Planning guiding principles for improving sanitation services in urban areas of developing countries – case study application in Maputo

Summary

Besides the undoubtedly importance of sanitation, global figures describing lack or inadequacy of sanitation services are alarming. Coupled to the unprecedented growth of unplanned urban settlements in developing countries, improper sanitation poses serious risks to the environment, people's health and human dignity. The insufficient results in sanitation have been, in part, attributed to the absence of structured and comprehensive planning frameworks applicable to the specificities of developing countries. The international community increasingly highlights the need to integrate technical and engineering aspects of sanitation together with environmental impacts, socio-cultural factors, financial and economic issues as well as institutional, legal and political concerns. Within this background, the present dissertation intends to contribute to an integrated approach, thus helping to overcome the prevailing infrastructural bias towards sanitation, as well as the general tendency in the sector for isolated interventions. In pursuance of this objective, this thesis explores the complexity around the vast influential decision factors in need of consideration when planning sanitation. It further analyses how effectively existing planning approaches and decision-support resources deal with such decision factors. Lastly, a set of Planning Guiding Principles are proposed and complemented by the development of an interactive decision-support tool. The research outputs of this dissertation are applied to a case study in Maputo, Mozambique.

The extensive and throughout review undertaken in this thesis regarding the experiences in the sanitation sector has reinforced the importance of recognising the complexity of planning sanitation services. The assessment of existing decision-support resources showed that they do not cover various important decision factors for planning and also do not support the consideration of trade-offs and synergies among such factors. A more in-depth analysis was undertaken regarding four categories that are believed to cover the most relevant factors to consider in planning: a) the multi-sectoral approach, b) the multiplicity of sustainable dimensions, c) the system analysis perspective (from collection to final destination of sanitation products), and d) the co-existence of planning scales. This analysis revealed that the increasingly recognised importance of these categories is not mirrored by what happens in the field. Therefore, this thesis further explored possible solutions for improving decisionsupport resources, their integration into urban planning processes, and recommendations for policy development which may facilitate the appropriate consideration of relevant decision factors. In light of the above, a set of Planning Guiding Principles were developed to provide those who have responsibilities in sanitation a roadmap to choose among the numerous options available for service improvement. The Guiding Principles were applied to a case study in Maputo, Mozambique. Additionally, the Guiding Principles were further adapted into an interactive planning exercise called S4S ("Service-oriented System-based analysis For Sustainable Sanitation"). This planning exercise promotes the constructive discussion and learning experience of participants through a set of rules facilitated by the visualisation of the analysis results by means of graphs and maps. Its performance was tested through workshops with different groups of participants showing different levels of familiarity with sanitation issues. The present work is expected to contribute towardsthe integration of transdisciplinary knowledge and the systematisation of the influential decision factors required for improving urban sanitation in developing countries.

Keywords

Decision-making, planning, sustainability, system-approach, urban sanitation.

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