Towards Water Smart Cities

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Water is essential for life in cities
Water challenges in an urbanizing world

- 1 billion people live in flood prone areas
- 1 in 9 people lack access to safe drinking water
- 3.6 billion people live in areas that are potential water scarce
- Water pollution is a growing threat
- Increasing demand for water, food and energy
- Cities vulnerable for climate change: sea level rise, pluvial floods, droughts and heat waves
One in four world’s largest cities already water stressed
Increased demand for water, food and energy

Demand for water is expected to grow by 25% by 2050

Source: WWF
Worldwide damage by urban floods:
> 30 billion USD per year
Climate change will increase the risk for floods, droughts and heat waves.
A Nature Based approach for Water Smart Cities

We need to change the way we think about water.

Integrate total water cycle into urban planning.

We need to understand symbiosis between city and landscape.

System approach to restore natural resiliency.
A system approach towards Water Smart Cities

1. **Landscape Based Adaptation:**
   Restore degraded ecosystems in natural surroundings of cities, system approach to connect cities to river basins
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2. **Nature Based Solutions for cities:**
   Restore the natural drainage/sponge capacity and improve liveability of cities
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2. **Nature Based Solutions for cities:**
   Restore the natural drainage capacity and improve liveability of cities

3. **Closing the urban water cycle:**
   Reduce water use and treat water as a resource: reduce, re-use, recycle
1. Landscape based adaptation

- Climate Smart Forestry (re/afforestation, forest conservation)
- Reconnect rivers to flood plains / Renaturalizing river basins
- Climate Smart Agriculture
- Wetlands restoration / conservation
Room for the river programme
De Onlanden: Wetland restoration in peri urban area

- 2200 Ha wetland prevents city of Groningen for floods
- Costs: € 40 million
- Traditional civil engineering approach: € 115 million
2. Nature Based Solutions for cities

- Urban forestry
- More green space
- Green corridors in/around cities
- Green roofs/green walls
- More open water for water storage
Benefits of Nature Based Solutions

- Green solutions for storm water management
- Water quality improvement
- Moderating air temperatures and improving air quality
- Enhance biodiversity
- 5 – 30% higher property value
- Improved quality of life
3. Closing the urban water cycle

- Reduce water use - awareness
- Water efficient buildings
- Harvesting and reuse rainwater
- Natural waste water treatment
- Reuse of grey waste water in buildings and for irrigation
Transition towards WSC creates business and opportunities for smart innovations
Roadmap Towards Water Smart Cities

1. System analysis: Identify physical and geographical context of city
2. Identify water related risk and opportunities
3. Define a long term Water Smart City vision
4. Adaptive planning: Explore co-creation opportunities
5. Implement adaptation measures
6. Monitoring & evaluation: Create evidence base

Multi-stakeholder approach: government, businesses, ngo’s, research, citizens
Living Labs – create evidence base
Transition towards green, circular and resilient cities

- Cities face great challenges with water, either too much or too little
- We have to redesign our cities, adaptation is urgent
- A system approach is required. We need to restore the natural resilience of cities and their surrounding landscape
- Nature based adaptation is a huge opportunity to improve quality of life
- Create evidence base in living labs and exchange best practices
- Urban (re)development programmes offer large opportunities for co-creation. U$ 3 trillion invested in urban infrastructure
To explore the potential of nature to improve the quality of life

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