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PATHFINDER 2011: Equity and Gender

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Sanitation and Hygiene Applied Research for Equity

Equity and Gender Pathfinder

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ABSTRACT

This review considers access to sanitation and hygiene services with a focus on the themes of equity and equality. The paper begins by reviewing concepts of economic, social, spatial and political inequality and their significance to issues related to access to sanitation and hygiene services.

Drawing on discussions with SHARE collaborators and an overview of relevant literature, the review summarises some of the findings in respect of our understanding of what it takes to provide equitable access. The conclusion argues that there are three groupings within the relevant literature, each of which makes a contribution to addressing the need for interventions that take account of structural inequalities, but each of which is limited when considered alone.

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Executive Summary

This review considers access to sanitation and hygiene services with a focus on the theme of equity. It is one of the four Pathfinder papers prepared by the SHARE consortium to cover their four research pillars of health, equity, urban, and markets. The Pathfinder papers are designed to assess existing knowledge and help chart a direction for forthcoming research activities.

What do we know now?

This paper begins by reviewing concepts of economic, social, spatial and political inequality and inequity, and discussing their significance to issues related to access to sanitation and hygiene services in urban areas. The focus in this paper is on urban sanitation due both to the increasing urbanization of poverty, and the complexities of safe provision at high population densities. The discussion explores reasons for inequalities in access, explaining how dimensions of income and social inequality combine to multiply the difficulties faced by disadvantaged and otherwise vulnerable populations. It also elaborates on the ways in which income inequalities may overlap with residency in informal settlements (and related inadequacies in sanitation provision), and explores the contribution of cleanliness to social stratification. Inequalities in political influence and power help to explain the low priority that has been given to sanitation.

Various dimensions of inequality and inequity in provision have been recognised to be particularly significant. These include spatial (informal settlements, street homeless), social (gender, generation), health-related (disability, ill-health), and economic (low-income communities and households). Considerations influencing equity are raised, including the difficulties faced by women (safety of facilities/menstrual hygiene), different generational needs, disability/ill-health and the impact of group beliefs and customs.

The paper documents three different approaches to understanding and addressing issues of equity:

- Descriptions of the specific needs of particular groups who are denied equitable inclusion (for example, disabled people, people living with HIV/AIDS) and support for equal incorporation into Water, Sanitation and Hygiene (WASH) interventions
- A focus on under-served areas and interventions that will increase the provision of sanitation services including improved technical solutions, encouragement for sanitation markets with greater demand for sanitation from local populations, and co-production initiatives that bring state and community organizations together to improve access
- An analysis of anti-poor politics and power dynamics at the city level, the reasons why political elites have favoured a lack of sanitation provision, and the potential for alternative political outcomes to address needs.

On the basis of what we know now, what are the major gaps in policy and programming?

The existing evidence demonstrates the importance of taking account of the multiple sources of deprivation and exclusion that are characteristic of the lives of low-income households. For many low-income households, the problems associated with income poverty are compounded by inadequate living conditions including a lack of provision for sanitation and hygiene, safe and secure neighbourhoods, and lack of access to basic facilities including

transport, schools and health centres. Gender, race and ethnicity may all be important indicators of status and be associated with inequality and inequities in access to sanitation. Class and caste also remain important factors influencing social relations. However, as with assumptions about poverty, care needs to be taken in making generalisations.

Despite an understanding of the specific inequities in sanitation that result from the particular needs and social situations of identifiable groups, programmes and policies may not pay sufficient attention to this knowledge. In many cases, they are sensitive to some of the problems but do not take full account of all of those who are excluded or not equally included.

Despite evident problems of affordability and an understanding of the health risks of high residential densities for sanitation provision, there is little attention paid to understanding the implications of this for adequate access to sanitation and good health. Likewise, the significant proportion of tenants in many urban areas is often known, but has rarely been given sufficient recognition in plans to improve sanitation in specific settlements and within urban programming.

What do we need to know to do better?

We know little about how to secure inclusive sanitation at scale. In this context, there is a need for the literatures described below to engage with each other. At present, much of the literature focuses either on general statements about the need for such city wide programmes, or discusses how to avoid the exclusion of specific groups in existing projects, or discusses how particular groups might enhance their demand and access. There is very little that discuss how the scaling up of sanitation investments can take place in a way that includes most of those who remain in need. It is self-evident that the needs of particular groups will not be meet at scale until there is an effective strategy for comprehensive provision. What is lacking is a comprehensive approach to inclusion with the identification of needy groups and the development of appropriate strategies that are sensitive to the circumstances of each group within a framework that addresses the needs of all. We need knowledge that is cognizant of the political realities and vested interests in systematic outcomes, sensitive to and informed about the particular needs of the populations, and insightful about options that can work to provide sanitation improvements at scale.

The lack of information referring to informal settlements is frequently mentioned. Practices of data collection now vary considerably and such different techniques help account for the discrepancy in recorded figures. There is clearly a need to improve data about the scale and depth of inadequacies in provision, especially relating to informal settlements. While substantial “slum upgrading” projects have been underway for decades across the Global South, the improvements to sanitation which have occurred as part of these initiatives have not been adequately documented.

There appears to be little written on the particular needs and health challenges faced by sanitation workers, particularly those dealing with waste material. This is a sub-sector of the informal, and sometimes formal, labour market that is associated with low-status and difficult working conditions.

At the government level, there is inadequate information about the amount spent on sanitation due to a lack of coordination and sanitation-related responsibilities being spread between a number of different ministries and agencies. More generally, there is recognition of the need to generate a much better understanding of how the state can be effective in redistributing income and ensure access to essential goods and services.

SECTION I : Introduction

1.0 Purpose and plan

The purpose of the Sanitation and Hygiene Applied Research for Equity consortium (SHARE) Pathfinder paper on gender and equity in sanitation and hygiene is to contribute to establishing a direction for forthcoming research activities. The paper draws on existing work on urban poverty and inequality in IIED, concerns and perspectives emerging from discussions with the participating agencies and related individuals, and a body of literature. Consultations[1] within SHARE indicated the literature to be considered in the course of drafting this paper. This paper offers a discursive framework to assist the research consortium in its future work. The desired aims for the pathfinder papers are summarised below and this paper seeks to contribute to these:

- What do we know now?
- On the basis of what we know now, what are the major gaps in policy and programming?
- What do we need to know to do better?

The purpose of the papers is to challenge and sharpen thinking in each agency as they draw on their expertise and experience to contribute to research on equity and gender, and to assist us in providing a common basis for future discussions, decisions and activities.

The recent JMP report from WHO-UNICEF (2010: 16) reports on the population gaining access to improved sanitation in both urban and rural areas between 1990-2008. The global analysis for 2008 shows there remain an estimated 794 million people in urban areas and 1.856 billion people in rural areas without access to improved sanitation (ibid: 16). In urban areas, populations grew by 1.089 billion and those achieving access to improved sanitation grew by 813 million. In rural areas, global population grew by 370 million with 450 million securing access to improved sanitation. In this period, the numbers of urban dwellers practicing open defection increased from 140 million to 169 million (ibid, 22). It is clear that sanitation remains a major issue in many rural areas, and this should not be neglected. However, the shift to higher levels of urbanisation, the consequences for health of rising population densities in a situation of inadequate sanitation coverage, and the relative lack of attention to urban sanitation are important factors explaining the focus on urban areas that is taken in this Pathfinder paper. The lack of access to sanitation interacts with, and exacerbates, other dimensions of disadvantage and inequality experienced by urban populations. The deficit of work on urban sanitation in the specialist literature has been acknowledged. Peal *et al* (2010: 15), in a recent volume about hygiene and sanitation software, note that there is relatively little that focuses on the urban context and suggest that this:

> …illustrates the bias within the sector in favour of rural sanitation and hygiene improvement, which is traditionally where a greater need for support is perceived to exist and it is also possibly seen as easier! The complex problems caused by the ongoing rapid increase in urbanisation are of increasing concern and there is a need to find good, well-documented at-scale examples of urban programmes that resolve these issues across the WASH sector.

[1] Including a meeting at IIED on 9 August 2010.

This bias may in part be explained by a lack of awareness of the significance of population densities when talking about sanitation. For example, the recent JMP report from WHO/UNICEF (2010) made no reference to density when discussing issues of improved and unimproved sanitation. In *Spatial Inequality and Regional Development*, Escobal and Torero (2005: 88) compare urban and rural areas in Peru. They point out that urban services are two or three times better than in rural areas particularly in the case of sanitation, seemingly with a complete unawareness that the health risks associated with a lack of sanitation services and high population densities means that simple conclusions cannot be drawn about urban to rural inequalities.

In this context, the paper examines the challenges of poverty and inequality in urban areas considering structural causes, consequential impacts and their inter-relations with access to adequate sanitation. The plan of the paper is as follows.

Section I, the introduction, continues with a brief summary of the scale of need in urban areas and a discussion of the way in which sanitation needs are defined. Section II discusses concepts of equity and inequality, and elaborates on the different ways in which such concepts contribute to our understanding of development needs and challenges. The Section begins by differentiating between equality and equity in the context of sanitation. This Section summarises some of the frameworks used to understand inequality, and differentiates between income inequality and inequalities in social status including those based on gender. It explores reasons for such inequalities, explaining how the dimensions of income inequality and social stratification combine to deny access and multiply the difficulties faced by disadvantaged and otherwise vulnerable populations. The discussion considers the ways in which inadequate access to both sanitation and the resources necessary for hygiene are both a manifestation of inequality, and a contributor to such inequalities. The high densities in some urban areas add considerably to the importance of adequate provision and government structures are frequently complex, thereby adding to the difficulties. Finally the Section considers some of the primary inequalities and their significance for the core research themes.

Section III explores the ways in which the identified literature has addressed these themes. Sub-sections consider what we know about the scale of inequalities in the provision of sanitation and access to the goods and services needed for hygiene for a range of groups that face particular disadvantage including women, young and old people, and those with disabilities. This discussion highlights different aspects of the issues related to sanitation inequality and inequity, and in so doing provides an opportunity to explore how and why the scale of inequality in sanitation and hygiene has been addressed, and why it has not been addressed more fully. The discussion highlights the scale of neglect and the need for comprehensive strategies to address sanitation needs across the city if inclusion is to be achieved. It then highlights some emerging conclusions that can be drawn from this work, and suggests the knowledge gaps that exist. This analysis provides the basis for a tentative identification of SHARE priorities.

Section IV concludes.

1.2 Equity, inequality and sanitation: the challenge

The purpose of the SHARE Consortium is to ensure that new and existing knowledge is developed and used to improve systems for sanitation and hygiene delivery. Underlying its purpose are the conclusions that DFID reached as a result of several scoping studies, conclusions which underpin their interest in this research programme. Inadequate and unsafe sanitation remains a major constraint on health and livelihoods, particularly for low-income households. Women and disadvantaged groups often suffer disproportionately.

Both outcomes are a major constraint on meeting several Millennium Development Goal (MDG) targets. There are significant, but manageable, knowledge gaps in the sanitation sector, particularly on how to improve sanitation and hygiene for low-income and otherwise disadvantaged people, and how to achieve improvements at the scale that is required.

Inadequate sanitation remains the most neglected of the MDG sectors; over 40 per cent of the world's population lack a safe place to defecate. Existing evidence points to poor sanitation being a major factor in approximately 2.4 million child deaths annually (Cumming 2008: 5-7). WHO/UNICEF (2010: 8) estimate that the MDG target (7c) to half those in need by 2015 is not being achieved. The target was to reduce the percentage of the global population without adequate access to sanitation from 46 per cent to 23 per cent; however only 10 percentage points have been achieved and 36 per cent remain without adequate sanitation. Even this target only aspires to improve conditions for 50 per cent of those in need, and there are concerns that the urgency to meet targets has led to a "low-hanging fruit" tendency, with the hardest to reach and most disadvantaged households being neglected.

Governments, international agencies and the market have failed to offer low-income households the sanitation systems which they want and can afford. Years of inadequate investment in sanitation and research about how to meet sanitation needs have left the sector with a huge problem to solve. The need for improved urban sanitation is pressing; no more is this evidenced than by recent discussions that the author observed in Zambia, where government officials and NGO staff expressed the unanimous opinion that there are no successful models for urban sanitation provision at scale because up to now urban sanitation has been thought of as a private good.[2] As a private good it was considered that sanitation could be left to the households to address as is the case with, for example, the improvements of roofs or the construction of an additional bedroom. However, with growing urban populations living at increasing population densities and associated potential and actual health risks, Zambian professionals now consider that public investment is required. In an urban context, there are particular problems with sanitation being conceptualised as a private good. High residential densities mean that the removal and/or treatment of waste is likely to be required. Even with good affordability this may be difficult but in a situation of very low incomes, the need for public investment is acute. A second factor is the large number of informal settlements where families settle prior to investment in services (due to an inability to afford market properties). This reverses the formal construction process (buy land, install services and infrastructure, construct, occupy) and the sequence becomes occupy, construct, invest in partial services and infrastructure, negotiate tenure security, improve services and infrastructure with the final stages being difficult to achieve (Moser, 2010). A third factor is the scale of rental dwellings (often housing the lowest-income families) where incentives for investment are very different.

Behind these observations and conclusions concerning sanitation and hygiene lies a complex set of over-lapping causes and consequences that together contribute to the multiple disadvantages experienced by the urban poor. Of particular significance, and elaborated in the following section, are the relationships between the distribution and scale of household income, forms and degrees of social stratification, and the nature of residential urban settlements. Also important, and helping to explain why this situation continues, are political inequalities. The section will discuss the nature and scale of inequality

[2] See McGranahan and Budds (2003: 10-11) for a discussion of public goods and water and sanitation. Sewerage pipes have some aspects of public good provision (ie. they are non-rivalrous although not non-excludable). There are also considerable externalities that arise from the under-provision of sanitation that may be experienced by neighbourhood households (who fall sick) and by the most vulnerable members within the household (for example, children). Such externalities provide a further reason for state intervention.

differentiating between income inequality and inequalities in social status including those based on gender. It will explore how the nature of sanitation and hygiene goods and services bears on issues of inequality and inequity, and will discuss how such inequalities and inequities have been understood and conceptualized. It will also consider reasons to explain how the dimensions of income inequality, social stratification, spatial divisions and political exclusion combine to deny access and multiply the difficulties faced by disadvantaged and otherwise vulnerable populations.

Before proceeding, it may be useful to differentiate between equity and equality. As elaborated by Taylor (2008) in a paper for WaterAid (Tanzania) and TAWASANET, equity is essentially a simple concept. It relates closely to the idea of fairness, and the idea that all members of a society have equal rights: we can describe a particular aspect of the sector as being equitable if it affects all sections of society equally. The significance of this distinction is that simple inequalities may be widely recognised to be fair when we take into account different needs and vulnerabilities, and different situations. The discussion below elaborates on some of the particular needs of vulnerable groups in the case of sanitation. Communal sanitation, for example, may not be safe for women to use at night, old people may need more frequent access to toilet provision, and people with disabilities may struggle to use particular sanitation designs (e.g. "skyloos" which have several steps to climb). In each of these cases, alternative modalities for sanitation provision with some having better facilities than others may be seen as equitable (i.e. fair), despite meaning that the level of access and/or the quality of provision is unequal. A recognition of these problems and policies to address these situations reflects an understanding that access should be related to needs (which may be unequal for multiple and diverse reasons) if equity is to be achieved.[3] The universal need for sanitation means that any equitable approach has to be inclusive, considering the needs of different groups within the population that is to be reached (Gosling 2010).

1.3 Definitions

WHO-UNICEF (2010: 55) breaks down access to improved sanitation in urban areas by region over time and the figures provide evidence of the slow progress (Table 1).

Table 1: Percentage of urban population with access to improved sanitation

Region	1990	2008
Sub-Saharan Africa	43	44
Southern Asia	56	57
Eastern Asia	53	61
South-eastern Asia	69	79

Source: WHO-UNICEF 2010: 55

The JMP figures are fraught with the difficulties involved in defining "improved" and "unimproved" (WHO-UNICEF 2010). The report elaborates that "An improved sanitation facility is one that hygienically separates human excreta from human contact" (ibid, 34), and adds that "An improved drinking-water source is one that by the nature of its construction adequately protects the source from outside contamination, in particular with faecal matter" (ibid, 34). Boxes 1 and 2 summarise the definitions used.

[3] It therefore follows that not all inequalities are inequitable. The fact that older people may have more capital (for example), is both understandable and would in many cases be seen as a fair reward for a lifetime of labour.

Box 1. Technologies considered improved sanitation

- Flush or pour-flush to:
- piped sewer system
- septic tank
- pit latrine
- Ventilated improved pit (VIP) latrine
- Pit latrine with slab
- Composting toilet
- Source: WHO/UNICEF report (ibid, 34)

- Box 2. Technologies considered unimproved
- Flush or pour-flush to elsewhere (that is, not to piped sewer system, septic tank or pit latrine)
- Pit latrine without slab/open pit
- Bucket
- Hanging toilet or hanging latrine
- Shared facilities of any type
- No facilities: bush or field
- Source: (WHO/UNICEF, 34).

Notably, many sanitation facilities defined as improved may still fail to hygienically separate human excreta from human contact as they are too close to water sources. The safety of such sanitation facilities depends both on the geological and topographical conditions as well as other site specificities. Climate change may raise the likelihood of flooding in some localities, increasing the risks from previously safe sanitation provision; see McGranahan, Balk and Anderson (2007) for a discussion of the relatively high numbers of people living in low-elevation coastal zones. Many informal settlements are in low-lying areas.Particular problems arise when dense settlement means that some types of sanitation are simply unsafe due to risks of contamination, and there may be too little available land to move to a better location. The problem is not confined to urban areas as there may be some rural settlements with higher densities with, as some Community-Led Total Sanitation (CLTS) projects have identified, a lack of land for toilet construction. For example, Evans *et al* (2009: 14) reports that, when households within CLTS villages that had not constructed toilets were asked the reasons, over 20 per cent of the ultra poor households lacked access to land and over 45 per cent did not construct because there was no money.

The SHARE Pathfinder paper on urban sanitation highlights the scale of inadequate access to sanitation (Mulenga, 2011). Particularly relevant to this Pathfinder paper is an acknowledgement of the paucity of data, particularly data related to social stratification and associated systemic inequality.

SECTION II : Urban Poverty and Inequality

2.1 The income and expenditure components of urban poverty[4]

Prior to elaborating the nature of urban poverty and inequality, it is important to recognise that the world has shifted from being primarily "rural" to one where most economic activities and more than half the population are "urban". This change is being driven by the economic change and demographics of towns and cities in the global South rather than those in the North (UN Population Division 2008). Urbanisation is, in the majority of cases, a consequence of changing patterns of economic activity and particularly the shift away from subsistence agriculture.[5] However, while some associate urban development with economic growth and multiple market-based income opportunities, there is reason to be more cautious. Much of the market-based urbanisation taking place today is also associated with significant levels of income poverty as formal sector wages remain low both within the formal and informal sectors (Chronic Poverty Research Centre 2008, 67-68). Alongside the recognition that the world is becoming increasingly urban, there is also an acknowledgement (at least by some) that there is an urbanisation of poverty, with the urban poor becoming an increasingly significant proportion of the total poor (Wratten, 1995; Haddad *et al*, 1999).

It is common for assessments of income poverty to highlight the relatively high incomes in urban areas which are contrasted to significantly lower incomes in rural areas. However, these conclusions are rarely based on a considered assessment of the way in which poverty assessments are compiled and the adequacy of their methodology in the context of urban livelihoods. As discussed by Satterthwaite (2004) and illustrated by a range of studies brought together by IIED's Human Settlements Group (Chibuye, 2010), the real value of urban income is frequently over-estimated as adequate adjustment is not made either for the cost of living in urban areas or for the scale of commodification and the need to purchase shelter (with relatively high expenditure on rents) and basic services such as water.

Poverty in urban areas is critically influenced by labour and commodity markets. There is evidence to suggest that many of the urban poor receive incomes that are too low to purchase what they need for long-term survival and advancement. Studies of low-income settlements indicate very high levels of income/food poverty; for example, 82 per cent of the population live on incomes that are below food poverty lines in Khayelitsha and Nyanga, two low-income settlements in Cape Town (South Africa), and 73 per cent of residents live on incomes below expenditure poverty lines in "slum" areas in Nairobi (Kenya) (De Swardt *et al*., 2005; World Bank Africa Region, 2006). This outcome reflects a lack of employment opportunities, low wages and/or low returns from informal vending or other forms of self-employment. In this context, it can be difficult for home-owners to invest in improved sanitation. As critical as incomes for the quality of sanitation provision is the inability of families to acquire homes with adequate infrastructure. Both Khayelitsha and Nyanga include formal and informal settlements. While most of the formal areas are connected to sewerage systems, informal settlements are not and are provided with bucket systems and/or chemical toilets. A study of the Joe Slovo settlement in Khayelitsha highlights the lack of services in such informal areas (CORC, 2009).[6] This settlement includes 2,799 children and young people below 17, and 6,047 adults. There are 706 functioning toilets (ie.

[4] This section draws on Mitlin and Satterthwaite (2009).
[5] A major exception is urban growth that is driven by violent conflict in rural areas.
[6] In respect of income, 32 per cent of the settlement's population is employed and 68 per cent unemployed, the latter figure is identical to the aggregated city data for its lower-income citizens.

one for 12 residents) and 34 functioning taps.[7] As with other low-income settlements in South African towns and cities, women are reluctant to leave the house at night to use public toilets for safety reasons.

The incidence and associated problems of poverty relate both to low wages and high expenditures; urban dwellers have to pay for the vast majority of the commodities that they consume, with few opportunities to secure, outside of the market, such essential goods and services as access to water, sanitation, housing costs, transport and health care. Research shows the relationship between vulnerability to the market (i.e. dependence on finding work and affordable adequate food), low pay, lack of assets (including the inability to invest in education and manage short-term crisis) and ill-health. In Bangladesh, Begun and Sen (2005) study the difficulties faced by rickshaw pullers in Dhaka and illustrate the difficulties faced by households who fail to accumulate the income and assets that they need to avoid poverty. Over 90 per cent of their sample are first generation rural migrants and the authors conclude that they and their families have very poor prospects, noting that the need for children to enter the labour market (due to low wages) means that only 58 per cent are in school compared to 73 per cent of children living in rural villages (ibid, 14). Access to sanitation is not reported however, it is noted that a major burden is frequent household crises, of which health crisis is the most common (which is likely to be exacerbated by the low quality of their living environment). In Bangladesh, the percentage of the urban population with access to improved sanitation fell from 59 per cent to 56 per cent between 1990 and 2008 (WHO-UNICEF, 2010: 39); during this period the urban population almost doubled from 23 to 43 million people, highlighting the challenge of urban sanitation.

In addition to recognising the need to improve our understanding of income poverty in urban areas, these and other studies demonstrate the need to move beyond an emphasis solely on income poverty, to take account of the multiple dimensions of deprivation that are characteristic of the lives of low-income residents, which is already recognised by urban specialists (Wratten 1995; Satterthwaite 2004; Rakodi 2002). For many low-income households, the problems associated with income poverty are compounded by appalling living conditions including a lack of provision for water, sanitation, safe and secure neighbourhoods, and lack of access to basic facilities including transport, schools and health centres.

In 1992, 600 million residents in Southern towns and cities were estimated to be living in inadequate housing – a figure that had risen to 900 million in 2003. The local manifestation of this global figure is illustrated for Pune (India) where despite positive economic growth in India,[8] the proportion of the city living in "slums" has grown from seven per cent in 1951 to 23.3 per cent in 1976 and 39 per cent in 2001; during the same period, the numbers of people living in these settlements has increased from 37,000 to over one million (Bapat 2009, 4 and 27). Between 1990 and 2008, the percentage share of India's urban population with access to improved sanitation rose from 49 per cent to 54 per cent (WHO-UNICEF, 2010: 43). In Nairobi's informal settlements that house around half of the city's population, 68 per cent share a public toilet facility, on average with 71 other persons. Six percent of their 1,755 household sample have no access to sanitation and use "flying toilets", and of those that use toilets, 29 per cent of the toilets are connected to a public sewer (either formally or informally) (ibid: 48). Informal settlements are believed to be home to between 30-55 per cent of Nairobi's population (ibid, 13). Disproportionate access is shown by the following comparison; 64 per cent of residents in Nairobi's informal settlements rely on water

[7] WHO-UNICEF (2010, 49) report that the proportion of South Africa's urban population with access to improved sanitation increased from 80 to 84 per cent between 1990 and 2008.This shared provision would not be included as improved.

[8] From the 1990s average consumption per capita has grown at 3 per cent or more (Datt and Ravallion 2002).

kiosks and buy water by the jerry can, spending an average of three per cent of their income, however, across the city, 71-72 per cent of the population has access to piped water (World Bank Africa Region 2006, 25 and 50).[9] What becomes evident from a careful investigation in this and other cities is that it is a lack of public investment in piped networks, rather than a lack of household finance, which lies behind such patterns of water consumption and sanitation use. As Swyngedouw (2004) elaborates for Guayaquil, Ecuador, such deficiencies are not accidental but reflect differential access to resources and profit seeking behaviour by those in a position to exploit the inability of low-income households to find alternatives.

Complexities of urban sanitation are not only related to the lack of available land combined with high residential densities and low incomes, and/or settlement on land without the necessary infrastructure due to unaffordable alternatives. A further factor to take into consideration in many cities is the relatively high proportion of urban dwellers living in rental accommodation. The percentage of residents who are tenants varies considerably, but as squatting opportunities or getting house sites in informal sub-divisions becomes more difficult with the growth of cities and the commodification of land markets, then renting is a growing option. Estimates suggest that the percentage of tenants may be anything between 30-80 per cent. In the case of Nairobi's informal settlements, for example, only eight per cent own their own homes (Guylani, Talukdar and Jack 2010, 9). In informal settlements in Dakar (Senegal) and Johannesburg, tenants make up an estimated 26 per cent and 11 per cent respectively of all resident families (ibid: 9). Also relevant are the numbers living in informal shacks in formal areas (as these households frequently do not have adequate access to sanitation). These numbers can be sizeable. In South Africa, for example, between 1996 and 2007, the total number of households residing in informal dwellings grew by 24.2 per cent from 1.45 million to 1.80 million. During that period, the number of households living in backyard informal dwellings rose by 46 per cent from 403,000 to 590,000.[10] Tenants may remain in one dwelling for many years but they have less incentive to invest in sanitation facilities. In some cases, they may not be able to even if they want to due to their lack of ownership over the land. Moreover, they may be reluctant for the landowners to invest if this means that rents increase and properties become unaffordable.

2.2 The significance of income inequalities

Compared to absolute poverty, relatively little discussion has taken place in respect of inequality (or relative poverty). There is a growing awareness that this aspect of collective and individual well being should not be ignored. This has been supported by the knowledge that income inequalities may be higher in urban than in rural areas (Mitlin, 2004: 16-17) and hence more of a problem as the world urbanises, and by greater discussion about the consequences of such inequalities (Wilkinson 2006).

To date much of the emphasis on inequality has been on income inequality as measured by the Gini coefficient applied to national populations. The Gini coefficient is a measure of the inequality of a distribution and is often used to measure inequality of income. It ranges from 0 to 1, with 0 representing the most equitable and 1 representing the most inequitable distribution. The Gini coefficient has been measured for many countries of the world. In part, the emphasis on the Gini coefficient and hence incomes reflects the preferred means of intervention to address poverty and inequality (Green and Hulme, 2005: 867), as well as income being the major way in which poverty continues to be defined (not withstanding recognition of the importance of other forms of deprivation). Broadly speaking, Gini

[9] At the national level, the percentage of Kenya's urban population with access to improved sanitation rose from 24 to 27 per cent between 1990 and 2008 (WHO-UNICEF 2010, 44).
[10] Press release from the South African Institute of Race Relations, 24 November 2008.

coefficients and other measures of income inequality capture the combined effect of the structure of the economy and labour markets, and the scale of income redistribution by the state.

Evidence from Chile points to the importance of analysing both absolute poverty and inequality, and offers indications as to the sources of persistent inequality. Hurtado (2006) explains that, in a context of real economic growth, the percentage of the population below the (absolute) poverty line has fallen from 38.6 per cent in 1990 to 18.8 per cent in 2003 with the Gini coefficient remaining at between 0.58 to 0.56 throughout this period. He argues that inequality has not been reduced because of the distribution of employment opportunities. Informal sector employment remained at 36 to 37 per cent of the labour force between 1990 and 2000, with wage growth being greater in the higher-paid formal sector. During this period, the government has sought to improve shelter opportunities through a housing subsidy programme that has provided 500,000 units (over 25 years), and which is increasingly orientated to the lower-income urban residents. This programme has been accompanied by measures to prevent the continued presence of informal settlements. Access to sanitation has improved with the JMP estimating that 98 per cent of urban residents now have access to improved facilities (WHO-UNICEF, 2010: 40).[11] However, this improvement in access to sanitation is associated with the growth of subsidy-financed housing which has improved shelter but been criticised both for its location and the poor quality of construction (Rodríguez and Sugranyes, 2007). Improved access to housing has been in locations that lack basic services, such as schools and health centres. Moreover, poor transport facilities combined with a distant location from urban centres has reinforced some forms of social exclusion including distance from job opportunities (ibid: 60). Such experiences caution us from an over-emphasis on any single measure of poverty and inequality.

The importance of understanding labour market dynamics for the lowest paid workers is also highlighted by Ferreira and de Barros' (1999) study of urban inequality in Brazil. While urban dwellers who are further up the income ladder (from the 15th percentile) have managed to maintain incomes by investing in education, reducing family size and increasing women's participation in labour markets, those below the 12th percentile have lost income (ibid: 32). The JMP figures for urban Brazil suggest some improvement in the last 20 years with access to improved sanitation rising from 81 per cent in 1990 to 87 per cent in 2008 (WHO-UNICEF 2010: 39), but these figures also suggest that there is a problem in reaching the lowest-income groups who continue to live in informal and poorly-serviced settlements.

The situation in fast growing Asian economies is exemplified by China, where urban income inequalities are increasing on a very significant scale due to market developments, and these are only partly addressed by state intervention (Gao, 2006: 26). Between 1988 and 2002, the Gini coefficient for urban incomes before taxes and transfers increased by 11 percentage points to 0.38. State intervention through taxes and benefits helped to reduce the coefficient and it fell to 0.33 by 2002 (ibid: 16). Access to improved sanitation in urban China increased from 48 per cent in 1990 to 58 per cent in 2008 but these figures may be misleading as urban figures may not include rural migrants without an urban registration status, typically one of the lowest-income groups who live in very poor quality shelter.

Our understanding of income shifts and state redistribution in China is unusual and there is relatively little data on the Global South and the significance of state redistribution for incomes. Recent interest on conditional cash transfers may have begun to increase both the scale of redistribution and may lead to improved information in a wider number of countries.

[11] WHO / UNICEF Joint Monitoring Programme for Water Supply and Sanitation, Estimates for the use of improved drinking water sources and improved sanitation facilities, http://www.childinfo.org/files/SAN_Chile.pdf (accessed 15 July 2011).

At present, studies from Brazil, South Africa and China suggest some general conclusions. Governments collect finance from both income and expenditure taxes although with a high proportion of the population in informal employment the latter is of particular significance. In terms of state expenditures, the importance of government's direct investment in basic services in addressing poverty and inequality is highlighted by Velez *et al.* (2004) in their study of Brazil. They *et al*discuss the aggregate outcomes of state transfers and benefits concluding that, although public expenditure in Brazil is regressively distributed, it is less regressive than household income and hence reduces income inequality. Pensions, they calculate, reduce the Gini coefficient by 1.85 percentage points (ibid: 30). In terms of positive re-distributional impacts, they highlight the particular importance of public social expenditures and spending on kindergarten, children's services, *favela* upgrading, maternal nutrition, basic education and childcare. Expenditures on tertiary education, pensions and housing are more regressive while the remaining sectors are moderately progressive or neutral (public health care, unemployment insurance, water connections, urban public transport, secondary education) (ibid, 31 and 33).[12] Sewer connections are slightly regressive reflecting their distribution across income quintiles with most of the expenditure benefiting the highest quintile (32 per cent) and the second highest quintile (28 per cent) and only four per cent of expenditure benefiting the lowest income quintile. In contrast, one-third (34 percent) of expenditure on *favela* upgrading is received by the lowest income quintile (ibid: 65). This highlights the importance of not assuming that state redistribution is pro-poor, and this evidence reinforces earlier conclusions that much subsidy finance does not benefit the lowest-income households.[13]

As suggested by the Brazil study, it is too simplistic to conclude that all state expenditure is regressive. There needs to be a much better understanding of how the state can be effective in redistributing income and ensure access to essential goods and services. This research highlights the importance of understanding investments in infrastructure (such as water and sanitation) for state strategies to combat poverty and social exclusion. Amis (2001) reports on the conclusions of an impact assessment of DFID's slum improvement projects in India and elaborates on the multiple benefits that an integrated infrastructure programme (which includes sanitation) can achieve with access to basic infrastructure and services being improved, greater use of external space within the settlement and longer working days together with a strong gender dimension for reasons elaborated below. In part such benefits are achieved because of the impact on the way in which such areas are perceived and the positive impact on the social status of those living in low-income neighbourhoods, in addition to the material improvements that arise from such investment.

Exclusion on grounds of income remains a major reason for a lack of sanitation facilities, and lack of access to adequate supplies of water. Reflecting on aggregated figures, WHO-UNICEF (2010: 30) summarise the situation thus:

> The richest 20 per cent of the population in Sub-Saharan Africa is almost five times as likely to use an improved sanitation facility than the poorest quintile. The poorest 20 per cent is around 16 times more likely to practise open defecation than the richest quintile.

A recent analysis by WHO-UNICEF (2011, 3) breaks down figures for access to improved sanitation in South Asia between1995 to 2008 by wealth quintile. However, it does not differentiate between urban and rural wealth groups. The wealth analysis reports that in both India and Nepal, the income quintile that has seen the greatest percentage increase in access to improved sanitation facilities is the fourth richest. In India and Nepal, the two

[12] It appears that these calculations are expenditure inputs, rather than the ways in which local communities perceive and value the benefits.
[13] See Van der Berg (2005: 33-34) for a similar discussion in the context of South Africa.

lowest wealth quintiles only made up 12 and 11 per cent respectively (ibid: 4). In Bangladesh improvements are much more even across the income groups; however, much of the increase has been in access to unimproved facilities (which are better than open defection) rather than fully improved facilities.

Figure 1 and Figure 2 included as an annex to this paper illustrate sanitation inequalities in urban India. Figure 1 shows how sanitation provision in Bangalore is related to income with low-income households being the most likely to have no provision and to have a public or shared toilet, while the higher income groups are more likely to have a toilet at home and have a tap alongside the toilet. This data supports UNICEF's conclusion that the lowest-income groups still need to be reached with improved sanitation. Figure 2 reports on environmental health, and other maternal and child health indicators for the population of Delhi; the scale of systematic deprivation is illustrated by the figures which compare the low-income quartile alongside the rest of the urban population. Households in the lowest-income quartile are more likely to be without sanitation and piped water, are less likely to be immunised and more likely to have children who are stunted and under-weight.

These findings about the differential access to sanitation based on incomes are repeated elsewhere, as are findings about the ineffectiveness of state contributions. WaterAid's (2009) study of Community-Led Total Sanitation (CLTS) in Bangladesh, Nepal and Nigeria found that just under half of the ultra-poor did not have a private latrine because they had no money. For the very low-income group, this figure was just under 30 per cent. A further reason (related to money) in 25 and 12 per cent of households respectively was insufficient access to land. In one of the countries (Bangladesh), there are government funds available to support access and the report elaborates (2009: 21):

> In Bangladesh**,** the local government (Union Parishad) has an earmarked allocation of funds which are intended to be used to promote sanitation through both software activities and hardware subsidies. In the study communities, ward members were free to allocate Union Parishad assistance for toilets as they saw fit. Not all of this assistance went to the ultra poor, and not all ultra poor households received help.

Only 14 out of 142 households interviewed have received assistance from the government monies, half for their first toilet and the other half for replacement or upgrading, despite the fact that the interviewers purposively sampled from low-income households.

WaterAid Malawi (2008, 24-5) discusses the financial contributions of communities to eco-san toilets, highlighting both the costs involved (Kwacha 350 to 3,700 per toilet) and the different costs charged by different projects. In one project, for example, the lowest income households pay nothing and repay the mason with the first fruits grown with the manure from the toilets. However, many others do not have the benefits of these arrangements. TAWASANET (2009: 10) argues that, in the case of Tanzania, the use of Ventilated Improved Pit (VIP) latrines clearly decline with higher incomes. However, the lack of information means that it is not easy to complete this analysis. For example, the information shows that over 80 per cent of those in the lowest-income categories have access only to pit latrines, but clearly the implications of this vary depending on the scale of the concentration of population and the density of the area. A further complication is that the poverty assessments do not always reflect the true costs of living in urban areas and hence unrecognised additional costs incurred by urban dwellers may lead to them being judged to have lower levels of poverty than is in fact the case (Chimbuye 2011). This is very significant in understanding income-based comparative data. If urban poverty assessments are inaccurate then the data that shows higher-income households have a high prevalence of pit latrines is misleading.

2.3 Social stratifications and relational inequalities

The discussion in section 2.2 is concerned with financial measures of well-being. However, there are many other aspects of inequality that are important to the well-being of urban citizens. Inequalities in status may be particularly significant in enabling individuals to be socially mobile (or not) and/or reducing (or increasing) the social distance and exclusion that some groups experience. As elaborated by Stewart (2001), group identities produce inequalities that are different in kind from those that are individually determined and may result in the systematic social exclusion of particular groups. Gender, race and ethnicity may all be important indicators of such status and be associated with inequality. Class and caste remain important factors influencing social relations. However, as with our assumptions about poverty, care needs to be taken in making generalisations. For example, women-headed households may have a higher incidence of poverty than male-headed households but this is not necessarily the case and in some contexts they do not appear to face gender-related discrimination within this domain (although they may experience other kinds of discrimination) (Mitlin 2003).

There are repeated examples of social discrimination in access to sanitation. For example, significance of caste influencing access to sanitation in India is evident. While 42.3 per cent of all Indian households had a latrine facility in 2001, only 23.7 per cent of Dalit households had this level of access (One World Action 2010:13).

While low-income residents may live in an informal settlement because they cannot afford formal accommodation, living in an informal settlement may itself be a reason for discrimination and exclusion (compounding the material difficulties faced by a lack of basic services). For instance, residents may be unable to join the voter's register or access schools, health care and social programmes. Perlman (2007: 14) reports on the discrepancy between the incomes paid to *favela* and non-*favela* residents with the former being paid (on average) only 40 per cent of the latter for an identical period of schooling (16 years). In a longitudinal study, she argues that the residents in the community she originally studied are doing better than newer residents to the city i.e. they are socially mobile. However, she also reports that residents perceive themselves to face continuing discrimination in part because "…simply living in a *favela* may be equally stigmatizing, and many people told of being afraid to give correct addresses on job interviews, knowing that eyebrows would be raised and the interview terminated if this were known" (Perlman 2004, 135). Similar findings emerge in Jamaica (Henry-Lee 2005) and Durban (Marx and Charlton 2003, 7-8) as well as through direct discussions with informal settlement residents.

A particularly striking relationship exists between ideas of cleanliness and social stratification; or put the other way, associations between dirt, poverty and moral delinquency stigmatise the residents of informal settlements creating spatial inequalities. In Freetown, Sierra Leone, for example, the city government has recently instituted new bylaws to strengthen its capacity to control informal activity (both economic and spatial) across the city. A major informal settlement (that is in a prime location) is now under threat of eviction reportedly due to health concerns related to living conditions (Bradlow 2010, 11-13). At the global level, the Centre for Housing Rights and Evictions (2006) identifies a range of cities where evictions have been justified by governments on the grounds of health and safety. Some of these evictions were specifically linked to allegations about the criminal activities taking place in informal settlements. Others have not been associated with criminal acts but simply the presence of low-income informal development and negative associations sometimes with explicit reference to the lack of hygiene. Bhan (2009: 128) discusses the increased incidence of eviction taking place in Delhi in the last 15 years quoting high court judgements that argue that the displacement of low-income settlements is necessary if the city is not to be "allowed to degenerate and decay". The court also argued a priority was

"cleaning up the city" (ibid: 135), by which it was meant that evictions should be allowed. In these settlements, a lack of sanitation and other services results not just in immediate health problems and a lack of well-being, it is also reason for greater insecurity and possibly eviction.

The sense of social distance between the low-income (generally informal) areas and the richer parts of town with their associated higher social status is sometimes captured in the naming of settlements. In Zanzibar for example, the redevelopment of the African areas of the city in the 1940s created a neighbourhood called Ng'ambo (or literally, the Other Side) (Myers, 2003: 79). The name reflects a perceived scale of exclusion that is also replicated in a lack of basic investment in infrastructure. This neighbourhood has now grown to around 173 hectares with a significant population, a continued lack of services and problems with persistent flooding (World Bank 2011). IRIN (from the UN Office for the Coordination of Humanitarian Affairs) report that in the capital, Zanzibar City, only a minority of residents, those living in the historical centre - Stone Town - are connected to the sewerage network, which consists of 25km of pipes. The total population of the capital was estimated at 206,000 in 2002 with an annual growth rate of 4.5 per cent.[14] Hamza Juber Rijal, head of environmental education at Zanzibar's department of energy, is quoted as saying: "What we mainly have are septic tanks and soak pits. Within the periphery of the suburbs, there are places with no soak pits or septic tanks; some people even have no toilets".

In addition to informality being used as a reason for a lack of state investments, and the lack of basic infrastructure then being used as a rationale for eviction and forms of social discrimination, the way in which cleanliness has become defined has further consequences for social relations and self-image, particularly in the case of women due to their gendered responsibilities. Hygiene is said to be the "conditions or practices conducive to maintaining health and preventing diseases, especially through cleanliness". Hence it includes both the physical situation and its influence over health, and the way in which people are acting on this situation to improve outcomes.[15] The following paragraphs in this sub-section explore some other ways in which the concept of hygiene serves to deepen and perpetuate unequal social relationships.

As noted above, the social associations with cleanliness form part of a longstanding discourse that results in an adverse spatial and social stratification of urban populations. The scale of social discrimination against the residents of low-income settlements is in part rationalised by an emphasis on deficiencies in the level of cleanliness. The critical discourse that is associated with these representations places low-income residents, particularly women due to their gendered responsibilities for the household, in a situation that is disadvantageous. Songsore and McGranahan (1998: 410) note that "During Accra's colonial period, for example, there were times when the work of the lower courts was dominated by cases of women accused of sanitary offenses (Robertson; 1984)".

Obrist (2004) extends this discussion with an analysis of the consequences for women of the public campaign for hygiene through a study of women living in a lower middle-income neighbourhood in Dar es Salaam. She links the ways in which negative judgements of others are internalised by women. Her interviewees elaborate the importance of cleanliness and they explain that this is difficult because of lack of water which is related both to the uncertain supply and the cost of water when purchased from informal vendors (ibid: 50). Obrist then illustrates the challenges that the women have to live with, and the way in which they feel about raising children in a situation that they feel is unhygienic:

[14] IRIN (2010) Tanzania: Zanzibar's sewage disposal challenge. 23 April 2010. http://www.irinnews.org/report.aspx?Reportid=88901; accessed 15 July 2011.
[15] There is a separate Pathfinder paper detailing core literature relevant to our understanding of hygiene research.

> While we chatted with Anna, her daughter Mariamu passed and went to the toilet with bare feet. Anna says, she feels ashamed seeing her children walking barefoot, especially entering places like the toilet. She simply cannot afford shoes for them. Sometimes she instructs them to wash their hands after going to the toilet, but when she remembers that they do not even wear shoes, she just keeps quiet 'because what they get via their feet is much worse than what they get from not washing their hands' (ibid: 52).

The lack of local facilities combined with their understanding of the importance of hygiene for good health places women under considerable strain due to their gendered social responsibilities. Obrist (2004: 53) argues that "women who are committed to health development carry not only a practical and intellectual but also an emotional burden. To them it really matters whether they can put key elements of these discourses into daily practice, and they feel distressed, if they do not manage to do so". In part such distress is caused by a discourse that stresses the importance of cleanliness and which implicitly and sometimes explicitly critiques low-income women (in particular) for failing to maintain these conditions.

Nations and Monte (1996) elaborate an example of social critiques and the response of women through a discussion of cholera and cholera preventions in Fortaleza, in the north east of Brazil. They argue that in Latin America there is a well-established discourse which blames low-income and disadvantaged citizens for their own problems (ibid: 1009). In this context, women may develop the kind of "counter-culture" described by Scott (1985) in his volume entitled *Weapons of the Weak* as they seek to establish a more positive perspective on their situation and seek to avoid internalising negative social judgements. One of the communities that Nations and Monte study to understand the response to cholera and cholera prevention occupies an insecure urban settlement with the experience of multiple evictions, no sanitary facilities and serious health problems; the other is a resettlement area with poor quality housing and toilet facilities being limited to pit latrines in only some of the plots. Nations and Monte (ibid: 1010) argue "that so-called patient 'non-compliance' - mocking cholera prevention messages, lashing out at medical authorities, threatening powerful politicians, shunning doctors' advice, spitting-up medication, and resisting hospital rehydration, etc. - is popular resistance against, not so much cholera care, but the more insidious social diseases of defamation and discrimination." In this context they recommend that health authorities seeking to engage with women should "[A]void fear-driven educational messages; mass media campaigns should speak to specific methods to prevent infection using popular terminology and cognitive images... Most important, eliminate all menacing, stigmatizing metaphors which insidiously discriminate by linking cholera to the identity of the poor" (ibid: 1021).

As we understand in more detail how inequities and inequalities have been conceptualised and then realised, the ambivalent nature of hygiene interventions becomes clearer: the context is one in which "inadequate hygiene" has been the means through which squatters, shack-dwellers and other residents of informal settlements have been subject to clearance and other forms of repression. Even for those with more secure tenure, the simultaneous discourse on the importance of cleanliness combined with a lack of the material conditions that enable this to be realised, places residents (particularly women) in a difficult situation as they are simply unable to do what they consider is necessary to maintain the health of their families.

An emphasis on behavioural aspects to improve health outcomes may be counter-productive because the representation plays into a longstanding anti-poor discourse about the lack of cleanliness associated with low-income settlements and increases residents' vulnerabilities both in the sense of collective insecurity related to the risk of eviction and other settlement-

based interventions, and in their awareness of their individual "inadequacies". In the context of the latter, the emphasis of hygiene interventions appears to be on agency and behavioural change. But in a neighbourhood in which the material conditions are lacking and in which a consciousness of this places those responsible for hygiene at a disadvantage, such strictures may simply reinforce a sense of personal failing and negative self-perceptions and reflect cultural dissonance. While Nations and Monte (1996) recommend practices for health authorities to avoid, one of the difficulties faced by such agencies is that hostile critiques on low-income households based on the criteria of cleanliness and hygiene go well beyond the staff working for these agencies. Any change in their approach may fail if the more substantive discourse from the state and elsewhere continues to threaten low-income households using the same criteria. Moreover, a discourse which emphasises the need for amended hygiene behaviour may contribute (however unwittingly) to the rationale for discriminatory acts and views.

In addition to these forms of spatial stratification, there are multiple sources of social inequality with a wide-ranging body of research that considers the details of these processes and associated consequences. Mitlin (2005) categorises major social divisions as a result of such stratification as those related to the life cycle (old and young), ethnicity, gender, migration, and ill-health and disability. Section 3.2 below looks specifically at the significance of the life cycle, gender and limited physical capacity for access to sanitation. There is much less consideration of the dimensions related to both migration and ethnicity, although this is mentioned in the context of some of WaterAid's work (see below). Also important are social stratifications in the labour market related specifically to employment and enterprises in the sanitation and hygiene sector.

2.4 Political inequalities and political inclusion/exclusion

A further dimension of inequality is that of political exclusion. Residents of informal settlements may not be on the electoral role, and hence may not be able to vote in elections. However, arguably a more significant constraint is the relations that develop in situations of acute poverty and resource scarcity. There is a wide literature to argue that the residents of informal settlements and their neighbourhood associations are embedded within clientelist political relations that do not challenge political inequalities and consequential adverse government policies and programmes, but rather reinforce relations of dependency such that protest and contestation is managed to the detriment of many and the benefit of a few (Wood, 2003). There is also a literature that argues the reverse, suggesting that there are benefits from the clientelist system that progress the agendas of low-income communities that are otherwise excluded (Auyero, 2000; Benjamin, 2000). Hence some improvements in access and the quality of provision may be achieved. However, both literatures acknowledge that political inequalities are significant and these prevent low-income groups from making a substantive challenge to the deficit of political will and limited state capacity to address the lack of sanitation and hygiene goods and services.

To challenge this situation, many forms of community organisation have emerged within informal settlements to negotiate resources from local government and to defend the interests of local residents. Despite the level of social exclusion related to residency in informal areas, these agencies seek to build relations with political leaders, parties and officials. In some cases the leaders of these organisations continue to be embedded within clientelist political relations and hence the problem is more their adverse incorporation into a political system, than complete exclusion.[16] When the Orangi Pilot Project began work in

[16] See Hickey and du Toit (2007) for a discussion of adverse incorporation. Du Toit frames the debate more widely to talk about labour markets but the concept has real resonance for the ways in which low-income residents are drawn to participation in clientelist and popularist politics.

Orangi, Karachi, for example, they found a major problem to be the expectation among community organizations that they would lobby and the state would provide (Pervaiz, Rahman and Hasan, 2008: 58).[17] These politicised groups seemed to have little interest in pragmatic strategies to address sanitation needs, but they challenged the strategies that the Project was interested in exploring. This work is elaborated below.

Increasingly local associations are creating new kinds of political opportunities which challenge political inequalities as well as addressing unequal access to essential goods and services. As described by Abers (1998), federations of grassroots organisations in Porto Alegre were central to the development of participatory budgeting methodologies in Brazil. More recently, federations of landless citizens and shack dwellers through their international network, Shack/Slum Dwellers International (SDI), have established innovative upgrading and land development projects in towns and cities in more than 15 countries, negotiating state support for their own development activities and illustrating the positive contribution of low-income citizens (Mitlin, 2008). SDI has prioritised the improvement of shelter in part because its organising methodology seeks to work with women, as one of the lowest-income and most disadvantaged groups.[18] In Orangi (Karachi), where the Orangi Pilot Project (OPP) has nurtured an alternative approach to community-led sanitation improvements, there are now many lane organisations that are familiar with self-help sanitation and which have combined together to pressure the state to install secondary and tertiary infrastructure and waste treatment plants (Pervaiz *et al*., 2008). In this city, OPP staff helped to found the Urban Resource Centre, a small NGO that networks community groups across the city and supports them in their work to influence local government and professionals (Hasan 2007). These examples suggest that local organizations are seeking ways to address political exclusion.

Although there is a strong consciousness in many grassroots organisations in the South in relation to the need to access basic services including sanitation, perceptions of needs and interests continue to differ. These examples alert us to differential influence within local organizations, as well as unequal relations between low-income residents and the state. Perrault (2006) discusses resistance to water privatisation in Cochabamba, Bolivia, highlighting the fact that the struggle to keep prices low addressed the needs of those connected to the piped water network but did little to address the needs of those unable to connect due to a lack of public investment. Those who are not connected to the networks have much more of an interest in private sector involvement particularly if it comes with requirements to extend the networks and secure more customers. However, such situations are necessarily complex as finance depends on price agreements and in some cases access to capital. Hailu *et al* (2009: 1) offers a national perspective and assesses what has happened to piped water coverage since privatisation in Bolivia; it concludes that "when privatisation contracts stipulate clear targets, concessionaires do attempt to reach them. But there is a limit to how far private providers can increase spending on infrastructure and expand services from the profits made through cost recovery. Ultimately, expanding access to the poor requires public efforts." Such examples demonstrate the very real difficulties that grassroots organizations face in ensuring political outcomes that address their needs both within neo-liberal regimes and among those contesting such regimes. McGranahan and Budds (2003: 32-34) discuss the responses of the private sector to affordability constraints in the case of water and demonstrate the very considerable contradictions that exist as companies seek to meet expansion requirements but face communities with a very low capacity to pay.

[17] The OPP is a well-known NGO working on sanitation issues in Pakistan. Its contribution is elaborated later in the paper.

[18] SDI is a transnational network of homeless and landless people's federations. The federations are established at the national level and bring together women's-led savings schemes. See www.sdinet.org.

Before leaving this discussion, we should note that Chaplin (1999) argues that the absolute political inequalities and associated exclusions among low-income groups may be less significant if they can be countered by an ability to create coalitions between the low-income and middle income households. In nineteenth century England, pressure from the urban poor combined with middle-class health concerns to enable the required reforms and associated capital investments in sanitation. In today's India, she argues, the situation is very different as more accurate knowledge about hygiene and sanitation together with technological advances offer the middle class some health protection, while for low-income households, the low proportion of workers in the formal sector combines with a fragmented labour force in the informal sector (and associated employment insecurity and high labour mobility) to prevent them from coalescing into a political force. More recently, Agarwala (2006) argues that the informal sector in India is now becoming more organised and is targeting the kinds of basic services that they have been denied access to for so long. She argues that their perspective is that "...if the state will not ensure a wage that will allow poor workers to meet the costs of their social reproduction, then the state must directly ensure that such reproduction is possible" (ibid: 440). Such perspectives alert us both to the way in which class alliances can both form and dissipate, and to the fact that perceived interests change, in part due to state capacity but also due to the changing knowledge, understanding and capabilities within disadvantaged groups themselves.

As suggested by the deficits reported by WHO-UNICEF (2010), there remains inadequate state action. Despite the examples offered above, in many cities there is little civil society action. Perhaps in part due to the lack of public voice, Manda (2009) notes that in Malawi, there is little emphasis on sanitation funding, even in respect of donor support, and the government has prioritised the water supply. He notes that according to WaterAid (2005), the 2005/06 national budget allocated only three per cent (MK0.9 billion) to water and sanitation. Of this budget, "Nearly 97.5 per cent of the budget of MK0.9 billion was allocated for water, while 2.5 per cent or MK22.5 million was for sanitation (WaterAid, 2005: 7-8)." This is equivalent to US $145,161. Perhaps because of this neglect, between 1990 and 2008, there was no increase in the access to improved sanitation in urban areas of Malawi (which remained at about 50 per cent of the urban population) (WHO-UNICEF, 2010: 45).

SECTION III: Sanitation needs and interventions

3.1 Needs: their scale and breadth

This section illustrates the scale and nature of such inequalities as understood through a number of distinct themes found within the academic and international agency literature that are relevant to the focus of this Pathfinder. These themes have been developed through a partial review of the literature together with discussions with collaborating agencies. As seen below, the literature examined focussed both on sanitation and on the needs of particular groups (in order to assess the ways and extent to which sanitation is featured). The sub-sections look in turn at major areas of discussion and intensive "pockets" that have been the subject of recent discussions (subsection 3.2), and substantive interventions that seem to be emerging (sub-section 3.3). A final theme considers the literature on sanitation and political ecology which draws attention to the political dimensions involved in addressing needs at scale. This section does not claim to be conclusive and should be read as a tentative review that will benefit from being augmented over the course of SHARE's work. This Section discusses the following areas:

- Hygiene needs
- Sanitation statistics
- Gender
- Menstrual hygiene
- Generational issues
- Schools
- People with special needs
- Financing and sanitation markets
- Ecosan and technological options
- Public toilets
- CLTS
- OPP

Through elaborating the scale and nature of inequalities, this Section will assist in our understanding as to why inequities and inequalities in sanitation and hygiene have not been addressed.

In addition to gender and generational needs, and those related to particularly difficult circumstances such as disability or ill-health, it is also evident that group beliefs and customs play an important part in determining local needs and hence have to be taken into account when ensuring equity in access. Some religions do not permit the handling of human faeces meaning that forms of eco-sanitation may not be suitable. Such beliefs are not fixed and over time they may change, opening up new possibilities and potentially closing down others. However, this does not mean that they can be ignored. In a rare overview of the scale of inequity and inequality, a recent report by WaterAid Malawi (2008) highlights some reasons identified in a study of communities in Embangweni, Dwangwa, Salima, Machinga, and Mgona and Kauma (Lilongwe), all areas in which their country partners had been working. The conclusions of the report identified a number of reasons for exclusion and discrimination, which are listed in Box 3.

Box 3: Reasons for exclusion and discrimination in the provision of sanitation

- Social and cultural factors: class and social status; congestion and crowding; gender; poor sanitation design; perceptions of respect and a lack of sufficient toilets to enable the separate provision related to age and gender groups; religion
- Economic factors: financial contributions and low incomes; lack of credit
- Political factors: sense of entitlement and failure of the state to provide: political involvement in service provision
- Geographic factors: water table: sandy soils
- Other factors: lack of community trust restricting collective financing: uncertainty: poor dissemination of information: poor programme and technology design

Source: WaterAid Malawi (2008)

WaterAid Malawi (2008: 28-32) elaborates on the lack of provision and suggests the following factors may be important. The perspectives are summarised here as they offer insight into collective perspectives and experiences relevant to sanitation provision:

- Women believe the digging and construction of toilets to be a man's job and would not attempt it themselves. This belief has resulted in women-headed households lacking any form of toilet... pregnant women are resorting to open defecation because they are not allowed to use toilets in some areas (e.g. Embangweni).
- The bad smell and houseflies coming from toilets near homes are upsetting for many people. The study found that due to a lack of adequate knowledge about Ecosan toilets, self-exclusion has occurred in some areas (eg in Embangweni, Mzimba). People prefer to defecate in the bush because they believe that this is the only way to rid themselves of the smell and housefly problems.
- Muslims, who form over one-third of the population of Salima, do not like hu-manure (eco-san) technologies due to their perceived lack of cleanliness.
- Some people are just not interested in using hu-manure and exclude themselves from projects because they prefer to use deep toilets which last longer and don't need emptying.
- With regards to Ecosan toilets, a wide variability exists in all project areas in terms of costs and fees paid to masons by individuals who would like a latrine slab. Fees range from a contribution to the mason's food (K70.00) and a commercial value of K1200.00 per slab in some rural areas, to as high as K2,500.00 – K6,000.00 for a slab in low-income areas. Lack of money, in both rural and low income areas, leads to exclusion (people not having Ecosan toilets).
- In the low incomes areas of Lilongwe, which are highly characterised by unplanned settlements, ... there is often poor infrastructure and people don't have access to the most basic services. Most people live in rented houses which lack basic facilities and... they have no control over decisions to participate in sanitation programmes.
- Sandy soils create problems because toilet pits dug out of them are unstable and risk collapsing. The alternative in such areas is the adoption of Sky-loo toilets (raised some feet above the pit and reached by steps). However, these are expensive (not less than K20,000) and as most of the rural communities live below the poverty line, they can't be afforded on top of the cost of living.
- Having always used the bush as a toilet, many people have become habituated to it – particularly the elderly. For this reason, some people don't want to own a toilet in their house and exclude themselves from the projects.
- Most sanitation technologies are user-friendly, but the Sky-loos and some hand washing basins are inaccessible to certain groups, such as disabled people and children, because they are too high to reach.

3.2 Dimensions of inequality and inequity

A key question in understanding dimensions of inequality and inequity is the paucity of data about the scale and depth of inadequacies in provision. At the aggregate level, there has been a discussion about progress towards the Millennium Development Goals and a sub-theme about the adequacy (or not) of the associated statistics (see above). There is now more information available about some aspects of inequality, but a comprehensive picture is still not available. Accompanying agencies' reflections on the slow progress of MDG sanitation goals has been an academic literature on the same theme, i.e. progress towards the MDGs (Sahn and Stifel, 2003). However, at least in Sahn and Stifel's discussion there is no particular focus on the sanitation MDG as the seventh goal is omitted by the authors, and toilets are only mentioned once. This paper is also notable for claiming that there is very

little urban poverty in sub-Saharan Africa and in part this is because of the authors' lack of understanding of the (very large) inaccuracies in the official statistics on water and sanitation that they use.

Spatially, the lack of information about informal settlement dwellers is widely acknowledged, and information about sanitation in informal settlements is no exception. In the past, many authorities did not recognise these settlements and considered that they did not have to collect information about them. Practices of data collection now vary considerably and it is this that helps to account for the discrepancy in recorded figures. For example, it has been estimated that more than 100,000 households, or 500,000 people, in Cape Town do not have access to basic sanitation.[19] According to a research report by Water Dialogues South Africa, about 37 per cent (or 47,650) of the 128,000 city households living in informal settlements have no access to any sanitation system. A further 80,500 have been supplied with the "bucket system" by the local authority; this includes the black bucket and Porta-Pottis toilets. The report notes that the servicing of these toilets falls "far short" of required standards. This provision appears not to comply with JMP specifications for "improved sanitation". Karen Goldberg, who prepared the report, said the number of households with no sanitation at all was not reported in any of the city's official reports. She suggests that there has been a lack of attention to these areas with about 14.4 per cent of Cape Town's households living in informal settlements but only 2.6 per cent of water and sanitation department staff assigned to informal areas.

Satterthwaite (2003) argues more generally that inadequate statistics are a major problem when assessing issues of urban poverty and his analysis includes a focus on sanitation. For example, in reference to Nairobi (Kenya), where more than half the population live in informal settlements, Satterthwaite argues (ibid, 184-5) "Only a small proportion of households in these informal settlements have their own toilets, and it is common for 200 people to share each pit latrine. How can 96 per cent of the population be considered to have adequate sanitation?" (as official statistics at that time suggested that 96 per cent of Kenya's urban population had improved sanitation). Satterthwaite explains that many of these statistics emerge because those asking the question do not consider whether or not the sanitation is really adequate. In many cases, the lack of formal tenure in informal settlements means that residents are not entitled to the services that others secure. As elaborated by Evans (2007: 8), lack of meaningful information is a severe problem; she highlights that living close to a sewer and even having a toilet connected to it does not necessarily mean that the toilet works every day of the year, particularly where water supplies are erratic, or that the sewer takes the wastewater somewhere appropriate. What is needed to assess true access is of course much more detailed and nuanced analysis based on local information, which is difficult and expensive.

To assist with our understanding and for this Pathfinder paper, SPARC -an Indian NGO working closely with grassroots organisations to address urban poverty - has drawn together existing figures from its settlement database to demonstrate the scale of sanitation needs. These details cover 33 cities in four Indian states and have been compiled by drawing on 3,024 settlement profiles (out of a total of 3,596 urban poor settlements in the cities). These settlements include both notified and non-notified "slums". The 4,528,924 people living in the profiled settlements are served by 287,474 individual toilets and 1,509 toilet blocks (with 11,816 seats). This results in an average of 15.1 people per seat, although this aggregated figure is self-evidently too crude as it assumes a perfect distribution of seats. Taking account of both toilet and households locations means that each individual toilet serves 3.6

[19] South Africa: Half a million have no loos, Urban Health Updates, http://urbanhealthupdates.wordpress.com/2010/03/04/south-africa-half-a-million-have-no-loos/ , accessed 8 August 2010.

people and each communal toilet seat serves 31 people. This data shows that 3,111,012 people (69 per cent of the total population) do not have access to either individual or communal facilities. Despite such local realities, the WHO-UNICEF (2010) report that 54 per cent of India's urban population have access to "improved sanitation" with a further 21 per cent having access to shared facilities, leaving only 25 per cent of the urban population with access to unimproved or no facilities. This contrast substantiates the argument that Satterthwaite (2003) is making.

A second group that is often ignored in reports on the availability of sanitation are tenants. As described above, rental arrangements are commonplace for large sections of the low-income population in most cities of the Global South. Access to sanitation for tenants in informal settlements may be dependent on the relation with the landlord (who is frequently present on site) and the conditions that they stipulate to access available provision. There is a wide range of situations depending on whether or not the tenants are renting rooms in formal areas (which may have sewerage provision) or informal areas in which case there may only be pit latrines. As described within a focus group discussion during a recent visit to (Harare) Zimbabwe, when running water is not available, many landlords in formal areas lock the flush toilet to prevent use. All but one of a group of six were denied access to the flush toilet for many hours of each day as the landlord locked the door to the toilet when the water was not running in the pipes.[20] Earlier discussions between the author and back-yard tenants in South Africa found that many tenants have restricted access to the toilet ie. only once or twice a day. These tenants have constructed shacks in the backyards of formal dwellings and sanitation provision is limited to a flush toilet inside the landlord's house.

The lowest-income tenants may avoid accommodation with toilets because of the additional costs. Undie, John-Langba and Kimani (2006, 55) illustrate the problems during focus groups in Korogocho and Viwandani (informal settlements in Nairobi):

> Respondent 3: There are houses with a bathroom and toilets, which go for around 1000 shillings, but those without go for around 600 or 700 shillings. So, when you are paid that small salary, you know that the rent has to be paid.

Data are not only lacking in the case of informal settlements. Although there is a strong focus on descriptive statistics, this is rarely broken down into a comprehensive analysis of vulnerable and non-vulnerable groups. As noted above in the case of WHO-UNICEF (2010) and Satterthwaite (2003), there are considerable shortcomings and a differentiated analysis is not available. In terms of social distinctions, data is typically collected at the household level. Hence there is no consideration of whether or not access is adequate for particular groups of people. WaterAid Malawi's (2008) study of exclusion from sanitation and hygiene in Malawi found that:

> Respect is very important in rural communities and the study found that it can ultimately lead to the exclusion of certain people. It was explained that elders feel ashamed and uncomfortable to be seen coming back from the toilet and, likewise, married women would dread an encounter with any of their in-laws on the way to the toilet. For this reason, both parties choose to defecate in the bush to avoid any disrespect issues.

Such findings suggest that there needs to be far greater sensitivity to the needs of different kinds of household members and more disaggregated information collected. This is elaborated below in the sub-sections that discuss particular needs.

[20] Focus group discussion with members of the eco-san building team of the Zimbabwe Homeless People's Federation, Saturday 14th August 2010.

In addition to information about spatial areas and particular social groups, a further set of information needs are those related to government support for sanitation improvements. A different data inadequacy is that pointed out by Taylor (2008: 5) in a report on equity by WaterAid on behalf of TAWASANET a network of agencies in Tanzania. Taylor argues that it is not possible to track government expenditure on sanitation due to the responsibilities being spread between a number of different ministries and agencies. "The Ministry of Health and Social Welfare (MoHSW) is responsible for policy development, the Ministry of Water and Irrigation (MoWI) for investments in sewerage, Local Government Authorities for sanitation and hygiene promotion, and the Ministry of Education (MoE) for policy and finance for school sanitation"; … in addition "many budg*et al*locations to sanitation are hidden within larger budget lines – for example, where investments in water supply and sewerage for a particular town are combined" (ibid, 5). As a result, it is not possible to identify and compare budg*et al*locations to sanitation and hence it is difficult for civil society organisations to ensure that commitments are increased and that these commitments are realised.

Notwithstanding these problems in the availability of data, the following sub-sections consider some specific inequalities and inequities.

In each of the discussions below, the dangers of simple generalisation should be recognised. Those studying income have long recognised that while a women-headed household may be associated with a greater incidence of poverty in some contexts, this is not necessarily the case. Likewise the hygiene and sanitation problems that women face in some contexts may not be replicated in others.

Water and Gender: There is a considerable literature on water and gender although very little of this reaches into substantive discussions about sanitation; see, for example, the collection of papers in a special issue of *Gender and Development* (2010). More generally, discussions about water emphasise women's primary responsibility for caring for the household, and their major role in addressing deficiencies in access to water. There is little discussion about how women, in this caring (reproductive) role, manage without sanitation facilities, or about how responses are managed either at the community or individual level. A recent volume on gender and poverty provides an opportunity to see what issues appear to be relevant to the themes of hygiene and sanitation (Chant 2010). In a total of 698 pages, the index records no mentions of hygiene and identifies 11 pages that discuss aspects of sanitation. The discussion on sanitation is not substantive in all 11 cases with sanitation simply being mentioned as one of a longer list of basic services and/or as an example of inadequate service and/or infrastructure provision. Health is mentioned within the index, there is one five-page chapter on health care with two further chapters on aspects of health rights. Maternal mortality is discussed within a further chapter.

Some of the conclusions in the general literature on gender and water also hold in the case of sanitation. There are multiple sources of discrimination experienced by women that include intra-household discrimination (for example, less access to essential goods and services), discrimination in the labour market where low-pay and fewer enterprise opportunities reduce their capacity to purchase essential goods and services, the particular disadvantage sometimes faced by women-headed households (lack of access to land tenure, for example), and gendered responsibilities for reproductive services placing additional burdens on women.

Recognising the centrality of women to reproductive services, Songsore and McGranahan (1998) discuss the gender dimensions of local environmental management in Accra, Ghana. Women, they elaborate, "typically work together to manage the environment of the house compound, and are considered primarily responsible for maintaining the spaces between the compounds. They are usually responsible for the children, who move from place to place. In addition, even in-house environmental management depends heavily on public

infrastructure, such as water pipes and connections" (ibid: 396). Their contribution is helpful in elaborating both the needs and the obligations that women face. Specifically in the case of sanitation in Accra, this includes taking care of the shared toilet within a compound house with the space shared by other tenant or extended family households.[21] While women clean the toilets, the removal of excreta is a male job either in the form of hired labour or from the household. Despite this, the authors conclude that "As a result of the crowding of these [communal or shared] sanitary facilities, open defecation is often practised by neighbourhood children" (ibid: 403); these are the areas that low-income women have to keep clean, often at considerable health risk. Songsore and McGranahan (1998: 409) argue that the attribution of such environmental hazards including sanitation to "private problems" may be perceived as a gender bias, as the consequences fall disproportionately on women.

A further area of discussion is the adequacy of women's inclusion in community participation. Cleaver (2005: 903) in a discussion about participation in village meetings provides evidence of exclusion on the basis of gender when she concludes that "Even non-poor women suffered exclusion within their household and communities; their position worsened by an inability to effectively express themselves, or to influence the discriminatory norms of the public institutions."

The difficulties and dangers of managing without sanitation: A further perspective is offered by women themselves, as they reflect on the relative importance of sanitation assets to their health and well-being. Earlier research with the SDI affiliate in India, a tripartite alliance that includes the National Slum Dwellers Federation, SPARC the support NGO and the women's network *Mahila Milan* provides a useful platform to explore these issues (Bapat and Agarwal 2003). The quotations, from women living in informal and/or insecure settlements, highlight the perspective of the mainly women members of *Mahila* Milan in respect of the inadequate toilet provision. They identify three particular issues: women's concerns about the availability of the services and lack of hygiene which does not enable them to behave in a way that satisfies their self-respect and social reputation; immediate physical safety for themselves and their children; and the social stigma attached to living in a low-income settlement that is without adequate services. The reflections elaborate on both the significance of these assets to these groups, and their ability (or not) to negotiate their priorities through the range of institutions, norms, values, local organisations and external agencies that influence the realisation of such perspectives and priorities.

As noted above, it is typically women who have primary responsibility for taking care of the family in terms of the home and domestic milieu. This includes cleaning the home, preparing the food, washing the utensils, doing the laundry and bathing the children. At the same time, as individuals they also care about the quality of their environment, particularly the proximate surroundings. One immediate set of concerns is that, in the context of low-income Indian urban settlements) there are very limited services for a woman who wants to be respectable (ie. not be seen in public going to the toilet in day time) and that if there are such services, they are not sufficiently clean. Women either have to use dirty public toilets with long queues and pressure on them to take very little time, or they have to go at night, avoiding needing the toilet during the day. There are repeated concerns about the poor quality of the environment in public toilets (that are often not maintained). In some neighbourhoods thereare very limited choices because, for example, there are no public toilets, and/or because the size and density of the settlement is such that there are no safe "night-time" options.

[21] The codified rules included that "no defecation is allowed on the ground by children except in chamber pots, and no urination is permitted on the walls" (Songsore and McGranahan 1998, 400).

Concerns about physical safety are a repeated theme in Bapat and Agarwal (2003). The lack of toilet provision within a safe environment leads to fears about children and also about sexually-motivated attacks on women and girls. Both appear to be related to distance of the toilets from the home. The same dangers are also represented in an Amnesty International report (2010) entitled *Insecurity and Indignity: Women's experiences in the slums of Nairobi, Kenya* which has a significant focus on the lack of adequate sanitation. The report documents how the lack of facilities is a major risk to women, most of whom have to walk more than 300 metres to a toilet (ibid: 18). The women spoke about how it is risky for them to walk alone in the settlement after 7pm. Cost is a further factor that prevents use. Plan International (2010: 56) reports on similar cases of violence and harassment when public toilets are being used.

What is evident is that lack of sanitation facilities is a cause of poor hygiene and in some cases reinforces negative attitudes from outside the settlement towards local residents. There are repeated references by interviewees to their dependency on external factors that are beyond their control and are the responsibility of either the municipality and/or involve other residents within the settlement.

Menstrual hygiene: The particular needs that women have during menstruation are the focus of another sub-set of literature. This includes but goes beyond issues related to sanitation. In recent years a number of publications have drawn attention to the scale of neglect of this topic with explicit concerns that much hygiene education to date simply ignores this subject. Mahon and Fernandez (2010: 100) provide a useful overview of the issue and summarise the needs for adequate menstrual hygiene:

> This requires access to appropriate water, sanitation and hygiene services, including clean water for washing cloths used to absorb menstrual blood and having a place to dry them, having somewhere private to change cloths or disposable sanitary pads, facilities to dispose of used cloths and pads, and access to information to understand the menstrual cycle and how to manage menstruation hygienically. As well as addressing practical needs like this, it is also necessary to promote better awareness among women and men to overcome the embarrassment, cultural practices and taboos around menstruation that impact negatively on women's and girls' lives, and reinforce gender inequities and exclusion.

Mahon and Fernandez (2010: 100-101) quote Bharadwaj and Patkar (2004) to provide evidence that many water, sanitation and hygiene interventions ignore this issue. This may have been and may continue to be the case, however, a number of the reports cited here make reference to the problems associated with menstrual hygiene (Amnesty International, 2010; UNICEF/IRC, 2005). While many of the difficulties are not related to sanitation, both cultural beliefs and fear of staining the toilet are two reasons that deter women from using toilets at this time. Women at school and other public places require access to toilets that offer privacy as well as somewhere to dispose of sanitary cloths (UNICEF/IRC 2005). Mahon and Fernandez (2010) describe the work of WaterAid in India, an agency that has sought to put in place a programme that addresses this issue.

Generational issues: The particular needs of the old and the young have been recognised although there does not appear to be a well-developed specialist literature. In the case of the old, this is related to the physical implications of aging. Older people may require more frequent access to toilets and hence need a greater intensity of provision.

In the case of the young, there are also particular physical needs. Young children, for example, need smaller toilets and may be frightened to use conventional toilets (Bartlett and Satterthwaite, 2010). Children are likely to be mobile within the settlement, and inadequate sanitation greatly increases the likelihood that they will come across faeces. As argued by

Bartlett (2010: 37), young children may be “both more susceptible to sanitation-related disease and harder to protect from exposure; their illness is more likely to result in death or to have long term effects”. Bartlett (2010: 38) also points out that the WHO-UNICEF standards for improved sanitation do not appear to have taken the particular needs of children into account. An additional area of concern is that children’s faeces may be regarded as less dangerous than those of adults and hence there may be less social compulsion to provide access to services.

There is now an understanding that repeated bouts of diarrhoea may have lasting implications for the long-term health and well-being of children. More generally, sanitation-related diseases fall heavily on children, rather than on adults. Thus, from a health-equity perspective, better sanitation and hygiene may make more difference to age differentials than gender differentials in health. However, since women are the predominant carers, particularly for children, there is a considerable labour burden that falls on women when children are sick.

Schools: There appears to be a widespread recognition of the need to have toilets in schools and to ensure that there is adequate provision for both girls and boys. There are clearly needs for sanitation when so many are confined for a long period in a relatively small space. There are particular concerns that inadequate provision will deter girls from attending school. A high-level roundtable in 2005 sought to draw attention to the problems and documented a range of project and national initiatives across the Global South and transition countries (UNICEF/IRC). TAWASANET (2009) is one of many reports that exemplify the problem. In Tanzania there is a target of 22.5 school pupils per drop hole with current rates of 59.3 and 75.8 in rural and urban areas respectively. “The greater pressure on space in urban areas is likely to be part of the reason for this difference. The same factor also makes it more important for urban schools to have an adequate number of latrines – greater population density increases the risk of disease transmission. A second likely contributory factor is the greater average size of urban schools” (ibid: 5). While the TAWASANET report places the equity issues in the context of urban and rural differentials, clearly an important aspect is equity between generations and children requiring adequate facilities during their school day.

People with special needs: A further group that has special needs that have been identified (at least to some extent) in the literature are those with disabilities, either mental or physical, as well as those that have poor health. During the last decade, there has been significantly more awareness and hence related work about the need for specifically designed interventions to ensure that groups with special needs are adequately included in development interventions. As suggested by Jones and Reed (2004: 6), one reason for the relatively low profile of this area of work related to hygiene and sanitation is that “voice” may not be expressed: “Disabled people do not raise demand for accessible facilities because they are unaware that the possibility exists.” This problem is exacerbated in social contexts in which these individuals are kept within the household as their lack of visibility makes it difficult for professionals external to the community to understand the scale and nature of the problem.

A recent review article from the Leonard Cheshire Disability and Inclusive Development Centre at University College (University of London) (Bailey and Groce, 2010: 2) considers “what is currently known about access to water and sanitation for persons with disabilities in low and middle income countries from the perspective of both international development and global health”. The paper also identifies current gaps in research, practice and policy related to the water and sanitation needs of this group. Their paper draws on the earlier research by WEDC and highlights the problems associated with inadequate access including those of low social status. Once more, data problems are recognised (ibid: 16). The review (ibid: 20) ends by emphasising that:

> What is needed at this point is to develop a body of evidence that can be used to lobby at both small and large scale development levels to consider persons with disabilities when planning the adaptation of existing or construction of new buildings/water and sanitation projects, both in households and in the community.

In this respect, the authors are relatively modest, pushing simply for greater consideration within ongoing development interventions.

The recognition of the importance of mental health within development is relatively recent. BasicNeeds, a UK charity focusing on this sector, was established 10 years ago. Its review document published in 2006 provides several life histories which mention the need for improved sanitation. Five years ago, DFID began financing a major research programme (the Mental Health and Poverty Project) in the area with a focus on four countries (Ghana, South Africa, Uganda and Zambia). Bird *et al* (2010) summarises the findings and reports that mental health remains a low priority in all four countries, despite the high prevalence of mental ill health. Services, resources and staffing for mental health are inadequate and often centred on large institutions in or near the capital cities. Furthermore, many countries have outdated laws, and mental health policy development has been slow and implementation has been variable. Jane Gilbert (2005) provided a review of the work of UK NGOs in this area suggesting that recognition of the issue was beginning to grow, however there is little discussion of hygiene and sanitation in the review itself.[22]

A further group with particular needs are people living with HIV/AIDS as they have a greater requirement for clean water, are more susceptible to diarrhoea, and may be prevented from using shared latrines or water points as people believe this causes transmission. A study by AMREF and WaterAid in Tanzania interviewed 42 people in both rural and urban areas (Nkongo and Chonya 2009). A quarter of the 21 urban households have flush toilets and the remainder have pit latrines; across both types, 43 per cent considered provision to be “poor”. While there were some suggestions that sharing can be difficult, in practice this had not preventing people living with HIV/AIDs from using latrines (ibid,13).

Finally it should be recognised that lack of hygiene as a result of inadequate sanitation may lead to specific health problems that are a cause of disability; for example, the link between facial hygiene and trachoma.

3.3 Sanitation interventions, inequity and inequality

Following from this elaboration of the particular needs of groups within the population, the next section explores the equity dimensions of a range of interventions.

Technical options including eco-sanitation: One area of the literature is concerned with the technical options available in particular areas. For example, von Munch and Mayumbelo (2007) compare different options for low-cost sanitation in Zambia.

An awareness of the potential for eco-sanitation is also a significant area that has been discussed, albeit with a relatively narrow focus on technology. This literature is concerned with sanitation options in areas without access to piped sewerage but in general there is little consideration of equity issues. However, the emphasis on cost suggests that equity issues are implicit in the approach of at least some of the authors. In terms of its suitability in urban settings, Manda (2009: 6), referring to Malawi, says:

[22] The review was part-financed by the London School of Hygiene and Tropical Medicine.

> The conventional view of the flush toilet always being the ideal solution to faecal disposal has been challenged in recent years as unsuitable for households in poor communities and where water is scarce. There is now considerable support for some types of dry-composting or 'ecological' toilets, such as the arborloo, often called 'eco-san' toilets. Whereas some proponents are cautious because such eco-san toilets require a certain level of knowledge for effective use, and because some need enough space guaranteed only in rural areas, others argue vehemently in favour.

Manda (2009) refers to the increased interest in the urine-diversion dry toilet (UDDT, or "skyloo"). While requiring adequate awareness on its use and on hygiene, the UDDT can be constructed in high-water-table locations and in urban settings where pit latrines are unsuitable and where there is no sewer line; hence it provides an option for those previously without adequate access. Both WaterAid and the SDI affiliate in Malawi have been supporting the construction of such sanitation provision although as noted above there may be cost implications with the lowest-income households unable to afford such investments.

Participation and basic services: There is recognition that inclusion in service provision is more likely if there is a more inclusive decision-making process related to sanitation investments. Hence, a further area of discussion in the literature is that related to the development of more participatory forms of decision-making. The hypothesis is that a more broadly based decision-making structure that directly engages low-income citizens, and/or with a higher proportion of women, results in higher investment in basic services.

There are two levels at which this is considered in the literature, at the project level and in terms of local government. At the project level, Peal *et al* (2010) introduce a number of tools to enhance participation after an introduction which explains the importance of such "software".[23] While many of the tools are designed to be inclusive and sensitive to issues of equity including gender, there is relatively little discussion in this paper about the success or otherwise of such initiatives. One part of this literature illustrates the benefits of including specific groups in planning and design; for example, how toilet designs improve if women and disabled people are involved in the interventions (Patkar and Gosling, 2011: 7). Another set of literature is represented by Cleaver (2005: 897) who describes the inability of systems of collective action to equally incorporate some of the lowest-income household; in her examples, the problems faced by those who are old and young as well as those who have less physical capacity are demonstrated.

Nance and Ortolano (2007) study a number of approaches to participatory approaches to sanitation in Recife and argue that the particular ways in which local residents are involved are significant in understanding whether or not the intended benefits are achieved. Their conclusions are summarised thus: "we find that not all forms of participation are equally influential in delivering successful condominial sewer service. In particular, for agency-organized participation based on phases of the project cycle, we find that only two forms of participation—mobilization and decision making—are positively associated with project outcomes" (ibid: 297). (Involvement in construction and maintenance appears to be less significant). Their research emphasises the potential importance of processes that address political exclusion, as well as direct involvement in the details of the project.

Considering the second level and participation in government decision-making, TAWASANET (2009: 12) reports on the increasing participation of women in key decision-making bodies in the water sector but does not attempt to link this improved representation to political outcomes. Elson and Sharp (2010) discuss gender responsive budgeting, i.e. a particular kind of participatory budgeting process that is intended to favour women. The

[23] This volume introduces two distinct groups of hygiene and sanitation software activities: those which primarily focus on hygiene promotion and those which primarily focus on sanitation promotion.

authors argue that “in some countries GRB initiatives have improved the delivery and funding of services” (ibid: 524), although they go on to recognise that there are limitations in what has been secured. Cabannes (2004) reviews the experience with participatory budgeting in 25 municipalities in Latin America and Europe. While the nature and extent of these initiatives varied considerably (as might be expected) there were some commonalities. In terms of the focus of this Pathfinder paper, there are a few notable findings:

- Participation rates varied from two to seven per cent of the relevant population (ibid: 36)
- Participatory budgets are focused on spatial areas; some cities have introduced committees to improve the representation of disadvantaged groups while offers have affirmative action and include a quota system for such groups to ensure that they are represented at the neighbourhood-level.
- There is little research that measures changed investment priorities. The data that is reported shows that greater investment takes place in low-income areas but does not exemplify changes in priorities

An associated literature is that related to co-production, i.e. programmes that are jointly realised by both government and local communities. The contribution of this literature is elaborated in Mitlin (2008). Coproduction was first written about by scholars of US inner-city areas when research showed that citizen-involvement in service delivery improved the quality of provision. Whitaker (1980) argues that, in the case of services in which behavioural change is sought, participant involvement is likely to be critical to effective service delivery; for example, in the case of crime, it should be more widely recognised that police manage the streets through a set of negotiated interactions rather than the authoritative imposition of order. To achieve street security, personal and collective changes are required, with some dependence on the participation of local residents. In such examples, participation is embedded within joint programme decision-making and implementation.

Despite the Northern-origin of the literature on co-production and arguments for its functionality within government in the North, many of those writing about co-production in the context of development view it to be a secondary strategy for service delivery, to be used prior to the state gaining in political will and bureaucratic capacity (Leftwich, 2005; Joshi and Moore, 2004). Ostrom (1996) looks at its contribution to condominial sewerage systems to address sanitation needs in the northeast of Brazil, and to education in Nigeria. She describes a system through which low-income settlements are linked to city sewerage systems as conventional engineering standards are reduced and local residents are involved in local planning decisions, providing some finance and voluntary labour. Ostrom concludes: “[M]any of these systems have been successful and have dramatically increased the availability of lower-cost, essential urban services to the poorest neighbourhoods in Brazilian cities” (ibid: 1075). In a context in which the labour of low-income residents is underutilized, she suggests that the opportunity costs of citizen labour are low, and hence the economics of co-production will favour high inputs from citizens. Joshi and Moore (2004: 38) summarise two very different examples concluding that in both cases, the organisations “…help to fulfil a core state function in response to a clear decline in state capacity”, and that they offer lessons for “…other contexts where conventional public provision is under stress.”

There are multiple aspects to coproduction which may involve project and/or programme and/or policy design, planning, management, implementation and delivery, and monitoring and evaluation. The example of the Orangi Pilot Project (see below) elaborates this and illustrates one extensive coproduction programme in the Global South.

Financing sanitation including micro-finance, subsidies and sanitation marketing: There have been several strands to the discussion on the challenge of financing sanitation improvements that are relevant to an understanding of equity and inequality.

A emerging theme within microfinance over the last ten years has been the financing of shelter; in part this has taken place because of enterprise loans being diverted into this area with the related realisation by microfinance institutions that this is a profitable area of lending (Daphnis and Ferguson, 2004; Consultative Group to Assist the Poor (CGAP), 2004). Relatively little of this lending has involved basic services, although improvements sometimes include upgrading bathroom and toilet facilities. The most substantive shortcomings of this approach both for sanitation improvements and more generally for settlement upgrading are the lack of engagement with the state (meaning that there is no regulatory reform and support for a more enabling regulatory environment) and the individualistic nature of lending with only household-level improvements. This makes the improved provision of services to a community difficult and limits its relevance, particularly in informal settlements and for tenants. As noted by Malhotra (2003), as with other kinds of micro-finance there is a tendency to favour those who are slightly better off in the low-income settlements. Mehta (2008) reviews the relevance of these approaches for sanitation; and it is notable that most of the examples studied (see page 25) are in rural areas where the regulatory and collective dimensions are less pressing. As she elaborates, there are very few examples of microfinance being used in integrated urban upgrading programmes for sanitation (and water) (ibid, 33). As Mehta argues (ibid: 40):

> Use of microfinance with public funds is critical: Issues around low income ("slum") settlements tend to receive considerable political attention, and promises of subsidies are common, even if they are not sustainable for large scaling up. Any approach to microfinance will thus need to forge effective mechanisms for combining the use of public funding and subsidies.

There are two ways in which this financing approach has been extended. First, some NGOs have supported group lending for infrastructure improvements; see, for example, the work of Practical Action in small scale hydro-electrical provision in Peru. SDI affiliates have also supported both communal toilet blocks and individual sanitation upgrading through group lending. Secondly, some neighbourhood upgrading programmes have involved the subsidised provision of basic services (by the state) with shelter microfinance then providing additional finance for those households wishing to upgrade their private homes (see Stein 2008 for a discussion and examples from central America).

In addition to the literature discussing the viability and operation of small-scale lending to enable household and neighbourhood improvements, there is a longstanding literature which critiques subsidy designs to address the needs of the lowest-income households. Much of this literature focuses on water, rather than sanitation, in part because water subsidies are more prevalent that sanitation subsidies. However, there has been a consideration of both badly designed subsidy regimes and the relative advantages of subsidising capital and/or recurrent costs. A recent synthesis publication is Evans, van der Voorden and Peal (2010) which offers an introduction to the key debates and a selected literature guide. In terms of equity, there is an evident relevance. The authors suggest that it may be useful to take as a starting point the principle that the most efficient use of public funds is to maximise public benefits (those that are shared by everyone). The corollary of this is that public funds should not be used to finance essentially private elements (such as soap, individual latrines, etc) for which people are willing and able to pay when private or market-based funds are available.

The central challenge for subsidy design is how to ensure that support is effective in reaching the desired goals. There is a rationale for subsidies due to the externalities that are a consequence of inadequate sanitation (i.e. that the health benefits are only achieved when

most people are using safe sanitation, and there are high social and personal costs associated with unhealthy environments) and/or a rationale related to an equity preference (i.e. that no-one should be denied access to safe sanitation because they cannot afford it). However, subsidy designs have often been flawed and have resulted in key target groups being missed and/or desired outcomes not being attained (ibid: 13-14). As WaterAid Zambia (2009: 3) highlights, donors are divided about the significance of subsidies; one argument is that non-subsidy financed inventions "are …likely to lead to sustainable growth of safe sanitation without further external support, and more money can be used to create demand." However as the authors recognise, this assumption is dependent on sufficient incomes and in reality there are significant problems of affordability and "the effect is limited if demand creation is incomplete or slow."

Evans and Trémolet (2009) recognise these limitations when they augment their discussion of microfinance with two further strategies that assist in sanitation financing, the development of low-cost designs and technologies, and targeted subsidies. In terms of the assessment of public finance, they suggest five criteria: targeting, effectiveness, leverage, sustainability and scale. Groups such as SDI, which has placed a priority on inclusion, divide the "scale" criterion into both absolute numbers (scale of coverage) and the quality of provision. Improvements may require both subsidies and some form of collective (and lower-cost) provision.

A further more recent and complementary set of literature related to financing is that focussing on household sanitation investments regardless of the particular modalities of finance – this broadly goes under the title of "sanitation marketing". A recent USAID (2010, 1) publication elaborates thus:

> Sanitation marketing is an approach to increase sustainable access to improved household sanitation at scale and close the huge sanitation access gap in developing countries. It does so by developing the sanitation marketplace to better serve the needs of low-income households. Public funds are used, not to provide latrines directly, but to strengthen the supply and demand sides of the sanitation market.

"Sustainable" in this context relates to viable long-term financing strategies and the concentration on the marketplace suggests that, as with microfinance, the primary focus is on those with some investment capacity. The assumption is that market transactions can be maintained (sustained) while subsidy programmes are unreliable. Little cognisance is taken of the recent evidence (i.e. the 2009/10 financial crisis) that this underlying assumption is not borne out by history and that the state is as reliable as the market. Both may work badly and fail from time to time, but both come back and demonstrate a fundamental longevity and resilience. Moreover, the emphasis on the market does little for those unable to exhibit market "demand" due to their low incomes and lack of assets (USAID 2010: 8).

Despite the strong emphasis on need for behaviour change, and the growth of a literature on sanitation marketing, there is very little information on how much people invest/spend and the contextual constraints and opportunities behind these choices. Sanitation demand literature addresses a part of this story but the focus appears to be on the delivery of, and potential demand for, sanitation services rather than the way in which people address their sanitation needs (with or without such services). Jenkins and Scott (2007) offer an insightful and detailed analysis of survey data from Ghana that has resonance to the argument about public infrastructure, hygiene and social stratification above. In trying to understand reasons for sanitation investments, they argue that:

> Reasons to change sanitation have been shown to vary considerably across households as a function of lifestyles, local environment, and socio-cultural aspects of excreta handling and defecation practices, but typically have little to do with

> preventing fecal-oral diseases … In Ghana, cleanliness and neatness are particularly salient motivations for a wide range of hygiene behaviours. Neatness is culturally tied to notions of moral and social purity(ibid: 2438).

However, whatever the motivation, sanitation investments are constrained by a lack of space, lack of immediate funds and being a tenant (ie. lack of control). The authors conclude that "Tenancy in tenant-only houses is likely to create a housing situation where marketing is ineffective in achieving sanitation improvements without legal action to encourage landlords to add sanitation facilities to their properties" (ibid: 2439). However, this proposed solution ignores both the frequent contravention of regulations in low-income settlements, and the problems of affordability and the fear among tenants that improved sanitation provision will lead to higher rents and displacement.[24] Limited space and the associated concerns about the safety of pit latrines are serious constraints. Moreover, with the development of multi-storey housing there are some obvious limitations on what kinds of toilets and human waste disposal facilities can be offered to those not living on the ground floor. While communities have a long history of managing re-blocking and reorganisation, there is little they can do if high water tables and the risks associated with the proximity of water sources make such developments unsuitable.

As also noted by the authors, credit opportunities may help those with cash flow difficulties but will not be of assistance to those with an absolute lack of income. High costs have also stalled some of those who have started building. While problems such as building complexity may be addressed through better information, and costs can be reduced by new designs and technologies, it is not clear that scale can be achieved due to the lack of suitability of individual investments in high-density settlements and the significant levels of poverty.

Clearly, a complicating factor is that the choices that are known may be very limited. It took OPP (see below) two years to convince residents to try their model because communities were so used to the prevailing clientelist politics and believed that the state should provide improved sanitation. Local residents were very sceptical about a model in which they had to organise and fund the improvements and considerable persuasion was required before the model was tried and then adopted. Once proven, it has been taken up on a very significant scale. This demonstrates that choices are not separate from the observed options and the experiences associated with the options. Residents may not be impressed with the choices available, but this does not mean that they will be willing to invest in new options; they must be convinced that these are likely to work.

While much emphasis is placed on capital costs associated with construction, also relevant is the cost of maintenance. For example, Manda (2009) reports that in Malawi, a study of urban sanitation in nine peri-urban settlements in three cities found that most pit latrines cost less than MK10,000 (US$65) to construct, but emptying them was expensive, incurring similar costs to construction As a result, he reports that "it is common for pit latrines to be abandoned and another pit dug. In older houses, several pit holes can be seen in the backyards" (ibid: viii). Obviously this is only suitable in the larger plots.

As noted earlier in this sub-section, a critical aspect of achieving greater equity is cost reduction. Even well-designed subsidies need to be financed and with a limited capacity for state expenditure, it is important that subsidies can be targeted to the populations in greatest need. In this context, cost reductions have a critical contribution to make to ensuring inclusive hygiene and sanitation strategies. The following two sub-sections discuss communal toilets and the contribution of the Orangi Pilot Project.

[24] Discussions during a visit to a Practical Action project in Kitale (Kenya), June 2006. In this case, community-managed sanitation blocks provided a better solution than individual home-owners and landlords receiving loans to invest in household facilities that might have resulted in higher rents. .

Public and community toilets: The efforts to provide sanitation in high density low-income areas have resulted in a number of initiatives that provide communal and/or public toilets. Mara (2009: 3) concludes that for urban high-density areas: "If communities are very poor and cannot afford either simplified or low-cost combined sewerage, then the only option (given that in these areas on-site sanitation is more expensive than these two sewerage options) is community-owned and managed sanitation blocks." The motivation for communal blocks is generally to achieve a low-cost option where land is limited.

A recent WaterAid report authored by Biran and Jenkins (2010) discusses the use of communal toilets in Bhopal with a study that looks at three providers. Burra, Patel and Kerr (2003: 11-32) examine the efforts of SPARC, Mahila Milan and the National Slum Dwellers Federation to design multiple community sanitation blocks in Mumbai. This is a programme that has been taken up and replicated with World Bank funding and government support. While communal toilet blocks (or other forms of shared provision) are still seen as a secondary option for some, in high-density low-income urban settlements there may be few feasible alternatives for the lowest-income households.

There are examples of agency-based grey literature with relatively few academic discussions. Much of it is also project-focused.

OPP and its work: A well-developed low cost sanitation intervention has emerged from the work of the Orangi Pilot Project (Pervaiz, Rahman and Hasan 2008). The reason for such interest in this one initiative is primarily related to scale. The OPP model has been replicated by over 100,000 households with the low-costs enabling speedy take-up. The model was designed to function in informal urban areas that had been provided with partial services under clientelist political systems; these conditions are replicated across the Global South. The OPP model supports the establishment of micro-organisations (at the lane level) which invest in lane sanitation with pipes that connect to a sewerage system. Their original design has evolved to incorporate grassroots pressure on the state to install the public networks and waste treatment plants, and highly focussed advocacy efforts at multiple levels to challenge government to end bad practice and work in more effective ways that include the installation of a workable city network (ibid, 45-50).

OPP argues that its approach is component-, rather than cost-sharing. The technical assistance is subsidised for the lane level organisations but households meet the rest of the cost of installing sanitation themselves (about $30 per household for the communal element of lane sanitation systems plus the cost of a toilet and connection). Households pay the costs of the toilet and lane sanitation; the government pays for the secondary and tertiary drains, i.e. the main sewerage network beyond the lane (or street) in which the household is living, and the treatment plants. Perviaz, Rahman and Hasan elaborate the reasons for their financing model thus (ibid: 23):

> OPP-RTI's experience from Orangi and other replication projects shows that when subsidy is used, it most often opens up the possibility of the project collapsing. It creates dependence, which spirals into point where the community expects others to take responsibility for paying for the services, and when started in one community, this quickly spreads to other areas. It ends up with a whole population just waiting to be helped and simply not doing anything themselves.
>
> But perhaps as importantly, community self-funding is the principal instrument that brings down the cost of projects. Subsidies tend to increase costs and give rise to wastage. When the community pays for a project on a purely self-help basis, providing or paying for the labour and supervising the work, costs are immediately cut. This is because designs are simplified, methods of construction become

> extremely cost-efficient and profiteering and kickbacks, as well as professional fees for contractors, engineers and supervisors, are eliminated. The process is self-reinforcing: without the drastic reduction in costs, it would be impossible to persuade low-income families to undertake the responsibilities of self-financing. Finally,with the principle of component- rather than cost-sharing, the NGO or government can spend scarce resources over a wider area.

It should be noted that communities have learned from experience that they have to monitor any state investment to ensure that the quality is adequate. OPP itself is involved in the design issues. Communities have had to build up considerable expertise in political pressure to ensure that the required investment is forthcoming. In this context, the topographical reality of Orangi and the fact that the natural nalas (streams) could function as open drains was important to maintain the momentum of the programme in the early years.

In terms of equity, it should be noted that the areas in which this model functions do not have significant levels of rental accommodation. Gender issues are not elaborated in this documentation. However, in discussion OPP staff stress the importance of women's pressure within households to ensure that there is support for sanitation investments. Within the lanes, widows and those with particularly low incomes may not be expected to pay their share of the lane sanitation costs and would be allowed to connect when they are able to raise the capital for a toilet.

Community-Led Total Sanitation A further model of interest to any discussion of equity is that of Community-Led Total Sanitation with its emphasis on total sanitation i.e. complete inclusion. This model has been developed in rural areas and is based on individual household investments without subsidies. One recent overview of three WaterAid supported programmes in Bangladesh, Nepal and Nigeria highlights a number of points relevant to an understanding of the equity implications of this model (Evans *et al*, 2009). As noted in the discussion above, for perhaps understandable reasons given the scale of poverty, the objective of complete inclusion is limited by lack of finance. In summary, the overview authors suggest that progress is varied. Inclusion is good in Bangladesh and more limited in Nepal. The Nigeria programme was about three years old and the authors were hesitant to draw conclusions. In the case of Bangladesh, not all households have a toilet but some share and only a small amount of open defecation was said to be taking place. In Nepal, there was said to be open defecation (although not in public areas) in settlements. In Nigeria, open defecation continues to be practiced in all but one of the study communities (ibid: 15).

The researchers concluded that in Bangladesh there was no evidence of the systemic exclusion of any group; while lack of income and assets was reported to limit investments, sharing was reported to be acceptable. In Nepal, low-income residents were more likely to be without latrines or sharing a toilet. In Nigeria, the main disadvantaged groups were households headed by women or the old, and households with people with disabilities (ibid: 18). It was also suggested that the reduction in open defecation was less in the case of Fulani households who are semi-nomadic.

In an urban context, there are far fewer CLTS examples for several reasons including need for additional investment in safe sanitation, high levels of rental accommodation, and a lack of room for toilet facilities within the dwelling space. One attempt has been in Mauritania and a report of the intervention[25] summarises some of the critical aspects of the urban context when describing the challenges faced by those running the programme:

[25] Community-Led Total Sanitation, Mauritania, http://www.communityledtotalsanitation.org/country/mauritania , accessed 5 August 2011

> A 32,000 large town (Rosso) and one adjacent rural village were chosen as starting points. This was a mistake. Today, after one year of work, 8 of the town's 11 neighborhoods, representing 60 per cent of the population are ODF but not the whole town. It became clear that urban CLTS only works in neighborhoods that have social cohesion and are fairly free of other problems.

The three Satara neighborhoods who never became ODF (open defection free) were places where the population had fairly recently established itself after escaping from droughts or floods, and came from different cultural backgrounds and geographic locations. They were very low-income people and had no ownership of their land. Moreover, the water table is found only 40 cms beneath the surface and during the rainy season every year flood waters reach up to 80cm above ground. Other problems were identified including: the amount of garbage dumped in the streets, the practice of emptying shallow pits into the streets, the size of the transient population (in part because the settlement is a port of entry for migrants from Senegal), street children, abandoned houses easily used for defecation, schools with filled latrine pits, and insufficient public toilets.

Sanitation-related workers: One component within this literature has a strong focus on supporting the enterprises that deliver sanitation services. This has parallels with the recent interest in informal water providers. The focus is on groups of workers that have been relatively neglected in the literature on informal workers despite their vulnerability and low social status. In 2009, WaterAid India published a report on the practice of manual scavenging in India, explaining some of the difficulties of improving conditions in a sector where employees do not officially exist (WaterAid India, 2009: 5). Manual scavengers of human waste are dalits, the lowest caste in the Hindu social order, and many of them are women (ibid: 6). The report suggests that in 2006 there were 676,000 such workers with the government claiming that 427,870 of these had been "rehabilitated". This labour is very poorly paid and the health risks are high:

> Common health ailments reported are parasitic infections, gastrointestinal disorders, skin ailments, diminished vision and hearing due to the toxic fumes inhaled during cleaning of septic tanks and manholes. Respiratory diseases like breathlessness and consistent cough were also experienced by some. Communicable diseases such as dysentery, typhoid, malaria and mainly Tuberculosis (TB) were found to be prevalent among scavengers. The cases of TB are rarely revealed, primarily because of the attached social stigma. Heavy menstruation, miscarriage, severe anemia, irregularity in heart beat are some of the health problems which women face (ibid, 9).

While the government has pledged to eradicate this practice of manual scavenging, the deadline has been extended four times. There remain significant numbers of toilets that require the removal of waste. Moreover, considerable social stigma against the scavengers may mean that it is difficult for them to find alternative employment.

Valfrey-Visser and Schaub-Jones (2008) provide an overview of sanitation entrepreneurs in a report for Building Partnerships in Water and Sanitation; they discuss the labour force working in sanitation including latrine construction, those emptying pit-latrines and the management of dumping sites. They highlight the problems facing some of the most marginal operators (those emptying by hand) and their discussion resonates with the discussion immediately above: "This is, of course, a very dirty business, and a niche occupied mostly by marginalized or traditionally outcast persons" (ibid: 10). They do not elaborate on what might be done to address their low social status. USAID (2010) elaborates a sanitation marketing strategy that includes both support for the private sector and the promotion of consumer interest in their services. The report argues that the strategy is complementary to CLTS as it "seeks to expand supply and market low-cost, high-quality latrine products and services to low-income households, ones that they want and will pay for,

so as to increase household investment in a durable improved household facility" (ibid: 15), and hence some projects coordinate implementation of the two strategies.

3.4 Understanding structural inequalities in the provision of sanitation

As suggested above, some literatures have a strong focus on behaviour change (keeping the house clean, handwashing, sanitation investments) with the implicit assumption that improvements can be achieved at the local (household) level and with relatively little consideration about structural reasons that may prevent sanitation needs being met. Other sets of literature discuss how project interventions can be improved to ensure that specific groups are not excluded. In the former case, it is assumed that people can achieve substantive change through their own actions. In the second case, the focus is on the specificities of a single intervention. In direct contrast to both these perspectives is a small but growing literature that is broadly within the tradition of political ecology and which presents a city-level analysis as to why some kinds of investments rather than others may be financed and why a considerable scale of need remains. Political ecology combines the approach of political economy, with its emphasis on understanding political outcomes through economic interests and related class affiliations, with an awareness of the constraints and opportunities associated with the natural environment and its social representations.

This literature is exemplified by McFarlane (2008) who examines the multiple meanings of sanitation in colonial Mumbai, exploring the ways in which officials drew on, but did not fully replicate, the understandings and subsequent policy initiatives found in nineteenth-century Britain. He argues that such infrastructure investment is important in the context of both urban politics and justice, demonstrating how the discourse of equity and equality is something of a "taken for granted" objective within this literature (ibid: 416). Drawing on Swyngedouw's 2004 volume on water in Guayaquil, Ecuador, he uses the political ecology approach because it "permits a fuller understanding of the processes that shape urbanization as a set of unequal social relations involving the continuous production of new socio-natures" (ibid: 417). McFarlane (2008: 424) analyses the perspectives of modernity and morality, suggesting that the nineteenth-century British rulers of Mumbai believed that improved sanitary behaviour would not result from greater public investment and rising public consciousness, but rather would have to be "policed" with sanitary measures enforced. Whatever the conceptualisations that were being used, he argues that the outcomes benefited the elites and reinforced inequalities in the city (ibid: 426); turning to the present day, he suggests that current attempts to improve and "cleanse" (original quotation marks) the city favours the wealthy with little attention being given to informal settlements and low-income groups. McFarlane (2008) argues that elite interests and discourses have led to sanitation being addressed through toilet blocks in part managed by NGOs and community groups rather than on sewer connections for households and drainage, despite concerns for the long-term management and sustainability of these activities. Alongside these limited measures is, he notes, a continuing restructuring of the city with demolitions of low-income settlements and the exclusion of low-income groups. In this analysis, sanitation inequalities are indicative of social and political inequalities.

Gandy (2006) provides a further example of the conceptual approach with broadly similar conclusions. He analyses the infrastructure challenges facing Lagos "within a wider geopolitical arena of economic instability, petro-capitalist development and regional internecine strife" (ibid: 371). Gandy concludes that the solutions to inadequate infrastructure investment will need to be political. He argues that despite considerable efforts by citizens to address their needs, localised responses cannot deliver the level of coordination and infrastructure investment needed to address the city's development needs. He emphasises the essential nature of a government intervention that is able to address the need for institutional reform and secure the inclusion of low-income urban citizens. Gandy

goes beyond a somewhat detached analysis to argue positively in favour of the capacity of infrastructure investment to create a new kind of politics with sanitation provision-building collectives able to challenge anti-poor politics:

> The potential role of infrastructural networks in forging social collectivities through the 'binding of space' holds implications for many cities facing similar problems of poverty, social fragmentation and governmental failure. It is only through the identification of commonalities which transcend emerging patterns of social, ethnic and religious polarisation that Lagos can begin the complex task of reconstruction and the development of new and more legitimate modes of public administration (ibid, 390).

3.5 The gaps in the literature

How to secure inclusion: There is very little on how to secure inclusion as a basic principle. Much of the literature focuses either on general statements about the need for such city wide programmes, or discusses how to avoid the exclusion of specific groups. The collection of papers produced by WaterAid appears to be the most serious attempt to document comprehensively the multiple sources of exclusion and to prompt thinking in the agency about how to address this. A recent co-authored publication by WaterAid and the Water Supply and Sanitation Collaborative Council (Patkar and Gosling, 2011) helps to draw together some of the work of WaterAid for groups in need, provides a useful bibliography of agency reports of relevance and provides some general recommendations. The authors suggest that there are attitudinal, environmental and institutional barriers that need to be overcome if inclusion of those with the lowest income and/or who are otherwise marginalised is to be achieved. While there is a more comprehensive analysis of equity issues, the document does not take the next step and discuss the scaling up of sanitation investments. It is self-evident that the needs of particular groups will not be meet until there is an effective strategy for comprehensive provision.

Although the needs of particular groups have been considered (see above), others have not (for example, caste) in part because there have been few studies that have taken an overall perspective, identifying all the groups in need of sanitation improvements and thinking about a strategy to address needs holistically. What is lacking is a systemic approach to inclusion with the identification of needy groups and the development of appropriate strategies that are sensitive to the circumstances of each group. For example, the KfW Water Symposium in 2009, despite being entitled *Financing sanitation: improving hygiene awareness and sanitation* and providing detailed discussions of many relevant aspects, does not mention tenants (or types of rental accommodation) once.

The literature from the tradition of political ecology emphasises the need for city wide interventions but there is little within this literature to explain how such goals might be achieved. There is a need for an elaboration of alternative strategies together with a discussion about their relative effectiveness.

The contribution of Nilsson (2006), who explores the historic development of both water and sanitation in Kampala, is important because the analysis demonstrates both the paucity of models that exist for securing city-wide sanitation and the significance of past investments due to the scale of capital required. In Kampala, the colonial government installed a limited sewerage network in part due to the earlier provision of a piped water system. However relevant it was at the time, economic and demographic changes have resulted in a public network that mainly serves the not-so-poor. The author concludes that the problems of sanitation go well beyond the inappropriateness of this initial investment, but he also argues that history is important, and the models and capital investments influence the present.

Two papers reviewing the health impacts of a city-wide sanitation programme in Salvador (Brazil) demonstrate the potential significance of inclusion and scale. The authors argue that a programme seeking to raise the proportion of the population with sewer connections from 26 per cent to 80 per cent has been associated with a 21 per cent fall in the incidence of diarrhoea in children under three (Barreto *et al*., 2007). A further finding has been a reduction in the association between poverty and poor sanitation (Genser *et al.,* 2008: 837-8).

Hence what is required are analyses that are historically robust so as to offer an understanding about why inequalities developed, comprehensive in identifying the needs of all of those that lack access to adequate sanitation, and focussed in assessing how provision can be expanded to address the scale of all needs.

Labour market issues: There appears to be little written on the particular needs of sanitation workers, particularly those who are dealing with waste material. This is a sub-sector of the informal, and sometimes formal, labour market that is associated with low-status and difficult working conditions. McFarlane (2008: 423) suggests that in nineteenth century Mumbai, elite Indians used caste-related employment as one argument to influence sanitation policies seeking to prevent improvements and maintain such work. As noted above, manual scavenging of human waste continues in India to this day. More generally, there is a continuing need for active waste management in the case of sanitation options, such as pit latrines and septic tanks. While this may not be a priority issue for SHARE, it may be useful to begin a discussion with groups working on employment issues.

How upgrading has addressed sanitation: There have been significant initiatives for upgrading in some cities in low- and middle-income nations. There is frequently a large and rapidly growing proportion of the population living in squatter settlements, illegal sub-divisions and overcrowded districts where centrally-located legal housing has been sub-divided so a house or apartment that previously housed one household now houses several. The World Bank began to fund 'slum' upgrading programmes in the early 1970s, along with site and service schemes. The projects they funded were not the first upgrading programmes – and the World Bank has only funded a small proportion of all upgrading programmes since then. But the support of the world's largest development assistance agency helped to legitimate the approach within governments. Such upgrading has become widely supported and it routinely includes improvements to sanitation.

However, there is very little literature that elaborates the particular ways in which sanitation improvements at scale have been achieved within these programmes. This includes details of the solutions that have been agreed, the costs of the sanitation component, the multiple advantages of integrated improvements in infrastructure, and the sharing of responsibilities between neighbourhood and individual components. It also includes an emphasis on maintenance rather than the initial investment. There is also relatively little on how, particularly in Latin America, at least some politicians were persuaded to support upgrading.

SECTION IV : Conclusion

Inequality analysis highlights systemic patterns of discrimination in the provision of services including those related to sanitation and good hygiene. As noted above, such discrimination may be spatial (informal settlements, overcrowded central city, street homeless, peri-urban areas, pockets and/or tenants in higher income areas), it may be social (women, ethnic groups that have reduced access, those with health problems and/or people with disabilities), and/or it may be economic (and in part a consequence of the increased commodification of basic services without equal growth in real incomes). The exclusion from services may be related to a lack of political voice and capacity for influence, as discussed in the subsection immediately above.

An awareness of equity issues highlights the need to consider the different needs of individuals, households and groups when assessing the equality or inequality of services provided. In terms of sanitation and hygiene, there are significant distinctions in terms of needs that relate to: spatial factors (density, housing type, geological conditions), physical requirements (age, health, sex), and group beliefs (gender, religion).

An awareness of health risks sensitises the researcher to the need to be aware of the additional difficulties faced by urban households in densely-populated environments, such as greater risk of contamination of the home and wider residential environment with faecal matter. These factors may also be relevant in rural areas if, for example, landless labourers live in high densities in confined areas.

There are three groups to this literature, each of which contributes to, but fails to, address adequately the challenges posed by equitable and equal access to sanitation. The conclusions below make some comments about the balance of attention within the literatures. It is likely that there are exceptions to these general conclusions; the reader is forewarned.

The first group of literature heightens our awareness to the specific needs of particular groups within a general population, and elaborates specific strategies for more inclusive approaches to sanitation. The needs of women, the old, the young, people with disabilities, those living with HIV and chronic illness, and those with mental health difficulties: these are groups that have been considered by academics and professionals documenting the work of particular agencies and/or reporting on detailed and specific research studies. A central focus of this literature is to ensure better inclusion in existing hygiene and sanitation interventions. In terms of these interventions, there are two significant and overlapping populations: those with low-incomes and hence a lack of affordability, and those with adequate incomes but living in higher-density under-served areas without adequate access to the infrastructure required for adequate hygiene and safe sanitation services within their specific locality.

In this group of literature, there is relatively little emphasis on the need for vastly scaled up interventions. Perhaps this is taken for granted or perhaps it is considered to be another area of work. While sensitising the readers to the need for modified interventions, the literature does not deal with what might be considered to be a core problem – the simple fact that there are too few interventions and many households lack the possibility of securing adequate sanitation and adequate opportunities to maintain hygiene. The neglected households inevitably include large numbers of those who have particular needs; but there seems to be more emphasis on how particular groups can be included in inadequate existing initiatives rather than on the need to scale up all work in this area. Despite this shortcoming, it is undoubtedly helpful to have a developing literature that sensitises both the academic and professional communities to the challenges of securing inclusion. However, to address

the scale of the challenges facing specific groups with particular needs will require a much greater number of sanitation investments and improved sanitation availability for all.

The second group of literature addresses particularly the need for investments in under-served areas. With an emphasis on improving sanitation markets, it considers both demonstrated and potential market demand, along with measures to realise demand through improvements to credit markets. The focus is particularly on urban areas (perhaps because of greater levels of commodification) although the principles are relevant to both urban and rural settlements. The literature provides evidence of the considerable and demonstrable willingness of households to make improvements, and a primary focus is thinking through how these resources might be more effective in addressing sanitation needs if improved market and state systems were in place to support the better use of funds.

A weakness of the discussion in this literature is the inability to respond to situations of considerable need but insufficient demand due to low incomes, i.e. there is an assumption that more efficient markets can address needs irrespective of the considerable lack of affordability. A further gap is that there is insufficient attention given to two very significant urban realities. First, high levels of rental accommodation mean that the decision to invest in toilets is not available to the residents themselves. (At the same time, the discussions should recognise that lack of affordability means that it is common for a substantial proportion of tenants to rent accommodation without toilets or with toilets shared with many other tenants due to the need to live as cheaply as possible.) Second, high densities mean that the individualised approach to toilet provision is likely to be inappropriate in at least some cases with the risk that the waste from pit latrines will contaminate drinking sources. Toilet provision for each household is also more complicated in multi-storey buildings. Flush toilets served with septic tanks are generally an expensive option that is not affordable to many low-income households. The alternative is a need to develop new models and technologies that reduce the costs of sanitation. While this is mentioned in this literature, little cognisance is given to the time required to develop such models and negotiate their acceptance in the complex political realities of cities in the Global South (as exemplified by the experiences of the Orangi Pilot Project and discussed above).

A core challenge is to develop market options within a more comprehensive financing framework that does not exclude those unable to pay and which recognises that:

- Individual responses are not appropriate in dense areas (depending on other topographic conditions)
- Tenants may be neither responsible for sanitation investments in their rental accommodation, nor able to afford tenancies with access to services
- New low-cost models (including technologies) need to be developed and spread and that this is often a complex process
- Legislation may not be relevant in low-income informal settlements and standard regulation-led attempts to improve provision are frequently counter-productive.

More fundamentally, a starting basis for this research has been that progress is made through a policy-making process in which academic researchers provide scientific evidence which persuades decision-makers to take up the optimum course they should follow. An alternative perspective is that the policy-makers are more influenced by political realities and class interests. Such realities include the importance of elites in decision-making and the scale of entrenched interests (Swyngedouw's 2004 analysis of water management in Guayaquil, Ecuador). It is the attempt to change these realities that is elaborated in Appadurai's 2001 study of the political processes and strategies of SDI's Indian affiliate as it struggles to realise more pro-poor politics.

Reflecting this alternative perspective, there is a third group of literature that focuses on the political domain with associated discourses and power struggles. This literature has a much more direct concern with equality and issues of justice, and the debates place access to hygiene and sanitation within such a framework. However, the discussions may be critiqued for failing to move beyond a pessimistic and/or detached analysis. The emphasis on governance points to the state taking on a role to address need but there is little to suggest how and when either officials or politicians might be encouraged to do this. Indeed the emphasis on the political economy of urban development points rather to the anti-poor bias in much decision-making. There is little consideration about the more regular interactions between the state and low-income households or neighbourhood organisations, and how negotiations may lead to sanitation improvements.

This analysis suggests that SHARE can usefully fill a gap between these three groupings with an inclusive approach to scaling up sanitation coverage which is sensitive to particular vulnerabilities, recognises the need for approaches which are affordable and, in high-density areas, safe, and which is sufficiently specific to offer realisable strategies for political engagement to advance the likelihood of investments in sanitation.

Finally, as summarised above in the quote from Gandy (2006), we should recognise that access to sanitation and the goods and services required for hygiene are just two among many aspects of deprivation experienced by those who have low-incomes and/or who are otherwise disadvantaged. In terms of arenas for intervention and action, be they at a national, international or neighbourhood level, sanitation may be particularly powerful. Interventions related to sanitation are, in the urban context at least, necessarily concerned to link informal settlements more substantively into mainstream urban planning and hence development. They require the city to address the need for effective (and hence participatory) interventions at the local level because of the need for local households to make investment that complement state efforts (unlike, for example, road construction). At the same time, sanitation improvements require residents to work both collectively and individually to address their own and their neighbours' needs. Hence sanitation may catalyse further efforts by both citizens and the state to advance the achievement of the MDGs and other development goals.

Moreover if improvements can be achieved, they offer direct contributions to efforts to reduce other kinds of poverty. These interventions draw together a number of relevant professions including those of physical improvement (eg. engineers and planners) together with health specialists and help to improve the coherence of poverty reduction programmes. In many cases, due to the gendered division of labour, sanitation improvements will directly reduce women's workload enabling them to have additional time for other activities. At the household level, the consequential improvements for health, as well as higher social status and political connectedness, address some of the causalities that have helped to maintain adverse social relations and/or trigger a slide from transitory to chronic poverty. Hence while the primary focus of sanitation appears relatively narrow, it is likely that improvements will catalyse substantive reductions in poverty.

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Annex 1: Illustrations of sanitation provision in India

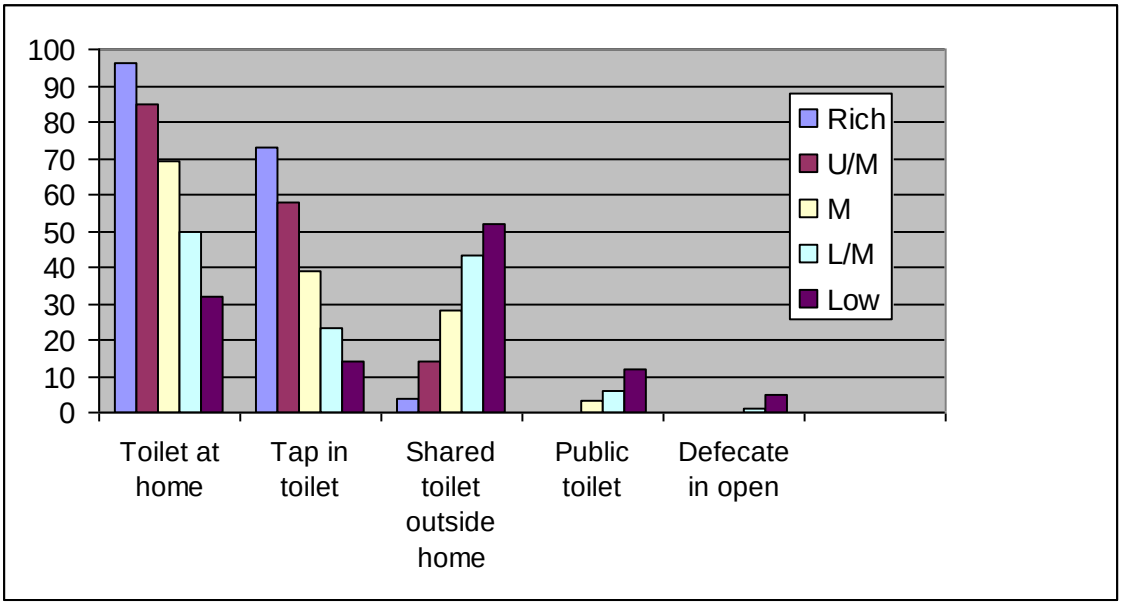

Figure 1: Bangalore: Percentage of different socio-economic categories served by different forms of sanitation

Source: TARU Leading Edge(1998), Bangalore Water Supply and Sewerage Master Plan: A Situation Analysis,, prepared for AUS AID, New Delhi

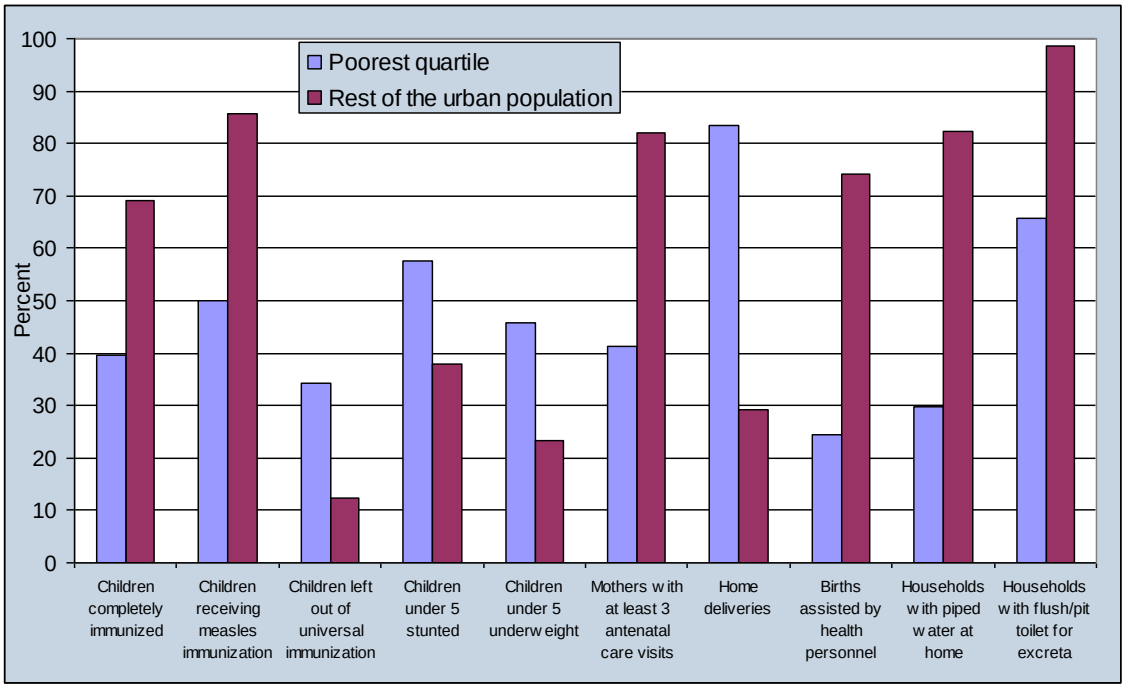

Figure 2: Comparing health, maternal and child health and environmental health conditions for the poorest quartile with the rest of the urban population in Delhi (2005-2006)

Source: Agarwal, Siddharth, Anuj Srivastava, Biplove Choudhary and S. Kaushik (2007), State of Urban Health in Delhi,, Urban Health Resource Centre, New Delhi.