



**Urban Sanitation Research Initiative 2017-2020**  
Driving sector change in urban sanitation



This document gives an overview of the Urban Sanitation Research Initiative 2017-2020, and details specific research plans as at June 2017.

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## What is the Urban Sanitation Research Initiative?

The **Urban Sanitation Research Initiative** is a 2017–2020 programme of rigorous research designed to drive pro-poor sector change in urban sanitation in three countries (Bangladesh, Ghana and Kenya) and globally. The initiative is led by Water & Sanitation for the Urban Poor (WSUP) in collaboration with key in-country partners, and is core-funded by UK aid from the UK government. The core funding is GBP 4m, and we continue to seek additional funding. WSUP will lead definition of research strategy and manage the initiative, but most research will be delivered by academic institutions and research consultancies selected via competitive calls.

### Urban Sanitation Research Initiative Bangladesh

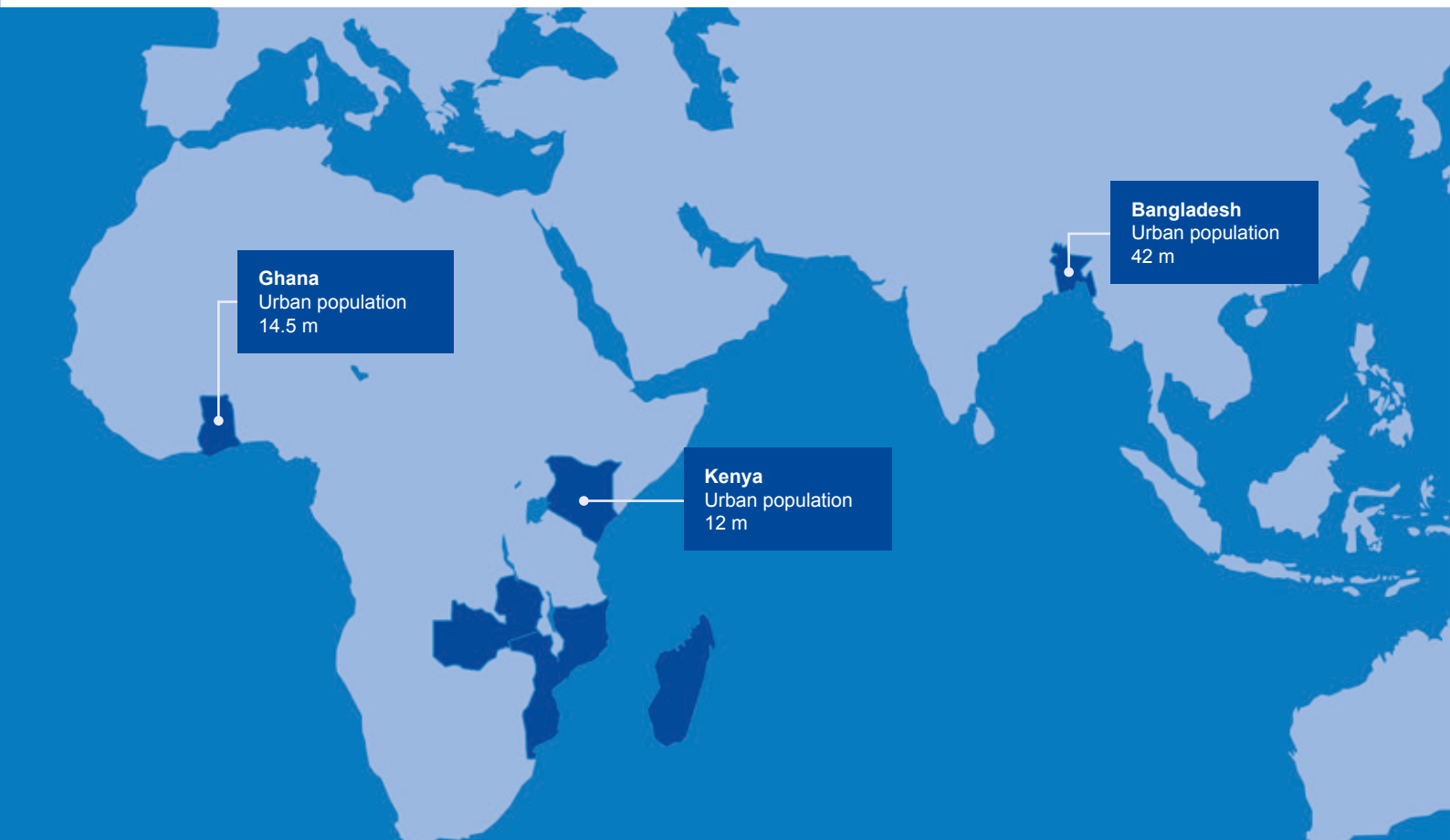
- Centre for Water Supply and Waste Management (ITN – BUET)
- International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b)
- Water & Sanitation for the Urban Poor (WSUP) Bangladesh

### Urban Sanitation Research Initiative Ghana

- Environmental Health & Sanitation Directorate, Ministry of Local Government (EHSD)
- Kwame Nkrumah University of Science and Technology (KNUST)
- Institute of Local Government Studies (ILGS)
- Water & Sanitation for the Urban Poor (WSUP) Ghana

### Urban Sanitation Research Initiative Kenya

- Water Services Regulatory Board (WASREB)
- Ministry of Health (Division of Environmental Health)
- Water & Sanitation for the Urban Poor (WSUP) Kenya





## Vision

The Urban Sanitation Research Initiative aims to make a substantive contribution to achieving universal urban sanitation coverage in low-income contexts. This will be achieved through **a)** direct research-into-policy impacts in focus countries, **b)** contribution to research capacity development in focus countries, and **c)** contribution to global understanding of how to achieve universal urban sanitation. The research will contribute to the evidence base available to in-country actors including national and city governments, and to major international donors and financing institutions. Research will reflect WSUP's core philosophy that at-scale improvement in urban WASH essentially requires two things: *market thinking*, including the development of dynamic small businesses in the WASH service delivery sector, and *institutional change*, including substantially increased government investment in WASH services for low-income communities.

## Core Principles

- a) The Urban Sanitation Research Initiative will focus strongly on national evidence needs.** The primary design criterion for research will be that it should create an evidence-and-influence base that can plausibly be expected to make a substantive contribution to urban sanitation sector strengthening and/or urban sanitation coverage within one of the three focus countries over period 2017–2020. Global learning will then be drawn from this specific national experience. In other words, we believe that (within this programme) useful global learning will in general be best achieved not by trying to identify “international” research needs, but rather by identifying national research needs, then drawing international learning from the findings of that research.
- b) Research-into-policy will be a core goal at all levels of research design.** Approaches to achieve this will include involving key in-country stakeholders in defining research needs, and ensuring that staffing of major projects includes dedicated research-into-practice expertise alongside research expertise. [The word “policy” should be understood to include not only national and local government policy, planning and investment, but also market development and innovation, and attitudes and practices of key stakeholders (including water companies, SMEs and households) that contribute to the system strengthening required for universal coverage.]
- c) Developing in-country research capacity will be a secondary but important aim.** This is centrally a programme of research, not of research capacity development. However, development of local capacity is clearly desirable in terms of long-term sustainability, and ties to the local knowledge and “ownership” advantages of working with Southern partners. A common approach will be for research projects to be implemented by Northern academic institutions in close partnership with Southern academic institutions.
- d) A phased modular approach will be followed in research implementation.** In line with the aim of doing research that influences policy, WSUP will favour a phased modular approach in research implementation: this means i) we will favour one-year projects where feasible; ii) in longer projects, we will encourage a modular design ensuring annual deliverables; iii) we will aim for near-immediate start-up of some small projects, so that this programme is rapidly generating results.
- e) Research strategy will aim for a balanced mix of small and large projects.** Small projects allow opportunistic response to evolving understanding of evidence needs, and are relatively low-risk. Large projects allow for high-quality exploration of major questions, but are higher-risk: there must be strong certainty that the results will prove useful.

## Urban Sanitation Research: International Evidence Gaps

The Urban Sanitation Research Initiative sets out to respond to national evidence gaps in Bangladesh, Ghana and Kenya. Nonetheless, it is important to consider international evidence gaps. Particularly useful assessments have been published by the SHARE consortium, by the JPAL Urban Services Initiative, and by Hutton & Chase (2016). Aside from SHARE and JPAL-USI, we note also other major research initiatives focusing partly or entirely on urban sanitation, including the SaniPath project; the DFID-funded REACH and Transform programmes; research and learning activities around excreta-flow diagrams; and the Gates Reinvent the Toilet Challenge and other BMGF-funded activities.

1) **There is strong evidence that urban sanitation impacts on health, but limited understanding of a) exactly what types of sanitation improvement have good impact, b) how these impacts relate to other types of intervention (e.g. food hygiene), and c) how sanitation investment planning can take into account faecal pathogen pathways.**<sup>1</sup> A SHARE review (Esteves-Mills & Cumming 2016) looks at evidence gaps in 10 areas within which WASH can plausibly have strong impact, including diarrhoea, nutrition, complementary food hygiene and female psychosocial stress. There is strong evidence of sanitation impacts on aspects of health including diarrhoeal disease: a recent review (Wolf et al. 2014) found that improved sanitation can decrease diarrhoea by 28%, and found notable differences in illness reduction according to the type of sanitation improvement. Related to this, there is increasing empirical support for the theory-based view that “neighbourhood sanitation” is no less important for health than “household sanitation” (Jung et al. 2017), and that the health impacts of urban sanitation are dependent on reaching a threshold level of coverage (Hunter & Prüss-Ustün 2016). But understanding remains weak around exactly what types of environmental improvement and behaviour change are required for health impact (Hutton & Chase 2016). Esteves-Mills & Cumming (2016) suggest that research is required to increase understanding of the dominant transmission pathways in particular contexts, and how this might influence intervention strategy: how important are interventions like food hygiene and nutrition? An ongoing study commissioned by us (Willetts 2017) interviewed a number of sector experts, and finds wide consensus that health impacts are not currently considered effectively in sanitation investment planning, due to multiple factors including uncertainty around how to do so.

2) **There is weak understanding of factors which may influence high-level decision-makers to commit more strongly to improved sanitation (and other basic services) in slum communities.**

High-level political commitment to slum sanitation is weak or very weak in countries like Bangladesh, Ghana and Kenya: in Bangladesh in particular, government accepts practically no responsibility for service provision in slum communities, often considered “illegal”. In a SHARE review of evidence needs around sanitation markets, Trémolet (2012) notes that there is limited evidence that economic arguments (i.e. societal cost-benefit arguments) have an impact on policy-making. Trémolet highlights a WSP study (Garbarino et al. 2011) which sought to identify determinants of historical pro-poor sanitation investment decisions in Brazil, India, Indonesia and Senegal. Indonesia provides the clearest example of a country in which effective demonstration of the benefits of sanitation drove a major increase in government budget allocation. Duflo et al. (2012), reviewing evidence gaps for JPAL’s Urban Services Initiative, likewise highlights the importance of understanding political drivers: “what are the mechanisms of vote buying and its implications for the quality of publicly provided WASH services?” For similar views on the need for research to understand how to drive political change, see also Mitlin (2011), Brocklehurst (2013), Northover et al. (2016) and Cumming et al. (2017). Related to this are issues around institutional frameworks, mandates and regulation: Mulenga (2011), reviewing urban sanitation research needs for SHARE, asks “what kinds of policy and legislative environment will best serve the urban poor?” Two key areas of interest are institutional frameworks for urban sanitation (often fragmented and in need of clarification) and regulation on owner-occupiers and landlords, designed to strengthen requirements for sanitation quality and thus drive market demand.

3) **There is weak understanding of the life-cycle costs of different sanitation models and of elasticity in consumer demand; it is thus difficult to assess the space for market solutions, and the requirement for public finance.** Trémolet (2012) argues for wider application of cost-benefit analysis in sanitation research and sanitation investment planning, suggesting that key areas of research should include improving estimates of benefits and comparing benefits with costs of sanitation in a broader range of countries and local contexts. In a review commissioned for this initiative, Daudey (2017) reports that studies of sanitation costs have used inconsistent methodologies, and many such studies focus only on capital costs, or do not report data on desludging, transport and treatment. Daudey notes that comparative analysis of raw cost

<sup>1</sup> The core budget of the Urban Sanitation Research Initiative will *not* be allocated to health impact evaluation, in view of its high cost; but we are very open to collaboration in health impact research with other partners, as in our ongoing participation in the MapSan study in Mozambique. We are also interested in ways in which sanitation investment planning can take better account of faecal pathogen pathways (see page 28).

data across countries is in any case of limited value, owing to the numerous determinants of costs and their context-dependence; as a result, there is a need for sanitation cost databases at country and even city level (see also Hutton & Chase 2016). Duflo et al. (2012) identify willingness-to-pay (WTP) as one of four key areas for research, noting that it may be affected by disparities in how much the product or service is valued by end users, and by the household member in charge of purchasing decisions: in some situations, women may value a product or service more than men, but not take the purchasing decision. Relating to the relationship between costs, WTP and public finance, Trémolet (2012) suggests that to design better actions, we must improve our knowledge of what needs to be financed.

**4) There is continued lack of understanding around how to create viable pro-poor sanitation businesses.** This is a core area of interest for many stakeholders involved in implementation. Trémolet (2012) highlights the value of research directed at analysing how best to increase demand for reuse, in order to make the system economically and financially viable for the actors concerned. O’Keefe et al. (2015) note that private providers can help to deliver sanitation services but stress that without consideration of the institutional setting, projects aiming to develop services around the sanitation chain will overestimate the profit to be made at the bottom of the pyramid. In line with this, there is a particular need for work to identify market incentives and regulatory requirements to encourage new and established SMEs to enter the sanitation space and achieve commercial viability, while at the same time meeting social requirements around serving low-income consumers (as opposed to only non-poor customers) and disposing of waste safely. Mitlin (2011) notes also that there has been little research on the needs of sanitation workers, often viewed as low-status, and research in this area is potentially of interest from both the worker health and business viability perspectives.

**5) In line with low government investment in pro-poor urban sanitation, there is limited understanding of public finance mechanisms that can work in different contexts.** Duflo et al. (2012) identify public finance as one of four key areas for research: how can government budgets and taxation systems be adapted to overcome public finance challenges and enable better provision of WASH services? Trémolet (2012) and Hutton & Chase (2016) both suggest a need for research to identify effective financing mechanisms, including ways of attracting new resources (from beneficiaries, via re-use, and from taxation).

**6) There is an urgent need for better data on acceptability criteria for shared sanitation.** The core indicator for assessing countries’ progress towards SDG Target 6.2 is proportion of population with “basic sanitation”, but under the current WHO/ UNICEF JMP definition shared sanitation is not considered to be “basic”. As outlined in a recent editorial by Evans et al. (2017), there is broad consensus that this exclusion is problematic: many slum-dwellers necessarily depend on shared sanitation (because they live in tiny dwellings which are too small for a private toilet), and exclusion of shared sanitation from the basic category may create a perverse incentive for donors and governments to direct funds at rural areas or less-poor urban areas, not at slums. Heijnen et al. (2014) state that research is necessary to determine the circumstances in which shared sanitation can offer a safe and acceptable alternative to individual household toilets.

This existing understanding of international evidence gaps has helped shape design of our over-arching 5-theme research strategy (see page 7) and our identification of specific research projects in each country (see for example pages 12 and 13). Over and above the issues identified here, we note a strong interest in gender issues, with women’s needs treated as a key cross-cutting component in all research under this initiative, and with a specific interest in research around women’s involvement in decision-making.

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## Over-Arching Strategy

**The core aim of this research programme is to build an evidence-and-influence base that drives progress towards universal urban sanitation in each of the three focus countries (Ghana, Kenya, Bangladesh).** Key steps to achieve this have included i) wide consultation with international sector experts and within WSUP teams; ii) development of formal partnerships with key actors in each country; and iii) sector consultation workshops held in each country in February/March 2017, bringing together key specialists from national and municipal government, regulators, water and sanitation utilities, SMEs, NGOs and in-country academics. These consultation processes have been supported by situation analyses of the urban sanitation sector in each country, carried out by UK-based consultancy AguaConsult and available for download from the Urban Sanitation Research Initiative website: summary findings of these situation analyses are given on page 10 (Bangladesh), page 16 (Ghana) and page 22 (Kenya).

Following these consultation processes, we have identified the following broad areas of research focus for the Urban Sanitation Research Initiative:

- A)** Sanitation businesses and market development
- B)** Public finance and sanitation planning
- C)** Sanitation models, user behaviour, user experience
- D)** Institutional frameworks and capacity
- E)** Regulation and smart enforcement

These areas reflect i) WSUP's own understanding of the key challenges in urban sanitation (with greater emphasis on institutional policy and market enablement than on development of new technologies); ii) an assessment of the appropriate focus for this particular research initiative; and iii) inputs from in-country actors around what types of research can drive sector change in each country. We note that these areas define the scope of our allocation of this initiative's core funding: nonetheless, we remain very open to broadening scope (for example, to include health impact evaluation) where additional funding can be achieved.

The consultation processes outlined above have identified specific research projects in each of these areas. These are detailed for each specific country on page 13 (Bangladesh), page 19 (Ghana) and page 25 (Kenya). As at June 2017, we have identified a series of projects for immediate commissioning over the period July–December 2017, and a "B list" of other projects which we may subsequently commission.

## Commissioning

Most research projects under this initiative will be commissioned by competitive open procurement, open to in-country and international bidders. Except where specifically indicated in the call, neither in-country nor international bidders will be preferred, and bids will be selected on the basis of demonstrated ability to deliver the research to high standard; however, we note that in most cases high-quality research delivery will require an in-country lead or in-country partner/s.

Most calls will be for amounts of between GBP 60K and GBP 80K, though some calls may be of up to GBP 300K. Submission deadline will typically be 3 weeks after release date: see the Urban Sanitation Research Initiative website for emerging calls (and the country pages in this document for summary indication of calls that we will be releasing). Bidding procedures will be deliberately designed to be relatively straightforward.

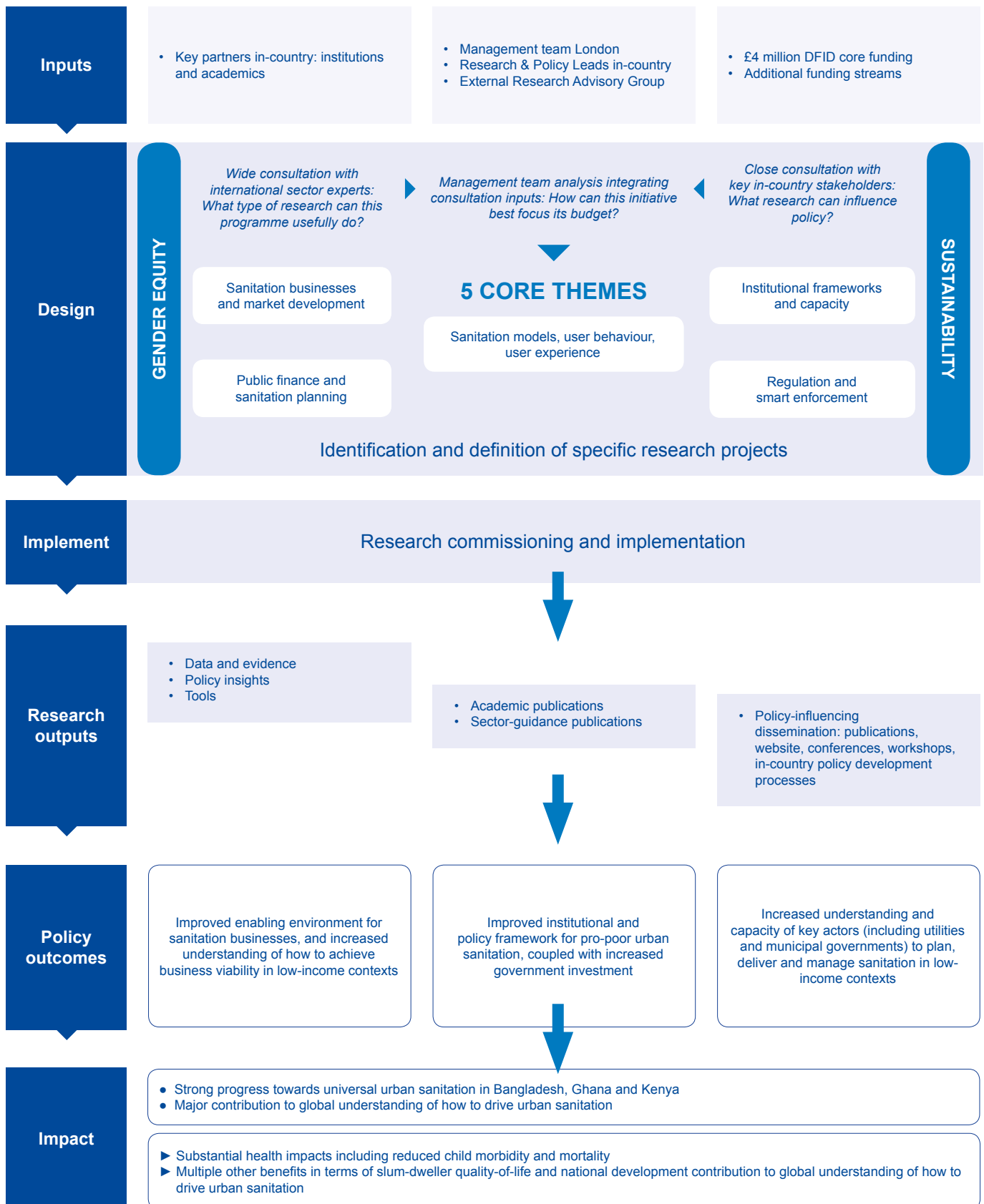
Given the practical nature of this research initiative, with strong focus on specific policy outcomes, most research calls will be fairly closely specified; in some cases, however, bidders will have greater flexibility to define the nature of the research within a broad framework.

The majority of research projects will require, as a primary deliverable, one or more articles for submission to a peer-reviewed journal; final payment will be dependent on submission (as opposed to acceptance for publication, which may of course take up to one year). Open-access publication will be required.

This is an overview of commissioning process: for specific details, potential bidders should consult each call.

# Urban Sanitation Research Initiative

## Theory of Change







**Urban Sanitation  
Research Initiative  
Bangladesh**

## Bangladesh: The Urban Sanitation Sector In Context

**Bangladesh is a lower-middle income country with high ambitions, but poor infrastructure in urban areas is holding back economic growth.<sup>1</sup>**

**Bangladesh has made remarkable progress in reducing poverty in recent decades.** A densely-populated country of 159 million people, Bangladesh is vulnerable to natural disasters (particularly floods), but has displayed impressive resilience to global economic shocks. The manufacturing sector, to which the garment industry contributes 50% of formal employment, is the largest single contributor to growth, while higher incomes and remittances have been important drivers of inclusive growth. Progress in reducing the gender gap has been slow, but the country has maintained a long tradition of women's involvement in decision-making and political empowerment. The government has committed to reach higher-middle-income status by 2021 (the 50th anniversary of its independence): in order to achieve this ambition, the country needs to accelerate economic growth in urban centres, which remain plagued by poor infrastructure and services.

**Bangladesh is one of the least decentralised countries in the world.** Only 4% of government expenditure is spent at local level and less than 2% of total revenue is collected at subnational level. Local governments depend almost entirely on central government transfers for investments and operating costs.

**Bangladesh's urban population of 42 million is one of the largest in the world in absolute terms, equivalent to 30% of the total population.** Urban residents are concentrated in its 11 City Corporations (of which population sizes vary between 307,000 and 3.9 million) and pourashavas (agglomerations of more than 5,000 with urban features such as non-farming activities). Dhaka is classified as a Metropolitan Area (comprising two City Corporations) and is at least twice as large in population as Chittagong, the country's second largest city.

**Slum areas are important features of urban agglomerations in Bangladesh.** A census conducted in 2005 identified 4,966 slum clusters in Dhaka Metropolitan Area. Slums are defined by the Bangladesh Bureau of Statistics as unplanned clusters of housing in an "unhealthy" environment. Slums are located both on government- and privately-owned land. There have been attempts to resettle slum residents outside city centres but most have failed due to poor transport.

**Onsite sanitation is the norm: transport and treatment of sewage and faecal sludge are under-developed.**

**According to the Joint Monitoring Programme (JMP), 58% of urban residents benefited from improved sanitation facilities in 2015. Open defecation has reportedly been eradicated in urban areas.** However, 12% use unimproved facilities and 30% rely on facilities shared by different households, or on public (fee-paying) facilities. Most urban residents rely on onsite sanitation: Dhaka is the only city with a sewer system, and only 20% of the population is connected.

**Transport and treatment systems for wastewater and faecal sludge management (FSM) are very limited.** Increasing population density and high levels of water use lead to septic tanks and pit latrines filling up rapidly. Residents generally discharge large volumes of untreated effluent directly into open drains or the nearby environment. Manual emptying – a service usually performed by "sweepers" who provide a range of sanitation services – is widespread. A common practice in both low and middle/high-income areas is to connect pour-flush toilets directly to drains, without any form of onsite containment. With regards to sewer services, Dhaka's only treatment plant functions below capacity. The network transports only 2% of the sewage produced and only 0.3% is effectively treated. Pilots have recently been launched by numerous agencies (including WSUP, UNICEF, Practical Action and WaterAid) to test approaches for improved FSM.

**The legal framework is fragmented, but recent progress has been made in developing a framework for FSM.**

**The legal framework for sanitation services is distributed across several acts of law.** The main acts pertaining to sanitation are the City Corporations and pourashavas Acts (2009) that assign to local governments the responsibility for sanitation services. At the same time, the Water and Sewerage Authority (WASA) Act established the creation of WASAs (public utilities) in City Corporations, the prime responsibility of which is to provide water and sanitation services. Other environmental and health-related acts provide norms for environmental quality standards.

**In recent months, the Local Government Division of the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) drafted an institutional and regulatory framework for FSM,** with support from key donors involved in the sanitation sector. The draft framework clarifies the roles and responsibilities for FSM, re-affirming City Corporations and municipalities' roles for ensuring services, and the need for potential partnerships with

<sup>1</sup> This section is drawn from a 2017 situation analysis of the urban sanitation sector in Bangladesh, commissioned under the Urban Sanitation Research Initiative from UK-based consultancy AguaConsult. The full report is available from the Urban Sanitation Research Initiative website.

WASAs where relevant. The framework also proposes guidelines for the design of household facilities and faecal sludge treatment facilities; specifies the potential of private sector participation; and identifies the need for the MoLGRD&C to set up a dedicated unit in the City Corporation or municipalities for FSM.

**The National Policy for Safe Water Supply and Sanitation issued in 1998 is the main policy document for the sector, setting the goal of universal access to sanitation, but without committing to a timeframe.** In 2014, the government issued a National Strategy for Water Supply and Sanitation that recognised access to water and sanitation services as a human right, together with the need to move up the sanitation ladder to develop FSM services.

**There is significant overlap in institutional responsibilities, contributing to the limited supply of FSM services.**

**At national level, the Department of Public Health Engineering (DPHE), within the Local Government Division of MoLGRD&C, has chief responsibility for sanitation policy.** DPHE also retains responsibility for implementing sanitation projects in areas not covered by WASAs, despite local governments' overlapping mandate. DPHE is further mandated to monitor and regulate sanitation services; in practice, it exerts limited oversight. Local governments' planning and budgeting capacities are constrained by a lack of resources: budgets allocated by the central governments do not take into account the need to develop infrastructure, and local governments face major human resource constraints.

**The main providers of urban sanitation services are local governments, Dhaka WASA, informal service providers ("sweepers") and a burgeoning formal private sector.** Local government services are generally limited to drainage and solid waste services, although some are involved in hygiene promotion and public toilet construction. Dhaka WASA provides sewerage services, although some pilot projects now involve the utility in FSM. Informal service providers, mainly involved in septic tank and latrine emptying, predominate. Innovative contracts are currently being developed to attract more formal service providers to the FSM market: for example, WSUP has supported the design of a lease contract between Dhaka WASA and a medium-capacity SME to operate a vacuum tanker. CBOs and local NGOs have a long history of involvement in developing community-managed toilets in urban slums.

**Funding has focused on rural sanitation, and sewerage services to urban areas.**

**Central government funds allocated to sanitation increased from 0.006% of GDP in 2007/2008 to 0.023% in 2015/2016. However, most funds have been allocated to sewerage services (in urban areas) and rural sanitation, where the government has been implementing a subsidy-based strategy to eradicate open defecation.** Similarly, donor-funded projects have focused on sewerage improvements (the World Bank is soon to launch a USD 960 million project for Dhaka's sewerage improvements). International NGOs and not-for-profit organisations have attempted to bridge the gap by investing in the piloting of infrastructure and services for onsite services to low-income urban areas.

**Rapid urbanisation, low decentralisation, lack of demand for and supply of FSM services and lack of investment are all major barriers to pro-poor urban sanitation.**

**Population density arising from rapid urbanisation presents a challenge for the construction of traditional networked-based solutions, but some policy-makers remain unconvinced that onsite sanitation services can provide a solution.** At the same time, weak environmental and housing regulations implicitly allows landlords to discard appropriate containment solutions and households to discharge faecal sludge into drains. As a result, there is a perception of lack of demand for improved and sustainable sanitation services, including among municipal officials. This combination of factors results in continued de-prioritisation of pro-poor sanitation services and a lack of investment in the necessary infrastructure for transport and treatment. Ineffective decentralisation and the duplication of roles and responsibilities create further disincentives for engaging in sanitation services.

**Despite challenges, the sector has an opportunity to bring about change.**

**The urban sanitation sector in Bangladesh has moved beyond the development of containment services to supporting the development of the full supply chain.** FSM is now a buzzword in the sector: studies such as the Excreta Flow Diagram (funded by the World Bank) have helped to highlight the problem of ill-managed faecal sludge services. In addition, donors are interested in developing pro-poor services, and the establishment of a low-income unit within Dhaka WASA is an encouraging sign of increasing institutional commitment. Finally, the government's ambition to achieve higher-middle income status increases the potential for rapid progress in the sanitation sector.

## Bangladesh: Evidence Gaps, Research Needs

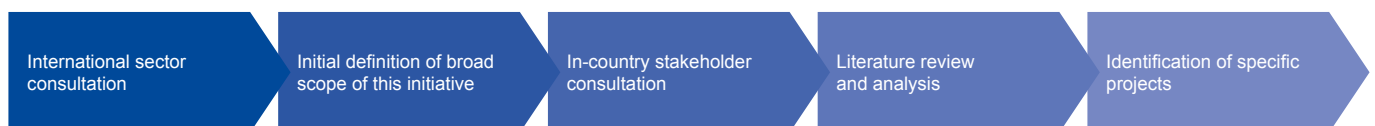
The stakeholder consultation workshop for the Urban Sanitation Research Initiative Bangladesh, held in February 2017, identified the following key barriers to pro-poor urban sanitation progress in Bangladesh:

- Lack of citywide urban planning, in a context of rapid urbanisation and challenging topography
- Limited demand for improved sanitation services from citizens
- Challenges relating to widespread uncontrolled discharge of faecal waste to informal open drains and formal stormwater drainage systems
- Challenges related to non-recognition by government of responsibility for basic service provision in slum communities, often viewed as “illegal” or temporary
- Lack of understanding of the impacts of poor urban sanitation among political leadership
- Lack of decentralisation, lack of resource for local government
- Lack of clarity around institutional mandates for urban sanitation service provision (e.g. division of responsibility for FSM between urban Water and Sewerage Authorities and City Corporations)
- Lack of guiding policy and regulation around urban sanitation, and lack of implementation of existing policies and regulations

These barriers impede sanitation improvements in cities across Bangladesh. Fully overcoming these barriers will likely take years of reform and concerted effort from national and international stakeholders, and is beyond the reach of the Urban Sanitation Research Initiative. Nonetheless, this initiative can contribute significantly by providing relevant data and information upon which policy decisions that realistically respond to these problems can be formulated.

The research projects listed on the next page have been identified taking into account **a)** these key barriers, **b)** stakeholders’ assessments of types of research that can usefully contribute to overcoming these barriers, and **c)** analysis to identify research that can feasibly be done under this initiative. For example, Bangladesh’s history of limited decentralisation has led to a funding shortfall for the regional and municipal actors mandated to deliver services. The Urban Sanitation Research Initiative Bangladesh thus aims to clarify where there are either gaps or overlaps in policy, and to provide in-depth analyses of how City Corporations can best implement and finance pro-poor urban sanitation.

Research can also go some way to shed some light about why demand for sanitation projects, products and services is so low, not only from consumers on the ground but also amongst high-level policy makers. Is it lax enforcement of regulation around connecting sanitation facilities to storm drains that is inhibiting the growth of the private FSM sector, or is it due to other factors, such as the social stigma associated with pit-emptying? Will behaviour change amongst low-income consumers need to be matched by a greater understanding of what drives national and municipal decision-makers?



### Urban Sanitation Research Initiative Bangladesh, Consultation Workshop attendees:

**Md. Akhtaruzzaman**, Consultant, AguaConsult; **Md. Shofiqul Alam**, WASH Specialist, Water Sanitation and Hygiene WASH Section, UNICEF Bangladesh; **Dr Ashraf Ali**, Director, ITN-BUET; **Dr Asiful Haque**, Associate Professor, CUET; **Md. Akter Hossain Azad**, CEO, Rangpur City Corporation; **Amdad Hossain**, Superintending Engineer, Rangpur City Corporation; **Md. Rashidul Huque**, Additional Chief Engineer, DPHE; **Mr Ibrahim**, Additional Chief Engineer, DPHE; **Dr Zahirul Islam**, Programme Officer Health, SIDA; **Md. Waliul Islam**, Consultant, AguaConsult; **Alok Majumder**, Country Coordinator, Bangladesh WASH Alliance; **Shafiqul Mannan Jishu**, Chief Conservancy Officer, Chittagong City Corporation; **Abdul Motaleb**, Consultant, World Bank; **Rajeev Munankami**, Team Leader, FSM Programme, SNV; **Imrul Kayes Muniruzzaman**, Director Resource and Learning, WaterAid Bangladesh; **Md. Azizur Rahman**, Project Manager, ITN-BUET; **Dr Mahbubur Rahman**, WASH Coordinator, icddr,b; **Dipok Chandra Roy**, Programme Manager, Practical Action Bangladesh; **Engr. Uttam Kumar Roy**, Commercial Manager, DWASA; **Dr Dibalok Singha**, Executive Director, DSK; **Farzana Yeasmin**, Research Investigator, icddr,b; **Dr Tariq Bin Yousuf**, Superintending Engineer, Project Director, Urban Resilience project, DNCC; **Dr Md. Shahid Uz Zaman**, Executive Director, ESDO.

## Bangladesh: Research Projects

The table below lists the research projects to be commissioned from the core budget. This listing is as at June 2017, and may change as our understanding of research needs or policy context evolves, and/or as additional funding prospects arise. Not all commissioning budget is allocated at this stage, and this should not be viewed as the final project listing.

### B1: Assessment of organisational capacity for sanitation planning, investment and management in 3 Bangladeshi cities

In Bangladesh, the capacity of city corporations to plan, deliver and manage pro-poor urban sanitation is severely limited. This research (already commissioned) will carry out a detailed capacity assessment in three Bangladeshi city corporations (Dhaka North, Chittagong and Rangpur), with additional consideration of relevant technical support units in national government.

**POLICY-INFLUENCE AIM:** To provide guidance to key institutions on capacity needs for urban sanitation.

**THEMATIC AREA:** Institutional frameworks and capacity

**BUDGET:** £40,000

### B2: Determination of minimum requirements for acceptability of shared toilets

Shared toilets are necessary in many slum contexts, where people often live in tiny dwellings that are too small for a private toilet. But what are the minimum requirements (in terms of criteria like number of people per toilet, distance from home, etc.) to ensure that a shared toilet is of acceptable quality, particularly as regards the needs of women? This project (forming part of a 3-country study) will centre around large-scale survey of existing shared toilets, and of their users, to identify minimum requirements for acceptability.

**POLICY-INFLUENCE AIM:** To provide guidance to key institutions and NGOs on design/management criteria for shared toilets.

**THEMATIC AREA:** Sanitation models, user behaviour, user experience /

**BUDGET:** £100,000 (Bangladesh component)

### B3: Financing requirements for pro-poor urban sanitation systems

SMEs can play a key role in city-wide faecal sludge management; but without public finance, adequate services for slum communities are not commercially viable. This project will analyse, within defined contexts, a) low-income consumers' willingness-to-pay for different levels of service and b) the lifecycle costs of each level of service, allowing c) estimation of the financing gap that needs to be bridged. This research will likely also analyse potential approaches for subsidy injection (e.g. voucher systems; subsidy to SMEs; government financing of capital and/or recurrent costs of components of the sanitation chain).

**POLICY-INFLUENCE AIM:** To provide guidance to government on level and modality of public investment required.

**THEMATIC AREA:** Public finance, sanitation planning

**BUDGET:** £100,000 (Bangladesh component of 3-country study)

### B4: Factors affecting decision-maker attitudes to investing in improved sanitation services in slum areas

In Bangladesh, central government accepts little responsibility for investing in slum sanitation, relying heavily on donors. This ties to limited government acceptance of responsibility for service provision in "illegal" slums. This research project will assess factors influencing the attitudes of high- and medium-level decision-makers towards publicly funded provision of basic services in slum communities, and will aim to identify approaches by which prevailing attitudes might be changed.

**POLICY-INFLUENCE AIM:** To support advocacy aimed at increasing government willingness to invest public funds in slum sanitation.

**THEMATIC AREA:** Public finance, sanitation planning

**BUDGET:** £100,000

### B5: Identification of ways in which SMEs can be incentivised to invest in service delivery in low-income communities

This research will explore ways of incentivising SMEs to enter and invest in the sector, and to develop business models focused on low-income consumers (a common challenge is that they focus their business on higher-income consumers). The precise nature of this research remains to be defined: this will be released as a broadly defined call listing possible approaches, but with bidders free to propose different approaches.

**POLICY-INFLUENCE AIM:** To provide guidance to government and NGOs on approaches for enabling and supporting SME activity.

**THEMATIC AREA:** Sanitation businesses and market development

**BUDGET:** £80,000

### B6: Analysis of user and decision-maker attitudes towards discharge of untreated effluent in open drains

A key problem in urban Bangladesh is the widespread practice of discharging untreated effluent from pit latrines or septic tanks direct to open drains. This study will explore the drivers of this practice and how they might be influenced, both in terms of a) household attitudes and behaviours and b) decision-maker attitudes, policy and regulatory challenges.

**POLICY-INFLUENCE AIM:** To inform development of sanitation planning including guidance associated with the FSM regulatory framework.

**THEMATIC AREA:** Regulation and smart enforcement

**BUDGET:** £80,000

### B7: Climate resilience of onsite sanitation solutions

Climate change is a particularly critical threat for Bangladesh, with particular issues around flood resilience of urban sanitation infrastructures at household, community and city level. The precise nature of this research remains to be defined: this will be released as a broadly defined call listing possible approaches, but with bidders free to propose different approaches.

**POLICY-INFLUENCE AIM:** To inform development of sanitation planning including guidance associated with the FSM regulatory framework.

**THEMATIC AREA:** Public finance, sanitation planning

**BUDGET:** £80,000

### B8: Analysis of social attitudes towards pit-emptiers and how they can be influenced

Working as a pit-emptier is negatively perceived in many locations, and particularly in Bangladesh where caste-related issues persist. This study will incorporate an assessment of whether social attitudes towards pit-emptying impact on the viability of pit-emptying business, and if so how attitudes might be changed.

**POLICY-INFLUENCE AIM:** To inform development of sanitation planning including guidance associated with the FSM regulatory framework.

**THEMATIC AREA:** Sanitation businesses and market development

**BUDGET:** £50,000

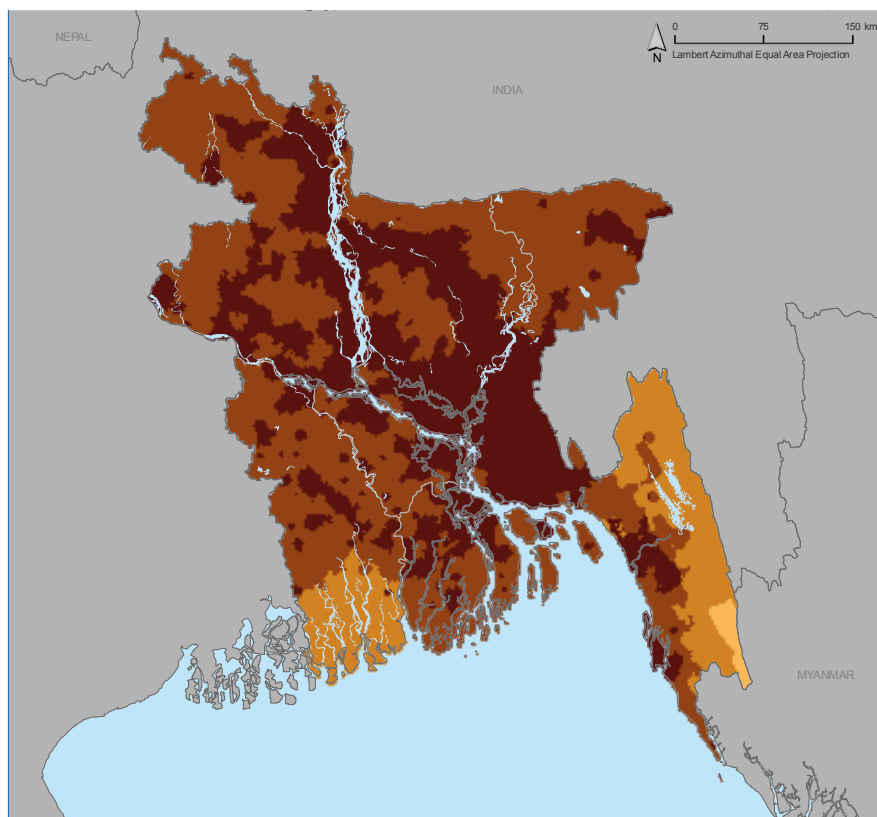
## Bangladesh: Other Research Areas

Other research areas currently identified as of possible interest in Bangladesh are as follows:

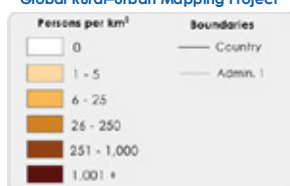
- Follow-up study on regulation and enforcement linked to development of the draft regulatory framework for FSM
- Analysis of strategies for engagement of landlords in the management of communal toilets
- Analysis of the impacts of improved sanitation facilities in the workplace (including menstrual hygiene) on workforce productivity and wellbeing, with a focus on the garment industry in urban Bangladesh
- We note a possible future study, in collaboration with a US university, around occupational health of FSM operators; and possible future research tied to a WSUP small-scale sewerage intervention
- We note strong interest in aligning our work with the World Bank-financed Dhaka Sanitation Improvement Project

## Other Work and Collaboration

We are very open to proposals of collaboration to expand the scope and reach of this initiative: the Urban Sanitation Research Initiative Bangladesh offers a strong framework for other research around urban sanitation, including dedicated staffing for research-into-policy translation, and strong in-country research skills offered by the programme partners icddr,b and ITN-BUET. We welcome conversations around potential collaborations, including **a)** 50/50 match-funding and co-creation of specific research projects (already defined by us, or yet to be defined); **b)** participation in university-led bids for research activities that align with this initiative's vision; **c)** research funding forming part of a wider WSUP implementation funding package. This initiative is managed by WSUP, but this is a multi-partner programme, and we welcome direct conversations with our partners icddr,b and ITN-BUET, as judged most useful by the potential collaborator.



Global Rural-Urban Mapping Project



Population density measures the number of persons per square kilometer of land area. The data are gridded at a resolution of 30 arc-seconds.

Note: National boundaries are derived from the population grids and thus may appear coarse.



**Urban Sanitation  
Research Initiative  
Ghana**

## Ghana: The Urban Sanitation Sector In Context

**Ghana is a fast-growing economy that has made notable progress in reducing poverty.<sup>1</sup>**

**A country of 27.4 million, Ghana is a lower-middle-income economy in which GDP growth has been fuelled by the discovery of off-shore oil in 2007.** Industry, including crude oil, cocoa and mining, accounted for 49% of GDP in 2013. The recent drop in commodity prices created a large fiscal deficit and slowed economic growth. Ghana's national level of monetary poverty fell by more than half (from 56.5% to 24.2%) between 1992 and 2013. Urban poverty is generally lower than in rural areas (10.6% versus 37.9%). Economic disparities persist between the north and the richer south. Although the country has made good progress in reducing gender inequalities in various sectors, women generally have limited decision-making authority. The country is hailed as one of the most stable democracies in Africa. Elections held in 2016 brought to power the leader of the New Patriotic Party, Nana Addo Dankwa Akufo-Addo.

**Ghana is a decentralised country, with 216 Metropolitan, Municipal, and District Assemblies (MMDAs) that are local government authorities.**

There are currently six Metropolitan Assemblies, including Kumasi, Cape Coast, Accra, Tema, Tamale and Sekondi-Takoradi (agglomerations of 250,000 or more). MMDAs have autonomy for planning and budgeting, based on local priorities and guidelines provided by the National Development Planning Commission (on planning) and from the Ministry of Finance (on budgeting and expenditure reporting). The main source of funds for MMDAs is central government transfers, sourced from different funds and Internally Generated Funds (IGF).

**Urban infrastructure has not kept pace with cities' expansion and high levels of rural-urban migration.**

**Ghana is one of the most urbanised countries in Africa: an estimated 53% of the population lived in towns and cities in 2014.** Recent urban growth has averaged 3.5%, with some cities experiencing higher levels of growth (4.8% in Kumasi). Urban boundaries are still being shaped and districts and new municipalities continue to be created. The largest cities in Ghana are Kumasi (1.8 million), Accra (1.7 million), Sekondi-Takoradi (632,000) and Tema (310,000).

**Slum areas are part of the urban landscape in Ghana.** In Accra, slums are situated within and around the city's current boundaries where peri-urban areas were absorbed by the city's expansion. Slum areas are characterised by high population density and lack of

basic services: entire families live in single rooms in "compound houses" that often lack sanitation facilities and water supply. Although poverty is a common feature of many slum residents, income levels vary.

**Only a fraction of urban residents use improved sanitation facilities as per the JMP definition.**

**The vast majority of urban residents (73%) rely on shared sanitation facilities that can be either compound toilets (shared by a few households) or public toilets (usually fee-paying and accessible to all).** The JMP estimates that only 20% of urban residents have individual improved facilities. Open defecation is practiced by 7% of urban dwellers. Most toilet facilities (including individual toilets) are onsite technologies. Sewered facilities serve a small fraction of urban residents. Only three main cities have a sewerage network: Accra, Tema and Kumasi. In Accra, there are only 1,100 connections. Tema reports about 23,000 official connections to the sewer system.

**Faecal sludge management services (related to onsite sanitation facilities, including container-based sanitation services such as Clean Team) are beginning to develop.** Municipalities, together with private operators, increasingly offer emptying services, in the form of mechanical suction and manual collection. However, treatment services remain inadequate: in Accra and Kumasi, an estimated 72% and 43%, respectively, of the sludge produced ends up untreated in the environment or the sea.

**Well-developed legal, policy and strategy frameworks exist but need to be fully implemented.**

**Ghana has a well-defined legal and policy framework for sanitation services. The legal framework clearly allocates to MMDAs the responsibility to prepare infrastructure development plans for sanitation and to implement them.** The Environmental Sanitation Policy (2010) allocates specific responsibilities between ministries and MMDAs and recognises the challenge of urban sanitation (referred to as liquid waste sanitation). It also makes households responsible for financing their own facilities. The National Environmental Sanitation Strategy and Action Plan (NESSAP) further develops the policy: it recognises the need for appropriate low-cost treatment/disposal facilities for faecal sludge and the central role of the private sector. Finally, a Strategic Environmental Sanitation Investment Plan (SESIP) was developed in 2012, proposing financing strategies for the sector including earmarked government transfers to MMDAs for sanitation and a revolving fund to support household investments in sanitation. However, many of these policies are still to be implemented.

<sup>1</sup> This section is drawn from a 2017 situation analysis of the urban sanitation sector in Ghana, commissioned under the Urban Sanitation Research Initiative from UK-based consultancy AguaConsult. The full report is available from the Urban Sanitation Research Initiative website.



## Major institutional reforms followed elections in 2016, but service provision remains poor for low-income areas.

Until 2016, the water and sanitation sectors in Ghana had been characterised by a clear divide between institutional responsibilities for water and sanitation services. Water services fell under the responsibility of the Ministry of Water Resources, while sanitation was under the Environmental Health and Sanitation Directorate (EHSD) of the Ministry of Local Government and Rural Development (MLGRD). EHSD was in charge of policy formulation and implementing national level activities. Within MLGRD, the Office of the Head of Local Government Service (OHLGS, formerly Local Government Service Secretariat) has the responsibility to ensure local authorities are staffed with the qualified personnel and to provide the relevant capacity building for staff to deliver on their mandate. Regulatory functions were shared by EHSD, Ghana Environmental Protection Agency (EPA) and the MMDAs, under the oversight of the Ministry of Environment, Science and Technology (MEST).

Soon after his election in December 2016, President Nana Akufo-Addo announced the creation of a Ministry of Sanitation and Water Resources, among other reforms including a one-house-one-toilet campaign. As of January 2017, consultations were still taking place to determine the implementation modalities of these reforms.

At local level, MMDAs have the responsibility to implement the sanitation policy and strategy. Metropolitan and Municipal Assemblies (MMAs), which have large urban areas, have set-up Waste Management Departments. All MMDAs usually have Environmental Health Units. Service providers include MMDAs themselves; although the policy states that services should be delegated to private operators, many MMDAs remain involved in service provision, usually public toilet management. Private sector provision is developing. In Accra and Kumasi in particular there are over 100 privately-operated vacuum trucks registered with the two assemblies. Such services are not appropriate for low-income areas that large trucks cannot access. Donor-supported initiatives include business models for alternative and decentralised sanitation technologies involving social enterprises. One such enterprise is Clean Team in Kumasi (supported by WSUP): this business offers portable toilets for rent and associated maintenance services, including emptying. The model has yet to scale up, however. NGOs are also involved in service provision, mainly through hygiene promotion and sanitation marketing activities.

## Sanitation is not a public funding priority.

TrackFin, which Ghana has been implementing since 2014, provides indicative figures on public expenditure on sanitation. It estimates that domestic public expenditure on sanitation (excluding households) amounted to GHS 49 million (USD 11.3 million) in 2014. By comparison, Ghana's commitment to the Sanitation and Water for All High Level Meeting was to allocate 0.5% of GDP (at least USD 150 million per annum) to sanitation. The bulk of national expenditure (USD 466 million) came from households, mostly for expenditure on pay-per-use public toilets.

In recent years, donor funding for urban sanitation has increased. The World Bank is supporting the Government of Ghana to implement a sanitation project (with a faecal sludge management component) for low-income areas of Accra. The Dutch Embassy is also supporting a number of urban sanitation projects. Most donor-funded interventions have so far focused on large cities with populations of over 200,000. In line with Ghana's policy, recent programmes give prominence to private sector participation. Donors are testing multiple approaches, often not programmatically aligned.

Government funding for WASH remains inadequate. The Water Sector Strategic and Development Plan (WSSDP) calls for sustainable water and basic sanitation for all by 2025, and financial projections for 2012-2025 indicate that Ghana will need to find USD 386 million per annum to achieve this. At present, however, total government financing (for water and sanitation) is only USD 54 million annually, leaving a gap of USD 332 million. Government spending remains at only 18% of donor spending (UNICEF-USAID Budget Analysis, 2017).

## Lack of prioritisation, insufficient demand, limited supply: barriers to pro-poor sanitation remain significant.

Sanitation has been at the bottom of the government's priorities, whether at national level or local level. Perhaps this lack of prioritisation (and therefore inadequate funding) mirrors insufficient demand, among urban residents, for improved services, partly due to an entrenched reliance on and acceptance of public toilets. A major hurdle to overcome is the high cost of improved facilities in urban areas, which ranges from USD 230 to USD 1,000 depending on the technology. However, alternative, cost-effective and decentralised solutions still need to gain buy-in from policy makers. More research on factors of demand is needed in order to inform policy going forward, including investment costs, the role of women and vulnerable groups in influencing decisions, and the potential of innovative low-costs solutions.

## Ghana: Key Research Needs

The stakeholder consultation workshop for the Urban Sanitation Research Initiative Ghana, held in February 2017, identified the following key barriers to pro-poor urban sanitation progress in Ghana:

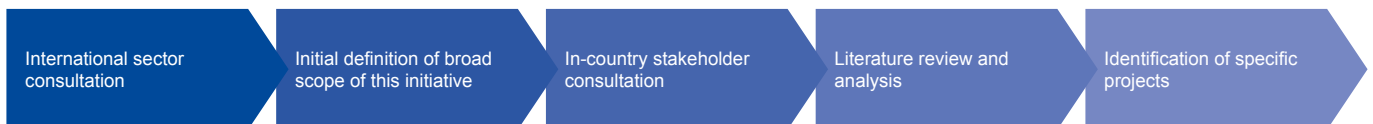
- Prioritisation of public toilets over household (or compound) toilets, in terms of policy and government funding
- Ineffective use of finance, despite the fact that Ghana has significant funding (from the World Bank, for example)
- Lack of enforcement of (and accountability for) existing plans and guidelines for urban sanitation
- Lack of technologies that are suitable, affordable and context-appropriate, and an associated lack of consumer demand for sanitation products and services
- Current high cost of credit
- Poor urban planning: in some cases, settlements are built with no planning, in other areas planning does not correspond with practice on the ground

These barriers clearly impede urban sanitation improvement in Ghana. Fully overcoming these barriers will likely take years of reform and concerted effort from national and international stakeholders, and is beyond the reach of the Urban Sanitation Research Initiative. Nonetheless, this initiative can contribute significantly by providing relevant data and information upon which policy decisions that realistically respond to these problems can be formulated.

While funding is (as in similar contexts) a very real constraint to urban sanitation in Ghana, there are more immediate blockages in policy and practice that hinder the development of improved sanitation. For example, any research seeking to explore the low demand for sanitation products and services among urban residents must take into account the very large proportion of urban residents who use public toilets: these may often be more expensive in the long run than household or shared compound toilets, but they require only small daily payments, which are typically preferred by poorer people.

The Ghanaian government is now shifting focus and promoting 'one toilet in every home', but this must be matched by support for households willing to construct these facilities and support for businesses that supply materials and expertise. Furthermore, "one toilet in every home" doesn't work for people living in tiny rented dwellings. Municipalities already require landlords to provide sanitation facilities for their tenants, but diverse issues mean that these regulations are rarely enforced. Additionally, the cost of borrowing in Ghana is prohibitively high, which in turn impacts on the cost of household toilet construction and the profitability of private businesses that offer sanitation services and products. Understanding the intricacies of how these policies impact on the demand for and the supply of urban sanitation services will be invaluable for policy makers and business owners.

The research projects listed on the next page have been identified taking into account **a)** these key barriers, **b)** stakeholders' assessments of types of research that can usefully contribute to overcoming these barriers, and **c)** analysis to identify research that can feasibly be done under this initiative.



### Urban Sanitation Research Initiative Ghana, Consultation Workshop attendees:

**Donnan Kobla Tay**, Water Director, Ministry of Sanitation & Water Resources; **Felix Addo-Yobo**, NDPC; **Kwame Asubonteng**, Programme Manager, IRC Ghana; **Prince Antwi-Agyei**, Director of Programmes, NHance Development Partners; **Dr Dadson Awunyo Vitor**, Director, ILGS; **Michael Kissi Boateng**, NDPC; **Simon Bokor**, Dean, ILGS; **Dr Richard Buama**, Senior Lecturer, KNUST; **Bertha Darteh**, Consultant, GAMA, MLGRD-EHSD; **Martin Derry**, Chairman, CONIWAS; **Harold Esseku**, Rapha Consult/AguaConsult; **Joana Forte**, Water, Sanitation and Hygiene Consultant, I-San; **Kwadwo Gyasi**, Projects Coordinating Unit, Ghana Projects; **Samuel Lawer**, Municipal Planning Officer, Ga West Municipality; **Goufrane Mansour**, Sanitation and Water Specialist, AguaConsult; **Anthony Mensah**, Director, Waste Management, Accra Metropolitan Assembly; **Abdul-Nashiru Mohammed**, Country Director, WaterAid Ghana; **Emmanuel Nkrumah**, Senior Water & Sanitation Specialist, World Bank; **Gideon Nkrumah**, MLGRD-EHSD; **Dr Kwabena Nyarko**, Senior Lecturer, KNUST; **Daniel Opore**, Municipal Head, EHSD, Ga West Municipality; **Kinley Penjor**, WASH Specialist, UNICEF; **Baah Tettah**, Representative for the Head of Service, LGSS.

## Ghana: Research Projects

The table below lists the research projects to be commissioned from the core budget. This listing is as at June 2017, and may change as our understanding of research needs or policy context evolves, and/or as additional funding prospects arise. Not all commissioning budget is allocated at this stage, and this should not be viewed as the final project listing.

### G1: International comparative study of institutional models for Ghana's proposed National Sanitation Authority

Ghana is planning to set up a National Sanitation Authority, and the Minister of Sanitation and Water has requested that this programme deliver an international comparative study of institutional models, to support decisions about the nature of the future Ghanaian NSA. This research will thus be similar in scope and design to Kenya's K1.

**POLICY-INFLUENCE AIM:** To support government decisions about the nature of the future National Sanitation Authority.

**THEMATIC AREA:** Institutional frameworks and capacity

**BUDGET:** £80,000

### G2: Determination of minimum requirements for acceptability of shared toilets

Shared toilets are necessary in many slum contexts, where people often live in tiny dwellings that are too small for a private toilet. But what are the minimum requirements (in terms of criteria like number of people per toilet, distance from home, etc.) to ensure that a shared toilet is of acceptable quality, particularly as regards the needs of women? This project (forming part of a 3-country study) will centre around large-scale survey of existing shared toilets, and of their users, to identify minimum requirements for acceptability.

**POLICY-INFLUENCE AIM:** To provide guidance to key institutions and NGOs on design/management criteria for shared toilets.

**THEMATIC AREA:** Sanitation models, user behaviour, user experience

**BUDGET:** £100,000 (Ghana component of 3-country study)

### G3: Financing requirements for pro-poor urban sanitation systems

SMEs can play a key role in city-wide faecal sludge management; but without public finance, adequate services for slum communities are not commercially viable. This project will analyse, within defined contexts, a) low-income consumers' willingness-to-pay for different levels of service and b) the lifecycle costs of each level of service, allowing c) estimation of the financing gap that needs to be bridged. This research will likely also analyse potential approaches for subsidy injection (e.g. voucher systems; subsidy to SMEs; government financing of capital and/or recurrent costs of components of the sanitation chain).

**POLICY-INFLUENCE AIM:** To provide guidance to national/county governments on level and modality of public investment required.

**THEMATIC AREA:** Public finance, sanitation planning

**BUDGET:** £100,000 (Ghana component of 3-country study)

### G4: Identification/modelling of public finance mechanisms to support FSM provision

Stakeholders indicated strong interest in work in this area, somewhat analogous in broad influencing aim to Kenya's K5. The precise focus remains to be defined, but this will likely comprise two phases: an initial review of possible mechanisms, followed by a more detailed analysis (likely including willingness-to-pay studies) focusing on one specific mechanism. Several key stakeholders have indicated the potential feasibility of some sort of hotel/leisure tax.

**POLICY-INFLUENCE AIM:** To provide guidance to key institutions on mechanisms for revenue generation for pro-poor sanitation.

**THEMATIC AREA:** Public finance, sanitation planning /

**BUDGET:** £80,000

### G5: Identification of ways in which SMEs can be incentivised to invest in service delivery in low-income communities

This research will explore ways of incentivising SMEs to enter and invest in the sector, and to develop business models focused on low-income consumers (a common challenge is that they focus their business on higher-income consumers). The precise nature of this research remains to be defined: this will be released as a broadly defined call listing possible approaches, but with bidders free to propose different approaches.

**POLICY-INFLUENCE AIM:** To provide guidance to government and NGOs on approaches for enabling and supporting SME activity.

**THEMATIC AREA:** Sanitation businesses and market development

**BUDGET:** £80,000

### G6: Identification of smart regulatory approaches for ensuring landlord provision of high-quality shared toilets to tenants

WSUP has already commissioned a small rapid-start-up study, centred around negotiation games, to identify smart enforcement models ("carrot and stick") that are workable for municipal authorities and acceptable to landlords as a group; completion due autumn 2017.

**POLICY-INFLUENCE AIM:** To provide guidance to relevant institutions on approaches to improving enforcement.

**THEMATIC AREA:** Regulation and smart enforcement /

**BUDGET:** £60,000 (already commissioned and underway)

### G7: Analysis of factors impacting consumer demand for household and compound toilets

The sanitation market in urban Ghana is impacted by the uniquely high prevalence of pay-per-use public toilets, the dominant form of sanitation in urban Ghana; the relatively high cost of toilet construction; and the prohibitive cost of consumer borrowing. This research will explore how and to what extent these factors undermine demand for household and compound toilets. It will incorporate an analysis of the factors contributing to the unusually high cost of toilet construction in Ghana and identify potential policy measures.

**POLICY-INFLUENCE AIM:** To provide guidance to relevant institutions on triggering demand for household and compound sanitation.

**THEMATIC AREA:** Sanitation models, user behaviour, user experience

**BUDGET:** £80,000

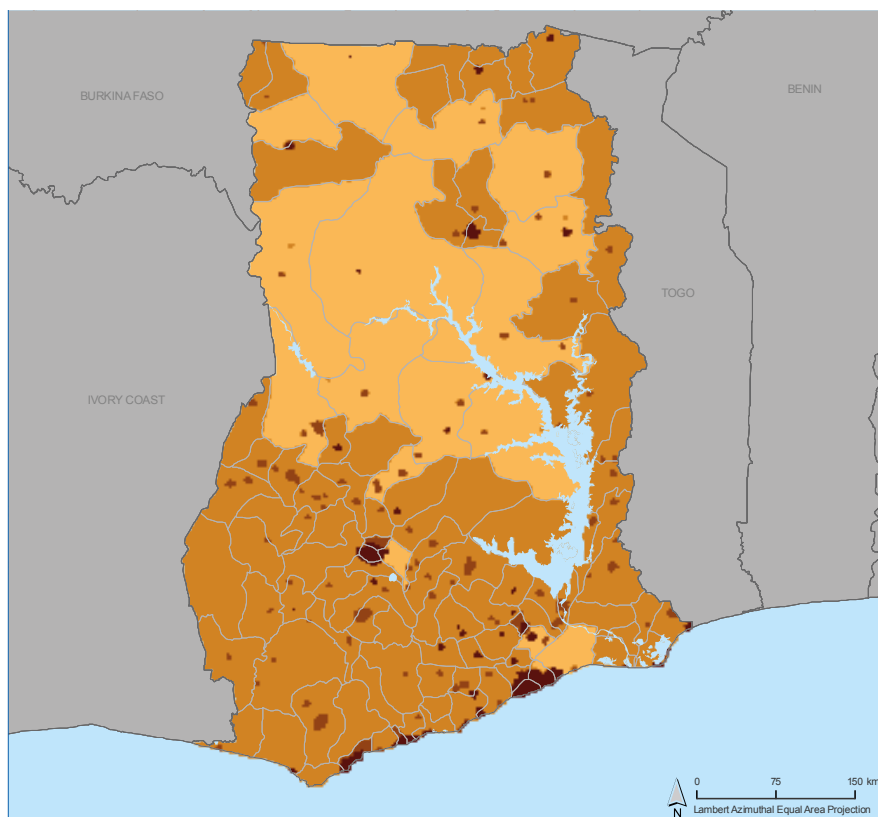
## Ghana: Other Research Areas

Other research areas currently identified as of possible interest in Ghana are as follows:

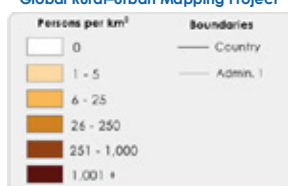
- Identification of effective mechanisms for citizen engagement in municipal planning and budgeting
- Analysis of incentives and models for enhanced SME engagement in waste-to-resource sanitation models, analogous to Kenya project K5 and subject to the success of that research
- We note interest in aligning this research initiative with ongoing World Bank-financed work in Ghana

## Other Work and Collaboration

We are very open to proposals of collaboration to expand the scope and reach of this initiative: the Urban Sanitation Research Initiative Ghana offers a strong framework for other research around urban sanitation, including dedicated staffing for research-into-policy translation, and strong in-country research skills offered by the programme's academic partners KNUST and ILGS. We welcome conversations around potential collaborations, including **a)** 50/50 match-funding and co-creation of specific research projects (already defined by us, or yet to be defined); **b)** participation in university-led bids for research activities that align with this initiative's vision; **c)** research funding forming part of a wider WSUP implementation funding package. This initiative is managed by WSUP, but this is a multipartner programme, and we welcome direct conversations with our partners KNUST and ILGS, as judged most useful by the potential collaborator.



Global Rural-Urban Mapping Project



Population density measures the number of persons per square kilometer of land area. The data are gridded at a resolution of 30 arc-seconds.

Note: National boundaries are derived from the population grids and thus may appear coarse.



**Urban Sanitation  
Research Initiative  
Kenya**

## Kenya: The Urban Sanitation Sector In Context

**Kenya is one of Africa's top 10 economies, experiencing strong urban growth amid deep institutional and governance reforms.<sup>1</sup>**

**With a population of 46 million, Kenya is the 9th largest economy in Africa, ahead of Ghana and Tunisia.** Economic growth has only slightly reduced poverty levels, which fell from 45% in 2005 to 42% in 2013. Inequality persists, with poverty concentrated in arid rural areas. Kenya has rapidly recovered from 2007's political turmoil and a new Constitution was voted by referendum in 2010, paving the way for deep institutional and legal reforms.

**Constitutional reforms have divided the country into 47 counties.** As of January 2017, nearly all counties have established basic constitutive structures and local government systems. In the first year of devolution (2013/14), about 20% of total government expenditure was spent at sub-national level. The inheritance by counties of assets and liabilities of previous local authorities has created a funding gap for the major urban centres. Transfers from central government currently do not take into account the funding requirements for ensuring basic services.

**Kenya is still predominantly rural, but is experiencing strong urban growth (4.3% per annum).** Nairobi's population makes up more than 45% of Kenya's urban residents: with an estimated 3.9 million people, it is at least three times larger than the second city, Mombasa. An estimated 15% of the country's urban population lives in informal settlements: Kisumu has the highest proportion of population living in informal settlements (47%) followed by Nairobi (36%).

**A minority of urban residents use improved sanitation facilities as per the JMP definition, while wastewater treatment and faecal sludge transport/treatment services are largely inefficient.**

**The WHO/UNICEF Joint Monitoring Program (JMP) estimates that only 31% of urban residents have access to improved facilities.** About 48% use shared facilities, including public toilets as well as facilities shared by defined groups of households. While 18% of urban dwellers use unimproved facilities, 3% still practice open defecation. Onsite sanitation is the norm for most urban residents, as less than 20% have access to sewerage services. Transport and treatment services are very poor across all kinds of facilities. Nationally, only 5% of sewage is effectively treated due to failures of the sewerage system and inadequate wastewater treatment processes.

Onsite sanitation services are equally poor: in Kisumu and Nakuru over 65% of excreta ends up in the environment untreated, due to inefficient transport and treatment. Research has shown that the impact of inadequate sanitation falls disproportionately on women.

**The legal framework for sanitation remains fragmented and focuses on sewerage services.**

**With the new Constitution (and its Bill of Rights), access to sanitation became a basic human right. However, the legal framework for sanitation remains fragmented.** The major legislation for sanitation is embodied in the 2002 Water Act, which focuses on water and sewerage services. The Water Act introduced major reforms, separating water (and sewerage) asset ownership from service provision. Regional Water Services Boards (WSBs) were formed and were able to delegate asset operations and maintenance to Water Service Providers (WSPs) via Service Provision Agreements (SPAs). A new Water Act was passed in 2016 to reflect constitutional reforms. However, overlaps of responsibilities between WSBs and county governments led counties to dispute the validity of the 2016 Water Act. Other relevant legislation for the sanitation sector include the Environment Management Act and Coordination Act (1999), which regulates the discharge of effluents, and the Urban Areas and Cities Act (2011), which provides for the classification and management of urban areas as well as arrangements for service provision (including through Public-Private Partnerships). The Ministry of Health, with support from the World Bank, UNICEF and other partners, has embarked on the process of developing a National Environmental Health and Sanitation Bill (expected to be published in 2017).

**The policy framework sets high ambitions and recognises a range of solutions and service provision models.**

**The overarching policy framework for urban sanitation is set by Kenya Vision 2030 and the Kenya Environmental Sanitation and Hygiene Policy (KESHP) 2016-2030.** Kenya Vision 2030, developed in 2007 and revised in 2012, aims for universal sanitation by 2030. This objective was also formulated in KESHP, which aims to achieve improved sanitation for all (not just eradication of open defecation) by 2030. KESHP sets the ambition to increase public investment in sanitation from 0.2% to 0.9% of the GDP by 2030. The policy promotes the adoption of low-cost technologies in peri-urban and slum areas, and explicitly refers to a range of technologies, ranging from sanplats and cartridge-based toilets to conventional sewerage. It emphasises the need for sustainable systems for collection and safe disposal of solid waste from

<sup>1</sup> This section is drawn from a 2017 situation analysis of the urban sanitation sector in Kenya, commissioned under the Urban Sanitation Research Initiative from UK-based consultancy AguaConsult. The full report is available from the Urban Sanitation Research Initiative website.

residential and commercial areas. The Kenya Environmental Sanitation Strategic Framework (KESSEF) 2016-2020 provides a medium-term framework for the implementation of the KESHP 2016-2030. It aims to declare 100% of Kenya ODF by 2030, and to ensure that at least 55% of urban households have access to improved sanitation facilities.

**There is significant institutional fragmentation and overlap, especially between the Ministry of Health and the Ministry of Water and Irrigation.**

**At national level, policy and strategy development for the sector is shared between three main ministries.** The Ministry of Health oversees the whole sanitation portfolio, but has primary responsibility for coordinating rural sanitation activities. The Ministry of Water and Irrigation is the key institution in charge of the formulation of policies and strategies relating to urban water and sewerage and investment planning. The Ministry of Environment and Natural Resources, through the National Environmental Management Authority, is responsible for environmental regulation.

**The regulation and monitoring of urban sanitation services is the responsibility of the Water Services Regulatory Board (WASREB).** WASREB issues licenses to service providers, approves service provision agreements and develops tariff guidelines, among other functions. WASREB is not currently involved in the regulation of small-scale sanitation service providers.

**At the county level, planning and service delivery is also shared between the County Departments of Health, Water and Environment.** The Constitution requires county governments to further decentralise sanitation functions to urban areas and cities. However, this decentralisation process has yet to materialise.

**The main service providers are the WSPs, county governments, private operators, CBOs and NGOs.** WSPs are mainly involved in sewerage services (benefiting less than 20% of Kenyans), and tend to reject responsibility for onsite sanitation service provision including FSM. County governments are mainly involved in the construction and management of public toilets. The private sector is relatively dynamic but remains limited, especially for service provision in low-income areas. There are many SMEs working at small scale in the provision of pit emptying and exhausting services (and solid waste collection), but only a few are large enough to bring services to scale. In recent years, some social enterprises have been developing business models to bring sanitation services at scale to low-income areas. One such social enterprise is Sanergy, which designs and manufactures public toilets with sealable containers and sells the franchise to local residents. WSUP and

Kisumu County Government have also supported a small business to start providing safe manual emptying services for pit latrines.

**Investments in sanitation for low-income areas are almost entirely donor-funded.**

**The Ministry of Health estimates that public funds for sanitation represent only 0.2% of Kenya's GDP every year, despite the country's commitment to reach 0.5% of GDP.** Most investment plans for the sanitation sector have focused on sewerage services, the costs of which appear out of reach in the medium-term. Overall, sanitation has remained a low investment priority due to institutional fragmentation, leading to a lack of coordination in carrying out investments.

**Nearly all funding allocated to pro-poor sanitation has come from donors.** The Water Sector Trust Fund (WSTF) established in 2002 has channelled at least USD 18.4 million to pro-poor urban sanitation as part of the Upscaling Basic Sanitation for the Urban Poor (UBSUP) programme funded by the German Ministry for Economic Cooperation and Development (BMZ) through the German Development Bank (KfW) and by the Bill and Melinda Gates Foundation (BMGF). The World Bank GPOBA programme is funding a water and urban sanitation project, supporting WSPs to increase investments to serve low-income areas. Some ongoing donor projects are focusing on sewerage services.

**Inadequate institutional capacity and sector financing are major barriers to pro-poor sanitation.**

**County governments' capacity, in terms of staff numbers and skills, is not adequate to meet the needs of the sector.** However, there is no explicit government initiative to fill this gap. In addition, pro-poor sanitation remains a lower priority, and planning and funding is left to donor projects. At the local level, counties have difficulties in allocating and appropriating budgets for sanitation activities, in part due to a lack of assigned budget codes. Finally, the sector has insufficient data on key areas: for example, the factors affecting demand for improved sanitation in low-income areas, including the role that women can play; and the operating conditions of private operators in slums, including costs related to business fees and charges (and other "informal taxes" set by local power-holders), which may deter the private sector from venturing into urban sanitation markets. Research in these areas may be useful to inform policy going forward.

## Kenya: Key Research Needs

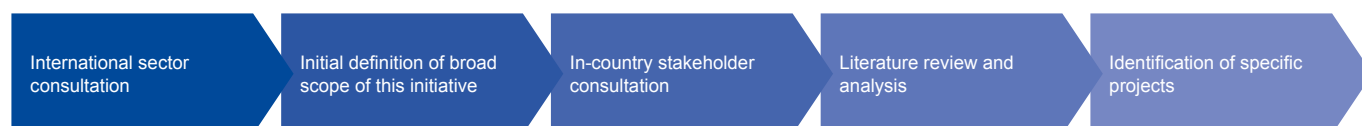
The stakeholder consultation workshop for the Urban Sanitation Research Initiative Kenya, held in March 2017, identified the following key barriers to pro-poor urban sanitation progress in Kenya:

- Lack of political prioritisation: policy-makers prefer to engage in water over sanitation, partly because of the latter's complexity and somewhat invisible nature
- Lack of an institutional framework to regulate and regularise activities, particularly for FSM which has been overshadowed by a focus on sewerage
- Lack of capacity at the governmental level, not just in terms of personnel, but also technology
- Inadequate finance for the sector: funding and commitments do not take the long view, and are often short-term or inadequate
- Inadequate planning: no strategic planning, therefore no well-designed guidelines or enforcement (potentially due to institutional fragmentation, as the sector is now split across multiple national and county-level ministries)
- Insufficient data about who lacks sanitation where, and how that could shift in the near future.

While the barriers listed above are daunting, Kenya is at a constitutional crossroads where timely and relevant research could have a long-lasting positive impact on citizens of the new counties. Decentralisation will most likely have short-term 'losers' (most notably those counties that consist of large urban centres such as Nairobi, which will lose out financially as a result of decreasing transfers from central government); but if well-managed, the process could reinvigorate the sanitation sector as a whole through empowered and informed local/municipal governments. Research that provides context, lessons and recommendations on funding and planning for pro-poor sanitation would be well-placed to reach decision-makers at national and county levels.

The sanitation market in Kenya is already host to a small number of private businesses that provide sanitation services from collection to treatment and re-use. However, these businesses struggle to scale up and provide their services to poorer urban residents those who cannot pay a fully cost-reflective price; this is partly due to a lack of policy and regulatory support from public institutions that have to date focused on sewerage services, leaving FSM providers out of the picture. Focused research projects can provide guidance on business development to sector stakeholders, public and private, as well as persuading public bodies of the importance of expanding their remit to services other than sewerage.

The research projects listed on the next page have been identified taking into account a) these key barriers, b) stakeholders' assessments of types of research that can usefully contribute to overcoming these barriers, and c) analysis to identify research that can feasibly be done under this initiative.



### Urban Sanitation Research Initiative Kenya, Consultation Workshop attendees:

**Prof. Elijah Biamah**, Department of Environmental and Biosystems Engineering, University of Nairobi; **Benjamin Cutner**, WASH Sector Leader, SNV; **Andrew Foote**, CEO & Co-Founder, Sanivation; **Eng. Robert Gakubia**, CEO, WASREB; Samuel King'ori, Public Health Officer, Nakuru County; **Goufrane Mansour**, Sanitation and Water Specialist, AguaConsult; **Alex Manyasi**, Government Relations, Sanergy; **Dr James Messo**, Chairman, Soil Water and Environmental Engineering Department, JKUAT; **Janet Mukule Mule**, Senior Public Health Officer, MoH-DEH; **Dr Jane Mumma**, Dean, Tropical Institute of Community Health & Development, Great Lakes University of Kisumu; **Eng. George Mungai**, MD, RUJWASCO; **Eng. James Ng'ang'a**, MD, NAWASCO; **Wycliffe O. Nyang'au**, Research Assistant, WARREC JKUAT; **Dickson Ochieng**, Government Relations Manager, Sanivation; **Simon Okoth**, Urban Programme Officer, WSTF; **Scolastic Onjala**, RUJWASCO; **Charles Oyaya**, Executive Director, IDI Africa; **Rachel Peletz**, Director of Programmes, Aquaya; **James Ronoh**, Sanitation Project Coordinator, GIZ; **Dr Moses Rugutt**, CEO/Director General, NACOSTI; **Samson Shivaji**, CEO, KEWASNET; **Andrew Trevett**, Chief Water, Sanitation and Hygiene, UNICEF Kenya.



## Kenya: Research Projects

The table below lists the research projects to be commissioned from the core budget. This listing is as at June 2017, and may change as our understanding of research needs or policy context evolves, and/or as additional funding prospects arise. Not all commissioning budget is allocated at this stage, and this should not be viewed as the final project listing.

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### K1: International comparative study of institutional frameworks for urban sanitation in highly decentralised countries

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The institutional framework for urban sanitation is evolving rapidly in Kenya, as part of wider processes of devolution of power and responsibility from national to county government. Kenyan stakeholders express strong interest in an international comparative study to identify useful institutional framework models. This study will look at around 10 representative and relevant models, then “zoom in” to analyse in greater detail the experience of 3 countries with models identified to be of particular relevance to Kenya.

**POLICY-INFLUENCE AIM:** To support government in identifying the most appropriate institutional framework for urban sanitation in Kenya.

**THEMATIC AREA:** Institutional frameworks and capacity  
**BUDGET:** £80,000

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### K2: Determination of minimum requirements for acceptability of shared toilets

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Shared toilets are necessary in many slum contexts, where people often live in tiny dwellings that are too small for a private toilet. But what are the minimum requirements (in terms of criteria like number of people per toilet, distance from home, etc.) to ensure that a shared toilet is of acceptable quality, particularly as regards the needs of women? This project (forming part of a 3-country study) will centre around large-scale survey of existing shared toilets, and of their users, to identify minimum requirements for acceptability.

**POLICY-INFLUENCE AIM:** To provide guidance to key institutions and NGOs on design/management criteria for shared toilets.

**THEMATIC AREA:** Sanitation models, user behaviour, user experience  
**BUDGET:** £100,000 (Kenya component of 3-country study)

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### K3: Financing requirements for pro-poor urban sanitation systems

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SMEs can play a key role in city-wide faecal sludge management; but without public finance, adequate services for slum communities are not commercially viable. This project will analyse, within defined contexts, a) low-income consumers’ willingness-to-pay for different levels of service and b) the lifecycle costs of each level of service, allowing c) estimation of the financing gap that needs to be bridged. This research will likely also analyse potential approaches for subsidy injection (e.g. voucher systems; subsidy to SMEs; government financing of capital and/or recurrent costs of components of the sanitation chain).

**POLICY-INFLUENCE AIM:** To provide guidance to national/county governments on level and modality of public investment required.

**THEMATIC AREA:** Public finance, sanitation planning  
**BUDGET:** £100,000 (Kenya component of 3-country study)

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### K4: Factors affecting willingness of non-poor consumers to pay a sanitation surcharge on water bills

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As noted in K3, there is a clear need for government finance to support development of pro-poor faecal sludge management systems. What new revenue generation mechanisms might work

in the Kenyan context? WSUP has already commissioned a small rapid-start-up study, in collaboration with the Kenyan water services regulator, looking at factors affecting the willingness of non-poor consumers to pay a “sanitation surcharge” on water bills. Depending on the outcomes of this research, this stream of work may be continued.

**POLICY-INFLUENCE AIM:** To provide guidance to key institutions on mechanisms for revenue generation for pro-poor sanitation.

**THEMATIC AREA:** Public finance, sanitation planning  
**BUDGET:** £60,000

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### K5: Analysis of incentives and models for enhanced SME engagement in waste-to-resource sanitation models

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One approach for reducing the public financing requirements of urban sanitation is revenue generation from waste. WSUP’s experience indicates that this is no silver bullet; however, there is strong potential for contributing to costs. This research is likely to consist of 1) a baseline study to assess demand for faecal product and existing W2R models in Kenya; and 2) research to test the viability of a specific W2R model or technology. The precise nature of 2) remains to be defined.

**POLICY-INFLUENCE AIM:** To provide guidance to government and NGOs on approaches for enabling and supporting SME activity.

**THEMATIC AREA:** Sanitation businesses and market development  
**BUDGET:** £90,000

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### K6: Identification of smart regulatory approaches for ensuring landlord provision of high-quality shared toilets to tenants

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Related to K2, a key issue in Kenya and elsewhere is lack of regulatory enforcement to ensure that landlords in low-income communities provide high-quality shared toilets to tenants. In Ghana, WSUP has already commissioned a small rapid-start-up study, centred around negotiation games, to identify smart enforcement models (carrot and stick) that are workable for municipal authorities and acceptable to landlords as a group. This research will apply a similar approach in the Kenyan context.

**POLICY-INFLUENCE AIM:** To provide guidance to county governments on approaches to improving enforcement.

**THEMATIC AREA:** Regulation and smart enforcement  
**BUDGET:** £80,000

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### K7: Assessment of gender differences in decision-maker attitudes in the sanitation sphere

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Gender-focused sanitation research to date has tended to focus at the household level: while this is appropriate, it is also important to understand how gender dynamics affect decision-making within institutions involved in sanitation service planning and delivery. This research will explore how gender shapes decision-maker attitudes towards sanitation service delivery. This study will be focused in Kenya, but may also include Bangladesh and Ghana.

**POLICY-INFLUENCE AIM:** To assess whether gender-equitable outcomes requires gender equity in institutional decision-making.

**THEMATIC AREA:** Institutional frameworks and capacity  
**BUDGET:** £80,000

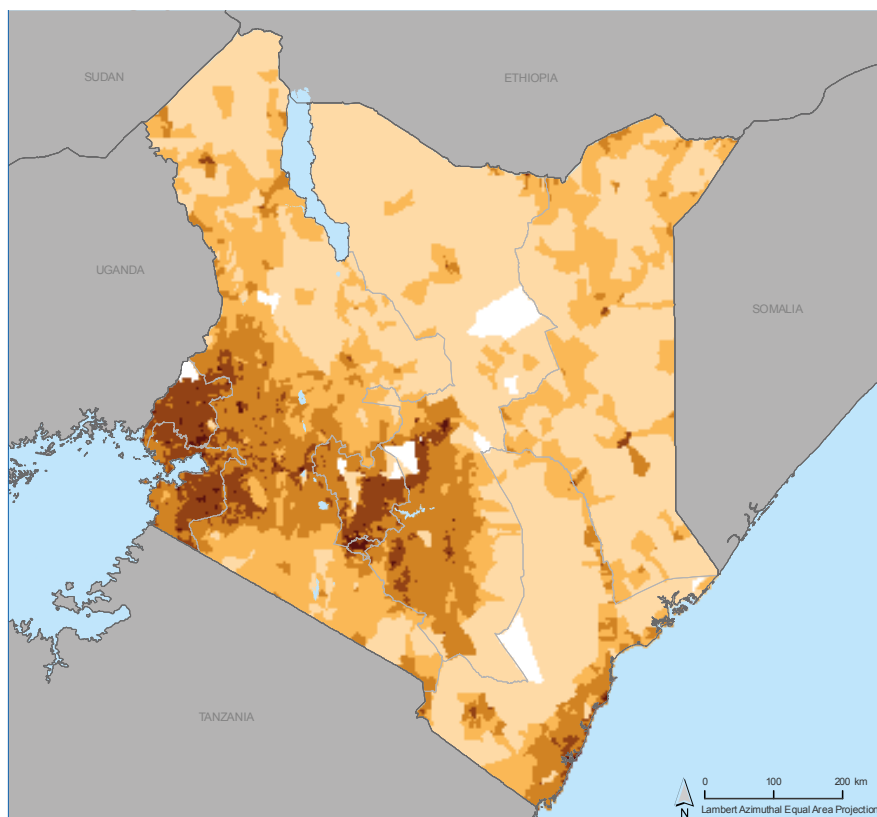
## Kenya: Other Research Areas

Other research areas currently identified as of possible interest in Kenya are as follows:

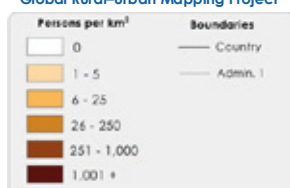
- Assessment of organisational capacity for sanitation planning, investment and management in 3 county governments
- Analysis of informal costs to a sanitation business (e.g. protection rackets) of operating in informal settlements, and/or barriers to service provision in informal settlements (e.g. land tenure, landlord sequestration of communal toilets)
- Analysis of the impacts of dependence on public toilets on the security of women and girls
- Additional research in the business/markets area
- Additional research into identification/modelling of public finance mechanisms to support FSM provision in Kenya
- We note interest among many Kenyan stakeholders in research around pro-poor sewerage (not just onsite sanitation and FSM); we are entirely open to this

## Other Work and Collaboration

We are very open to proposals of collaboration to expand the scope and reach of this initiative: the Urban Sanitation Research Initiative Kenya offers a strong framework for other research around urban sanitation, including dedicated staffing for research-into-policy translation. We welcome conversations around potential collaborations, including **a**) 50/50 match-funding and co-creation of specific research projects (already defined by us, or yet to be defined); **b**) participation in university-led bids for research activities that align with this initiative's vision; **c**) research funding forming part of a wider WSUP implementation funding package. This initiative is managed by WSUP, but this is a multipartner programme, and we welcome direct conversations with our partners WASREB and Ministry of Health (Division of Environmental Health), as judged most useful by the potential collaborator.



Global Rural-Urban Mapping Project



Population density measures the number of persons per square kilometer of land area. The data are gridded at a resolution of 30 arc-seconds.

Note: National boundaries are derived from the population grids and thus may appear coarse.



**Beyond Bangladesh,  
Ghana and Kenya: the  
Urban Sanitation Research Initiative  
internationally**

## Global Research

The Urban Sanitation Research Initiative is focused in Bangladesh, Ghana and Kenya. Most studies will have a single-country focus, but some studies (notably B2-G2-K2 and B3-G3-K3) will be multicountry (i.e. carried out across all three countries). All studies, though primarily designed to meet the evidence needs of the focus countries of this initiative, are likely to generate learning that has global value.

In addition, some research under this initiative will be global in scope, and small amounts of budget may support research in other WSUP focus countries (namely Madagascar, Mozambique and Zambia) and possibly in India, where WSUP is involved in supporting national urban sanitation planning.

### Global research

- A small rapid-start-up study already commissioned under this initiative is looking at ways in which sanitation investment planning can take better account of faecal pathogen flows in the environment. This work is being carried out by the Institute of Sustainable Futures at the University of Sydney, and we anticipate that this stream of research will likely continue, possibly with allocation of the initiative's core budget, or with additional funding sought elsewhere.
- Other studies over the course of this programme may be international in scope (i.e. not tied to any particular country). Note also that the institutional frameworks research already identified for commissioning in Ghana and Kenya is international, in the sense that it is being designed to meet evidence needs in these countries, but will in fact look at other countries.

### Madagascar

- As part of Dubai Cares funding to WSUP for an implementation programme in Madagascar focused on schools sanitation, WSUP will be delivering research related to schools sanitation in Madagascar, and will be employing a Research & Policy Lead, opening up the possibility of further expansion of research activities in Madagascar. For further information about this research, see [www.wsup.com/research](http://www.wsup.com/research)
- We are very open to research collaborations in Madagascar, from partners who are able to bring or access significant funding for the proposed research.

### Mozambique

- WSUP has been involved since 2014 as implementation partner within the MapSan research programme funded by USAID, with additional support from the Bill & Melinda Gates Foundation and the Stone Family Foundation: this is a major ongoing evaluation of the health impacts of a WSUP-implemented urban sanitation intervention in Maputo, with initial findings expected to emerge in late 2017.  
*Brown J, Cumming O, Bartram J, et al (2015) A controlled, before-and-after trial of an urban sanitation intervention to reduce enteric infections in children: research protocol for the Maputo Sanitation (MapSan) study, Mozambique. BMJ Open 2015;5:e008215. doi: 10.1136/bmjopen-2015-008215*
- We are very open to research collaborations in Mozambique, from partners who are able to bring or access significant funding for the proposed research.

### Zambia

- WSUP does not currently have any research involvement in Zambia. However, there are many research questions that could be usefully explored in Zambia: we will likely allocate a small amount of budget to work in Zambia, and we are very open to research collaborations, from partners who are able to bring or access significant funding for the proposed research.

For up-to-date information, see [www.wsup.com/research](http://www.wsup.com/research)



## Urban Sanitation Research Initiative Partners

### Bangladesh



### Ghana



### Kenya



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Anna Nileshtar, DFID  
Sophie Trémolet, World Bank  
Andrew Trevett, UNICEF Kenya

## About WSUP

Water & Sanitation for the Urban Poor (WSUP) is a not-for-profit company that helps transform cities to benefit the millions who lack access to water and sanitation.

We were created in 2005 as a response to the unprecedented urban explosion that has left cities unable to provide basic services, such as access to a toilet or drinking water, to low-income communities.

We are based in the UK with offices in seven countries in sub-Saharan Africa and Asia. Since inception we have helped over 10 million people access better water and sanitation services.

[www.wsup.com](http://www.wsup.com)

