

# Sponge City Kajiado

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## Kajiado town water dynamics

Kajiado is one of many growing towns (20% increase in 6 years KCIDP 2014) in the arid lands of Kenya. Its rapid growth led to the increased hard surfaces such as roofs, roads sewage drains and reduction of vegetation around town. Increase in hard surfaces negatively impacts groundwater recharge as stormwater drains quickly without giving it time to sink into the soil. Combined with the increasing demand on groundwater resources these developments left a number of boreholes in Kajiado dry and others diminishing in yield.

Clean water is a real issue for the poor in Kajiado, most sources are salty and freshwater jerrycans go for 60 shillings. The Kajiado County Integrated Development plan marks inadequate water supply and poor physical infrastructure as the top development challenges (KCIDP 2014: 29). The County Government is acutely aware of this problem and actively looking for potential solutions also with its civil society partners. In 2013 and 2014 NIA (Kenya, local NGO Kajiado) Maasai Technical Training Institute (MTTI Kajiado), SASOL (Kenya) and RAIN (Netherlands) collaborated to develop a plan for addressing these issues and piloted small scale interventions near MTTI to capture stormwater from the road for infiltration.



Small stormwater capturing weir on the edge of Kajiado town

Recognizing the potential to utilize stormwater, using urban infrastructure and real estate development as harvesting infrastructure, this proposal outlines the development of *Sponge City Kajiado* and its potential role as an example in the region.

## Sponge City Kajiado

Together with the Makueni proposal the ultimate goal of this proposal is based on Chinese wisdom of the sponge city, an approach that is:

*“characterized by natural retention, natural infiltration and natural purification, save water resources, protect and improve the urban ecological environment and promote the construction of ecological civilization”* (MoH&URD 2014).

Urban infrastructure and real estate development in Kajiado provide a challenge as well as a solution. Roads, roofs and other hard surfaces can also be augmented to perform as catchment area and water can be redirected for infiltration or storage. Runoff water can effectively recharge the groundwater for local reuse or pumped up by the town’s boreholes. We will demonstrate that development of urban infrastructure and - expansion in Kajiado should not be seen as an obstacle for water resource availability, but as a possibility to use our 3R knowledge to create synergy between recharge technologies and urban infrastructure (urban 3R).

With this program we align urban water planning with the vision 2030 plans for Kenya: “The country therefore, aims to conserve water sources and start new ways of harvesting and using rain and underground water. The 2030 vision for water and sanitation is to ensure that improved water and sanitation are available and accessible to all.” (GoK 2007 p.18).

## Outline of the approach

During the inception phase of the project we visited real estate development zones and a stormwater gully which showed high potential for urban beautification and water recharge.



Members of the consortium (MTTI, RAIN, NIA and SASOL) at one of the storm water gullies in Kajiado March 2014

Based on established linkages with the County Council, MTTI and the Makueni proposal we take the following steps:

*Step 1) Site selection and data collection.*

A geohydrological assessment of the urban area, current water supply (boreholes), sub-catchment and recharge areas, using existing data and a field/satellite based research (remote sensing, geophysical exploration, geochemistry and isotope studies). The research will result in high potential sites for artificial recharge and reuse (locally of through the town's boreholes) of the urban groundwater.

*Step 2) Survey of planned urban development* and further deliberation with the county governments to recognize high potential recharge and infrastructure development.

*Step 3) Technical proposition for urban adaptation*

At selected high potential sites/projects we will develop at least 6 different methods of recharge, reuse and stormwater management. These include for instance:

- Household level (soakpits/tanks)
- Roads: borrow pits as soak pits, diversion trenches to recharge zones. Irish bridges as recharge dams etc.
- Wastelands and gullies: Gully plugging, recharge parks for stormwater storage, weirs in seasonal drainage channels, artificial wetlands

The results will be offered to the county government and relevant line ministries.

*Step 4) Implementation and partnering*

We will pilot at least 5 different technologies in the field. During the previous steps we build up

strong relationships with the county government and several other local stakeholders to co-invest. These stakeholders include MTTI which will engage their students in building to develop their capacities in urban 3R surveys and implementation. At present some of the boreholes are privately owned. We will seek to engage these private operators in the program to make them a party in the lobby and advocacy at county level.

*Step 5 national and international recognition and replication*

Many other towns are in a similar position as Kajiado in Kenya, for instance Wajir, Isiolo, Kitui and Narok. The proof of concept we generate and the pilot scheme we implement will serve as a scalable template for different county governments. Sponge City solutions can be tailor made to cover geohydrological and organizational issues particularly tapping into the growing mandate of the county governments under the recent devolution.

**Crosscutting: Learning agenda**

We will build up the learning agenda with the Makueni proposal and it will include:

*Development of demonstration site(s).*

Local stakeholders will agree on a site to develop such infrastructure in order to make urban recharge as tangible as possible. A solid ownership arrangement should be at the basis of this site. The aim is to provide tangible examples for local and national replication as well as a learning by doing site for students.

*Knowledge products:*

The products will include adapting the sponge city approach to East Africa and strengthened with a basic methodology for urban geohydrology assessment and monitoring of the main indicators for success of urban 3R. We will focus on increased urban recharge, increased water availability and diminished urban runoff.

*Promotion and replication*

The information will be packaged along with best practices and lessons learned in liaison with the Makueni proposal and possibly other VIA water partners and included in the roadshow presentations. Presentation to relevant INGOs, counties and ministries will see the replication of the approach with the 3R consortium and its partners.

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## Partners



### ***Neighbours Initiative Alliance***

(Lead implementing organization and local partnering institute for county government and ministries, learning)



### ***RAIN (Aidenvironment)***

(Program development, coordination of partnership, technical backstopping and learning)



### ***Acacia water***

(Georeferencing, geohydrological mapping and learning)



### ***Masai Technical Training Institute***

(Learning and implementation)



### ***AMREF Kenya***

Community mobilization engagement, local networking



### ***SASOL Kenya***

Technical backstopping in infrastructure

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## References

- GoK (2007) Kenya Vision 2030; the popular version. Government of the Republic of Kenya.
- KCIDP Republic of Kenya County Government of Kajiado (2014) County Integrated Development Plan 2012 2017
- MoH&URD Peoples Republic of China Ministry of Housing and Urban-Rural Development (2014) Technical Guideline for Sponge City Construction; Construction of low-impact development stormwater system

