Note from the field

Sanitation Mapper: A tool for mapping and monitoring sanitation in low-income countries

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The Water Point Mapper, conceptualized and developed by WaterAid, has proven to be a valuable tool to inform the planning and design of interventions and build evidence for effective advocacy in the sector. Sanitation Mapper is a simple and low-cost technology to map sanitation facilities and their status in low- and middle-income countries. The process is based on Water Point Mapper experiences from WaterAid country programmes in Southern and East Africa regions. This paper reports on the piloting of the Sanitation Mapper in informal settlements in Dhaka and Matlab (Chandpur) in Bangladesh.

THE WATER POINT MAPPER (WPM), conceptualized and developed by WaterAid, has proven to be a valuable tool to inform the planning and design of interventions, and build evidence for effective advocacy in the sector (Welle, 2005). The WPM allows the display of non-functional/semi-functional water sources, and the distribution of improved water supply services, highlighting inequalities. It also provides information on water quality by mapping high-risk contaminants in the water source.

Yet, mapping the access and type of sanitation facilities lags behind the progress made in the water sector. Several attempts have been made to monitor distribution and access to sanitation facilities. Table 1 illustrates examples of important efforts at monitoring and mapping sanitation facilities, showing their applications and benefits.

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Table 1 Examples of important efforts at monitoring and mapping sanitation facilities

Project	*Location*	*Data collected*	*Application used*	*Financial aspects*	*Strengths/weaknesses*
SanMap	Dar El Salam (Tanzania), Kampala (Uganda), Kigali (Rwanda), Blantyre (Malawi)	Latrine coverage, open defecation areas, environmental, market data	FLOW, SanMap, manual data collection, GPS, online data management	High costs: technical outlay, training, paid data collectors	Strengths: comprehensive data set, public/private, visual data representation Weaknesses: FLOW has limitation of scale, network connectivity issues, training costs
Orangi Pilot Project Research and Training Institute – OPP-RTI	Informal settlements Karachi (Pakistan)	Water point, latrine coverage, open defecation areas, functionality, public/private service provision, secondary census data	Manual data collection and management, GPS, aerial maps, AutoCad, Google Earth	Low costs: CLTS, volunteer, manual data transfer	Strengths: building community capacity building, low costs, simple technology Weaknesses: community organization is difficult, data management without technology, low resource capacity, dependent on political context
Society for the Promotion of Area Resources Centre – SPARC	Informal settlements Mumbai (India)	Infrastructure, functionality, secondary census data	Manual data collection and management, GPS	Low costs: CLTS, volunteer, manual data transfer	Strengths: building community capacity building, low costs, simple technology Weaknesses: community organization is difficult, data management without technology, low resource capacity, dependent on political context
Mathare Mapping Project	Mathare (Kenya)	Water point, latrine coverage, open defecation areas, sewer network, open drain, functionality, social video	Manual data collection, GPS, OpenStreetMap	Average-high costs: US$35,000 per year, investment in the technology	Strengths: community capacity building, low cost, simple technology, zonal mapping approach Weaknesses: community organization is difficult, security and health issues in data collection, dependent on the political context, volunteer dependent

Project	*Location*	*Data collected*	*Application used*	*Financial aspects*	*Strengths/weaknesses*
Kilifi Mapping Project	Kenya (Kilifi)	Water point, latrine coverage, open defecation areas, sewer network, open drain, piped and open water source, functionality, point and area data, social video	Mobile handset data collection, GPS, PAJAT POI mapping software	Average-high costs: investment in the technology, technical training	Strengths: comprehensive data set, visual data representation Weaknesses: network connectivity issues, cost of training outlay
Map Kibera Project	Kenya (Kibera)	Health, water, and sanitation security, WASH education	Manual data collection, GPS, open street map	Low costs: CLTS, volunteers, manual data transfer	Strengths: building community's capacities and skills Weaknesses: lack of planning and participatory experience, lack of sustainable capacity

Typically the methodologies illustrated in Table 1 focus on informal settlements where a lack of information regarding boundary delineation and existing infrastructure restricts efforts to improve water and sanitation infrastructure and services (Hasan, 2006). They are based on manual data collection and GIS technologies, with others adopting more complex mapping software such as in the Kilifi Mapping Project. Despite their successful application in sanitation projects, these technologies present some limitations in terms of cost and management, and user friendliness and thus new tools for mapping and monitoring data are to be explored. Acknowledging the knowledge gap in this area, this field note reports on the piloting of Sanitation Mapper, a monitoring tool developed by WaterAid and piloted in two areas of Bangladesh.

The Sanitation Mapper has been tested and piloted in monitoring and mapping sanitation facilities in urban and rural areas

Sanitation Mapper is a simple and low-cost technology to map sanitation facilities and their status in low- and middle-income countries. The process is based on Water Point Mapper experiences from WaterAid country programmes in Southern and East Africa regions. Sanitation Mapper uses a small number of core parameters to produce maps. The Sanitation Mapper has point and shape data-handling capability so trends can be aggregated and presented at local authority administrative level. The tool is designed to work using Windows, running Microsoft Excel, and uses the Google Earth application to visualize data. Once Google Earth has been installed, it can be run offline and maps can be generated without internet

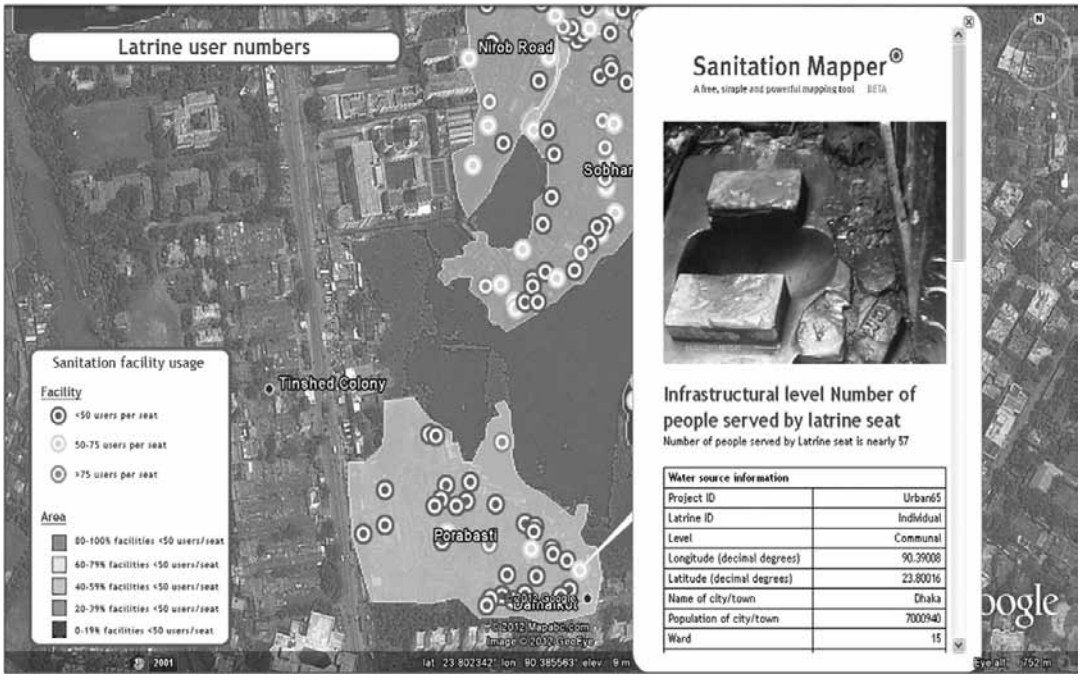

Figure 1 Sanitation Mapper process

connection. Detailed base maps can be cached in Google Earth when an internet connection is present and can be used offline. Figure 1 illustrates the process at the basis of the Sanitation Mapper.

The Sanitation Mapper has been tested and piloted in monitoring and mapping informal settlements in Dhaka and Matlab (Chandpur) in Bangladesh collecting information on sanitation facilities in urban and rural areas. The tool has been developed to analyse information collected at both community and latrine level. In testing the Sanitation Mapper we collected village-level information from rural Matlab through sampled household surveys, and latrine-level information within a ward in Dhaka. The data collection exercise lasted six days for several small teams collecting a range of relevant indicators including:

- number and gender of latrine users;
- latitude and longitude;
- type of facility (latrine, floor, roof, superstructure);
- hygiene aspects (drainage, hand-washing, presence of soap);
- water supply (storage, bathing);
- management (waste management, finance, and payment);
- security (lighting, locking, and distance from household).

Figure 2 Sanitation Mapper visual

Figure 2 provides a visual illustration of the Sanitation Mapper data analysis for settlements within Ward 15 of Dhaka city. The map shows an analysis of each latrine with the number of people accessing the facility. Each latrine icon on the map contains photos of the facility and associated information.

Sanitation Mapper can collect information that focuses on equity of the service provided

The Sanitation Mapper tool can also collect information which focuses on equity of the sanitation service provided. These relate to the presence of disabled and child-friendly adaptations and the presence of menstrual hygiene management facilities.

The Mapper aims to provide a user-friendly service aimed at WASH practitioners and local government staff working at district, sub-district, and village levels, which allows monitoring sector performance. Further studies are planned to evaluate the efficacy of the Sanitation Mapper as tool for mapping, monitoring, and planning together with identifying a mechanism allowing for institutionalization of mapping tools in local and national governments' decision-making process.

You can download the Sanitation Mapper for free from the SHARE website: www.shareresearch.org and www.waterpointmapper.org

If you are interested in this research or have any questions or comments about the project, please get in touch: contactshare@lshtm.ac.uk

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