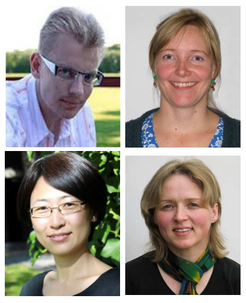

Building water resilient green cities in Africa

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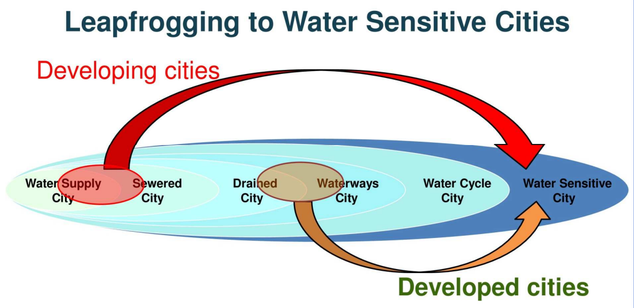
INTRODUCTION

Every day, more than 40,000 people move into cities in Africa. By 2050, the urban population in Sub-Saharan Africa will have tripled to more than one billion people (UN DESA, 2014). The demand for water in African cities is growing. Infrastructure is scant. Cities rely on water sources further from the city. Urban land-use change lead to increased surface runoff, higher peak flows, flooding and erosion. Poor sanitation impacts health and threatens groundwater sources. Climate change will aggravate these urban water challenges.

Historically, cities in the Global North have gradually expanded the water infrastructure from a fairly narrow focus on water supply and sanitation to a wider focus on urban drainage and healthy waterways. Few cities in the world are exploring options for a closed-loop urban water system. In the long term, cities must be attractive places to live in and competitive sites for economic investment. Sustainable cities need to be resilient to climate change and concerned with intergenerational equity.

Cities in Africa have an opportunity to leapfrog towards a holistic urban water management regime, whilst avoiding undesirable technological lock-ins. This challenge calls for integrated solutions and an inclusive process of knowledge creation.

Since 2013 the University of Copenhagen has collaborated with universities and communities in Addis Ababa (Ethiopia) and Dar es Salaam (Tanzania) on the framing of water resilient cities in Africa. Current funding from Danida will terminate in mid-2017 and a follow-up project is underway.



Developing cities may generate pathways towards water sensitive cities since they have not heavily invested in single-purpose systems.

Source: WSC CLIP Presentation in Monash University, 14-02-2016 (Ana Deletic, Rebekah Brown, Hadi Susilo Arifin, Maria Anityasari, Anisa Santoso)
http://hsarifin.staff.ipb.ac.id/files/2016/04/Leapfrogging-WSC-page-0.jpg

METHODS

- Exploring the potential of nature-based stormwater management options in urban Africa
- Interdisciplinary action research linking landscape architecture, environmental engineering and urban planning
- Two countries. Two cities. Two river catchments. Three case sites located upstream, midstream and downstream in the catchment transect
- Multi-level stakeholder engagement – peer-to-peer research collaboration, training of professionals, community level co-design workshops
- Fostering rapid mind-set change through champions at universities, among professionals and in the local communities
- Focus on innovation through 1:1 demonstration and developing catchment strategies

RESULTS

The project *Water Resilient Green Cities in Africa* (2013-2017) has explored if a robust green infrastructure in combination with multi-level stakeholder engagement can be a key to develop water resilient green cities in Ethiopia and Tanzania.

A range of technological concepts for landscape based stormwater management at site and catchment level have been developed along with new knowledge on inclusive water governance and planning.

Key results:
• A series of locally developed eco-technologies with demonstration in case sites, including a novel swale-dike system and new road design
• An integrated catchment plan for each of the two case catchments
• An established network of champions at different levels and across sectors in Addis Ababa and Dar es Salaam
• In-depth knowledge of the legal, institutional and cultural conditions for and impediments to sustainable urban change in the two case cities

Further research needs:
• Developing business models to motivate private sector involvement and investment in nature-based urban water systems
• Understanding the role of demonstration projects on the ground as a means to facilitate knowledge diffusion and upscaling
• Further exploring the relationships between civil society and public, private and academic stakeholders underpinned by transition theory

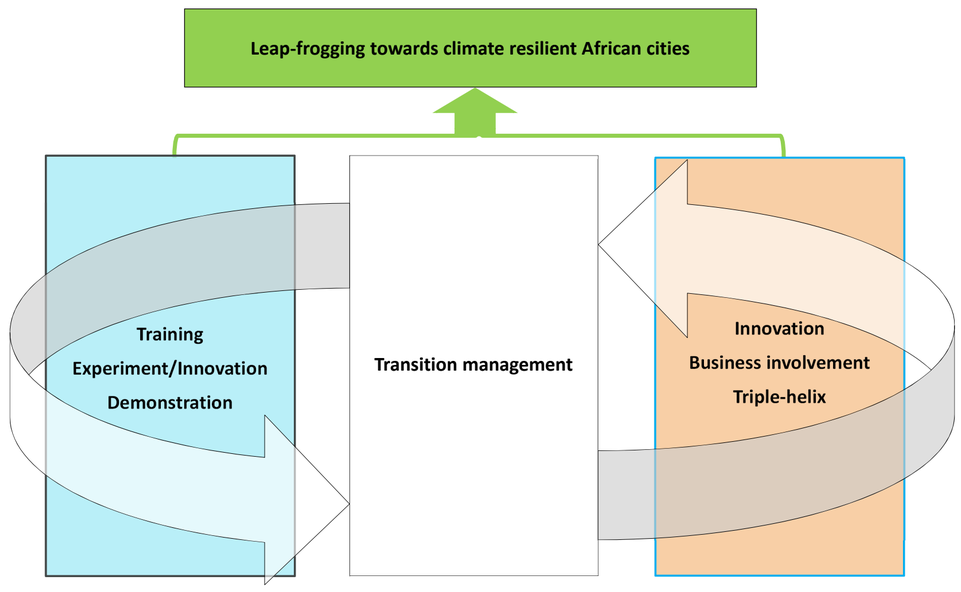
NEW PROJECT

We propose a new 3-year research project (2018-2020) that expands on the knowledge and network we have developed during the past four years in Addis Ababa and Dar es Salaam.

Denmark has a track record of successful triple-helix networks that have fostered collaboration and innovation, Vand i Byer being the most prominent example.

Experiences from Denmark show the relevance of involving end-users, companies and research institutions in the process of developing, demonstrating and upscaling good solutions, which in turn strengthen the capacity of all partners.

Full scale demonstration projects are critical to drive this process of change and to facilitate knowledge diffusion and the acknowledgement of nature-based solutions in society at large.



ARE YOU OUR TRIPLE-HELIX PARTNER?

We invite Danish public and private stakeholders to partner with us as we take the next step in the process of building water resilient cities in Africa.

Activities include:
• Peer-to-peer collaboration and partnerships between stakeholders in Ethiopia, Tanzania and Denmark
• Research, training, design, fundraising and implementation of demonstration projects
• Market maturation

Our ideal partner:
• Shares our commitment to develop holistic urban water solutions
• Has a technical, social, financial or entrepreneurial expertise that strengthens the team
• Works as a consultant, contractor, manufacturer and/or innovator OR is a professional in a municipality or a water utility company (within planning, urban greening, water)
• Has solid experience with nature-based solutions or smartphone app startups

Acknowledgement:
We would like to thank our partners at Addis Ababa University and Ardhi University for outstanding research collaboration during the past four years.

References:
UN DESA (2014). *World Urbanization Prospects - The 2014 Revision*. Population Division, Dept. of Economic and Social Affairs. United Nations, New York.