 (obviously rare in slums). Applications forms cost an additional Rs.60 ($1.30), though some NGOs charge a small margin bringing the application fee to Rs.100 ($2.20).

These amendments to the BWSSB Act gave the utility the legal platform it needed to go into communities and actually disconnect public taps.

Figure 4.1: Public Notice Issued by the BWSSB to Slum Dwellers



BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PUBLIC NOTICE

It is hereby notified for the information of the general public that as per amended Section 62(c) and 85(c) of BWSSB Act, 1964, whoever illegally draws water from BWSSB's lines or illegally allows sewage into Board's sewers shall be deemed to have committed a cognizable offence, punishable with simple imprisonment which may extend to one month or fine which may extend to Rs. 10,000/- or both. Please refrain from the temptation of taking unauthorised connection.

BWSSB also solicits co-operation from the public to provide information about unauthorised connections and help the Board in booking the culprits who tamper water and sewer lines.

Contact us : Phone : 1916 (24 hours), 2945100, 29451140
E-mail : chairman@bwssb.org / pro@bwssb.org
www.bwssb.org

In accepting these policies, the utility demonstrated a kind of flexibility not usually associated with bureaucracy. Government agencies are not known for their flexibility in infrastructure standards. On the contrary, caught in an "unintentional conspiracy," contractors, agency staff, elected officials, and suppliers are usually motivated to keep standards excessively high (Brando and Gakenheimer, 1987). Yet in this case, management agreed to lower standards in tenure requirements, service levels, and fee structures for slum dwellers. Though the water literature has long advocated this practice of easing standards for the poor and differentiating service levels by customer type (*e.g.* Cowen and Tynan, 1999; Johnstone and Wood, 2001), very few water utilities act on this advice. The fact that the utility's Governing Board was willing to accept these unusual measures proposed first by AusAID and later by the SDU is testimony to the strength of external jolts propelling them forward and to their commitment to doing something about slums.

The utility was able to lower infrastructure standards because management was unusually prescient in its anticipation of resistance from the outside. The Governing Board deliberately subverted formal channels of policymaking in order to avoid being hamstrung by a lengthy political process. Such "policymaking by stealth" was an important tactic to circumvent any resistance new measures might have provoked. For example, the Board did not seek approval from the state government for its radical shift in tenure requirements, even though providing water connections to slums without land title did have legal implications. Though the utility normally seeks approval from the Urban Development Department for major policy resolutions, management wanted to avoid a political discussion on slums. Taking this administrative and bureaucratic route avoided going to the State Legislative Assembly, where the issue could have been bogged down in heated and lengthy debate on the overall status of slums and their

regularization. Management was able to get away with this by enlisting the support of the chief IAS officer at the Urban Development Department who sits on the Governing Board and by drawing on the agency's comparatively strong independence as a parastatal.[9] It gambled, rightly, that given rampant illegal construction and tapped networks in slums anyway, few people would suddenly object to a government agency connecting the poor, or at least not on the grounds of their murky legal status.

Despite these progressive policies on paper, the slum program was never launched as an official, neat and tidy program with discrete objectives and an explicit methodology. From the beginning, implementation of the new idea was threatened by an almost careless ad-hoc treatment by senior management, despite several important resolutions adopted by the Governing Board. The meager resources allocated to the SDU are a case in point. More importantly, the Chief Engineer of Maintenance never addressed the fundamental issue of how to mainstream a slum initiative into the core operations of his field-based staff.

Instead, the program came to be defined by the actions of the SDU and service station engineers. Though the Board's resolutions were far more than mere policy gestures, they were but the beginning of the reform process. They provided a useful framework in which "friends of the poor" could act but did not give concrete directions as to how to proceed (Joshi and Moore, 2000). This lack of a consciously articulated strategy left the program open to interpretation by the SDU and by engineers, sometimes in ways that resulted in successful outcomes and

[9] In interviews, the Principal Secretary of Urban Development explained that this daring decision to ignore tenure status in slums was indeed a "silent progressive policy." Interview with Principal Secretary, May 24th, 2005.

sometimes in ways that did not. It is these actions of street-level bureaucrats on the ground that we must turn to next.

4.3 Engineer Buy-In

The Principal-Agent Problem and Centrifugal Tendencies

How do managers ensure that their subordinates work conscientiously and competently on behalf of the organization? How do officers at the top tangibly induce men in the field to do what they want them to do? These questions have long been the subject of research on bureaucracy and the state. Indeed, Weber's fundamental concern was "how often and under which conditions do bureaucrats actually comply with rules and commands, and how are rules and commands enforced?" (Olsen, 2005: 4). Answering these questions is critical to understanding how the slum program was unfurled within the agency.

A classic problem in modern economics provides a useful starting point. In the principal-agent model, a principal employs one or more agents to undertake certain tasks on the principal's behalf. A principal-agent problem exists when it is difficult for the principal to monitor agent behavior and enforce performance standards (Wade, 1997). The problem arises not just from conflicts of interest but from superior access to information by agents in the field who may withhold knowledge from principals in order to divert benefits in their direction (Batley, 2004).

There are well-known problems with this rational choice approach to understanding bureaucratic behavior. For example, the approach assumes that agents are motivated by rational self-interest

and will only comply with an organization's goals when it is in their own interest to do so. Principal-agent models are thus better at explaining workers who shirk, subvert or steal than they are at explaining why bureaucrats behave as "principled agents"—workers who work well even when rewards for a given task are limited or altogether absent (DiIulio, 1994). Many studies have shown how, in fact, bureaucrats behave in more altruistic ways because of the professional satisfaction they derive from the task or because of their loyalty to an organization.

Nonetheless, identification of the principal-agent problem itself provides a useful entry point to an examination of engineer buy-in in Bangalore. Maintenance engineers sitting in service stations are charged with authorizing and providing connections to new customers, and the policies enacted by the Governing Board of the utility to catalyze a slum program were directed primarily at them. Thus, field engineers represent the agents who undertake the physical tasks of the utility while senior management and chief engineers at headquarters represent the principals who sit at the helm. A typical principal-agent problem existed at the utility because it was difficult for senior managers to monitor implementation in scattered service stations and because those with the best access to information from the field were in fact the engineers.

The literature on organizations identifies several methods for tackling the principal-agent problem. In his classic study of how infrastructure agencies motivate staff, Wade (1997) identifies four broad methods: the use authority, the use rewards, teaching identification, and peer pressure. First, employees can be ordered to perform tasks in exchange for remunerated employment, with some discretion as to how they can achieve certain results. Second, employees can be induced to use their discretion in ways that advance managers' objectives through rewards

tied to performance assessments. Third, employees can be taught to identify with the organization and to align their own behavior with the organization's overall goals. Fourth, employees can be motivated to act by peer pressure, including the monitoring of activities by colleagues. In a similar vein to Wade, Wilson (1989) identifies incentives, culture and authority as the methods which when used in combination secure desired outputs from agents.

These methods for ensuring agent behavior in line with an organization's stated goals resurface repeatedly in the literature with modification according to the conditions of work. For example, Kaufman (1960) examines how the principal-agent problem is exacerbated in large organizations with far flung agents with complex jobs and large tasks. Though Kaufman was writing about a particularly dispersed agency, the US Forest Service, there are significant parallels to Bangalore's water utility with its engineers scattered across the city in field offices. Faced with competing influences, workers in dispersed organizations are naturally prone to fragmentation away from goals set by managers sitting in headquarters. An organization faced with such "centrifugal tendencies" must conquer the inherent "thrust towards disunity" in order to be successful. As Kaufman tells us, such organizations must adopt techniques of integration to defeat fragmentation. These include detecting and discouraging deviation (through inspections, sanctions, and reporting) and developing the will and capacity to conform (through careful recruitment and training).

While these studies are extremely insightful, the Bangalore water utility is different from the typical organization described in this literature in at least two important respects, both of which had an impact on how managers approached the new slum program. First, the utility is

characterized by a tight and protective professional camaraderie among engineers which conflicts with that of non-engineering management. This exacerbates the principal-agent problem. The extent to which chief engineers in headquarters act as principals in matters they know will irk their junior colleagues in the field is in fact limited. Like most professionals, engineers share a sub-culture based on values, norms and networks regardless of rank or assigned task (Lubove, 1965). In the case of slum work, this strong cultural homophily among engineers effectively cleaved the agency's principals in two, leaving senior management without the full commitment of the chief engineers more closely aligned with agents in the field. Because of the half-hearted commitment of senior engineers to assigning their junior peers a new and complex task, and because of the dependency of short-term senior managers on long-term engineers for support, the principals as a group trod meekly. They did not employ methods to induce agents to respond to their broad pronouncements on slums and they did not develop a strategy to conquer centrifugal tendencies with respect to slum work.

Second, the utility was not capable of prescribing actions on slum work in advance. Normally, large organizations avoid fragmentation by prescribing actions in advance of specific instances requiring choice. This ensures far-flung agents will make decisions in line with what headquarters wants. But organizations can only quell deviation "once experience has indicated the kinds of situations likely to develop" (Kaufman, 1960: 91). The utility had no such experience in slums. Managers and engineers simply did not know what to do or how to do it. Though the utility had successfully completed three pilots, untested implementation conditions and the isolation of the pilots from everyday operations provided almost no learning among core staff. No one designing worker inducements at the top was capable of prescribing actions in

slums. Though the absence of specific inducements is in part a reflection of the lukewarm response by those at the top to implementing a slum program, it also reflects the "natural" way bureaucratic practices grow during early stages of improvisation when practitioners are first exposed to a new idea (Yin, 1979).

Consequently, senior management meted out extreme discretion to service station engineers as to whether and how to approach slums. While the managers and chief engineers at headquarters tinkered with the *Kaveri Agamana* proposal to scale up the pilots to the entire city and the Board approved new resolutions with potentially far-reaching implications for slum dwellers, engineers on the frontline were simply informed via letter that a new SDU had been created and that they should cooperate with it on the issue of slums.[10] This letter sent from the Chairman to all field-based Maintenance engineers made no mention of the new connection fees or service levels on offer to slums. It simply informed staff that a new slum unit had been formed and that they should cooperate with its requests for assistance.

The result reveals the Janus-faced quality of worker discretion. One the one hand, discretion among bureaucrats is important to increasing worker dedication to the job. Under pressure for good performance from a sense of trust and accountability, rather than distrust and scrutiny, workers have been shown to use discretion to the advantage of an organization (Tendler, 1997).

[10] The Chief Engineer of Maintenance scaled back the original *Kaveri Agamana* proposal developed by AusAID from a Rs.65 crore ($14 million) to a Rs.27 crore ($6 million) project. The new document was a bare bones proposal to provide 102,000 households with water and sewerage pipes only; it took out the expensive "extras" the AusAID proposal had inserted for social mobilization, staff training, NGO remuneration, etc. For a while, Maintenance envisaged that 50 percent of the funding would come through a grant from the City Council and 50 percent through a grant from the state Government of Karnataka. Eventually, when this was not forthcoming, a more sophisticated proposal was developed by in-house consulting firm Tata for Rs.46 crore ($10 million), which was circulated to international donors. Though such tinkering at the top might have sent mixed signals to field staff about the legitimacy of the SDU's current efforts, it did not much affect the program on the ground because most service station engineers were kept out of the information loop.

On the other hand, there are perils to leaving take-up of reform at the mercy of frontline workers. Discretion as to how to comply with an organizational goal is quite different from discretion as to whether to comply with it at all.

In Bangalore, both forms of discretion prevailed and their countervailing effects are revealing. While discretion as to how to comply led to a successful three year period of experimentation under the initiative of the non-aligned SDU, the initially hesitant commitments made by principals to the idea of rolling out household connections to slums essentially left implementation entirely up to agents in the field. As a result, individual engineers reacted very differently. The remainder of this chapter explains why engineers acted the way they did. Before turning to the dynamic role of the SDU and its capacity to elicit enthusiasm from engineers, the following section describes the determinants of supply already in place at the utility and in service stations *without* any specific inducements from management to tackle slums.

Determinants of Willingness to Supply

In the absence of a well-articulated strategy for rolling out slum connections, the existing work structure in service stations made the proposition to connect slum households more or less appealing depending on several factors. These incentives and disincentives embedded in daily maintenance work can be grouped into four categories, namely: (1) the professional environment, (2) area resources and slum traits, (3) worker disposition and personal preferences, and (4) non-preference characteristics of engineers (see Table 4.1). Though no single factor was necessary to pique engineer interest, in combination these factors begin to explain early buy-in to

management's new idea, even if their effect on motivation for slum work was largely accidental. This section examines each of these explanatory factors in turn, taking us back to the everyday conditions of scarcity and constraints in which Maintenance engineers operate.

Table 4.1: Determinants of Willingness to Supply

Category	Sample Variables
The Professional Environment	- Orders from superiors - Revenue targets and performance reviews - Profile of service station
Area Resources & Slum Traits	- Size of slum and existing supply - Water scarcity - Presence of pipes near slum
Worker Disposition & Preferences	- Public service motivation - Fear of slums - Identification with agency goals
Non-Preference Characteristics	- Years at service station - Education background - Experience at utility

(1) The Professional Environment

Each service station has a distinct flavor of its own. When an Assistant Engineer (AE) assumes command of a station, he inherits a professional environment he can do little to change but which deeply influences his daily behavior.[11] This environment is especially affected, first, by the distribution of connections across customer segments and, second, by the manner in which an

[11] A service station is supposed to be headed by an engineer of the rank of Assistant Engineer (AE). However, due to years of over staffing and the preferential placement of members of the scheduled castes in job openings, many engineers have been promoted to Assistant Executive Engineer (AEE) without a commensurate increase in responsibility. Service stations are thus headed by both AEs and AEEs although their jobs are the same. I use the term AE for simplicity's sake and in reference to the fact that there is only one kind of service station job. In my estimation, rank does not deeply alter an engineer's behavior in a service station.

engineer's immediate supervisor monitors his work. Both of these factors are closely related to revenue collection which remains one of an AE's primary tasks, bordering at times on the dominant one. In the absence of specific slum targets, rolling out slum connections was most appealing to a Maintenance engineer when doing so fit with these two traits of his particular service station: the kinds of connections present and the nature of supervisor control.

First, the connection profile of each service station was an important determinant of buy-in to the program, in particular the distribution of connections across the domestic and non-domestic sectors. Because of the division of Bangalore into geographically discrete service stations, each station serves a mix of domestic, non-domestic, and industrial connections, all of which must be attended to by the AE in charge and his staff.[12] In absolute numbers, domestic connections dominate ranging on average from 95 to 99 percent of all connections (see Table 4.2). But non-domestic customers contribute a disproportionately higher share of utility revenue. In order to keep the extensive cross-subsidy system afloat, they pay much higher tariffs than their domestic counterparts and consume larger volumes of water.[13] The non-domestic sector is thus hugely important to the agency's overall finances, as well as to an individual engineer's task of revenue collection.

When endowed with a large share of monthly revenue accruing from non-domestic connections, engineers had much less incentive to connect low-revenue domestic connections, particularly extremely low-revenue slums. For example, in JB Nagar service station, where 50 percent of all

[12] The BWSSB differentiates between non-domestic and industrial connections. Non-domestic refers to small and medium sized enterprises, including shops and firms, whereas industrial refers to large industrial firms.
[13] Non-domestic customers pay a slab rate starting at Rs.36 per KL, while industrial customers pay an even higher tariff of Rs.60 per KL regardless of volumetric consumption. Both pay considerably more than domestic customers who start at Rs.6 per KL, and both pay more than total production costs at approximately Rs.20 per KL.

revenue came from the non-domestic sector, the engineer in charge was not interested in connecting slums. Though he connected both a pilot and an immediate post-pilot slum, he did so entirely under pressure from the AusAID team and, later, the SDU. His willingness to supply plummeted when implementation was left to his own initiative. In interviews, he expressed significant reticence about engaging in any further slum work because of a predilection for the sizeable non-domestic sector in his service station and the ample revenue accruing from it. However, like all the determinants discussed in this chapter, a connection profile dominated by non-domestic customers was not a fail stop. In Machalibetta service station, the AE connected over 12 slums to the network despite a similar revenue split because, on balance, other factors affected him more.

Table 4.2: Connection Profiles of Four Service Stations

	JJ Nagar	JB Nagar	Machalibetta	Rajajinagar
Number of Connections	6,512	8,054	7,907	10,681
% Domestic	95%	99%	98%	95%
% Non-Domestic	5%	1%	2%	5%
% Revenue from Non-Dom.	28%	50%	46%	11%

Source: Author's calculations using April 2005 data.

Second, the way an engineer's superiors monitored his work and assessed his performance greatly influenced his willingness to work in slums. Although Maintenance managers in sub-division and division offices grant their service station engineers wide discretion as to how to comply with tasks and how to allocate their time, they do supervise certain criteria quite closely. The average AE meets with his immediate boss in the sub-division at least three to four times a month to discuss his performance formally, and many more times in the course of an average

week to attend to technical matters and complaints. Although there is no formal ranking or grading system, supervisors pay particularly close attention to performance on complaint reduction and on revenue collection. Thus, an engineer will do everything in his power to reduce the number of complaints filed and to increase his revenue collection. Slum work is inherently heavy on the former and light on the latter. As long as an engineer found himself closely monitored on both these fronts, he faced a strong disincentive to commit to slums.

Although both the connection profiles of service stations and manager supervision of complaints and revenue collection tended to drive engineers away from slum work, simultaneous changes at the utility adjusted these factors in favor of slum connections in a very concrete, if unexpected, way. In the recent past, repeated hikes in electricity prices had resulted in reduced profit for the utility and, as part of larger reform efforts, the new Chairman began putting real pressure on the Maintenance Division to improve collection efficiency. He held regular meetings with long neglected service station engineers and fired staff for poor performance in ways his predecessors would never have deigned. Through a combination of genuine carrots and sticks, he roused the revenue collection efforts of the agency out of a deep slumber. Although the utility's "demand-collection-balance" accounting system had been in place for decades, the Chairman set new and ambitious monthly revenue targets.[14] Engineers were assessed not only on their ability to close the revenue gap and meet their target, but also on their ability to attract new demand. Though

[14] The DCB system works as follows. Demand is measured as the sum of the opening balance (i.e. arrears), interest, new water demand (i.e. meter readings), new sanitary demand (i.e. sanitary charges), and service charges. Collection is the sum of all moneys collected from both current demand and past arrears. The difference between the two is the closing balance. The new Chairman put pressure on engineers to increase two of these variables in particular: new water demand and arrears collection.

some engineers were concerned that slums might accrue arrears, increasing demand on the books by authorizing new connections would stand an engineer in good stead.[15]

As a result of this new emphasis on revenue targets, the tasks of expanding the customer base and collecting arrears came to dominate work life in Maintenance. The actions of the Chairman, aimed at turning the financial health of the agency around, changed the order of importance of an engineer's primary tasks. In most public sector utilities in India, maintenance staff rank solving technical matters and addressing complaints over and above "recovering revenue" (Ruet, 2001). In Bangalore, the new emphasis on meeting revenue targets, particularly through "demand-raising," inverted this order. Though technical matters retained some importance, the concrete pressure for revenue collection and its numbers-driven simplicity gradually won engineers over. In interviews, nearly all engineers emphasized the extent to which billing and collection dominated their everyday work lives. As one engineer stated, "I am an engineer, a public relations officer and a revenue collection officer."[16] Though small technical crises punctuated their days and occupied much of their time, engineers structured their work lives around billing cycles, dividing each month into one period in which meter readers issued the bills and another in which customers paid and staff collected arrears.

Engineers were thus tempted by slums when they saw a market, one which would raise demand on the books and potentially improve their collection efficiency. Indeed, engineers who did well

[15] This incentive to attract new demand was bolstered by the way UFW is calculated. For each service station, UFW is calculated as the difference between the amount of water pumped into the station's main feeder pipe, and the metered demand. If an engineer simply increases his metered demand, by putting more customers on the books, he reduces his UFW without actually doing anything about leakage or reducing illegal connections (unless of course the new customers previously had illegal connections). Although this perverse incentive did nothing to promote efficient utility management, it did make connecting slum households more appealing to engineers.
[16] Interview with AE of Rajajinagar, May 13th 2005.

in slums cited revenue collection as one of the primary determinants of their willingness to supply and the evidence supports their claims. In JJ Nagar, for example, collection efficiency for the whole station was extremely low and the AE was under pressure from his sub-division head to raise demand and close the revenue gap. Once connected, slums eventually contributed seven percent of his total revenue (see Table 4.3). Likewise, the extremely successful AE in Machalibetta saw in slums an opportunity to surpass his targets. Although he could rely on non-domestic connections for the bulk of his revenue, slums presented an opportunity to collect even more. The 12 slums he connected contributed Rs.220,000 ($4,900) in monthly revenue alone, nearly half of the amount he reached over and above his target. Though his share of total revenue from slums was much lower than the AE's in JJ Nagar, this was only because his service station contained so many high volume non-domestic connections. In absolute terms, slums contributed a lot of money for which he was heavily praised. Although the revenue potential of slums was, of course, not equal across the city and larger and wealthier slums appealed to engineers more, all slums presented at least some opportunity to raise demand and increase collection.

Table 4.3: Revenue Profiles of Four Service Stations

	JJ Nagar	JB Nagar	Machalibetta	Rajajinagar
Monthly Target	Rs.2 million	Rs.20 million	Rs.9 million	Rs.4.5 million
Total Collection	Rs.1.5 million	Rs.22.8 million	Rs.9.5 million	Rs.4.6 million
% of Target Collected	74%	114%	106%	102%
Collection from Slums	Rs.102,000	Rs.28,363	Rs.220,000	Rs.4,000
% of Total from Slums	7%	0.1%	2%	0.1%

Source: Author's calculations using April 2005 data, figures in millions are rounded.

Finally, in addition to monitoring complaint reduction and revenue collection, supervisors also monitored performance with respect to public taps. Though no manager gave specific targets to engineers to install new connections in slums, a few emphasized the need to disconnect public taps. This was because the ongoing problem of public taps not only prompted senior management to change policy at the top, it also prompted them to apply pressure down the chain of command.[17] In the Chairman's regular meetings with heads of sub-divisions, and in line with his broader agenda to improve the agency's finances and reduce UFW, he urged field staff to disconnect these troublesome, non-revenue taps. In interviews, committed engineers cited these disconnection targets passed down to them by their immediate superiors as a primary motivation to connect slum households. Although it was easy for senior managers to say, disconnection was hard for service station engineers to do. Therefore, some engineers expressed an interest in connecting slums precisely because they had to find an alternative supply before even attempting to disconnect.

(2) Area Resources and Slum Traits

Apart from structured incentives and rewards, the availability of local resources also impacted engineer buy-in to reform. When an engineer considered approving new slum connections, he not only considered the benefits he would receive in revenue terms or the additional work he

[17] The problem of public taps was not just a trigger for reform. It stayed with management throughout the years as a problem in need of a solution. The utility estimated that public taps supplied 4.6 million KL of water per month, whereas the *Kaveri Agamana* proposal estimated that 102,000 slum households would in one month consume only 765,000 KL. Each subsequent version of the proposal developed by the utility reasserted the importance of disconnecting public taps and justified the financial costs of slum work on these grounds. In the first adjusted version, slum connections were deemed financially viable precisely because while water loss through taps amounted to more than Rs.24 crore per year, providing slum connections would cost only Rs.27 crore as a one-time investment with an additional Rs.7 crore in revenue per year. Of course, not all public taps are located in slums and there are more than 102,000 slum households—but the problem of water loss through taps continuously drove management to think about serving the slums.

might create for his staff. He also considered what resources he would have to work with, the most important of these being water and pipes.

Engineers working in areas with either acute water scarcity or problems of tail-end supply were considerably more reluctant to work in slums than their other colleagues. Though slum dwellers are low-volume consumers, their addition to the network in large groups all at once significantly increases demand. If the distribution network is poorly designed, the subsequent spike in demand can reduce water pressure for existing customers, leading inevitably to a surge of complaints and jeopardizing revenue collection. Engineers were thus reluctant to serve slums if their addition to the local network would throw their finely balanced distribution systems off kilter.

This reluctance to serve slums in water scarce areas reveals a peculiar paradox of accountability. Though we usually think of introducing accountability as a good thing, my findings show how the ability to hold engineers accountable backfired when the conditions which stymie performance were out of their control. As soon as connections were sanctioned and meters were issued, new customers were "on the books." From this point onwards, engineers were made accountable and had to provide water and collect payment. If not, they risked questioning by their immediate superiors, the wrath of a local politician, visits by slum dwellers *en masse*, and a future pattern of low collection from a dissatisfied customer base—all of which negatively impact performance reviews and make everyday life unpleasant. Without enough water to serve new customers well, engineers preferred not to serve them at all. As one engineer quipped, "slum work can come back to haunt you."[18] This paradox goes a long way in explaining some of the

[18] Interview with AE of Machalibetta Service Station, May 13th 2005.

disinterest in the slum program. In interviews, engineers cited the fear of being held accountable for customers they could not adequately serve as one reason they avoided slums altogether.

Yet an abundance of water also had its perils. When water was too copious, there were no pressure problems and far fewer complaints. Engineers in such water-rich stations did not feel compelled to reallocate water away from illegal connections to paying customers and, holding all else constant, could afford to turn a blind eye to public taps and tapped lines. Though in many cases this tolerance actually benefited slum dwellers, it did little to advance management's stated goal of rolling out legal connections across the city's slums. For example, from the beginning of the slum connection drive to the end of my research, the water-rich South Division maintained a dismal record on service to slums. The service stations here had access to plentiful water supply because of their proximity to where the large pipelines enter the city from the Cauvery River. To boot, a high concentration of industry ensured consistently high revenue. The engineers in the South were thus flush with both water and cash, and for two years after the pilot project displayed a logical indifference to slums. Indeed, the Executive Engineer of the division only contacted the SDU once the Chairman increased his revenue target. As he then said, "Now I need one *crore* per month more. I can get 30-40 *lakhs* in one month with slums and it will help me meet my revenue targets."[19] Without any other incentives, abundant water resources made slum work a proposition with few rewards.

A second important area resource was the availability and quality of actual pipes. Even prior to the AusAID Master Plan Project, the utility had begun an extensive program to replace old pipes,

[19] Interview with Executive Engineer, South Division, May 14th 2004. A crore is Rs.10 million ($220,000) and a lakh is Rs.100,000 ($2,200).

some of which were over 100 years old. By the time the pilots were completed in 2002, the utility had replaced up to two thirds of its distribution network removing corroded pipes and replacing them with larger pipes of better quality. This alone had the important effect of improving service, thereby decreasing the number of customer complaints related to leakage, contamination, and bad pressure. Several engineers who experimented with slum supply cited time savings from a lower complaint load in their service station as one reason why they were interested in entering a new market.

In addition to being of good quality, however, pipes needed to be there. Without a distribution network in slums at all, there was very little even the most enthusiastic Maintenance engineers could do. Though the program paid for by the City Corporation to extend the utility's network to newly added wards and other "missing bits" started in 2002, few slums had been covered in the immediate aftermath of management's new slum policies. It was only as the network gradually penetrated slums, or at least neighboring areas, that engineers could act. For example, the engineer in JJ Nagar dated his own willingness to supply to Mominpura slum back to the installation of a new feeder pipe in his service station. Similarly, Machalibetta's AE explained his presence in slums as the logical consequence of the physical expansion of the network.

Although the presence of pipes seems an obvious precondition for engineer buy-in, discussing it with staff revealed the extent to which the division of labor at the utility hampered the slum program. Maintenance engineers were charged with connecting the slums because of their traditional role of approving new connections, monitoring water supply, and ensuring billing and collection. But the maintenance funds available to service station engineers were only sufficient

to cover minor improvement works, such as link works between water mains. Major capital investments were not the domain of Maintenance. Instead, the expansion of the network was entrusted to the Projects Division in charge of capital investment, with the obligation to hand the network back to Maintenance once construction was complete. This separation of duties led to much acrimonious finger-pointing between the two divisions during program implementation when the utility came under attack by the City Corporation for periodic delays and sloppy construction. Little noticed, however, was how much this separation of duties harmed the slum program. Because Projects engineers were not subject to any of the incentives in place at service stations, they were under no compunction to extend the network to slums. As a result, many slums were effectively cut out simply because there was little even the most willing Maintenance engineer could do to build a physical network himself.

In addition to area resources, the physical traits of a slum were also important determinants of supply. Although an engineer's knowledge of a particular slum was naturally limited at first, certain traits, if and when they came to light, could decidedly curb any fledgling enthusiasm otherwise aroused. One of the more important and easily identifiable traits of a slum is its size. Engineers, particularly those encountering slums for the first time, were generally more willing to try their hand in smaller slums than in large ones where they knowingly risked being entirely overwhelmed by complex politics and intra-slum divisions. They felt smaller slums were far easier to assess and that fewer streets made their task more feasible.

Interestingly, land tenure was of little consequence to most engineers. Despite the radical and bold policy measures taken by management to extend service to slums irrespective of legal

status, engineers did not seem to take this variable into consideration anyway. In interviews, very few mentioned tenure status as a constraint or hinted that possession of land title improved their willingness to supply. Indeed, when asked, most engineers confessed very little knowledge about the complexities of land tenure altogether. From their perspective, the illegal status of slums was never a deterring factor. It was not illegal tenure, they said, but extreme poverty and the worst physical conditions which put them off. Though the latter are correlated with tenure status and can be good proxies, it was not the status *per se* which reduced willingness to supply.[20]

Of extreme importance to engineers, however, was whether a slum already had access to water of good quality. If so, they knew it would be difficult to connect residents. This reluctance applied to slums with borewells fed by groundwater but also to slums with existing connections to the utility's network, either through centrally located public taps or illegal household connections. Whereas groundwater contamination and sinking water tables have reduced the quality of most borewell supply in Bangalore, "Cauvery water" is still highly valued. Even more highly valued is free access to utility water. This makes the conversion of public taps and illegal connections to paid connections very difficult. On balance, public taps and illegal connections fed by Cauvery water may even be close substitutes for legal household connections fed by the same source. This is for two reasons. First, the problems of intermittent supply, low pressure, and water contamination hold regardless of whether Cauvery water is delivered to a legal connection or to a public tap or an illegal connection. Second, water supplied through taps and illegal

[20] The exception to the predominant view was voiced by the successful head of Machalibetta service station. Perhaps because of his familiarity with slums, he came to understand the subtleties of land tenure better than any other engineer I interviewed. In the case of one extremely poor slum built of temporary shacks and not recognized by the Slum Board, he was willing to offer shared connections but insisted that they be sanctioned in the name of the NGO, rather than of households, to avoid the risk of litigation. He knew that the provision of basic amenities is frequently used in the courts as grounds for recognizing land rights and he did not want the utility dragged into any future case, even though management had waived this concern themselves.

connections is free even if the community must attend to its own maintenance. Therefore, it is only when the number of taps is truly insufficient and the promise of improved customer service really credible that direct connections at a fee become interesting to slum dwellers with existing network supply.

But the number of taps was rarely insufficient and engineers knew this. If a distribution network was present in slums, free taps were rarely few and far between. The paucity of taps we associate with slums occurred only when the network had not yet penetrated the area, in which case Maintenance engineers could not extend service anyway. Once the network had penetrated a slum, public taps were everywhere. For example, in Chamundi slum in Rajajinagar, residents had access to so many "public taps" situated throughout the slum that service effectively reached the level on offer through individual connections. Though officially sanctioned taps were few, most households had blatantly tapped the lines just outside their home and dubbed it a "public tap." Although the engineer in this service station was losing scarce water to illegal connections, the prospect of converting free supply to a paid one without any discernable improvement in quality was so unappealing it dissuaded him completely from even trying.

(3) Worker Disposition and Personal Preferences

Engineers had vastly different perceptions of what slum work entails. Some recoiled at the prospect of the added workload, while others rose to the occasion. This finding mirrors the argument that agents act according to mental models of choice with expectations of patterned outcomes (March, 1994). If an individual engineer perceives a problematic future for what he

imagines slum work to be, he is likely to avoid it in the absence of further pressure. If on the other hand, he sees no major problems with a decision to engage, or at least believes his time and labor force are sufficient to meet the new demands, he is more likely to proceed until his subsequent experiences either corroborate or refute his expectations. For example, part of a positive mental model is the conviction that slum dwellers can pay. The engineer in JJ Nagar who connected Mominpura slum was convinced of this. As he stated, "They earn money and build *"pakka"* houses. The cost for meters is only Rs.550 so they can definitely pay [that]."[21]

Engineers in service stations with successful slum connection drives also displayed strong ideals of public service and a genuine identification with the agency's overarching goal of providing water to the entire city. Although the demand-collection-balance system hangs heavy over their heads, it is not everything. The most willing engineers professed a real commitment to parallel job efforts and defined their primary task in service stations as "providing regular service to the public without compromising on revenues".[22] These engineers insisted that "we must embrace all customers"[23] and identified their source of drive as "department service motivation."[24] Willing engineers in Bangalore thus drew on their own personal dispositions about duty and the meaning of public service to explain their presence in slums.

Such sentiments are not uncommon in bureaucracies. Many public sector employees have strong norms and emotions about performing public service. These ideals often prompt employees to enter government in the first place and linger on even after years on the job. Though engineers as

[21] Interview with AE of JJ Nagar, May 11th 2005. A *"pakka"* house is one of good quality and durable materials.
[22] Interview with AE of Machalibetta, May 13th 2005.
[23] Ibid.
[24] Interview with AE of JB Nagar, May 12th 2005.

a profession have strong technical ideals and attainment of a government job in India connotes much more than performing a public duty, public service motivation has been shown to play a prominent role in other Indian water utilities (Caseley, 2003). Moreover, public service motivation surges forth when employees are faced with situations, like serving the poor, which dreg up old ideals. When faced with dilemmas as to how to allocate scarce resources, street-level bureaucrats sometimes hark back to old emotions which they have suppressed in order to conform to the reality of bureaucratic life (Lipsky, 1980).

Engineers in Bangalore described a similar reaction. They explained their commitment to slums on the grounds of "social justice" and "humanity considerations"—ideals which presumably they had always subscribed to but which officially sanctioned slum work gave them the opportunity to act on at last. These engineers prided themselves on their work in slums and they condemned the laissez-faire attitude of engineers averse to slum work acting as if they had "white collar jobs." Not only did committed engineers display more public service motivation than their uncommitted counterparts, but they took pride in finding a "humanitarian" chance to let it shine.

Inversely, in service stations where progress was halting, engineers revealed deep reservations about connecting individual slum households to the network. In some cases, this was because engineers were afraid of slums. As street-level bureaucrats, they must on occasion handle instances of what they call "rowdyism." Street protests, beatings of service station staff, and burnings of BWSSB jeeps are not uncommon events in Maintenance. Although there is no necessary correlation, engineers who associated such behavior with poor people were reluctant to add slums to an already dissatisfied customer base.

In other cases, heads of service stations were reluctant because they did not see slum work as compatible with an engineering job. The skills required to mobilize slums were social, not technical, and traipsing through slums was not part of their job description. Though these descriptions are nowhere written down, reluctant engineers perceived slum work as above and beyond the call of duty. In the absence of greater public service motivation, they viewed slums from the narrow perspective of traditional job roles and focused instead on the tasks for which they were concretely induced. For them, supplying slums with water was a discretionary activity quite apart from the core tasks of the agency, what one engineer dubbed a mere "extra service."[25]

However, not all engineers who refused slum work lacked public service motivation. Many simply did not believe in management's approach. As the AE of Rajajinagar stated, "the BWSSB alone cannot bring a sea change in slums."[26] Although this engineer had a sophisticated understanding of the dynamics of slums and believed in "social service," he did not believe in the idea of supplying slums with individual household connections. In his view, the only way to supply slums was through bulk metering of a separate slum system paid for by government. His personal convictions included that slum dwellers can not and should not pay for water, and that the problem of urban slums was entirely beyond the concern of his agency. Slums were badly designed neighborhoods which made lane-by-lane pipes difficult and were in all likelihood not permanent structures anyway. Something had to be done about persistent poverty but not by service station engineers. Given wide discretion, he was free to act on these convictions, as did many others of the same view. For many engineers otherwise devoted to public service and to

[25] Interview with AE of JB Nagar, May 12th 2005.
[26] Interview with AE of Rajajinagar, May 13th 2005.

the utility, the particular approach advocated by management simply did not tally with their vision of a viable technical solution for slums.[27]

(4) Non-Preference Characteristics

A final set of factors with some bearing on engineer buy-in to reform is the category of non-preference characteristics. Of these, the most important was the length of tenure in a particular service station. Although other non-preference characteristics, such as level of education, past positions held, and number of years employed, affected engineer behavior in other ways, the evidence in Bangalore for their impact on willingness to supply to slums is inconclusive. In contrast, service station tenure mattered very much. In my focused comparison, newly transferred engineers displayed a great deal less interest in slum work than their longer-term colleagues, and none of the most committed engineers were new to their stations. For example, although the AE of Rajajinagar was a long-time member of the Maintenance Division, he had only been at this particular service station for the last eight months. His unwillingness to supply to Chamundi slum stemmed in part from his recent arrival to the area and his reticence to depart from the more pressing task of acquainting himself fully with new particulars. Upon appointment, a new AE spends considerable time learning how to grease the wheels of his new service station. He must grasp the station's revenue and connection profiles, befriend local staff

[27] This concern with the proposed technical solution for slums in Bangalore was not without merit. Many of the academic and engineering experts I interviewed agreed with this assessment. For them, the service on offer to slums was a technical folly on two grounds. First, in a system of intermittent supply, surges in pressure make meters ineffective, particularly for low volume consumption. They saw the installation of individual meters as a waste of money when high-pressure bulk delivery made much more sense. Second, they viewed the eventual laying of both water and sewerage pipes in small lanes as a serious breach of minimum standards. Close proximity between pipes would raise the specter of cross-contamination with all its dire health implications, for which the utility would be responsible.

from water inspectors to meter readers, and establish relationships with area politicians from both the city council and the state assembly. All of this takes time and energy beyond the daily grind of water distribution, revenue collection, and complaint redressal. Consequently, only engineers who had already mastered their service stations were able to allocate any time to the discretionary task of supplying slums.

4.4 The Critical Role of the Slum Unit

The Importance of Information Exchange

Although the preceding kind of analysis of engineer buy-in is informative, its limitations are twofold. First, the incentives and disincentives described in the previous section are largely static and cannot account for changes in willingness to supply during project implementation. Though they vary at the margins, such incentives built into service station life cannot explain the significant variation in engineer commitment to reform. Second, and related, an analysis of such determinants cannot explain how engineers came to know of such incentives and disincentives in the first place. Just as agents may withhold information from principals to divert benefits in their direction, information may unwittingly be withheld from them. Yet agents of all stripes require information on what to do and how to do it. Without information, engineers cannot spontaneously supply a new service.

Though mostly absent from studies on how infrastructure agencies motivate staff, information exchange is central to the literature on the diffusion of innovations (*e.g.* Rogers, 1995). The very premise of this literature is that new practices generate uncertainty and that the meaning of an

innovation has to be communicated to expected adopters. Diffusion essentially boils down to information exchange among participants. The very first step in models of innovation is precisely the knowledge stage in which "an individual or other decision-making unit is exposed to an innovation's existence and gains some understanding of how it functions" (Rogers, 1995: 162). Similarly, the literature on organizational learning stresses the centrality of information exchange. An organization and its employees are said to learn when they acquire "knowledge, understanding, know-how, techniques, or practices" (Argyris and Schon, 1996: 3). The essential message in both literatures is that in order to diffuse an innovation, fresh information about the new program, invention, or idea must be conveyed its expected adopters.

In contrast, the role of information in the development literature is more confined. While information is repeatedly cited as key to accountability, the focus is more on information generation as a tool for advocacy and citizen-based monitoring of government performance rather than on dissemination of information for the purposes of learning (*e.g.* Goetz and Gaventa, 2001; World Bank, 2006).[28] If anything, information exchange inside the state is discouraged because moving information around is costly and because of a fashionable tendency in the development literature to hold sacred all things local, including information. For example, the case for decentralization pivots on the argument that bringing decision-making closer to local sources of information makes it more responsive and better informed (Fukuyama, 2004). This may be true but when local knowledge is insufficient for local agents to act effectively,

[28] The World Development Report 2004 makes this singular concern very explicit (World Bank, 2004). In the framework for service provision, information is one of the five features central to effective accountability relationships between providers, on the one hand, and client and citizens, on the other hand. But information is a feature which flows *from* the provider *to* clients. It does not flow the other way around towards the provider, nor does it flow within the providing organization from principals at the top to agents in the field.

information must be moved up and down the hierarchy of an organization so that decision-making is actually well-informed.

A focus on information exchange such that employees might learn is not to ignore the problems typical of center-periphery relations when the center innovates and imposes ideas on the periphery, or to negate that innovations can spread horizontally rather than vertically from experts to adopters (Ellerman, 2001). Indeed, the essential message of my findings is that information must keep moving, not that it should move only from top to bottom. But we must be honest when local knowledge is insufficient. A focus on the "trenches"—in this case street-level bureaucrats—rather than on policy elites does not mean the former have all the answers.

The need for mobile information surfaces repeatedly in the literature on rural development and agricultural extension. Extension agents cover such vast ground of farming hinterland that of obvious concern is the movement of necessary information both within the extension organization and between professionals and farmers (Leonard, 1977). In low-density rural settings, the need for information exchange is thus obvious. But because the literature on infrastructure provision to dense, urban areas tends to underestimate intra-organizational variation and the thrust towards disunity in service agencies, the importance of information exchange gets lost.

In Bangalore, one of the most important determinants of a successful outcome was effective information exchange—both within the state and across the state-society divide. Within the utility, information exchange was central to achieving engineer commitment to reform. Despite

the utility's long history of decentralized decision-making based on delegated discretion to service stations, engineers did not have access to adequate information on which to act. As a profession, most engineers are not trained in design for mixed levels of service or in mobilization and participatory techniques (Bos, 2001). Apart from the three engineers with limited involvement in the pilots, most had no prior experience on which to base their actions. They did not know what services to offer or how to approach large neighborhoods of poor people; they did not know much about the Governing Board's change in policies; and they did not even know how many slums were in their service stations and whether they were declared, identified, or altogether illegal. In order to dive into slums, extend the network, and offer connections, engineers needed to be exposed to new information.

Communicating, Marketing, and Disentangling the Task

Information was of quintessential importance to engineers because of the way it made their task more feasible. The job of information dissemination to frontline workers fell to the new Social Development Unit (SDU). The SDU channeled information to Maintenance engineers and their staff in order to reduce complexity and tangibly direct all parties as to how to proceed. Specifically, engineers were most enthusiastic in service stations where the SDU was effective at (1) communicating the contents of the program (the "what"), (2) marketing the benefits of cooperation (the "why"), and (3) laying out concrete steps for them to follow (the "how").

First, the SDU explained the details of the new program to engineers in greater detail than anything they had heard before. The 2002 letter from management informing engineers in the

field of their decision to allow slum connections was brief and cursory. It simply announced the creation of the SDU as a continuation of the AusAID project and directed engineers to cooperate with the head of the new unit should she chance to contact them. As a communications strategy to expected adopters of an innovation, this was measly. In contrast, the SDU disclosed much more. In private meetings with engineers, the head of the unit explained the history of the pilots and the subsequent decisions taken by the utility's Governing Board. She discussed what had and what had not worked in the pilots and presented an alternative vision of service in which poor households in slums could connect to the network. Most importantly, she laid out the details of the new policies, communicating explicitly what management had already agreed to but which engineers were not aware of. In one-on-one meetings, the SDU told engineers that the connection fee for slums had been reduced from Rs.1,740 to either Rs.550 or Rs.800 depending on plot size; that shared connections with a distinct tariff structure were a possibility for dense slums; and that the burden of paperwork had been reduced for slum dwellers unable to furnish land titles or property tax receipts.

Second, the SDU marketed the idea of slum work to engineers. Engineer buy-in did not just follow naturally from effective communication of program content. Just knowing "what" the new slum program was all about was not enough. An engineer had to be convinced of "why" he should do anything and how his subsequent actions might benefit him. Thus, one of the SDU's primary roles within the utility was to market the program in such a way as to elicit willingness to supply. This meant explaining to engineers why they should cooperate and increasing the moral cost of not doing so. One of the SDU's most successful marketing strategies was incentive disclosure. Though incentives to connect slums were built into the local characteristics of the

slums and service stations, they were not always so obvious to engineers and needed to be unveiled. For example, the SDU deliberately marketed the program as one way to increase service station revenue and to raise demand on the books. The success of incentive disclosure as a marketing strategy was evident in my interviews in which many committed engineers cited the benefits of slum work for revenue collection and demand-raising but also cited the SDU's role in making these benefits first apparent to them.

Third, the SDU disentangled slum work, separating out concrete tasks for engineers to connect slums to the network. A careful step-by-step presentation of "how" to implement a slum connection drive provided interested engineers with explicit strategies as to how to proceed. It also increased the chances of converting skeptical engineers to willing suppliers by making their tasks distinctly more feasible and clear. Therefore, the extent and quality of time spent by the SDU with service station engineers laying out clear implementation strategies had a huge impact on engineer buy-in to the slum program.

The dissemination of information on implementation strategies was particularly important for engineers accustomed to established procedures inappropriate for slums. For example, normally, when a household wants a new domestic connection, it approaches the service station directly. An engineer thus expects future customers to come to him. Several unsuccessful engineers cited this as one reason why they had not supplied water to any slums—they were waiting for slum households to approach them. But in slums, the sequence is reversed and utility staff must go out to residents. Before they can even issue applications, they must meet with the community, assess existing sources of water, design new networks, and convince the majority of households to

connect at the same time. All of this is unusual behavior for engineers and in the absence of effective information dissemination by the SDU, they just would not know how to approach slums.

The difference between normal operations and slum-specific procedures deserves some elaboration here. In successful slums, engineers mastered the fact that slums were different. They understood that what you did normally for a middle-class household did not apply to slum dwellers. For example, you go to slums—you do not wait for them to come to you. Alternatively, when converting a slum from illegal to legal connections, you treat it as a fresh start—you do not charge a penalty fee. In contrast, uncommitted engineers had not learnt this vital difference. In interviews, the least successful engineers made the point of saying they treated slums the same as everyone else. As one put it, "we don't have two rules—one for slum and one for non-slum."[29] Such statements were uttered with pride, as if separate rules somehow invoked statutory discrimination and as if mere inclusion of slum dwellers in the population of potential customers was actually progressive. But what these engineers did not understand was that there were different rules and procedures, and that these were necessary to bring slums onto the network. Therefore, one of the SDU's most important contributions to engineer buy-in was making this point clear.

[29] Interview with AE of JB Nagar, May 12th 2005.

Explaining the Unit's Success

On the face of it, the SDU's success as information purveyor is somewhat surprising. A common argument against internal units, as opposed to separate project management units, is that the predominant bureaucratic culture at an agency will prevail and dominate the new unit, not letting it flourish as was intended. Engineers, in particular, are known to resent the creation of new slum divisions to which they might be assigned as "punishment posts" (Davis, 2004). The fact that the SDU had no funding, was ludicrously understaffed, and had at best equivocal support from senior management makes the fact that it worked so well even more interesting.

The SDU worked well in Bangalore for two reasons. First, its presence was particularly important in the absence of any horizontal learning networks among engineers. Neither the Engineers' Association nor the BWSSB Union for non-engineering staff ever discussed the slum program in any real depth, other than to ascertain whether the SDU was going to disrupt the revenue streams accruing to Maintenance staff from bribes, payouts, and other forms of cream skimming. Once the Union exempted the head of the SDU from this assessment, it left it alone. For its part, the Engineers' Association was simply not interested. Its monthly professional journal never mentioned the slum program and committed engineers lamented the fact that they never had the opportunity to share what they learned in slums with any of their peers. The SDU was thus the only critical constant in a kind of hub-and-spoke approach to innovation diffusion. While it moved information to each service station, the engineers themselves never interacted or shared ideas, except to pass information up to their own superiors, much of it only numbers-driven in kind.

Second, the fate of the in-house unit in Bangalore was different from most internal units because of the head of the unit's rank, training, and access to inside information. Service station engineers looked up to the head of the SDU and immediately placed her as someone above them in the chain of command. Despite her outsider status, her known government rank on par with that of the utility's Executive Engineers gave her a tangible place in the hierarchy and ensured that sub-division managers and service station staff listened when she approached them with new ideas. Though some engineers remained unconvinced of the merits of slum work, all of them viewed at least meeting with the SDU as a requirement of their job. In addition, the head of the Unit was trained in social development and not in civil engineering. This was extremely important in professional terms. It meant the SDU did not present an "engineering threat" and it avoided the turf battles so common when new slum wings staffed by engineers step on the toes of existing divisions. It also meant that her views on slums were actually useful to engineers who happily deferred to her on matters of non-engineering expertise.

Finally, the SDU came armed with credible information. We have seen, for example, how the head of the unit was able to simplify the task for engineers using information gleaned from total immersion in the work structure of service stations. The head's unique ability to convey information in the engineering vernacular made slum work meaningful to frontline staff. This was the very intention of the AusAID project in hiring an in-house counterpart and it worked well. Though little learning occurred among engineers during the pilot, the AusAID team at least left someone behind who understood the agency's work culture and what information staff needed to know.

Engineers, however, were not the only expected adopters of the innovation. For the new idea to work, slum dwellers had to want it too. Therefore, a similar process of communicating, marketing, and simplifying information needed to occur in slums. Slum dwellers could not spontaneously demand a new service anymore than engineers could spontaneously supply it. Someone needed to inform them in equally concrete terms that this was the new approach of an old utility, these were the service levels on offer, there was a service station, this was the price, here was an application, and so on. If no one told them the new connection fee was a bargain rate, they simply would not know. In Bangalore's successful slums, information was moved during project implementation not just within the organization but across the state-society divide. The next chapter explains how engineers and the SDU, with the help of NGOs and community organizers, channeled information back and forth between the utility and slums in order to kick-start implementation.

4.5 Conclusion

Although senior managers and chief engineers were pioneering, perhaps even daring, in the way they crafted early slum policy and their actions defy the view so common in international development that bureaucracies are stale organizations unwilling to experiment with new ideas, they had no concrete plans to operationalize a new slum program or to communicate their new policies to utility employees. Any discussion of the new idea to connect slums was limited to meetings of the Governing Board. The newly created Social Development Unit (SDU) was the only non-managerial part of the organization drawn into the process. Although pressures and precedents prompted action by the utility, mastery of the "learning imperative" was in fact

limited to a single layer of senior employees at the top. Field-based engineers removed from policymaking were neither informed of the new slum policies nor made part of an operational roll-out strategy. In combination with management's initial caution and tepid support for the program, this limited engagement was not a promising start.

Instead, internal commitment to reform was generated in different ways. The slum program picked up speed within the utility through a combination of, on the one hand, incentives inherent to maintenance work in service stations and traits of the particular engineer in question, and on the other hand, high-quality information dissemination by the SDU. First, certain characteristics of the service station job, of engineers, and of local geographies made the proposition to work in slums more or less appealing. This chapter examined four categories of determinants of willingness to supply, namely: (1) the professional environment, (2) area resources and slum traits, (3) worker disposition and personal preferences, and (4) non-preference characteristics. Holding all else constant, some of these characteristics were closely associated with willingness to supply. For example, high revenue targets, close monitoring of performance, a large domestic customer base, public service motivation, long tenure at the service station, and small slum size were all positively associated with engineer willingness to supply. In contrast, the presence of illegal network connections and multiple public taps, an abundance of water, and a large industrial customer base all seemed to dissuade engineers from implementing a slum program. Other variables, such as land tenure status and level of engineer education were more neutral in their effect. However, none of the important characteristics was perfectly correlated with willingness to supply. For example, although *most* engineers with a high percentage of their revenue accruing from non-domestic connections expressed disinterest in the slum program, the

most successful engineer at the utility in terms of number of slums connected had a very high share of his service station revenue accruing in just this way.

Second, the dissemination of information to utility staff was key to eliciting willingness to supply. Within the utility, the SDU actively engaged engineers by informing them of details management had never bothered to convey. In particular, the SDU communicated the details of the program, marketed the importance of cooperation, and disentangled slum work through the provision of concrete strategies as to how to implement a slum connection drive. These information-sharing activities not only revealed to engineers the incentives for slum work already inherent to their job but also made their task more feasible. Conversely, when the SDU did not perform these time-consuming tasks well, engineers were less willing to supply.

In conclusion, certain features of the service station job and certain kinds of interventions by the SDU generated interest in the slum program from street-level engineers removed from policy making. These findings are important because they tell us which features matter more in eliciting interest in a slum program from field-based engineers, and show us just how much an internal slum unit devoted to the issue is critical to mobilizing engineers from within. They are also important because they draw attention to the diversity of tasks and behavior within water utilities and to how large urban infrastructure agencies weld together the behavior of their dispersed workers. But engineer willingness to supply was but one necessary condition for success. It is the other variables that affected program outcome we turn to next.

CHAPTER 5:
Striking Neighborhood Deals

5.1 Introduction

Having laid out the vertical forces at play within the Bangalore water utility, this chapter examines the interaction of the provider with slum customers as street-level bureaucrats reached out to low-income groups for the first time. Although some of the 46 slums targeted by the utility resulted in failed outcomes because engineers were not willing to supply, others were not connected despite engineer buy-in to the program. Although "willingness to supply" was a necessary ingredient for success, deals still needed to be struck. Each unique pairing of one slum and one service station had to arrive at a mutually agreeable solution in order to connect the majority of households in that slum to the network. This chapter examines how utility staff and slum dwellers concluded 26 successful "neighborhood deals" with a particular focus on which aspects of deal making mattered most in the focused comparison.[1]

The chapter is divided into two parts. The first part (Section 5.2) examines how the relationship between the utility, on the one hand, and slum dwellers, on the other hand, was mediated in practice. In order to connect slums to the network, willing engineers and the SDU had to cross the state-society divide and interact with the new intended customers. This chapter examines how the head of the SDU partnered with community associations, respected leaders, and NGOs in order for this to happen. Together these in-house and external brokers channeled information about the program and about residents back and forth between the utility, on one side, and the

[1] I am indebted to an article by Whittington et al (2000) for the phrase "neighborhood deal."

slum, on the other. This section shows how the presence of these brokers was necessary to generate and disseminate the right kind of information and to engender trust that the deal was going to hold. Although at times the SDU could compensate for the poor performance of a local broker, or the lack of one altogether, the actual activities undertaken by brokers as a group were absolutely necessary to reaching successful deals.

A focus on brokers is important not only because it brings the relationship between utilities and slum dwellers to life, but because these channels of influence are unexpected. In the water literature, the policy advice has been overwhelmingly concerned with identifying effective demand-side institutions capable of putting pressure on agencies in ways that make staff respond. For example, water user associations are repeatedly advocated as a good way to channel demand and influence supply-side agencies. In contrast, what really mattered in Bangalore was the presence of brokers capable of straddling the state-society divide. Instead of focusing solely on institutions to channel demand, we should consider those best placed to shuttle *between* the supply and the demand sides. The evidence for this is particularly strong in Bangalore because the WatSan committees established during the pilot projects precisely to channel demand faltered and were not replicated elsewhere.

The second part of this chapter (Section 5.3) examines the surprisingly conflict-laden way neighborhood deals were reached. During the process of engagement, slum dwellers, elected leaders, and service station staff all expressed a range of reactions from conflict to cooperation, even in the most successful slums. Though resistance is usually couched as a problem for reform, this analysis shows how it is not necessarily something to be thwarted or diminished but

something which, under certain conditions, can be constructive and lead to neighborhood deals. Although cooperative relations were ultimately needed and conflict was by no means necessary to a successful outcome, resistance and conflict did have some positive impacts. Specifically, resistance elicited engagement from those in opposition to reform, boosted collective action from program supporters, signaled when implementation did not make sense, and revealed holes in program design. This section examines how these things happened during negotiations to reach neighborhood deals.

This twist on resistance is importance because development research has obfuscated a crucial facet of voice, namely that it ranges in temperament from the cooperative to the conflictual. The concept of participation is now extremely sophisticated and scholars have helpfully disaggregated it by its elicitation techniques (*e.g.* Davis, 1998), by its strength (*e.g.* Ackerman, 2004), and by its occurrence in the life cycle of a project (*e.g.* Nance, 2006). This chapter shows how the range of temperaments associated with participation is also important. Cooperative participation on the surface can in fact mask a passive and resentful acceptance while explosive conflict can bring even the most steadfast opponents of reform into the fold. Resistance to change, in particular, is an essential form of voice that has not been adequately understood.

5.2 Channels across the State-Society Divide

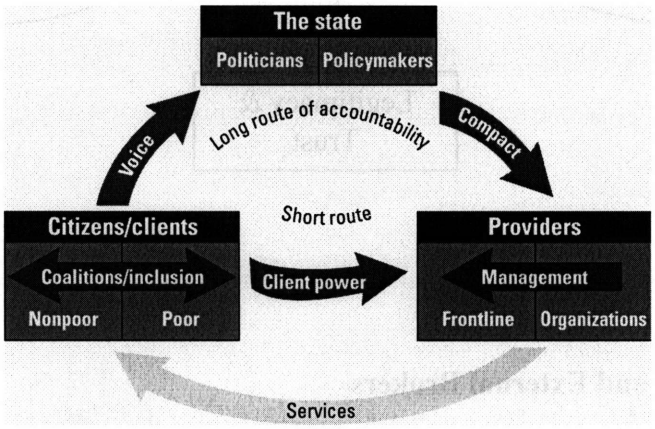
Not-So-Direct Pathways to Accountability

In the hopes of dampening the worst effects of clientelism and political interference, development policymakers typically call for a direct relationship between the recipients of a service and its providers. The 2004 World Development Report, for example, portrays an ideal-type direct relationship between customers and service providers in which the recipients of a service exert so-called "client power" over the provider to hold it accountable (World Bank, 2004). This "short route to accountability" brings service providers closer to actual users, enabling the latter (rich or poor) to exert their voice directly (see Figure 5.1). This pathway is seen as preferable to the "long route to accountability" whereby users come to rely on politicians and policymakers to put pressure on service providers indirectly. At the very least, the short route breaks the hold that municipal water authorities would otherwise have on supply and mitigates the rent-extracting behavior "water mandarins" are known to adopt (Lovei and Whittington, 1993; Swyngedouw, 2005).

The problem is that the short route remains poorly understood. Though there is merit in the concept as an ideal-type, it remains something of a black box. Real pathways to accountability may not be as simple as the model suggests. In particular, the idea of a direct relationship makes certain assumptions which do not hold for poor people living in slums and for engineers tasked with providing service to multiple customer segments. First, the direct relationship assumes slum dwellers and engineers have the time to engage with each other directly, when in fact time is a scarce resource neither party may wish to allocate to this matter. Second, it assumes both parties know what to do, when in fact they are not privy to suitable information as to how to proceed

and in most cases have never worked with each other before. Third, it assumes a level playing field, when in fact poor customers are of a much lower socio-economic status and are unlikely to approach professionals with the directness the short route requires to function so purely.

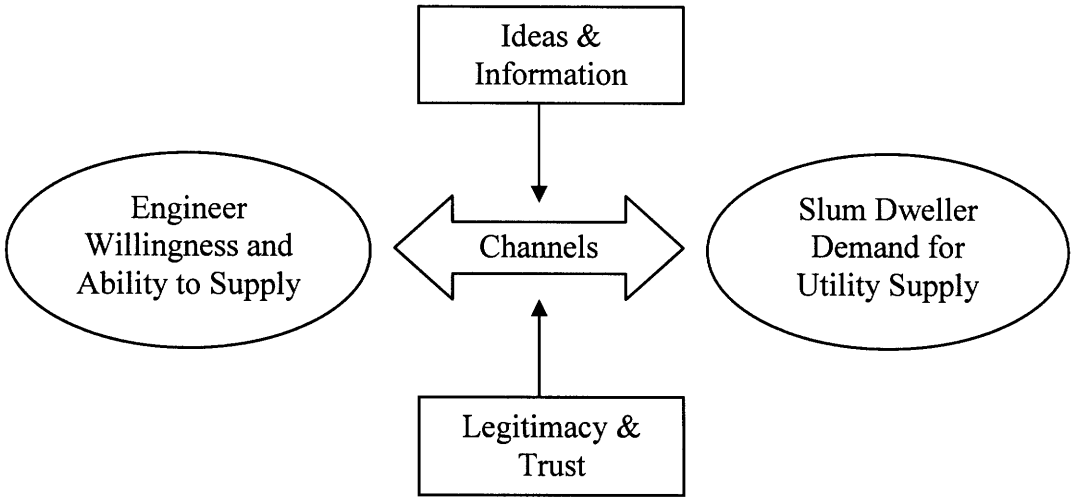
Figure 5.1: The Long and Short Routes to Accountability



Source: World Development Report, 2004.

Evidence from the slum program in Bangalore brings the black box to life and shows how the "direct" route might function in practice when none of these assumptions hold. Though the relationship between engineers and slums did not come to rely on politicians or policymakers, it was not unmediated either. Instead, community associations, individual community leaders, and external NGOs played a crucial role channeling pressure and voice back and forth between engineers and slum dwellers. In particular, these third party brokers harnessed ideas and information, and garnered legitimacy and trust, in ways an unmediated, direct relationship would have struggled to achieve (see Figure 5.2).

Figure 5.2: Channels of Information and Trust



The Roles of In-House and External Brokers

In-house and external brokers fulfilled two important roles: they helped generate and dispense information to actors to make their task more feasible, and they helped take the heat off street-level engineers, lending the utility some legitimacy in slums. These roles are different from those commonly ascribed to mediating NGOs. After all, a fairly common prescription for service delivery programs that target the poor is a partnership between an agency and an NGO better suited to slum work (Davis, 2004). The usual idea is that NGOs are better at handling poor neighborhoods and are better equipped to "stretch" and "deepen" a government program (Krishna, 2003). Although the evidence in Bangalore supports this view, it shows a richer variety of roles as well. Not only were there two kinds of brokers, one from within the utility and one from without, but their contributions were different from those usually ascribed to a linking NGO. Instead of simply mobilizing communities, a task which we know NGOs are better suited

to than large public bureaucracies, brokers also channeled both ideas and information, and trust and legitimacy between engineers and slum dwellers.[2]

The role of the SDU in comparison to that of community-based brokers deserves some attention. Labor was divided between the in-house broker closest to engineers and the external brokers closest to slums according to who had the best access to particular information and who was best placed to deliver it to those in need. For these reasons, the SDU was the natural point of contact for engineers. Because senior management did not create an internal slum wing staffed by engineers authorized to lay pipes and sanction new connections themselves, the SDU became the primary liaison at the utility for all things "slum." Not only did it diffuse information within the utility, but it assisted engineers in bridging the large gap between state and society. In this way, the SDU's range of activities is typical of what Montgomery (1988) calls "bureaucratic populism." The SDU literally moved both people and information between service stations and slums in a way that lessened the distrust and unresponsiveness so characteristic of the relationship between bureaucracies and the poor (Korten, 1981). For example, the SDU brought the names and locations of specific slums to the attention of engineers, and physically took them into the slums to meet with residents and discuss as a group how they might go about connecting to the network.

The SDU's in-depth knowledge of the utility, its staff and its procedures also made it the most effective source of information for slum dwellers interested in connecting to the network. They needed this information as one input necessary to elicit their demand for the program. After all,

[2] Information exchange is sometimes included as one facet of community mobilization (e.g. Nance, 2005). But because it is usually listed in passing, its primacy in the Bangalore case is still unusual.

participation is not a spontaneous "outpouring of irrepressible natural juices" but something that needs inputs.[3] As Evans (1996) writes, "citizens are hamstrung unless their governments dependably supply them with inputs that they cannot produce on their own."[4] A vital such input is information. As one slum dweller told me, "both educated and uneducated people live here in this community and they have no information about government systems."[5] If engineer buy-in was to be met by demand for the utility's program on offer, slum dwellers needed more information about the service levels and the tariffs, as well as a guarantee that these street-level bureaucrats were legitimate.

However, although the SDU was well positioned to feed information to engineers, it was not well positioned to convey information about the utility and internal procedures to an entire community of slum dwellers on its own. It needed the assistance of an external broker much closer to slums in order to share the load of conveying information about the utility and disseminating it to each and every household. The challenge for the SDU was finding a balanced community association, a respected local leader or a rooted NGO that could fulfill this role. This challenge was made more difficult in Bangalore. Unlike other Indian cities such as Ahmedabad or Mumbai where one or two NGOs dominate in slums, Bangalore contained no natural candidate to assume the usual proprietary relationship with a utility. Amidst a prolific range of active organizations scattered across the city, the SDU saw no obvious single NGO to be its lead partner in scaling up the slum program.

[3] Quote from Montgomery (1988), p.xvi.
[4] Quote from Evans (1996), p.1130.
[5] Interview with WatSan Committee, Chandranagar Slum, March 7th 2005.

Moreover, the AusAID program had engaged three separate NGOs, one for each pilot, and this aspect of the model had been a success. Although none had any prior experience in water, each one had a long history of working with the particular community on issues as far-ranging as housing rights and preventive health. What worked well in the pilots was that each NGO possessed a great deal of information about the slum and commanded respect from the community. Water expertise *per se* was irrelevant, as was the socio-economic status of NGO workers since they were not expected to converse directly with utility staff.

Following the precedent set by the pilots, the SDU opted to search for a local partner in each slum. But, unlike the pilots, it did not limit its search to established NGOs. What the SDU needed most from its community-based counterparts was simply access to good information and the ability to garner trust. First, in successful slums brokers assisted the SDU in conveying information about the utility to the entire slum and in generating feedback (see Figure 5.3). Time and again, the skills on display in these organizations were not technical. What these community groups all had in common was local knowledge. They knew the history of their slum, who lived where, and who did what. Though they could not speak for everyone in their expressed preferences or guarantee what proportion of households would connect to the network, these organizations could fan information from the utility out to the community and funnel needed information back. For example, local brokers could identify whether a slum had illegal connections "because they know their neighbors and know who pays and who doesn't."[6]

Second, in successful slums external brokers took the heat off street-level bureaucrats and nurtured relations between the two initially cautious sides. Though a context of trust between

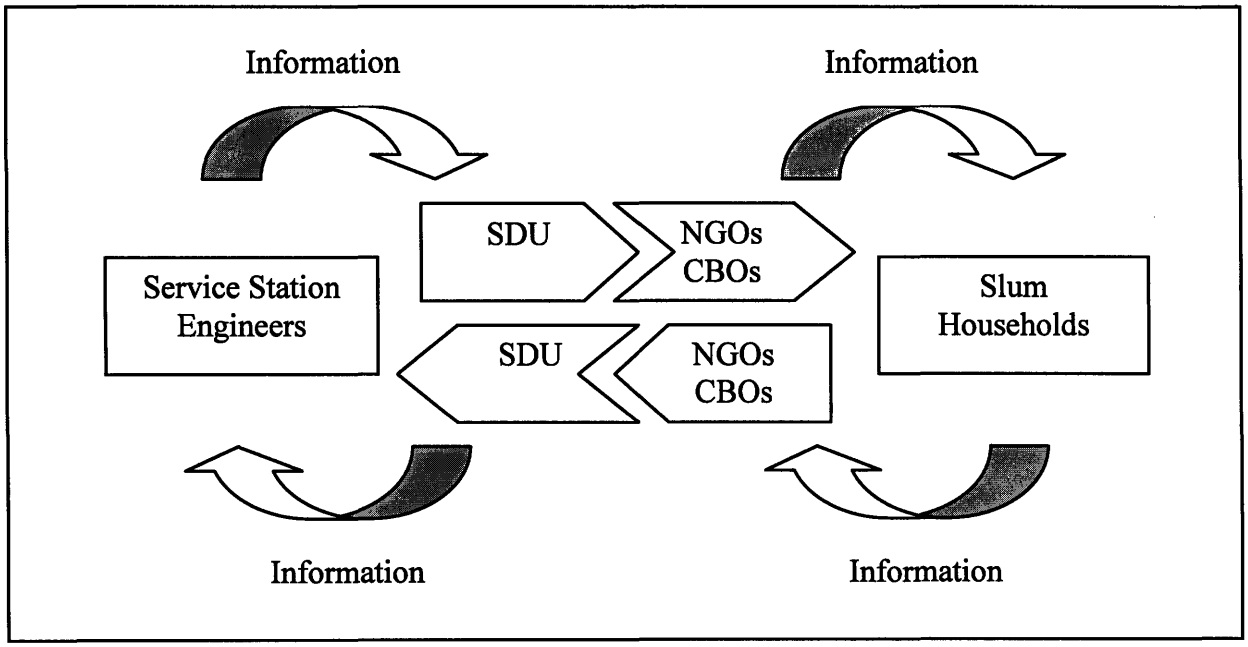
[6] Interview with Coordinator for NGO Mythri in Lingarajpuram Slum, March 4th 2005.

workers and customers is critical for good performance, this link is often neglected (Tendler, 1997). This study of the BWSSB underscores how important this link is, particularly in slums where a long history of neglect and maltreatment by bureaucrats has created a deep current of distrust of government employees. In Bangalore, external brokers went a long way in giving the utility some legitimacy on the streets. As one NGO worker stated,

> *"There is a large gap between the government and the people. There is not a lot of trust. The NGO is monitoring this gap and they help reduce it. They know the people well and they command respect in the community in ways that government officials cannot."*[7]

Because of their ability to take the pulse of the people, external brokers harnessed the credibility and respect they had earned prior to the slum program and channeled it back to the utility. In this way, they mediated interactions by providing informal guarantees to both parties, for example that the utility would provide a better service and that slum dwellers would pay for it.

Figure 5.3: The Role of Brokers in Information Exchange



[7] Interview with Coordinator for NGO Suraksha in Chandranagar Slum, March 7th 2005.

The fact that access to information and the ability to engender trust were paramount meant that the division of labor between brokers was not fixed. Who had better information and who garnered more trust differed from slum to slum. In some cases, community associations were better suited to these tasks than NGOs, despite the fact that associational life is generally weak among India's poor because of the dominance of local politicians (Houtzager et al, 2005). For example, in Mominpura slum, the only active NGO in the area had a poor track record. Instead of using the NGO as its local counterpart, the SDU tapped into two active community leaders with the motivation, resourcefulness, and respect needed to make a deal. These particular men met regularly with residents and the SDU, and did all the community organizing. They helped residents fill out applications and later, once the slum was connected, they managed the distribution of water opening and closing the valves themselves. Alternatively, in Lingarajpuram slum, the SDU worked with a representative women's credit society and an active male resident. This society had originally been created by an NGO but was ultimately better suited to the tasks at hand than its founding organization. Together, these brokers maintained a database of slum residents, collected applications and fees, distributed sanctioned water meters, found local plumbers to install the meters, and reported back to the SDU on illegal connections.

Because the division of labor was not fixed, the role of the SDU also varied. When external brokers had access to better information and garnered more trust, the SDU deferred to them more. Inversely, when brokers were weak, the head of the SDU assumed a much greater share of the labor going door to door in slums herself. For example, in Gajendranagar slum where the partner NGO was so caught up in its own political struggles that it effectively defaulted on its

commitment to the slum program, the community strongly believed that "Madam is the only reason we have water."[8]

Finding the right local broker was not always easy and required a large time commitment from the SDU. When the SDU did not have the time to search for an optimal local partner or to compensate when the selected broker performed poorly, the likelihood of a successful outcome diminished. While successful neighborhood deals were necessary to connect the majority of slum residents to the network, the active involvement of the SDU was necessary to make these deals happen in the first place.

Finally, the amount of mediation needed to make the short route to accountability work was itself not fixed. Active mediation between state and society was needed in each slum during the early phase of exchanging information, distributing applications, assessing technical options and eliciting household demand. While the need for brokers never faded altogether, the volume of information channeled through brokers decreased over time. Once slums were connected, less information was being generated that needed channeling. Moreover, as engineers grew to know their slums better, they were able to work directly with residents without going through brokers at each and every encounter. It is thus important to note that information and trust are most critical to cementing the relationship between engineers and slum dwellers at the outset and that over time the relationship does approach the direct ideal type.

[8] Focus Group in Gajendranagar Slum, May 23rd 2005.

The Demise of WatSan Committees

The evidence that effective program implementation does not depend so much on voice from demand-driven institutions as on information exchange is particularly strong in Bangalore because the water user associations established during the pilot projects were not replicated elsewhere. Although three gender-balanced water and sanitation (WatSan) committees were established and nurtured during the pilots, their role was somewhat overstated in project design. In theory, the WatSan committees were meant to assist the utility, acting almost like a local branch of the agency. In practice, their tasks were limited to gathering community information for the SDU, collecting money and application files from interested households, and receiving complaints and questions from fellow residents.

While important, none of these tasks were necessarily suited to a new institution of water users. Existing local credit societies, women's groups, and other kinds of organizations were sufficient, if not better prepared, for the primary tasks they would be needed for, namely conveying and generating information downstream, and garnering trust and legitimacy from slum dwellers. Most importantly, the SDU had neither the time nor the budget to spend on institution building in the 46 slums it targeted over three years—particularly institution building of a kind that can create intra-slum rifts when the real goal is mediation. As one cynic put it, "Water users—oh what a lovely term! It denotes that special group of folks who use water. The rest of us are non-users, a type of dry land bacteria!"[9] Establishing new WatSan committees for each slum was something the SDU had neither the time to nurture nor the suspicion that it would be worth it.

[9] P. Sainath (2006). "Thirst for Profit" in The Hindu, Vol 23, Issue 7.

Although the fact that WatSan committees were not replicated in the post-pilot phase is not necessarily proof that they are not effective when they do exist, three pieces of evidence do bolster this claim. First, all three of the WatSan committees wilted upon pilot completion. Group members expressed frustration with their role saying they felt over-trained and under-used. They were not needed to read bills or fix pipes, as they had been trained, and because of the hub-and-spoke pattern of diffusion, they were not called on to share their learning with other slums or service stations. Two years after the pilot, membership had eroded significantly in two WatSan committees and the third disintegrated completely. Of the two left standing, one felt so under-used that it changed its name to a Welfare Association and became a micro credit society—exactly one of the kinds of community groups which performed so well in the post-pilot phase.

Second, in slums where community groups did adopt a role similar in spirit to the one originally intended for WatSan committees, they did not like it. Although external brokers of all stripes were happy to provide information and organize meetings, they were not happy about assuming maintenance tasks, such as meter reading, bill collection and minor repairs, which the utility was supposed to do. For example, in the successful Anandapuram slum, residents questioned the authority of a women's group to collect money on behalf of the utility and threatened to hold members accountable for bad service. The women resented being treated this way by fellow residents and accused utility staff of not doing their job. Despite the intellectual appeal of a blurred line between state and society, these women saw a very clear line between the duties of the utility and the obligations of the community, one they were reluctant to cross.

Brokers and Feedback Loops

Finally, the case for the centrality of brokers in successful neighborhood deals can be made in one last way. Not only were brokers needed to bridge the gap between field-based staff and slum dwellers, but they were effective channels for feeding information back to policy makers at the top. Because senior managers had drafted early slum policy in a hesitant environment with limited knowledge, it is not surprising that not all aspects of the program worked well. The interaction between slum dwellers and engineers, mediated by brokers, provided an extensive opportunity to field test these policies as well as forums in which to discuss it. Information generated from these interactions about how to ameliorate the program was then fed back up to senior managers including the Chairman who used the information to revise policy and improve the slum program.

While the existence of policy feedback loops is not so interesting, what is surprising is the channel of delivery. In the literature on accountability relationships in service agencies, information is usually fed to senior managers by elite politicians, professional associations, and the media, and, on occasion, by active citizens and frontline workers moving information back up the chain of command (Caseley, 2003). In contrast in Bangalore, information on the slum program was fed back to senior managers almost entirely by in-house and external brokers.

The case of Chandranagar slum is a good example of how this worked. Here, a community association expressed great dissatisfaction with the utility's original pricing strategy. Though slums benefited from the reduced connection charge, residents were still expected to pay the minimum fee of Rs.115 based on a consumption of 15,000 liters per month. The problem was

that, on average, slum households consumed much less. Over several months, this group conducted an informal survey of monthly bills. The results proved that average consumption in slums was indeed half the current minimum. This information was first furnished to the head of the SDU who wrote in a memo to the Chairman that "the socio-economic status of the slum dwellers and the fact that they consume only half of the quantum of water in the first slab calls for a rethinking of the levying of an appropriate tariff on the slum dwellers."[10] The head of the SDU then arranged a meeting with the Chairman where she and the local community group requested that the minimum tariff be lowered.

Cleverly, senior management used this information to their advantage. The survey conducted by slum dwellers was used to justify a revision in the pricing structure, lowering minimum consumption from 15,000 to 8,000 liters per month while increasing the unit rate for higher slab customers. The new tariff reduced the minimum charge from Rs.115 to Rs.73 per month, and was advertised in the press and in internal utility publications as a chance to help the poor, even though bills actually increased for the average middle class family.[11] Although this example tells us something interesting about the political economy of pricing reform, it also illustrates how brokers can credibly collect and channel information back to utility policymakers and, in the process, ensure sustained neighborhood deals.

If some combination of brokers was necessary for a successful neighborhood deal, consensus was not. Over the many months from first point of contact with a slum to the connection of the majority of households to the network, deals oscillated back and forth from the cooperative to the

[10] Internal memo written by the SDU for consideration at a BWSSB Board meeting, undated.
[11] For example, an average middle-class household consuming 30 KL of water per month saw their water bill increase by 30 percent from Rs.417 to Rs.546.

conflictual. Although conflict was not a necessary condition for a successful outcome, it was a common feature of neighborhood deals and did have surprising benefits. The remainder of this chapter calls attention to this interesting finding.

5.3 Conflict and Cooperation in Neighborhood Deals

Resistance in the Literature

Resistance is usually described as a problem. Although the word occurs quite frequently in diverse literatures, it is rarely disaggregated by divergent types or viewed as anything other than negative or neutral in effect. Mostly, resistance is viewed as a deleterious phenomenon and policy prescriptions point to how resistance can best be anticipated, thwarted or quelled in order to get on with the real business of reform. In contrast, I argue that resistance and conflict present possibilities for eliciting meaningful participation in ways that have been not been well appreciated. This section briefly reviews the ways resistance is usually described. The remainder of the chapter then presents an alternative, more nuanced concept of resistance—one based on a subset of writings on its more positive effects and on empirical evidence in Bangalore.

The word "resistance" is everywhere in the literature on reform. For example, it is a central problem in research on the dynamics of organizational change. Of the more extensive treatments of resistance, one approach is distinctly taxonomic in style. Scholars have identified why change is resisted (*e.g.* O'Toole, 1995) and who does the resisting (*e.g.* Batley, 2004). Another approach rooted in the policy process literature situates resistance as but a stage in the life cycle of reform (Grindle and Thomas, 1991). This stage is usually described as a kind of necessary but not

particularly helpful stage during which time actual advance towards the goals of reform are temporarily put on hold, or worse, defeated. Thus, in *ex-post* empirical examinations of particular projects resistance is usually summoned to explain defeat of reform or the failure of a good idea (Davis, 2004).

There have been some attempts to disaggregate the concept further. A few scholars have developed concrete typologies of the kinds of resistance available to both government workers and agency customers. For example, in his study of water in Guayaquil, Swyngedouw (2005) devotes an entire chapter to rituals of resistance and water activism among the urban poor. He describes four strategies typically adopted by urban communities in the face of exclusionary water practices: passive acceptance, individual resistance, self-help, and social protest. These strategies range in type from individual exit strategies (e.g. resorting to illegal connections, water pumps, or clientelist networks) to collective voice strategies (e.g. street protests). In a study of street-level bureaucrats in the United States, Lipsky (1980) shows how frontline workers resist managers by using the collective bargaining resources available to them. He describes three "strategies of non-cooperation" typically adopted by workers, namely not working (absenteeism and quitting), aggression towards the agency (stealing and cheating), and negative attitudes (alienation and apathy). Finally, in a study of rent-seeking behavior in Jakarta, Lovei and Whittington (1993) outline several strategies adopted by utility engineers to resist the development of a better water system, such as restricting the quantity of water supplied or delaying the expansion of system capacity. Although such typologies are helpful in separating out different kinds of resistance, nowhere is the concept treated as anything other than an expression of self-interest with non-cooperative outcomes.

Not unexpectedly, therefore, the dominant policy advice focuses on how to minimize and overcome resistance. A common refrain in the planning literature is that reform-minded politicians, communities, and agency staff must look for innovative pathways to overcome "entrenched resistance." For example, Watson (1999) describes the ingenious ways small subgroups within a large water utility in Brazil were able to short-circuit entrenched resistance and turn agency policy around. The low-profile, low-status, and small size of these subgroups allowed them to maneuver within the existing structure without attracting attention or resistance from traditional sectors. Ascher (1984) shows how careful coalition building and the wide diffusion of costs enabled redistribution policies to gain traction and overcome elite resistance in Latin America. And in a more theoretical vein, Sanyal (2005) illustrates how resistance can be anticipated by planners and how clever problem formulation and sequencing of planning tasks can soften institutional resistance, particularly within the state structure. At the core of all this advice is a concern with garnering support for reforms that would otherwise engender deep resentment.

Conflict as a Pillar of Society

While such observations on the nature of resistance are certainly true, they are also one sided. Just as there is a propensity to describe bureaucrats as venal and rent-seeking, there is among scholars of reform a propensity to showcase resistance as purely problematic and bad. Upon reflection, this is somewhat strange. After all, the canon of liberal thought has long appreciated the transformative potential of protest, itself a very public manifestation of resistance. We think,

for example, of protest movements as harbingers of change and the moral assertion of people's rights. Indeed, there is a rich literature in political theory on the positive effects of conflict and crisis. To avert crisis repeatedly and avoid resistance at every turn is to cut off these benefits. This section briefly presents an alternative view on the potential benefits of resistance and conflict on the assumption that conceptually the two are not very far off in meaning.

An examination of Hirschman is a good place to start because early on he noted with considerable eloquence the transformative potential of resistance and conflict in development. For example, in *Journeys Toward Progress*, Hirschman (1963) stressed the importance of even violence as an ingredient of reform, commenting how "reform and revolution are not nearly as far apart as language would make us believe."[12] A key but oft-overlooked characteristic of violence is that it is not only protest and pressure, but also a direct problem-solving activity. For example, when a peasant satisfies his need for land by squatting on a plot in contravention of numerous laws, he reduces the size of the problem which remains to be solved.

In later work, Hirschman (1994) explored the notion of conflict as a very pillar of democratic society. Though he was writing about social progress in general and not third world development *per se*, it is worth quoting him at some length to describe the paradox of how conflict can lead to cohesion.

> "*Generally, to be sure, conflicts have been viewed as dangerous, corrosive, and potentially destructive of the social order and therefore precisely in need of being contained and resolved by some standby reserve supply of community spirit. But... social conflicts themselves produce the valuable ties that hold modern democratic societies together and lend them the strength and cohesion they need.*"[13]

[12] Quote from Hirschman (1963), p.256.
[13] Quote from Hirschman (1994), p.207.

Conflict is thus both glue and solvent: it can wreck societies but it can also strengthen them. The key question he posed for grounded research was whether it is possible to distinguish between two varieties of social conflict—those that leave behind a positive residue and those that tear society apart.

Beyond Hirschman, others have also argued for a reconsideration of resistance. As Kelman (2005) writes in reference to organizational change, traditional arguments for why people resist change "turn out to be not so much wrong, as incomplete."[14] He argues that the conventional explanation that people resist change is often oversimplified and misleading. Instead, organizations often contain within them a strong constituency for change. Instead of bracing advocates of reform for imminent resistance and finding ways to help them defeat the stalwart defenders of the status quo, prescriptive policy advice should also consider "activating the discontented" and "unleashing change" from within organizations. Rather than honing in on the perils of resistance, reformers should focus on the process of engagement which itself may vary from the supportive to the antagonistic.

To be fair, the development literature has not ignored the power of protest either. Protest action is repeatedly proffered as one means of attracting the attention of policy-makers and proving the seriousness behind claims and concerns of civil society groups (Goetz and Gaventa, 2001). It remains one of the basic ways to assert voice and improve government accountability. The literature on co-production and societal accountability, for example, which otherwise stresses synergy between state and society, also emphasizes the importance of going beyond "well-behaved" local participation in government projects to more transgressive and openly

[14] Kelman (2005), p.6.

confrontational relationships with government (Ackerman, 2004). However, much less studied are small individual and collective acts of resistance other than social protest, especially at the project level.

A more hopeful view of resistance is particularly appropriate in a study of India which retains a strong cultural tradition of debate. In his book *The Argumentative Indian,* Sen (2005) describes how heterodoxy is a natural state of affairs in Indian public life where persistent arguing is common. Though great socio-economic inequality exists, democracy and public life in general are deeply influenced by a long tradition of argument and public reasoning, much of it conflictual or even violent. This has important implications for any study of service delivery in which actors of vastly different socio-economic status must negotiate for better outcomes. To view the relations between engineers of different rank or between politicians and slum dwellers as merely hierarchical is to be simplistic. Indian culture breeds resistance and disagreement in ways that we must learn to analyze and understand. To shun these as mere problems is to misread public life.

That resistance and conflict can play a constructive role in social relations is not an original insight. As Hirschman (1994) notes, the idea is reinvented with considerable regularity, each time with undue surprise at having arrived at such a paradoxical notion. Nonetheless, attention to the possibilities and benefits of resistance has been scant in the development literature and an application of the idea to a study of infrastructure is at the very least enlightening. The trick is to move beyond the general point that resistance matters, to a more careful examination of how

resistance and conflict can play a constructive role in the implementation of infrastructure projects.

Resistance as a Pathway to Participation

Resistance of course can be harmful. It can hamper policy change, delay project implementation and otherwise stymie progress towards better outcomes. The evidence in Bangalore confirms that all this is true and that there are problems inherent to any form of resistance. Yet there is more. If resistance is an expression of voice provoked by change, and if conflict is a pillar of a democratic society (particularly an Indian one), then there is another dimension to antagonistic reform. This section concludes this theoretical overview by outlining the ways conflict and resistance might be constructive as pathways to participation.

Specifically, resistance draws people out of the woodwork and puts them on a course of engagement which, though initially conflict-laden, may over time adjust to the cooperative. Two important points follow. The first is that the very process of resisting change is one way to elicit meaningful participation. Though the effects of resistance to reform may be delaying and possibly injurious, there are benefits to a process that creates opportunities for engagement. Resistance, conflict, and even provocation can under certain conditions elicit voice from individuals who would otherwise remain disinterested, apathetic or unaware of particular projects.

Existing empirical studies provide some evidence for how such a pathway to participation might work. The protest path is fairly linear: citizens express voice in explosive ways and agency officials respond. For example, in a study of a garbage tax in Maputo, Kruks-Wisner (2006) shows how the city doubled its efforts to improve garbage collection following a series of angry protests in response to the new tax. But other paths are more counterintuitive. In a study of frontline workers and forest policy reform in West Bengal, Joshi (2000) shows how cooperation between the Forest Department and villagers emerged and spread at a time of high levels of conflict between them. Growing conflict with villagers posed such a threat to the welfare and lives of Forest Department staff posted in the field that their union actively sought to improve forest policy by promoting a participatory approach to forest management. Alternatively, research by Fox (1993) on the rise of peasant organizations in authoritarian rural Mexico shows how conflict between government and citizens lent itself to the production of improved social capital. Though all these studies describe cases of open conflict, arguably a similar pathway can be extended to less explosive and less organized forms.

The second point is that conflict and cooperation are really opposite ends of the same spectrum, one in which reactions to reform oscillate back and forth over time. The balance of forces within state and society are always changing such that to expect continuity of cooperation or of conflict during engagement of representatives from both sides is unlikely (Fox, 1993). With renewed attention to resistance comes a fresh look at cooperation and the extent to which the two are really different sides of the same coin. Of more interest than avoiding resistance as a one-time expression of disaffection is identifying which forces lead some negotiations away from the

hindering end of the spectrum of engagement to its more reform-assisting end, and which forces lead them back.

The prescriptive implications of these ideas are messy but important. Though planners and bureaucrats naturally shy away from prescribing that which is transaction-intensive, creative tension breeds new ideas and is anyway unavoidable. As Pritchett and Woolcock (2004) write:

> *"It is in the tension between the interests and the incentives of administrators, clients, and frontline providers that the solutions lie. These tensions—between specialists and the people, planners and citizens, authority and autonomy—cannot be escaped; rather, they need to be made creative rather than destructive."*[15]

How to make tension creative is not obvious and does not at any rate lend itself to theoretical generalizations. But encountering resistance can yield positive outcomes for reform. Simply anticipating and thereby avoiding it is neither realistic nor necessarily the best way to achieve meaningful and lasting change. It is not enough for planners to strategize intelligently so as to achieve "peaceful institutional reform without much fanfare" (Sanyal, 2005: 240). Planners must learn to see the value in the fanfare too.

The Pathway in Bangalore

The remainder of this chapter puts some empirical meat on these theoretical bones. In Bangalore, a significant proportion of the 26 successful slums attained network connections despite resistance from slum dwellers, elected politicians, and service station staff. Not only did this proportion connect to the network *in spite* of the resistance such efforts evoked, but, in some cases, *because* of it. Conversely, in the 20 slums that fared poorly with respect to the utility's

[15] Quote from Pritchett and Woolcock (2004), p.207.

goals, only some of the failed outcomes can be explained by adamant resistance. Even in unsuccessful slums, conflict elicited meaningful engagement and was not necessarily the true reason for failure.

Though cooperative engagement and enthusiastic participation were, of course, better final outcomes than resistance, they were not always the first reactions when the utility approached a new slum for the first time. The combination of green engineers and skeptical slum dwellers made negotiating neighborhood deals a slow process. While such hesitant first encounters lent themselves well to an experimental style of implementation, they were also left vulnerable to open expressions of disagreement and covert acts of sabotage. Just as engineers varied in their willingness to supply, slum dwellers, politicians, and service station staff varied too in their response to an engineer's decision to implement the slum program.

In some cases, steadfast refusal by slum dwellers to connect to the network or job shirking by reluctant service station staff did indeed derail the efforts of a committed engineer. But antagonistic behavior was not always so bad. This was particularly true of collective acts of resistance manifest early on. Though such acts slowed the speed of reform, in some cases they also enhanced the quality of the eventual positive outcome. This is because resistance to the proposed slum program elicited interest in its fate. This, in turn, prompted further in-depth information exchange and rallied supporters to action. While those in opposition to the provision of legal connections devised ways of preventing their installation, those in support of the program rallied together in ways that boosted collective action and promoted better participation.

Moreover, resistant actors were not fixed in their ideals. Resistance was often a knee-jerk reaction which once evoked had the potential to change to the cooperative over time.

Finally, some kinds of antagonistic behavior made sense. Some instances of resistance which finished in deadlock or outright refusal to comply were logical. While such outcomes may have been "bad" with respect to advancing the utility's policy on paper, there were at times very legitimate grounds on which this resistance was based. Indeed, resistance and conflict are seldom attempts to flout implementation for its own sake. Rather, they are usually based on strong convictions that the views of the people in opposition are correct. In Bangalore, slum households, elected leaders, and service station workers all exercised this right of refusal when the program did not make sense to them. Thus, failed outcomes were often a logical byproduct of local circumstances which did not favor connecting slum households to the network.

Using concrete examples from the comparative study, the following three sections present the evidence for these findings. Each section examines a different set of actors, namely: (1) slum dwellers, (2) elected leaders, and (3) service station staff. For each set of actors, I give some examples of typical areas of conflict and illustrate their effect on neighborhood deals. Taken together, these findings show empirically how brokers elicited participation from even the most resistant parties; how meaningful engagement was characterized by both strife and convergence; and why some conflict-laden encounters transitioned to cooperative negotiations between key actors in a neighborhood deal while others did not.

(1) Legitimate Resistance and Deepening Participation in Slums

For many slum dwellers, resistance to utility connections hinged on price. In the early days of the slum program, the minimum tariff for domestic connections was Rs.115 per month. This was high relative to what most slum dwellers were prepared to pay. In a willingness to pay study conducted by AusAID prior to the pilots, poor households revealed that they were not willing to allocate more than one percent of their income to utility water, a monthly equivalent of between Rs.25 and Rs.100 (AusAID, 2001a).[16] For shared connections, approximately 80 percent of poor respondents stated that they would be willing to pay a monthly tariff in the range of Rs.16 to Rs.29 per household. Yet at Rs.115 and Rs.45 respectively, the individual and shared connections on offer to slums were considerably more expensive.[17] Although the utility offered the slums a reduced connection fee, the minimum monthly tariff was not adjusted for them.

Reluctance to do a deal based on these prices can be traced to two reasons. First, some slums already had access to water supply at a cheaper rate. Residents with access to good quality groundwater were content to pay nominal fees to maintain a mechanized pump or a mini-distribution system instead of connecting to the utility. Provided the quality of the groundwater was at least potable and of sufficient volume, they felt no compunction to switch to a higher cost alternative. And residents with perfectly good supply through illegal connections or free public taps were also understandably unimpressed with the agency's proposition to convert them to paying customers. These sentiments were exacerbated when neighboring slums were not being

[16] In my informal household survey of six slums, household income ranged from Rs.2,500 at the low end to Rs.10,000 at the high end, with only a few outliers beyond this range.

[17] The average household with a shared connection could be expected to pay about Rs.45 per month. This was based on an expected consumption of 7,200 liters per household per month charged at the first slab rate of Rs.6 per KL, plus a portion of the Rs.25 in sanitary and administrative charges, divided equally by the number of households sharing the tap.

asked to connect to the network. Though resistance on these grounds stymied the advances of the utility, in principal it made sense.

Second, some slums were adamantly against paying so much for water from a government agency. Though the argument is frequently made in the water literature that poor people pay much more per unit of water than middle class residents consuming subsidized network supply, it does not necessarily hold that poor people are willing to transfer their revealed price point from a private provider to government. While some slum dwellers reliant on expensive vended water saw in network provision a much cheaper substitute, others reacted differently.[18] In particular, slum dwellers with high expectations of what government should provide objected to paying the utility's prices. Accustomed to targeted private transfers, they saw no reason to pay so much for something as basic as water. If a public bureaucracy was finally going to offer them network supply, it should do so at a special price for poor people. As an active member of the failed Chamundi slum explained,

> *"If the KEB [electricity board] comes here and tells us they charge Rs.2 per unit, that is not our problem! We are poor people. We live from day to day. So why should we pay?"*[19]

This kind of reaction was common both in slums with existing free supply and in slums reliant on expensive vended water but reluctant to transfer the same price point to government. While heartfelt, it was usually fueled by NGOs, such as the Slum Dwellers Federation (KKNSS), who believed in minimum levels of service and basic rights for the poor. The evidence for slum dweller reluctance to pay a government agency was glaringly apparent in slums where residents

[18] Vended water is sold by the pot but equates to anywhere from Rs.20 to Rs.40 per KL, in contrast to Rs.6 per KL for BWSSB water. If a household consumes 8 KL of water per month, its monthly bill for vended water will range from Rs.160 to Rs.320, in comparison with the minimum fee of Rs.115 (and later Rs.73) charged by the BWSSB. Both levels of service require coping costs but I have not included them in this comparison.
[19] Focus Group in Chamundi, May 18th 2005.

who expressed their frustration with the utility on price happily paid more than one and a half times the minimum water tariff for cable television, a service they do not associate with government or with basic rights.[20]

Resistance from slum dwellers on price was difficult to overcome. Access to alternative water supplies at cheaper rates meant connections to the network made no sense. Without a parallel disconnection drive by the utility or a significant drop in the quality of vended supply, there was little either engineers or brokers could do to sell the program to them. Reluctance to pay for government supply was not particularly constructive either. Although at times extensive mobilization and education by brokers about the costs of providing piped water supply did alter residents' views, resistance on price was generally a huge stumbling block in concluding a deal.

Another kind of resistance from slum dwellers was more transformative. During negotiations for a neighborhood deal, a prominent intra-slum gender divide had a unique effect on the quality of participation. When engineers entered a slum with the SDU, a common pattern to emerge was a strong difference of opinion among slum dwellers between the men and the women, even within the same household. Since the tasks of waiting for, collecting, and storing water are largely relegated to women, those living in slums with bad access to water were particularly interested in improving their lot. For them, striking a neighborhood deal with the utility was a tangible way to increase the quantity of water available for their families and to save the considerable time otherwise allocated to water collection. For these reasons, women were far less likely to protest the utility's advances. For men, on the other hand, the equation was different. Many of them were active foot soldiers in political parties with strong allegiances to elected representatives. As

[20] As a point of comparison, the cost of cable television ranges from Rs.100 to Rs.250 per month.

party members, it was their job to intervene on behalf of their politicians when engineers began penetrating party turf. On occasion, this turned the men in a slum against the women. As the engineer in Machalibetta service station noted, "The men will canvass against the women and against the BWSSB."[21] Such intra-slum conflict was often vociferous, particularly during the months of March and April 2004 in the run-up to hotly contested nationwide elections and just when the SDU's efforts were really picking up steam.

Ultimately, however, this divided reaction between men and women deepened participation. Resistance from the men catalyzed women to work more closely together tapping into local brokers, such as women's groups and self-help societies, to channel information to the utility about what they needed. The SDU and these local associations then channeled their ideas and their demands to the service stations, bypassing male party members in a way that broke the political hold on slum associational life. In the process, the close-knit mobilization efforts by women to secure water connections accelerated the pace of deals with the utility and empowered them. Women repeatedly expressed a renewed sense of confidence from the work of diffusing information to neighbors and channeling it back to service stations. As one woman explained to me,

> *"Now men and women are equal and I am less shy in meetings because there are now more women. Each street has one elected member and now we are more daring as community leaders. I used to be just a housewife but now I am discussing problems with government officials."*[22]

Although the water literature usually focuses on improved outcomes for women in terms of time-savings and health benefits, evidence from Bangalore reveals there is more. The very process of improving water supply was beneficial for women, even when it was conflict-laden. Although

[21] Interview with AE, Machalibetta Service Station, May 13th 2005.
[22] Focus Group with WATSAN committee members of Chandranagar slum, March 7th 2005.

conflict stirred by political henchmen or other slum groups was certainly not necessary for women to feel empowered or to organize collectively, it did elicit committed engagement where it occurred.

(2) The Transformative Potential of Political Opposition

Reluctant to let outsiders into their vote banks, elected representatives from both the state and the city government often derailed the utility's connection drive. Although by no means all elected leaders were territorial and uncooperative, some obstructed and delayed engineering work in an attempt to take credit for infrastructure provision for themselves—often instructing slum dwellers to wait for free connections from their own development funds even though this money was rarely forthcoming.[23] For example, much of the failed outcome of Chamundi slum can be explained by the adamant stance of the City Corporator against any attempt to break his grip on the slum. He encouraged his constituents to wait for free connections and he invited the service station engineer to visit the slum on his terms, not the other way around. Such efforts to obstruct utility advances were not uncommon and many engineers, slum dwellers and brokers blamed politicians for their stalemates. As one struggling engineer stated, "If the politicians were willing, we would be happy to supply."[24]

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[23] Despite access to funding for discretionary spending, neither state ministers nor city councilors invested a great deal of money in slums apart from minor allocations here and there for free meters under the City Council's 18 percent scheme. Anecdotal evidence suggests that this is because state MLAs used their substantial funding for large, visible projects while city Corporators were tied to the demands of the municipal engineering department. Though the amounts available to each politician were similar, their discretionary usage was not. The amount allocated to each MLA was increased under Chief Minister SM Krishna from Rs.2 to 4 million and then raised again in the 2005 state budget to Rs.5 million (roughly $110,000). An MLA was free to spend this as he pleased. In contrast, the Rs.4.7 million allocated to each Corporator for "ward works" in his or her ward had to be spent in line with the demands of the City Corporation's engineering department and of middle-class residents associations.

[24] Interview with Assistant Executive Engineer, April 14th 2005.

But even in slums where political resistance was high, outcomes were often positive. This happened in ways that exemplify first, how the very act of resistance can elicit meaningful engagement, and second, how much voice ranges in temperament from the conflictual to the cooperative and is rarely "entrenched." To begin with, resistance from politicians sometimes catalyzed an otherwise timid community into action. This was particularly true for slum dwellers with ambivalent relationships with their elected leaders whose interventions against a community's desire to connect to the network proved a powerful rallying cry. Just as the resistance of men catalyzed collective action among women, the resistance of politicians catalyzed committed engagement from slum dwellers now determined not to let their elected leaders keep them off the network.

Moreover, slums that battled through political resistance and came out the other side often emerged better off than their intervention-free counterparts. In particular, these slums benefited from the long-term effects of political engagement in operations and maintenance when accountability pressures on engineers matter most. If slums made it to the network, formerly resistant politicians often reversed their stance and, in order to rescue their votes, then supported their constituents in ways that helped a slum and its brokers hold engineers' feet to the fire.

A good example to illustrate this process is the slum of Gajendranagar which encountered fierce political resistance to the program but eventually emerged with 93 percent of households connected to the network, one of the highest success rates. Shortly after the SDU and the committed engineer in Machalibetta service station first visited the slum to meet with residents and present the new program, local representatives of the Congress Party sent word to the service

station and the sub-division to keep out. In the important election year of 2004, they wanted the utility's street-level bureaucrats to time their entry better so that the MLA up for re-election could hold a ribbon-cutting ceremony just before the election. Aggressive telephone calls and visits to the service station dissuaded the engineer and the SDU, and the installation of a new distribution network was put on hold.

Although the matter might have ended there, this political posturing catalyzed the slum into action. Residents wanted the new network installed and they were angry that a Corporator whom they had nominated but who had "not lifted a finger to help" was blocking their negotiations with the utility.[25] With the help of an active community leader and the SDU, representatives from the slum went directly to the Chairman of the utility who, in turn, put pressure on the service station to respond. Sandwiched between pressure from above and from below, the engineer called a public forum to collect applications and issue meters, and invited the MLA to cut the ribbon, excusing his own behavior to the politicians on the grounds of orders from above. In this way, the MLA was forcibly drawn into the process. He begrudgingly attended the public meeting at the service station, but upon assisting in the handout of meters and discussing the matter with his constituents, came to feel like he had a stake in the process too. A year later when the service station engineer was up for a transfer, the MLA was actually campaigning for him to stay.[26]

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[25] Focus Group with Gajendranagar Slum, May 23rd 2005.

[26] Although this dissertation does not look at the maintenance phase after neighborhood deals were struck, the role of politicians in Bangalore was also interesting for the way it inverted the usual paradigm. In the infrastructure literature, capital investment is usually described as easier than ongoing operations and maintenance—both because politicians prefer investing in visible new projects than in ongoing operations and because engineers prefer the technical challenge of building things rather than maintaining them. Instead, in Bangalore, this sequence was reversed. The initial process of connecting slums to the network was in fact not very appealing to engineers. Early forays required time-consuming house-to-house mobilization and were particularly contentious when residents had illegal connections. Facing off with politicians was also a daunting prospect. Although the maintenance tasks of meter reading and water distribution in slums were not easy either, engineers generally found maintenance work easier than installing new connections.

Although the power of politicians to curtail engineers' efforts proved a difficult stumbling block in the initial phases of deal making, the reactions such interventions provoked proved unusually transformative.

(3) The Revealing Effects of Resistance by Service Station Staff

A third source of resistance and conflict during implementation was the frontline staff of BWSSB service stations. During program roll-out and the forging of neighborhood deals, meter readers, water inspectors, valve men and other frontline workers who until now had been largely excluded from internal discussions with the SDU often derailed the plans of even the most willing and committed engineer. Because they had no prior say in the matter, implementation was the first real opportunity reluctant service station staff had to articulate their own interests. Though much of this kind of resistance was not constructive, it did reveal weaknesses in implementation which if addressed could have improved program design.

Each service station is staffed by workers who carry out the orders of engineers. Though a small army of helpers, peons, drivers, telephone attendants, and sweepers man the actual service stations, only approximately 15 skilled personnel assist each engineer in the field (see Table 5.1). Water inspectors are essentially an engineer's left and right hand men. They assist him in carrying out his assigned duties, in particular distributing water, monitoring reservoir levels, attending to customer complaints, stopping leaks, and disconnecting illegal connections. In turn, they are assisted by the valve men and sanitary workers who do the dirty work in the trenches. Finally, each service station has anywhere from 4 to 8 meter readers. Within their assigned areas, they read meters from door-to-door, note the readings in ledger books, return the books to

service stations, collect the resulting bills, and distribute them to households. In the second half of each month, meter readers also assist with revenue collection, accompanying engineers and water inspectors on collection drives and pointing out the premises with large arrears.

Table 5.1: Skilled Personnel in Four Service Stations

	JJ Nagar	JB Nagar	Machalibetta	Rajajinagar
Water Inspectors	2	2	1	2
Meter Readers	4	6	6	7
Valve Men	4	6	3	4
Sanitary Workers	6	3	n/a	2
Total	**16**	**17**	**10+**	**15**

Source: Author's field research, 2005.

Although engineers are more skilled and more senior than service station staff, the latter dominate the organization in number and, to some extent, in style. Frontline workers form the backbone of each service station and while engineers come and go every three to five years, they tend to remain much longer. Therefore, the relationship of skilled personnel with domestic and non-domestic customers has deep roots and a dynamic of its own. This last point is especially true in slums with illegal network connections which frontline staff usually know about.

These workers saw two immediate problems with implementing the slum program. First, the physical work required to connect slum households came at some cost to their allocation of scarce resources, especially time and manpower. While engineers could delegate much of the initial mobilization work to the SDU and external brokers, and then simply sanction meters with limited inputs of their own, frontline workers were saddled with the responsibility of all the physical work without any commensurate increase in either monetary or professional rewards.

Second, connecting slums often required allocating scarce water away from other outlets of their own choosing and interfered with the rent-seeking behavior a system of intermittent supply breeds. For example, the conversion of illegal connections to legal ones disrupted established revenue streams for service staff. Though taking payment in return for ignoring tapped lines is arguably just corruption, altering the petty cash flow of service station staff without touching anyone else's was bound to elicit resistance. Thus, the combination of difficult extra tasks and the disruption of revenue streams proved to be a powerful disincentive for frontline workers.

In addition, there were no incentives built into the way the performance of service station staff is assessed. For example, the assessment of a meter reader is in no way linked to actual bill delivery or to subsequent revenue collection. As one engineer put it,

> *"If one meter reader has a good neighborhood, revenue collection is a cakewalk. If he has a tough area, then you cannot punish him for bad collection."*[27]

Interviews with utility employees revealed a common disconnect between inputs and rewards. Service station staff knew their performance was seen as almost entirely dependent on whatever area they happened to inherit and not on the actual quality of their work. As a result, many staff resisted implementation simply because there were no incentives for them to do the extra work.

What is interesting is that these acts of resistance on the part of service station staff were concrete articulations of workers' interests. While the quiet resistance of service station staff did in many cases delay the connection of households resulting in laggard outcomes, it also illuminates how the program might have been improved. Although the program is still very young, evidence of a growing billing problem in slums provides a good example how this might

[27] Interview with AEE, April 15th 2004.

have happened. In interviews, meter readers confessed they disliked working in slums and provided very concrete reasons why. Lanes are small and often dirty, they said, making for uninspiring visits. Meters are frequently kept inside houses for fear of theft, making readings complicated when no one is home. Slums are extremely community oriented, denying them professional anonymity on the streets. And when supply is bad, they are verbally and physically hassled by residents, even though they are not to blame. Although this litany of complaints was somewhat stereotyped, it was based on real experience. Bad meter reading and other acts of protest were not just instances of program sabotage or job shirking but valuable sources of information. Their resistance constituted grounded feedback as to what needed to change to improve the program. By changing the way meter readers were rewarded and acknowledging the difficulty of the work conditions in slums, the utility might have capitalized on this resistance to better effect.

One way worker interest articulation actually did improve program design was in the case of contractors. Though they are not service station staff *per se*, their heavy presence in the field makes them a good example of how frontline resistance can be channeled to positive effect. Contractors employed by the utility to lay the network under the Package Program did not want to work in poor neighborhoods and their resistance severely delayed expansion of the program to slums where willing engineers were waiting for the construction of new networks. For example, the main reason why Byapanahalli slum resulted in a "no success" outcome in the otherwise highly successful service station of Machalibetta was because contractors failed to lay the promised network. Although both engineers and slum dwellers in Byapanahalli were willing to

close a deal, the Projects Division of the utility fell short on its commitment simply because the appointed contractors balked.

The contractors, however, resisted slum work on some very legitimate grounds. For example, they argued that harassment of workers and theft of materials made slum work more difficult than the rest of the city. Most importantly, they said, monetary compensation was not adequate. These voices of protest were right. Rates for contractors were fixed citywide and were not relevant for many slums. Although in some cases laying network infrastructure in slums was cheaper because of the smaller size of the pipes, in many cases costs actually escalated because of the technical difficulty of building on narrow streets, circumventing shallow house foundations, and, not infrequently, drilling through deep bedrock. Engineers themselves estimated that it could take 20 percent more time to lay pipes in slum streets than in middle-class neighborhoods. Therefore, from the perspective of contractors, refusal to comply with the utility in slums was a legitimate tactic—one which the utility eventually responded to by readjusting its rates for network construction in slums.[28] In this way, conflict during implementation led to cooperative outcomes. It revealed holes in program design that were only noticed and subsequently fixed *because* of the resistance they evoked.

[28] Although the Projects Division of the utility did not readjust the rates for each element of the costing structure specifically for slums, it did incorporate a generous clause for cost overruns intended among other things to bear the additional cost incurred in slum areas. The actual rates are stipulated by the state government and cannot be amended by the utility, but in slums contractors were allowed to increase the total cost as per the new clause.

5.4 Conclusion

This chapter explained how engineers and slum dwellers arrived at neighborhood deals and the kinds of reactions such negotiations elicited. The first part showed just how much the presence of brokers was necessary to successful outcomes. These brokers came in two forms. One kind was the SDU, a unit internal to the utility but distinct from engineers and service station staff. A second kind of broker could be found in the community associations, local leaders, and NGOs rooted in slums. Although the division of labor between the two kinds was not fixed, together they fulfilled several important roles. First, they channeled information about the utility and the new program out to slum dwellers and funneled information about the slum and its inhabitants back to service station staff. Without this exchange, engineers and slum dwellers would simply not have known the content of the program on offer, the existing supply situation in slums, how to file an application, where interested households were located, and so on. Second, brokers generated trust and legitimacy. Just as engineers came to trust the SDU on slum issues, slum dwellers needed an organization or an individual to ensure that these street-level bureaucrats from the utility were serious about connecting the poor. An alliance between the SDU and a respected local broker was a valuable way to reassure residents that the outreach effort by the utility was indeed genuine. Third, brokers proved to be effective channels for feedback on program content and the experience of implementation. Without brokers, and in particular without the SDU, field-based staff and slum dwellers would have struggled to reach senior managers with valuable suggestions to policy.

The second part of the chapter showed how resistance and conflict in neighborhood deals had surprisingly positive effects. Though resistance was not necessary to reaching a deal, under

certain conditions it did have particularly beneficial impacts. First, when resistance revealed flaws in program design that the utility could address, it was constructive. For example, when contractors refused to lay networks in interested slums because the pay was insufficient relative to the work conditions, senior managers adjusted the rates such that contractors were better remunerated.

Second, when parties diverged in their views, the resistance of one party and the ensuing conflict boosted the effectiveness of collective action by those in support of the program. For example, when primarily male slum dwellers protested the advances of street-level bureaucrats treading on political party territory, women keen to connect to the BWSSB network mobilized and organized themselves more industriously than in the absence of intra-slum conflict.

Third, when a party to the negotiations objected to the slum program, the very act of objecting drew them into the process of participation with the potential to change their behavior to the cooperative over time. For example, in several slums elected politicians actively opposed deals made between slum dwellers and the utility without their involvement. They wanted control of the process and assurance that they would be credited for any infrastructure improvements. Not only did such political opposition catalyze more effective mobilization within a slum but it drew politicians into the process as well. Brokers were able to orchestrate deals in clever ways that obliged resistant politicians to participate and gave them a vested interest in ensuring a successful outcome. The main theoretical contributions of these findings are that voice can range in temperament from the cooperative to the conflictual even within the same deal, and that conflict and less explosive forms of resistance are not necessarily reactions to be avoided by planners.

CHAPTER 6:
Conclusion

6.1 Introduction

In contrast to most water utilities that express either reluctance or disinterest in serving the urban poor, the Bangalore Water Supply and Sewerage Board (BWSSB) demonstrated an unusual commitment to slum dwellers and achieved surprisingly positive outcomes. Over a five year period, the utility revised its operational policies to accommodate the financial and legal realities of slums and connected 5,000 slum households to its piped network as paying customers. After a pilot phase of experimentation in three slums, senior management scrapped the restrictive requirement for proof of property rights, lowered the connection charge for slum dwellers, and established a Social Development Unit (SDU) within the utility to coordinate the new program. From 2002 to 2005, the SDU and service station engineers connected another 26 slums to the water network. Most surprisingly, the utility performed well in its post-pilot phase with only one additional staff hire and without any of the low-cost technologies that usually accompany successful slum programs.

The utility's success in slums, however, was not absolute. Although the BWSSB did connect 5,000 households or approximately 30,000 people to the network, this was only five percent of the total slum population in Bangalore. Progress was slow and the utility was unable to connect the other 20 slums it targeted during the post-pilot phase. To compound matters, not everyone in the 26 slums where the utility did perform well connected either: on average, 34 percent of households either refused or were not offered water connections. Thus, while the utility did achieve significant outcomes, it was unable to expand its slum program everywhere it tried.

Although the utility deserves praise for its surprisingly positive results, contrasting outcomes are what make this case particularly interesting.

This dissertation set out to explain why the utility performed well in some slums but not others. Using a branch of organizational analysis rooted in the study of street-level bureaucrats, the preceding chapters explained why engineers, service station staff, slum dwellers, politicians, community organizers and all the others out in the trenches reacted differently to the same slum program and how their interactions determined eventual outcomes. In particular, I showed how the "willingness to supply" of service station engineers and the attainment of a neighborhood deal were necessary conditions for a successful program outcome. This chapter summarizes the main findings and concludes with a brief discussion of their implications for planners.

6.2 The Main Findings

The Important but Limiting Effects of External Jolts

The utility commenced operations in slums in response to general reform pressures simmering in the environment and specific triggers in the water sector. In a changing Karnataka where the problems of deteriorating infrastructure and capital flight threatened to strip the state of its newfound prosperity, public service agencies found themselves subject to intense scrutiny. Under pressure to improve service delivery from both the State Government and a new breed of elite NGOs, the utility began to experiment with a series of reform measures including new complaint monitoring systems, monthly water forums, revenue collection drives, leakage reduction programs, and detailed financial reporting. Although targeting the poor was not the

main goal of these external actors bearing down on the utility, appeasing accusations of elitism was a central concern.

While these general pressures simmered, a series of external jolts in the water sector spurred senior managers to take the specific problem of inadequate supply in slums seriously. First, the threat of privatization forced engineers opposed to the idea to respond with their own reform agenda, only this time in the public sector. A large foreign aid project designed as a master planning exercise to reform the entire utility provided one way for utility staff to appear engaged in public sector reform, even if their commitment was less than genuine. Part of the master plan project was the implementation of three pilots to test the idea of extending network connections to slums. Although the pilots were implemented by an external team isolated from the utility's core operations and did not set the utility on an irreversible course towards scaling up, they did set an important precedent with the establishment of the first slum-specific policy, namely the decision to abandon the prohibitive requirement for proof of land title in order to obtain a connection. Shortly after, the Bangalore City Council approved two resolutions that jolted the utility out of its complacency to the poor once and for all. The first resolution to discontinue funding for public taps and the second to expand the network to the entire city had important ramifications for the utility. Unable to sustain a network of free public taps and worried about a run on illegal connections in the new expansion zones, senior managers finally accepted they had to do something about inadequate supply in slums.

While the potential of external jolts to shake the *status quo* in stagnant agencies is not surprising, my findings show exactly where the effects took hold within the utility. This helps us chip away

at the monolithic view of infrastructure agencies. Though organizations sit squarely in their environments, not all workers feel the pressures of the environment in the same way. In Bangalore, the top layer of senior managers and chief engineers at the utility were eventually convinced of the need for a new approach to slums. But the general pressures and specific triggers which catalyzed this change of view only affected them. The vast majority of utility staff was not a part of this process. Service station engineers in particular were neither convinced of the need for a new approach to slums nor necessarily privy to the information in the first place. Therefore, to say that external jolts catalyze can reform is not enough. Understanding how reform reaches a utility helps us distinguish the layers of actors within large organizations and acknowledge the extent to which new ideas must be unfurled from within.

Welding Together the Behavior of Dispersed Workers

Though information must be communicated to workers, this did not happen in Bangalore. The early decisions made by the utility to promote connections in slums were reached in meetings of the Governing Board with only the occasional participation of the new Social Development Unit. In private meetings, the Board altered several of the BWSSB's policies and regulations in ways designed expressly to help the poor. For example, the Board approved the creation of an internal slum unit, it lowered the connection fee for slum dwellers, it removed the land title barrier, and it made shared connections a legal option. But the mandate to engage in slum work was never explicitly communicated to utility engineers and despite some very progressive policies on paper, the slum program was never launched in a carefully crafted way. Management did not convey or explain the new policies to frontline staff and never designed any incentives to make

the new program work. Instead, Maintenance engineers were simply informed via letter than a new unit had been created and they should cooperate with it on the issue of slums.

This happened for two reasons. First, the tight professional camaraderie of engineers at the utility exacerbated the principal-agent problem so common in large infrastructure agencies with dispersed workers. Because chief engineers were more professionally aligned with their junior colleagues in the field than with non-engineering managers at headquarters, they were reluctant to employ methods to induce engineers in service stations to respond to their broad pronouncements on slums. Second, management and chief engineers were not capable of prescribing actions on slum work in advance of experimentation. Because engineers had no prior experience in slums and the pilots had not been integrated into everyday operations and maintenance work, management at the top of the utility simply did not know how to induce workers to roll out a slum program.

As a consequence of this mixture of uncertainty and equivocal support, extreme discretion was meted out to service station engineers as to whether and how to approach slums, with predictable results. Though worker discretion is important to increasing worker dedication to the job, it is also important for agencies to weld together the behavior of their dispersed workers. Without concrete inducements and incentives to address slums, large urban water utilities will follow their natural centrifugal tendencies as workers veer away from goals set by management. In the absence of a clear operational strategy for rolling out new connections across the city's slums, this is precisely what happened at the BWSSB and the main reason why willingness to supply varied so widely within the agency.

Engineer Willingness to Supply

The "willingness to supply" of a service station engineer was necessary to achieve a successful outcome. Without engineer buy-in to the program and an interest in serving that particular slum, it was impossible for the SDU to strike a neighborhood deal on its own. Therefore, understanding how willingness to supply was elicited is extremely important, both because of the way it explains some of the intra-organizational variation in Bangalore and because of the insight it provides as to how engineer enthusiasm for reform might be generated elsewhere.

Willingness to supply was elicited at the BWSSB primarily as a result of two factors: positive incentives embedded in the service station job and effective information dissemination by the SDU. While information dissemination by the SDU was a critical input, no single factor embedded in daily maintenance work was necessary to pique engineer interest. Instead, different combinations of certain traits of service stations, slums, and engineers generated interest in the program. The absence of any necessary determinant built into the service station job is in part a reflection of the fact that incentives were not explicitly designed to promote system expansion in slums and that their impact on the success of the program was largely accidental. However, a summary of which incentives mattered most in Bangalore gives us a good indication of how managers might design a slum program with specific worker inducements in mind.

Traits of the Service Station Job

For the utility's program to work well in slums, it had to appeal to the service station engineers entrusted with implementation. In particular, slum work had to complement, rather than compete

with, the service station job and all its many other tasks unrelated to serving the poor. The incentives, resources, and attributes which mattered most to program outcome can be grouped into four categories. Although none of these variables correlated perfectly with success or failure, they tended on average to have a certain direction of effect, holding all else constant.

First, certain aspects of the professional environment of each service station made the idea of connecting slums more or less appealing. Although all service stations cater to a predominantly domestic customer base, those with substantial revenues accruing from the non-domestic sector made slum work less appealing to their engineers. This is because non-domestic customers pay much higher tariffs than domestic customers and it is much easier for an engineer to meet high revenue targets set by his superiors by expanding his network or collecting arrears from that customer base, than by looking to low-revenue slums. Conversely, engineers in service stations with a large domestic customer base and high revenue targets were generally more willing to try their hand. Engineers were thus tempted by slum work when they saw a market. In addition, the way managers supervised complaints and revenue collection had an important effect on willingness to supply. For example, service stations in which the complaint load was closely monitored by superiors made the prospect of slum work less appealing. In contrast, engineers with greater worker discretion and less pressure to comply with strict supervision standards felt freer to experiment with a new customer segment.

Second, certain area resources and distinct slum traits mattered. Although all engineers work for the same cash-strapped, resource-scarce utility, each service station area they manage has a unique combination of characteristics. One of the most critical area resources was, of course,

water. Engineers working in areas with acute water scarcity were, on average, less committed to slums than their colleagues. But engineers with water to spare were not interested either. An abundance of water enabled them to turn a blind eye to illegal connections and wastage through public taps. As a result, engineers were more committed in slums that were neither water-scarce nor water-rich. In addition, willingness to supply differed not just depending on the resources of a service station as a whole but on the characteristics of the slums in that area. The existing water supply situation was particularly important. Existing illegal connections or public taps presented notable obstacles to the conversion of slum dwellers to paying customers and, all else being equal, engineers were more enthused by the prospect of working with a fresh customer base.

Third, the personal dispositions and preferences of individual engineers weighed heavily on their willingness to supply. On the one hand, engineers with strong public service motivation saw the opportunity for slum work as a way to deliver on personal beliefs about what it means to improve people's lives. Some of the most willing engineers explained their commitment as a way to further "social justice" while reaping satisfaction from a kind of task different from those usually associated with the service station job. On the other hand, even socially committed engineers were not willing to supply when they simply did not buy-in to the technical solution adopted by senior management and propagated by the SDU. In a few failed slums, engineers confessed that they were uninterested in the program because they thought providing slums with individual metered connections was a technical folly in a system of intermittent supply and in irregularly planned settlements. Several of the failed outcomes can thus be explained by the reluctance of certain engineers to subscribe to the actual solution on offer.

Fourth, certain non-preference characteristics of engineers affected willingness to supply. Of these, the evidence from my research was strongest for length of tenure in a given service station. None of the successful outcomes with their revealed willingness to supply were situated in service stations where engineers had only recently arrived. Conversely, several of the failed slums where engineers expressed a disinterest in serving the poor were located in stations where engineers had just been posted. Because the service station job consists of so many diverse tasks and each station functions differently, newly transferred engineers had little time to devote to a new program without having mastered first the particulars of their new post.

Diffusing Innovations within the State

Although aspects of the service station job greatly influenced willingness to supply, they cannot fully explain an engineer's enthusiasm for reform. Many aspects varied only marginally across service stations and oftentimes the ways in which slum work complemented the service station job were not initially obvious to utility employees. Though willing engineers later explained their enthusiasm in light of the service station job, they also confessed that many of the links between slum work and professional rewards had been made explicit to them by the head of the SDU first. Thus, commitment to reform from frontline engineers within the utility was elicited when incentives were in place *and* when the SDU was effective in communicating, marketing, and simplifying the contents of the new program in ways that unveiled incentives otherwise hidden from view and made the task more feasible.

Though often missing from the development literature, information exchange is central to the diffusion of a new idea. In order to diffuse an innovation, fresh information about the new idea must be conveyed to its expected adopters. In the case of a new slum program, workers in infrastructure agencies must be informed of what the program entails, why they should cooperate, and how they can implement it. In Bangalore, without the active role of the SDU, few utility engineers spontaneously supplied slums on their own. They needed to be furnished with details on the slum program, convinced of its merits, and quite simply, told what to do. To this end, the internal slum unit was a critical channel of communication within the utility. Its role as mover of information from headquarters out to the frontline was particularly important given the absence of any horizontal learning networks with respect to slums. Although the unit was not as effective in some service stations as it was in others, this can be explained by the limited time and capacity of the unit staffed by only one social development professional for the entire city. The success of the unit where it occurred highlights just how much the dissemination of information to frontline staff is critical to eliciting interest in slums from within water utilities.

Neighborhood Deals and their Brokers

Alongside engineer willingness to supply, the attainment of a neighborhood deal was a necessary condition for a successful program outcome. Each unique pairing of one slum and one service station had to arrive at a mutually agreeable solution before households could be connected to the network. Good negotiations were also important as a way to rescue flailing deals and push laggards into becoming successful cases, and as a way to increase the share of households that opted to connect to the network in a successful slum.

Reaching these deals was not easy. Having never worked in slums before and often skeptical of their own willingness to try, engineers needed a hand in reaching out across the state-society divide. As the nodal point within the utility for all things "slum," the SDU assumed the role of assisting engineers. The head of the unit was assisted in this regard by community groups, local leaders, and grassroots NGOs who helped her broker neighborhood deals. Together they generated and conveyed important information back and forth between the utility and the slum, and they engendered the trust from the community that these new street-level bureaucrats were genuine. Just as engineers were not able to spontaneously supply a new service, slum dwellers were not able to spontaneously demand it without the critical support of brokers.

Instead of selecting one NGO to coordinate with the utility for the city as a whole, the utility worked with a whole host of different kinds of local organizations. What mattered most in the selection of a broker was not citywide reputation but who had the best access to local information and who garnered the most trust in a particular community.

The role of brokers has important implications for the literature on the relationship between workers and users. Although this literature advocates rightly for a close and direct relationship between service providers and clients, my findings shed light on how this relationship might work in practice. In Bangalore, positive outcomes were associated with mediated relationships in which both engineers on the supply side and slum dwellers on the demand side had access to organizations from which to learn and through which they could feed and obtain information necessary for implementation. Moreover, although the level of input by brokers diminished

slowly over time from a peak in the deal making months, the role of brokers was ongoing and not limited to a one-time injection of information and training.

This is important not just because it brings the relationship between providers and poor clients to life but because it puts the role of demand side institutions in perspective. Although the infrastructure literature advocates institutions like water user associations capable of channeling voice from the demand side, my findings show how the channels *between* utility employees and slum dwellers were more critical to success than user associations. What mattered more than anything was access to utility staff, an outcome that was achieved through brokers. Without a direct channel to the utility, the voices of the poor were simply "voices without power."[1]

The Value in Resistance and Conflict

Surprisingly, the participation of engineers, service station staff, slum dwellers, and politicians need not have been harmonious for it to be effective. On the contrary, resistance by any of these stakeholders sometimes elicited better outcomes than the more muted negotiations so common in other slums. Though open conflict and less explosive forms like resistance were by no means necessary conditions for a successful outcome, they did enhance the quality of some deals in unexpected ways. One of the contributions of this dissertation, therefore, is that resistance is a form of voice that has not been well appreciated.

[1] Interview with Head of SDU, Feb 25th 2005.

In particular, resistance to reform had three main benefits. First, resistance drew people out of the woodwork and put them on a path of engagement which though initially conflict-laden sometimes adjusted to the cooperative over time. Put otherwise, any negative reaction was better than no reaction at all. Although the very word resistance signifies delays in project implementation and fundamental disagreement between parties, eventual outcomes may be better and more sustainable because of the way delays and disagreements breed discussion, interaction, and the exchange of ideas. For example, one of the most successful slums—as measured by the share of households that connected—experienced some of the most open conflict between staff, slum dwellers, and politicians. But because conflict galvanized slum dwellers in favor of the program and brokers harnessed the ensuing resistance in clever ways, the eventual outcome was real political support and greater unity among stakeholders.

Second, when slum dwellers diverged in their views, resistance by one party deepened the quality of collective action among those who did support the program and who then organized themselves better in the knowledge that there was opposition. For example, in slums where men actively opposed the utility on political grounds, women's groups rallied together more constructively than in the absence of intra-slum conflict.

Third, resistance promoted accountability. When service station staff or slum dwellers expressed their resistance to specific aspects of the program, they were in fact signaling flaws in project design. For example, a slum that refused to pay for water was not necessarily acting in an entrenched and unreasonable way. The slum next door might have been getting water for free or residents might already have had access to perfectly good albeit illegal supply. Similarly, a meter

reader who refused to read meters in slums was reacting to legitimate concerns about his safety, the impact of the job on his professional standing, and the difficulty of reading meters locked inside slum homes. Although we tend not to think of 'voice' and 'exit' as concepts that apply to government workers or to customers in monopolies, these reactions were simply manifestations of just that. The utility was successful when it read these signs correctly and adjusted policy to reflect the concerns of staff and beneficiaries in the field, much as firms adjust their products in response to the voice and exit of customers.

6.3 Policy Implications

The findings of this dissertation are important because of the way they generate different kinds of insights from the ones conventionally found in analyses of why water utilities do or do not serve the poor. When a study is rooted at the level of street-level bureaucrats, it is able to get away from a tendency to skim the surface of utilities and to ignore intra-organizational diversity and the buried voices of frontline workers. This gets us away from the trap of blaming poor government performance on bad incentives and advocating narrow policy solutions. Although the empirical evidence in Bangalore supports the dominant policy advice that incentives, resources, and prices matter to good performance, it also shows how other more dynamic aspects of communication and negotiation can result in good performance, even when the incentives are not quite right. Good performance hinges just as much on the dissemination of information within utilities and across the state-society divide such that workers and beneficiaries might learn. This is especially true for programs that involve diffusion of an entirely new idea, such as

when business-as-usual utilities agree to try their hand at slum programs their workers have no idea how to implement.

The broad implication of this more dynamic view is that pro-poor utility reform is really about the adoption of new practices. To this extent, we as policymakers should promote the kinds of institutions which foster dynamic information exchange and negotiated participation both *within* utilities and *between* workers and users. Though supply-driven and demand-driven planning are useful categories, they tend to mask a large gray area in between senior managers of agencies, on the one hand, and users of public services, on the other. Instead, the relationships between managers and their workers and between street-level bureaucrats and communities are much more central to determining outcomes than the literature would have us to believe. For a utility to improve its service to the poor, it must focus on diffusing new practices to this middle ground.

The specific policy implications for managers are that incentives must be aligned within utilities to elicit engineer buy-in *and* that well-staffed social development units are necessary to diffuse a new slum program to utility employees, to broker deals with slum dwellers, and to harness the benefits of resistance. First, organizational incentives must make the added task of serving slums compelling to frontline staff. Utility managers rely on field-level staff to grease the wheels of their organization and knowingly employ a system of incentives to ensure workers act in the interests of the agency's stated goals. But when systems of worker inducement are not in place, street-level bureaucrats exercise a great deal of discretion as to what they do in ways that effectively add up to agency policy. This can lead to fragmentation away from the stated goals of the utility, however progressive or pro-poor they may be on paper. To implement a slum

program effectively, managers must re-align incentives embedded in the service station job such that engaging in slum work makes sense for field-based engineers and their staff.

Second, internal slum wings or social development units are crucial to the success of a slum program. These must be staffed in adequate numbers by well-trained social development professionals and given the resources necessary to mobilize utility employees and slum dwellers across an entire city. Despite the scale of this task, these need not be huge units. Internal slum wings can leverage the engineering presence within utilities and the community organizers in slums to great effect. But there must be adequate manpower to do this with resolute support from the top. Ideally, these units should be staffed by qualified social development professionals able to command respect from those in the trenches without presenting a threat to the core group of utility engineers.

These policy implications and the insights from this dissertation are different from the kinds generated in the dominant explanations as to why urban water utilities fail poor people. Development professionals usually think about the problem of serving the poor as intractable and are often quite negative in their view of the matter: the public sector is doomed, bureaucrats are rent-seeking and venal, elected leaders are trapped by political expediency, piped supply is simply too expensive, and so on. To the extent that research has opened up the possibility for pro-poor reform in the public water sector, the policy implications are often limited to changes in the environment in which utilities sit: keep the politicians out, get more water, target state subsidies better, give slums land tenure, and so on. With the notable exception of calls to get the incentives right and to finance connection charges, most advocates of piped water supply for the

urban poor have ignored how workers in urban water utilities relate to each other and how policies might be changed from within. My findings show not only how the public sector and bureaucrats are much more flexible and experimental than usually deemed, and how bringing politicians and other detractors into the process can actually be good for outcomes, but also just how important understanding intra-organizational behavior is to utility reform.

Although very specific changes in the Indian environment prompted the BWSSB to amend its policies and the city government financed the expensive side of infrastructure expansion, this case reveals the extent to which successful implementation of slum programs is contingent on so much more than macro-reforms and financing. Although many of the practical implications of these ideas are messy, their direction of effect is very clear. With well-staffed slum units, internal communication of new ideas, incentives for street-level engineers, and openness to resistance as the litmus test for policy, utilities can improve water supply for the poor.

Appendix A:
Methodology & Interviews

SCHEDULE A1: Number of Open-Ended Interviews & Field Visits

	# Interviews	# Field Visits
Bangalore Citywide (Sept 03 – May 05)		
Donors (AusAID, USAID)	6	
Bangalore City Corporation (BMP)	5	
State Government Officers (GoK)	4	
Bangalore Development Authority (BDA)	2	
Karnataka Slum Clearance Board (KSCB)	5	1
State Infrastructure Agency (KUIDFC)	3	
Planners, Experts, Scholars	8	
NGOs	14	2
Total	**47**	**3**

BWSSB, First Phase (Sept 03 – May 04)		
Social Development Unit	5	16
Senior Management	6	
Chief Engineers	3	
Engineers assigned to HQ or Projects	4	
Field-Based Maintenance Engineers	4	
Field-Based Non-Engineer Staff	1	
Total	**23**	**16**

BWSSB, Second Phase (Nov 04 – May 05)		
Social Development Unit	7	3
Senior Management	6	
Chief Engineers	3	
Engineers assigned to HQ or Projects	1	
Field-Based Maintenance Engineers	3	
Field-Based Non-Engineer Staff	0	
Total	**20**	**3**

SCHEDULE A2: Open-Ended Interviews & Field Visits by Title/Location

A. BWSSB First Phase (Sept 03 – May 04)

1. Chairman (9/8/2003)
2. Head of Social Development Unit (9/8/2003)
3. Assistant Executive Engineer, Yelahanka Treatment Plant (9/9/2003)
4. Chairman (9/9/2003)
5. Field Visit: Sudamnagar & Anandapuram Slums (9/10/2003)
6. Head of Social Development Unit (2/17/2004)
7. Executive Engineer, Coordinator of AusAID Project (2/26/2004)
8. Chairman (2/27/2004)
9. Field Visit: Machalibetta Service Station, East-3 (3/10/2004)
10. Head of Social Development Unit (3/11/2004)
11. Assistant Executive Engineer, Machalibetta Service Station, East-3 (3/17/2004)
12. Chief Engineer of Corporate Planning (3/24/2004)
13. Field Visit: Mominpura Slum (3/24/2004)
14. Water Inspector, Machalibetta Service Station, East-3 (3/25/2004)
15. Field Visit: Chetiappa Garden, M.N. Garden & K.R. Paliya Slums (3/25/2004)
16. Field Visit: Katheeraman Temple Slum (3/26/2004)
17. Field Visit: Lingarajpuram Slum and NGO Mythri Sarva Seva Samithi (3/27/2004)
18. Field Visit: Machalibetta Service Station, East-3 (4/2/2004)
19. Field Visit: Anandapuram, Sudamnagar & Cement Huts Slums (4/5/2004)
20. Chief Engineer of Maintenance (4/6/2004)
21. Head of Social Development Unit (4/8/2004)
22. Assistant Executive Engineer, Deposit Contributions, North-3 (4/8/2004)
23. Assistant Executive Engineer, TA to Chief Engineer of Maintenance (4/12/2004)
24. Field Visit: Lingarajpuram Slum B Block (4/13/2004)
25. Assistant Executive Engineer, East-3 Subdivision (4/15/2004)
26. Executive Engineer, East Division (4/16/2004)
27. Chief Engineer of Projects (4/17/2004)
28. Field Visit: Chandranagar Slum (4/21/2004)
29. Field Visit: Chetiappa Garden Slum (4/23/2004)

30. Field Visit: D.J. Halli Slum (4/24/2004)
31. Field Visit: Jayanagar South Division Team Meeting (5/14/2004)
32. Assistant Executive Engineer, Chamrajpet Sub-Division (5/15/2004)
33. Field Visit: Giripura Slum (5/17/2004)
34. Director and Chief Engineer of in-house Tata Consulting (5/17/2004)
35. Field Visit: Jayanagar South Division Follow-Up Meeting (5/20/2004)
36. Accounts Comptroller (5/20/2004)
37. Field Visit: Jayanagar South Division Follow-Up Meeting (5/22/2004)
38. Chairman (5/28/2004)
39. Head of Social Development Unit (5/28/2004)

B. BWSSB Second Phase (Nov 04 – May 05)

1. New Chairman (11/18/2004)
2. Head of Social Development Unit (11/18/2004)
3. Field Visit: Hoskerahalli Slum (11/23/2004)
4. Field Visit: Koramangala Slum (11/24/2004)
5. Head of Social Development Unit (12/14/2004)
6. Financial Advisor (12/20/2004)
7. New Chief Engineer of Projects (12/21/2004)
8. Chief Engineer of Cauvery River (12/22/2004)
9. Public Relations Officer (12/22/2004)
10. Chief Administrative Officer (12/23/2004)
11. Chief Engineer of Maintenance (12/23/2004)
12. Head of Social Development Unit (2/25/2005)
13. Assistant Executive Engineer, Machalibetta Service Station, East-3 (3/10/2005)
14. Head of Social Development Unit (3/18/2005)
15. Assistant Executive Engineer, Malleswaram Service Station, North-1 (4/4/2005)
16. Head of Social Development Unit (4/4/2005)
17. Assistant Executive Engineer, Chandranagar Service Station, West-4 (4/6/2005)
18. Field Visit: M.G. Slum (4/6/2005)
19. Head of Social Development Unit (4/20/2005)

20. Chairman (4/27/2005)
21. Head of Social Development Unit (5/20/2005)
22. Assistant Executive Engineer, Corporate Planning & Wastewater (5/21/2005)
23. Statistical Officer (5/25/2005)

C. Bangalore Citywide (Sept 03 – May 05)

DONORS

1. Ms. Rupa Mukerji
   Consultant to TARU under AusAID Master Plan Project
   Sept. 16th, 2003 (Hyderabad)

2. Mr. Aro Revi
   Director of TARU under AusAID Master Plan Project
   Dec. 4th, 2004 (London)

3. Mr. Somnath Sen
   Director of TARU under AusAID Master Plan Project
   Feb 16th, 2005 (New Delhi)

4. Mr. Ramesh Subramanian
   Project Manager, AusAID India
   Feb. 17th, 2005 (New Delhi)

5. Mr. Anand Kumar
   Former Head of Vivendi in Bangalore
   Water Specialist, Indo-US FIRE Project
   March 29th, 2005

6. USAID—Indo-US FIRE Project
   Mr. Lee Baker, Mr. Chetan Vaidya, and Mr. Anand Kumar
   April 22nd, 2005

BANGALORE CITY COUNCIL

1. Mr. P.R. Ramesh
   Mayor
   May 12th, 2004

2. Mr. Subhash Chandra
Special Commissioner
May 22nd, 2004

3. Mr. Sreenivasa Murthy
Commissioner
May 26th, 2004

4. Mr. Ramegowda
Engineer in Chief
June 1st, 2004

5. Mr. P.K. Srihari
Finance Commissioner
April 2nd, 2005

GOVERNMENT OF KARNATAKA

1. Mr. S. Sarfaraz Khan
District Project Officer, Bangalore Urban Deputy Commissioner's Office
March 16th, 2004

2. Mr. Jairaj
Principal Secretary to the Chief Minister
May 18th, 2004

3. Chief Justice Venkatachala
Lok Ayukta
May 18th, 2005

4. Mrs. Shamin Banu
Principal Secretary, Urban Development Department
May 24th, 2005

BANGALORE DEVELOPMENT AUTHORITY

1. Mr. V.S. Shiva Rudraiah
Deputy Director of GIS and Spatial Mapping
Sept. 5th, 2003

2. Mr. Sandeep Dash
Finance Member
Sept. 8th, 2003

KARNATAKA SLUM CLEARANCE BOARD

1. Mr. J. S. Virupakshaiah
   Commissioner
   Sept. 11th, 2003

2. Mr. S. Raganna
   Joint Director
   Sept. 11th, 2003

3. Mr. Munivenkataiah
   Asst. Executive Engineer
   Sept. 15th, 2003

4. Field Visit to Vambay Scheme
   Sept. 15th, 2003

5. Mr. S. Raganna
   Joint Director
   May 27th, 2004

5. Mr. Venkataramana N. Nayak
   Commissioner
   May 27th, 2004

KARNATAKA URBAN INFRASTRUCTURE DEVELOPMENT FINANCE CORPORATION

1. Team Meeting
   Feb. 19th, 2004

   Mr. Atul Kumar Tiwari, Joint Managing Director
   Mr. Ashok Jain, General Manager for Urban Affairs
   Mr. K.N. Narasimha Murthy, Company Secretary
   Mr. N.R.N. Simha, Assistant General Manager (Technical)
   Mr. B.V. Chandrasekhara, Engineering Advisor
   Mr. Deepak Singh, Team Leader, KUIDP, Louis Berger International

2. Dr. K.P. Krishnan
   Managing Director
   May 24th, 2004

3. Mr. P.M. Kulkarni
   Water Expert
   March 30th, 2005

PLANNERS, EXPERTS, SCHOLARS

1. Ms. Asha Ghosh Rao
   Project Coordinator for Land Use, BATF
   Sept 4th, 2003

2. Mr. Olivier Toutain
   Manager of Comprehensive Development Plan for Bangalore
   Planner, SCE-CREOCEAN, India Pvt. Ltd. (SCE)
   Sept. 8th, 2003

3. Mr. Jean-Philippe Lestang
   CEO, SCE
   Manager of Comprehensive Development Plan for Bangalore
   March 17th, 2004

4. Dr. G.S. Sastry
   Professor, Institute for Social and Economic Change (ISEC)
   May 22nd, 2004

5. Ms. Kalpana Kar
   Member, BATF
   Tues. May 25th, 2004

6. Dr. A. Ravindra
   Former Chief Secretary, GoK
   Chairman, Centre for Sustainable Development
   May 28th, 2004

7. Dr. Madhu Sekher & Dr. Bhargava
   Professors, ISEC
   Nov 23rd, 2004

8. Mr. Narendar Pani
   Editor, Economic Times
   May 19th, 2005

NON GOVERNMENTAL ORGANIZATIONS

1. Mr. K. Beema
   Campaign Coordinator for SJSRNY
   Sept. 11th, 2003

2. Mr. Srikanth Nadhamuni
Director and Managing Trustee, eGovernments Foundation
Feb 17th, 2004

3. Ms. Anita Reddy
Director and Founder, AVAS
May 19th, 2004

4. Mr. Ramesh Ramanathan and Ms. Swati Ramanathan
Directors and Founders, Janaagraha
May 24th, 2004

5. Mr. K.K. Nayar and Mr. Greig Sandilands
Coordinators GBWASP, Janaagraha
Dec 13th, 2004

6. Mr. Nagarajaiah
Coordinator for AVAS
March 3rd, 2005

7. Ms. Helen Govindraj
Field Worker, Mythri
March 4th, 2005

8. Ms. Anapurna
Field Coordinator, Suraksha
March 7th, 2005

9. Focus Group—Chandranagar Slum
WATSAN Committee Members
March 7th, 2005

10. Focus Group—Lingarajpuram Slum
Women's Group
March 10th, 2005

11. Directors of KKNSS
Group Meeting
March 10th, 2005

12. Mr. Madhu Sudhan
Research Unit, KKNSS
March 30th, 2005

13. Mr. Viswanath
Founding Member, CIVIC Bangalore
Head, Rainwater Club
March 30th, 2005

14. Mr. Vinay Baindur
Member, CIVIC Bangalore
April 4th, 2005

15. Mr. Pramodh
Slum Coordinator, Janaagraha
April 5th, 2005

16. Mr. Gopakumar Thampi
Director, Public Affairs Centre
April 25th, 2005

SCHEDULE A3: Statement of Purpose & Consent

My name is Genevieve Connors and I am doing research for my PhD degree in Urban Planning at MIT, a university in the United States. The purpose of my study is to examine how the Social Development Unit of the Bangalore Water Supply and Sewerage Board (BWSSB) was able to connect slum dwellers to the piped supply network in the city's slums. I am interviewing engineers and other staff of the BWSSB, as well as elected and administrative officials throughout the city. I have asked to interview you because of your detailed knowledge of this subject, which will help me understand this issue and help me complete my research.

This interview will take approximately half an hour and will consist of short questions. Your participation is entirely voluntary. At any time you may choose not to answer any specific questions or to terminate this interview without any consequences.

[If applicable for interviewees who do not have unique identifiers, e.g. most engineers at the BWSSB:] Your answers will be recorded anonymously- no one can trace the information obtained in this interview back to you individually [show them form which has no designated space for entering names of interviewees].

If you wish to say anything in confidence or "off the record" I will not record this information. The data obtained will only be used by me for my research for academic purposes only and no one else will have access to it.

Before we begin, do you have any questions?

Thank You.

SCHEDULE A4: Interviews & Focus Groups in Focused Comparison

Interviews at Four Service Stations

1. Assistant Engineer, JJ Nagar Service Station
   May 11th, 2005

2. Assistant Engineer, JB Nagar Service Station
   May 12th, 2005

3. Water Inspector, JB Nagar Service Station
   May 12th, 2005

4. Former Assistant Executive Engineer, JB Nagar Service Station
   May 13th, 2005

5. Assistant Executive Engineer, Machalibetta Service Station
   May 13th, 2005

6. Assistant Engineer, Rajajinagar Service Station
   May 13th, 2005

7. Former Meter Reader, JB Nagar Service Station
   May 20th, 2005

8. Meter Reader, Machalibetta Service Station
   May 23rd, 2005

Focus Groups in Six Slums

1. Mominpura Slum, May 17th, 2005

2. Chamundi Slum, May 18th, 2005

3. Anandapuram Slum, May 19th, 2005

4. G.Byapanahalli Slum, May 20th, 2005

5. Sudamanagar Slum, May 21st, 2005

6. Gajendranagar Slum, May 23rd, 2005

SCHEDULE A5: Data Requests from Engineers in Focused Comparison

Connections:

Total Number of Connections in Service Station (Domestic and Non-Domestic and Industrial)	

Total Number of Slums in Service Station	

Total Number of Non-Domestic and Industrial Connections in Service Station	

Total Number of Domestic Connections in Service Station	

Total Number of Slum Connections in Service Station	

Targets and Collection:

	Target Fixed Amount (Lakhs)		**Collection Amount (Lakhs)**	
	Demand	**Pro-Rata**	**Demand**	**Pro-Rata**
April 2005				
April 2004				
April 2003				
April 2002				

Figures above required per month only for entire service station, not for entire year.

Collection Demand for Non-Domestic and Industrial Connections (Current)	

Collection Demand for Slum Connections (Current)	

Figures above required for latest April 2005 month only.

Slum Figures:

	April 2005	**April 2004**	**April 2003**	**April 2002**
Total Number of Metered Slum Connections in Service Station				
Opening Demand for Slum Connections Only (Lakhs)				
Collection Demand for Slum Connections Only (Lakhs)				

SCHEDULE A6: Guidelines for Semi-Structured Interviews with Engineers

Part I: Assess initial entry in slum & initial connection process.
Part II: Assess current status & ongoing performance.
Part III: Ask for indicators from service station (repeat visit will be required to collect).

Part I:

1. Why did you decide to work in this slum? Why not?
2. Who first contacted you about connecting this slum?
3. Did slum dwellers approach you directly? Who is you point of contact there?
4. If the SDU helped...What kind of mediation did SDU provide for you?
5. Did you know about the SDU before? What is its role at the BWSSB?
6. Have you worked with Salma in other slums? What was the experience there?
7. Have you worked alone in other slums? What was the experience there?
8. What instructions, targets or support have you been given from the BWSSB for slums?
9. Does the AEE +/or EE ask you to work in slums, and why or why not?
10. Do they ever come with you to visit?
11. Are you rewarded for your work in slums? By whom and in what way?
12. Were the politicians in this area involved in this process?
13. Is water supply a constraint in this service station? Is there sufficient water for slums?
14. If package program or new network, have the pipelines been serviced yet?
15. What is the process for connecting a slum, can you walk me through the steps?
16. What are the particular characteristics of this slum that helped you/constrained you?

Part II:

1. What time of day and for how long you do you supply water to this slum?
2. Approximately what share of the slum has BWSSB connections? What about the others?
3. Are you billing the slum dwellers now?
4. Are they paying? What do you do if they can't pay?
5. Do slums help you meet your revenue targets or too little?
6. Who is your point(s) of contact in this slum now?
7. How do you receive any complaints from slum dwellers?
8. When they have a complaint, how do they approach the service station? Who and how?
9. How do you address their complaints?
10. Who goes into the slums on a regular basis from your staff?
11. How often do you find time to go each month? Is it necessary, helpful etc...?
12. What is the current relationship with the local politician in this slum? Supportive or not?
13. What is your opinion about servicing slums?
14. What are the main problems in the slums?
15. Why do you think the program works well in some areas or not others?
16. What would you need to make supplying the slums more appealing or effective? Can you rank: recognition, salary, choice transfer, more resources, more water, anything else?

SCHEDULE A7: Guidelines for Focus Groups with Slum Dwellers

Part I: Assess initial entry in slum & initial connection process.
Part II: Assess current status & ongoing performance.
Part III: Walk around slum to meet households and verify situation.

Part I:

1. Prior to the BWSSB's efforts, what kind of water supply did you have? Was it free?
2. Why did you decide to connect to the BWSSB network? Why not?
3. Who first contacted you about connecting this slum?
4. Did the concerned engineer approach you directly? Who is you point of contact at BWSSB?
5. Who mobilized the community and collected applications? How did this process work?
6. If the SDU helped…What kind of mediation did SDU provide for you?
7. Was an NGO involved? What did they do?
8. Do you have a community leader who helped too? What did he/she do?
9. Were the politicians in this area involved in this process? In what way?
10. What is the process for connecting to BWSSB network, can you walk me through the steps?

Part II:

1. Are you getting water supply now? Is it of good quality? Consistent timing?
2. What time of day and for how long you do you supply water to this slum?
3. Approximately what share of the slum has BWSSB connections? What about the others?
4. What is the quality of meter readers' work in your slum?
5. Do they come regularly?
6. Are the bills accurate?
7. Are most of you able to pay? Why not?
8. What do you do if you can't pay?
9. Where do you pay, how do you pay?
10. How is your community organized around this issue of water supply?
11. Who is involved, how often do you meet, where etc…?
12. How do you convey complaints or questions to the BWSSB?
13. Who is your main point of contact there?
14. How would you register a complaint?
15. Do they respond to your complaints? How do they treat you as a community?
16. Is there someone who goes into the service stations on a regular basis from the slum?
17. What do you expect of the BWSSB? What are the most important things to you?
18. What do you think they expect from you in return?
19. What about the local politicians? Do they stay involved? Supportive of your concerns?
20. Why do you think the program works well in some areas or not others?

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