City Scan Method

Research results of a new method in climate adaptation:
the International City Scan Method

Rick Heikoop & Floris Boogaard

Research results of a new governance method in climate adaptation; the International City Climate Scan Rotterdam,
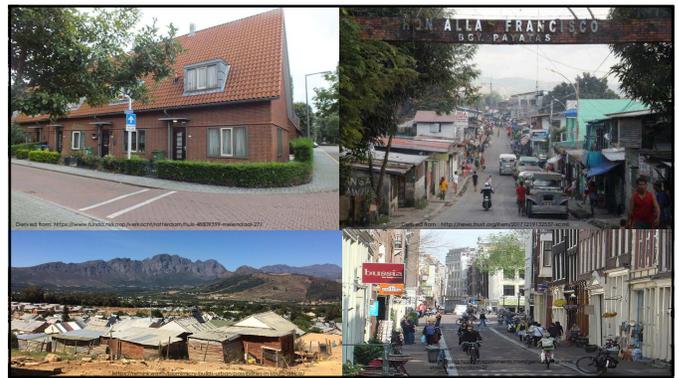
World Urban Areas 2018

World Population Distribution: 2018
URBAN (BY POPULATION) & RURAL

Current World Population
7,630,554,997
view all people on 1 page >

Derived from : http://www.demographia.com/db-worldua.pdf

Weather related loss events worldwide

Weather related loss events worldwide 1980 – 2014
Number of events

Loss events worldwide 1980 – 2014
Percentage distribution

according to Peter Hoeppe from insurance company Munich RE, derived from:
https://www.researchgate.net/publication/283975392_Trends_in_weather_related_disasters_–_Consequences_for_insurers_and_society?_sg=3Y_MJw19z78SktaEKR4ow.dwe.jaJsJq7mEFSerUF8hcIcF9omQ26dkOrfAozCDiKOh-CNfdD-6w

The Netherlands: a man made country with a long history in water management
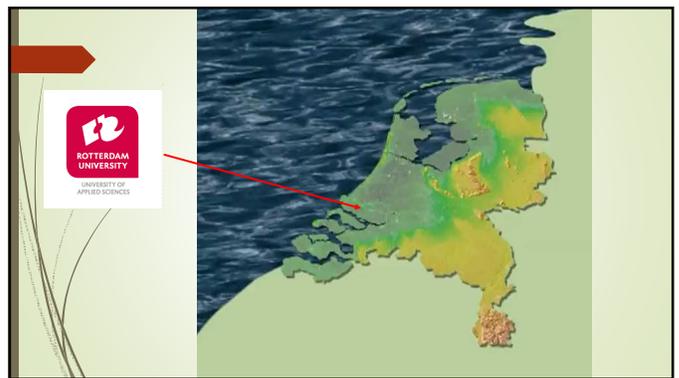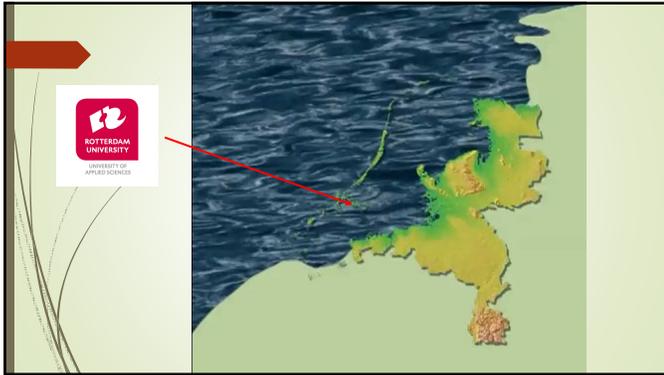
2/3 of the Netherlands prone to flooding and 25% below sea level.

The Netherlands above and below sea level

- dunes and beach 200 m
- between 0 and 1 m
- below sea level
- above 1 m

Retrieved from www.hollandbiketours.com/about-holland/geography/

Lowest point is 6,74 meter below sea level

Climateproof Cities: Rotterdam & Groningen
Both seats of the Global Centre of Excellence in Climate Adaptation (GCECA)

Home > Latest > News >

Groningen and Rotterdam will accommodate Global Climate Adaptation Centre

The international climate adaptation knowledge centre will be accommodated in Rotterdam and Groningen. These two cities have reeled in the Global Centre of Excellence on Climate Adaptation (GCECA) by jointly submitting the most convincing bid. Decisive factors for the selection committee were the location of the cities, their expertise on the impact of climate change, and their innovative office buildings. In February of this year, Dutch Environment Minister Dijksma announced that the knowledge centre, to be set up in collaboration with the United Nations and Japan, will be established in the Netherlands.

ROTTERDAM UNIVERSITY OF APPLIED SCIENCES · Global Centre of Excellence on Climate Adaptation · Interreg North Sea Region WaterCoC

twitter Linked in ResearchGate

Challenges urban climate (change): The Netherlands

flooding
heatstress
Tropisch Nederland, 1975

Beeld: Youtube · RefG7.com

examples of problems in the urban areas: floodings, degradation of waterways, heatstress, drought leading to lower groundwater table and subsidence with results as damage of buildings

Tropisch Nederland, 1975

subsidence

waterquality

Typical questions that the governments of these cities have are:

- How to raise awareness among communities?
- How to involve residents in the process of becoming a climate proof city?
- How to collect data – at street and neighborhood level (low-cost & low-tech)
- How to share Best Management Practices (BMP)?

Books …
for international knowledge exchange on climate adaptation?

Rotterdam Climate Initiative

ROTTERDAM CLIMATE PROOF · ADAPTATIEPROGRAMMA 2009

Books …
for international knowledge exchange?
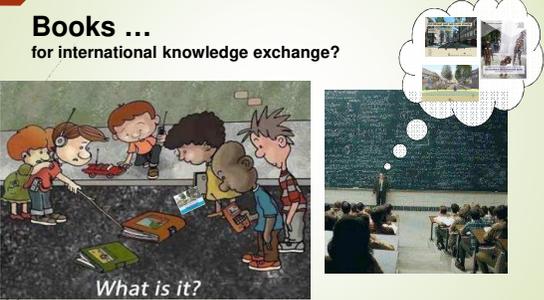
What is it?

Tools
international knowledge exchange tools

The City Scan method was tested in different cities around the globe
- ✓ with groups of young professionals and stakeholders
- ✓ in rapid urban appraisals. (Philippines, Indonesia, Netherlands, Taiwan, …)

tangible results of international city climatescans at the Philippines.
Left: the wastetrap 'longganisa', Manila. Right: bio-based floating islands for water quality improvement, Cebu.

Method should:

1. raise awareness among citizens and other stakeholders about vulnerability,
2. contribute to capacity building among stakeholders
3. increase support for the implementation of climate adaptive measures at the local level.
4. A very important aspect of the method is the selection of 'the wicked problems' or challenges in the city where the City Scan will take place

---

Definition of the method city scan:
after stakeholder analyses for climate adaptation scan of their city

A City Scan should be:
- **Addressing 'wicked problems'**
- **Quick scan (1/2 weeks)**
- **Participation quadriple helix**
- **Young professionals**
- **Linked to international projects**
- **Result: concrete data or insights**
- low-cost, low-tech methodology
- Insight in vulnerability

- • Innovative
- • Multidisciplinary
- • Field and interaction
- • Evaluate and optimize
- **• Tangible end results**
- **• Method up scaled to other cities**
- **• Education, participation, dissemination**

13-06-2018

Global challenges in urban climate change:
The wicked problems…..

Slide 1
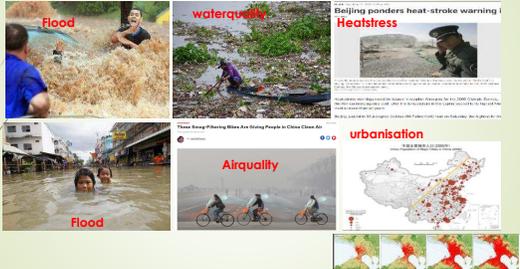
The City Climate Scan methodology: to Measure, Map, and Assess (MMA) different parameters that provide insight into the vulnerability of urban areas and neighborhoods.

19

For the Rotterdam City Climate Scan (September 2017), the following challenges were selected: **risk of flooding, heat stress, water quality (micro-pollutants and plastic waste) and air quality.**

Challenge	Method	Results
Urban floods	Mapping floodings and infiltration capacity measurements with infiltrometer test	• Measurements on infiltration capacity (see next paragraph map with measurements www.climatescan.nl, figure 1 and 2
Heatstress	Dynamic and static measurements of temperature on several surfaces in the urban dense area with heatcameras and sensors	• Map with heatstress in the urban dense and green areas in the city
urban waterquality mirco polutants	apps and teststrips and underwaterdrones with camera's and sensors	• maps with results of grab samples of nutrients in urban water • 3D scans of waterquality with continuous sensors with indication of pollutant sources
urban waterquality marce polutants; plastic waste	"square method" the type and amount of plastic waste is determined at 1m²	• detailed insight in waste per m² optimized method to be used at projects in Ambon (Indonesia) and Cebu City (Philippines)

Slide 2

video

https://www.youtube.com/watch?v=S2rLYT48Vrs

Slide 3

Airquality

Method   Results

Slide 4

(Plastic) waste

Method   Results

Slide 5

Heat stress

Method   Results

Slide 6

Waterquality

Method   Results

Parameters that were assessed in Rotterdam are: urban water quality (several parameters such as: nutrients, ph, conductivity, temperature, turbidity, oxygen), and waste pollution (plastic waste).

Floodmodels: infiltration capacity

Method

Results

The Infiltration Capacity of urban spaces were measured at multiple locations in the city. The open green spaces show a 3-6 higher infiltration rate that paved areas. From detailed flood maps and flood models, locations have been selected to implement green and blue measures BMPs.

Map BMPs

Map BMPs

More than 25 climate adaptation Best management practices (BMPs) mapped on www.climatescan.nl.

Some of the BMP's have been tested: infiltration rates permeable pavements considered very low.

The discussion of this and other results in the triple helix consortium has led to a detailed strategy for the city to be more resilient.

Dissemination

Coming months
develop the method: storytelling and perception

Streetlevel:
- involve community:
- collect data and knowledge
- identify perceptions,
- interact with stakeholders in the community

30   The Rotterdam City Scan was evaluated (triple helix partner)

The conclusion is that the City Scan approach:

1. helps policy makers and practitioners to gather valuable data for decision makers in a rapid appraisal at the neighborhood and city level.
2. The results of the City Scan method provides insights, creates awareness and brings together stakeholders.
3. The most valuable deliverable is the **concrete and tangible results.**
4. The Method can be easily replicated to other cities

As a result of this positive evaluation, the City Climate Scan will be up scaled to a number of cities in Europe and Asia and other places..

Is your city Interested?

6/22/2018
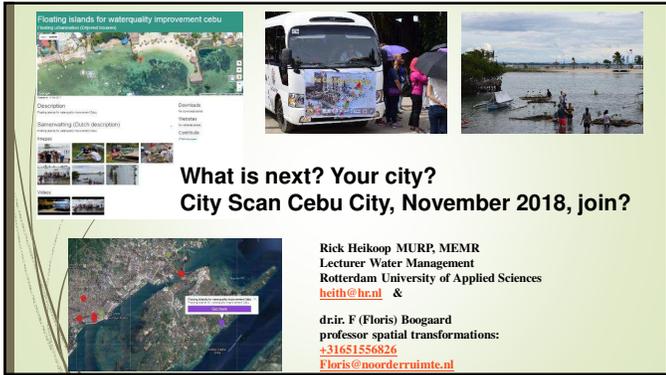
What is next? Your city?
City Scan Cebu City, November 2018, join?

Rick Heikoop MURP, MEMR
Lecturer Water Management
Rotterdam University of Applied Sciences
heith@hr.nl &

dr.ir. F (Floris) Boogaard
professor spatial transformations:
+31651556826
Floris@noorderruimte.nl