

## **[Editorial introduction]**

### **Glass half empty? Urban water poverty halfway through the Decade of Water for Life.**

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The moral imperative of tackling urban water poverty should not require much elaboration. Access to clean water is a basic right denied to millions of people living in cities across the world. Being outside the formal systems of water provision through centralised pipe networks, the poorest often pay the highest price for water. Water from vendors and bottled water is notoriously expensive compared with piped water. Illegal water connections managed by organised gangs can also come at a high cost to people living in slums. The cost of fuel to boil unsafe water can also be significant, further increasing the economic burden of water provision on those who can least afford it. Urbanities are often characterised as the beneficiaries of increased wealth and opportunities generated in cities but for many urban life can also constitute a trap of poverty and insecurity. Water plays a crucial role in making a difference between these two scenarios.

In 2000 the United Nations (UN) included targets to reduce by half the proportion of people without access to safe water and sanitation in the Millennium Development Goals (MDGs), and in 2005 it launched the Decade of Water for Life. We are now more than halfway through the Decade and only four years away from the 2015 deadline set by the UN MDGs, prompting reflection on progress and obstacles to delivering reliable, safe water to people in cities everywhere. Urban water poverty raises questions not only in relation to how to meet the water needs of urban dwellers but also on how to protect and enforce their right to the city.

This special issue on 'Urban Water Poverty' addresses the challenges of providing universal and sustainable access to clean water in cities. Lack of access to water in cities is rarely a result of an absolute scarcity of water. Most cities have access to sufficient water resources to meet the basic needs of all residents, but in rapidly growing cities infrastructure provision has not kept up with the pace of settlement, leaving the poorest people without reliable and affordable access to safe, clean water. For this reason, it is important to consider urban water poverty as distinct from water scarcity, and to draw attention to the need for political, social, economic and institutional change to improve urban water provision.

#### **A global commitment deficit?**

If we take a glance at progress in combating water poverty since the 1992 Rio Earth Summit, we will find that commendable progress has been made in terms of establishing concrete targets, in placing cities in the scene (prior to this point much debate on water poverty made reference to this phenomenon in rural areas) and also in recognising the role of local authorities in bringing about change. However, little progress has been made in establishing specific targets for water-related services (connection to sewerage, wastewater treatment and storm water drainage) and in ensuring universal access to at least 40 litres of safe water per day and 75 percent with onsite or community sanitation, as agreed in the 1990s.

Compounded with what could be termed as a 'global commitment deficit', we also face deficits in the way we frame our understanding of the problem: What is urban water poverty? Where does it take place? Who is affected? And why is this one of the most persistent problems facing us in the New Millennium?

Given the difficulty of establishing a benchmark based on adequate access to water, the UN MDGs place emphasis on the availability of improved water supply at a reasonable distance. The Global Water Supply and Sanitation Assessment Report 2000 suggests that 'reasonable access' should be broadly defined as 'the availability of at least 20 litres per person / per day from a source within one kilometre of the user's dwelling'. But for most urban dwellers, distance alone does not provide an appropriate standard; population density is a much more critical factor (McGranahan and Satterthwaite, 2006).

Much has been written about the fact that what is measured as 'improved facilities' might not necessarily constitute 'adequate access' (Jowit 2010). The adoption of an inadequate conceptualisation has significant implication in terms of underestimating the real number of people living in urban water poverty. For instance, according to official statistics, over 90 percent of the urban population of Bangladesh had access to improved water supply in 2000. However, studies drawn from individual cities in the country show that the proportion with safe and sufficient provision is much less, about 50 percent in Dhaka (Mamtaz and Akter, 2004; Sarkar and Rahman, 2008).

#### **Water poor cities or citizens?**

An additional issue articulated to the definition of urban water poverty is the question of what and who is affected. Are we talking about cities or people? If we look at urban water poverty from a natural resource perspective – that is in terms of water availability and variability – the focus tends to be on megacities. The World Water Assessment Programme reveals that the majority of these cities lie within regions experiencing mild to severe water stress, and that most of such megacities are in Asia. However, analysis drawn from demographic and health surveys suggests that in many nations of the South water provision is worse in smaller urban centres than in larger cities. And if the definition of adequate provision for water were to be set as a house connection or a yard tap, then more than half of the population in these cities has inadequate provision (Guardiola et al, 2010)

A number of tools developed in recent years are helpful to gain a better grasp of the complex and multiple dimension of water poverty, such as the Water Poverty Index (WPI), developed in 2003 by Caroline Sullivan and her colleagues at the UK Centre for Ecology and Hydrology (Sullivan et al, 2003). The WPI combines measures of water availability and access with measures of people's capacity to access water, therefore taking into account both the physical and socio-economic factors associated with water deprivation. This approach helps to articulate the bigger and the smaller picture by combining indicators across five main components: resources (what is available?), access (what is the extent of coverage?), use (how effectively is water used?), capacity (what is the capacity to manage water?) and environment (what are the environmental impacts?).

The value of the WPI is that it provides a comprehensive picture of the multiple potential causes and consequences of water poverty, easily accessible for policy making and planning. People can be 'water poor' in the sense of not having sufficient water for their basic needs because it is not

available, or because they may have to walk a long way to get it, or even if they have access to water nearby, supplies may be limited for various reasons. Of course, people may also be 'water poor' because they are 'income poor'. Although a move in the right direction, the WPI has only been applied so far to a handful of communities in a handful of countries and its application to urban areas requires further conceptual and methodological refinement.

### **Urban water transitions**

Whilst in most cases urban water poverty is not necessarily connected to water scarcity, it is also true that water over-consumption is increasingly posing a threat to the availability of global water resources. Thus, water deprivation and excess consumption - together with the multiple ways in which water is used for profitable business but with rather questionable developmental benefits - need to be examined and tackled as interconnected realities. This stresses the need to unpack urban water poverty in the context of multiple 'urban water transitions'. In other words, cities face different challenges in relation to water, ranging from severe under consumption to over consumption and expanded water footprints, for instance through the virtual water imported through food produced at long distance rather than locally and regionally. In many cases these challenges coexist within the same city.

In the middle of the 20th century, Kuznets observed that in the course of economic growth income inequalities first increased and then decreased. The term 'environmental Kuznets curve' was coined in the 1980s in response to the finding that (some) environmental problems display a similar pattern, initially increasing with economic growth and then declining. However, water problems do not decline with affluence and economic growth. Furthermore, the local and global effects of urban water transitions are strongly linked through a vicious circle, in which over consumption and expanded water footprints eventually have an impact on water availability and variability, affecting access at the household level and therefore increasing the likelihood of water poverty.

Darrel Jenerette and Larissa Larsen in their 2006 article '*A global perspective on changing sustainable urban water supplies*' set out to identify patterns of renewable water availability and urban consumption throughout the globe between the years 2000 and 2015. To better understand the interactions between urban consumption and regional availability of renewable water they used a modified ecological footprint (EF) approach, examining variations between consumption and availability in the 524 largest world cities. Their findings suggest that climate induced reductions in water availability may be more of a concern than population growth or increased per-capita demand for securing continued supplies of water to large cities.

### **From physical to social networks**

For some time, we have heard that urban water poverty is not a technical or a resource problem but a governance problem. Therefore the emphasis has been placed on reforming public utilities, bringing the private sector into play, introducing water charges and cost-recovery practices. We have also become used to the call for demand-led water management, changing consumer behaviour, reducing inefficient water use and so on. In the last two decades we have been bogged down by the private/public controversy, missing the point of how to effectively reach the water poor (Budds and McGranahan, 2003). The main problem is that both the public and the private sector are showing little capacity and/or willingness to deal with the challenges at hand (Bakker, 2007; Nilsson and Nyanchaga, 2008).

When looking at the specific ways in which the urban poor gain access to water services, it is possible to identify a wide range of practices and arrangements. Some of these are formal, 'policy-driven' mechanisms supported by institutional arrangements of the state. But in addition to these, there is a wide set of arrangements that operate on the basis of solidarity and reciprocity and on informal provision, as in the case of small independent water providers. These mechanisms can be characterised as being 'needs-driven' and correspond to the wide spectrum of practices adopted by the poor, often with little or no support from the state, its policies and resources. The crucial problem is that the bulk of the efforts to improve access to water are made on the policy-driven side of the wheel and remain unsupportive of the actual need-driven practices through which the poor get by (Allen, et al, 2006; Allen, 2010).

### **Water poverty and urban sustainable development**

Contributions in this issue seek answers to the following questions: What do we know about urban water poverty and how to tackle it? What additional conceptual frameworks can shed light into the way in which water material and immaterial flows produce cities and accumulation and deprivation within them? What needs to be done differently if we are to put this knowledge into practice up to and beyond 2015?

The papers are based on a symposium held at University College London in 2010 that aimed to bring together perspectives on urban water poverty from different disciplines. The authors of papers in this issue come from disciplines including earth sciences, engineering, geography and development studies, and the issues they address in their papers cross the boundaries between different disciplinary perspectives. The papers also address case studies in diverse cities including Dhaka, Bogotá, Mexico City, Mumbai, Chennai, Bangalore, Lusaka, Caracas, Cairo and Dar es Salaam.

Focusing on the experience of Bogotá, **Alan Gilbert** examines the governance arrangements that made possible to address not only poor access to water but also to other essential services, turning urban infrastructure and service deficits round in less than three decades. The paper takes us through a detailed exploration of how a combination of municipal autonomy and democratisation together with public and private arrangements contributed to almost full service provision, though problems remain in relation to affordability by the urban poor and in keeping provision in pace with the expansion of Bogotá. As with many other cities, service provision in the Capital District presents a contrasting trajectory with that of districts in the greater Bogotá, which houses an increasing proportion of the urban poor. This case study discusses the governance of water provision in relation to other services, offering a comparative overview of how political and managerial decisions on the public-private equation featured in Bogota in comparison to other Latin American cities, where citizen's satisfaction with total or partial privatisation of essential services features much lower. Current patterns of urban sprawl are however presenting similar challenges to those faced by other cities in the region, particularly if the current Bogota model of autonomous public-private enterprises is to be extended to peri-urban municipalities, inequality in water provision is likely to feature high among the challenges faced in the near future.

The papers by **Jenny Gronwall** and **Pascale Hofmann** both identify the shortcomings of current definitions and indicators applied to measure water deprivation in urban areas. Statistics and targets related to access to 'improved' water source under-represent the diverse strategies of the urban and peri-urban poor in meeting their water needs. For Gronwall this leaves

groundwater as the 'invisible' resource and for Hofmann the peri-urban poor as 'invisible' citizens in urban water policy debates. Both authors emphasise the need to consider access to water of an appropriate quality for different uses in meeting basic needs, rather than simply focussing on 'improved' supplies to meet drinking water needs.

Hofmann's analysis of water poverty in peri-urban areas is developed through a comparative study of five metropolitan areas and leads to the conclusion that efforts to reduce water poverty should build upon grass roots strategies for accessing water and aim for adequate rather than 'improved' supply. Adequate supply for the peri-urban poor often involves water for livelihoods such as livestock keeping or textiles production where quantity rather than quality is important.

Gronwall's paper highlights the lack of attention to groundwater in policy and debate about urban water poverty. She compares the situation in Bangalore and Lusaka, showing the importance of hydrogeology, policy and infrastructure in determining dependence on groundwater. She draws attention to public health research which shows that quantity can be more important than quality in delivering improvements in hygiene, particularly for hand washing (Eisenberg et al, 2007). Again, this implies the need to reconsider definitions of 'improved' and 'safe' water. Setting more realistic targets that reflect access to sufficient water of an appropriate quality to achieve public health improvements provides the basis for more realistic appraisal of the current status of water provision in cities and open up options for water supply that currently exclude groundwater sources such as open wells.

Groundwater in Dhaka is made visible in the paper by **William Burgess et al**, which focuses on the critical issue of water pollution and demonstrates the need for a thorough scientific and technical understanding of urban water issues to underpin policy. Water quality can be a highly contentious issue in urban areas, particularly in attributing sources of pollution and managing water resources to minimise health risks to residents. The case study of the Dupi Tila aquifer in Dhaka shows the value of a good understanding of hydrological processes in guiding policy for urban water provision. Burgess et al show that where cities and governments have limited resources and capacity to enforce environmental regulation it is important that efforts are directed to where they can have the most beneficial impact. In Dhaka, hydrological surveys and modelling indicate that priority should be paid to managing ground water pollution from the River Buriganga, which is a more significant source of pollutants than local industrial sites.

Through the examination of municipal water schemes in a Mumbai squatter settlement, **Reid Cooper** takes us through the material and immaterial flows that regulate access to water by the poorest in the city. In doing so, he unveils the complex and fluid networks of social actors that in effect controlled water access and their embeddedness within wider assemblages that define agency power as a relational process rather a fixed set of attributes. In a self-proclaimed World Class city, where over half the population lives in informal settlements, conventional debates on water supply along the lines of public, private and civil society single or interlinked actions only skim the surface of the much more complex networks operating on the ground. The paper contributes a detailed deconstruction of the agency of such networks, essential to understand how generalised urban water poverty can be curbed or perpetuated under extreme conditions of urban inequality, and where flexible infrastructural systems have emerged vis a vis the making and remaking of space and its ecology through repeated cycles of demolition, relocation and reconstruction entangled with the protection and denial of the right to water. In this context, the author reveals how water networks are not only materially but also socially

constructed through a dense web of political patronage and corruption that alienates in practice both the state apparatus and slum dwellers from any control over the local water networks.

Formalised provision of water to cities has conventionally focussed on building large infrastructure systems and continually expanding them to meet demand. This model is reaching hydrological, environmental and economic limits in many cities, leading to increased attention to demand management (Butler and Memon 2005). **Ilan Adler** analyses the case of Mexico City, highlighting the potential for demand management measures such as retrofitting with water efficient sanitary fittings, as a more sustainable alternative to meeting projected water shortages than expanding supply from rivers far beyond the city catchment. Water demand management is important in 'freeing up' existing water resources that are being wasted to meet the needs of an expanding population, particularly the needs of the urban poor. This highlights the importance of good water governance and policy making, rather than the conventional attention to building large infrastructure projects.

Rainwater harvesting is often presented as a decentralised alternative to large infrastructure projects in water supply. **Pushpa Arabindoo** analyses the promotion of rainwater harvesting as a response to water shortage in Chennai, focussing on project to restore a temple tank in the southern coastal areas of the city. The case study presents the efforts by a local NGO to establish a grass-roots led project to restore the temple tank and surrounding areas, and to promote water conservation. The initiative was unsuccessful in mobilising active participation from middle class residents, drawing attention to entrenched social divisions. More importantly, policy and infrastructure changes that transform water from a public resource to a private commodity contribute to the shaping of the urban middle class as consumers rather than citizens, further disengaging residents from issues that do not directly impact them as individuals of households. The case study also shows the ephemeral nature of crisis-led urban environmental activism as middle class attention shifts from one emergency to another, failing to maintain sufficient attention to achieve long term change. The water crisis of 2003-2004 in Chennai raised the profile of community based approaches to implementing rainwater harvesting, but more recent developments such as the commissioning of a desalination plant demonstrate that the persistence of dominant modes of infrastructure provision.

Last but not least, Timeyin Uwejamomere (WaterAid) and Professor Matthew Gandy (UCL Urban Laboratory) offer a sobering reminder and overview of the key practical and intellectual challenges ahead if we are to address urban water poverty both as an essential and urgent task that requires further action and research.

### **Concluding remarks**

Providing adequate water supply to growing urban populations under changing climatic conditions is one of the greatest challenges of the twenty first century. Defining the scale of the challenge is made difficult by the complexities of urban life and hydrology, with the urban poor demonstrating diverse water needs and strategies for meeting them. Progress towards the MDG of halving the number of people without access to safe drinking water is positive and encouraging. However, renewed commitment from governments, the private sector, NGOs, researchers and the international community is required to ensure that this statistical achievement translates into sustained and sustainable improvement in the lives of the urban poor. Furthermore, this requires a more critical framing of the problematic at hand, away from the multiple biases and myths that populated the water debate.

The discussions throughout this special issue reinforce the notion that urban water poverty is not simply the result of resource scarcity or poorly managed utilities but rather a socially constructed process produced and reproduced through multiple socio-political processes of exclusion and discrimination, spanning from the macro level to the micro-cosmos of the household. Paraphrasing Amartya Sen (1999), it could be argued that urban water poverty is above all a 'deficiency of entitlement'.

Overcoming water poverty requires action based on sound knowledge of the lived experiences and needs of the urban poor, the nature of urban hydrological systems and technologies of water provision, the dynamics of urban power and politics, and international mechanisms for consolidating commitment and directing resources. This conceptualisation "compels us to tackle inequalities in the water sector seriously and work towards distributive justice around water as a productive resource. It allows us to question the water sector's dominant evocation of 'efficiency' and the 'common good' which can compromise on both equity principles and poor people's basic rights." (Mehta, 2006: 25)

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