Luchenza, Malawi (Image: Sandec)

Sanitation Planning for Small Towns

Good data for good planning

This policy brief summarizes the main findings of applied sanitation planning research conducted in small town settings between 2015–2017 in Bolivia, Malawi and Nepal. Good planning requires good data – therefore, this brief policy focuses on the crucial step of data collection to inform the situational analysis. The assessment of the initial situation is necessary as a key, first planning step. With "good" data, we mean data that are (i) meaningful, (ii) high quality and (iii) timely, i.e., data which allow municipalities and sanitation stakeholders to make informed decisions.

What do we mean with small towns?

Worldwide, more people now live in urban than in rural areas. In 1950 only 30% of the worldwide population was urban; it is now 54% and growing. Public perception tends to focus on urbanisation processes in mega-cities in low- and middle-income countries, while smaller urban settlements rarely receive the attention they deserve. Increasing urban populations reflect three separate forces: urban fertility and mortality rates, the migration of rural dwellers to cities, and the reclassification of rural settlements as urban as they expand and become more densely populated.

"Small town" is defined differently around the world. A more accurate term might be small urban settlements, or secondary towns, as almost all census data around the world differentiates between urban and rural. "Urban" classification criteria include population size, density, physical size, the proportion of the labour force engaged in non-agricultural activities, the mix and diversity of services, as well as the administrative and political status of the local authorities in charge.

Problem statement

Despite receiving a fraction of the attention that megacities draw, small towns play a pivotal role in social and economic development by supporting their hinterland and providing markets for rural produce and regional administrative services. In 2014, 43% of the world's 3.8 billion urban dwellers were living in secondary or small towns (UNPD, 2014); these urban settlements will carry the brunt of urban population growth in the decades to come. Despite this, small towns have consistently been neglected in terms of basic services such as water and sanitation and are 'falling through the cracks'. Relative to bigger towns and cities, small towns suffer from several disadvantages as they are:

- too small and dispersed to offer an attractive market for urban utilities;
- too large to be managed and operated by community initiatives;
- characterized by a weak institutional base and a lack of human resources;
- expected to deliver WASH services within decentralized frameworks, even though adequate funding and institutional capacities are absent (see Box 1).
- lacking current, relevant data to inform strategic planning and investment decisions.

Box1: **Decentralisation and Services**

Decentralisation processes include administrative, fiscal and political aspects. It involves devolving responsibility for public services such as water and sanitation to lower tiers of government, i.e. at the city or district level, instead of a national administration, and making them more accountable to citizens. Improving service delivery is an implicit motivation behind most decentralisation efforts. However, the evidence shows that decentralisation does not automatically lead to better development outcomes. The most frequently mentioned problem is the lack of capacity at subnational levels of government to exercise responsibility for public services, ranging from poor accounting procedures to neglecting operation and maintenance activities. Many secondary towns do not have the technical, managerial or financial capacity to take on the necessary water and sanitation management tasks (Rosenqvist et al, 2016; Lüthi et al, 2017).

These challenges have led to a poor state of infrastructure and services evidenced by:

- under-investment in infrastructure, operation and maintenance;
- insufficient operational and managerial know-how and an inability to retain quality staff
- poor management and a lack of accountability to small towns residents. (WaterAid, 2015)

How to collect good data

The assessment of the initial situation provides the baseline information for solution-formation and decision-making. The main goals of the assessment of the initial situation are to understand the context, get to know the stakeholders and provide enough information to start developing sanitation scenarios, including context-specific design parameters.

Collecting good quality and useful data is often a difficult process, especially in contexts where data are scarce, improperly collected or analysed, or hidden or manipulated for political or personal reasons (Reymond, 2014a). Governmental agencies usually have some reports, statistics and maps that can serve as a preliminary introduction; However, they should always be considered with care, and therefore the collection of *primary data* is recommended. It is essential to rely on several sources of information, which can be cross-checked and, if needed, complemented by further research.

Key data that can inform planning and implementation include:

- Population and demography: number of inhabitants, number of people per household population density and growth rate, type of housing
- Recent maps (digital): roads, topography, water bodies, built structures, etc.
- Spatial and socio-economic city structure
- Water and hygiene: drinking water coverage and infrastructure, drinking water sources types of supply (e.g. networks, taps in houses, fountains, trucks), operators (public and private), prevalence of water-borne diseases
- Sanitation stakeholders and their role
- Identification of sanitation "hot spots": open defecation areas, surface water points used for bathing/washing/drinking purposes, open drains, wastewater and faecal sludge discharge points
- Collection/treatment/disposal facilities: sewered/unsewered areas, emptying modes (manual/mechanical), organisation (public/private), disposal sites, tariffs, solid waste management, end uses and resource recovery initiatives

- Physical characteristics: geomorphology, hydrologic basins, areas prone to flooding, type(s) of soil, groundwater table
- Climate data
- Stormwater management
- Analysis of institutional, legal and regulatory framework

Collecting quality data and analysing them is a challenge. Multiple authorities and agencies may slow the data collection process and in some cases, permission may be denied altogether. When conducting interviews and surveys, respondents may not provide the required information or an enumerator may not find the "right" stakeholders as respondents. A stakeholder analysis should be done prior to data collection (Reymond, 2014a). This step identifies and characterizes stakeholders, assesses the relationships between them, and evaluates their interest in engagement. Through this the project team gains insight into whom to approach, how to approach them and for which data (Reymond, 2014a).

There are different ways to collect primary data: informal or semi-structured interviews, household surveys, qualitative field observations such as transect walks, analysis of satellite imagery and mapping, sampling and lab analysis. Collecting primary data can be a very time-consuming and thus a costly process. This is probably the main reason authorities and consultants have often been reluctant to invest in good quality data in the past. All too often, data collection ends up unused in "data cemeteries," or in data compilation reports that lack enough context or analysis to inform decision-making.

Fortunately, the digital revolution of the last decade brought forth tools that greatly facilitate data collection, analysis and communication. The following tools/apps were used during our field research: Geographical Information System (GIS), the Excreta Flow Diagram (SFDs), which is both a data collection guide and a visualisation tool, Sustainability Assessments, and the smartphone-based data collection app: Kobo Toolbox.

These tools are already widely used in large cities. The potential for them to improve sanitation planning in small towns is high, as they are easy to use and provide a significant reduction in the time and resources needed for data collection, analysis, and reporting. Smartphone-based data collection apps require data to be entered only once and reduce the potential for mistakes. The data entered are sent to an online platform, from which they can readily be downloaded and analysed. GIS tools such as Google Earth allow to produce geo-referenced,

Box 2: **KoBo Toolbox**

KoBo Toolbox is a free, open-source tool for mobile data collection. It enables data collection on digital devices such as mobile phones, tablets and computers. Planners, development professionals, researchers, and private companies use KoBo Toolbox to design and implement primary data collection and baseline surveys. It is quick and avoids input errors, since data does not need to be transcribed from paper to computers before it can be analysed.

KoboToolbox: http://www.kobotoolbox.org

Box 3: **Sustainability assessment (Traffic light system)**

Visualizing the results of a sustainability assessment in the form of a traffic light system can be a powerful diagnostic tool. The tool is based on an analysis of weaknesses (red), promising elements (orange), and achievements (green) along the sustainability dimensions (social, institutional, economic, environmental, technical, and knowledge). This tool has been used for example by the 21 municipal authorities within the framework of the Municipal Environmental Management project in Bolivia. The results supported planning and decision-making for municipal investments in the fields of wastewater and solid waste management.

Also visit: https://assets.helvetas.org/downloads/villazon.pdf

Box 4: **Excreta flow diagrams** (known as: Shit Flow Diagrams – SFDs)

An excreta flow diagram is a tool to illustrate and communicate sanitation service delivery in urban settings. They graphically represent the proportion of excreta that is being safely managed at each step in the service delivery chain, from defecation to end-use in a city. It can be used as an advocacy and assessment tool for the estimation of safely and unsafely managed excreta. Excreta flow diagrams are a powerful tool to use with non-professionals and decision makers and communicate why action is needed.

Also visit: http://sfd.susana.org/

up-to-date maps of the local situation. SFDs provide a visual representation of material flows through the sanitation service delivery systems for a locale that is easy to present to the authorities.

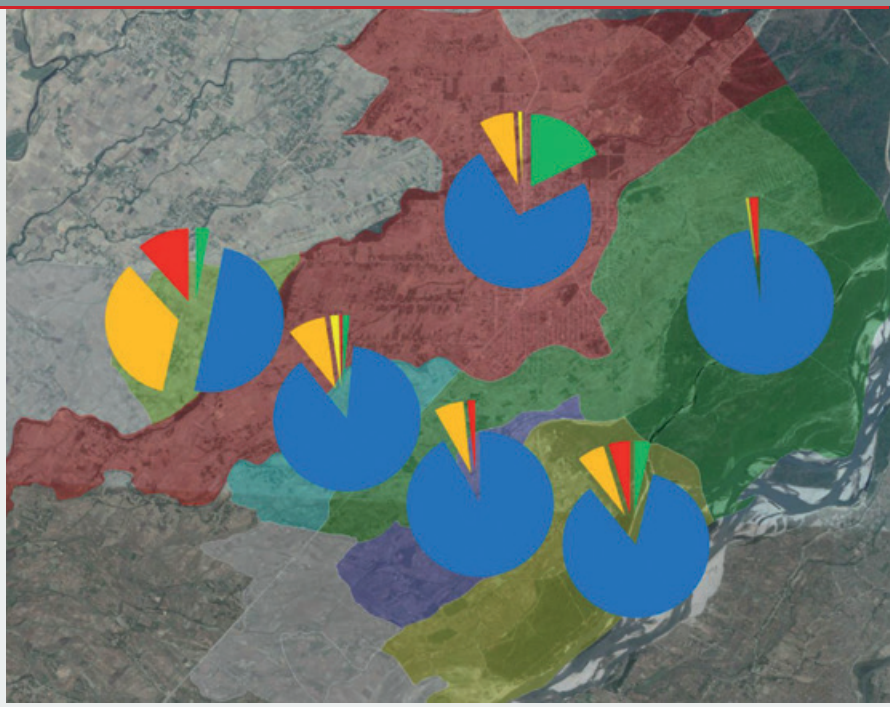
But how can a representative overview be created without having to survey every single household? In every study, trade-offs must be made between cost, time, and gathering adequate data. Different techniques exist to select a representative sample, encompassing the socio-economic heterogeneity of small towns.

Stakeholder engagement

Stakeholder engagement in the assessment of the initial situation, as in the whole planning process, is key. There are various modes of participation for stakeholders ranging from consultation to full participation and collaboration. Surveys are rather consultative, while workshops can be consultative or collaborative. Engagement with stakeholders is context-specific, but what is important is that the needs and constraints of each stakeholder are understood and considered. To make decisions for sustainable sanita-

Sanitation in Tikapur Municipality, Nepal

Visualisation of survey results regarding municipal toilet coverage in 2016 for Tikapur, Nepal using Qgis.



Sanitation situation

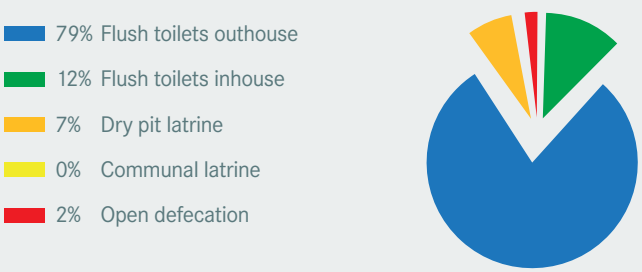
- 98.4% of households have a toilet
- Majority of flush toilets (91%)
- Flush toilets are either linked to sceptic tanks or directly linked to open drains
- No sewage system: waste water empties to open drains without any treatment
- No sludge management existing. If the faecal sludge is emptied, it is manually and directly into the open drains
- Twin pit toilets are being built in the eastern parts of town which are flooded each rainy season
- 4 public toilets are available but in poor condition or closed, 9 under construction, managed by WSUC and institutions

Key issues

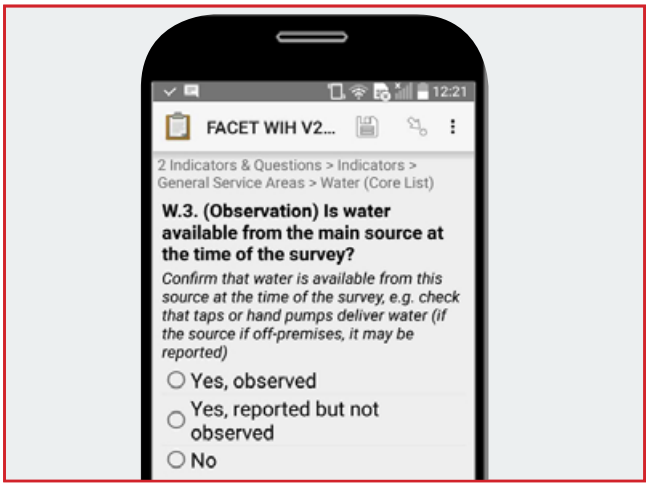
Poorly managed environmental sanitation services:

- Faecal sludge management
- Solid waste collection & disposal
- Storm waster drainage

Tikapur toilet types



Mobile devices already play a crucial part in data collection for sanitation planning (Image: Terre des hommes)



An example for mobile data collection in health care facilities (Image: Terre des hommes)

tion scenarios and then to provide continual improved service delivery requires strong relationships between the different actors in the service delivery chain, namely local politicians, administrators, service providers, and the citizens and communities at large. Stakeholder engagement in small towns is easier than in large towns– the stakeholder landscape, including local government, civil society and the private sector is manageable, compared to more institutionally diverse larger cities. Solving local problems that are debated, defined and refined by local people in an ongoing process allows for the development of ownership of the process. Especially for non-sewered systems (which are the norm in small towns) that require faecal sludge management, defining the roles and responsibilities of individuals, communities and the private sector are essential for sustainability (Reymond et al., 2016).

Promising approaches from the past decade show that 'engagement' in small town contexts can take on many forms and approaches, ranging from the consultation of stakeholders to their active participation in the design and delivery of projects (Lüthi et al, 2011; Parkinson et al, 2014; Reymond, 2014b). Evidence-based experience highlights the importance of the following:

- An enabling and pro-active local authority that nurtures multi-stakeholder partnerships in planning and decision making
- Stakeholder consultation during the planning stage of interventions. This includes soliciting views on priorities, service standards and affordability.
- Stakeholder consultation should be carried out as a continuous exercise with regular meetings and discussions, not just a one-off event (WASHTED, 2017)

Stakeholders should be involved in data management activities such as data validation, storage, documentation, accessibility, and sharing. This will ensure that accurate data is kept in an easily usable format for all stakeholders involved. This fosters transparency, trust, accountability and institutional memory.

Perspectives

This policy brief argues that the quality of sanitation planning is only as good as the quality of data that is available and that there are trade-offs between exhaustive data collection, which requires considerable resources, and basic information collection. Simple tools and data collection methods that can be taken up by local consultants/experts and stakeholders should be used whenever possible. Government agencies and international finance institutions should take steps to ensure that the assessment of the initial situation will be done properly, especially regarding the terms of reference for tendering consultancies. Key tools and outcomes can be specifically stipulated. At country-level, a certain standardisation of such assessments would contribute to the overall quality and comparability of data, while creating a basis for monitoring. Baseline data is essential for setting development targets, monitoring changes as a project proceeds, and evaluating the final impact. Globally, there is a need for standardized procedures and guidance, not only to help consultants and local authorities, but to facilitate monitoring and the creation of national databases to which planners can refer.

In terms of research, more effort is needed to develop and validate simple tools that translate collected data

into the development of robust service delivery model scenarios for small towns. Among others, key areas of work are the quantification and characterisation of wastewater and faecal sludge in small towns, the optimal spatial distribution of sewer networks and faecal sludge management, and the level of decentralisation of wastewater collection and treatment, as well as the cost implications of different management scenarios for the municipalities, the citizens and the private service providers.

The increasing investments in sanitation in small towns and the current policy developments in several countries will provide opportunities for field applications in collaboration with local authorities and sanitation stakeholders in small towns.

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