Towards safe sanitation and healthy cities in Bangladesh

Urban Sanitation and Hygiene for Health and Development (USHHD) approach

About us

SNV

SNV Netherlands Development Organisation is a not-for-profit international development organisation that makes a lasting difference in the lives of people living in poverty by helping them raise incomes and access basic services. Driven by the Sustainable Development Goals, we are dedicated to an equitable society in which all people are free to pursue their own sustainable development. Through our work in the Agriculture, Energy, and Water, Sanitation and Hygiene (WASH) sectors, we help realise locally owned solutions that strengthen institutions, kick-start markets, and enable people to work their way out of poverty well beyond the scope of our projects. SNV has a long-term, local presence in over 25 countries and is supported by over 1,300 staff around the world.

SNV in Bangladesh

SNV's presence in Bangladesh started in 2006, through a renewable energy project. In 2013, the scope of SNV in Bangladesh's work expanded to include WASH and Agriculture; operating in Dhaka, Khulna, and Rajshahi Divisions. In Bangladesh, SNV's flagship projects include urban sanitation, consumer awareness and certification of safe horticulture products, inclusive business models and sexual and reproductive health and rights in the garments industry, and decision support systems for farmers. Gender equality, social inclusion, and youth employment are priority themes across all projects.

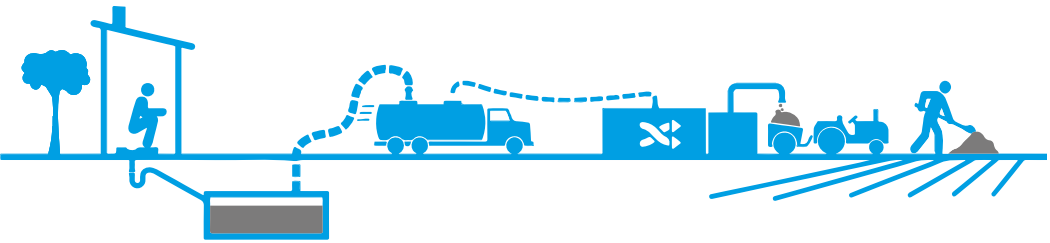

EMPTIERS
CONVENTION
BANGLADESH • 2020
FSM

Introduction

Governments are duty bound to facilitate the progressive realisation of the human rights of constituents within their areas of jurisdiction. In 2015, governments around the world adopted the Sustainable Development Goals (SDGs) of the United Nations. Working towards the achievement of universal access to safely managed sanitation services is a key commitment of the SDG pledge. These services encompass the entire sanitation value chain: from ensuring access to and use of sanitation and handwashing with soap facilities, to facilitating the safe separation of human waste during containment, emptying, transport, and safe disposal or re-use.

Similar to many cities, Bangladesh faces deep challenges to deliver to this commitment. Non-compliance with toilet design standards and unsafe emptying practices are rampant. In Bangladesh, the risks to public health are aggravated by the country's high population density and high water table. As a result, many water sources are vulnerable to contamination; due to the spread of faecal matter and waterborne diseases.

But connecting every household in Bangladesh to a sewer is not feasible. It is



Containment › Emptying › Transport › Treatment › Reuse/Disposal

In Bangladesh, although 64.4% of households use improved sanitation facilities, only 1.5% of these households have their waste collected, and transported to designated areas for safe treatment (off-site).[1]

[1] Bangladesh Bureau of Statistics (BBS) and UNICEF Bangladesh, *ProgotirPathey,Bangladesh Multiple Indicator Cluster Survey 2019, Survey Findings Report*, Dhaka,BBS, 2019.

USHHD in Bangladesh

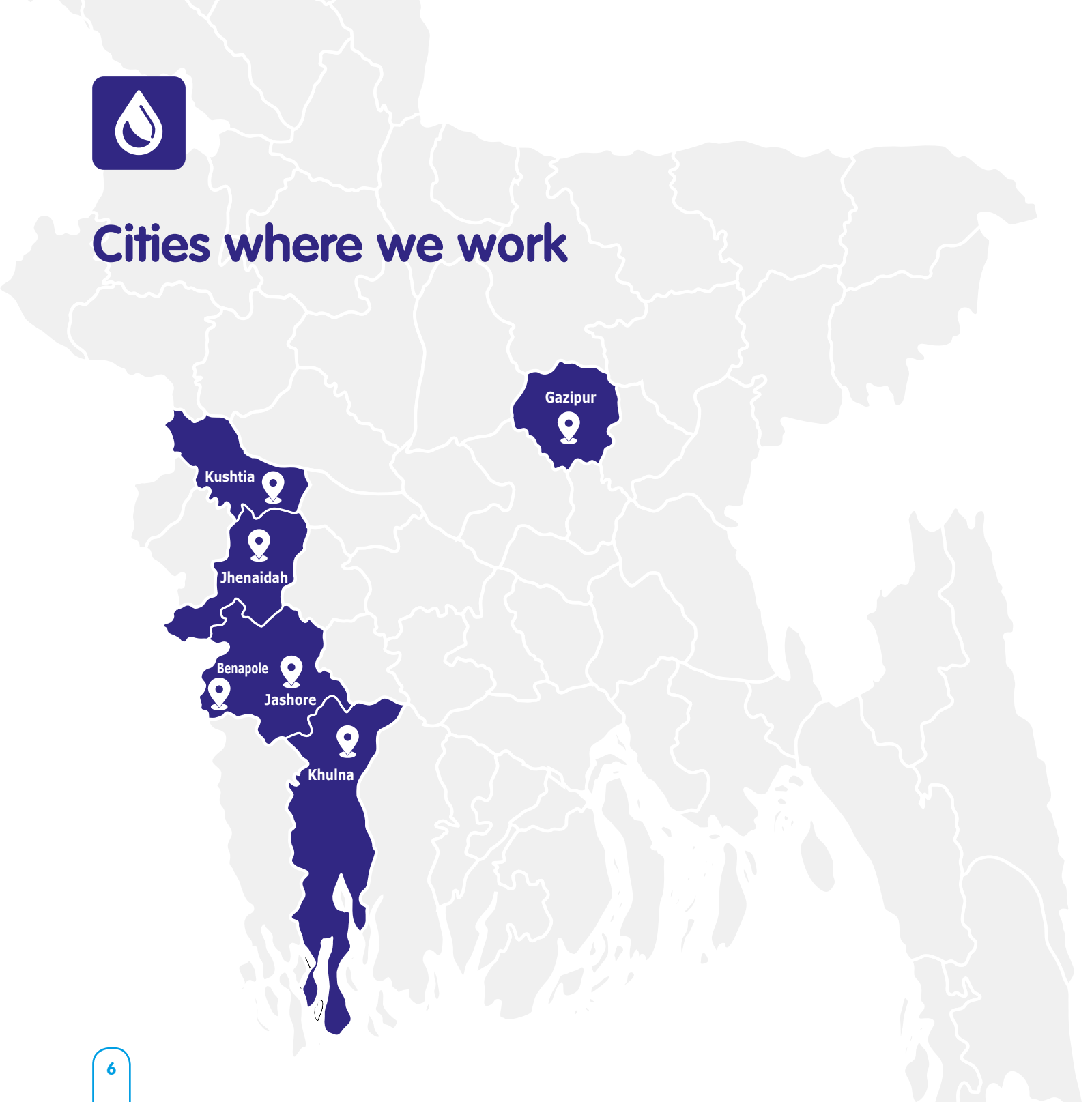
also not the only option. Over the years many innovative non-sewage on-site and off-site sanitation facilities and systems have been developed, have been proven safe, and have been taken to scale.

Since 2014 and through our Urban Sanitation and Hygiene for Health and Development (USHHD) approach, SNV Netherlands Development Organisation (SNV) has been supporting the Government of Bangladesh to improve its urban sanitation programming and planning. With our government partners, we are taking these improvements to scale, city-wide.

- We guide stakeholders through a process of informed choice in the selection of sustainable and inclusive sanitation technologies, financing strategies, regulation, and service delivery models.
- We co-create governance and service delivery models, mechanisms, and arrangements that clarify inter- and intra-agency responsibilities, harness cooperation, and achieve services efficiency and effectiveness.
- We offer tools and strengthen the know-how and technical capacities of government officials, service providers, civil society, and community members to deliver and/or maintain the safety, inclusivity and integrity of their service delivery systems.

Fast forward to 2021, elements of SNV's USHHD approach have now been integrated in the sanitation management practices of two Bangladeshi City Corporations (Khulna and Gazipur), four municipalities or *Paurashavas* as they are known in Bangladesh (Kushtia, Jhenaidah, Jashore and Benapole), and the Municipal Association of Bangladesh. These improved practices are benefitting close to 2.8 million people.

Cities where we work




যেখানে পানি ব্যবহারের ক্ষেত্রে সবাই সমান অধিকার
ADB
SNV
DFID
জাতীয় স্যানিটেশন মাস অক্টোবর, ২০২০
"উন্নত স্যানিটেশন নিশ্চিত করি, করোনা ভাইরাসমুক্ত জীবন গড়ি"
তারিখ ঃ ২৯ অক্টোবর, ২০২০।
আয়োজনেঃ বেনাপোল পৌরসভা।
সহযোগিতায়: তৃতীয় নগর পরিচালন ও অবকাঠামো উন্নতিকরণ (সেক্টর) প্রকল্প (UGIIP-III)
স্থানীয় সরকার প্রকৌশল অধিদপ্তর (LGED) এবং জনস্বাস্থ্য প্রকৌশল অধিদপ্তর (DPHE),SNV

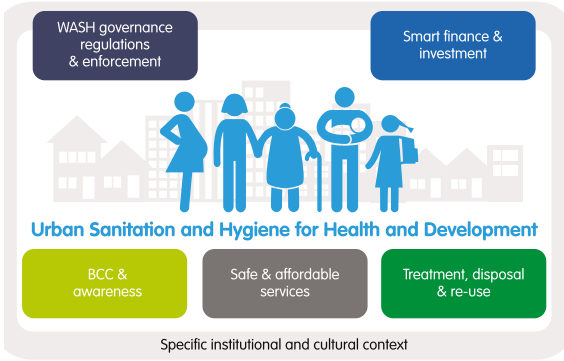
The way we work

For SNV, 'a city-wide sanitation service is achieved when all parts of the ***sanitation service delivery chain*** are handled safely, and when all neighbourhoods and ***all people living in the city benefit*** from this service.'[2]

We believe that this is possible when:

- a healthy, reliable, and sustainable system of demand and supply is established for everybody (*inclusivity*),
- good sanitation and hygiene behaviours are retained and become a way of life (*sustainability*), and
- various governance structures and delivery systems complement and reinforce national government sanitation and public health priorities (*systems approach*).

Our USHHD approach is a bid for **systems change** that consists of five components. Three components strengthen the sanitation value chain from the side of customers (BCC and awareness) and service providers (safe and affordable services, and safe treatment, disposal, and re-use). Two enable authorities to institutionalise regulations (WASH governance regulations and enforcement) and set in place healthy financing arrangements (smart finance and investment).



A Gender Equality and Social Inclusion (GESI) approach forms the foundation of all of our efforts and methods. Everybody must benefit equitably. Through GESI we make sure that in everything we do we address those practices and beliefs that reinforce or exacerbate the vulnerable positions and limited rights access of some groups and identities. We conduct city-specific GESI

[2] SNV, 'Urban Sanitation and Hygiene for Health and Development', *Capability statement*, The Hague, SNV, 2020, https://snv.org/cms/sites/default/files/explore/download/ushhd-capability-statement_0.pdf (accessed 28 January 2021).

assessments[3] to gather insights that could help us formulate and co-create gender transformative strategies. To translate the principle of leaving no-one behind to action, SNV's WASH programmes and projects take corrective action to raise the status of disadvantaged groups.

Finally, our approach places high premium on learning and knowledge management, consultative and participatory methods, knowledge and skills transfer, and strategy efficiency and effectiveness. We engage with a myriad of development actors and institutions, and facilitate informed choice and evidence-based decision-making. We co-create the necessary arrangements that facilitate coordinated sanitation responses by

national or local government, multiple development agencies, healthcare facilities, schools, utilities, civil society, consumers, etc.

Through the successful implementation of SNV's USHHD approach, we expect our efforts (outputs and activities) to lead to positive changes in capacities and performance of key stakeholders (outcomes). These changes, in turn, will enhance consumers' access to and use of services (impact), and will contribute to better health conditions of and development opportunities for whole populations (long-term impacts).

[3] GESI assessments in Khulna, Jashore, and Benapole found, for example, relevant evidence of stigma and discrimination faced by sanitation workers, limited participation of some groups in decision-making at community or city council level, the disproportionate distribution of workload as this relates to keeping containments from overflowing and toilets clean, etc. But also, a willingness by women, third gender, and potentially disadvantaged groups to engage in the sanitation business, and remarkable examples of women leaders in community, municipalities, and in the management of urban sanitation services.

Component 1: Behaviour change communication and awareness

We strengthen the capacities of authorities and sanitation promoters to design, institutionalise, and carry out behavioural change communication (BCC) and awareness strategies that are effective, sustainable, and tailored to diverse population segments within cities.

Research and strategy

BCC strategy development follows a stepwise, methodological process. The process is kick-started by a review of earlier communication campaigns in a specific area. It is followed by formative and participatory research to deepen our understanding of sanitation and hygiene behaviour patterns and practices of diverse groups. Research results are then analysed using an established BCC framework, LSHTM's (London School of Hygiene and Tropical Medicine) Behavioural Centred Design approach. What follows is a BCC strategy development process where stakeholders collectively map out:

(i) priority hygiene behaviours for change (e.g., personal hygiene, emptying practice, willingness to pay for services, toilet maintenance or upgrade, menstrual health and hygiene, etc.);

(ii) priority groups (specifically potentially disadvantaged groups) and institutions (schools, health care facilities, public areas, government offices, etc.) for tailored BCC outreach; and

(iii) implementation strategies (door-to-door mobilisation and awareness raising, training of trainers, monitoring, financing, etc.).

BCC strategies, which are endorsed by city municipalities and linked up to their respective City Sanitation Plans, are the resultant outputs of this strategic mapping and planning exercise. Strategies are then converted into activities to expand the effectiveness and outreach of awareness raising initiatives. As well, to strengthen the capacities of institutional actors so that they themselves are able to carry out BCC activities in a consistent and sustained manner.

In Bangladesh, SNV focuses on low-income areas and slums, secondary schools, and health care facilities. Every year, an effectiveness assessment is conducted to enable the update and adjustment of the cities' BCC strategies and related campaign designs and plans.

Sanitation in low-income areas and slums

People living in poverty represent a priority USHHD target group. In large cities, people living in poverty occupy cramped and densely populated spaces, mostly in low-income or slum areas. In Jashore for example, although more than half the population lives in poverty, these households only take up a meagre 5% of the city's area.[4] In Khulna, approximately 75% of the population lives in poverty.[5] Often, these

[4] UNDP, *Report on Poor Settlements in Jashore Paurashava*, Dhaka, UNDP, 2011.

[5] UNDP, *Urban Poverty Profile, Khulna City Corporation*, Dhaka, UNDP, 2018, p. 13.

households do not have access to regulated WASH services and facilities. There are few opportunities to instal private facilities, and land availability is limited. Rather than wait for opportunities for private facilities to present themselves, at SNV we take stock of these limitations and introduce arrangements that facilitate people's enjoyment of their right to water and sanitation (and health) today.

School sanitation and hygiene

Our school sanitation and hygiene work has a potential outreach of 678 schools (primary, secondary, colleges, religious schools, and others). Combined, these schools have a total population of close to 250,000 students between the ages of 5 to 25. To date, much of our sanitation and hygiene work, including menstrual hygiene management, is focused on secondary grade levels.

For SNV, the greatest impact in schools is realised by working through and with the departments of education in cities or municipalities. As overall responsible for city/ municipality educational systems, municipalities have greater opportunities and resources to enforce quality standards of sanitation and hygiene in schools.

WASH in health care facilities

Poor WASH facilities and weak infection prevention and control protocols in health care facilities (HCFs) lead to disease transmission in HCFs, and from HCFs to communities. Being a relatively new institutional WASH focus – at local, national, and global levels[6] – much has yet to be done to strengthen WASH in HCFs policies at all levels of governance, and to create enforcement standards, operations and management (O&M) guidelines, etc. Knowledge and awareness about the interplay of WASH and quality health – among health workers, cleaners, and HCF managers – also requires urgent attention.

Areas for SNV in WASH intervention in health care facilities have been defined in 2019. These were based on findings of a sector stakeholder analysis and policy review conducted across SNV USHHD programme cities in Bangladesh.[7] These include increasing availability of and access to sanitation facilities and handwashing with soap, particularly at points of care; menstrual health and hygiene management; medical waste management; and regular emptying of on-site systems.

[6] A resolution on WASH in HCFs was adopted by world leaders in May 2019, during the 72nd World Health Assembly. See, https://www.unwater.org/ministers-of-health-approve-resolution-on-wash-in-health-care-facilities/. The signing of this resolution shortly followed the UN's publication of its first global baseline report on WASH in HCFs in April 2019. Access UN publication here, https://www.unwater.org/publications/wash-in-health-care-facilities-global-baseline-report-2019/.

[7] For more information, see: https://snv.org/cms/sites/default/files/explore/download/wash-in-healthcare-facilities-summary-report-urban-sanitation-bangladesh_0.pdf.

USHHD in Bangladesh

Key achievements	
Strategies	Six local government institutions now have their own BCC strategies, which are linked to their respective City Sanitation Plans. BCC focus of each are as follows: timely emptying of faecal sludgein Khulna, Jhenaidah, and Kushtia; demand creation for new faecal sludge management services in Jashore; and containment building or upgradation in Benapole and Gazipur.
Low-income households	The reactivated sanitation stewardship role of 200 Toilet Management Committees in 2019 is now benefitting 15,500 dwellers who share in household/ community toilet systems across 36 slum settlements.
Schools	New city-wide indicators have been introduced in the standards monitoring checklist of Khulna's Secondary and Higher Education Department for school enforcement. These indicators include the cleanliness of toilets, availability of running water and a handwashing station with soap, availability of sanitary pads and a suitable location for girls' to practise menstrual hygiene and health (MHH), and annual emptying of septic tanks.
Health care facilities (HCFs)	SNV priority HCF interventions were aligned with the National Strategy for WASH in Healthcare Facilities 2019-2023 of the Government of Bangladesh. SNV will soon become an official member of the national WASH in HCFs committee.

Component 2: Safe and affordable services

We develop, test, and roll-out viable sanitation business models that are tailored to different consumer segments. Our models apply market-based solutions in the supply and construction of improved sanitation facilities, in the upscaling of mechanised faecal sludge emptying services for formal and informal urban settlements, and in the operation and maintenance of public and community toilets.

Business model selection and planning

Business models should facilitate the delivery of safe services (for consumers and sanitation workers), affordable services (while generating revenue), and professional services and customer care. We engage in business model research and planning processes, and explore possibilities of bundling and unbundling services schemes along the sanitation value chain. Our main preoccupation is to arrive at the most feasible arrangement for city-wide sanitation services, regardless of whether these services are provided by one or several entities. Our assessment findings are shared with city authorities so that they can deliberate on which model/s to apply.

Recently, we have also started supporting municipalities and cities in their heightened ambition to meet internationally recognised quality management systems standards.

Private sector engagement in services delivery

The notion that there are minimal to no profits to be made from investing in non-sewered technologies remains prevalent among private sector entities. On the other hand, local governments are reluctant to engage private sector in the delivery of municipal services out of concerns that they may not be able to guarantee the quality of services. By

strengthening the capacity of small-scale entrepreneurs, manual emptiers, and small to mid-scale private entities to deliver safe and financially robust services, the notion that non-sewered sanitation is not commercially viable is being debunked. We are also demonstrating to government the benefits of engaging in multiple service delivery arrangements within a city – private, public-private, public, etc.

No single private sector model applies to all cities. Therefore, the sanitation business models selected by city governments shape our capacity strengthening approach, the type of implementation guidelines to create (e.g., business plans, bidding processes, monitoring protocols, etc.), and the stakeholders we work with directly.

Mainstreaming Occupational Health and Safety

Advocacy for decent work conditions and the rights of sanitation workers has been gaining ground since SNV co-founded the Faecal Sludge Management (FSM) network in 2016. We co-design and advocate for Occupation Health and Safety (OHS) protocols for mechanical and manual sanitation workers. In Bangladesh, manual emptying services provide livelihoods to people whose earning opportunities are limited by their identities and the positions they hold in society. A blanket prohibition of manual emptying services – without a viable alternative and means of enforcement – would simply heighten their vulnerabilities.

Every year, the FSM network organises an annual emptiers' convention to give emptiers a platform to dialogue, voice out their concerns and needs, and give government and sector stakeholders an opportunity to learn from emptiers and recognise them for their societal contributions. The first convention was a success. As a result of this, national government released a circular to all local government institutions to ensure the OHS, legal certification of, and provision of appropriate training opportunities to every emptier training of all emptiers.

Public toilet management

We are now intensifying our efforts to explore business models than can sustain the operational and financial management of public toilets. We examine multiple lease models, bulk-lease contracts to cross-subsidise the operation and management of public toilets, or arrangements that broaden the range of services offered by private sector operators of public toilets; e.g., by leasing space for the sale of food, dry goods, sanitation products, etc.

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Key achievements	
Business model selectionand planning	In 2020, Jhenaidah became the first municipality in all of Bangladesh to receive ISO 9001:2015 Quality Management System standards certification for its faecal sludge management services.
Private sector engagement	SNV supported women-led emptying services operations in low-income communities with UNDP (in Khulna) | local NGO management of faecal sludge transport, treatment and reuse (in Jhenaidah and Kushtia; with the latter also engaging in the sale of certified fertiliser) | private investment mobilisation for non-sewered and sewered technologies as part of the Greater Dhaka Watershed Restoration (GDWR) work stream with 2030 WRG (in Gazipur).
OHS mainstreaming	Six partner cities now have their own OHS policy and implementation guidelines, and an emptiers' database[8] had been put in place to monitor emptiers' training progress.[9] Close to 400 emptiers have been trained on OHS by local government officials who attended SNV Training of Trainers (ToTs).
Public toilet management	City-specific sanitation plans were developed by municipalities with SNV. The plans introduced the formation of city management committees to monitor contracts and performance of public toilet operators. Appropriate public toilets designs following standards of accessibility for people with disabilities, ratio of female/male blocks, hygienic facilities were also introduced. Jhenaidah, Kushtia, Jashore and Benapole have adopted these designs, and have built or are leveraging funding for construction.

[8] The same database also provides a good start to manage emptiers' certification, their inclusion in health insurance schemes, or their engagement in other businesses promoted by authorities. Recently, government is using this database to prioritise the COVID-19 vaccination of sanitation workers.

[9] Know-how imparted include, but are not limited to protocols in emptying and transport service (manual or mechanical) and the disposal process and management of faecal sludge, safety precautions and accident/emergency response systems, and incentivising the use of Personal Protective Equipment (PPEs).

Component 3: WASH governance regulations and enforcement

We help national and local governments to achieve policy, strategy, and enforcement coherence. The technical advice and capacity strengthening services we offer help create an environment that is conducive for city-wide and inclusive sanitation governance, and for delivery systems to flourish and be sustained.

City-wide sanitation planning

The Institutional and Regulatory Framework (IRF) for Faecal Sludge Management serves as the guiding document for services and standards setting. We support LGIs and city partners (government, non-government, and civil society) in drawing up their respective city sanitation action plans to, (i) make the IRF actionable, (ii) ensure that their sanitation plans fit the larger city master plans, and (iii) that these align with SDG 6.2 and its 6.b target. This alignment is necessary to ensure that departments and authorities involved in the delivery of sanitation

services work together, and are aware of their roles and responsibilities. With the recent approval of the National Action Plans (NAP) for implementation of IRF, city-specific plans are being adjusted following the national guidance.

Ward sanitation action plans (local administrative and representative areas within cities) offer greater granularity to city sanitation plans. Due to the closer proximity of wards to consumers, the ward-level plans are more specific, and are developed with the participation of communities. We impart GESI tools to local government staff during our training sessions. These tools help them account for the needs of all groups in ward sanitation action plans, and ensure that the meaningful participation of potentially disadvantaged groups is facilitated.

Data fusion and digitalisation for quality data and services

The availability, reliability, and comprehensiveness of data improves the efficiency and effectiveness of sanitation services delivery. In 2016, SNV gathered close to 87,000 geo-localised data, providing authorities and sanitation workers in Khulna and Jhenaidah with information on containment type, access roads (and width), and drainage. This information makes sure that sanitation workers respond to service requests with the appropriate transport and tools for emptying. Today, more stakeholders are engaged in GIS census data collection, including the UNDP and LGD (under the Livelihoods Improvement of Urban Poor Communities project), and the LGED and ADB (as part of its Third Urban Governance and Infrastructure Improvement).

We are also in the business of exploring technologies and tools that improve data collection and management. The practice of updating data with real-time information (during actual emptying service) through the use of mobile phone technologies has been introduced in some areas. Our support for the digitisation ambitions of the national government's SMART CITY initiatives has led us to design and introduce the Integrated Municipal Information System (IMIS). Through IMIS, data is digitised and streamlined. Access to GIS-based data enables authorities to monitor and deliver a wide range of municipal services (drinking water, solid waste management, etc.) more effectively. Through IMIS, tax collection becomes more efficient, time savings are realised, and resources are freed up to cover the needs of people living in low-income areas.

Guidelines development and enforcement

Several guidelines to make city sanitation plans actionable have been enforced with technical support from SNV. For effectiveness and enforcement cohesion, we take 'bottom-up' and 'top-down' approaches.

Ward-level or district guidelines are shared across partners with the aim to receive national government endorsement for scale up nationwide. Examples of success include the national endorsement of an OHS guideline and FSM by-laws. Regulations, standards, or guidelines set at national level are tested at local levels of governance to facilitate feedback loops and improvements. Some examples include the Sanitation Tax, IRF/NAP, national building codes for septic tank construction, and emptying and transport services, among others.

Key achievements	
Sanitation planning	All six cities now have a city sanitation action plan each. Moreover, a ward sanitation strategy has been launched in Khulna and Jashore, to develop specific sanitation action plans in selected wards.
Data fusion and digitalisation	The cities of Khulna, Jhenaidah, Jashore, and Gazipur have adopted IMIS, and have completed integration of geo-localised data into their respective systems. Kushtia and Benapole IMIS adoption is underway.
Guidelines development/ enforcement	SNV was a key partner in the development of the national guidance document, Institutional and Regulatory Framework (IRF) for Faecal Sludge Management, and complementary National Action Plans (NAP) for Paurashava and City Corporation enforcement. SNV supported in the development of the approved sanitation by-laws in Kushtia, OHS guidelines for Kushtia, Jhenaidah, Jashore, and Benapole, and the sanitation tax for Jhenaidah and Kushtia, which is likely to increase the revenue available for infrastructure development, and the possible introduction of scheduled desludging services.

Component 4: Smart finance and investment

We strengthen the capacity of local governments, utilities, and service providers to realise the sustainable cost recovery of sanitation services operation and maintenance, and to employ public investments or revenue streams for capital investment over the life-cycle of infrastructure. Where there are budget deficits or gaps, we help identify financing opportunities and advise on investment and payment arrangements, without losing sight of equitable development.

Performance monitoring improvements to fill financing gap

There is an urgent need for policy level advocacy to, (i) reform budget allocation and costing practice nationwide, (ii) introduce green financing or other similar directives that support people's right to water and sanitation and health, and (iii) seek for creative ways on how to make efficient use of available funding in transparent and accountable ways. Our commitment to leave no-one behind prompts us to prioritise improvements in financing non-sewered sanitation service systems.

Local government institutions are beset with weak accountability and transparency mechanisms in the management of sanitation revenue and expenditures. Some areas where the improvement of systems can be achieved include the professionalisation of a costing centre structure, the effective implementation of cashless payments, and the regular update and management of sanitation customer databases. To ensure the effectiveness of these systems, SNV works with LGIs in the development of performance measurement tools and Key Performance Indicators (KPIs) for planning, budgeting, procurement, financial management, monitoring and assessment systems.

USHHD in Bangladesh

In 2014, the national government introduced Annual Performance Agreements (APA) to evaluate the performance of national and local bodies. SNV works with governments to strengthen sanitation indicators within the APA. We are also enlarging the scope of IMIS to to enable a more efficient way to monitor performance.

Steering sanitation investments

As in many other countries, Bangladesh continues to have a strong focus on infrastructure driven sanitation projects (faecal sludge treatment plants, vacutugs, public, communal, and individual toilets in slums, etc.) in Bangladesh. All too often, these projects are not accompanied by the transfer of technical knowledge and the capacity needed to carry out operations and maintenance responsibilities for the long-term. Some donor-led projects are not aligned with local government priorities thereby compromising the optimal use of investments and limiting LGIs' abilities to steer opportunities towards increased equity. These are also not sustainable and run the risk of countering a city's long-term vision. Worse, these could hamper progress. SNV strengthens LGIs' capacity and know-how to pro-actively identify needs, develop long-term investment plans, and capture funds in support of national/local ambitions. As a result of this collaboration the national government's Development Project Proposal (DPP) mechanism has been identified as one channel for municipalities to coordinate and leverage funds.

Key achievements	
Performance monitoring	In 2017, Khulna City Corporation introduced faecal sludge collection ratio as one key reporting indicator in its APA.
Steering sanitation investments	Khulna successfully leveraged funding for a € 1M project that delivers 11 new vacutugs and scales up the production of briquettes made from faecal sludge. SNV sanitation demand scan studies have been used by Khulna, Kushtia, Jhenaidah, Jashore, and Benapole to apply for € 8M of national funding for public toilets. With a focus on decentralised sewer technologies, Khulna also used SNV data to negotiate € 5M of DPP funding to construct 140 systems in three wards across the city.

Component 5: Treatment, disposal and/or re-use

We raise the awareness and understanding of policy-, decision-makers, planners, and investors in the selection of appropriate faecal sludge treatment and disposal, and re-use options. With a team of engineers in our staff base, we also offer technical advice in the construction, renovation, and rehabilitation of treatment facilities – ensuring that they remain environmentally safe, socially acceptable, and financially sustainable.

Informed (technology) choice selection

Local government institutions (LGIs) are best placed to decide on the most suitable technology/ies to operate in their areas of jurisdiction. To support LGIs in making an evidence-based and informed choice, we document the practical experiences of our partners in the set-up, management, and maintenance of diverse technologies. Through our documentation and engagement with partners, we offer an open and transparent presentation of the successes and challenges that operators and managers encounter in working with diverse technologies.

Off-site treatment improvements: FSTPs

SNV supports cities in the construction, renovation, or rehabilitation of their faecal sludge treatment plants (FSTPs). Our support in the construction, training, and management of a new FSTP in Khulna is probably one of our biggest technology/facility accomplishments to date. With a capacity of 180 m^3 the Khulna FSTP is one of the largest constructed wetlands in operation today. It is currently being used as a 'lab' to pilot innovative treatment processes and the practical application of monitoring tools and operational manuals. Our success in Khulna

resulted in the increased interest of neighbouring municipalities and cities to build or rehabilitate their own FSTPs. Nonetheless, challenges remain. Among others, demand for services is still below Khulna FSTP's capacity. Accelerating efforts to raise community awareness of Khulna's emptying services (through BCC strategies) remains a key priority.

On-site treatment improvements: simplified sewer networks

In some wards occupied mostly by low-income communities simplified sewer networks constitute low-cost sanitation treatment options. A simplified sewer network connects 40 to 130 households to a communal treatment system (combination of settlers and anaerobic baffle reactors). Capital investment is approximately € 165 per

household, and maintenance is limited to regular emptying of the settler, and cleaning of the filter.

In 2018, SNV piloted the construction of a simplified sanitation sewer network in wards across three community blocks in Ward 10 of Khulna. A users' management committee to operate the system and collect a monthly fee, with oversight by the Khulna City Corporation, was formed. Amid the success of this pilot, all three blocks experienced the challenges of unwanted household waste in toilets leading to network blockage. These challenges highlight the continued importance of behavioural change communication interventions to impart proper sanitation and hygiene behaviours. Our experience also demonstrates the need for broader management arrangements as a pre-condition to take technologies to scale. Other alternatives may include network integration with the forthcoming centralised sewerage network as one way to access treatment options.

Productive re-use: co-composting

Co-composting is a treatment process that turns faecal sludge into fertiliser. However, demand for faecal sludge-based co-compost continues to be low. Social, cultural, and religious norms and beliefs pose as barriers to its marketability. In 2017, an SNV market acceptance study found that although 76.4% of farmers are interested in organic fertilisers, only 2.6% use co-compost from faecal sludge.

In 2018, we published the findings of research studies that SNV conducted in collaboration with the Bangladesh Agricultural Research Institute (BARI), and the Fisheries and Marine

Resources Technology Discipline of Khulna University.[10] Both research studies found that co-compost was safe to use for agriculture and aquaculture purposes, respectively. In practice, Kushtia – municipality has been operating a functioning and profit-making faecal sludge co-composting plant since 2016. Despite evidence-based research findings and the now-validated market success of certified organic fertiliser production, the government's Department of Agriculture Extension remains cautious in recognising co-compost as safe to use. This challenge highlights the need to increase the information drive around the safety and benefits of human waste-based fertilisers to shift popular opinion.

Productive re-use: briquettes

Charcoal and fuel briquettes are by-products of dried faecal sludge that provide opportunities to close the sanitation loop. Currently in its exploration stages in Bangladesh, we are

10 See, BARI and SNV report on co-composting of faecal sludge and crop production here, https://snv.org/cms/sites/default/files/explore/download/2019-snv-bari-final-report.pdf, and report on the impact of treated faecal sludge on fish growth and associated health risks here, https://snv.org/cms/sites/default/files/explore/download/snv_-_impact_of_treated_faecal_sludge_on_fish_growth.pdf

collaborating with Khulna on an action research builds on our successful experience with briquette technology in Nakuru, Kenya. Additionally, in collaboration with Practical Action (EnDeV/GIZ), we are exploring the briquette market for clean cooking solutions for households, small shops, and big energy consumption industries. Through these initiatives, SNV aims to expand profitable business opportunities for local entrepreneurs, which combine applied learning and research within the sanitation and energy sectors.

Key achievements

Informed choice	The management and operationalisation of human waste treatment technologies in Khulna and Kushtia was featured in a forthcoming nine-case study compilation of technology options to provide much-needed practice- based data for decision-makers, planners, etc.
Off-site treatment	As technical and management expert behind the construction and operationalisation of one of the largest constructed wetlands today (in Khulna city), SNV has become a reliable source of expertise on different technologies, including leachate treatment and drying beds in Jhenaidah, and coco-peat filtration systems in Kushtia; Government-led FSTP projects in Jashore and Benapole are applying SNV lessons to inform construction and operations.
Co-composting	Collaboration with SNV facilitated the certification of ERAS' sale of co-compost from faecal sludge.
On-site treatment	Lessons drawn from the testing of simplified sanitation networks in Ward 10 of Khulna are being used by development partners and city officials to identify, design, and build similar technologies in Benapole, Jashore and Gazipur.
Briquettes	The success of briquette action research in Khulna and interest in Nakuru's experience, motivated Khulna to develop a strategy to scale up production of carbonised briquettes.


Ensuring a diverse and fair water and sanitation sector
Panel Moderated by Diane D'Arras
Madhu Krishna
Beatrice Chiwele Chibwe
Merelin Keke Adhikaria
Mumtaz Begum
Rose Kaggwa
IWA


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SNV
Training on
BCC Campaign Design, Message and Material Development
Organized by : BCC Committee, Gazipur City Corporation

Partners in urban sanitation

We acknowledge and thank all our partners for their contributions in improving the sanitation and living conditions of millions of people in Bangladesh.

- Bangladesh Agriculture Research Institute (BARI)
- Benapole *Paurashava*
- Department of Public Health Engineering (DPHE)
- Directorate General of Health Services (DGHS)
- Faecal Sludge Management Network Bangladesh (FSMNB)
- Gazipur City Corporation (GCC)
- Jashore *Paurashava*
- Jhenaidah *Paurashava*
- Khulna City Corporation (KCC)
- Khulna Development Authority (KDA)
- Khulna University (KU)
- Khulna University of Engineering and Technology (KUET)
- Khulna Water Supply and Sewerage Authority (KWASA)
- Kushtia *Paurashava*
- Local Government Engineering Department (LGED)
- Municipal Association of Bangladesh (MAB)
- Public Private Partnership Authority (PPPA)
- Secondary and Higher Education Department of Khulna Division


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