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**ACCESS TO WATER SUPPLY AND SANITATION SERVICES (WSS) –
OF LOW-INCOME HOUSEHOLDS IN THE PUI OF DEVELOPING COUNTRIES**

Pascale Hofmann

For more information, please contact:

Pascale Hofmann

Peri-urban Research Project Team

Development Planning Unit

University College London

9 Endsleigh Gardens

London WC1H 0ED

United Kingdom

Tel. +44 (0)20 76791111

Fax: +44 (0)20 76791112

E-mail project: j.davila@ucl.ac.uk

Email paper authors: p.hofmann@ucl.ac.uk

PUI website: <http://www.ucl.ac.uk/dpu/pui>

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Draft for discussion

ACCESS TO WATER SUPPLY AND SANITATION SERVICES (WSS) OF LOW-INCOME HOUSEHOLDS IN THE PERI-URBAN INTERFACE OF DEVELOPING COUNTRIES

1. INTRODUCTION

Improving access to water supply and sanitation services (WSS) has been an issue on the development agenda for decades now and still these services fail to reach a substantial proportion of the world's population. Every year, this becomes more of a challenge due to factors such as geopolitical changes, rapid population growth and increasing urbanisation (UN, 2003). According to WHO (2003a), in the year 2000 approximately 1.1 billion people lacked access to 'improved water supply'¹ and about 2.4 billion people were not served with some form of 'improved sanitation'². According to a number of international conventions and declarations priority should be given to water supply, but linked to this and therefore equally important is the disposal of waste water and human excreta, i.e. sanitation facilities. As a consequence both issues need to be treated jointly (UN-Habitat, 2003).

Looking at international statistics³ it becomes obvious, that most people without access to WSS live in developing countries and the burden falls especially on low-income households. However, UN-Habitat (undated a) suggests that even more people in developing countries lack access to WSS than those captured by statistics. This paper is an output of a research project which focuses on the governance and management of water supply and sanitation systems (WSS), with particular emphasis on the conditions affecting the access of low income households in the peri-urban interface of metropolitan areas⁴. The peri-urban interface (PUI), which often disproportionately comprises poor households, is a "complex mosaic of rural, urban and natural sub-systems" providing important environmental services and natural resources consumed in towns and cities (Allen, 2003). Whilst metropolitan areas continue to grow demographically and economically, the PUI, which is itself subject to rapid change driven by a range of processes, is required to continue providing these crucial environmental services, even in the face of increasing demand and greater competition from different users⁵. Given the focus of the research project, it is striking to note that there are separate statistics by continent, country and even for urban and rural areas, but there are no separate records for peri-urban areas, even though research on these areas is increasing. It is unclear where these areas are accounted for, if it is in urban or rural statistics or maybe in both. Some data collection systems may even overlook the PUI, hence render these areas invisible (EHP, 1999). In addition to the dilemma of institutional fragmentation caused by the ambiguity of spatial and administrative affiliation of peri-urban areas, there are some general issues to be aware of when handling data and dealing with statistics (see box 1).

¹ According to WHO improved water supply implies either a household connection or public standpipes, boreholes, protected wells, protected springs or rainwater collection within 1 km of the home (WHO, 2003a).

² The WHO definition for improved sanitation used here entails domestic connection to public sewer or connection to septic tank, pour-flash latrine, simple pit latrine or ventilated improved pit latrine within 1 km of the home (WHO, 2003a).

³ See for example the WHO Global Water Supply and Sanitation Assessment 2000 (WHO, 2003a).

⁴ This three-year comparative research project funded by the Department for International Development (DFID) of the British Government started in 2003 and is being implemented by the Development Planning Unit (DPU), University College London. The DPU works in close collaboration with research partners in Chennai, India; Cairo, Egypt; Dar es Salaam, Tanzania; Mexico City, Mexico and Caracas, Venezuela to look at five metropolitan areas in particular, each with different and changing service management regimes influencing the governance of basic service provision. For more information about the project please visit <http://www.ucl.ac.uk/dpu/pui/research/current/governance/index.html>.

⁵ For a more detailed definition of the PUI please see Allen, 2003.

Box 1: Statistics on WSS

1. It is often not clear what criteria or indicators are used to collect the data. Were these the same in each location where data was collected, to allow comparative statistics?
2. What is the definition used for 'improved', 'adequate' or 'safe' access and is it always the same⁶?
3. How is the data collected? One can find differences between consumer-based surveys and provider-based data. Therefore it can be misleading if there is no reference to the methods used or, even worse, if the data results from a mixture of methods.
4. Is the data disaggregated by income group, area/location etc.?
5. Is the data verified at local level or is it based on official statistics, which did not involve local people?

This paper concentrates on exploring the issues around access or rather lack of access to WSS with particular reference to the peri-urban context. In this respect it is important to know how the problem itself has been defined. To that end the first part of the paper compares two prevailing conceptual definitions of access to WSS in relation to a range of critical issues in our understanding of the problem. This is followed by an illustration of various consequences that can be linked to the inadequate access to WSS, before examining the structural causes that put certain groups of people in the position of lacking access to WSS. Finally the paper outlines and discusses some possible positions 'the poor' can have in the process of gaining access to WSS before presenting some concluding remarks. Additionally, throughout the text, some theses the author has developed in the course of the literature review are highlighted, which need to be tested in specific peri-urban localities.

2. CONCEPTUAL DEFINITIONS

Nowadays, the right to access WSS is implicit in many international statements and was reinforced by the UN in 2002 stating that "*the human right to drinking water is fundamental for life and health. Sufficient and safe drinking water is a precondition for the realization of all human rights*" (UN-Habitat, undated b). This regards people as citizens with the legal entitlement to access services and the UN further asserts that states parties have to 'respect, protect and fulfil' the right to water of everyone (UN Economic and Social Council, 2003). However, when discussing access to WSS, not everyone defines or looks at the issue in the same way. Another dominant definition regards water as an economic good. For example under GATT tariff headings (General Agreement on Tariffs and Trade) water is defined as a good (Smith, 2002). By treating water and sanitation as an economic good, access to those services cannot be taken for granted but depends on the willingness and capacity of consumers to pay for it. Table 1 compares the main aspect of both these definitions, which will be discussed below.

Table 1: Comparison of water as human right vs. water as commodity

	Human right	Commodity
Approach	Supply-driven approach: the state has to provide everyone equally with WSS	Demand-driven approach: those who ask and pay for WSS get served

⁶ Sometimes 'improved' access (used in the WHO Global Water Supply and Sanitation Assessment) is replaced by 'adequate' or 'safe' even if the meaning is different.

Obligation	States parties are obliged to fulfil the right to everyone, especially the underprivileged = people are seen as citizens with rights	Service is provided to those paying for it = people are treated as consumers
Level of provision	No exclusion from services due to inability to pay; provision takes place according to needs and is paid for according to people's ability to pay	Level of service according to ability/willingness to pay
Participation	Communities have the right to take part in decision-making	Community does not take part (or only limited) in decision-making

Even those who support the idea of treating WSS as a commodity do not conceive poor communities unanimously. Some believe that poor communities are unable to pay for WSS and others trust that it is a matter of unwillingness to pay. However, when looking at the figures spent on water and sanitation services, one will find that low-income groups often pay more, not only in relative but also in absolute terms, for an inferior service⁷. Poor communities in developing countries are often constrained to move further out of the city, settling in more affordable areas on the urban fringe, which are hardly connected to the formal WSS piped network. Hence they rely on alternative supply modes to purchase clean water, for example by private vendors, which charge at a much higher rate for various reasons⁸ (UN-Habitat, 2003 and Thompson et al., 2000). According to Lovei and Whittington (1991, cited in Ray and Kakebeeke, 2003) people purchasing from vendors pay up to 50 times more per litre of water than households connected to the municipal system, which proves that the assertions above are a misconception. On that account, those who see water as a commodity and therefore argue for privatisation of services claim that subsidies for WSS are not needed because in fact the poor already pay more for services and would be better off with a private system (The Economist, 2003). It is interesting to note though that, as far as water supply is concerned, only in very few countries of the European Union, where the connection to WSS is close to 100 percent, the private sector acts as the main service operator⁹ (Smith, 2002).

Solving the problem of WSS from the perspective of water as a human right would oblige the state to provide water and sanitation services to every member of the community with priority given to those hitherto deprived. In theory this would lead to an inclusive policy, However, as mentioned earlier, particularly low-income groups living in peri-urban areas are, even if sometimes unintentionally, often not regarded as citizens, because they are not accounted for in official figures and statistics and therefore invisible in the formal system (Gutierrez, 2003). Thus, in order for those groups to gain access on the basis of human rights, they first have to be formally acknowledged and integrated. Consequently one could argue that treating water as a commodity would be a better option as this definition follows a demand-driven approach. In reality though, private enterprises have so far been reluctant to provide services to the poor in peri-urban areas due too the high costs in extending the network to

⁷ See for example Thompson et al. (2000) for studies on urban water use in East Africa, where they discovered that a litre of water from the pipe costs less than for example purchasing it from kiosks, vendors or other sources.

⁸ In many cases water vendors cannot be blamed for their high water prices. The money they earn has to cover their costs for purchasing and transporting the water (under the given circumstances those are often not the most efficient) and leave enough profit for their personal income.

⁹ Only in France and the UK the percentage of water supplied by the private sector is higher than that of the public sector. In many other EU countries the percentage of water supplied by the public sector is close to 100 percent (see figure 1 in Smith, 2002).

those remote areas (Collignon et al., 1999). The problem with both definitions is that individuals cannot be divided into being either citizens or consumers, because in theory they are both. Even the UN faces difficulties in this respect. By adopting the Fourth Principle of the Dublin Declaration at the UN Conference on Water and the Environment in 1992, which states that “water has an economic value in all its competing uses and should be recognized as an economic good” but stressing at the same time that “it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price”, the UN treats water simultaneously as an economic good and human right (UN, 1992). Knowing that, it is not surprising that in practice none of the concepts is equally applied, especially to people living in the PUI of developing countries’ cities.

Thesis 1: In practice, both prevalent conceptual definitions of access to WSS, which strongly shape actions to solve the problem of inadequate access, fail to include the peri-urban poor.

3. CONSEQUENCES OF LACK OF ACCESS

Not having access to water and sanitation facilities leads to a number of consequences. In many cases these consequences affect not only those directly lacking access but the impacts often spread much further. Several consequences caused by lack of WSS are closely interrelated and therefore often emerge at the same time. To aid clarity in the following discussion, they could be grouped under different headings:

- Health consequences
- Livelihood consequences
- Environmental consequences

3.1 Health consequences

In order to prevent dehydration and disease, every person needs a minimum level of water a day. According to different sources these range between 15-50 litres per person per day¹⁰. Many diseases emerging in developing countries are in one way or another closely related to water and sanitation and represent the biggest health threat for people living in these countries. Every year approximately 3.4 million people die due to water-borne diseases, with the greatest health burden falling on children¹¹ (UN-Habitat, 2003). McLennan (2000) claims that diarrhoeal diseases transmitted through polluted water are still the major cause for morbidity and mortality among young children.

Bradley (1977 cited in Howard and Bartram, 2003) classifies four not mutually exclusive categories of diseases that relate to water (see box 2).

¹⁰ The SPHERE project (1998) identifies 15 litres of water used per capita per day as key indicator for minimum standards, WHO and UNICEF suggest a minimum of 20 litres per capita per day whereas Gleick (1996) argues that 50 litres per capita per day are the basic water requirement for domestic water supply (all cited in Howard and Bartram, 2003). The author is aware that it is not possible to define a universal minimum requirement of water per person per day as this depends on personal circumstances, age and so on. This aspect will be discussed in more detail later in the text.

¹¹ Approximately 1.73 million children die per year due to lack of WSS (Howard and Bartram, 2003).

Box 2: Categories of diseases related to water

- **Water-borne diseases** caused by use/ingestion of contaminated water, e.g. diarrhoea, guinea worm, typhoid
- **Water-washed diseases** caused through insufficient quantity of water for personal hygiene (faecal-oral transmission), e.g. diarrhoea, trachoma, typhoid, skin and eye infections
- **Water-based diseases** transmitted through an aquatic host, e.g. schistosomiasis
- **Water-related diseases** transmitted through insect vectors associated with water, e.g. malaria, lymphatic filariasis

Source: based on UN-Habitat, 2003 and Howard and Bartram, 2003.

When analysing what causes such diseases, there are some factors that need to be considered. Based on the findings of a study on health in peri-urban areas, the exposure to vector-borne diseases appears to be highest in a peri-urban context as these areas combine rural and urban characteristics and therefore attract vectors that would usually appear in either rural or urban areas¹². In the case of diseases linked to polluted water, lack of sanitation has been found to be the primary cause of water contamination and consequently the occurrence of such diseases (UN Economic and Social Council, 2003). This is even more valid in urban than in rural areas. As far as the peri-urban interface is concerned, the introduction of proper sanitation facilities to prevent human contact with polluted water can be a major measure to decrease diseases considerably¹³, which leads to the next thesis.

Thesis 2: the importance of sanitation to prevent diseases increases with the density of settlements and furthermore amplifies with the accumulation of certain productive activities characteristic in peri-urban areas.

It should be further stressed that the volume of water is in many cases as essential as, or even more significant than, its quality in order to prevent diseases¹⁴ (McGranahan et al., 2001 and Howard et al., 2003). McGranahan et al. (2001) state that the weight given to contaminated water in relation to diseases is often overstated and in reality constitutes only one of several aspects. More importantly, the emergence of water-washed diseases and other health concerns are very much linked to the amounts of water available and consequently to the distance of households to water sources. If a water source is far away from the household it stands to reason that people are unable to transport huge amounts of water. As a result the amount of water collected is likely to be used for the most urgent needs like drinking and cooking and less for personal or household hygiene and any other purpose. Past research by Howard and Bartram (2003) found out that multiple household taps are likely to bring the most health gains. The same applies for sanitation facilities: toilets outside the household will be used less frequently than those inside. In the context of this research project, in peri-urban areas, it is important to look not only at the distance but also at the

¹² Malaria, like in Africa, is largely a rural phenomenon, as most malarial mosquitoes breed in large unpolluted sources of water. However, some other malarial mosquito species have found their urban niches. In India, for example, 'industrial malaria' is transmitted through a vector breeding in artificial containers found in urban areas. Both, urban agriculture plots and industrial complexes are often located in peri-urban areas, and introduce new breeding sources for either type of malaria (Birley and Lock, 1998). Other vector-borne diseases like filariasis and dengue are associated with peri-urban areas due the transmitting vectors breeding near, among others, liquid waste disposal systems.

¹³ According to a study by Trape and Zoulani (1987, quoted in Birley and Lock, 1998) the canalisation of surface water was one of the factors that decreased the occurrence of malaria.

¹⁴ This rule does not apply to very young children, an aspect that will be further explored in the section about structural causes.

Nonetheless, health impacts depend not only on the accessibility of water and sanitation facilities but also on how they are used, i.e. the hygiene behaviour of consumers. Besides people needing access, equally important is the availability of information about how to use the facilities to minimise the risks associated with misuse (WHO, 2003a). Disease prevention starts at the household level. With good hygiene education people will know how to behave in order to prevent the spread of certain diseases, e.g. water purification through boiling, hand washing etc. This paper is looking in more detail at gender issues further on. However, it is worth mentioning here that in all the respects just mentioned women play a significant role and should therefore receive particular consideration. When looking at other illnesses related to the lack of WSS one will find that many water collectors, who happen to be mainly women, that have to retrieve water from long distance sources on a regular basis, suffer from severe back problems (Howard and Bartram, 2003).

3.2 Livelihood consequences

The lack of access to WSS can have severe impacts on people's livelihoods, further influencing development and poverty alleviation in a negative way. Ill health resulting from lack of WSS, as mentioned above, means that those affected cannot fully accomplish their daily duties. Furthermore, women spending most of their time on retrieving water or compensating for non-existing sanitation facilities have less time available for other tasks such as childcare, other household duties and economic activities, with the latter resulting in a lower household income. In many cases children have to help out and fulfil some of the tasks in order to compensate for the loss of time and money, which means that they miss out on their school education (WHO, 2003a). According to findings from McLennan (2000) this applies especially to peri-urban communities. He revealed that peri-urban communities of large cities are frequently populated by highly mobile young nuclear families from intra-urban or rural-urban migration in contrast to the large family networks of traditional families (ibid.). This is the case in Caracas, where more than 60% of the peri-urban population is composed by nuclear families (Lacabana, 2003). Consequently, there is a change in the social support and childcare practices, which means that peri-urban families have less members to rely on for the accomplishment of daily tasks. Gutierrez et al. (2003) claim that these issues do not only affect the livelihoods of these families but also have an impact on their governments, who should therefore take action, because a government that fails to invest in WSS for the poor may eventually end up spending much more in health and lost economic activity in case of widespread illness or epidemic outbreaks.

Tacoli (1999) states that the PUI offers a high income diversification and increased employment opportunities due to its proximity to both urban and rural markets. However, the ability to diversify sources of income depends on the proportion of active adults and is therefore more difficult for nuclear families (see above). Furthermore, the PUI is characterised by a large proportion of water-intensive primary and secondary sector activities such as agriculture and animal husbandry, tanning and rooking for sale (WHO, 2003b; see for example the case of Hubli-Dharwad in Brook and Davila, 2000). Lack of WSS facilities poses a serious threat on the livelihoods of poor people that depend to a large extent on these economic activities.

Thesis 5: The pattern of life and livelihoods that applies largely to the peri-urban poor makes them particularly vulnerable to the lack of adequate WSS.

3.3 Environmental consequences

As mentioned earlier, the PUI can be very important in the provision of water and other natural resources for a city and even a whole region. As competition over those resources escalates this leads to the depletion of freshwater resources and, in the case of coastal cities, increases the risk of groundwater salination. Paradoxically, peri-urban areas with their own freshwater reservoirs nevertheless suffer from insufficient supply, because in the majority of cases priority is given to inner city areas¹⁶. Besides, the peri-urban households are often not equipped with adequate WSS infrastructure as they are far away from existing water mains and trunk sewers, which makes it more costly and difficult to serve. Looking at inadequate water supply, low-income groups do not have the same means as higher-income groups and are therefore disproportionately forced to obtain water from contaminated sources. If they also lack sanitation facilities, which is, as outlined above, a common problem in peri-urban areas, these groups contribute further to the contamination of such water sources, creating a vicious circle which is difficult to get out of. It is worth mentioning though that in low-income areas the effects caused by lacking water and sanitation facilities are foremost local, whereas higher-income groups have the capacity to displace the burden and eventually transfer problems to a much higher scale (McGranahan, 2001).

As identified by Wolf et al. (2003) the diminishing quality of surface and groundwater is caused by pollution associated with rapid urbanisation, industrial development, population increase and certain agricultural practices (ibid.). Those processes, which all apply to the PUI, are strongly connected to the lack of waste management and pollution control. Improper waste disposal and treatment transforms the PUI in a sink for solid, liquid and gaseous wastes leading to environmental degradation in form of contamination of air, land and water, flooding and erosion (Tacoli, 1999). This environmental distress caused by lack of WSS generates consequences with much wider impacts than just on those directly suffering from no access. In the case of water, it generally increases the pressure on already limited resources even further.

Thesis 6: Institutions in the PUI are not adequately equipped to handle the by-products of the numerous processes taking place in these areas.

4. STRUCTURAL CAUSES OF LACK OF ACCESS TO WSS

So far research action has generally focused on the consequences of lack of access to WSS, as discussed above, whilst the causes of it are often not recognised. When trying to resolve the problem, solutions focus mainly on minimising the consequences by improving the distribution or coverage of services and less on improving the structural conditions that place people in the position of not having access to them. The following section explores different structural causes of lack of access to WSS. It will further reveal which factions in society suffer the most and why.

4.1 The legal system

Even though the UN Economic and Social Council (2003) states that “no household should be denied the right to water on the grounds of their housing or land status”, in practice, the two issues are often closely linked. Furthermore, existing policies and regulations do not take

¹⁶ This applies for example to the case of Mexico City, where an estimated 80% of water from a peri-urban area gets transported to the city, and Chennai with approximately 60% respectively.

account of informal settlements. Due to their informal status, most low-income groups, lack security of tenure to the land they settle on and they further do not have legal access to credit and consequently to services (EHP, 1999). Peri-urban settlements that lie outside the municipal boundary or are inexistent in master plans are automatically considered as informal which can be put down to problematic of institutional fragmentation mentioned earlier (Benjamin and Bengani, 1998 cited in Tacoli, 1999). When developing strategies to solve this problem, it is important not to limit secure tenure solely to land ownership, as this standardised is neither efficient, nor equitable or flexible enough to take into account administrative, economic and cultural diversities within a particular context and has, according to WaterAid led to gentrification in the past¹⁷ (Durand-Lesserve et al., 2002). Various intermediate tenure systems that secure at least occupancy rights have evolved that are able to respond to the diversity of situations in different locations. However, in some cases these have to compete with traditional customary land allocation systems that are operating especially in peri-urban areas (ibid.).

Lacking secure tenure, it is difficult for those communities to engage with the formal sector in general and specifically in respect of water and sanitation provision (EHP, 1999 and WaterAid, 2001). Therefore, one can often find two parallel WSS systems: formal provision of water with piped municipal or privately supplied water and the informal provision mainly through water vendors. There are some examples of projects where poor communities obtained services by unlinking land tenure and access to WSS, in other words providing services without having to grant tenure. So far this has been only a short term solution, because people are reluctant to invest in services without the security of tenure¹⁸. Besides, such projects can only be regarded as 'end of pipe' solutions, because they do nothing to address underlying causes. Without secure land tenure the problem of illegality persists and other improvements to alleviate poverty and protect residents from eviction are unlikely to happen (WaterAid, 2001). In this context low-income groups do not only lack access to services but more importantly they lack generally the power of decision-making, including decisions regarding WSS issues.

Thesis 7: Obtaining access to the formal WSS system is strongly linked to the land and housing legal tenure status of residents

Other issues which contribute to disadvantage the poor are existing standards and regulations, as they are mainly set up to serve the formal sector. Using international contractors to build WSS infrastructure, which is more and more common, can considerably raise the construction and maintenance costs of a project (Terry and Calaguas, 2003). This might work for formal higher-income settlements where consumer contributions are considered mainly in financial form but low-income groups might prefer to make contributions in the form of labour.

Generally, private household connections might not be the solution for everybody, especially in peri-urban areas¹⁹. Applied to the informal sector, these standards and regulations often

¹⁷ WaterAid found out that in a number of past experiences the legalisation of illegally occupied land led to middle income residents moving into the area driving poorer residents even further out of the city (WaterAid, 2001).

¹⁸ Often, paying for installation, operation and maintenance of services can be cheaper than buying water from vendors and therefore should be seen as an advantage even in illegal settlements with the risk of eviction. However, initiating such a project depends a lot on the collaboration in the community (WaterAid, 2001).

¹⁹ In a peri-urban locality of Karachi the municipality in partnership with the community sector had to come up with alternative water supply arrangements due to settlement's long distance to existing water mains, which affects the construction cost but would also result in a low level of service in these areas because of increasing water shortages (Ahmed and Sohail, 2003).

appear too costly, not taking into account specific local circumstances, i.e. availability of funds and skills of the community and their ability to pay for services (UN-Habitat, 2003). This is important not only during the construction but particularly in relation to the maintenance of WSS and therefore should be reflected in the solution. In a peri-urban low-income settlement in Tanzania for example, buying water from a water kiosk has been identified by the community itself as the most appropriate way to purchase water (Wandera, 2000). However, alternative practices of access to water are not always formally endorsed. The community in a peri-urban area in Mexico lacks public support, both in financial and, even more importantly for them, technical terms, to improve their rainwater harvesting practices which they started on their own initiative.

Overall, the existing legal system tends to reinforce the conditions that exclude the poor rather than trying to solve this problem of segregation. The same blueprint solutions applied in different contexts have therefore often failed in the past.

Thesis 8: Existing standards and regulations neglect specific local circumstances and often constitute an obstacle to improve access to WSS of the peri-urban poor in a sustainable way.

4.2 Disaggregation of 'the poor'

As already argued above, poor communities are most affected by the problem of poor access to WSS. But, who are 'the poor'? Formal institutions often lack the knowledge and skills to deal with poor communities, especially those living in peri-urban areas (EHP, 1999). Categories identified as 'vulnerable groups' or 'disadvantaged' are too broad to address distinct needs that different members of these categories might have (McIntyre and Gilson, 2002). When looking at the effects on men, women and children of lack of WSS or the division of labour in the household, one will find that it is mainly women and children (especially girls)²⁰ that are responsible for fetching water and accomplishing other household tasks that depend on water such as cooking and cleaning, childcare and hygiene²¹. Consequently, the issue of equity plays an important role in relation to water and sanitation (Smith, 2003). As shown earlier women and children in poor communities are more exposed to the risk of diseases and illnesses than men and therefore require special consideration (UN-Habitat, 2003).

As mentioned earlier several organisations have defined a guidance level regarding the minimum amount of water a person needs in order to satisfy daily essential requirements. The standard established by WHO and UNICEF requires 20 litres per person per day to be available from within 1km of distance to the household (Howard and Bartram, 2003). However, this cannot be taken as a universal figure. Disaggregation is important in order to determine the minimum amount of water per person per day in the light of different needs but also gender roles as regards productive, reproductive and other daily activities. Men, women and children have different requirements based on their age and physique²², which are further diversified by factors such as physical activity, climate, diet and others (e.g. pregnancy, breastfeeding etc.). Moreover, different purposes for the use of water have to be considered. White et al. (1972 cited in Howard and Bartram, 2003) suggest three types of

²⁰ According to Lui (cited in Smith, 2002), based on findings in Kenya and South Africa, women and girls spend up to five times as much time to retrieve water than men.

²¹ In cases of no sanitation this includes the disposal of human excreta.

²² For children under three years of age the quality of water is more important than the quantity while for children older than three the opposite is the case (Howard and Bartram, 2003).

domestic water use, namely consumption (drinking & cooking), hygiene (personal and domestic) and amenity (car washing etc.). Thompson et al. (2001 cited in Howard and Bartram, 2003) introduces a fourth category, covering productive use (e.g. agriculture, small scale manufacturing, catering etc.), which, as illustrated before, can be of special importance in peri-urban areas. All these factors have to be taken into account before being able to calculate the minimum amount of water needed for a particular person.

Thesis 9: Fair allocation of resources/services has to be calculated on the basis of needs in the light of gender roles, age and ethnicity, with a particular focus on the disadvantaged.

5. POSITION OF 'THE POOR' IN WSS

There are a number of potential stakeholders involved in WSS, different government agencies, private sector, NGOs and the community. Regarding the last group, there are various forms of participation, particularly when looking at the range of poor communities' involvement. As low-income groups suffer the most in the sense of lacking adequate access to WSS, it is important to explore what role they can play in the process of gaining or improving access to those services. There is no consensus among external support agencies (ESAs) whether 'the poor' should be treated purely as recipients or as contributors to service provision, creating a potential for conflict due to opposing policies when applied in the same area. Based on the discussion above about disaggregation, it goes without saying that the disaggregation of poor communities is especially important in the process of participation, because some members like women and children require special consideration. In certain cultural contexts, for example, women might feel intimidated by the presence of men and therefore could hesitate to actively participate. Table 2 provides an overview of possible forms of participation in the provision of WSS:

Table 2 : Participation of 'the poor' in WSS	
Form of participation	Characteristics
Passive participation	Poor communities participate by being told about water and sanitation initiatives that are being planned or have already been decided upon, without any attempt to elicit local opinion or knowledge
Participation through information (giving)	Poor communities are asked questions about their water and sanitation situation or needs through surveys or similar instruments. The information is fed anonymously into the decision-making process without feedback
Participation through consultation	Poor communities are consulted as to what should be done to improve the local water and sanitation situation, and many discuss different options being proposed by sector professionals, but the professionals are not obliged to take residents' views into account.
Participation through contribution	Poor communities are asked to provide labour or financial contributions towards the provision of water and sanitation utilities) and 'the poor' agree to take primary responsibility of some well defined components of a negotiated water and sanitation improvement
Participation through	Poor communities and other key actors share resources, knowledge

partnership	and risks in pursuit of commonly agreed-upon water and sanitation improvements. 'Partnership' can be taken to imply a long-term, equitable relationship
Participation through self-mobilisation	Poor communities work together to demand and/or implement water and sanitation improvements. They develop contacts with external actors, some of whom may contribute organisational as well as technical skills, but community groups retain control over how the resources are used.

Source : adapted from UN-Habitat, 2003.

5.1 'The poor' as recipients of services

By looking at the first three forms of participation outlined in Table 2, it is clear that 'the poor' are mainly treated as recipients of services. Even though they receive information and might participate in surveys, there is no guarantee that their experience and perception of their own reality might have an impact on the solutions adopted. All three approaches are top-down solutions, where the technology is chosen and implemented without active user participation. This has been identified as a major constraint for maintaining and improving WSS in the past (Terry and Calaguas, 2003). In their research on 'the impact of private sector participation on the lives of rural and urban poor communities in ten developing countries' Gutierrez et al. (2003) found out that communication with the poor is crucial for successful WSS while limited information and communication with the end users, i.e. the community, hinder a more active participation and increases the risk that local circumstances are neglected. Consequently it is unlikely that such approaches are sustainable, as they do not reflect the needs, interests, conditions and capacities of the community where they are applied.

5.2 'The poor' as contributors to service provision

As for the last three types of participation shown in table 2, the poor are contributing to the provision of services²³. They do not only take an active part in the definition of solutions but they also play a role and take certain responsibility within the process. As pointed out earlier, in this context it is important that support is not only limited to financial inputs but also allows labour contributions, to avoid excluding low-income earners (Gutierrez et al., 2003). Even more significant though is an active involvement of the peri-urban poor, especially women living in the PUI, in the development of strategies that reflect their own experience and perception of reality. However, in order to reach the very poor, one must be aware that the very poorest households might have limits to participate not only in respect of financial resources but also due to a lack of spare time²⁴.

All three forms of participation are noticeably bottom-up approaches to addressing the problem of lack of access to WSS, because they allow the poor to assess their own effective demand in terms of technology, level of service and price they are able to pay. Because the poor take an active part in decision-making, the process facilitates the creation of ownership and social mobilisation in the community. This is essential to secure the maintenance of these services in the future (Gutierrez et al., 2003). Furthermore, and most importantly, low-

²³ In these forms of participation NGOs often act as facilitators between the different stakeholders to provide support to the community (EHP, 1999).

²⁴ In a water and sanitation project in Bangladeshi slums, Hanchett et al. (2003) discovered that in order to include the very poorest into solutions that meet their needs, these have to reflect poor peoples' limitations to actively contribute to meetings and loan repayments.

income groups are able to gain financial and administrative power to help them improve their structural conditions.

Thesis 9: Active participation of the peri-urban poor in WSS helps to visualise and understand the specific challenges of the PUI to promote greater equality of access and sustainability of services.

6. CONCLUDING REMARKS

The PUI is one of the places where access to WSS is insufficient. Even though researchers and practitioners are increasingly dealing with peri-urban areas, it looks as if these are still neglected in the development and implementation of solutions due to a lack understanding the specificity of the PUI and the living and working environment of different groups among the poor in these areas. This paper has attempted to look at both consequences and causes of lack of access to WSS in order to contribute to finding more sustainable solutions. This approach is reflected in the theses outlined throughout the paper. One could argue that, most of the theses show (again) only general validity regarding lack of access to WSS without particular reference to the PUI, and therefore do not reveal anything new. However, under each heading this paper has tried to establish a relationship to the peri-urban context, which has demonstrated that both causes and consequences appear to accumulate particularly in peri-urban areas and therefore they urgently require adequate access to WSS. Furthermore, given the diversity of peri-urban areas, each thesis presented here needs to be looked at in the specific context of a peri-urban locality (see Thesis 8), in order to be able to unpack and identify the problematic of a particular place and develop appropriate solutions.

Draft for discussion

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