Re-thinking urban upgrading –
The Urban NEXUS approach to promote green and inclusive settlements

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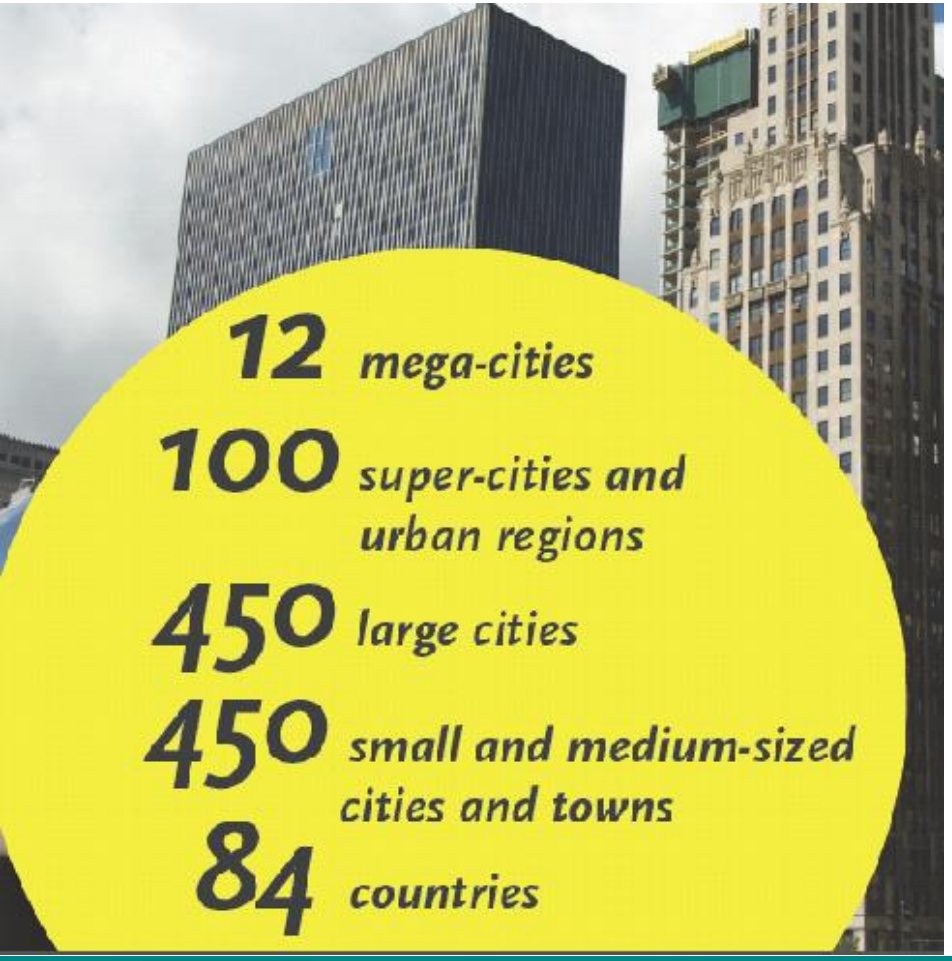
ICLEI Local Governments for Sustainability

Who we are

- Connecting Leaders
- Accelerating Action
- Pioneering Solutions

ICLEI
Local Governments for Sustainability



ICLEI is the leading global network of **more than 1,500 cities, towns and regions committed to building a sustainable future**. It has 280 staff working in 17 offices across regions.

Work areas:

- Advocacy
- Policy development
- Implementation
- Capacity building
- Knowledge sharing
- Networking

Towards Sustainable Cities:

ICLEI was founded in 1990, with the idea that a single municipality has a significant impact, and that cumulative local actions can achieve tangible improvements in global sustainability.

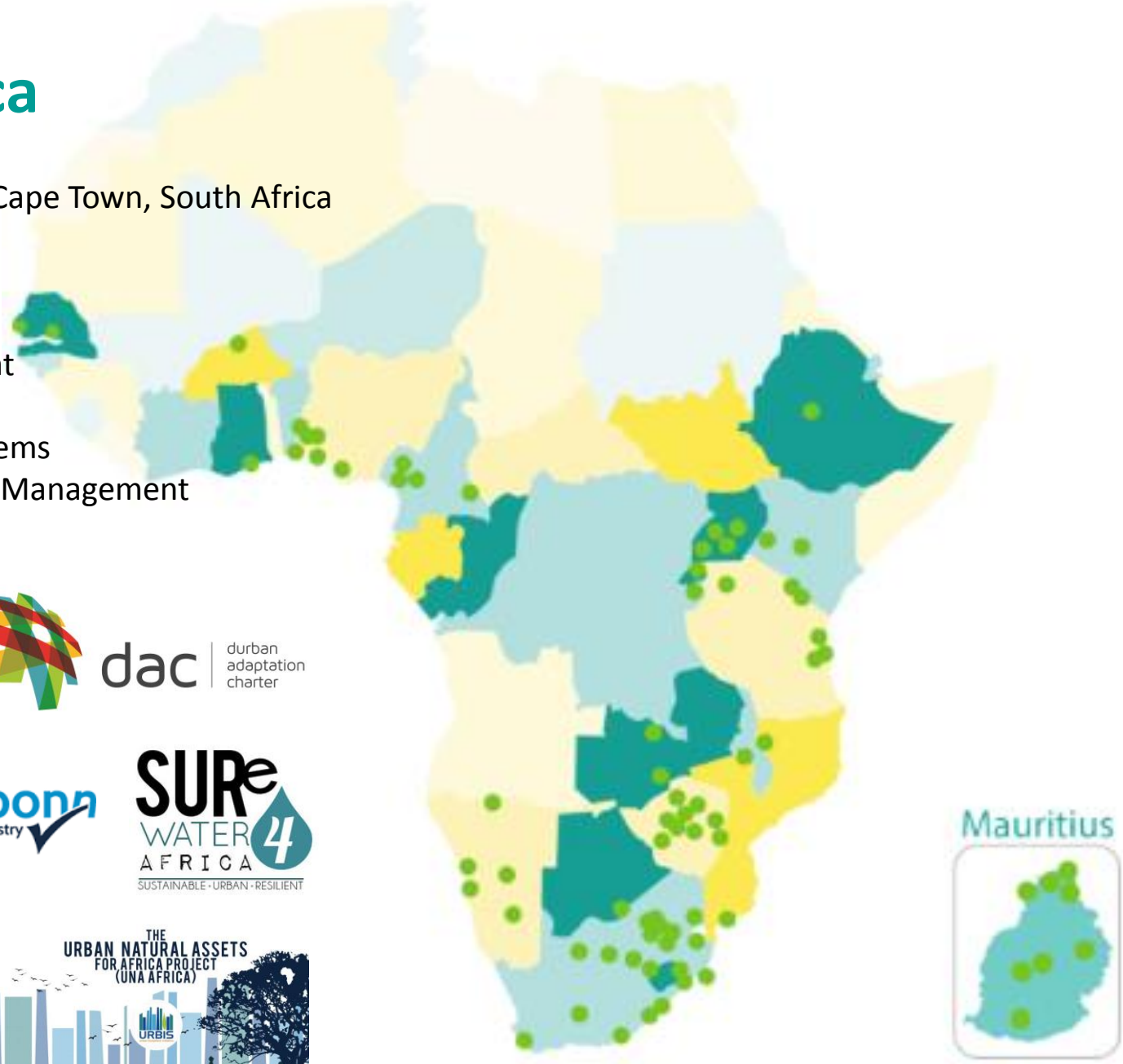
- Sustainable City
- Low-carbon City
- Resource-efficient and Productive City
- Resilient City
- BiodiverCity
- Smart City
- EcoMobile City
- Happy, Healthy and Inclusive Communities
- Sustainable Local Economy and Procurement
- Sustainable City-Region Cooperation

ICLEI Africa

80 members in 20 countries
Africa Secretariat based in Cape Town, South Africa

Workstreams:

- Low carbon development
- Resilience & adaptation
- Biodiversity and ecosystems
- Integrated Urban Water Management



COMPACT of MAYORS

dac durban adaptation charter

EARTH HOUR CITY CHALLENGE

carbonn Climate Registry

SURe WATER 4 AFRICA
SUSTAINABLE · URBAN · RESILIENT

ULAS URBAN LEADERSHIP FOR AFRICAN SUSTAINABILITY

THE URBAN NATURAL ASSETS FOR AFRICA PROJECT (UNA AFRICA)
URBIS

Why the Urban NEXUS?

Global trends

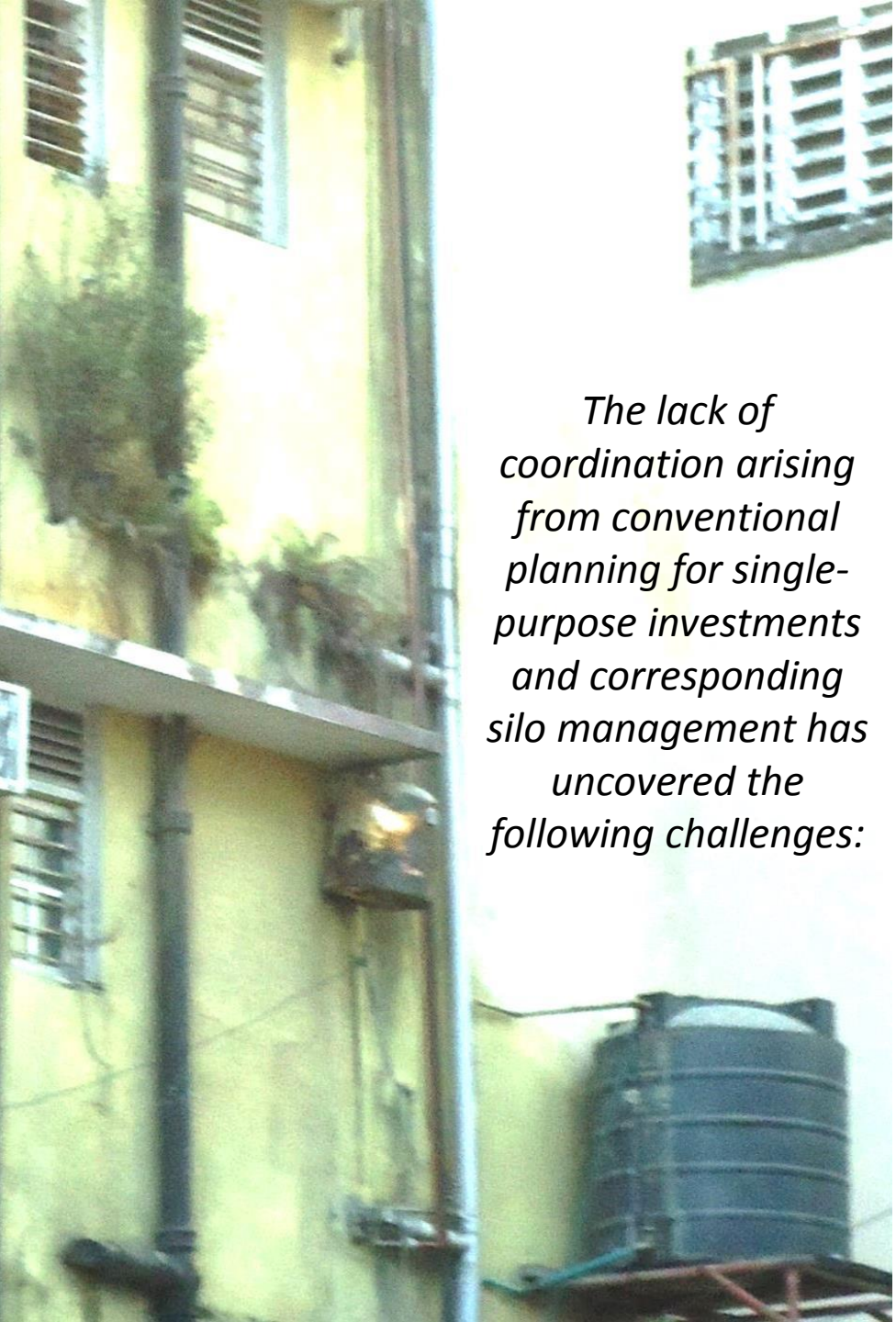
- Urbanisation
- Climate change
- Sustainable Development Goals

Local action

- Compact of Mayors
- New Urban Agenda

*A time when urban development practice requires the **optimization** of urban places and systems – rather than just their construction*

*The Urban NEXUS stems from an understanding of **cities and urban regions as complex systems of systems— as agglomerations of political, market, infrastructure, resource, legal and institutional, ecological, community and cultural systems** that are connected and connecting on a worldwide basis*



The lack of coordination arising from conventional planning for single-purpose investments and corresponding silo management has uncovered the following challenges:

Efficacy

- Delays and duplication
- Risk of trade-offs

Suitability

- External standards that can limit customizing solutions for local context
- Supply-driven rather than a demand-side perspective

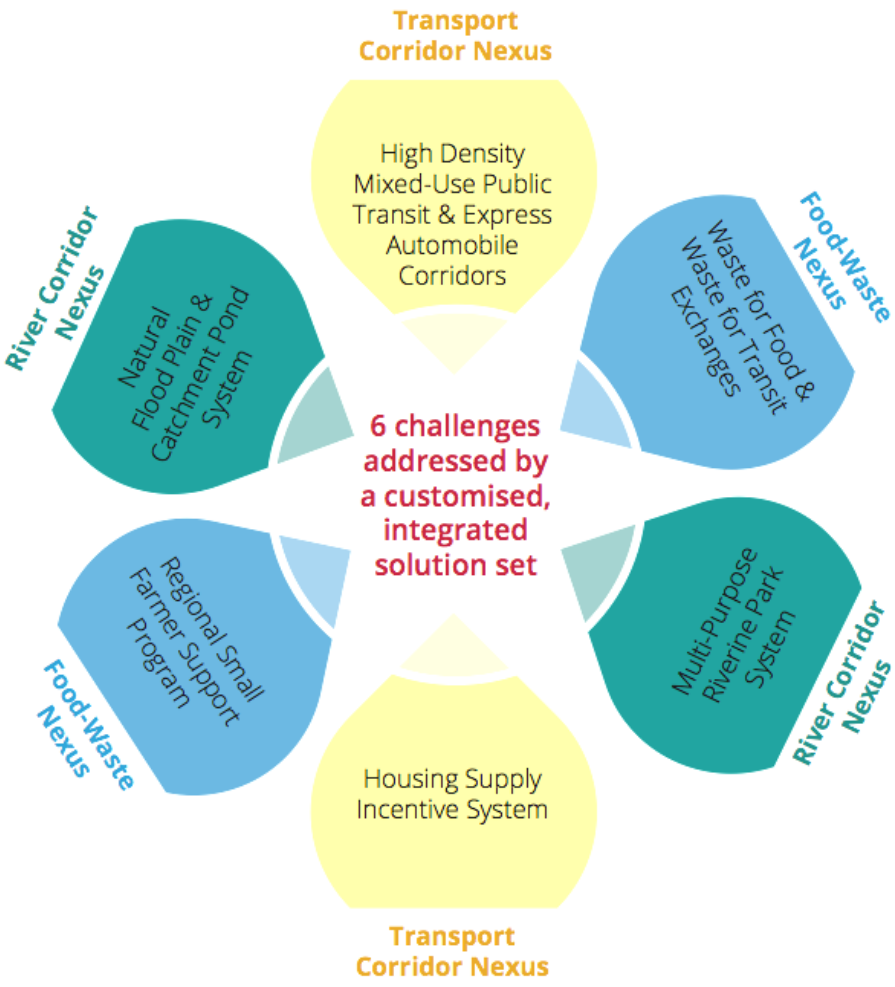
Efficiency

- Increased overall capital requirements and operating costs
- Underutilised infrastructure investments

Resiliency

- Adaptability of fixed infrastructures
- Exposure to costly failures in the face of changing risks and extreme events

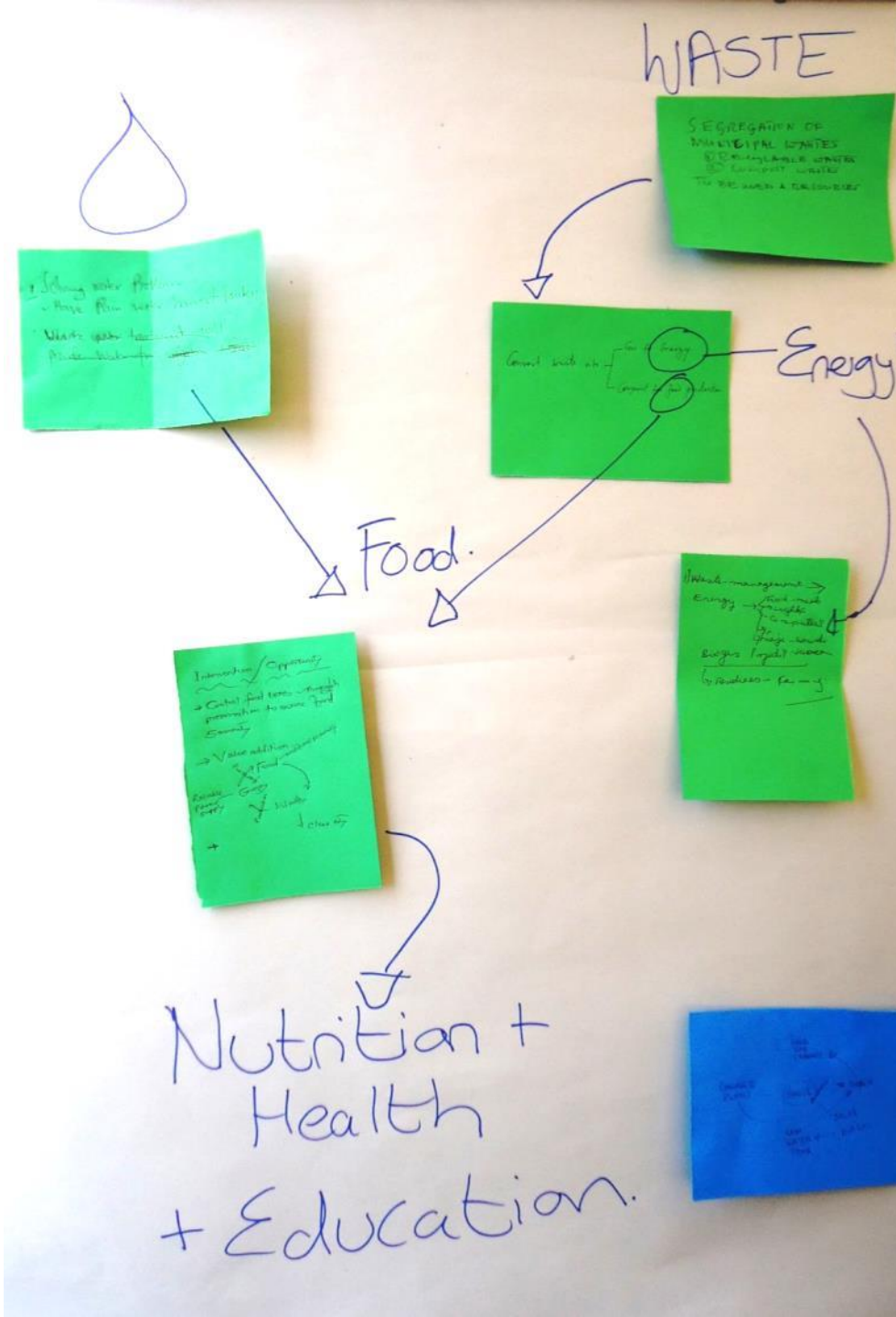
A Conventional Urban Management Approach implements separate, single-purpose solutions through administratively distinct units



An "Urban NEXUS" approach to urban management in Curitiba collaboratively addressed multiple urban policy aims through each integrated solution and investment

Urban NEXUS approach

- The Urban NEXUS is an **approach to the design** of sustainable urban development solutions.
- Seeking **integrated solutions that minimize risks and maximize opportunities** in the context of limited resources and competing development priorities (exacerbated by climate change)
- Projects based upon the **Urban NEXUS build on established concepts and practices of integrated planning**, while moving towards a new practice of policy, project and solutions design
- It focuses on the **strategic re-design of places, assets, and operations**



The approach guides stakeholders to identify and pursue possible synergies between sectors, jurisdictions, and technical domains, so as to increase institutional performance, optimize resource management, and service quality.

Why

1. URBAN NEXUS OBJECTIVES

Increase the effectiveness, suitability, efficiency and resilience of urban projects and investments.

What are the targeted increases in organisational and resource productivity? How will we measure 'nexus' success?

What

2. URBAN NEXUS INTEGRATION AREAS

1. **Scales**
2. **Systems & Resources**
3. **Services & Facilities**
4. **Silos**
5. **Social Behaviors**

What are the possible productivity enhancing synergies and benefits that can be gained by integrating two or more operations or systems?

How

3. URBAN NEXUS DEVELOPMENT CYCLE

Stage A: **Identify**
Stage B: **Innovate**
Stage C: **Design & Deliver**
Stage D: **Capacitate & Communicate**
Stage E: **Mainstream**

What process will be used to accelerate the preparation, testing, monitoring & evaluation, and scaling of the nexus solution?

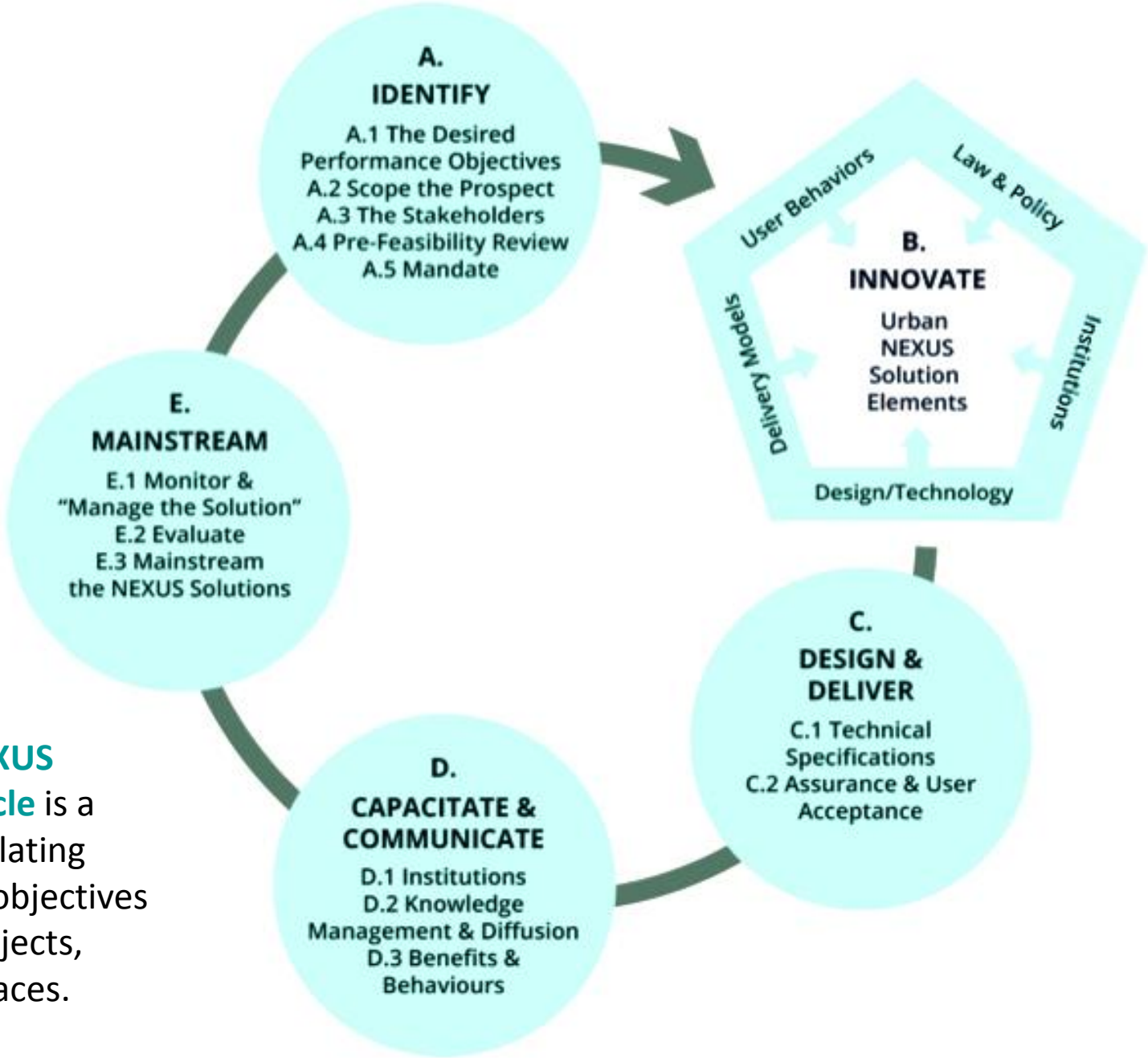
Where

4. URBAN NEXUS INNOVATION AREAS

1. **Law & Policy**
2. **Design & Technology**
3. **Delivery Models**
4. **Communications & User Behaviors**
5. **Institutional Development**

What measures and reforms are required to enable the productivity enhancing solution?

GIZ and ICLEI, 2014, Operationalizing the Urban NEXUS



The **Urban NEXUS Development Cycle** is a process for translating integrated planning objectives into policies, projects, systems, and places.

GIZ and ICLEI, 2014, Operationalizing the Urban NEXUS

A.
IDENTIFY
A.1 The Desired Performance Objectives
A.2 Scope the Prospect
A.3 The Stakeholders
A.4 Pre-Feasibility Review
A.5 Mandate

Key steps in identifying the Urban NEXUS prospect

Integrating one or more systems, services/products, facilities, policies, or organizational silos to achieve integrated planning goals and targeted productivity outcomes

A.1
Translate the general Urban NEXUS objectives into **context specific objectives** for the initiative

A.2
Scope the **potential Urban NEXUS integration areas** to support the achievement of the objectives

A.3
Identify the **stakeholders** who would need to be involved in developing and supporting the innovations, reforms and other measures in each of these areas

A.4
Work with stakeholders to do **pre-feasibility or strategic reviews** of the identified measures

A.5
Recommend the areas to be further explored and establish the **formal mandate** required to support collaborative innovation of a solution to achieve the initiative's objectives

NEXUS Objectives:
- efficiency
- suitability
- effectiveness
- resilience

Integration areas:
- systems
- scales
- services
- silos
- social behaviors

Potential partners:
- Department officials
- Private sector
- Community
- Academe

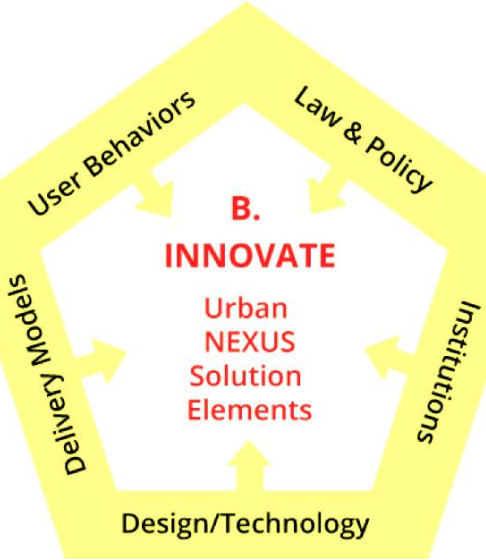
Methodology:
- Mapping
- Visioning
- Workshops

Sample solutions:
- a set of Urban NEXUS integration measures
- performance metrics to guide design

Identification of prospects for integration

Evaluation of strategic feasibility, under current conditions

Identification and early engagement of the stakeholders needed to develop, implement, and benefit from the prospective intervention



Five main Urban NEXUS Innovation Areas

Stakeholders collaborate in a structured innovation process to develop a set of politically, institutionally, and economically viable measures in areas spanning the range of policy, technology, planning, finance, business models, communications, and institutional design.

B.1
Law & Policy
support and regulate the market for existing solutions and systems

Examples:
- building standards
- legal instruments support behavioural incentives

B.2
Design & Technology
optimize current systems, services, institutional arrangements, and scales of operations

Examples:
- innovation in design of waste management systems (bins, collection transport, etc)

B.3
Delivery Models
optimize the efficiency of the service according to local conditions

Examples:
- extent of service delivery (eg provision, landscape, education)
- partnerships (PPPs, civil society)

B.4
Communications & User Behaviors
educate and secure the benefits of the solution

Examples:
- awareness raising
- skills development

B.5
Institutional Development
coordinate the integration of different systems and stakeholders, or to manage an entirely new kind of system

Examples:
- task force/agency
- steering committee

C. DESIGN & DELIVER

C.1 Technical Specifications

C.2 Assurance & User Acceptance

Design considerations

- metrics for evaluating performance, in relation to the defined objectives
- performance targets established in the initial initiative mandate (i.e. from Stage A: Identify)

Effectiveness of **each measure** should be tracked and evaluated

Applying resources and effort to **understanding the end user's response to the solution**

D. CAPACITATE & COMMUNICATE

D.1 Institutions

D.2 Knowledge Management & Diffusion

D.3 Benefits & Behaviours

Three main areas of capacity building

- training operational staff on managing their parts of the solution
- end-users:
  - benefits
  - required skills
- enabling the relevant institutions to establish a systematic process to enable up-scaling in other areas

Urban NEXUS thinking in the **curriculum** of urban planning and management courses, training institutions, and professional associations

E. MAINSTREAM

E.1 Monitor & "Manage the Solution"

E.2 Evaluate

E.3 Mainstream the NEXUS Solutions

Innovative institutional solutions and mandates

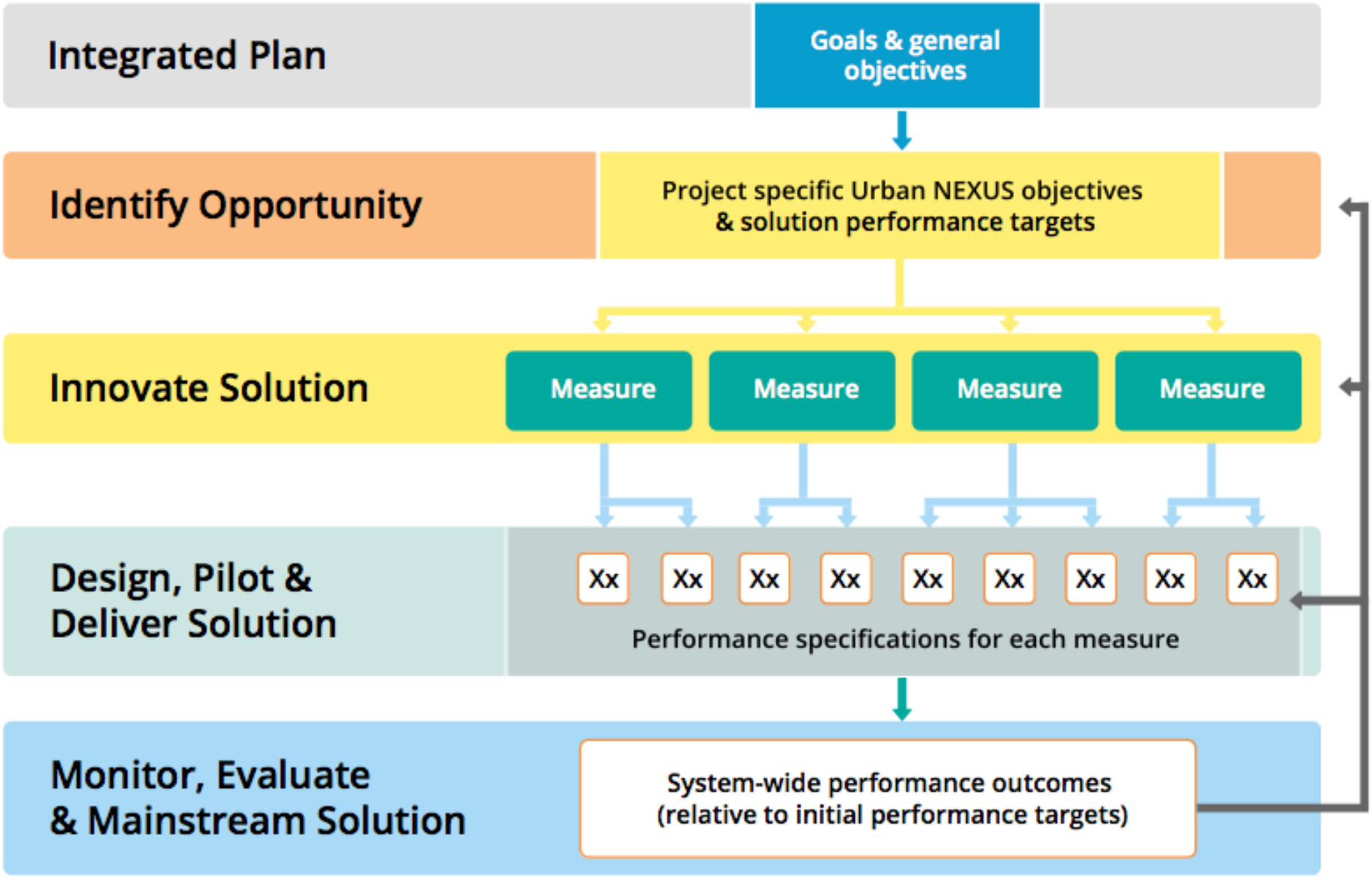
- upscale, address challenges and manage different contexts
- enable innovations to be the new "conventional" practice

Monitoring & Evaluation

- system-wide assessment of performance outcomes
- context- and initiative-specific objectives to customize solutions
- support learning amongst stakeholders in the process of developing, piloting and mainstreaming

Evaluation with stakeholders at each stage

- the process of conceptualization and specification of Urban NEXUS solutions
- lessons from pilot activities on different measures and how to improve them
- document and jointly evaluate the journey



GIZ and ICLEI, 2014, Operationalizing the Urban NEXUS. © ICLEI, GIZ and TNP

Exploring Possibilities for Nexus Initiatives in Metropolitan Regions:

Piloting the food-energy-water nexus in Dar es Salaam schools

Scale: Facility (two schools), Kinondoni District

Period February 2014-August 2014

Main activities baseline assessment, stakeholder engagement, technical installation (rainwater harvesting, vertical gardens, improved cookstoves)

Partners: GIZ, Kinondoni Municipality, EEPCO

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

ICLEI Local Governments for Sustainability

Urban NEXUS Sectors Water-Food- Energy-Education

NEXUS Objectives

- Effectiveness: service delivery
- Suitability: social issues (nutrition, security, waste)
- Efficiency: investments, capacity
- Resilience: food security, water management, energy efficiency

Urban NEXUS Innovations

Institutions, Design and Technology, Communication and User Behaviors, Service Delivery Models

A NEXUS initiative in Dar es Salaam

Water: The two schools on the site have extensive roofs that can harvest water and also extensive need for fresh water.

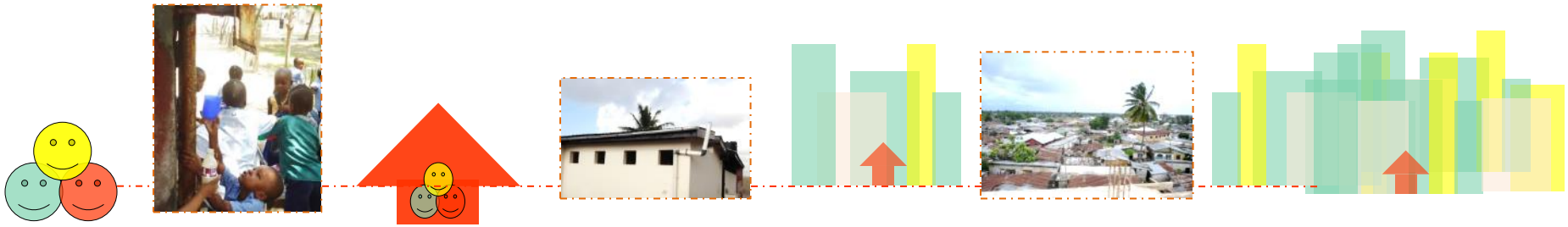
Extension: Municipal and ward agricultural extension workers can then help improve urban agricultural outputs;

Urban Agriculture: The schools have extensive grounds that can be used for vegetable and fruit tree growing that need urea and organic waste inputs

Sanitation: School children using eco-san toilets produce substantial waste that can fuel biodigesters with sludge used for soil

Upscaling: Once established in the school grounds, the system can be extended to local communities and small businesses established to buy and process wastes, biogas and agricultural produce

Dissemination of Results: In learning NEXUS by seeing and doing, school children can disseminate the procedures to parents and schools can also lead in changing mindsets and capacity-building



Approaches to community and municipal decision-making workshops

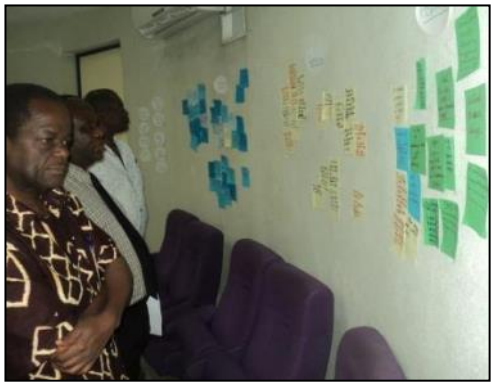
Decision making workshop at the school:

Representatives from Kinondoni Municipality Council, Tandale ward, Tandale and Hekima Primary Schools, academia and leaders of religious groups

- increase understanding of the project and Nexus concepts **"Resource Walk"** where stakeholders identified food, energy, and water resource flows on site
- increase and ensure secure stakeholder buy-in through a visioning exercise and decision-making on appropriate interventions

Decision making workshop at the municipality:

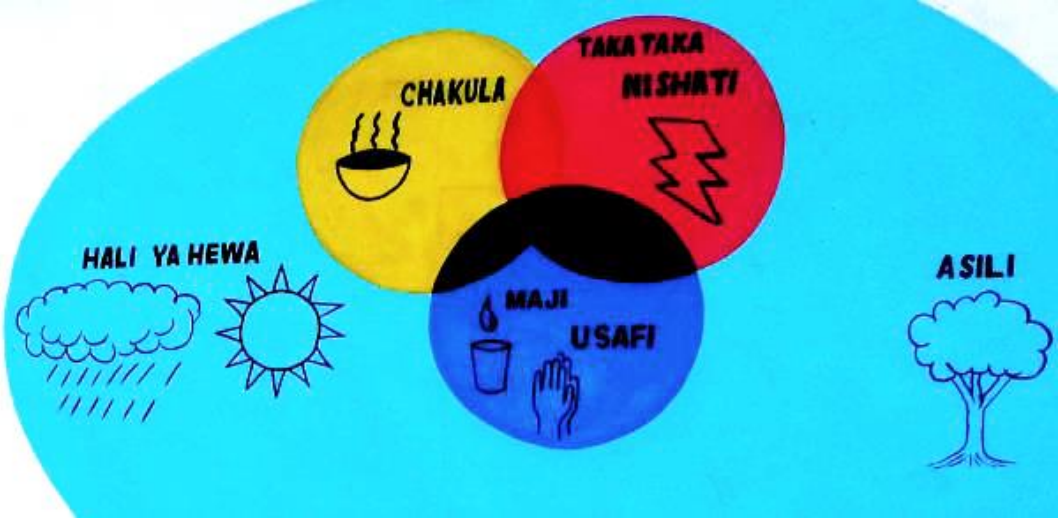
- increase capacity of understanding the Nexus, and to link with and learn from the school pilot implementation
- assessment of **Strengths, Opportunities, Aspiration, and Results (SOAR)** methodology of technology, policy, incentives, planning, institutions, culture and behaviour



Other stakeholders:

PMORALG, ALAT, Academia (Ardhi University, Institute of Environmental and Sustainable Development), BORDA

MRADI WA NEXUS



Design & deliver drawing from a limited investment, municipal co-financing and in kind contributions from the schools:

- improved water access through infrastructure upgrades (borehole and connections), rainwater harvesting and tanks for storage
- vertical food gardens and drip irrigation
- improved cookstoves
- school wall for safety & awareness raising

Capacity & communicate

- Community stakeholder workshops (inception, decision-making, showcase)
- Training of school workers
- Schools: infrastructure and curriculum

Mainstreaming

- Replication in other wards
- Urban Nexus steering group
- Publications (Case Study, UNEP Capstone)

AHSANTENI Thank you Vielen Dank

For more information
and examples, please visit:
http://www.iclei.org/urbannexus.html

Contact: irina.velasco@iclei.org | http://africa.iclei.org