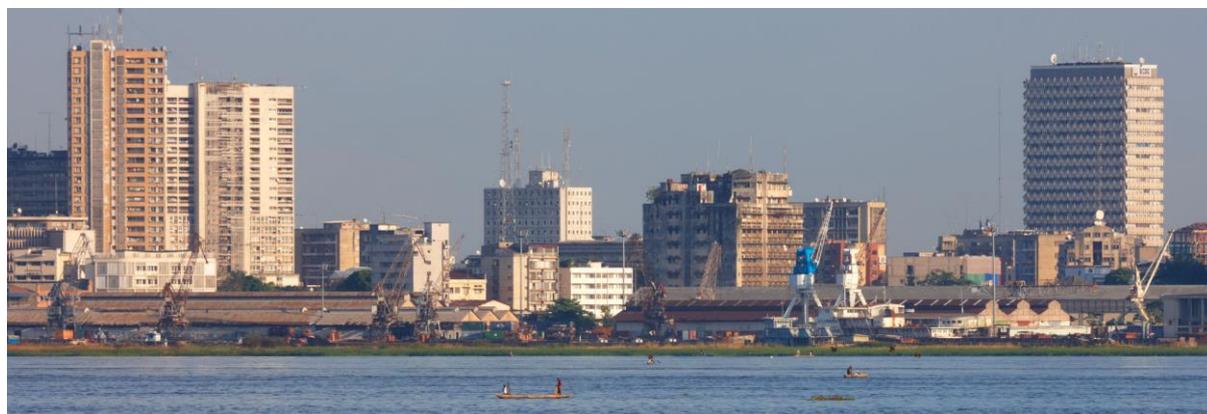
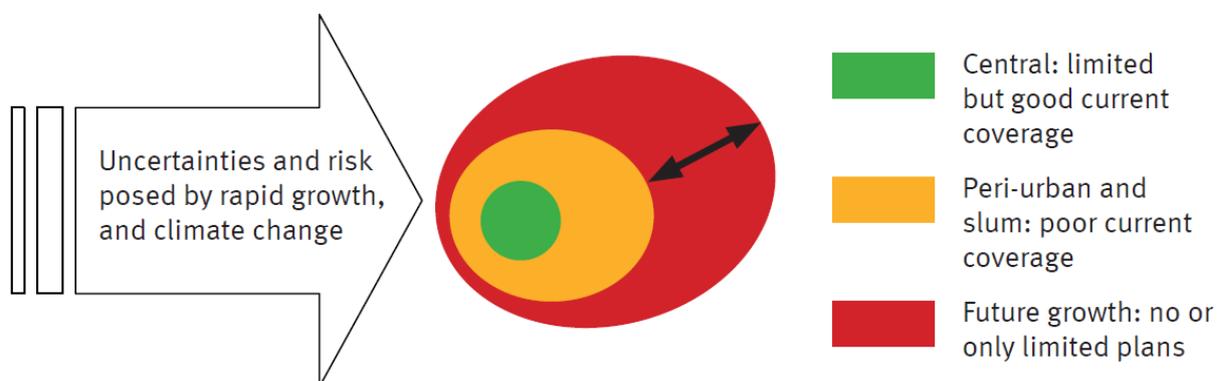


# Financing sustainable and resilient water and sanitation infrastructure in African cities



## The issue

The 2015 Addis Ababa Action Agenda recognises the critical need to provide sustainable and resilient infrastructure, and agrees to support cities and local authorities in doing so. Cities and towns in Africa currently face a multitude of threats, including rapid and unplanned growth, expanding slums, flooding and scarcity. Infrastructure – transport, housing, power, water and sanitation – already fall short of meeting current needs. Continuing rapid urbanisation and climate change will place added pressure on already strained capacities to deliver water, sanitation and hygiene services at the required scale.



**Figure 1: Sanitation in a major African city: stylised current and future coverage**

Cities and national governments in Africa face several simultaneous challenges:

- The African continent has the highest rate of urban growth, with a projected 50% of the population living in urban areas by 2035. Population growth, forecast

to increase by more than a billion people by 2050, and rural-urban migration, will continue to drive rapid expansion. Thus far, sanitation provision has not managed to keep up with this pace of change.

- Projected impacts of climate change, such as floods, droughts and rising sea levels, can damage WASH infrastructure and contaminate groundwater. Many cities are vulnerable to flooding due to poor drainage and other infrastructure, and 12% of the continent's urban population live in low-elevation coastal zones.
- High percentages of urban populations (>50%) live in informal settlement or slum conditions, but receive relatively low priority in city-wide spatial plans. Communities living in these areas are likely to remain underprovided for, and their location often makes them vulnerable to climate change.
- Urban planning authorities face significant challenges in dealing with the rapid change underway. It is also not always possible to achieve the desired coordination between the different important key stakeholders.
- Concerns from development partners over financial absorption or lack of disposable portfolio opportunities may prevent them from investing.

## WaterAid project: City-wide urban planning for sanitation and water

WaterAid began a project in April 2012, City-Wide Urban Planning for Sanitation and Water, to look in detail at this issue. Together with architects Sheppard Robson, and engineering firms MWH and Mott MacDonald, WaterAid is working to produce high level analysis and plans for water and sanitation infrastructure in four African cities. The aim is to boost spatial planning capacity for water and sanitation in each city, while promoting the adoption and scale-up of the concept of integrated spatial planning within the development community.

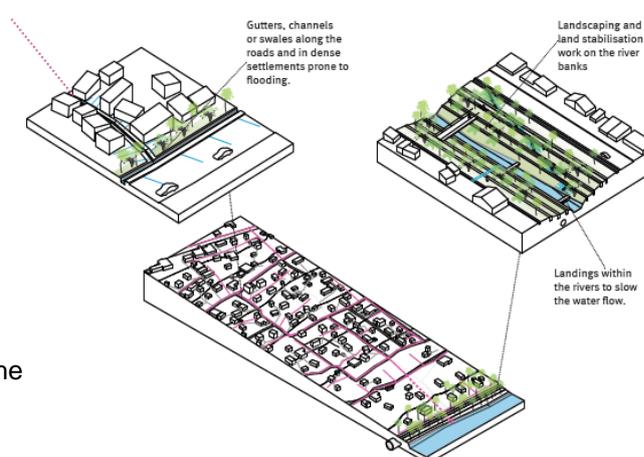


Figure 2: Drainage principles for the four-city study.

These spatial planning reports take account of the rapid urbanisation underway, the impacts of climate change, and residential and industrial development on water quality. The plans incorporate informal, peri-urban settlements and slums, and take a long-term planning horizon (50-100 years). The analysis is being developed in close collaboration with the government, municipal authorities and utility companies of the cities concerned, and the plans will be aligned with existing broader infrastructure plans for the cities.

The first drafts of the analysis and high level plans were developed in 2013. WaterAid then held consultations with planning authorities to build local ownership of the analysis and strengthen the analysis of subsequent drafts of the plans. In the longer term, the project team will continue to support the authorities through technical advice and capacity building, to secure increased investment from donors on the basis of the analysis.

## Focus cities

In **Maputo**, a key issue is addressing the risk of sea level rise, saline intrusion and erosion through flood defence work to protect and drain low-lying parts of the city, including the port and the railway station. The analysis supports recommendations aimed at extending key sanitation infrastructure to the densest slum areas of the city.



Figure 3: Maputo – Areas vulnerable to sea level rise (Red: new flood zones)

In **Kinshasa**, the analysis shows the absence of networked sewage facilities and waste water treatment plant, resulting in pollution of rivers and aquifers. It also points to the lack of drainage networks, causing problems of flooding and erosion. The analysis proposes looking in particular at strengthening sanitation and drainage infrastructure, using the natural corridors provided by the tributaries running north into the Congo river.

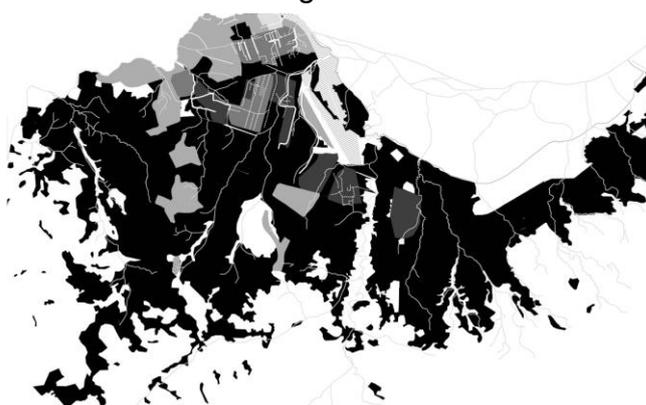


Figure 4: Kinshasa – sanitation and drainage levels (Black colour: limited or no drainage, no sewers.)

The **Lusaka** report considers key challenges such as low access levels to water supply and sanitation services in peri-urban areas, insufficient water and sanitation infrastructure capacity to deal with long-term demand, flooding during the rainy season, and contamination risk of the aquifer under the city. To boost infrastructure capacity and enable the city to expand beyond its existing district limits, it proposes developing water and sewerage infrastructure along proposed transport routes in existing master plans.

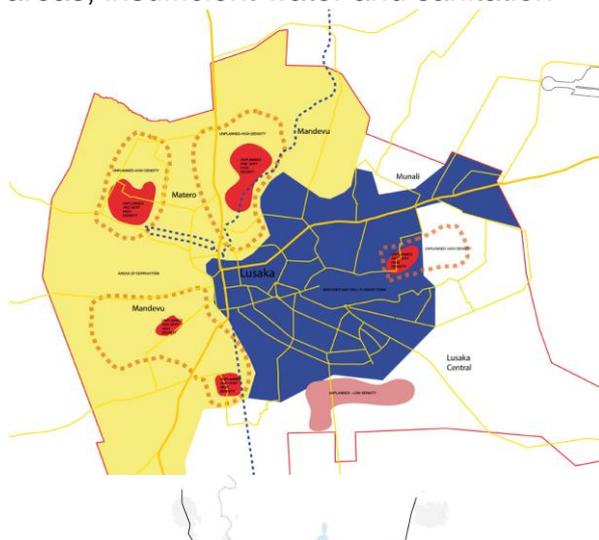


Figure 5: Lusaka – most vulnerable areas (Red: highest)

Key challenges in **Lagos** include the rapid pace of urbanisation, bringing high pressure on housing and basic services infrastructure sectors. There are up to 100 slum communities accounting for 70% of the population, with many located in flood prone coastal areas. The analysis also identifies inadequate drainage and sludge management systems as a problem. Proposals focus on the need to protect Lagos' large settlement areas vulnerable

to sea level rise, and look at different poverty pockets, proposing sanitation solutions for informal settlements and slums that have high water tables or are floating settlements.



Figure 6: Lagos – vulnerability to sea level rise (Dark blue: areas 2m above current sea level)

## Forthcoming research: urban adaptation for more resilient water, sanitation and hygiene services

Closely related to its city-wide work is WaterAid's forthcoming work on urban adaptation for more resilient water, sanitation and hygiene services. The project recognises that climate change will worsen existing challenges like rapid urbanisation, high inequality and changing land-use, and will be an additional stress on the availability of water, sanitation and hygiene services. It aims to convince authorities of the urgency of urban adaptation for water, sanitation and hygiene, and to demonstrate how adaptation can be mainstreamed into development processes and be designed specifically to benefit low income communities.

The work consists of three phases. During the scoping phase, a global contextual study will be conducted to assess the state of play and identify three cities suitable as case studies. Cities or towns with a high vulnerability to climate change will be selected, and the study build upon existing WaterAid work on city-wide urban planning underway since 2012. External researchers will then work with WaterAid Country Programme staff to document threats in the case study areas, and analyse a range of adaptation strategies. In the final phase, it is envisioned that a consortium of stakeholders will work to transition the identified change agenda into a portfolio of investible projects, in alignment with appropriate funding options such as climate finance.

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