

A good job – unfinished?

How contamination in the 'last 100 metres' of water provisioning hurts urban poor



The Daily Star and WaterAid in association with BRAC University and Lancaster University organised a roundtable titled "A good job – unfinished? How contamination in the 'last 100 metres' of water provisioning hurts urban poor" on May 28, 2017. Here we publish a summary of the discussions. --Editor

Dr Manoj Roy, Lecturer, Lancaster Environment Centre, Lancaster University, UK
 Since 2013 we have been implementing two projects: EcoPoor and Last 100 Metres, which together form a comparative research project between low income settlements in Dhaka and Dar es Salaam, Tanzania. The first project is supported by the UK Government through the Ecosystem Services for Poverty Alleviation (ESPA) research programme, and deals with the urban poor's access to ecosystem services. The second project is funded by British Academy Sustainable Development Programme and is about safeguarding potable water provisioning to urban informal settlements.

In urban slums of Dhaka, massive improvement in water and sanitation facilities has been happening since 2005. Relatively safe water from municipality arrives at the settlement. But when the water is dispensed, it gets contaminated, and it is this contaminated water that the general public take to their home. The crisis is widespread, endemic and deepening.

We have analysed over 200 samples from five stages of the water pathway in four Dhaka settlements. We found municipal water to be usually good with low to medium level of risk in the water distribution system.

Only when the water comes out of the final dispensing points does much of it get contaminated to a high degree. Further contamination happens between the final dispensing points and people's homes, with 99 percent of water consumed reaching a very high level of risk. These rates are much higher than those shown in the 2015 MICS (Multiple Indicator Cluster Survey) report covering the years 2012-13 in urban areas.

High population density and the seasonality of contamination in the wider water environment might make the situation worse.

In terms of population, slums in Dhaka are at least 20 times more densely populated than in Dar es Salaam. Moreover, the urban poor in Bangladesh will continue to grow at a much faster rate in Dhaka. Our previous research titled ClimUrb, found that well before 2050, Bangladesh will hit a poverty tipping point in which poor people in cities will outnumber the rural poor.

Too many users quickly overwhelm infrastructure capacity. We found that community water points and toilets that are meant to remain functional for at least a decade get damaged, on average, within two years. Community-based organisations (CBOs) thus find it difficult to maintain these points, resulting in their dilapidation.

On the point of seasonality of contamination in the wider water environment, a functioning natural drainage system (e.g. rivers, canals and ponds) is likely to show seasonal variations in the level of sewage-derived contamination, such as phosphate and ammonia.

Contaminant concentration is likely to be higher in the rainy season (especially at the start) than the dry season. This is simply because in the rainy season, water bodies get contaminated from a wider catchment. Also, many people take the rainy season as an opportunity to empty their containers into the surface waters. This is especially the case for those too poor to afford gulper (hand-pump used to empty latrines) or vacutug (mechanical sucking out dense waste sludge for transportation to a larger tanker vehicle) for emptying their toilet containers. In Dhaka, however, we found that phosphate levels are high throughout the year and that seasonal variation is much less pronounced. This suggests that Dhaka's natural drainage system may be approaching a recuperation tipping point.

The occupation of open spaces for housing, industry and other facilities has resulted in the loss of often well-vegetated "natural" buffer zones. Dhaka's dense development has resulted in contamination corridors and networks across the city. Because slums are typically located along these contamination corridors, their exposure to contamination from the wider environment is greatly increased.

Until these corridors are fixed, there is little prospect of reduced drinking water contamination within slums. Dhaka's immense size, with a population that currently exceeds 16 million, requires mega projects.

As a result, potential benefits of improved water supply are severely compromised by faecal contamination at a critical zone around the point of use inside slums - 'the last 100 metres' (L100M).

These findings point to three ways going forward: We need to set the 'L100M' space as our unit of focus. We must firstly ensure that the localised sources of contaminants are properly managed - e.g. mending leaking toilets, achieving full containment and safe removal of faecal wastes and desisting from open defecation; and secondly, ensure the integrity of the community-based water dispensing facilities. We must 'develop' the new generations of community-based WASH (an acronym for Water, Sanitation and Hygiene) engineers to support activities on the ground.

Innovative 'education pathways' are needed to ensure

that invisible faecal contamination is (metaphorically) 'made visible' to ordinary people and those tasked with water provision. This 'visibility' could be scientific; perhaps involving classroom experiments so that school children can help educate parents. But it could also involve appropriate art or cultural practices. We must ask how the solving of sanitation issues can be turned into a point of interest for politicians, the media, local actors, international organisations etc. What is needed is a sanitation strategy that, like the provision of water, is a cause for celebration and pride. This should go up from the local level by bringing in politicians as well.

We need more experiments to improve models and find ways to implement proven strategies in the most cost effective ways. Better results can be expected in lower risk/greater opportunity contexts. Therefore, we must build on what is already in place. This means working with slums and their organisations that are already 'mobilised'. By working together, we can develop ways to harness agencies in co-production in order to fix problems by adjusting existing infrastructure and practices. And we can learn how to successfully expand and scale up - without repeating earlier mistakes.

We are at an important point in our continued journey of developing what could be termed a 'WASH Vaccine'. This is no quick fix injection, but a concerted and sustainable set of actions to prevent faecal contamination within slum communities that could ultimately save millions of lives. By regarding this as a kind of vaccine, we are suggesting that proven actions must be repeated and revitalised - just as with other vaccines.

Dr M Feroze Ahmed, VC, Stamford University
 During the time of the MDGs, 10 percent of the total population did not have access to water supply facilities. However, we have to ensure quality of the water to fulfil the SDGs. We thus have to remember that 68 percent people still do not have access to safe water. This is a big challenge.

I do not think there is much scope of finding a permanent solution to the water supply issue in slum areas, because slums themselves are temporary settlements. We need to ensure participation of the slum dwellers in improving the living conditions in slums.

If we can improve the distribution system of WASA, we can ensure reliability of water supply in the urban areas. We also need to stop illegal connections. Dhaka WASA has only one sewerage treatment plant. According to the master plan, we need four more plants. As a short term solution, we can use various purification solutions at the consumption level.

Dr M Habibur Rahman, Chairman, Dhaka WASA Board, Dhaka Water Supply & Sewerage Authority
 We are following safe practices, such as maintaining at least a 30ft distance between faecal source and tube wells, and putting adequate barriers to stop the transmission of faecal materials. We have a master plan for improving the drainage system in Dhaka city. But there is a gap in coordination between different authorities such as Rajuk and city corporations. We need to reduce this gap to reduce faecal contamination of supply water.

Low income communities pay higher price for water supply. We are planning to introduce a vending machine to provide them with safe water at affordable prices. Finally, we need to combine water supply, sanitation and hygiene practices to ensure safe water for all.

Dr Dibalok Singha, Executive Director, Dushtha Shasthya Kendra (DSK)
 Earlier we provided slum dwellers with Sodium hypochlorite solution to purify supply water. It worked well. Unfortunately, this solution is not available now as the producing company stopped its production. I think we can provide this kind of purifiers as an instant solution to the water contamination problem.

The government spends very little on water and sanitation facilities for slum areas. These facilities are not even covered by the social security projects of the government. Without increasing the allocation, it is really difficult to ensure supply of safe drinking water to slum dwellers.

Alok Majumder, Country Director, Bangladesh Wash Alliance
 The contamination of water in the last 100 metres of water supply provision is closely linked with lack of awareness about hygienic practices. In Bangladesh, there are several hygiene related policies such as Hygiene

Promotion Strategy, Water Safety Plan, Sanitation Strategy and Institutional Regulatory Framework for Faecal Sludge Management. It is an imperative to implement these policies properly to stop contamination of supply water. There is also an action plan prepared by the government to achieve the safe water related SDG. It can be a starting point for us.

Prof. Shahid Akhter Hossain, former Pro-Vice Chancellor, University of Dhaka
 Slums are not permanent settlements. The government provides water and sanitation facilities there on ad-hoc basis. Thus there is always risk of contamination. Now we should think about establishing housing facilities for the slum dwellers. A large number of slum dwellers work in various industries, particularly the garments industry. If the industry owners make some arrangement of housing for their workers with the help of the government, a large number of people can get access to safe water and sanitation facilities in a structured manner.

Our sewerage system is also very poor. Building owners are not aware about the need to regularly clean the septic tanks. We need to focus on improving this situation by increasing the capacity of WASA and creating mass awareness about hygienic practices.

Prof. Dr Ferdous Jahan, Department of Public Administration, University of Dhaka
 We need to analyse the policy related gaps in supplying safe drinking water to all, particularly in slum areas. A large number of urban poor live outside slum areas. We should include them in our policies.

When we talk about awareness building, we should focus on how we can change the mindset of the general public about their everyday hygiene practices. It is not just about providing them with information. There are a lot of researchers who work on this aspect of behavioural change. We can learn from their findings and incorporate them in awareness campaigns.

Joseph Halder, Head, Advocacy & Information, NGO Forum for Public Health
 We always emphasise on the quantitative side of coverage, not its qualitative aspect. That's why the coverage of safe drinking water is so low. A similar situation exists in the sanitation section. We should not name our programmes as water supply and sanitation. It should be known as a hygiene or health programme. Supply of safe water and improved sanitation facilities will be important aspects of hygiene programmes. Hygiene should be the target, title and goal.

Most of the policies on water and sanitation sector were prepared targeting MDGs. These policies need to be updated to reflect the SDGs.

Dr Ishita Mustafa, International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B)
 In Bangladesh, one-third children under age five are suffering from chronic malnutrition. The most common manifestation of it is stunting. When a child has low height for his age, it is called stunting. It is widely believed that poor hygiene and sanitation, combined with unsafe diet, causes malnutrition. Recently we conducted a study to find the association between the nutritional status of children and microbial contamination in urban slums of Mirpur and also in the rural community of Mirzapur in Tangail district. We were appalled to see that 40 percent of the supplementary food given to the children there was contaminated with the bacteria commonly found in stool. This contamination seriously affects the growth of children.

We need to make people aware about the hygiene practices to keep our children safe from water-borne diseases.

Dr Mohammad Faruk, Assistant Professor, BRAC University
 I prefer the term 'informal settlement' to slums. We should link up research organisations with suppliers such as WASA. And projects surrounding hygiene and sanitation should include both scientific and social research.

Md Liakath Ali, Director, Programmes & Policy Advocacy, WaterAid Bangladesh
 I served as the Deputy Managing Director, Research, Planning and Development, at DWASA for three years. From my experience, I know that this department has some funding for research, if DWASA is properly engaged and communicated in this type of study from the beginning, it can play a crucial role in solving many problems that we are discussing today.

Mohammad Zobair Hasan, Member, End Water Poverty and Chief (Research, Evaluation & Monitoring), Development Organisation of the Rural Poor (DORP)
 In Dhaka there is a shortage of water supply. I would say that this happens because of a lack of reliability. The government can charge more for the water but it should supply adequate safe water to urban residents.

Prof. Dr Md Abdur Rob Mollah, Department of Zoology, University of Dhaka
 We should emphasise on the need for a proper drainage system. Overflowing drains cause serious contamination of water. In developed countries, universities and suppliers of water and sanitation facilities work together to improve the quality of service. But we do not see such partnerships in Bangladesh. We, the academicians, are eager to collaborate with WASA to prevent water contamination.

Md Shah Alam, President, Nagar Basteebashir Unnayan Shangstha (NBUS)
 The urban poor, particularly slum dwellers, do not have access to gas facilities. They have to procure wood for fire at a huge cost. It is difficult for them to boil water for drinking purpose. I would urge the policy makers to look into this issue and provide gas connections in the slum areas. This is also linked with the issue of creating a permanent housing system for these poor people. If the government provides us with housing on a loan system, we can repay the money in instalments.

Md Khairul Islam, Country Director, WaterAid Bangladesh
 The government is refurbishing all the supply pipes of WASA. If this is done properly, there will be no difference in quality of water between the source and dispensation point. We regularly test the supply water we get in our office. At present, we do not see any contamination in it. But I am not sure whether this is reflective of the overall situation of water supply in the capital.

There is a low income unit in WASA for ensuring supply of safe water to urban poor, particularly slum dwellers. This unit does not have permanent employees. It works like a project. I will urge the authority to integrate this unit in the mainstream activities of WASA.

Ensuring the safe quality of supply water is a priority in SDGs. Besides safe water supply, we have to make people aware about the value of hygienic practices. The low income units can play a vital role in this regard.

Dr Suresh Kumar Rohilla, Programme Director, Centre for Science and Environment, India
 In India, we have developed a practitioners' guide for every stage of faecal sludge management which includes what should be done, how it should be done and who should do it. This could serve as an example for here as well. We have also developed a 'shit flow diagram' for every locality from containment to emptying, disposal and management of excreta. Stopping open defecation alone is not enough. Toilets are for comfort and privacy. However, they can also lead to environmental degradation if not properly maintained. So along with toilets, we have to keep a check on environmental damage. We need to cover the full cycle. It is not just a problem of poor areas. It is happening in rich areas also. I do not know how a separate policy for poor people will help in this regard. You cannot have a separate planning management in the same city. We should seriously think about it.

EcoPoor: Institutions for Urban Poor's Access to Ecosystem Services project is supported by the Ecosystem Services for Poverty Alleviation (ESPA) programme (www.espa.ac.uk). ESPA is a global development research programme funded by the UK Government, supported by the Natural Environment Research Council, Department for International Development and the Economic and Social Research Council. ESPA aims to provide new world-class research evidence demonstrating how ecosystem services can reduce poverty and enhance well-being for the world's poor. The EcoPoor team includes: five Bangladeshi organisations (BRAC University, Dhaka University, Institute of Water Modelling [IWM], International Centre for Diarrhoeal Disease Research, Bangladesh [ICDDR,B] and WaterAid Bangladesh); one Tanzanian organisation (Ardhi University); and two UK institutions (Lancaster University [lead organisation] and The University of Manchester).

The Last 100 Metres: Safeguarding Potable Water Provisioning to Urban Informal Settlements project is funded by British Academy Sustainable Development Programme. The team includes: four Bangladeshi organisations (BRAC University, Dhaka University, Dushtha Shasthya Kendra [DSK] and WaterAid Bangladesh); one Indian organisation (Centre for Science and Environment [CSE]); two Tanzanian organisations (Ardhi University and BRAC Tanzania); and three UK institutions (British Water, Lancaster University [lead organisation] and The University of