

# Urban Watermanagement in the Netherlands

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City of Rotterdam

NOG London  
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# Delta





Below sea level



## Nederland Veiligheidsnorm per Dijkgebied

Legenda

12 nummer dijkgebied

 1/10.000 per jaar

 1/4000 per jaar

 1/2000 per jaar

 1/1250 per jaar

 hoge gronden (ook  
buiten Nederland)

 primaire waterkering  
buiten Nederland

Noordzee

Duitsland

België



# Structure of governmental institutions



Europese Unie

**European Union**



**National Government**



**12 provinces**



**26 Waterboards**



**408 municipalities**





# Provincial tasks

## Core

- Regional spatial planning
- Facilitation of economic development
- Nature en landscape

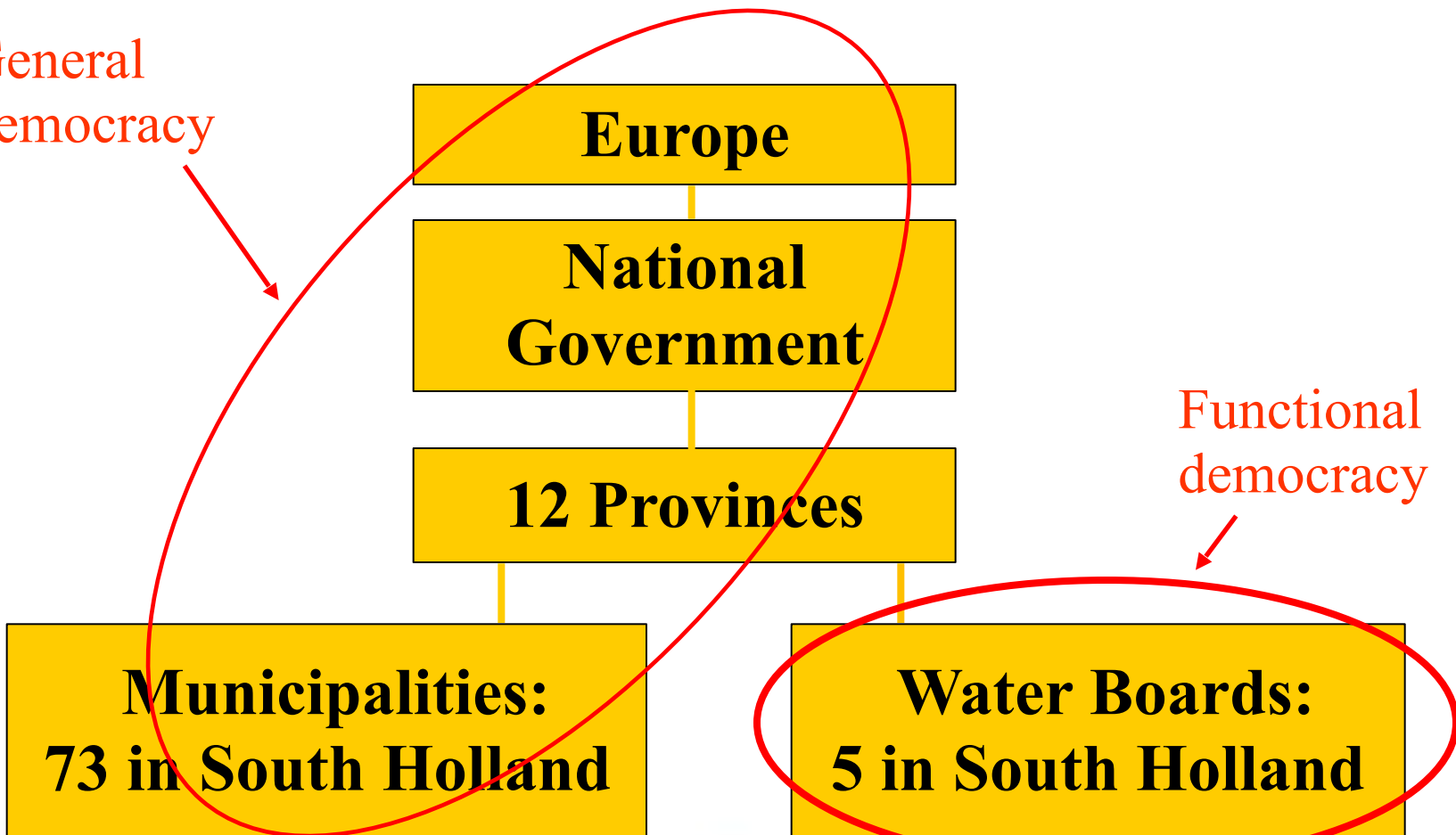
## Secondary

- Environmental- and watermanagement
- Recreation
- Welfare services
- Culture
- Transport
- Supervision on finances of municipalities



# Structure of public sector

General  
democracy





# CORE PROFILE ROLES AND TASKS

National Government

Standards, Water Safety, Freshwater Supply and Management Main Waterbodies

Provinces

Regional Spatial Planning, Nature and Facilitation of Economic Development

Municipalities

Local Spatial Planning, Sewerage Systems and Drainage

Water Boards

Management Local Waterbodies, Dike Construction and Cleaning Wastewater





## Waterschappen in Zuid-Holland

PROVINCIE  
**ZUID HOLLAND**



# province of South Holland

## South Wing Randstad





# Rotterdam

Connecting water with opportunities



# ROTTERDAM REGION



# THE NETHERLANDS



# ROTTERDAM, DELTA CITY

**MAESLANTKERING:  
STORM SURGE BARRIER**



**ROTTERDAM IN 2010**

**ROTTERDAM IN 1850**



**LARGEST PORT OF EUROPE**

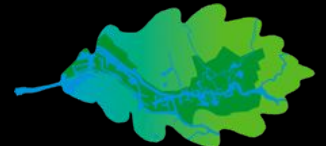
**40 KM HARBOUR**

**2800 KM SEWER SYSTEM**

**THREE WATERBOARDS**

**610.000 INHABITANTS**

**400 KM CANALS + 900 PUMPING STATIONS**





# WATER CHALLENGES ROTTERDAM







## SEA LEVEL RISE AND CHANGING RIVER DISCHARGES



PRECIPITATION



# WATER CHALLENGES

SEA LEVEL RISE



RIVER DISCHARGES



GROUNDWATER





# SYNERGY

WATER SAFETY

WATER QUANTITY

WATER QUALITY

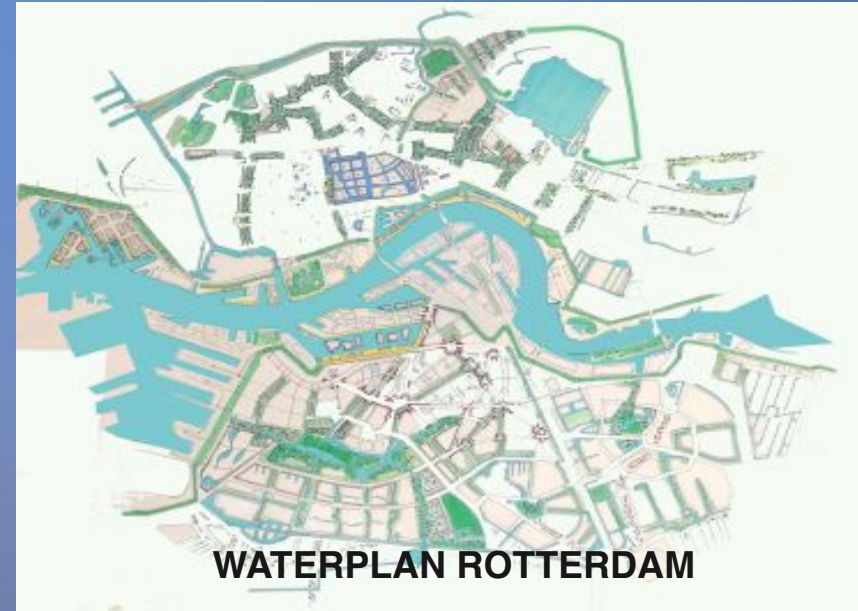
**URBAN PLANNING**

+

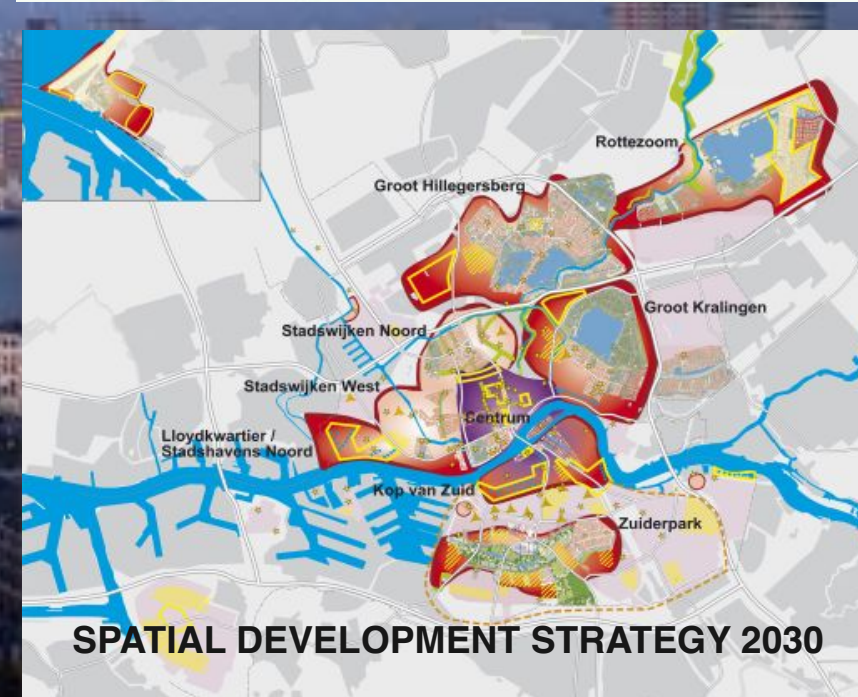
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CONNECTING WATER WITH  
OPPORTUNITIES

FOR AN ATTRACTIVE AND  
ECONOMICALLY STRONG CITY



WATERPLAN ROTTERDAM



SPATIAL DEVELOPMENT STRATEGY 2030

# ROTTERDAM CLIMATE PROOF

ADAPTATION PROGRAMME 2018



## ROTTERDAM APPROACH

**100% climate proof in  
2025**

**+**

**attractive and  
economically strong  
city**

**+**

**holistic approach**

**+**

**LT Vision =>  
ST Actionplan**







# MORE SPACE FOR WATER



# KLEINPOLDERPLEIN





# URBAN FLOODPLAIN

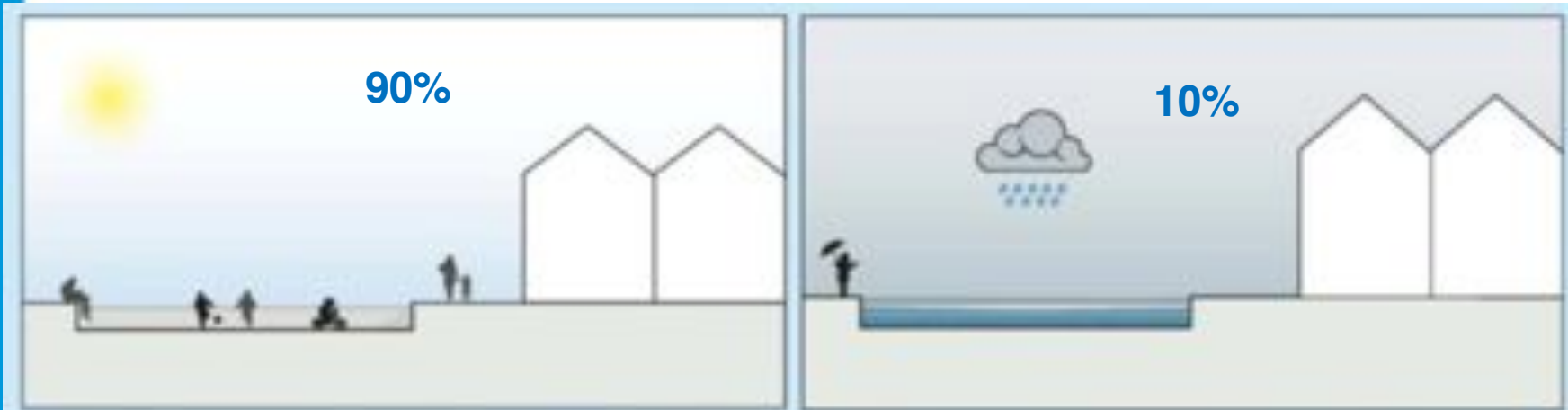


# UNDERGROUND WATER STORAGE

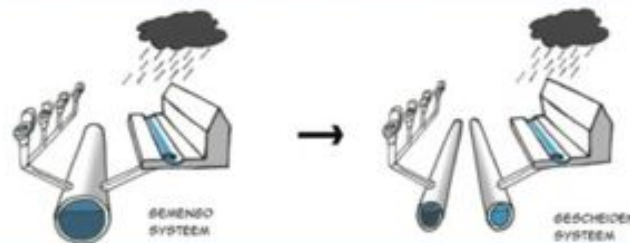


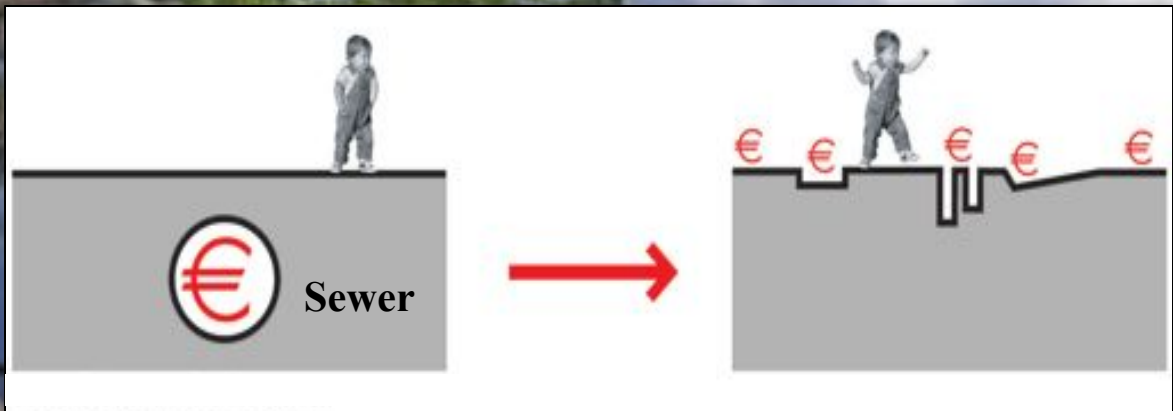


# WATER SQUARE



A water square is usable as any public space when it is dry. But when it rains it will function as a temporal storm water buffer

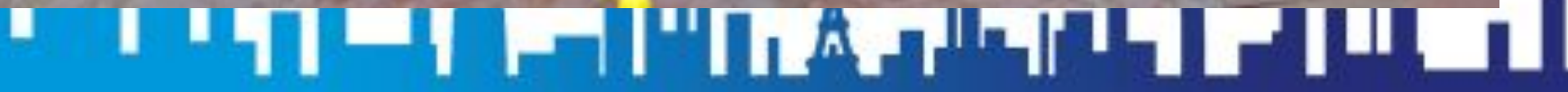




**INVESTING MONEY IN A DIFFERENT WAY**



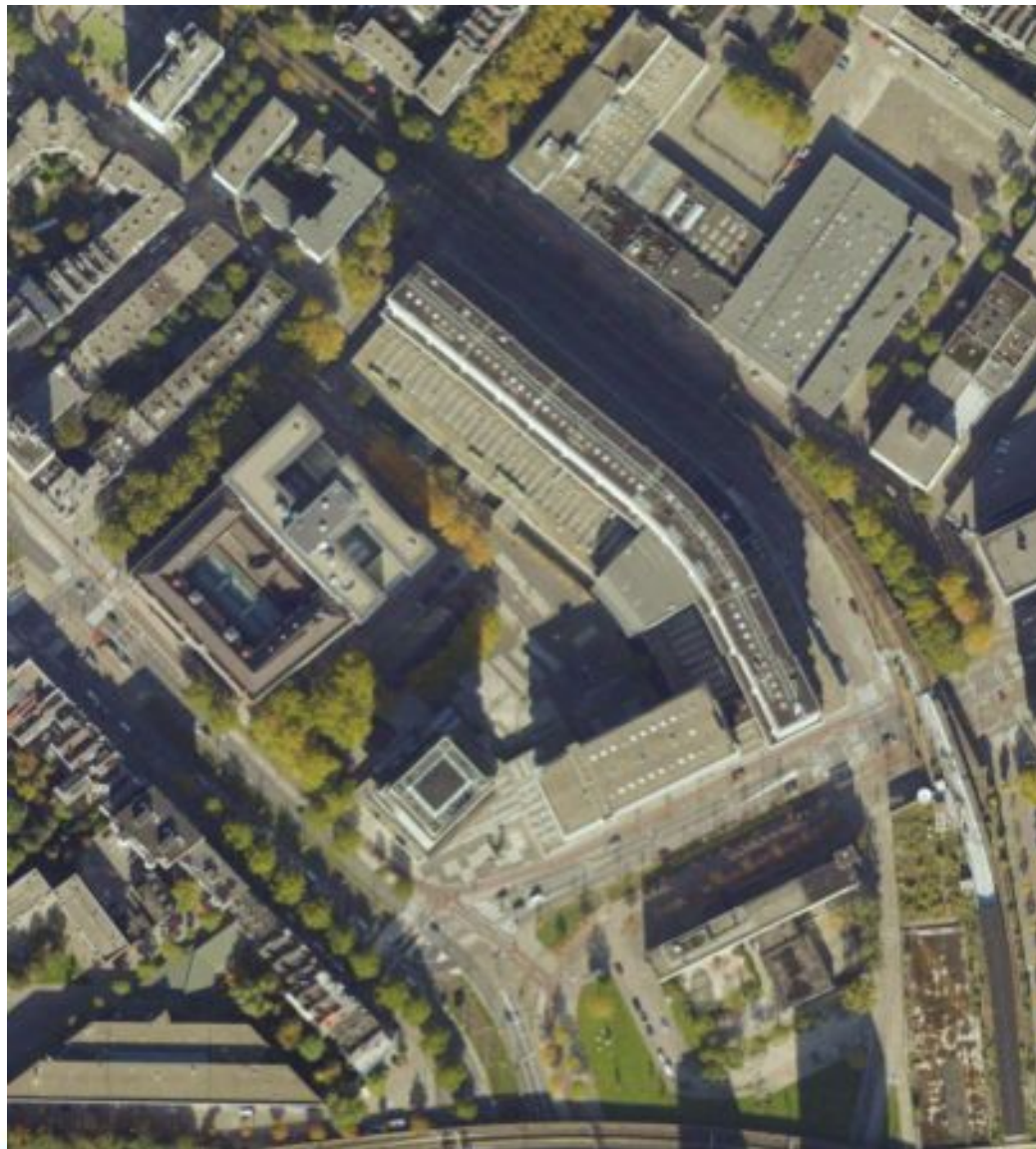
Opening event of water square Bellamyplein







# Water square second location: A large scale urban pilot on the “Bentthemplein”



Gemeente Rotterdam

**DE URBANISTEN**

The current square is underused and aesthetically not appreciated



**Everybody agreed...**

*Transforming the place into a watersquare is a great opportunity to turn the Benthemsquare into a beautiful and appreciated place, which offers possibilities for active sports and play*



Design & artist impressions Benthemplein by DE URBANISTEN



# Public participation process, overview

WORKSHOP 1

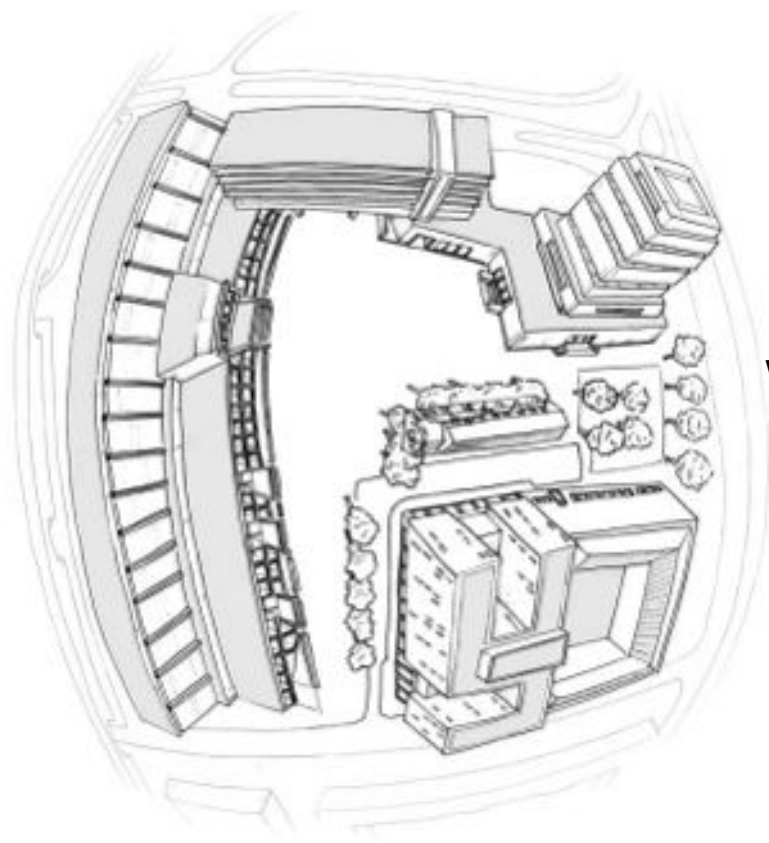


WORKSHOP 2



WORKSHOP 3





We started with a drawing of an empty square





Activiteiten

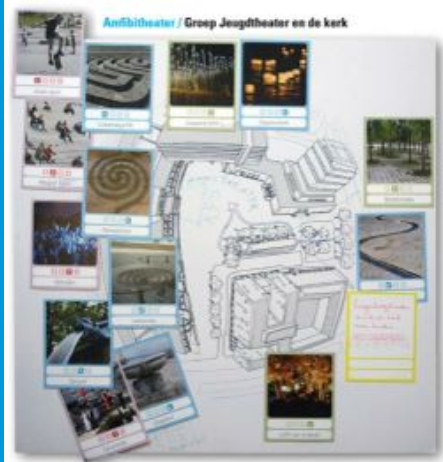


Stuur



Water

 Rode loperij	 Nieuw zwembad	 Nieuw terras	 Nieuw voetpad	 Schakel	 Muren	 Wegmarkering	 Bassin	 Waterwalg	 Waterwalg	 Waterwalg	 Waterwalg
 Nieuw terras	 Lawn	 Wandelpad	 Weggepad	 Groenzone	 Wandelpad	 Groenzone	 Groenzone	 Waterwalg	 Waterwalg	 Waterwalg	 Waterwalg
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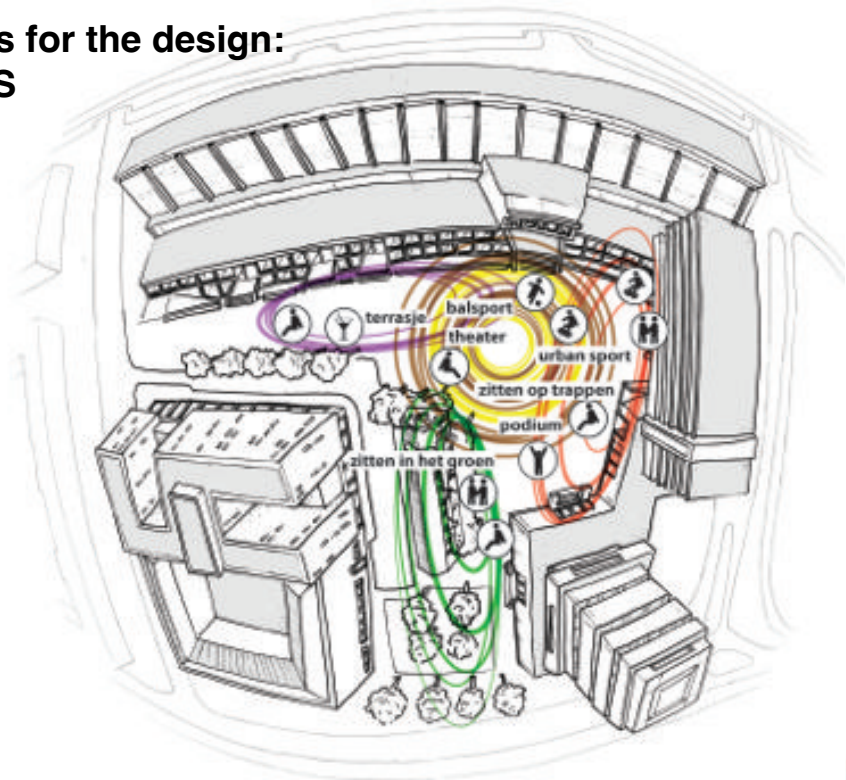
**Results workshop 1:**

**A set of programme for the Benthemplein by each of the 4 parties, Specifying activities, atmosphere and the role that water can play in this**



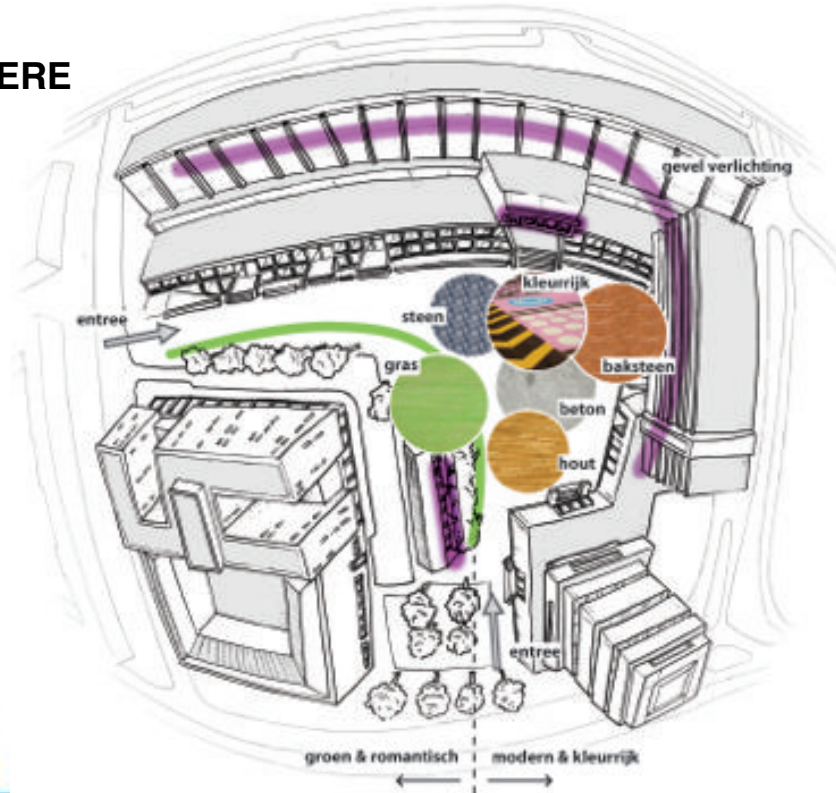


We distilled principles for the design:  
SUMMARY ACTIVITIES





# SUMMARY ATMOSPHERE

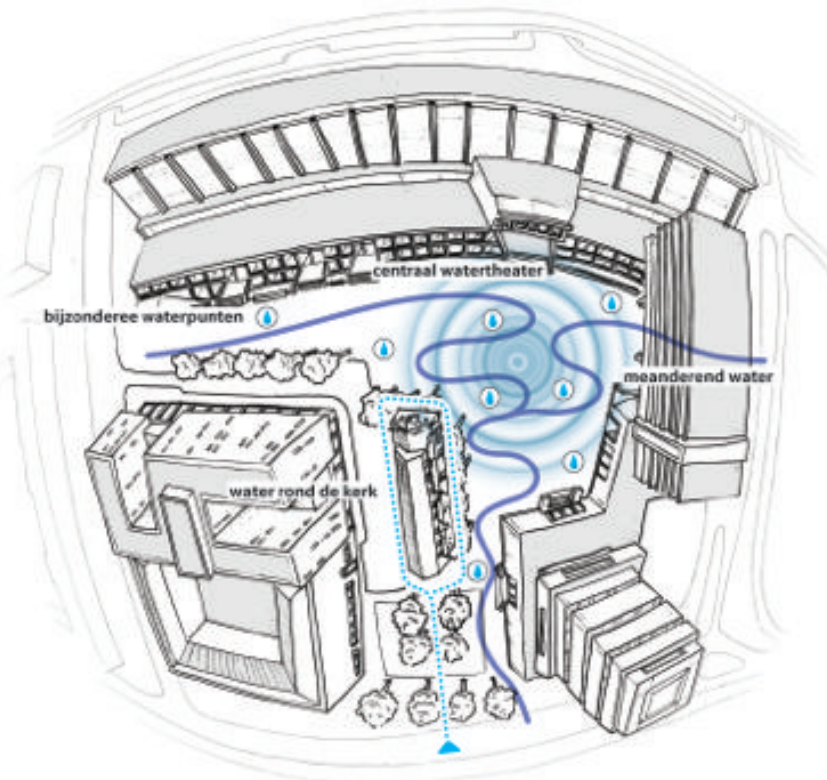


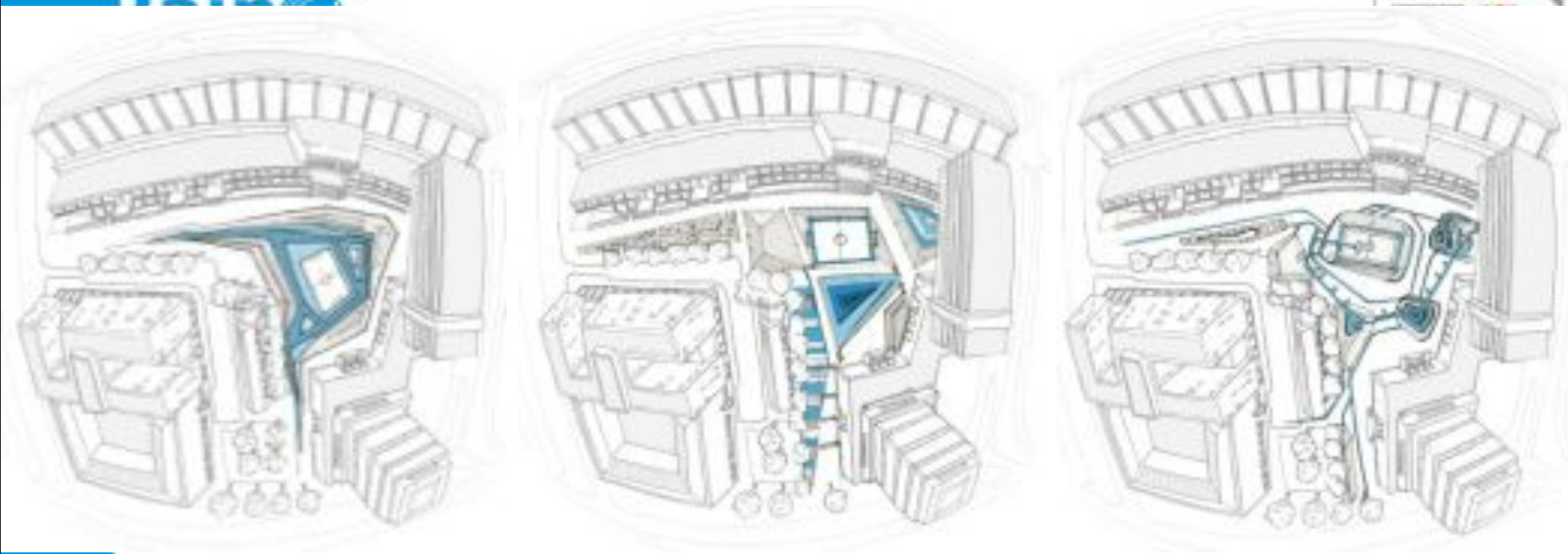




**SUMMARY WATER**

*Water as a steering principle in the spatial design of the place was embraced and brought a lot of inspiration for detailing the square to the participants*



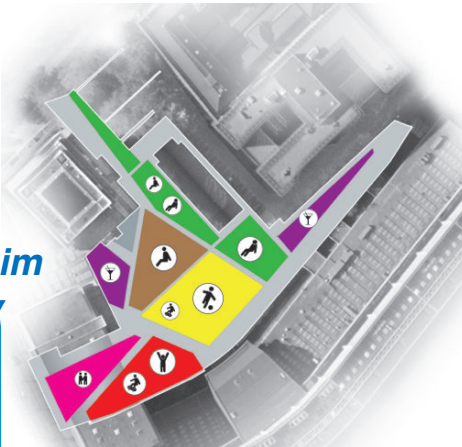


Second time we presented **three spatial concepts**

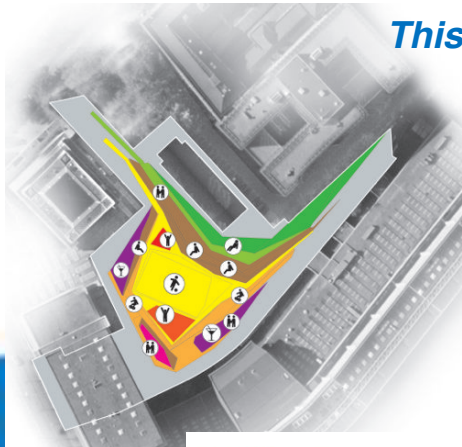
*Every concept was based on a specific way of water transport and storage  
 All desired activities were equally present in all concepts,  
 what differed was their social configuration and the overall atmosphere of the square.*



Discussion was focused on social aspects of two activity schemes



Every group can claim their own territory



This design was liked the best esthetically



So we combined them into one design proposal

And brought it back to the group



WORKSHOP 3

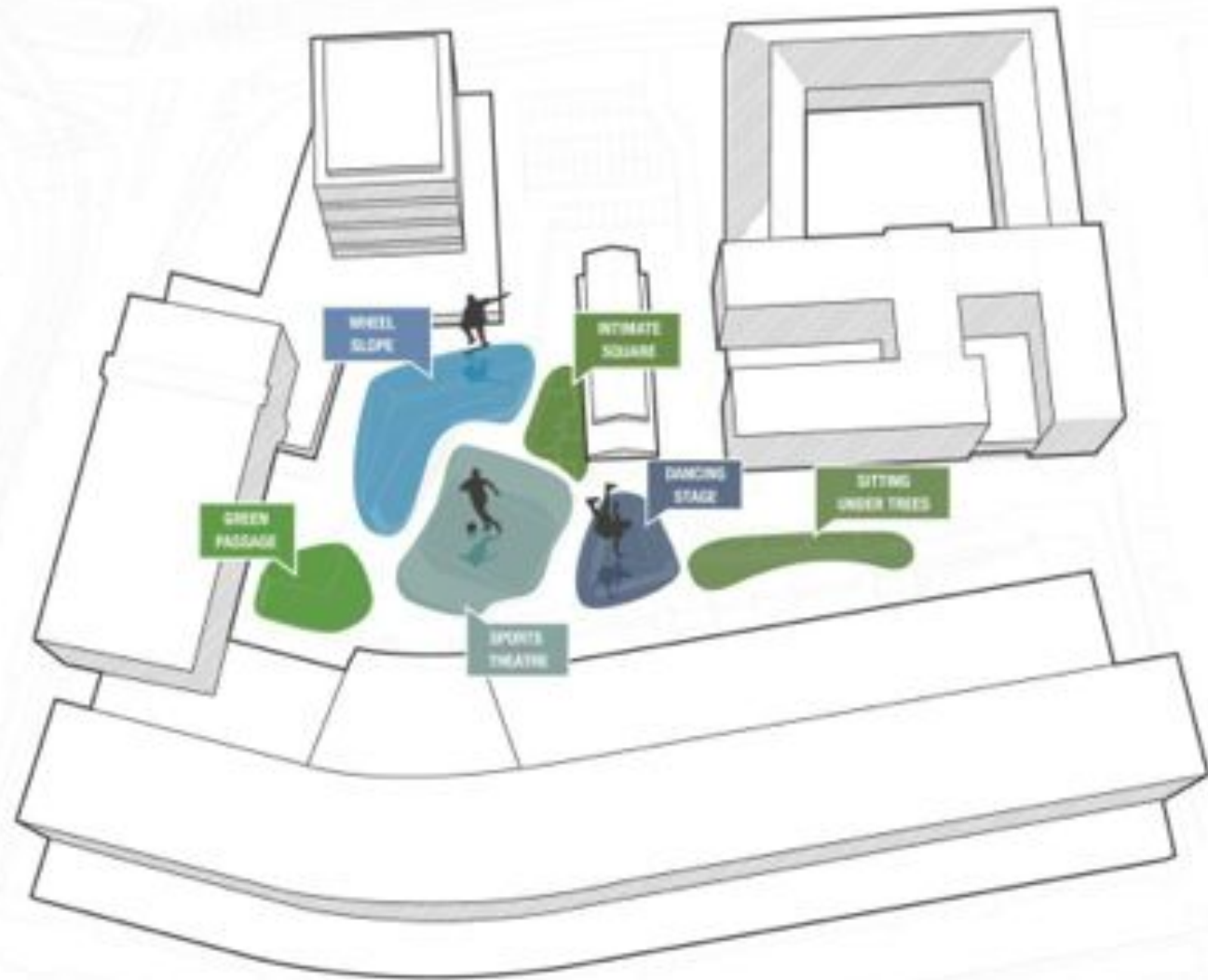




**FINAL PLAN**  
*pilot water square*

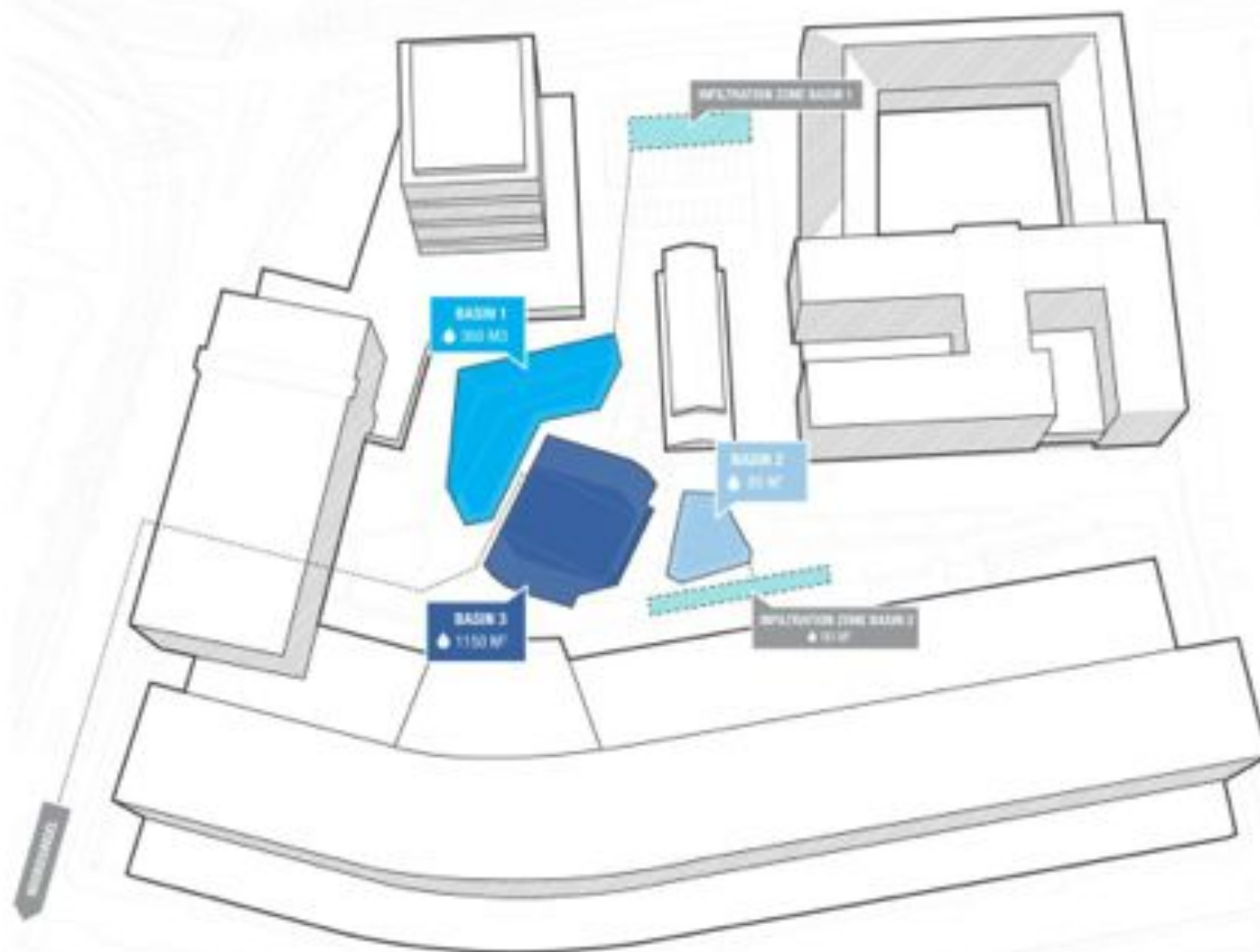


# Spatial entities and identifyable places (subculturally)



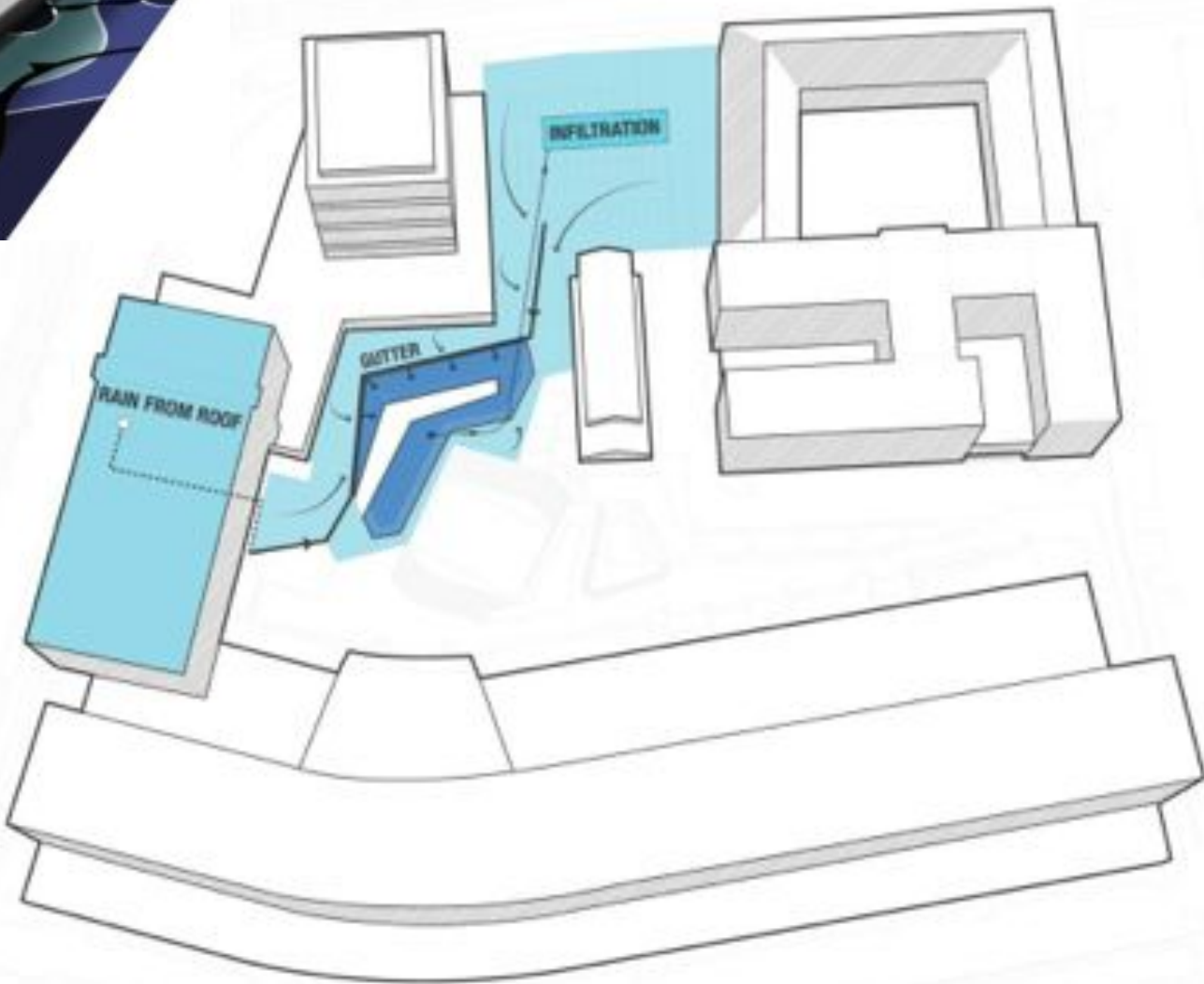
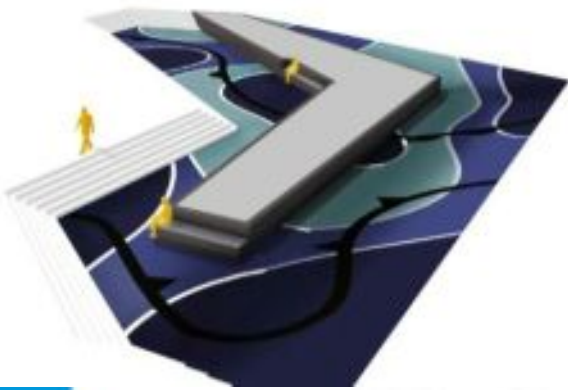


## Storm water storage basins



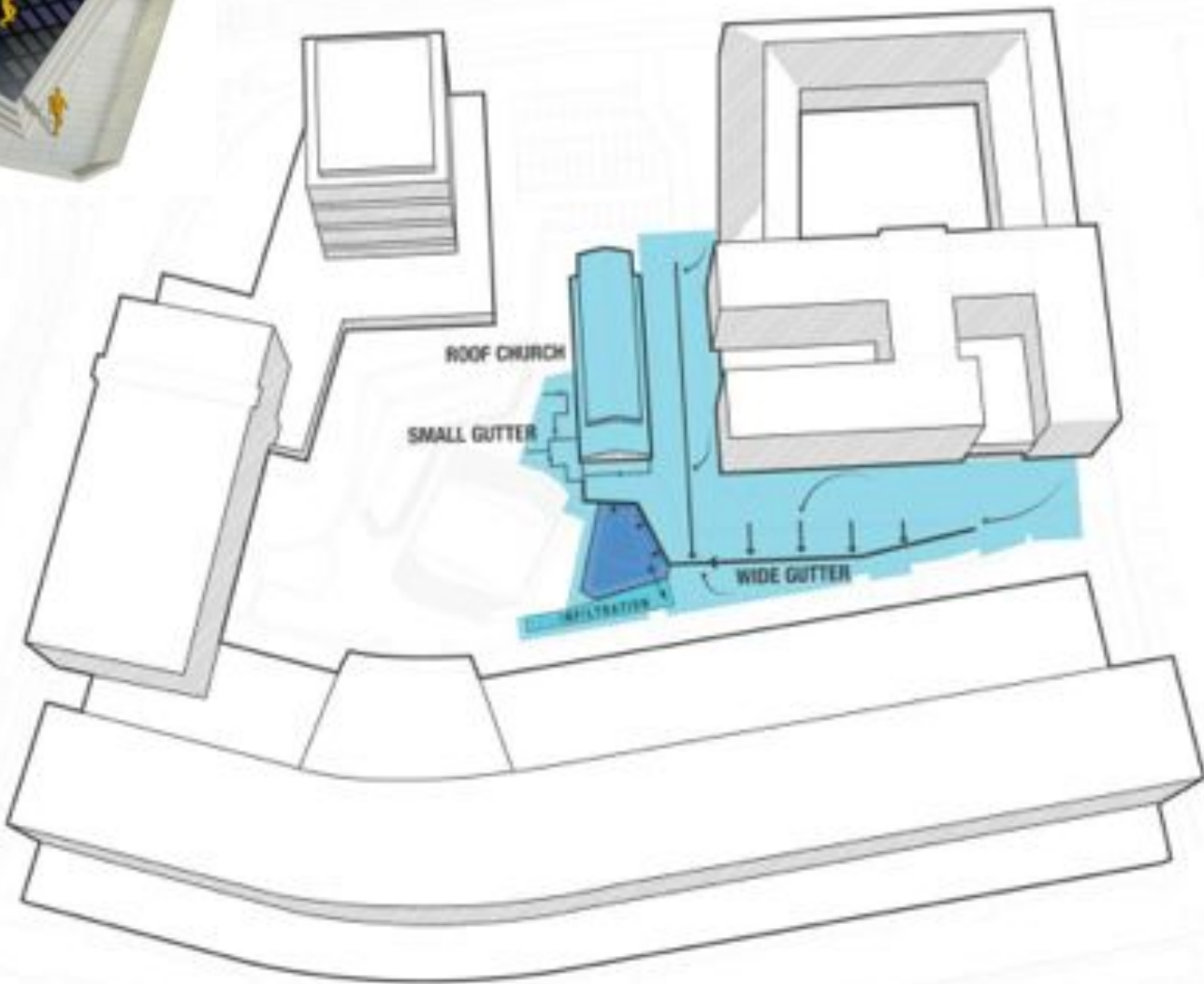
*Total buffering capacity up to approximately 2 million liters*

# Catchment area of basin 1

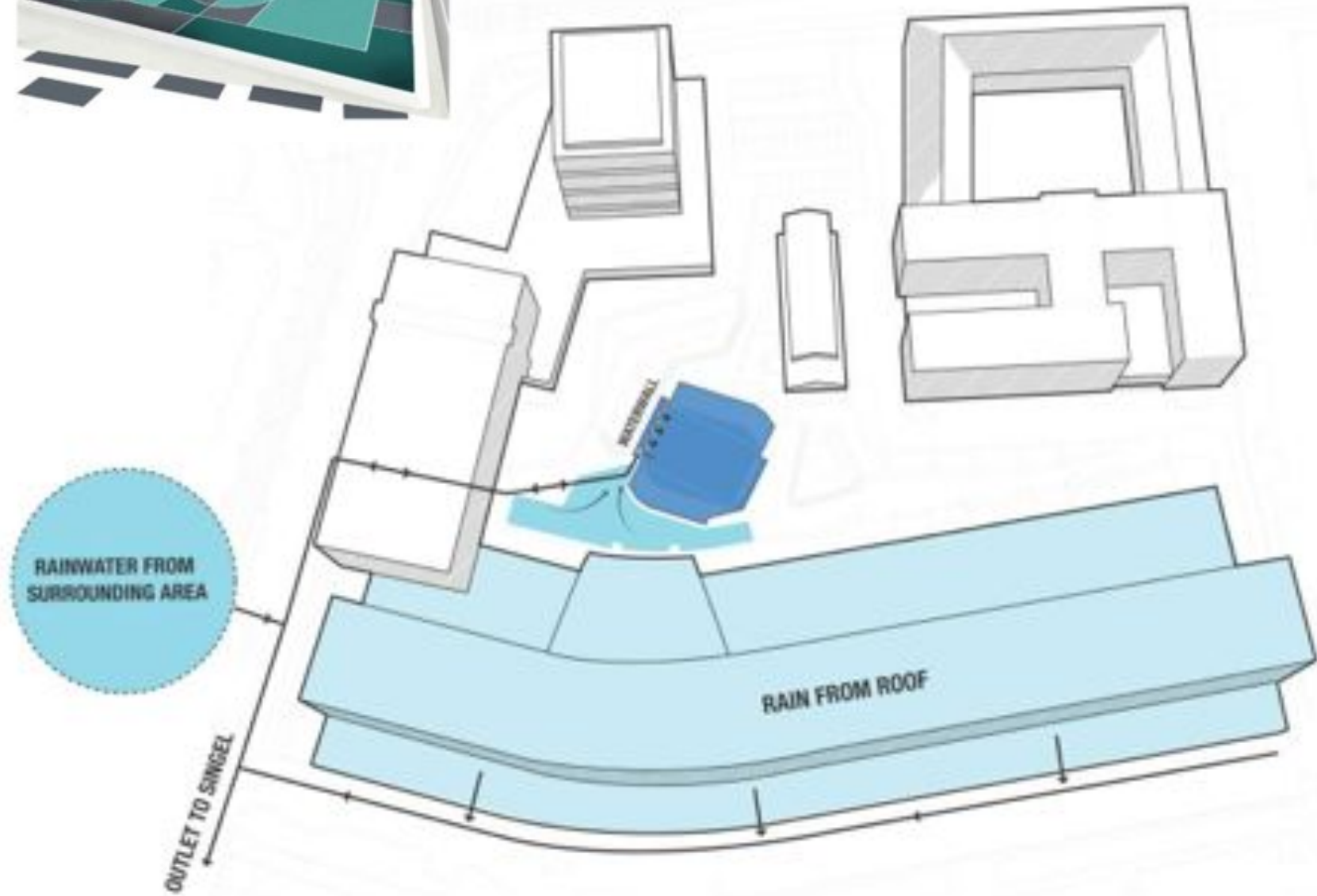




# Catchment area of basin 2



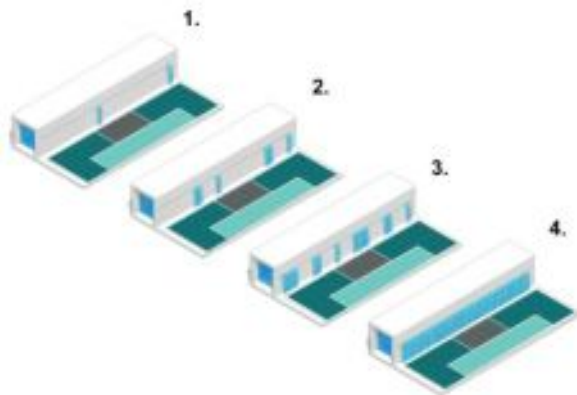
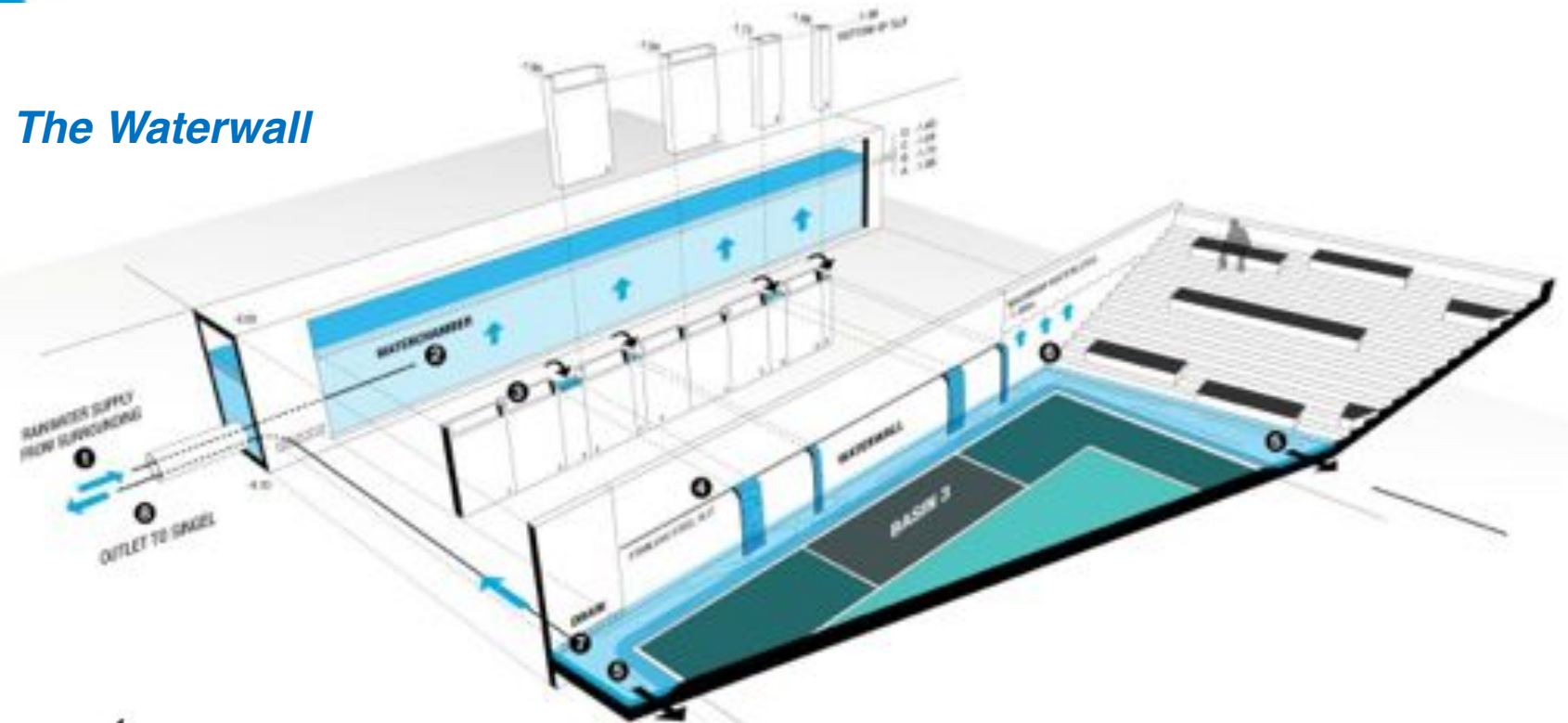
# Catchment area of basin 3



*Total catchment area approximately 120.000 m2*

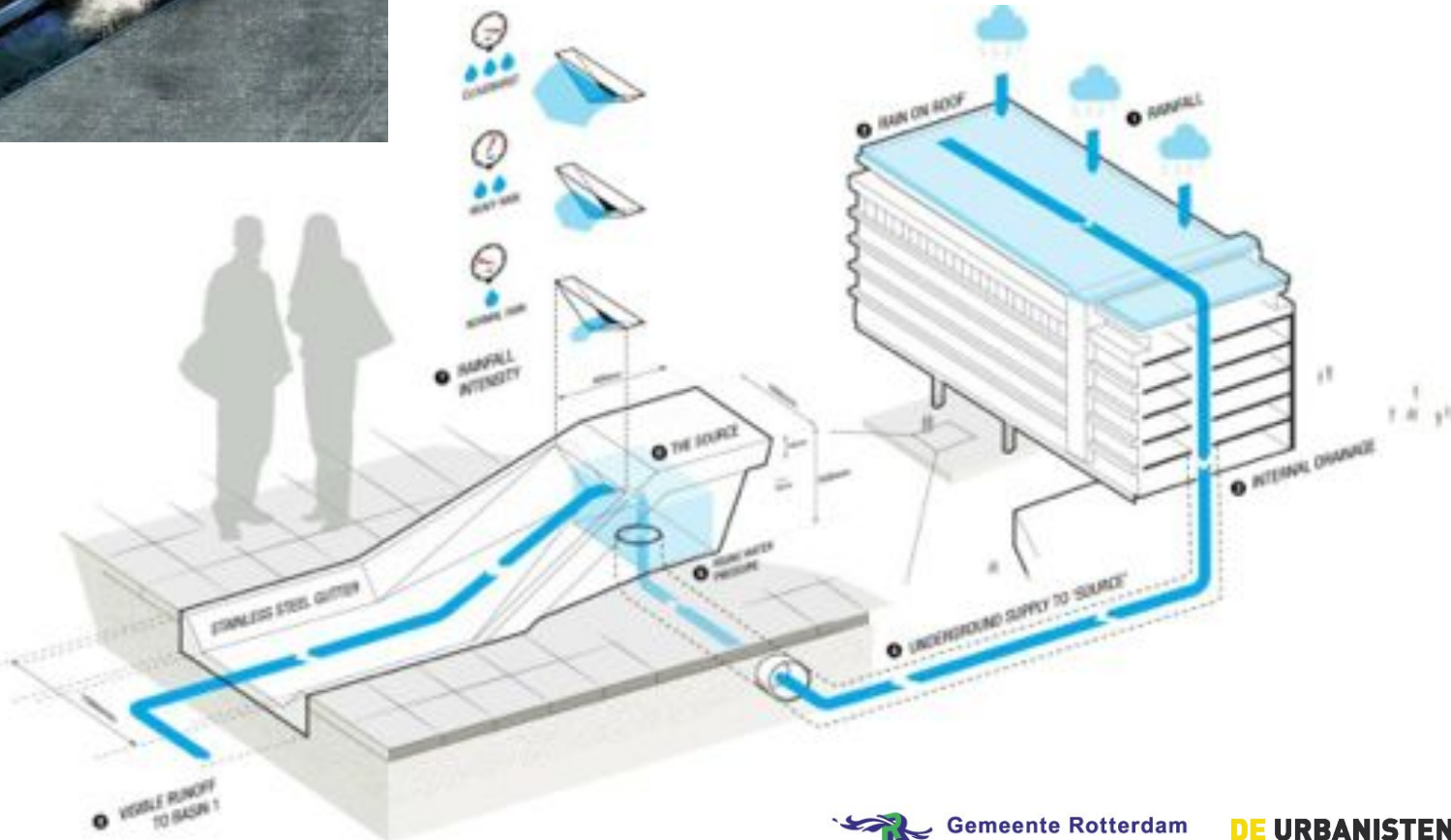


## The Waterwall





*The Rain well*





In section North to South



















## Animation Water Square (time permitting)

<http://www.youtube.com/watch?v=kujf4BTL3pE&feature=share&list=UUft10oPb70MOA8V3EmYcrQA>

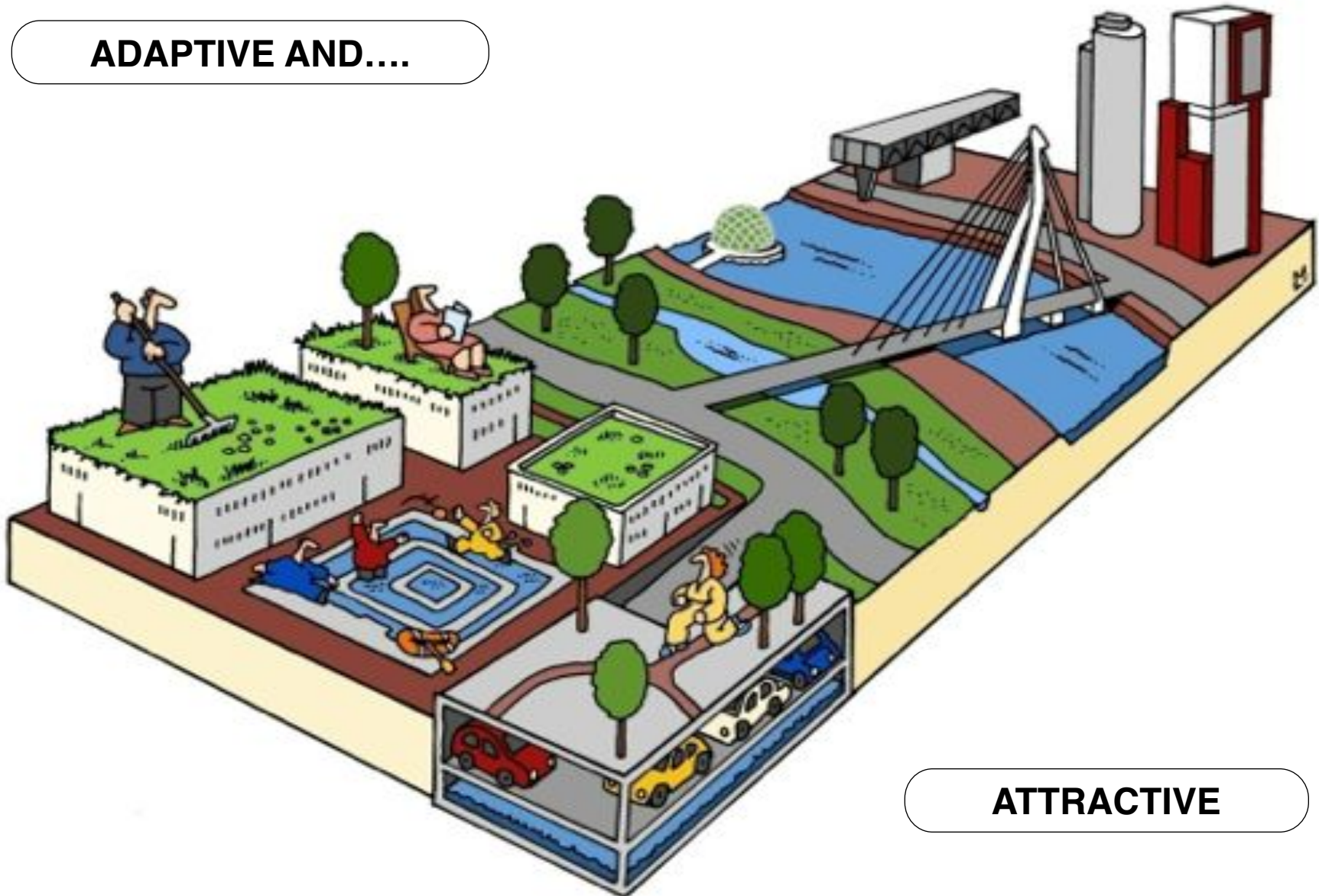


# GREEN ROOFS FOR AN ATTRACTIVE CITY





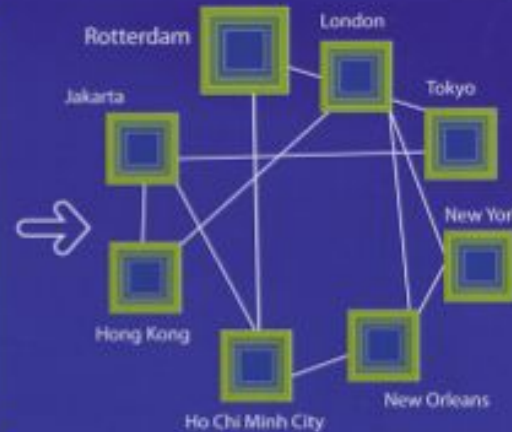
**ADAPTIVE AND....**



**ATTRACTIVE**



■ Participating cities of the CDC initiative  
■ Possible new member cities

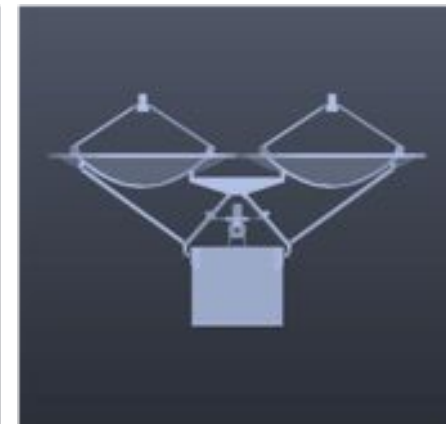


# CONNECTING DELTA CITIES





# Knowledge Development







**THANK YOU FOR YOUR ATTENTION**

