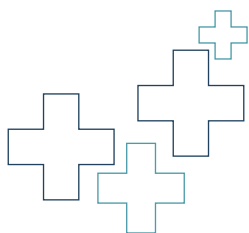




Urban Waters

How does water impact and is impacted by cities and human settlements?





The World Center for Sustainable Development, RIO+ Center, is a partnership between the United Nations Development Programme (UNDP) and the Government of Brazil. It was created in 2013 in Rio de Janeiro as a legacy of the Rio +20 Conference of 2012, by a wide range of founding institutions, such as the Ministry of Environment and the Ministry of Foreign Affairs. The mission of the Rio+ Center is to inform and inspire public policies and practices that lead to a more just and sustainable world, using evidence, promoting a broad-based dialogue and developing actions in alliance with other partners. One of the main objectives of the Center is to internationally promote the appropriation of a sustainable development paradigm that encompasses the economic, social and environmental dimensions in an integrated way.

Director a.i.: Niky Fabiancic

Coordinator: Haroldo Machado-Filho

Editors:

Lorena Camarena, Haroldo Machado-Filho,
Lorenzo Casagrande, Rosaly Byrd,
Aikaterini Tsakanika, Sarah Wotton

Publications Manager:

Lorena Camarena

Art and Layout:

Cesar Perri

Cover photograph:

Ricardo Gomes, Instituto Mar Urbano

The views expressed in the Centre RIO+ Publications are solely those of the authors and should not be taken as representing the views of their respective institutions, the United Nations Development Programme, or the Government of Brazil.

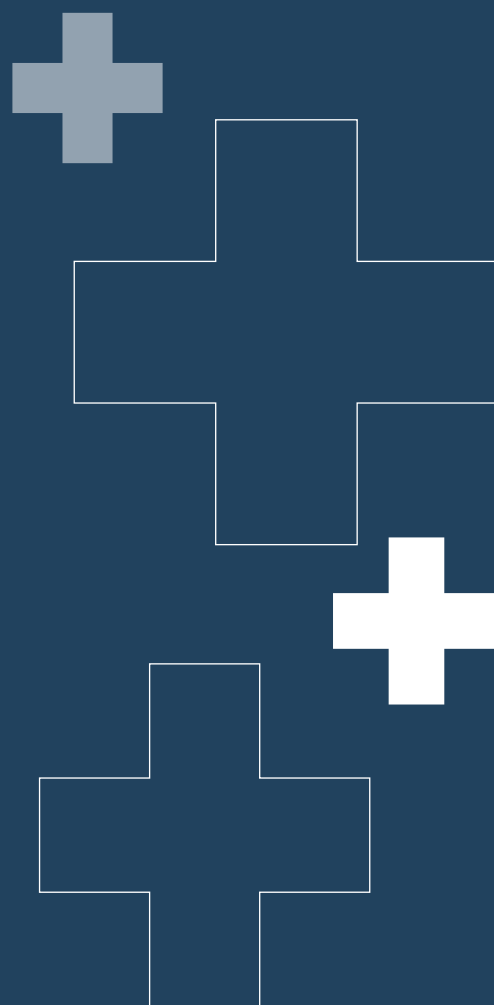
Rights and Permissions – All rights reserved.

The text and data in this publication may be reproduced as long as the source is cited. Reproductions for commercial purposes are forbidden.

Some of the photographs used in this publication are licensed under the Creative Commons license; full attribution and links to the individual licenses are provided for each.

Editors' note:

We would like to express our sincere appreciation to all of the authors for their generous and insightful contributions, without which this Issue simply would not have been possible.





Summary

Addressing Water Challenges And Urban Informality:
Lessons From Dar Es Salaam, Tanzania 6

Citywide Inclusive Sanitation:
Achieving The Urban Water SDGs 11

The Challenges Of Guanabara Bay In Rio De Janeiro:
A Showcase Of The Need For Integrated And Inclusive Source-To-Sea Urban Policies. 14

Urban Water Challenges Of India:
The Case Of Delhi 17

How Does Water Affect Cities And People?
The Case Of The Greater Paris Sanitation Utility (SIAAP) 20

Cities And Water Security:
The Role Of Local Governments 23

Managing Excessive Water Flows In Cities:
Nature-Based Solutions 27

Charging For The Use Of Bulk Water In Rio De Janeiro:
Analysing A Sustainable Water Management System 31

Drainage Infrastructure In The Monterrey Metropolitan Area, Mexico:
The Case Of *The Pluviales* Project 35



photo: D. Crosweller

Citywide Inclusive Sanitation: Achieving the urban water SDGs

Christoph Lüthi
Abishek Sankara Narayan
Eawag - Swiss Federal Institute of Aquatic Science and Technology

Between 2015 and 2030, Africa's population is expected to grow by 42 per cent or nearly half a billion people; Likewise, Asia's population will grow by a similar number, although representing only 12 per cent growth in the continent's population (UN DESA 2018). Most of this growth is projected to take place in urban areas, while rural population numbers will stagnate. Most cities lack the basic infrastructure and services needed for economic productivity, social inclusion and environmental sustainability, while inequalities within cities are persistent and widespread. The urban poor particularly lack access to adequate shelter, water, sanitation and health services.

Local authorities in developing cities often lack capacity in planning and implementation and therefore are ill-equipped to deal with this projected growth. In most countries of the Global South, urban infrastructure planning and programming is still top-down and follows an expensive, technocratic and "one-size-fits-all" networked system. Governments and agencies in low and middle-income countries plan and develop water and sanitation services with limited participation of the urban poor, if at all. Even where governments follow a pro-poor approach such as in Ethiopia, their policies and investments have been hampered by an inadequate understanding of the needs, perceptions and coping strategies of the urban poor (ISF-UTS and SNV 2016).

The New Urban Agenda and SDGs

The United Nation's New Urban Agenda ensured member nations' commitment in making cities more sustainable

with special attention to water and sanitation services (UN 2017). The Sustainable Development Goals (SDGs) are 17 different goals, among which water, sanitation and hygiene form Goal-6. Under this framework, there are separate targets for drinking water, water quality, water-related ecosystems and specifically, the universal, equitable access to 'improved' sanitation. Globally, an additional one million persons have to get access to improved sanitation facilities each day to reach this goal by 2030 (Mara and Evans 2017). Although compared to rural areas, cities have better sanitation service provision, (WHO 2017), the latter is still a major contributor of untreated wastewater, creating hotspots for environmental degradation and public health hazards impairing social and economic productivity.

Most importantly, within the sanitation targets of SDG 6.2, for the first time, the focus is not only on toilet access, but on managing the entire sanitation value chain, encompassing containment, emptying, transport, treatment and safe reuse or disposal. This paved the way for a paradigm shift, where thinking goes beyond piped sewers (Ross et al. 2016). Developing cities are growing bigger and denser, with informal and peri-urban settlements often being underserved. To provide a citywide solution, an inclusive approach that embraces various scales of decentralised solutions such as faecal sludge management, container-based sanitation and other small-scale decentralised treatment systems, is required. Total sanitation coverage for rapidly expanding cities of the Global South will therefore need to comprise a mix of different contextualised solutions (Figure 1), including sewered areas (e.g. central business districts), decentralised or small-scale systems (e.g. specific

residential developments or institutions) and faecal sludge management ecosystems (e.g. dense informal or peri-urban settlements).



Fig. 1: Blended sanitation systems in urban settings (blue: sewerage, green: decentralised systems, brown: on-site sanitation). © Eawag-Sandec 2018

Citywide Inclusive Sanitation (CWIS)

Citywide Inclusive Sanitation (BMGF et al. 2017) is a novel concept that is gaining traction with several sector players including the World Bank and the Gates Foundation. CWIS thinking rests on four main actionable pillars:

- (i) Prioritise the human right of citizens to sanitation – equitable and accessible for all;
- (ii) Deliver safe management along the whole sanitation service chain, from the toilet to safe treatment and reuse;
- (iii) Integrate sanitation in urban planning and renewal, providing liveable and sanitary environments; and
- (iv) Commit to working in partnership to deliver citywide inclusive sanitation, including formal and informal partners.

Clearly, citywide inclusive sanitation is cross-sectoral in nature and can contribute to the progress of other SDGs such as good health and wellbeing (SDG 3), gender equality (SDG 5), reduced inequalities (SDG 10) and sustainable cities (SDG 11). Through resource recovery and encouraging a circular waste economy, it adds to Goals 7 and 12, clean energy and responsible consumption (SuSanA 2017). As a corollary, the consequences of inadequate sanitation affect everyone, as human waste and its pathogens recognise no boundaries and spread freely across urban areas, therefore affecting many development goals.

There is no silver bullet for achieving total sanitation coverage, and therefore planning and programming for citywide inclusive sanitation with a coherent strategy requires rigorous planning. An integrated analysis of socio-economic, cultural, institutional and environmental conditions is critical. A planning process should ensure inclusion of the underrepresented communities and ensure

stakeholder involvement at all levels. By incorporating local knowledge in this way, success rates of interventions could be increased (McGranahan and Mitlin 2016). Further, this presents an opportunity for understanding the potential of resource recovery and its sustained use at the community level. However, a detailed planning effort requires dedicated financial and time resources allotted to it to deliver the intended outcomes.

Policy Recommendations

CWIS requires a clear policy framework to enable more inclusive and incremental sanitation solutions. In this policy brief, we present five suggestions that might enable urban sanitation planning and programming to move beyond the mainstream conventional solutions.

1. A more integrated and inclusive approach is needed to cover all urban areas. We argue for a blended approach that includes a menu of solutions such as faecal sludge management (FSM), decentralised or small-scale systems for areas too far from existing sewers and for the more affluent urban neighbourhoods, piped sewers (Reymond; Renggli and Luthi 2016). For blended solutions to be accepted, a concerted effort by academia, media and decision-makers to overcome the misconception that waterborne sewerage is the only acceptable sanitation technology, and that aforementioned alternative sanitation systems are temporary and stopgap solutions. An integrated approach also includes taking into account water supply, solid waste management and stormwater drainage, of the targeted location.
2. A more pragmatic approach to urban sanitation would entail the avoidance of infrastructure plans that are often prepared with aspirational objectives, without a realistic consideration of what is actually achievable given the availability of existing resources and ignoring existing investments. The availability of financial resources for system upgrade is a common limiting factor and therefore, a more pragmatic approach is to plan for improvements in incremental steps, rather than in an ‘all or nothing’ fashion. It also would progress towards ‘some for all’ as against ‘all for some’ principle.
3. Planning for CWIS needs to be holistic and requires dedicated time, effort and financial resources. The planning process should revolve around informed decision making, must be inclusive of all the relevant stakeholders, and not just the municipality or urban water and sanitation utility. The process should ensure robust data collection of current practices, socio-cultural, economic and environmental aspects. This could be done through coproduction of local knowledge, where the members of local communities themselves, are involved in data gathering. Provision of funds to support the above and other consultation activities, including the development of dissemination and communications channels, help in reaching

different stakeholder groups, since in these settings, stakeholder groups are not organised, and do not always have common engagement platforms for information exchange. Such an integrated participatory approach improves transparency of decision-making and promotes ownership among the community.

4. One of the inherent challenges with sanitation planning and programming is that they require a range of institutions and organisations to work together. Therefore, the level of commitment, capacity and the relationships between these institutions have a significant bearing on the planning process. Coordination between different stakeholder institutions, each of whom has a related mandate and jurisdiction, is crucial. City leaders need to leverage their power to drive a coherent citywide strategy and bring all major actors to the table, and on the same page set the functions and specific objectives of the improved services. Civic society, user communities, NGOs and other relevant actors, must be adequately represented, informed and consulted throughout the process. CWIS is less about technology fixes, and more about process-oriented solutions (Parkinson; Luthi and Walther 2014).
5. Although environmental considerations are implicit in sanitation planning, the subsequent part of the sanitation value chain, treatment and disposal/reuse, are often inadequate. That is evident, in low and middle-income countries, where access to 'improved sanitation' as evaluated until the containment and safe emptying is not tantamount to the wastewater / faecal sludge treated, with only 18 per cent of the domestic wastewater from on-site sanitation facilities actually being treated worldwide (UN-Water 2018). It is therefore important to build necessary treatment capacity for safeguarding the environment. Several low-cost alternative technologies are on the rise for municipal wastewater, such as the emerging advancements in nature-based solutions, all of which must be actively considered in the planning process.

Conclusion

With rapid urbanisation in low and middle-income countries, the challenge of urban sanitation must be innovatively addressed adopting a more inclusive, decentralised and incremental approach. Successful CWIS requires consolidated efforts in coordinated, participatory planning involving various stakeholders, and active consideration of management throughout the sanitation value chain.

References

- BMGF, Emory University, Plan International, University of Leeds, WaterAid and World Bank 2017. 'Citywide inclusive sanitation: a call to action'. Available at: <http://pubdocs.worldbank.org/en/589771503512867370/Citywide-Inclusive-Sanitation.pdf> (accessed 12 December 2018).
- ISF-UTS and SNV 2016. 'Are we doing the right thing? Critical questioning for city sanitation planning', p. 33.
- Lüthi, C., Panesar, A., Schütze, T., Norström, A., Mcconville, J., Parkinson, J., Saywell, D. and Ingle, R. 2011. *Sustainable sanitation in cities - A framework for action*. The Netherlands: Papiroz Publishing House.
- Mara, D. and Evans, B. 2017. 'The sanitation and hygiene targets of the sustainable development goals: scope and challenges', *Journal of Water Sanitation and Hygiene for Development*, 8 (1), pp. 1-16.
- McGranahan, G. and Mitlin, D. 2016. 'Learning from Sustained Success: How Community-Driven Initiatives to Improve Urban Sanitation Can Meet the Challenges', *World Development*. 87(ii), pp. 307-317.
- Parkinson, J., Luthi, C. and Walther, D. 2014. Sanitation21 - A Planning Framework for improving City-wide Sanitation Services, International Water Association. Available at: http://www.iwa-network.org/filemanager-uploads/IWA-Sanitation-21_22_09_14-LR.pdf (accessed 12 December 2018).
- Reymond, P., Renggli, S. and Luthi, C. 2016. 'Towards Sustainable Sanitation in an Urbanising World', *Sustainable Urbanisation*, pp. 115-134.
- Ross, I., Scott, R., Blackett, I. and Hawkins, P. 2016. 'Fecal Sludge Management: Diagnostics for Service Delivery in Urban Areas Summary Report - Diagnostic Tools for Fecal Sludge Management Services in Urban Areas', *Water and sanitation program technical paper; Water and sanitation program (WSP)*. Washington, D.C. World Bank Group.
- SuSanA 2017. 'Contribution of Sustainable Sanitation to Agenda 2030', pp. 1-19, SuSanA Vision Document.
- UN-Water 2018. Synthesis Report on Water and Sanitation 2018. Available at: https://sustainabledevelopment.un.org/content/documents/19901SDG6_SR2018_web_3.pdf (accessed 12 December 2018).
- UN 2017. New Urban Agenda, Conference on Housing and Sustainable Urban Development (Habitat III). Available at: <http://habitat3.org/wp-content/uploads/NUA-English-With-Index-1.pdf> (accessed 12 December 2018).
- UN DESA 2018. 'World Urbanization Prospects: The 2018 Revision'. Available at: <https://esa.un.org/unpd/wup/Publications/Files/WUP2018-KeyFacts.pdf> (accessed 12 December 2018).
- World Health Organization (WHO) 2017. Progress on Drinking Water, Sanitation and Hygiene: 2017 update and SDG baselines. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF), 2017. Available at <http://apps.who.int/iris/bitstream/handle/10665/258617/9789241512893-eng.pdf;jsessionid=83F0FBC80A367F6E81673FC402673FFD?sequence=1> (accessed 12 December 2018).

