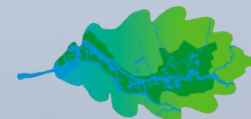


Rotterdam Climate Proof



Connecting water with opportunities

Towards Rotterdam Resilient Delta City

Jorg Pieneman – Programme manager Water
www.rotterdamclimateinitiative.nl

Rotterdam

ROTTERDAM REGION



THE NETHERLANDS

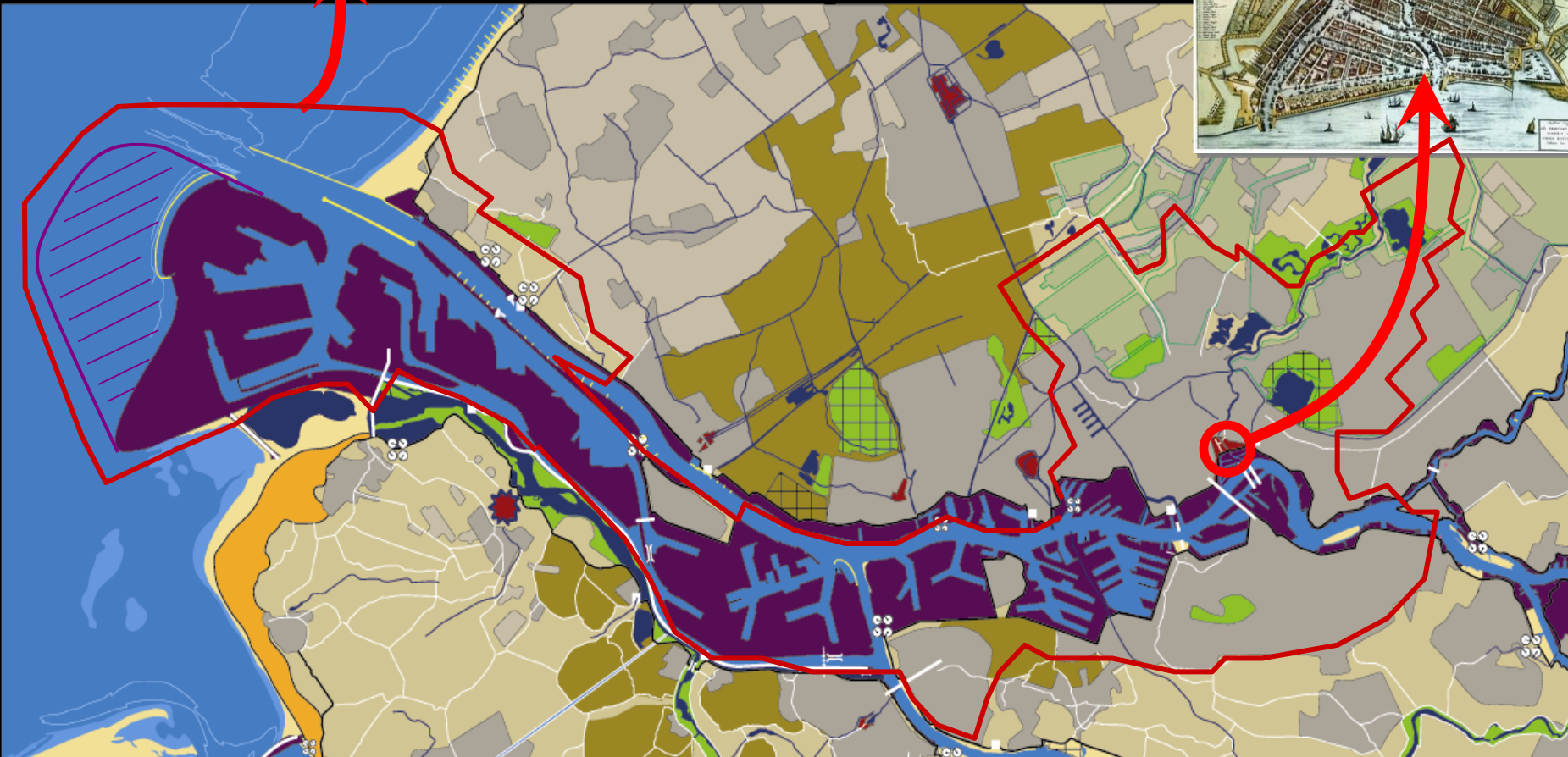


ROTTERDAM, DELTA CITY

MAESLANTKERING: STORM SURGE BARRIER

ROTTERDAM 2015

ROTTERDAM 1652



City

Area : 320 km²
Inhabitants: 615.000
Nationalities: 174
Municipal Budget: 4,2 billion Euro's

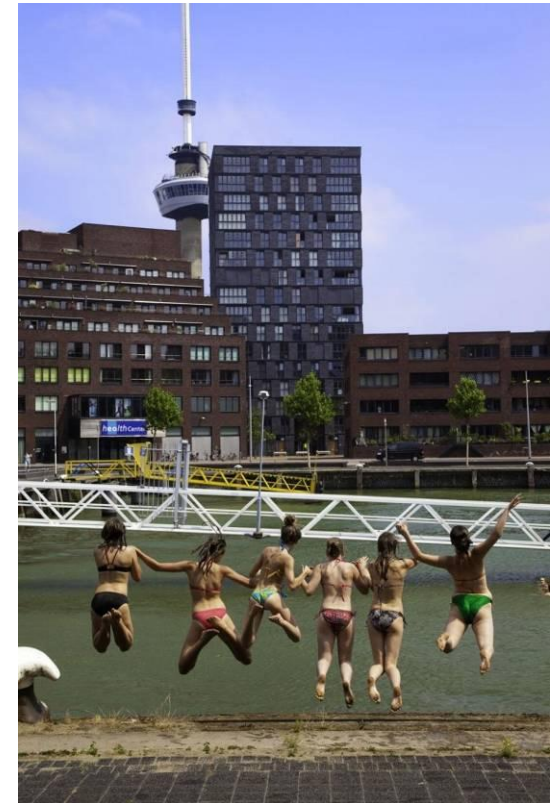
Port

Area: 105 km² (50 km² commercial sites)
Length of port area: 40 km.
Direct employment: over 70,000 jobs
Goods throughput: over 400 million tonnes of goods per annum
Shipping: 33,000 sea-going vessels and 110,000 inland vessels per annum

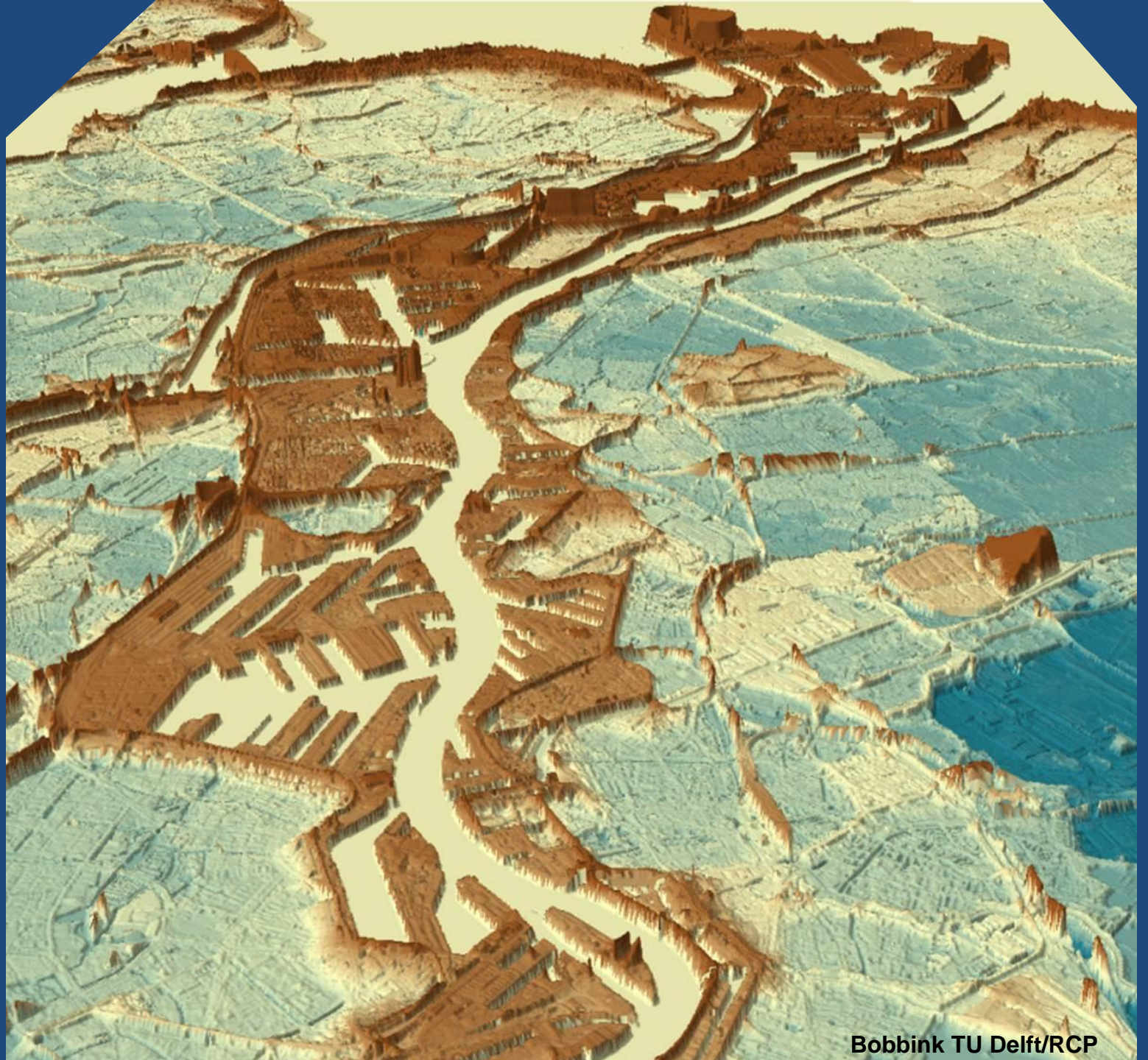


...and a lots of modern architecture

WATER: ADS VALUE TO THE PUBLIC SPACE



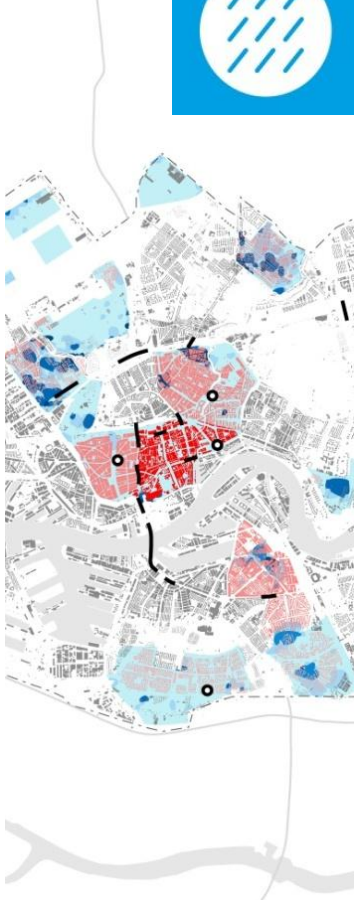
Challenges



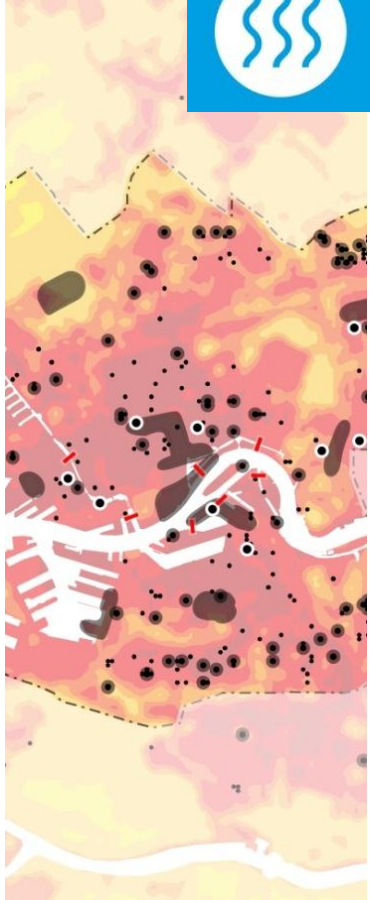
CLIMATE RISK ANALYSES



Possible consequences of flooding:
Inner dike and outer dike



Increasing problem locations concerning:
Storm water, salination and drought , heat island effect



Effects related to climate change



Flooding Noordereiland



Water quality



Excessive rain fall



Levee subsidence (drought)



Inundated cellars



Heat waves



Vision & Action Process

ROTTERDAM CLIMATE PROOF

URBAN
BY
NATURE

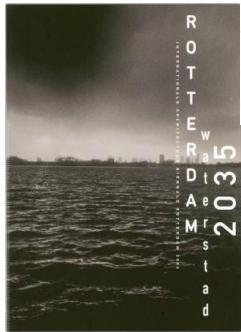
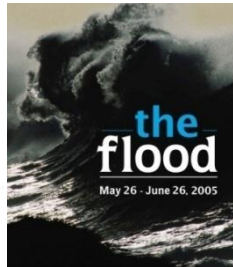
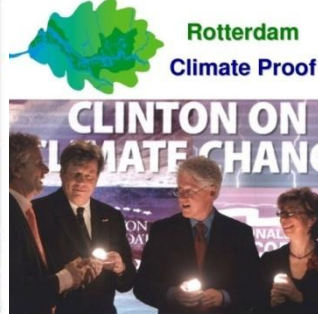
IABR-2014-
PRIZE 21 AUGUST 2014

2014

THE
ROCKEFELLER
FOUNDATION

THE ROCKEFELLER FOUNDATION
100 RESILIENT CITIES
CENTENNIAL CHALLENGE

2008



2005



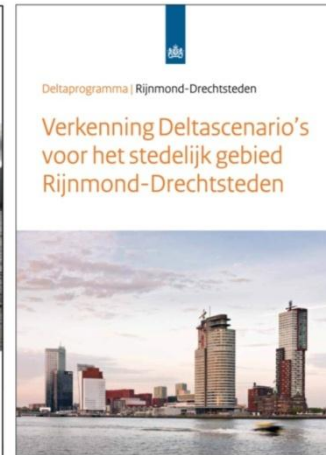
2007



2010



2013



2014



2001

Transition of more than 10 years...

Water

+ Spatial Planning

+ Climate Change

+ Resilience (wide spectrum)

LT VISION: ROTTERDAM WATER CITY 2035



Submission 2nd International Architecture Biennale Rotterdam 2005

ROTTERDAM CLIMATE PROOF

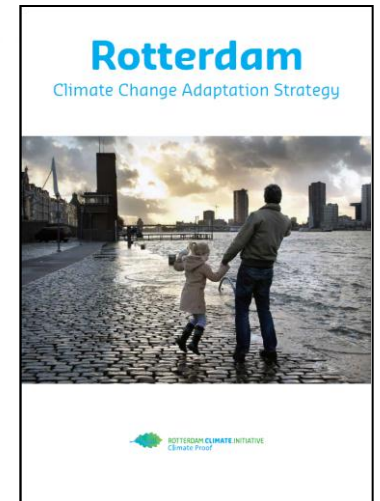
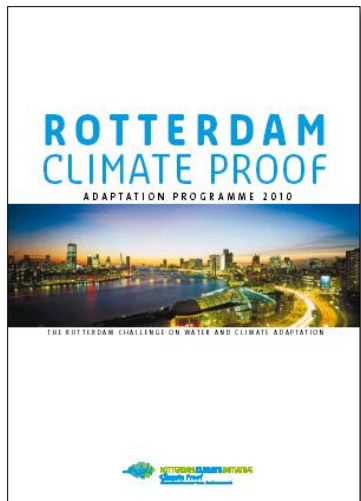
Knowledge



Actions



Exposure/Marketing



ROTTERDAM CLIMATE PROOF

Knowledge



Knowledge



Policy

Actions



Projects



City Improvement

Exposure/Marketing



Cooperation

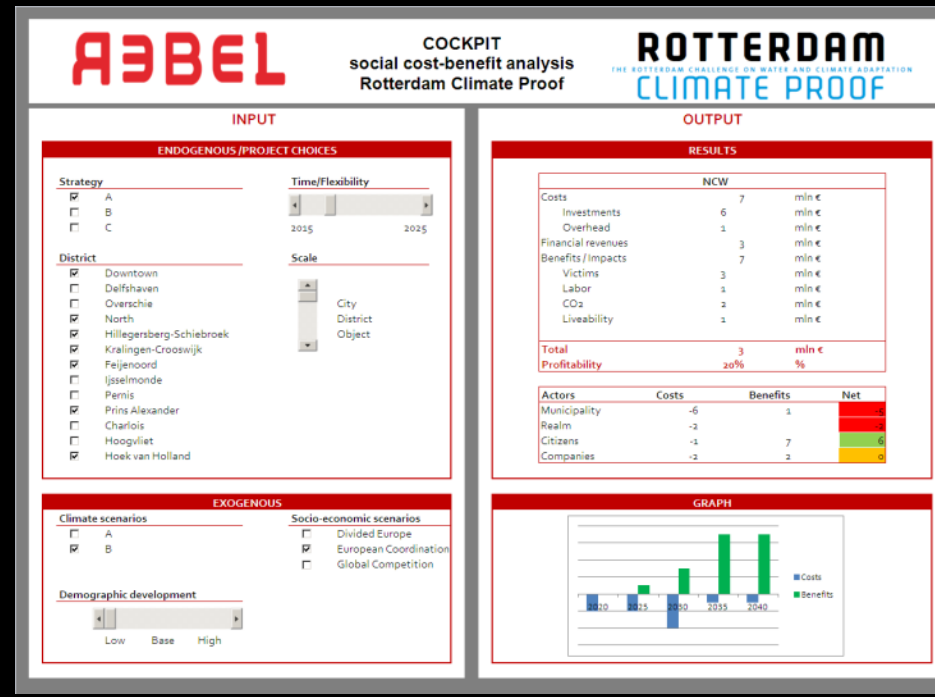
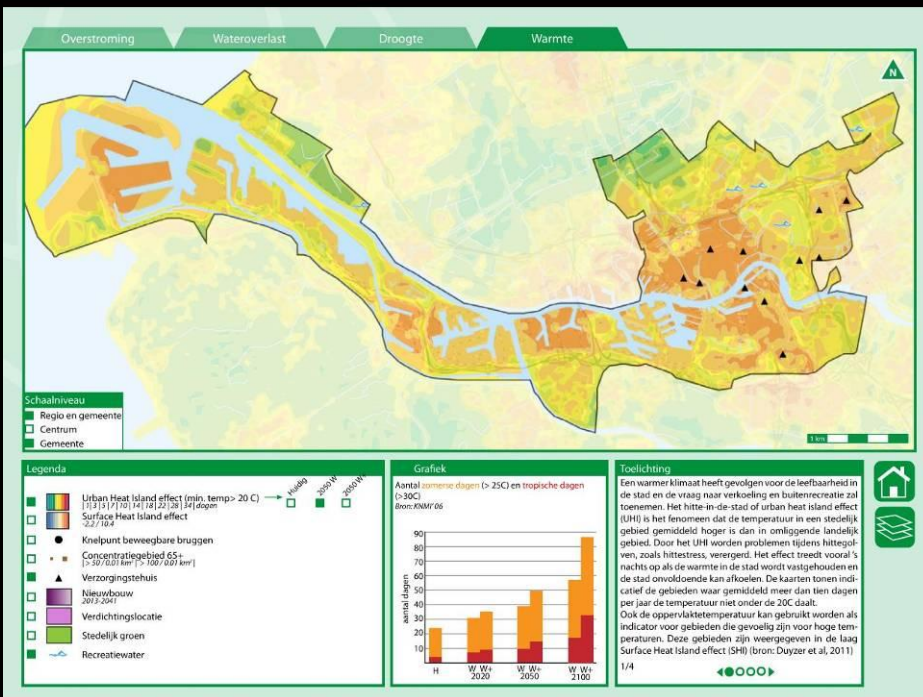


Economic Spin-off

KNOWLEDGE DEVELOPMENT

Interactive Climate Atlas Rotterdam

SCBA



Rotterdam (Climate Change) Adaptation Strategy (RAS)



Robust and resilient



sewer+ water square



Protection and live with water



levees+ adaptive development



Delta works and small-scale



storm surge barrier + permeable pavement



Technology and nature



Pumping stations + green embankments



ROTTERDAM CLIMATE PROOF

Knowledge



Knowledge



Policy

Actions



Projects



City Improvement

Exposure/Marketing



Cooperation



Economic Spin-off

BLUE SOLUTIONS: multifunctional



Water storage and.....

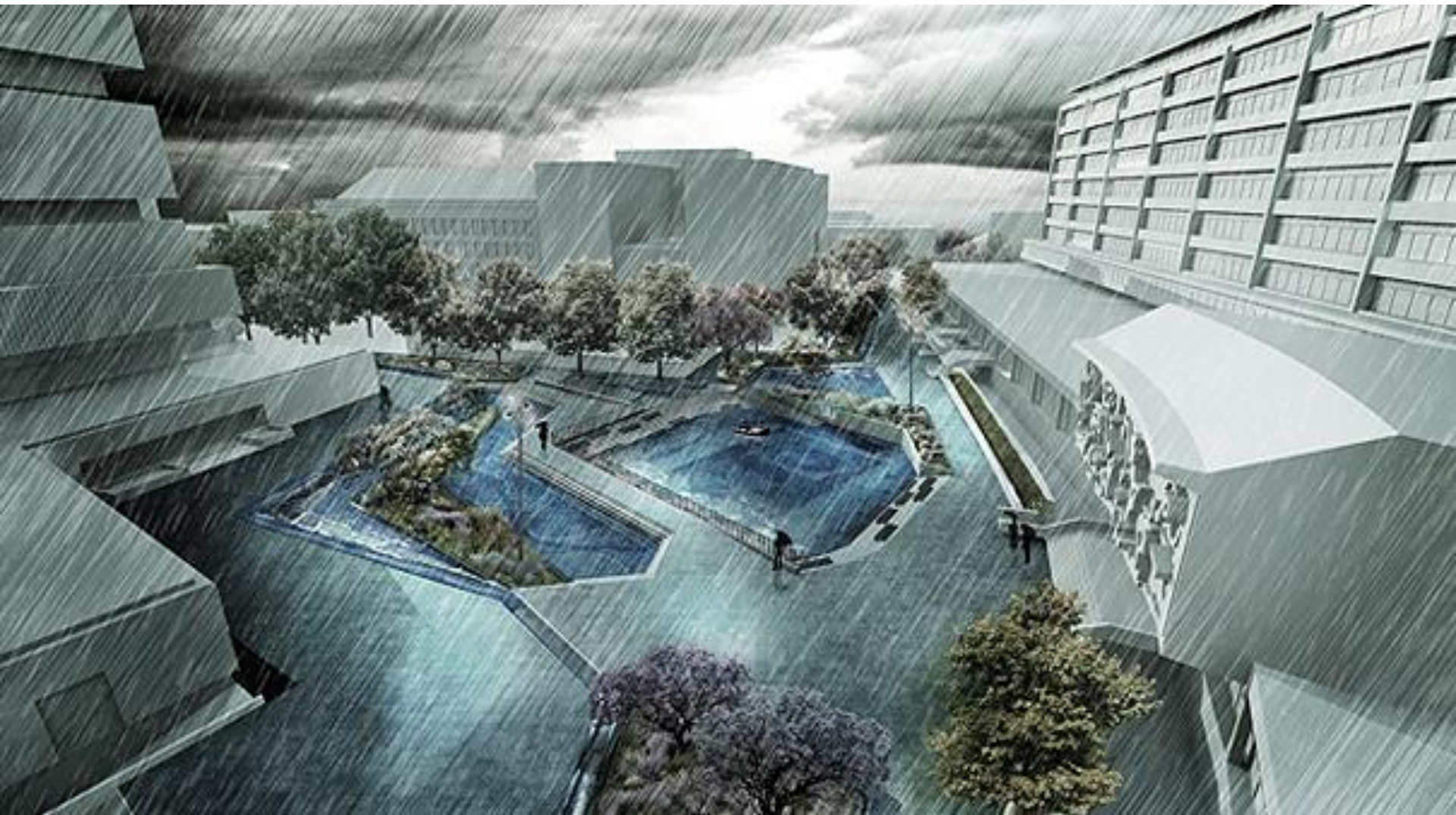
- Residential areas
- Ecological corridors
- Attractive Public area
- Recreation/Sport Facilities
- Underground parking garage



WATER SQUARE BENTHEMPLEIN



WATER SQUARE BENTHEMPLEIN

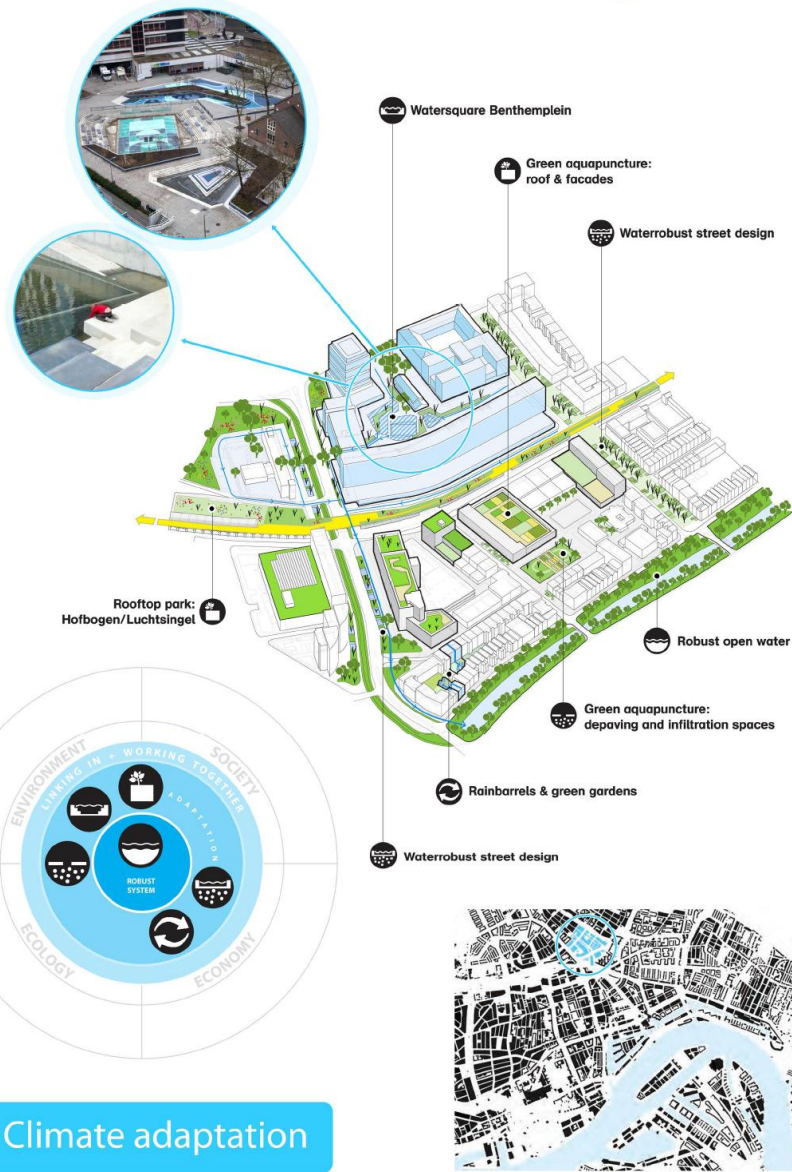




CLIMATE RESILIENT ZOMERHOFKWARTIER



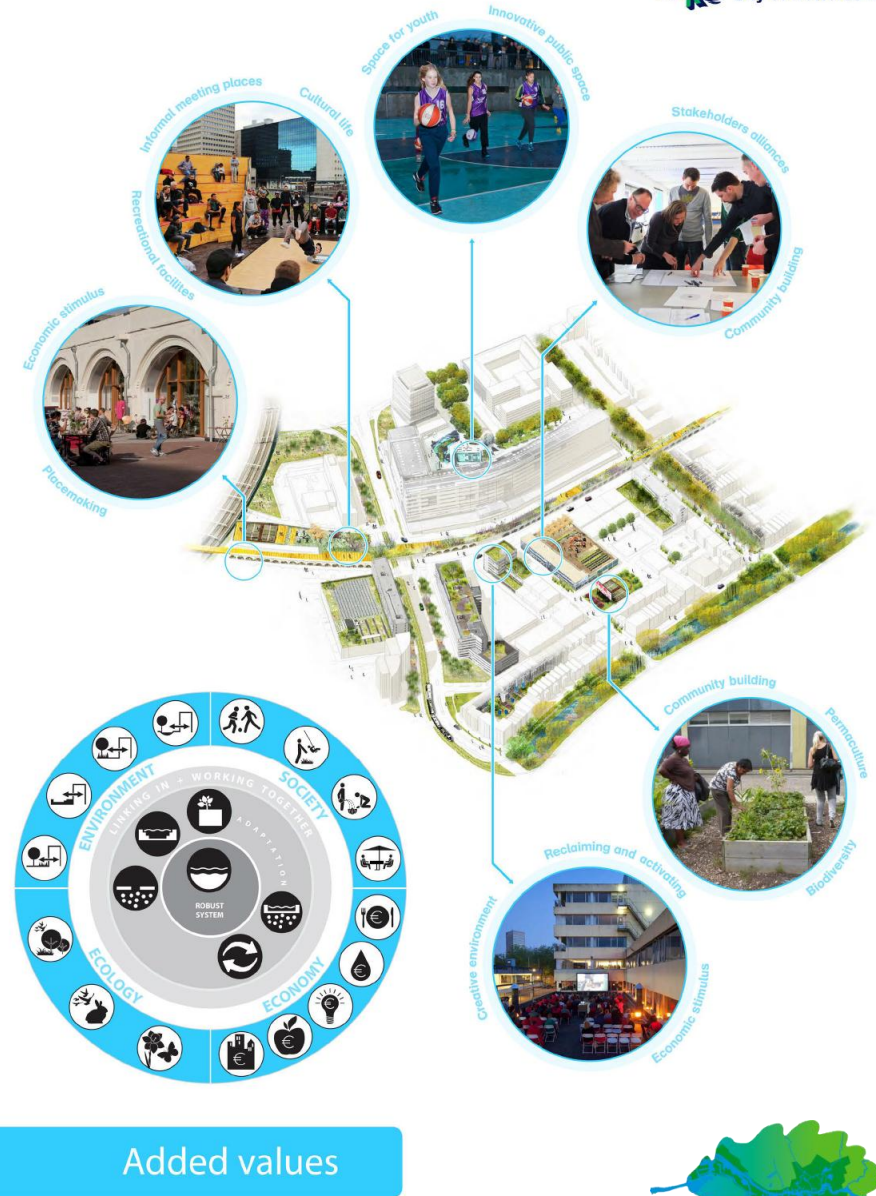
CLIMATE RESILIENT ZOMERHOFKWARTIER



Climate adaptation

Source: De Urbanisten

CLIMATE RESILIENT ZOMERHOFKWARTIER



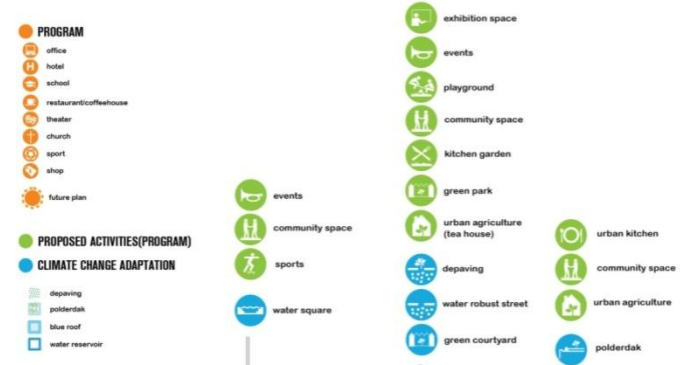
Added values

Source: De Urbanisten



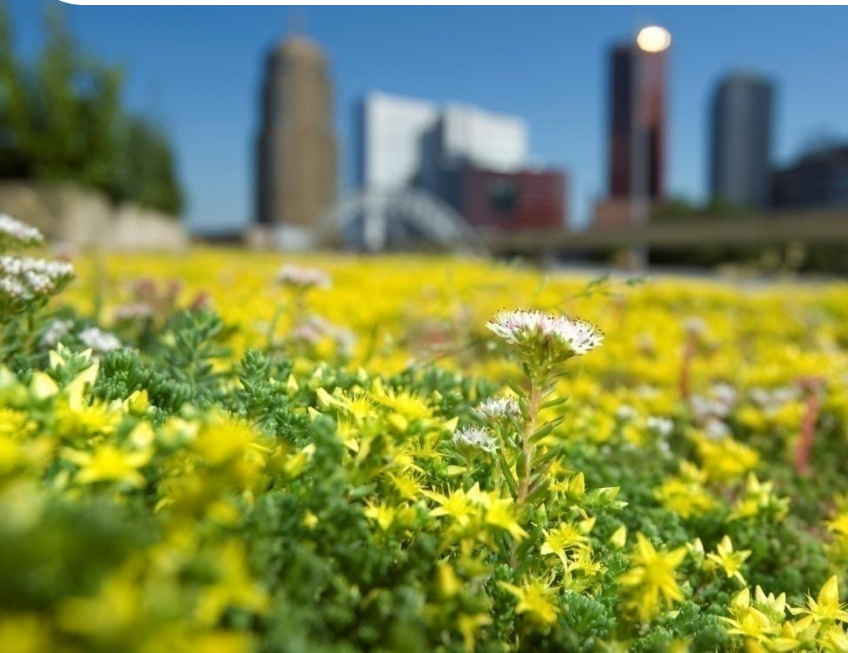
Programmatic approach on district level

Building a green framework and programmatic clusters for and with the neighbourhood



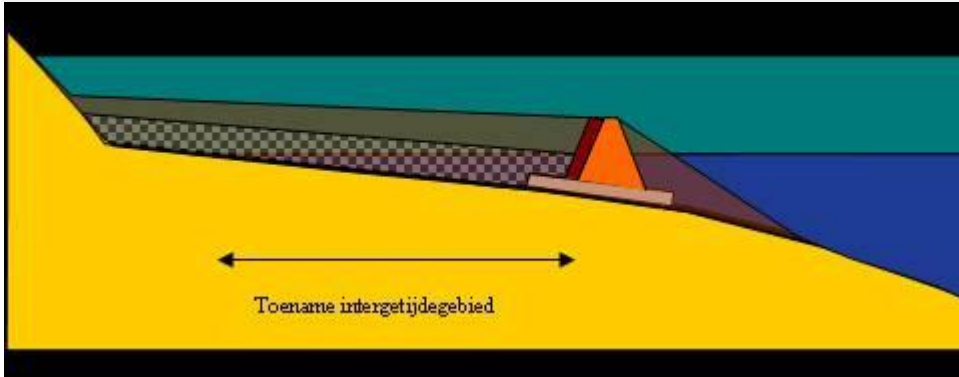


Community involvement: GREEN ROOFS



BUILDING WITH NATURE

GREEN INFRASTRUCTURE



Huidige situatie

Current



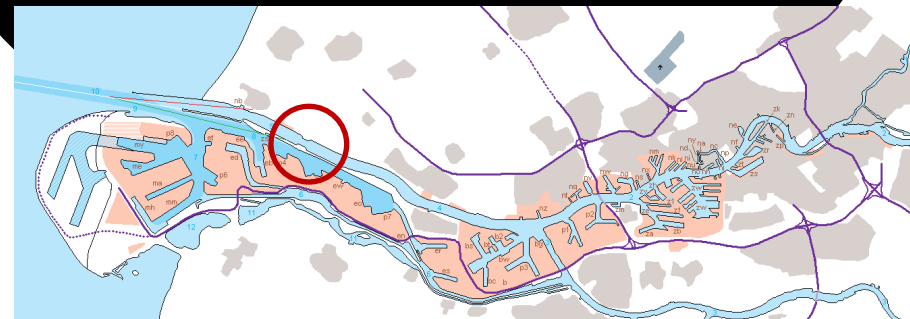
Toekomstige situatie

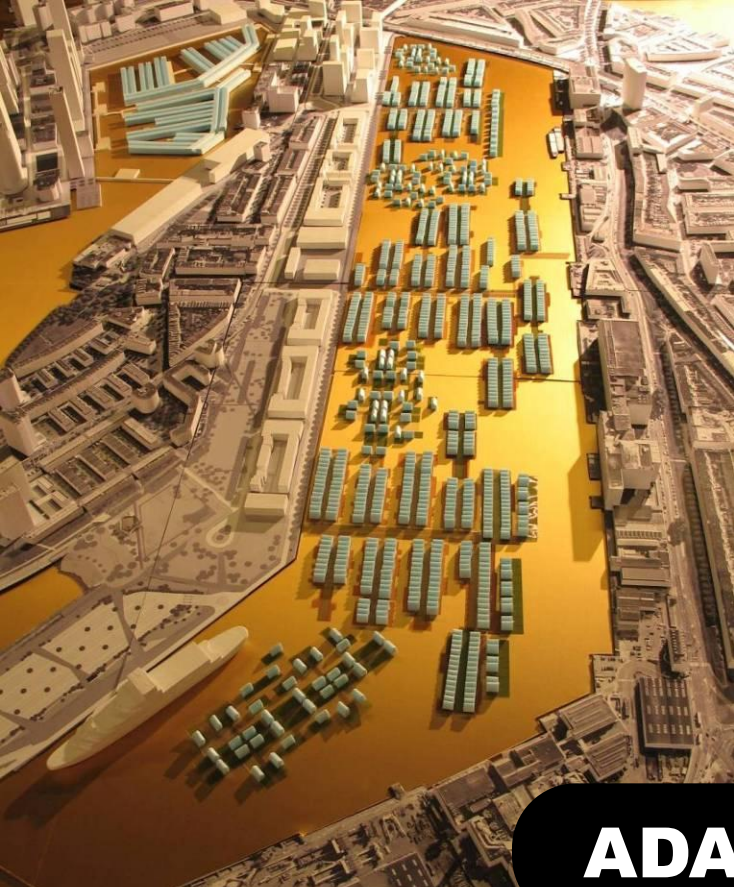
Future

Green solutions

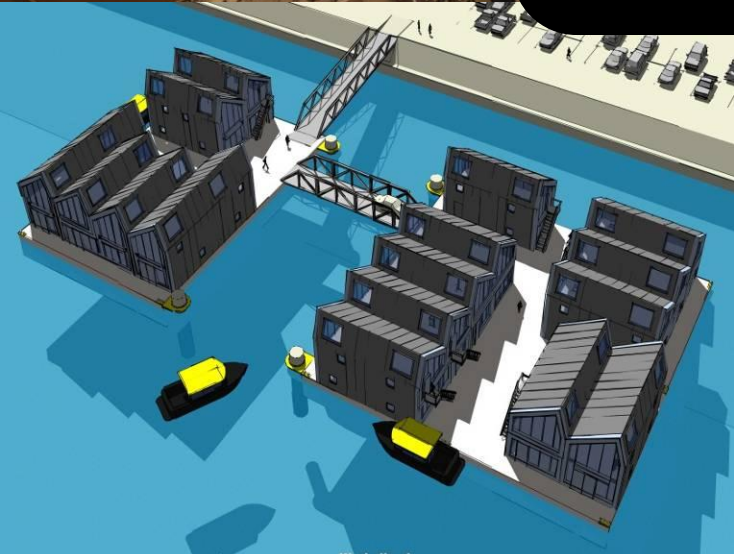
- WIN 1: NEW ECO-HABITATS
- WIN 2: BETTER WATER QUALITY
- WIN 3: REUSE OF SEDIMENTS
- WIN 4: WAVE REDUCTION

New Business cases





ADAPTIVE DEVELOPMENT



ROTTERDAM CLIMATE PROOF

Knowledge



Knowledge



Policy

Actions



Projects



City Improvement

Exposure/Marketing



Cooperation



Economic Spin-off

ROTTERDAM PARTNERS

AEBEL

bosch stabbers
LANDSCAPE + URBAN DESIGN

Erasmus
ERASMUS UNIVERSITEIT ROTTE

TNO

VU UNIVERSITY AMSTERDAM

Deltares
Enabling Delta Life

Knowledge for Climate

Clean Tech Delta

NWP
Netherlands Water Partnership

UNDP

Port of Rotterdam

Grontmij

DURA VERMEER

Royal HaskoningDHV
Enhancing Society Together

TYGRON
Serious Gaming

ARCADIS



Waterschappen



C40 CITIES
CLIMATE LEADERSHIP GROUP

TU Delft
Delft University of Technology

ROTTERDAM UNIVERSITY

DE URBANISTEN

Ministerie van Infrastructuur en Milieu

IBM

delta sync
WATERBASED URBAN DEVELOPMENT

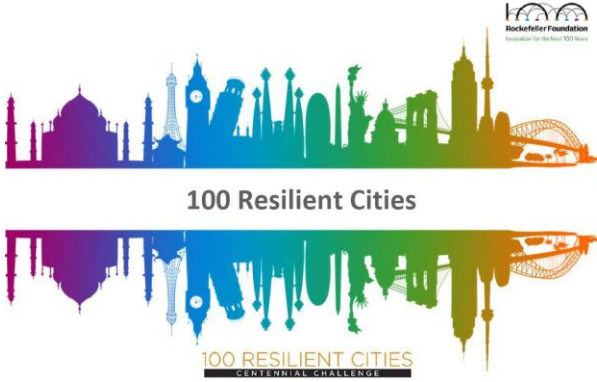
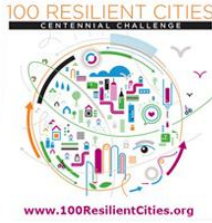
Rotterdam welcomes Delta Cities from around the world



CONNECTING DELTA CITIES



ROTTERDAM RESILIENT CITY



33 Resilient Cities Announced by
Rockefeller Foundation

By: [Judith Rodin](#)

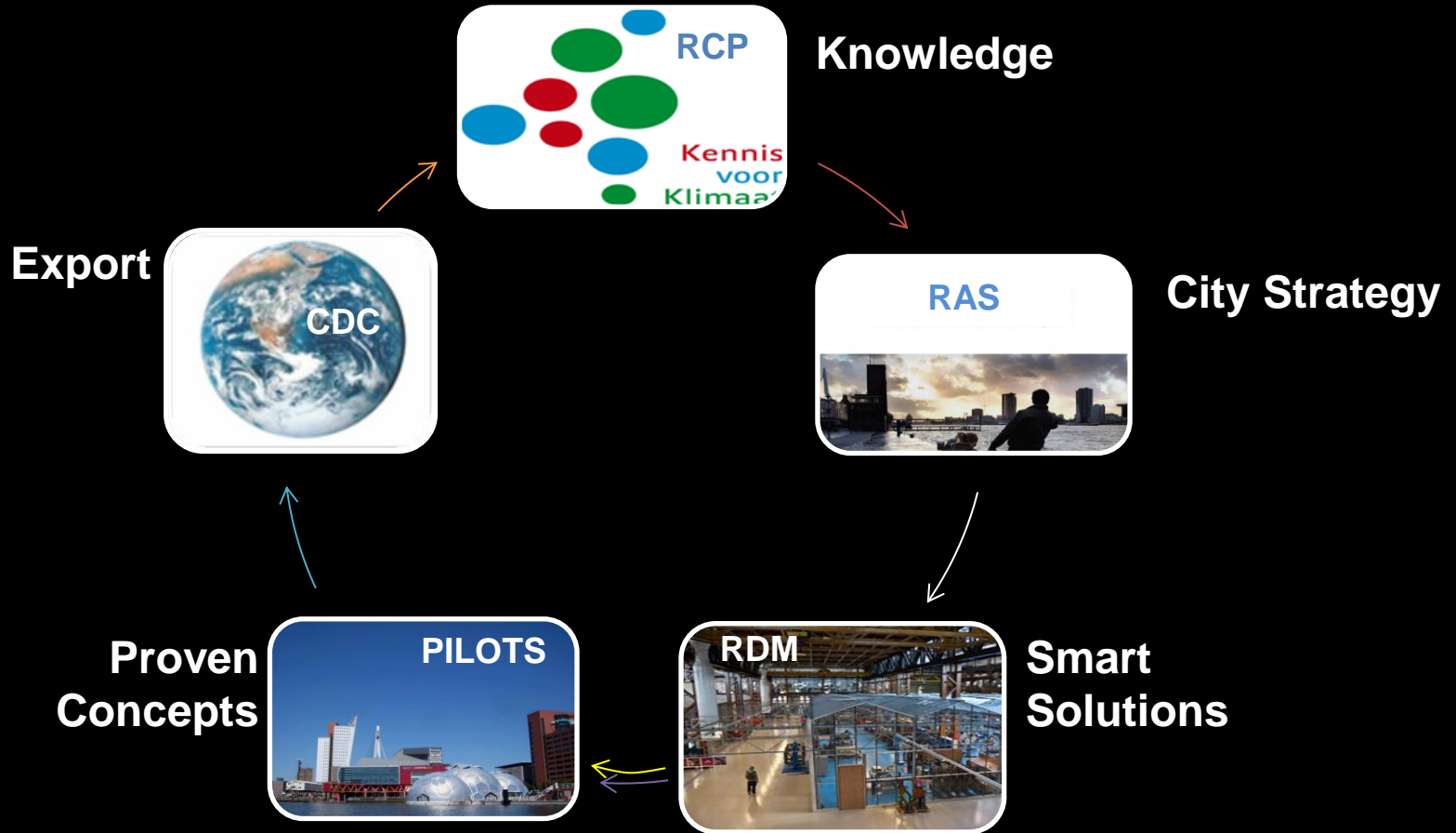


RESILIENT ROTTERDAM



Conclusions

EXPERTISE ROTTERDAM PARTNERS



CENTRE FOR RESILIENT DELTA CITIES

CONCLUSIONS

- We can use the threat of water for strengthening the main ambitions of Rotterdam:

Water is a chance for a more attractive city

- Traditional solutions are not enough anymore: we do need innovations
- We need to do it together!

***Connecting Water
with opportunities***

**WATER CHALLENGES
CLIMATE CHALLENGES
URBAN CHALLENGES
SPATIAL
DEVELOPMENT**

**CLIMATE ADAPTATION IS AN
OPPORTUNITY**

**FOR AN ATTRACTIVE AND
ECONOMICALLY STRONG CITY**



WHAT CAN WE SHARE

- **APPROACH:** HOLISTIC CLIMATE RESILIENCE STRATEGY
- **TOOLS:** RISK ASSESSMENTS, INTERACTIVE CLIMATE ATLAS, CLIMATE GAMES
- **SOLUTIONS:** GREEN INFRASTRUCTURE & WATER SENSITIVE URBAN DESIGN
- **PARTNERS:** WITH A RANGE OF EXPERTISE ABOUT RESILIENT DELTA CITIES
- **ROTTERDAM RESILIENCE PROGRAM:** NEXT LEVEL OF RESILIENT DELTA CITIES

Thank You!



www.rotterdamclimateinitiative.nl



Rotterdam Delta City

Enjoy the app

