



# Water and Sanitation in Dhaka's Low-Income Settlements, Bangladesh

Author: Dr Sally Cawood

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*MicroSave's* 'Low Income Lives' series provides an opportunity to learn how low-income households manage their lives based on solid empirical data. In this edition, Sally Cawood draws on data collected in three low-income settlements<sup>1</sup> to outline how much residents – a mixture of tenants, house owners and landlords – pay for water and sanitation (WatSan) services in Dhaka, Bangladesh. Despite significant improvements, fieldwork reveals that the costs and terms of access are greatly affected by overlapping financial and political insecurities at the household and settlement level.

## **Water and Sanitation in Dhaka's Low-Income Settlements: An Overview**

Whilst progress has been made in transitioning from traditional drinking sources (e.g. ponds/canals) to improved sources in Bangladesh, coverage of piped water supply is just 32% in urban areas (Table 1). In this context, improved access is mostly found among middle to higher-income households.

In Dhaka's low-income settlements – where over 35% of the city's 16 million population live – residents obtain water from a range of sources, including; piped water connected legally or illegally to Dhaka Water and Sewerage Authority (DWASA), tube-wells, private wells and local water bodies.

**Table 1:** Drinking Water Coverage in Bangladesh (1990-2015)

Bangladesh	Drinking water coverage estimates					
	Urban (%)		Rural (%)		Total (%)	
	1990	2015	1990	2015	1990	2015
Piped onto premises	23	32	0	1	5	12
Other improved source <sup>2</sup>	58	55	65	86	63	75
Other unimproved	17	13	28	13	26	13
Surface water	2	0	7	0	6	0

(WHO/UNICEF JMP Dataset 2015)

In addition to water, just over half of the population in urban areas have access to improved sanitation, and around one third share facilities (Table 2). Again, improved facilities are mostly found among middle and higher-income households. Within Dhaka, only 20-25% of the population are served by a sewer network (GoB 2013). Many residents in low-income settlements use simple pit latrines with/without water seals, septic tanks, cluster latrines, communal latrines or tong (hanging) sanitation suspended over water bodies.

**Table 2:** Sanitation Coverage in Bangladesh (1990-2015)

Bangladesh	Sanitation coverage estimates					
	Urban (%)		Rural (%)		Total (%)	
	1990	2015	1990	2015	1990	2015
Improved facilities <sup>3</sup>	47	58	31	62	34	61
Shared facilities	24	30	14	28	16	28
Other unimproved	19	12	15	8	16	10
Open defecation	10	0	40	2	34	1

(WHO/UNICEF JMP Dataset 2015)

Whilst the urban poor have a great need for government support, state 'neglect', unwillingness or inability to deliver services in Dhaka's low-income settlements (due, in part, to their disputed land tenure status) has resulted in 'highly formalised informal' systems of governance that mediate access to land, housing and services (Banks 2012; 2015; Hossain 2012; 2013). An array of actors provide and mediate water and sanitation in this context, including; private landlords, house owners, local leaders, political patrons, mastaans ('musclemen'), illegal vendors, informal slum committees, Non-Governmental and Community-Based Organisations (NGOs and CBOs).

In recent years however, the criteria around water provision has changed, to the benefit of low-income households. Since 2007<sup>4</sup>, residents have been able to apply for legal DWASA connections, via a CBO. At the time of fieldwork, an estimated 2174 water lines were installed in approximately 400 settlements, with '100% bill recovery'<sup>5</sup>. According to DWASA and NGO officials, legal water connections not only increase revenue for DWASA, but also result in lower bills for residents. The bills, produced according to a meter, vary according to the number of users, but average between Tk. 100-200<sup>6</sup> per month, per household (approximately Tk. 7.75 per 1000 litres).

On the other hand, illegal connections often incur much higher charges, reaching Tk. 300-400 per month, per household (approximately Tk. 50 per 1000 litres). Recognised low-income settlements (on public land) also receive subsidised connection fees of Tk. 5000, compared to Tk. 25-30,000 paid by 'regular' customers. Though the provision landscape for water is changing, sanitation is still largely installed privately (by house owners and landlords), or by NGOs (for a co-sharing fee).

The following section outlines how much residents of three settlements in Dhaka pay for water and sanitation services. Whilst this data is not representative of the wider context in Bangladesh, or low-income settlements more broadly, it offers important insights into the costs and terms of access, which vary according to ones gender, social and political networks, income, occupancy type and place of residence.

The focus here is not on full economic costs of WatSan facilities (i.e. construction, operation and maintenance), but on the up-front co-sharing fees (for NGO projects), one-off payments and monthly bills paid by residents for these services. As we can see, however, other 'hidden' costs (such as unpaid labour) are often unequally shared, with implications for access in the long-term.

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1. Data from PhD research (Cawood, 2017).
  2. JMP defines an improved water source as one that, by nature of its construction or through active intervention, is protected from outside contamination with faecal matter.
  3. JMP defines an improved facility as one that hygienically separates human excreta from human contact.
  4. After prolonged advocacy from NGOs (such as DSK, ARBAN, Fulki and World Vision), DWASA amended its Citizen Charter to allow legal water supply to slums via CBOs, with no holding number required.
  5. Interview with DWASA Senior Community Officer (SCO) (Cawood, 2017).
  6. In April 2015 (at time of fieldwork) approx. 1 USD = Tk. 77 and 1 GBP = Tk. 115.

### Three Settlements

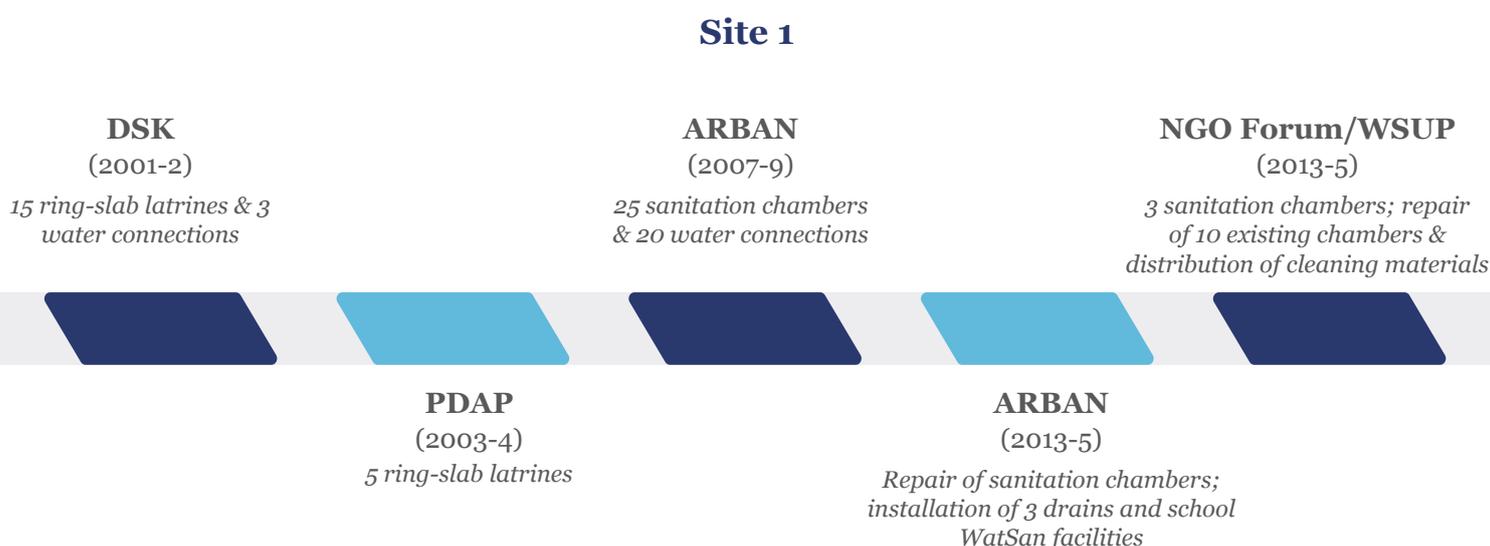
Table 3 outlines key characteristics of the three settlements included in this study, referred to hereafter as 'Site 1, 2 and 3'. As indicated, Sites 1 and 2 had active NGO and CBO activity, whilst Site 3 had none. This was due to a range of factors, including; mistrust of (and resistance towards) NGOs, fear of eviction, control exerted by local political leaders (via the slum committee), and the disputed status of the land. Though the land tenure status in all settlements was, in reality, 'disputed', the comparable security in Site 2 resulted in a proliferation of NGO WatSan projects and facilities (Figure 1).

**Table 3:** Key Characteristics of Field Sites

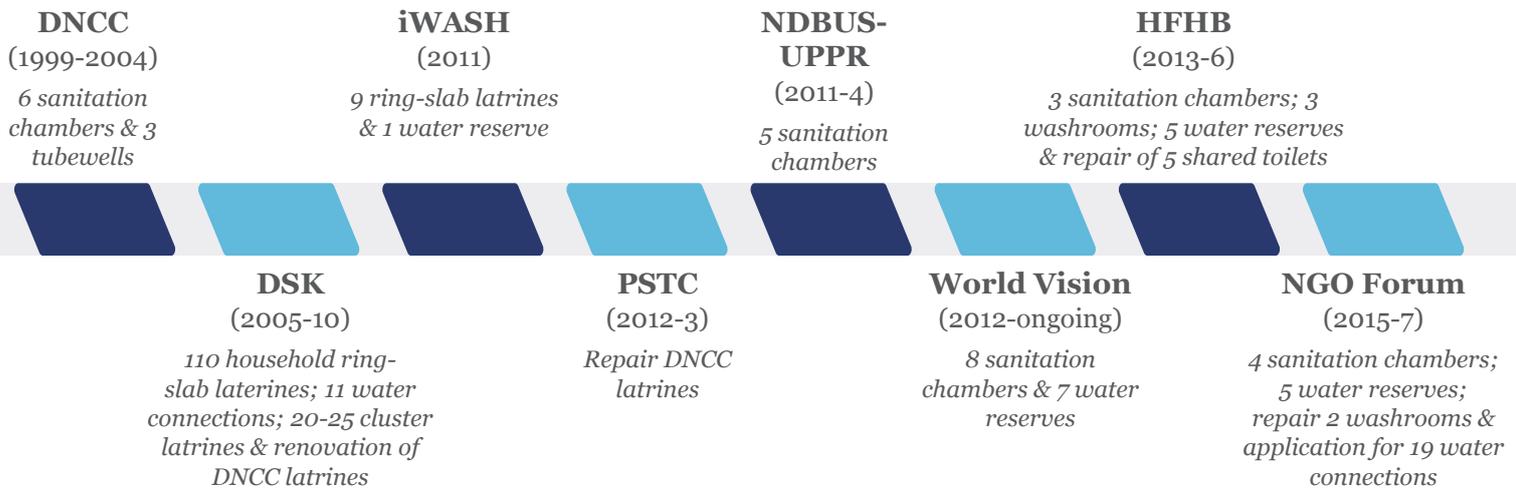
Characteristics	Site 1	Site 2	Site 3
Land Tenure Type	Mixed/Disputed	Public/Disputed	Disputed
Occupancy Type	Owners, Managers and Majority Tenants	Majority Owner-Occupiers	Owners and Majority Tenants
Active/Level of WatSan NGO and CBO Activity	Yes/Medium	Yes/High	None/Low
Size	802 households, 3200-4000 people, 2-3 acres	660 households, 3000-3500 people, 4 acres	650 households, 2600-3200 people, 2 acres
Age	25-30 years	17 years	35 years
Average Income (Tk. per household, per month)*	12000	9000	9000
Dhaka North City Corporation (DNCC) Services	Roads, telecoms, drainage, DWASA supply	DWASA and DESCO supply	None (DWASA connections pending)
Eviction Threat	Medium-High	Low-Medium	High

**Source:** Cawood, 2017. \*Based on 213 Semi-Structured Questionnaires and Mini Surveys)

**Figure 1:** NGOs & WatSan Facilities in Sites 1 and 2\*



### Site 2



**Source:** Adapted from Cawood, 2017. \*NGO name, dates active and facilities installed or repaired. (See end of article for full list of NGO abbreviations)

In addition to land tenure, occupancy type (Table 3) was found to greatly affect the type of facilities, terms and costs of access in the three field sites. Important distinctions could be made, for example, between tenants (those renting the land and owning their house; or renting both land and house), managers or caretakers (often long-term tenants that oversee numerous households, and receive subsidised or ‘free’ housing), house owners (those who ‘own’ their house and often rent out others) and ‘landlords’ (who claim to own the land, and who may live on or off-site). Fieldwork revealed that NGOs largely targeted house owners and landlords to participate in WatSan projects, with tenants often sidelined due to their (perceived or actual) temporality. In all sites, the majority of tenants also believed that house owners and landlords were responsible for water and sanitation provision, and were therefore less willing to invest time and money. This was especially the case when water bills were included in monthly rent (Figure 2). In Site 2, there were far fewer tenants, and those that did rent often paid for water separately.

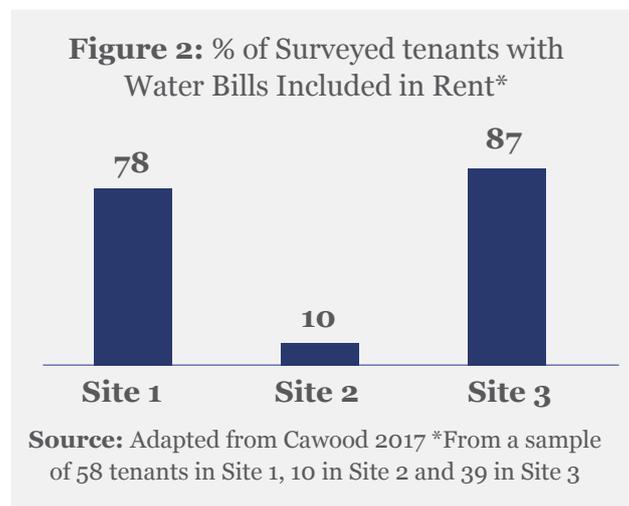
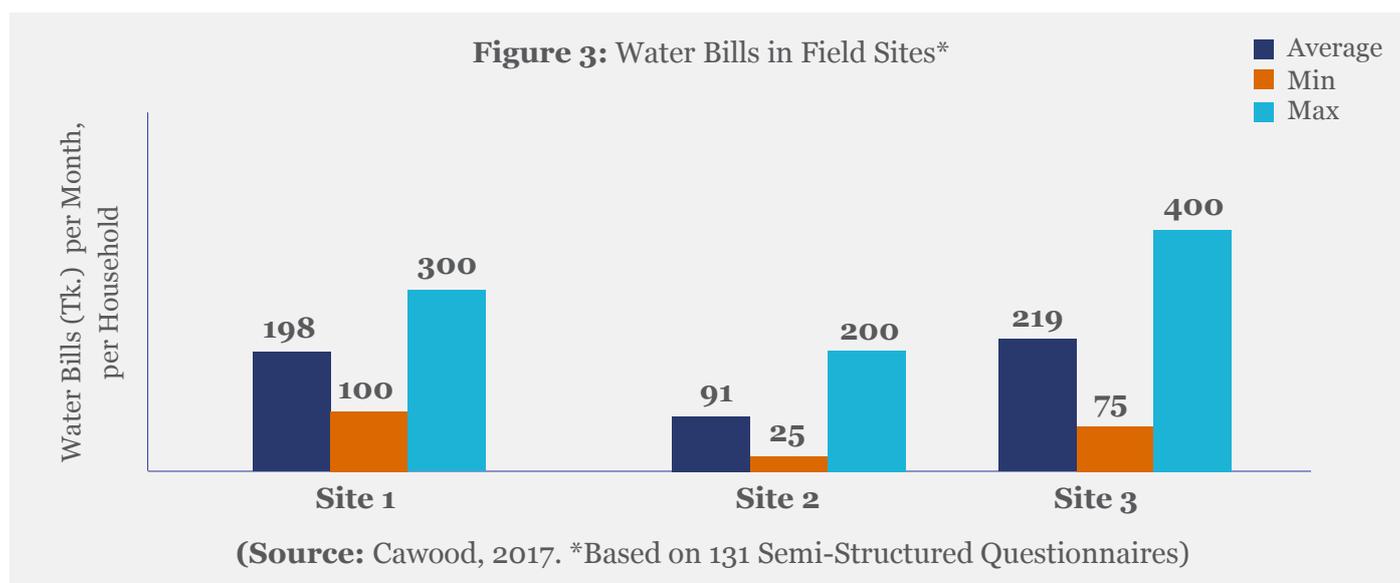


Figure 3 outlines the average, minimum and maximum monthly water bills paid per surveyed household in the field sites. As indicated, residents in Site 2 paid the least for their water, whereas residents in Site 3 paid the most. This can be explained by the fact that numerous connections in Site 3 were illegal, and often incurred higher charges (i.e. up-front fees, bills and bribes). However, there was considerable variation, with some residents having reduced or ‘free’ supply if they had a good relation with the provider/s. In Site 1, there was less variation, but the bills were higher than in Site 2, demonstrating that the costs of legal connections also vary according to context.

Important differences were observed between tenants (paying for water separately) and house owners. In Site 2, for example, in-depth interviews revealed that tenants were actually paying more, because two house owners were re-selling DWASA water to them at a higher rate (i.e. Tk. 200 as opposed to Tk. 25-30). Some house owners in Site 2 also paid no monthly bills, as they had constructed their own private wells, at a cost of Tk. 12-20,000. In Site 3, a handful of house owners in the slum committee, had applied for 25 legal DWASA connections, at Tk. 25-30,000 each<sup>7</sup>. Only politically connected house owners – who could afford the fees, and leverage the connections – could apply.



Sanitation presented a different story. Unlike water, there were no monthly ‘bills’, but residents (predominantly house owners and landlords) either co-shared for NGO facilities, or constructed them themselves/by hiring local labourers. In Sites 1 and 2, co-sharing was used to reclaim costs and enhance ownership of facilities by DSK, ARBAN, NGO Forum/WSUP and World Vision (Figure 1). The fees varied according to technology type, household income level and NGO approach. For example, DSK divided households into clusters (i.e. extreme poor, poor, non-poor) and charged rates accordingly. Residents could repay in ‘one-off’ payments (e.g. Tk. 5000 for a sanitation chamber) or – more commonly – via monthly instalments (e.g. Tk. 30). On average, NGOs charged households 5-10% of the construction cost. In most cases, CBOs were formed to manage and maintain facilities after construction, with money collected as and when required for cleaning materials (e.g. Tk. 30-100 per user-family), minor repairs and de-sludging (approx. Tk. 1500-2000 per call-out, every 6-12 months). Numerous residents in Site 2 also mentioned paying ‘one-off’ fees of Tk. 150-300 to CBO leaders or NGO staff, to have keys cut for the sanitation facilities. Finally, in Site 3, house owners constructed private hanging (Tk. 2000-4000) or ring-slab latrines (Tk. 5000) for their tenants and for personal use. Box 1 summarises the water and sanitation stories of three families, and Photo 1 depicts the different WatSan facilities in the three field sites.

7. Site 3 was not ‘recognised’ by DWASA, so house owners had to pay the full connection fee.

### Box 1 Three Families, Three Settlements (Source: Cawood, 2017)



Aparna<sup>8</sup> is 45 years old and has lived in Site 1 for 29 years. She bought the plot of land informally, and owns her pucca (permanent) house and 7 other rooms, which she rents out at Tk. 1500 per month. Aparna lives with her husband (a businessman) and three children. She earns Tk. 15-20,000 per month from rent and NGO work. Aparna has been actively involved with NGOs since 1992, and was the ARBAN CBO president from 2007-9. Aparna co-shared for one DSK ring-slab latrine, one ARBAN sanitation block (with two latrines) and 1 water point with a tank. These facilities are inside in her compound, and can only be used by Aparna's family and her tenants. Monthly water bills are included in the rent, but the tenants must help clean the facilities. The water bills range from Tk. 800-1500 per month, according to the meter.



Sajida is 27 years old. She moved to Site 2 four months ago and lives in a small rented room, paying Tk. 1000 per month plus bills. Her husband passed away one year ago leaving her with four young children. She is living in a very vulnerable condition and begs for money and food, earning less than Tk. 1500 per month. A few days ago, the house owner scolded her for failing to pay rent. If she does not pay, she will be kicked out. Sajida doesn't participate in WASH NGO activities because she has no time and is not invited. She uses the nearby NGO sanitation chamber after being given a key by her neighbour, and pays Tk. 100 per month for water, obtained from a nearby water point.



Rafeez is 49 years old. He has lived in Site 3 for 20 years. He owns a two-story house, in which he lives with his wife and two children, and rents out three rooms, at Tk. 1500 per month. Rafeez is the president of the local slum committee that looks after the area. He does not currently pay any water bills, and constructed his own ring-slab latrine for personal use. However, Rafeez recently applied, along with other house owners, for a legal DWASA water connection. He hopes that the legal connection will legitimise their claim on the land. He does not believe NGOs are trustworthy. Rafeez is well connected to the local MP and other political leaders, and can call on their help if required.

8. All names are anonymised.

**Figure 4:** WatSan Facilities in Field Sites

'Illegal' water lines (Site 3)



NGO tube well (Site 2)



Hanging latrine (Site 3)



NGO Sanitation Chamber (Site 1)

(Source: Cawood, 2017)

## 'Hidden' Costs?

During fieldwork, it emerged that many NGO facilities (outlined in Figure 1) were not functional, due to changing preferences and family size, damage, misuse and/or lack of financial and human resource capacity to repair. In Site 1, for example, 9 ARBAN sanitation blocks, and 1 DSK water point were destroyed during an eviction, whilst in Site 2, 3 DNCC tube-wells, 1 DSK chamber and water point, and the majority of DSK household ring-slab latrines were not functional, as they were difficult to clean and maintain. Intermittent and dirty water, plus overcrowded, unclean latrines and leaking septic tanks were identified as problems in all field sites, demonstrating that access alone is not sufficient. The depreciation of facilities, and costs of mismanagement and large-scale repair were rarely taken into consideration by NGOs when implementing WatSan projects. This seemingly resulted in increased costs (in cash and kind) in future, for upgrading and/or replacing failed facilities.

In addition, the opportunity costs of unpaid or in-kind labour for cleaning sanitation facilities, attending CBO meetings, training and long-term management in NGO projects, were often unequally borne by women. These unpaid labour costs could present a significant additional burden to CBO leaders, members and general-users, who had to juggle these responsibilities with family chores and paid work. However, many CBO members, especially the leaders, also enjoyed participating, were highly driven, and utilised their positions to obtain additional services and prestige. Though difficult to measure, and not an explicit focus of this study, the 'hidden' costs must also be taken into consideration in research and practice.

## Underlying Insecurities

Safe, hygienic and affordable water and sanitation services are critically important for health and wellbeing. However, in the three field sites, sanitation (unlike water) was not regarded as a priority for residents. The combined total of semi-structured questionnaires (213), verified by observations, Focus Group Discussions (FGDs) and in-depth interviews, revealed the top 10 'problems' for participants in the three field sites (from most to least/lesser importance) as:

**Top 10 'problems' for participants in the three field sites (from most to least/lesser importance) as:**

<b>1</b>   Financial insecurity	<b>2</b>   Potable water crisis	<b>3</b>   Flooding and water logging	<b>4</b>   Social insecurity	<b>5</b>   Land tenure and housing insecurity
<b>6</b>   Electricity problems	<b>7</b>   Poor living environment	<b>8</b>   Sanitation problems	<b>9</b>   Gas problems	<b>10</b>   Illness

Whilst these problems varied at the settlement and household level, a common theme emerged whereby financial insecurity undermined efforts to invest in and improve sanitation in the long-term. Other household expenditures, such as rent, food, school fees and electricity/firewood were often given priority over water and sanitation. This was especially the case in sites with a high number of tenants and greater tenure insecurity (e.g. Sites 1 and 3), with residents unwilling or unable to invest in infrastructure that could be demolished in an eviction. These underlying insecurities, and the dynamics between tenants, owners and landlords, must ultimately be taken into account, when examining the costs of water and sanitation in Dhaka's low-income settlements.

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## Abbreviations

ARBAN	Association for Realisation of Basic Needs [NGO]	GoB	Government of Bangladesh
CBO	Community Based Organisation	HFHB	Habitat for Humanity Bangladesh [NGO]
DESCO	Dhaka Electric Supply Company Ltd.	NGO	Non-Governmental Organisation
DNCC	Dhaka North City Corporation	PDAP	Participatory Development Action Program [NGO]
DSK	Dushtha Shathya Kendra [NGO – Health Centre for the Distressed]	SCO	Senior Community Officer [within DWASA]
DWASA	Dhaka Water and Sewerage Authority	SSQ	Semi-Structured Questionnaire
FGD	Focus Group Discussion	WatSan	Water and Sanitation
		WSUP	Water and Sanitation for the Urban Poor [NGO]



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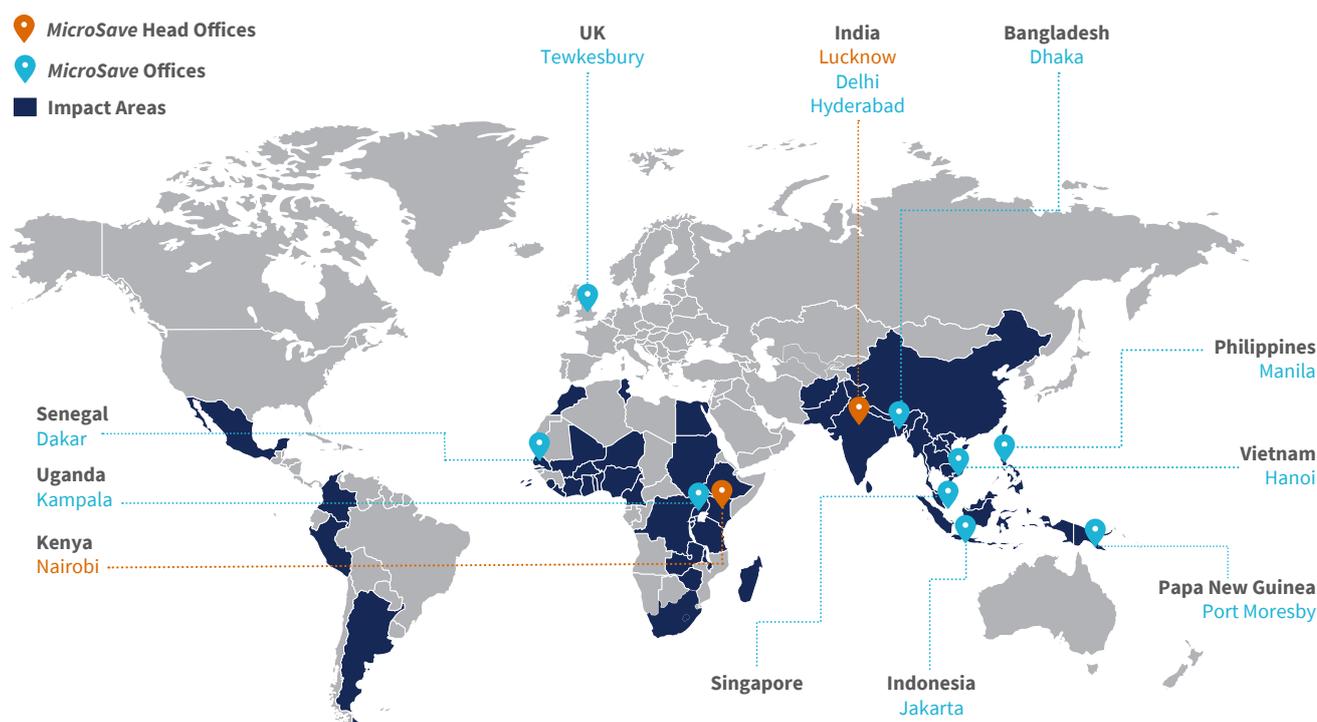
Dr Sally Cawood is a Research Fellow in Urban Sanitation (Health and Welfare Impacts) at the School of Civil Engineering, University of Leeds, working on the Bill and Melinda Gates Funded Climate and Costs in Urban Sanitation (CACTUS) Project. She completed her PhD at the Global Development Institute (GDI), University of Manchester, focusing on the role of Community Based Organisations (CBOs) in accessing, managing and maintaining water and sanitation facilities in low-income settlements in Dhaka, Bangladesh.

Sally's main research interests include: inclusive Water, Sanitation and Hygiene (WASH); community-led urban development; collective action (e.g. CBOs, cooperatives and urban social movements); gender and WASH; climate change impacts and adaptations in low-income settlements. For further information, please visit: [https://engineering.leeds.ac.uk/staff/1199/Sally\\_Cawood](https://engineering.leeds.ac.uk/staff/1199/Sally_Cawood)

Email: [S.F.Cawood@leeds.ac.uk](mailto:S.F.Cawood@leeds.ac.uk) | Twitter: [@SallyCawood](https://twitter.com/SallyCawood)

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