Governance and access to water and sanitation in the metropolitan fringe: an overview of five case studies

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DRAFT FOR DISCUSSION

Abstract
The peri-urban interface (PUI) is the location, on the one hand, of a mixed population which often disproportionately comprises poor households and producers, and on the other of important environmental services and natural resources consumed in towns and cities. Many of the localities in the PUI of metropolitan areas can be described as in transition from being predominantly rural to acquiring urban features. This process is often accompanied by substantial pressures over natural resources (such as land and water) due to their increased marketability and greater volumes of pollution generated by higher concentrations of population and enterprises.

This paper presents preliminary results from a research project on the governance of water and sanitation services in the PUI of five metropolitan areas (Chennai, Dar es Salaam, Cairo, Mexico City and Caracas). It explores differences and similarities in the formal and informal practices in the delivery and consumption of these services. It deals with issues of access to decision-making, equity, cultural and political practices in delivering, sharing or competing for services, and perceptions of local 'ownership' of natural resources, while highlighting the role that different actors, including state institutions, play in these processes.

1. Introduction

There now seems to be widespread agreement that in developing countries the state alone will be unable to meet the internationally agreed targets for reducing the number of people with no access to clean water and adequate sanitation (Nickson, 2002; UN-Habitat, 2003; World Bank, 2003). It has also been projected that for the next five decades most of the growth in the world's population will be in urban areas; much of this growth and the accompanying spatial expansion will be in peri-urban areas of medium-sized cities and metropolitan regions.

Over the past two decades or so a form of consensus has appeared about the nature of the water supply and sanitation (WSS) problem embodied in international declarations and shifts in emphases in national and international policies. Gradually, the focus has shifted from a concern with technical improvements towards a growing importance of the institutional aspects of service delivery (Ayee & Crook, 2003; Nickson, 2002;UN-Habitat, 2003)

This paper argues that the governance of WSS in the peri-urban context presents a number of peculiarities, particularly when compared with the provision of the same services in either urban or rural areas:

First, in the context of developing countries, peri-urban areas generally lie outside the coverage of formal WSS systems, which are in most cases restricted to a relatively small core. Thus, a first characteristic is that WSS supply in the peri-urban context is characterised by a

high diversity of practices, many of which could be characterised as informal. These practices are at best overlooked and at worst resisted by the set of regulations, policies and resources that structure and support the formal system. Examples of this situation are to be found in the lack of consideration of the role played by the informal private sector (e.g.: push cart vendors) in any policy attempts to reshape current WSS systems.

Second, there is a high degree of fragmentation in terms of the agents involved in the different stages of water and sanitation supply. The highest variety of agents is to be found in the stage of water distribution (and access), whilst other phases appear to be dominated by a smaller number of agents and actors. For instance, to a large extent, water abstraction continues to be the responsibility of the public sector, although cases can be found where abstraction is performed by the private sector (e.g. individual private well owners or illegal aquifer extraction). But, by far, it is at the stage of distribution where a higher diversity of actors operate, either within the formal system and thus under the regulation and supervision of the state, or in the interstices left by such system.

The discussion about the governance of WSS usually makes reference (almost exclusively) to the formal system, or in other words to the set of rules and principles articulated through the policy system that allow the operation of different agents in different roles. This paper argues that in addition to the governance regimes that characterise the functioning of the formal systems of service provision, there is also a variety of unwritten rules that support and structure the so called informal system. But whilst the formal system is 'policy-rooted', the informal system is 'practice-rooted'. Given the significance of the informal system in ensuring access to water supply and sanitation, particularly among the poorest, it is essential to gain a better understanding of the rationale and rules that govern the informal system and also of the ways this system could be articulated to the formal one to the point in which the governance regimes underlying both systems produce synergies rather than contradictory or undermining effects on each other. When speaking about 'formal' and 'informal' systems it should be mentioned that these two systems are not internally homogeneous. In fact, the only thing that different practices might have in common is whether they are rooted in policies and formalised practices or unwritten rules and informal practices. There is an overarching variety of arrangements within these two broad categories and it is interesting to notice that whilst some are hierarchically organised, others are market driven, whilst a third group facilitates cooperation among agents. It is this last group of arrangements that exhibits a better potential for promoting governance regimes that support a mixed pool of agents.

This paper reports on on-going research on the governance of water and sanitation services in the peri-urban interface of five metropolitan regions: Mexico City, Caracas (Venezuela), Dar es Salaam (Tanzania), Cairo-Giza (Egypt) and Chennai (India). Presently, there is a gap in the operating knowledge of implementing agencies on the specific problems that arise in the provision of peri-urban areas. A premise of this research project is that greater knowledge of the social, environmental and governance issues arising from changes in the management of water supply and sanitation in the PUI, and more specifically of the impact on these of different and changing regulatory frameworks, would be beneficial not only for the poor but also for these agencies and other local agents.

The five cities offer a vivid example of the considerable diversity in the forms of provision of these crucial services, which include both network and non-network systems supplied by a

wide range of agents. The paper explores the extent to which differences in governance regimes regulating the provision of water and sanitation services in peri-urban localities of the five metropolitan regions explain differences in the effective means by which peri-urban dwellers, in particular the poor, access these services.

The paper is structured in four sections. Following this introduction, section 2 provides an overview of the governance debate, particularly in relation to service delivery in the peri-urban context. In doing so, this section also introduces key concepts underlying the development of this paper and outlines the analytical framework adopted. Section 3 examines in more detail the roles of the public, private and community sectors in WSS and the extent to which the governance frameworks underlying the system prompt relations of cooperation or competition among the three sectors. An overview of the five case studies under examination in the research underlying this paper is presented in section 4, followed by a number of concluding remarks that focus particularly on the policy implications of the arguments and issues examined throughout the paper.

2. Bringing governance and service delivery into perspective

The debate on governance has expanded significantly in the last fifteen years. This has been associated with an increased concern on the side of the international community not only to understand but to improve the general conditions for policy making encompassed by the values of participatory democracy, social justice and environmental sustainability. This preoccupation has resulted in an overarching and often prescriptive debate of the most appropriate governing practices to promote co-responsibility and synergy among different social actors. In some cases, the outcomes of this debate have even become organised as an external conditionality prescribed by international institutions, such as in the debate surrounding the concept of 'good governance'. But contrary to the general view, the current debate goes beyond a concern for establishing a relatively formalised set of prescriptive governing practices aimed at addressing the perceived evils of corruption and autocracy among the public sector or to facilitate the operation of the private sector in the delivery of services. In the field of environmental politics, increasingly the debate on governance is focusing on the emergence of new institutional forms associated with cooperative management regimes, which "attempt to organise society through the means of association and public deliberation, and represent alternatives to hierarchies and markets as modes of coordination" (Gomez Cosío, 2004:1).

Over time, the concept of governance has been given many different meanings and interpretations but perhaps the best established definition is one that refers to the 'governability' of a polity or, in other words the capacity of a political system to govern efficiently and to provide the necessary political conditions for economic and social development. This definition of governance has its origin in the mid 1970s and was particularly applied to comparative politics, but still enjoys widespread popularity. The association between the notions of governance and governability was initially aimed at providing an analytical framework to examine the ways in which different governments and governing practices facilitate or obstruct the governability of the polity, in particular in the context of the welfare and developmental state. This explains why the focus of the debate and academic research at the time was mainly on the role of the state, and particularly the national

welfare state, assumed to act as a unified body upon a homogeneous society, generally understood as operating under capitalist and representative democracies (Bobbio, 1985).

In the 1990s, the concept of governance re-emerged with new connotations as it was re-assessed in a context characterised by significant transformations, including the dominance of neo-liberal politics and consequently, the withdrawal of the welfare state, economic globalisation and the emergence of multi-national corporations as agents with supra-national powers, as well as a wide recognition of the ecological crisis, the emergence of new social movements acting through local and global networks and a reappraisal of the role of local authorities in the development process.

Thus, the current governance debate is dominated by two contrasting definitions and set of concerns. On the one hand, part of the literature on governance still focuses mainly on the institutional capacity and performance of the state and the way it has adapted to recent developments. On the other hand, governance is increasingly being deployed as a notion that refers to "a change in the meaning of government, referring to a new process of governing; or changed condition of ordered rule, or the new method by which society is governed" (Rhodes, 1996:652-653). Pierre (2000) makes a distinction between the 'old' and 'new' notions of governance, which he re-characterises as 'state-centric' and 'society-centred' respectively. Under the first approach, "questions are asked about how and with what conceivable outcomes the state 'steers' society and economy through political brokerage and by defining goals and making priorities. The other theoretical view on governance looks more generically at the co-ordination of various forms of formal and informal types of public-private interaction" (page 3).

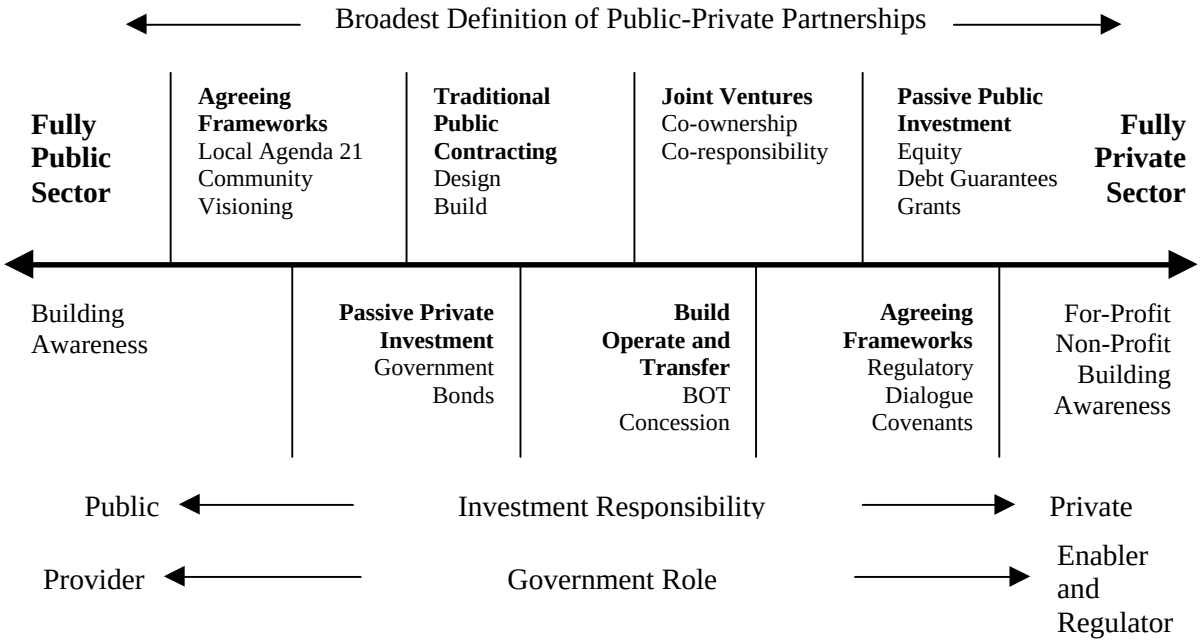
Under this distinction, the state-centric approach is concerned with assessing the political and institutional capacity of the state to 'steer' society towards certain goals associated with the 'public good' and also with examining the relationship between the role of the state and the interests of other powerful actors. By contrast, the so-called 'society centred' approach is primarily concerned with the role of civil society in the governing process, and its relation with the state, through a variety of governance forms or institutional arrangements (Peters, 2000). Thus, from this approach, 'governance' refers to emerging 'governing practices' (Pierre and Peters, 2000) that seek "to develop new patterns of relation between diverse social actors (i.e. the public sector, business organisations, multilateral organisations, the voluntary and community sectors, etc) in an attempt to build greater 'systemic capacity' for collective action in the face of 'cross-cutting and wicked' policy problems" (Gomez Cosío, 2004:3). Not surprisingly the focus of this approach is on multi-agency ensembles, such as partnerships and networks devised for creating synergy among different social actors in the pursuit of public policy goals.

This paper, and the research behind it, adopts a society-centred approach to governance, as the aim is to contribute to the understanding of the governance regimes that underlie the provision of water and sanitation services to the poor, in particular, in the peri-urban context of metropolitan areas and regions. A society-centred approach is relevant to this purpose because it allows the examination of alternative modes of governance to those that mainly focus either on the role of hierarchical structures (such as the state) or on the market. These alternative modes of governance are less reliant on top down policy instruments and concerned with the need to find more accountable, democratic and interactive means of social organisation. Thus,

"instead of relying on the state or the market, socio-political governance is directed at the creation of patterns of interaction in which traditional hierarchical governing and social self-organisation are complementary, in which responsibility and accountability for interventions is spread over public and private actors" (Kooiman, 1993:252).

An examination of the current literature on the governance of service provision in urban areas reveals to certain extent the application of a similar approach. Figure 1 shows the spectrum of associations between the public, private and community sector that characterise nowadays the actual delivery of service provision in urban areas. In this context, the term 'public-private partnership' (PPP) appears to be used in a broad sense, making reference to a variety of possible relationships of co-operation between these three sectors.

Figure 1: Spectrum of Public-Private Partnership Options



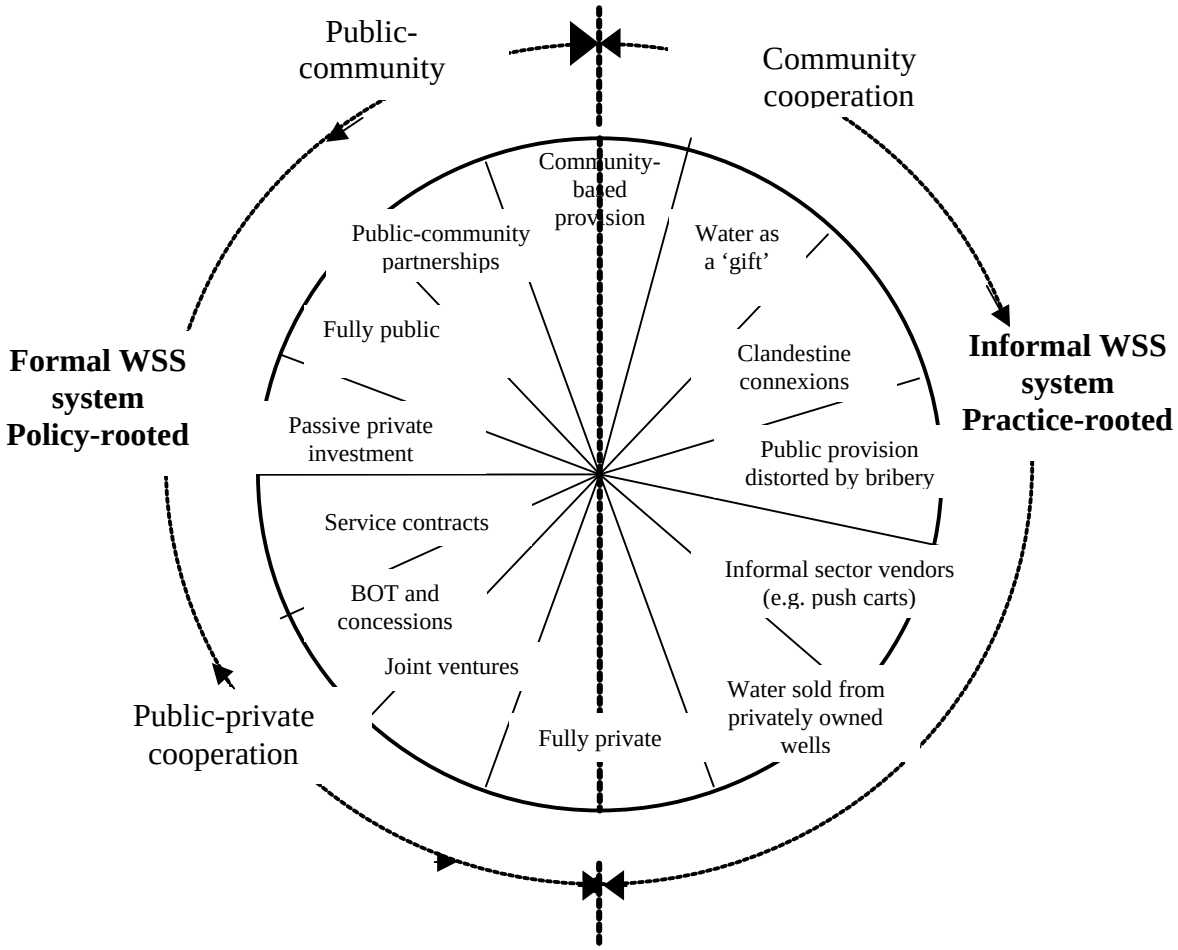
Source: Bennett et al (1999:5)

The spectrum presented in Figure 1 is useful in the sense that it helps unpack the different roles involved in the production and provision of urban services and the room for the participation of different actors (particularly the private sector), as well as the overall institutional arrangements that allow their interaction. However, we argue that this approach is somehow limited and limiting as it only deals with institutionalised governance arrangements or, in other words, it only focuses on the options frequently backed up by policy instruments, within what could be termed the 'formal system' of service provision but ignores the role of the multiple 'informal practices' by which the poor effectively access such services.

In their discussion of urban governance in relation to the operation of urban services, Harpham and Boateng (1997) remind us that governance refers not just to the exercise of governmental authority but to other forms of decision making, "formal as well as informal, participatory as well as representative, decentralised as well as centralised, and national as

well as local" (page 68). As highlighted in the introduction, when looking at the specific ways by which the poor gain access to WSS it is possibly to identify a large diversity of practices and arrangements. Some of these are backed up by the formal system or, in other words are policy-rooted mechanisms supported by institutional arrangements. Examples of this include, for instance, the operation of private tanks licensed to sell water. But in addition to these mechanisms, there is a wide set of arrangements that are not necessarily backed up by the formal system but operate on the basis of solidarity, reciprocity or need, such as those cases in which water is provided as a 'gift', by certain members of the community to others in need, but also exemplified in the case of water push cart vendors, who might access water through different means and then sell it to other members of their own community. These mechanisms can be characterised as being practice-rooted and correspond to the informal spectrum of arrangements by which the poor gain access to water.

Figure 2: Formal systems and informal practices in the WSS wheel



Source: Allen (2004:6)

Following the above considerations, Figure 2 presents both spectrums (formal and informal). Although it should be highlighted that often the limits between what is formal and informal are blurred, the intention is to provide a schematic and comprehensive (although not

exhaustive) representation of the universe of existing practices in WSS. Whilst formal or institutionalised mechanisms can be clearly identified from the perspective of WSS production and provision, the arrangements identified as informal on the right hand side of the wheel only become evident when WSS is scrutinised from the perspective of access.

The WSS 'wheel', also shows the role of the public, private and community sector in the provision of water and sanitation and the extent to which these roles are based or not on cooperative arrangements across two or three of these sectors. The three sectors are far from homogeneous as the public sector might be present in the form of highly centralised state agencies or decentralised bodies. In the same way, the private sector might involve large companies operating under the formal sector, medium-sized authorised water tanker firms operating at the city level, or informal vendors operating exclusively at the local level. The community sector is also far from homogeneous, as it might include arrangements characterised by a certain degree of formalisation, such as in the case when community WSS schemes are actively supported by the public sector or external NGOs, but also more informal relations of cooperation established among members of the community exclusively on the basis of solidarity tights.

The following sections examine the roles of the three sectors, the extent to which the different mechanisms are regulated and supported by the state and also the formal and informal governance regimes underlying them and the extent to which these prompt cooperation or competition among different social actors. The fourth section presents in more detail the formal and informal mechanisms found in the five case studies investigated by the research. But before proceeding with the discussion, it is important to highlight why the analytical framework proposed is particularly relevant to the peri-urban context.

Like the notion of governance, the term 'peri-urban' has been the subject of different interpretations and meanings - although it should be highlighted that the body of literature dealing with this concept is far more limited than the one dealing with governance. However, what clearly emerges from the current debate is that there is an increasing recognition among development professionals and institutions of the fact that rural and urban features tend to increasingly coexist within cities and beyond their limits, and that the urban-rural dichotomy deeply ingrained in our planning systems is inadequate to deal with processes of environmental and development change in the peri-urban context (Allen, 2003).

The working definition adopted by the research underlying this paper makes reference to three particular characteristics of this notion and more specifically of the peri-urban interface (PUI) (Allen, 2003). Such term makes reference not just to the fringe of the city but to a context where both rural and urban features tend to coexist, in physical, environmental, social, economic and institutional terms.

From an environmental perspective, the PUI can be characterised as a heterogeneous mosaic of "natural" ecosystems, "productive" or "agro-ecosystems" and 'urban" ecosystems, affected by material and energy flows demanded by urban and rural systems. Each of these subsystems conditions each other and is conditioned at the same time by the other two (Ibidem). Thus, from the point of view of water supply, the PUI is often the location of watersheds, whose management is essential to ensure the provision of water to nearby urban and rural areas.

From a socio-economic viewpoint, the PUI also presents several peculiarities. The continuous but uneven process of urbanisation taking place in these areas is generally accompanied (or in many cases produced) by land speculation, shifting economic activities of higher productivity and the emergence of informal and often illegal activities such as clandestine abattoirs, intensive use of agro-chemicals and fertilisers for horticulture production, and mining activities for the supply of building materials. As a result, the social composition of peri-urban systems is highly heterogeneous and subject to changes over time. Small farmers, informal settlers, industrial entrepreneurs and urban middle class commuters may all coexist in the same territory but with different and often competing interests, practices and perceptions.

Last but not least, from an institutional perspective, the PUI is characterised by the convergence of sectoral and overlapping institutions with different spatial and physical remits. Thus, institutional arrangements and jurisdictions are often either too small or too large, too urban or too rural in their orientation to effectively address sustainability and poverty concerns (Mattingly, 1999; Dávila, 2003). In addition, private sector bodies as well as non-governmental and community based organisations also intervene in the management of peri-urban areas, but often without clear articulation or leadership from government structures.

The problem of institutional fragmentation is particularly relevant in the metropolitan context, where often different administrative units are subjected to the policy decisions of a large number of public agencies. Weak links and limited municipal power in sectors such as transport, water, energy, solid and liquid waste management and land use planning often result in uncertainty as to which institution administers which specific area or activity. This has significant policy implications in the case of WSS. As highlighted before, the fact that the PUI often corresponds with the location of key sources of water provision for entire metropolitan areas means that as far as water management is concerned, these areas are often under the jurisdiction of sectoral public agencies which are often highly centralised, and are responsible for overseeing the protection and administration of watershed systems. At the same time, it is somewhat paradoxical that even when, as in Mexico City, Chennai and Caracas, they live in jurisdictions which are the main source of water or at the very least are net exporters of water to other metropolitan localities, peri-urban dwellers often face significant deficits in water supply and sanitation.

The options available to cover this deficit rarely rely exclusively on the extension of formal infrastructural networks but on more decentralised forms of service provision. Failure on the side of the public and private sectors to support such forms of WSS provision often means that peri-urban dwellers, in particular the poor, are left to their own devices to access these essential services. Furthermore, as their needs and practices often remain ‘invisible’ to the public sector, policy changes aimed at improving the efficiency of the formal WSS frequently do little to ensure better access to WSS by the peri-urban poor and often even constitute an obstacle (Hofmann, 2004). The following two sections explore these and other related issues in more detail whilst looking at the evidence emerging from the five case studies under research.

3. Roles and relations in the governance of WSS

This paper has argued for a better understanding of the specific peri-urban dimensions of the WSS particularly as they affect poorer households and producers. It has highlighted the

interaction of formal and informal systems of provision and access to these crucial services as an area that requires not only greater knowledge, but also a more favourable set of policies, regulations and official practices that recognise the existence of a wide range of both formal and informal practices.

Mention was made earlier of the enormous challenge embodied in providing WSS not only to the significant proportion of people who currently lack it, but also to meet the internationally-agreed 'Millennium Development Goals' (MDGs) whereby donor and recipient countries have pledged to halve this proportion. Estimates for 2000 suggest that 171 million people lacked access to what has been defined as 'improved water' supplies while 394 million lacked 'improved sanitation'. However, much larger numbers lacked access to 'adequate' supplies: 680-970 million for water, and 850-1,130 million for sanitation (UN-Habitat, 2003).[1] And, given the level of uncertainty about the scale of the problem, it will be difficult if not impossible to establish credible mechanisms to monitor progress on these targets.

Accessibility to these basic services is a major problem especially among many of the poorer nations, though also in middle income countries and even in poorer regions in higher income ones. There is now a consensus that the state in developing countries is not in a position to undertake this mammoth task alone. In reaching agreement about MDGs international support agencies (bi-lateral, multi-lateral and international NGOs) have pledged to combine their efforts in this task. In so doing, several scenarios have been sketched out for the roles that different actors ought to take in the process. When it comes to outlining these roles, and indeed identifying these actors, there appears to be less consensus, however. Moreover, as empirical evidence has emerged of the outcomes of different approaches to solving the problem (notably the limitations of water privatisation in improving access to the urban and peri-urban poor, and even some resounding failures which saw the state re-taking control of privatised utilities) and political realities locally and globally have changed, positions have shifted over the past decade (Batley, 1996; Nickson, 1997; Johnstone and Wood, 2001).

Given space limitations, this is not the most appropriate place to sketch out these changes in perception and the ensuing debates among influential actors and commentators about the different roles that the state and other actors play or ought to play in the supply of basic infrastructure. Some of these changes may be seen, nonetheless, in the most influential international development institution: the World Bank's earlier broad support for privatisation of infrastructure, introduction of competition (be this *for* the market or *in* the market), and a much reduced role for the state away from production towards regulation (World Bank, 1994), has subtly shifted to a much greater and explicit acceptance of the state not only as a regulator but also as a producer of services, be this at the central or local government tiers, and an explicit recognition of a range of formal and informal producers (such as 'independent' water providers) to be not merely tolerated but also positively encouraged by giving them legal status, enabling partnerships with public and formal private providers, and generally "by enabling poor people to gain access to multiple independent providers while

[1] 'Improved' provision of water is defined to include at least 20 lt/person within 1 km of the person's home, though with no reference to whether water is safe to drink or not; similarly 'improved' sanitation can include shared facilities, with no mention of cleanliness. 'Adequate', by contrast, refers to regular piped supply of water within the home or the yard, and to "an easily maintained toilet in each person's home with provision for hand-washing and the safe removal and disposal of toilet wastes" (UN-Habitat, 2003, pp. xix-xx).

keeping their regulation more focused on health and issues related to groundwater depletion" (World Bank, 2004, p. 171).

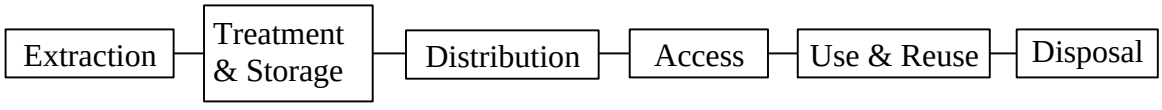
Given the influential nature of the Bank not merely in providing development funding to governments but also in signalling future directions for aid agencies and even the private sector (e.g. water multinationals), we welcome such broadening of official perspectives. They are, however, rooted in a conceptual framework that places the market at the centre of the interactions between the poor (as 'clients'), the providers of services and policymakers (i.e. politicians). Without wanting to explore this further here, suffice it to say that this stands in contradiction with our own civil-society centred conceptual framework summarised earlier.

In this paper we highlight the role of three main types of actors in the WSS system: the state, the private sector and the community. Using the five case studies, we seek to characterise the different roles and relations among these actors that govern both the delivery of WSS and access by the peri-urban poor to these services.

A number of clarifications are called for:

Firstly, in characterising these roles, we distinguish between the different components of the 'WSS cycle' (Figure 3). This is important not only from the technical perspective of delivering these services through efficient and effective means, but also from the governance perspective that informs this work. This is because previous consensus about WSS being a 'natural monopoly', and therefore best supplied (on technical and financial grounds) by a single body has recently been brought into question (Johnstone & Wood, 2001; World Bank, 1994). As in other infrastructure services such as telecommunications and electricity, technical, financial and institutional conditions now make possible the 'unbundling' of the different segments of the WSS production process. These could, in theory and given the right regulatory conditions, be given to specialised agents – whether in the public, private or community sector – who might be best equipped to take them on. A given segment such as distribution could even be broken into smaller segments, such as metering and billing, and these might be put out to a bidding process to private contractors (as has happened in case such as Bogotá, Colombia, in the 1990s).

Figure 3: Stages in the WSS cycle



Secondly, in characterising the roles of different actors, water and sanitation are treated separately. This is important both analytically and prescriptively, especially when discussing peri-urban areas, for a number of reasons:

- Generally, it is technically cheaper per unit cost to supply water via a network (e.g. pipes) than through individual solutions; networked sewerage, by contrast, tends to be expensive, especially in a rural or peri-urban context where individual approaches (e.g. latrines) are more technically feasible (Cotton et al., 2002).

- For the same reason, even socially unacceptable practices like open defecation are not rejected as much in less dense settlements as in more central, denser areas.
- There is generally little awareness about the health externalities associated with sanitation (Cotton et al., 2003), so rural and peri-urban (or indeed urban) residents who lack the service do not perceive a sense of urgency in gaining access to clean and safe methods of excreta disposal. This was clear in the participatory events with stakeholders in the project, where participants did not perceive it as an important issue (though we do not discard an element of cultural taboo in refusing to openly discuss this issue).
- Because of the demand for water (as nobody can survive for long without it, people are prepared to pay), it is more subject to commodification than sanitation.

As pointed out earlier, the five case studies provide a spectrum of formal and informal organisational arrangements for the delivery of WSS and the access by the peri-urban poor. We start with a brief overview of the five case study areas.

4. Comparative overview and analysis of the five case studies

As highlighted in the introduction, this paper is based on the preliminary findings of a three-year comparative research project that looks at the governance of water supply and sanitation services in the peri-urban interface of five metropolitan areas: Chennai (India), Dar es Salaam (Tanzania), Cairo (Egypt), Mexico City and Caracas (Venezuela). The ultimate aim of the project is to contribute towards the understanding of the formal and informal governance arrangements that characterise the peri-urban context and to produce a set of guidelines to enhance WSS governance and management for the benefit of the poor. The research, is co-ordinated by the Development Planning Unit, University College London in collaboration with a number of partner institutions in the five case study areas, with support from the UK Government's Department for International Development (DFID). [2]

In addition to the review of academic and grey literature on the subject matter, the research has included, so far, the development of a comprehensive institutional characterisation and analysis of the formal WSS systems, followed by detailed fieldwork in two peri-urban localities in each case study. The selection of these localities was based on three criteria. First, the localities had to show evidence of the key PUI features detailed in the working definition presented in the previous section. Second, the choice of two localities within each metropolitan area was aimed at capturing the highest possible diversity of formal and informal arrangements in the WSS system. Third, the selected peri-urban localities had to house a considerable number of low-income groups, in order to gain a better understanding of the specific strategies and practices deployed by poor women and men.

Methodologically, the metropolitan-wide institutional analysis was complemented by a series of interviews with the key agencies and actors involved in WSS and further developed

[2] The five project partners include the Citizens Alliance for Sustainable Living (SUSTAIN) in Chennai, the University College of Lands and Architectural Studies (UCLAS) in Dar es Salaam, the Urban Studies and Training Institute (UTI) in Cairo-Giza, the Latin American Faculty for Social Sciences (FLACSO) in Mexico City and the Centre for Development Studies (CENDES) in Caracas. For more information on the project and the partners, visit the project website (http://www.ucl.ac.uk/dpu/pui/research/current/governance/index.html).

through a set of multi-stakeholder workshops that focused on assessing the weaknesses and opportunities in the current WSS system (including both formal mechanisms and informal practices) to improve access by the peri-urban poor, whilst looking at other dimensions such as the environmental sustainability, effective management and efficiency of the system as a whole. The purpose of the fieldwork in specific localities was for the team to be able to zoom into the specific reality of peri-urban women and men. This was done through the use of transects and a series of participatory exercises such as focus group meetings, interviews and local workshops. The next steps of the project involve the development of a set of guidelines aimed at different users that will be tested locally and regionally, prior to their dissemination.

Tables 1 and 2 below provide a general overview of the main characteristics of the five metropolitan areas and of the specific peri-urban localities under study. The selection of the five metropolitan case studies sought to cover a wide diversity of institutional arrangements both in the current structure of metropolitan WSS systems and on on-going or planned policy changes to reshape these systems.

Table 1: Overview of the five metropolitan areas/regions under study

	Population (year 2000)	**Area (km2)**	**Annual population growth rate**	**Metropolitan administrative structure**	**WSS metropolitan formal system**
Chennai	7 million	1,177	0.9 %	Chennai Metropolitan Area composed by Chennai City, 8 Municipal towns, 27 Town Panchayats, 18 Census Towns and 1 Cantonment area	Public agencies at state, metropolitan and local level
Dar es Salaam	2.5 million	1,350	7.2 %	Metropolitan Dar es Salaam: three semi-autonomous municipalities under the Greater Dar es Salaam Council	Public-private partnership with a community component
Greater Cairo Region	17 million	3,400	Not available	Greater Cairo Region: Governorate of Cairo and parts of the Governorates of Giza and Qualiobia	Two separate public agencies for water and sanitation at provincial level to be fully privatised
Mexico D.F.	8.6 million	7,622	1.8 %	Federal District of Mexico City: 16 delegations	Increasingly decentralised metropolitan public system with private concessions
Caracas	4.2 million	6,207	Not available	Caracas Metropolitan Region: 17 municipalities belonging to three political-administrative entities(states)	Regional public agency to be devolved by 2007

Source: based on Dattatri (2004a), El-Hefnawi and Aref (2004a), Cariola and Lacabana (2004a), Kombe and Lupala (2004a) and Torregrosa y Armentia et al. (2004a).

There are significant differences between the five metropolitan areas and peri-urban localities present in terms of their population size, population growth rates, surface and density, as well as with regards to other factors such as predominant land use and land tenure regimes. Despite the particular characteristics of each case study, it can be said in general terms in all the cases

that physical (i.e. transport) accessibility of the selected peri-urban localities deteriorates as the distance to the main roads connecting these areas to the core city increases.

Table 2: Characteristics of peri-urban localities examined in the five case studies

	Peri-urban localities	Population (inhabitants)	Area (km2)	Location/Distance to city centre	Density (persons per km2)	Annual population growth rate (%)
Chennai	1) Valasaravakkam and surroundings	112,479	16.75	West of Chennai city centre	6,715	5.3
	2) Kotivakkam and surroundings	54,055	12.52	South of Chennai city centre	4,318	4.4
Dar es Salaam	1) Tungi	17,500	0.84	5 km south-west of city centre	20,800	
	2) Stakishari	15,000	1	10 km west of the city centre	15,000	
Greater Cairo Region	1) Abou El-Noumrus City	41,212	Not available	In the South of Giza Governorate, 7km from Giza City	3,879	2.4%
	2) Abou-El-Geitt	92,900	Not available	In the South-West of Qualiobia Governorate	Not available	1.1%
Mexico D.F.	1) San Bartolomé Xicomulco	3,423	Not available	South-east of the city centre, in Milpa Alta Delegation	Not available	Not available
	2) San Salvador Cuauhtenco	10,323	Not available	South-east of the city centre, in Milpa Alta Delegation	Not available	Not available
Caracas	1) Bachaquero	3,664	Not available	18 km south of Caracas centre	Not available	3.5
	2) Paso Real 2000	4,122	Not available	15 km south of Caracas centre	Not available	3.5

Source: based on Dattatri (2004a), El-Hefnawi and Aref (2004a), Cariola and Lacabana (2004b), Kombe and Lupala (2004a) and Torregrosa et al. (2004b).

In the cases of Mexico and Chennai, this also limits significantly the provision of WSS services not only through the expansion of network systems but also through alternative modes, such as water tankers. The two localities examined in the case of Mexico belong to the Delegation of Milpa Alta, which was only incorporated to Mexico D.F. in the late 1980s; as such, Milpa Alta is the most rural delegation of the metropolitan area of Mexico and the location of strategic environmental resources to the city, particularly due to its role in the recharge of the aquifers that supply the whole metropolitan area. Although it still shows significant rural features, both in physical and socio-economic terms, the localities examined are experiencing significant population growth.

But distance to the city core alone does not always explain the particular challenges faced in peri-urban localities, or their physiognomy in terms of rural and urban features. The locality of Tungi in Dar es Salaam is only five kilometres away from the Central Business District, but still presents a mix of rural and urban characteristics in terms of land use, housing and

livelihoods. The urbanisation of the area has been retarded due to poor transport links with the city, connected only by ferry. However, there are plans to build a bridge linking Tungi directly to the city. If this project materialises, the area will experience dramatic changes in physical and socio-economic terms. Already speculators have started acquiring land in the area. Uncontrolled rapid urbanisation is not a rarity in the PUI. In Cairo this has led to the loss of approximately 24 ha of valuable agricultural land every year.

As seen in all cases, the growth rate in the PUI is much higher than in the city (Tables 1 and 2). In Chennai, further differences can be noted between peri-urban 'panchayats' (local authorities) depending on the availability of suitable land for urban uses. In Ramapuram, a panchayat within locality 1, the population has nearly trebled between 1991 and 2001. At the same time, this seems to be the panchayat where access to WSS is especially poor. Surprisingly, this is not necessarily the place with the highest proportion of low-income households, as these only account for 13 per cent of all households, which is comparatively low in relation to the average at the metropolitan level. Instead, in both localities the percentage of the poor is linked to the number of inhabitants belonging to 'scheduled castes', which are labelled as socially and economically disadvantaged, and in locality 1 as well to the number of agricultural labourers.

A look at the institutions formally involved in the WSS system (Table 1) shows a broad spectrum across the five cases. In Chennai the formal system is fully within the responsibility of the public sector, albeit combining different government tiers. The 1971 Town and Country Planning Act established that METROWATER, a statutory authority, should be in charge of providing WSS services for the metropolitan area. However, this has not been enforced in practice. Only recently the jurisdiction of METROWATER has been extended beyond the City of Chennai to include areas designated as ‘Adjacent Urban Areas’, including some peri-urban localities. Services in the remaining peri-urban areas are provided both by Tamil Nadu Water Supply and Drainage Board (TWAD), a statutory authority attached to the state government, and by local authorities who generally lack the human and financial resources to ensure adequate levels of services. As the state supply of water is grossly inadequate and unreliable for users’ needs, the number of small-scale water tankers drawing water from a range of sources including peri-urban aquifers is increasing.

In the case of Dar es Salaam, the provision of WSS has been for decades the responsibility of the Dar es Salaam Water and Sanitation Authority (DAWASA), a public utility company. Historically, services were provided almost for free, with a minimum flat rate charge that did not cover supply, operation and maintenance costs. Over the last decade, the role of DAWASA was been the subject of significant reforms, shifting from direct provider to enabler and regulator. Following the conditions imposed by the African Development Bank (ADB) to support the rehabilitation and operations of the city water facilities, in 2003 DAWASA was transformed into a holding company: DAWASA Public Granting Authority (PGA), charged with the responsibility of managing the Community Water Supply and Sanitation Programme (CWSSP) and monitoring the performance of City Water Services (CWS), a private operator responsible for installing new connections and customer meters, operating and maintaining the assets, issuing water and sewerage bills, collecting revenues and also undertaking the rehabilitation of selected works.

The case of Mexico D.F. presents a different institutional setting. Since the 1980s, the provision of WSS, historically under the jurisdiction of a highly centralised public agency, has been subjected to a process of decentralisation from the federal government to the states and later from the states to the municipalities. This process has been accompanied by an attempt to democratise the decision making process through the creation of river basin organisations and underground technical committees (COTAS) charged with the responsibility of elaborating management plans through public deliberation. The legal reforms introduced in the early 1990s reinforced the process of WSS decentralisation and in particular paved the way for the participation of the private sector through phased contracts for the operation, maintenance and service provision. However, progress has been slow and - especially in the peri-urban context - the local government still plays a key role in ensuring that water is distributed to the most remote locations through the use of public tankers.

In Cairo, while there are plans by central government to privatise WSS services, the public sector is currently still fully responsible for providing them. There is one institution each at metropolitan level separately in charge of water supply and sanitation respectively.

In the Caracas metropolitan region, WSS is the responsibility of HIDROCAPITAL, a public sector regional water supply company operating in six sub-regions. Under a new national Constitution a process of decentralisation will devolve WSS responsibilities to the municipal level by 2007, with the service in theory provided by any of a number of agents or partnerships among them: private, public, community, NGO. In practice, recent political reforms and the creation of a Community Affairs Secretariat within HIDROCAPITAL, have given a boost to participation by poor peri-urban communities in the WSS system, as they can now negotiate with impressively trained and sympathetic agency staff mainly through Technical Water Forums (*mesas técnicas de trabajo*). These have helped improve coverage of WSS services and strengthened community solidarity ties, while providing examples of participatory democracy where not only rights but also duties of community members are stressed. They have arguably helped reduce the impact of patronage politics and a long-standing perception of the oil-rich Venezuelan state as a ‘milch cow’.

In most of the cases the process of decentralisation is attempting to transfer some of the centrally administered responsibilities to lower levels. Private sector participation is clearly increasing, especially in Dar es Salaam where a private company accomplishes some major tasks, though less significantly in Chennai, Caracas and Mexico City. Cairo, with its long tradition of public service provision, is the exception. The private sector is currently not formally involved in WSS, though, according to recent government plans, it will take over completely in the near future. As may be seen from Table 3, formally acknowledged practices by the community sector are gaining importance particularly in Caracas, Mexico and Dar es Salaam.

Table 3: Overview of formal and informal water supply practices in the five case studies

Provider	Formal practices	Informal practices
Public (state) sector	• Piped network (Household connections and public standpipes) • Wells and bore-wells (not Mexico) • Provision by tankers • Water kiosks (Dar es Salaam) • Negotiation with communities through 'technical water boards' (Caracas)	• Public provision distorted by bribery practices
Private sector	• Buying from licensed tankers (not in Cairo) • Buying packaged water (cans, bottles, sachets)	• Buying from tankers • Private vendors drawing from own site piped connections/own boreholes or wells sold directly by bucket or through push carts and bicycle vendors (Dar es Salaam)
Community	• Own individual wells and bore-wells (not Mexico or Caracas) • Piped network (community organisation agreement with local authority (Mexico)or public water company (Caracas)) • Piped network kiosks and taps run by the community with NGO support (Dar es Salaam) • Boreholes and kiosks run by the community (Dar es Salaam • Horizontal condominiums (Caracas)	• Rainwater harvesting (not Caracas) • Water theft • Gifts or paid provision from neighbours • Clandestine connections

Source: Case study reports.

Supply through piped network connections are far from satisfactory. In the case of Dar es Salaam access through this means only accounts for 5% in Stakishari and is non existent in Tungi. Generally, there are some formal alternatives in addition to piped network solutions, both for water supply and sanitation services. However, the formal system is still unable to satisfy the needs of peri-urban communities and particularly low-income households have to bear the consequences. Consequently a wide spectrum of informal practices to cope with service deficiencies has emerged in all cases (see Table 3).

In Chennai, where water scarcity poses a serious threat, a combination of sources is necessary to satisfy people's water needs. As mentioned earlier, with one or two exceptions[3], alternative practices by the private and community sector materialise primarily to cover distribution, access to water as well as its use and reuse (see Figure 3).

This is partly because sanitation facilities are seen as less urgent than water supply, as was pointed out earlier, and partly due to the fact that both the community and the informal private sector, which mainly consists of small-scale enterprises, lack sufficient resources and the capacity to take action as regards extraction, treatment and storage. Despite the fact that most of the peri-urban dwellers depend on such informal practices, all too often they lack the

[3] In the case of Chennai, some small-scale water supply enterprises, industries and institutions extract water themselves and in Caracas one will find transnational corporations are involved in the construction of extraction plants and water storage facilities (Dattatri, 2004a and Cariola and Lacabana 2004a). However, overall these correspond only to a small percentage.

necessary formal support to reach their maximum capacity. In Mexico community members highlighted the importance of rainwater harvesting, reuse and recycling but these practices currently lack technical and financial support to offer a viable alternative. In the case of Dar es Salaam and Cairo, current strategies to improve access (including privatisation of the formal system) overlook the reality of peri-urban residents and small firms, while informal private vendors are largely ignored; this has implications not merely for a reliable and affordable access to these services but also for the livelihoods of a substantial number of people.

The spectrum of practices regarding sanitation facilities, both formal and informal, is less diverse. In all five cases low-income households in the PUI are hardly ever connected to an underground sewerage network. Most of them have to rely on septic tanks and pit latrines, provided and operated mainly by the public sector with some involvement from private operators in Cairo and community organisations both in Cairo and Caracas. The only options for households that lack even the most basic facilities are uncontrolled discharge of wastewater and open defecation.

5. Concluding remarks and policy implications

This paper has presented a comparative overview of five case studies in an on-going research project. Given the limitations of time and space, we could merely scratch the surface of what is a very rich empirical material gathered by our local partners in five metropolitan areas in three continents over several months. This rich source of information will continue to be mined collectively in future outputs to be posted on the project website.

This first foray into the data helps us reflect on the relevance of the subject matter of this research, which lies in two interrelated policy issues. The first issue relates to the very real challenge now confronting the world in meeting the targets embodied in the Millennium Development Goals, notably those relating to halving the proportion of population without access to water and sanitation. As has been argued earlier, this is an enormous challenge that will tax not merely the resources of national governments in countries around the world, but one to which donor governments and agencies are currently committed.

It is a challenge that, by common consent, governments are not capable of meeting on their own. As has been argued here, policies and practices (regulations, norms, hierarchies) that focus exclusively on technical and formal means of delivering these services are not only bound to fail in meeting the development targets, but will also negatively affect a vastly significant proportion of both households and producers in metropolitan areas by failing to recognise non-formal means. This paper has argued, therefore, for a society-centred governance system that recognises a new breed of governing practices involving a range of service providers and informal practices.

The second policy issue at the core of the paper relates to the rapidly shifting and growing fringe of metropolitan regions, which not only has historically provided land - and often a source of livelihood - to a changing and highly heterogeneous population including a disproportionate number of poor households and producers, but often also provides essential environmental services to the metropolis, including aquifer replenishment, other sources of

water and environmental sinks for - among others - sewerage and solid waste from the urban core. And yet, much of the official data about cities tends to exclude these areas, largely because they do not fall within the jurisdiction of the larger, more central and urbanised municipalities. There is also a time lag between cities expanding and peri-urban settlements being included in the official statistics. In the meantime, these tend to live in a sort of statistical and administrative limbo, a conceptual and spatial 'penumbra' (Aguilar & Ward, 2003). Governance in this peri-urban interface is therefore severely fragmented, with a multitude of actors present and no single government body providing guidance or leadership. The delivery of water and sanitation services in such contexts is no less fragmented, as the cases documented in this research have shown.

The five case studies have provided a composite picture of areas growing more rapidly than the urban core. The choice of localities selected for more detailed research was guided by a number of criteria, including the proportion of poor households living in them. This also provided a complex picture of the range of means of delivery of basic water and sanitation services to peri-urban dwellers. The evidence shows that conventional network water services only cover a small proportion of households, if at all, whilst networked sewage systems are virtually non-existent.

The heterogeneous composition of the PUI demands a detailed examination of the specific strategies by which different income groups effectively gain access to WSS. This also means that the interests and needs of peri-urban dwellers are far from being homogeneous. Given the general inadequacy of service provision in the peri-urban context, most households have to spend a significant percentage of their income to obtain water, among the poor this often represents about 10-15 percent of households income. In addition, only medium and high income groups often depend on central sewer and septic tanks. As a result, these areas are affected by a number of water and sanitation related diseases including diarrhoea, intestinal worms, typhoid, cholera and dysentery, with the poor being most exposed and disadvantaged. An understanding of the socio-economic composition and cultural practices of peri-urban dwellers is then essential if their reality and experience is to inform effectively the development of WSS policies. This should include a detailed consideration of the social and political capital of the peri-urban poor. In other words, an examination of the means by which they access not only social networks of solidarity and reciprocity but also by which they have a say in the decision making process.

This paper has argued that there is a significant contrast between policy-rooted and practice-rooted realities. The five cases clearly show that improvements in access to WSS by peri-urban dwellers are mainly practice-rooted and informal rather than based on formal policies. The key to structural improvements in WSS lies on the recognition of these practices and their articulation to the formal system under new governance regimes.

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