ASLA PHL2018

Annual Meeting and EXPO October 19-22 Philadelphia



#ASLA2018

Water as Leverage: Lessons in Water Management from the City of Rotterdam

Gerda Roeleveld, expert advisor spatial planning, Deltares Tim van de Staaij, programme developer, BCR Han Dijk, urban designer and partner, PosadMaxwan

Learning Objectives

- Gain insight in the functioning of urban water management and the link to design and planning.
- Learn about urban Nature-based solutions and the integration of its multiple benefits into design, e.g. recreation, education.
- Learn about tools to build a successful urban water strategy by integrating design and engineering.
- Understand opportunities and constraints as determined by government, business, and community stakeholders, organizations and socio-economic contexts.

Water as Leverage: Lessons in Water Management from the City of Rotterdam



Part 1: UNDERSTANDING THE BIOPHYSICAL LAYER

Gerda Roeleveld Landscape architect, Deltares

Part 2: DESIGNING RESILIENT CITIES

Tim van der Staaij Rotterdam Centre for Resilient Delta Cities

Part 3: PLANNING AND DESIGN PRACTISE

Han Dijk Urban designer, Partner PosadMaxwan



Part 1: UNDERSTANDING THE BIOPHYSICAL LAYER Gerda Roeleveld Landscape architect , Deltares Most considerable effects to be expected in urban areas

CLIMATE CHANGE













Decrease vulnerability and enhance resilience of cities through Nature Based Solutions

NATURE BASED SOLUTIONS: GREEN & BLUE URBAN AREAS



Urban regeneration through nature-based solutions



Nature-based solutions for increasing the sustainable use of matter and energy



Nature-based solutions for improving well-being in urban areas



Nature-based solutions for enhancing the insurance value of ecosystems



Multi-functional nature-based watershed management and ecosystem restoration



Increasing carbon sequestration through nature-based solutions

How does the water system work: physically, ecologically, socially?

WATER SYSTEM ANALYSIS: SCALES & ISSUES



Tools: 1D-models Azerbeidjan & The Netherlands

SIMULATION MODELS



Tools: 3D models, detailed calculation of heavy rainfall effect

SIMULATION MODELS



Geographically specific design principles, guidelines and measures

GUIDING MODELS



guiding principles	geographical typology rural			guiding model	measures/design examples
retain & keep clean & flow from clean to polluted	urban	spaceous residential area with its own surface water system	polder	Infitrationodel protocology total total total total total total total total total total total total total total total total total total tota	
			river valley	Circulationsdel	
	high density builtup (up (city centre) area	Vertragingsmedel	

Water as negative driving force: regional water balance, example Mexico City

TOO MUCH OR TOO LITTLE WATER



Nature based Solutions to put water to better use, Utrecht City Centre, The Netherlands

URBAN WATER BALANCE



From negative to positive driving force: enhanced urban quality, example Zwolle, The Netherlands

TOO MUCH WATER? LESS IS NOT ALWAYS MORE!





Obligatory for every community in the Netherlands by the end of 2019

STRESS TEST CLIMATE RESILIENCE



Collect Data (Step 3): water depth caused by short heavy rainfall (1:100 yrs) in 2050

CLIMATE IMPACT ATLAS



Participatory identification of vulnerabilities (Step 4)

CASCADING FAILURE CRITICAL INFRASTRUCTURE



Identify opportunities: adaptation principles and ideas, catalogue nature based solutions, example projects, etc. (Step 5)

INSPIRATION



www.urbangreenbluegrids.com/design-tool

www.climateapp.org

Climate workshop (Step 6)

ADAPTATION SUPPORT TOOL





Adaptation Support tool

COMPARISON OF STRATEGIES







Collecting additional data (Step 10) and Data modelling and analysis (Step 11), New Orleans

DATA TELL THE TALE

Groundwater monitoring network: water quality and water fluctuation)





New Orleans Mirabeau Park (Step 13)

ADAPTATION PLAN





 Drainage structure drains water to Minutesecond

Part 2: DESIGNING RESILIENT CITIES Tim van der Staaij Rotterdam Centre for Resilient Delta Cities

Link presentation Gerda

POLDER SYSTEM





Water(management) / Landscape Architecture as necessity

PLAN, DESIGN AND MANAGE



Water-Land habitat as foundation

DAM IN THE ROTTE



Architect W.N.R. Rose (1839-1855) first adaptive planning = combine built and natural environment

PLAN ROSE



Focus on economic development; infrastructure (accessibility) priors water and nature

TABULA RASA



Wake-up Call: never again = design and manage environment

1953 WATERSNOODRAMP





Need for human intervention (plan, design, manage): fight and defend against water

DELTAWERKEN



Control Nature and Create Rotterdam (spatial planning transition)

DESIGNING TOWARDS SEA



Still; Geographical foundation/characteristics remains

ROTTERDAM IN PERSPECTIVE



Silent wake-up call; climate change comes with unpredictability

SENSE OF URGENCY



Paradigm shift; fight and defend, or accept and adapt

FACING THE WATER



Perceive Perception; rethink, replan, redesign

THREATENING & PROSPEROUS



Evolving policy (path/journey towards "water as leverage")

CHANGING GOVERNANCE

To cope with complexity of the "built" environment (Climate Adaption Strategy)

INTEGRATED APPROACH

Holistic, multi-level and multi-stakeholder strategy

Robust and resilient

Sewerage + watersquare

Protection and moving in tune

Dikes + adaptive building en design

Delta works, small scale projects

Technology and nature

Storm surge barriers + 'Remove tile, plant greening'

Pumping + green banks

Water storage as solution for spatial development

WATER PLAZA

Water storage as condition

WATER STORAGE

Water as enabler for alternative solutions

GREEN ROOF PROGRAM

Residents Revolve

WATER SENSITIVE CITY

Water as inspiration

THE NEXT STEP

Linkage presentation Han

WATER AS LEVERAGE

Part 2: PLANNING & DESIGN PRACTISE Han Dijk Urban designer and partner at PosadMaxwan

9.000 interviews on all levels spread out through the city

CONVERSATION WITH THE CITY

WAARIN WILLEN ROTTERDAMMERS INVESTEREN?

MEEST GENOEMDE ONDERWERPEN.

Wat is belangrijk en wat is minder belangrijk voor een mooie teekomst van de stad? De Rottendammers spreken klare taal. Onderwijs staat op nummer één.

THE STATEMENT

Party and a lot of the state of CONTRACTOR DALLARDON DALLARD

States and in case of and the local division of

IN BUILDING

Woman and Manual Voters of OTHER DESIGNATION.

THE OWNER DO

Internal Contractory

THE OWNER AND A

THE R. LEWIS CO., LANSING MICH. BREW TROP No. of Concession, Name STREET, MARTIN

ONDERWIJS

Ontwikkel talent bij jongeren. De jeugd heeft de toekomst, daar moet energie naartoe.

GROEN

Meer groen: meer parken en bornen. Groen betekent rust en veiligheid. En de mogelijkheid elkaar te ontmoeten.

DUURZAAMHEID

Meer hergebruiken. Bouwen aan de circulaire economie. Inzetten op groene energie en lokale voedselproductie. De luchtkwaliteit verbeteren: een autovrije of -luwe binnenstad.

VEILIGHEID

Veilig gaat samen met schoon en heel. Meer cameratoezicht en meer blauw op straat. Bewaakte fietsenstallingen.

WONINGEN

Er is behoefte aan meer goede, duurzame en betaalbare woningen. Koester de mix van mensen en houd dus een goede balans tussen huizen voor hoge en lage inkomens. Pak verloedering can.

OPENBAAR VERVOER EN FIETSEN

OV moet er 24/7 zijn, met goede verbindingen en comfort. Stimuleer het fietsen met veilige hetspaden. Rotterdam moet dé fietsstad van de wereld worden. Goed gedrag belonen.

INNOVATIE

WERKGELEGENHEID

Zet in op het pakken van de kansen in de economie; dat creëert werkgelegenheid. Let op banen voor lager opgeleiden.

SCHONE STAD

Schoon voelt veilig en leefbaar. Geen troep en zwerfahral. Zorg voor openbare toiletten. Schone straten en parken zijn ook een verantwoordelijkheid van mensen zelf. Meer bezicht en 'opvoeding'.

VERBINDING TUSSEN MENSEN

Begrip hebben voor elkaar, elkaar accepteren en vertrouwen hebben in de ander. Dit bereiken door mensen bijeen te beergen. Faciliteer ontmoeting en dialoog. Zet in op buurthuizen. Wees vriendelijk en groet elkaar.

What city does Rotterdam want to be in 2040?

FIVE VALUE BASED PERSPECTIVES

Nature inserted in the heart of the city

RIVER AS A TIDAL PARK

North and south divided, in all ways

RIVER AS A FRACTURE

HEALTHY CITY

COLUMN TWO IS

For a healthy life, live in the city of Rotterdam

VALUES

Proximity to amenities green, sports, care

Purity and sustainability clean air, water, soil, healthy food

Public protection limit health risks

Vitality inviting to move

Climate proof prepared for 'water and heat' problems

Tranquility and bustle balance between silence and urbanity

HEALTHY NEIGHBOURHOOD

Using dredged sand from the river

TIDAL RIVER PARK

INCLUSIVE CITY

Delta paradox: water not only as a threat but as an asset

WATER AS A LEVERAGE

THANK YOU

AIA Registered Provider

The American Society of Landscape Architects is a Registered Provider with The American Institute of Architects Continuing Education Systems. Credit earned on completion of this program will be reported to CES Records for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

This program is registered with the AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Copyright Materials

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited. © The American Society of Landscape Architects

Learning Objectives

- Gain insight in the functioning of urban water management and the link to design and planning.
- Learn about urban Nature-based solutions and the integration of its multiple benefits into design, e.g. recreation, education.
- Learn about tools to build a successful urban water strategy by integrating design and engineering.
- Understand opportunities and constraints as determined by government, business, and community stakeholders, organizations and socio-economic contexts.

ASLA PHL2018

Annual Meeting and EXPO October 19-22 Philadelphia

#ASLA2018

Session Recording

This education session will be recorded and available online:

http://www.asla.org/OnlineLearning.aspx

Individuals can view these for a small fee and PDHs can be earned by passing a self-study exam.

Note:

Keep this slide only if you receive notification that your session will be recorded.

(Delete this text box after reading.)

The views and opinions expressed by presenters are their own and do not necessarily represent those of ASLA. ASLA disclaims any responsibility for the use and application of information presented in this education session.