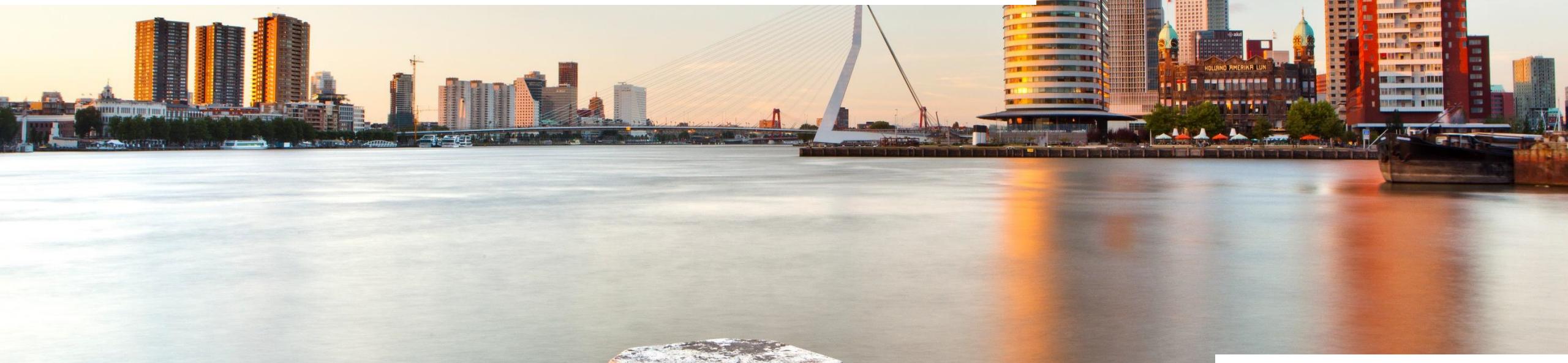




Climate adaptation in Rotterdam Urban design

鹿特丹城市设计中的气候适应



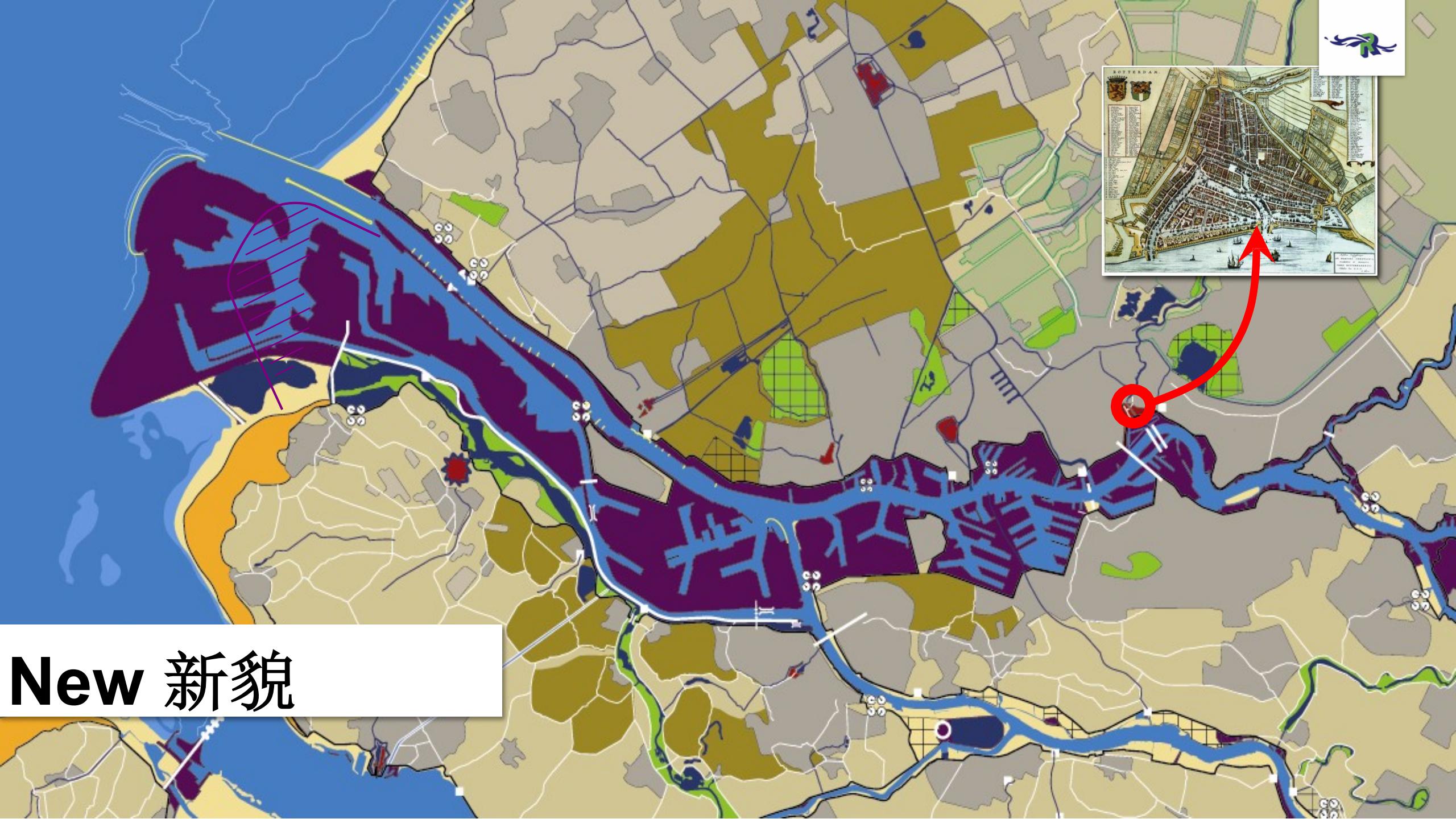
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Thuy Do
Public Works 公共建设
City of Rotterdam 鹿特丹市

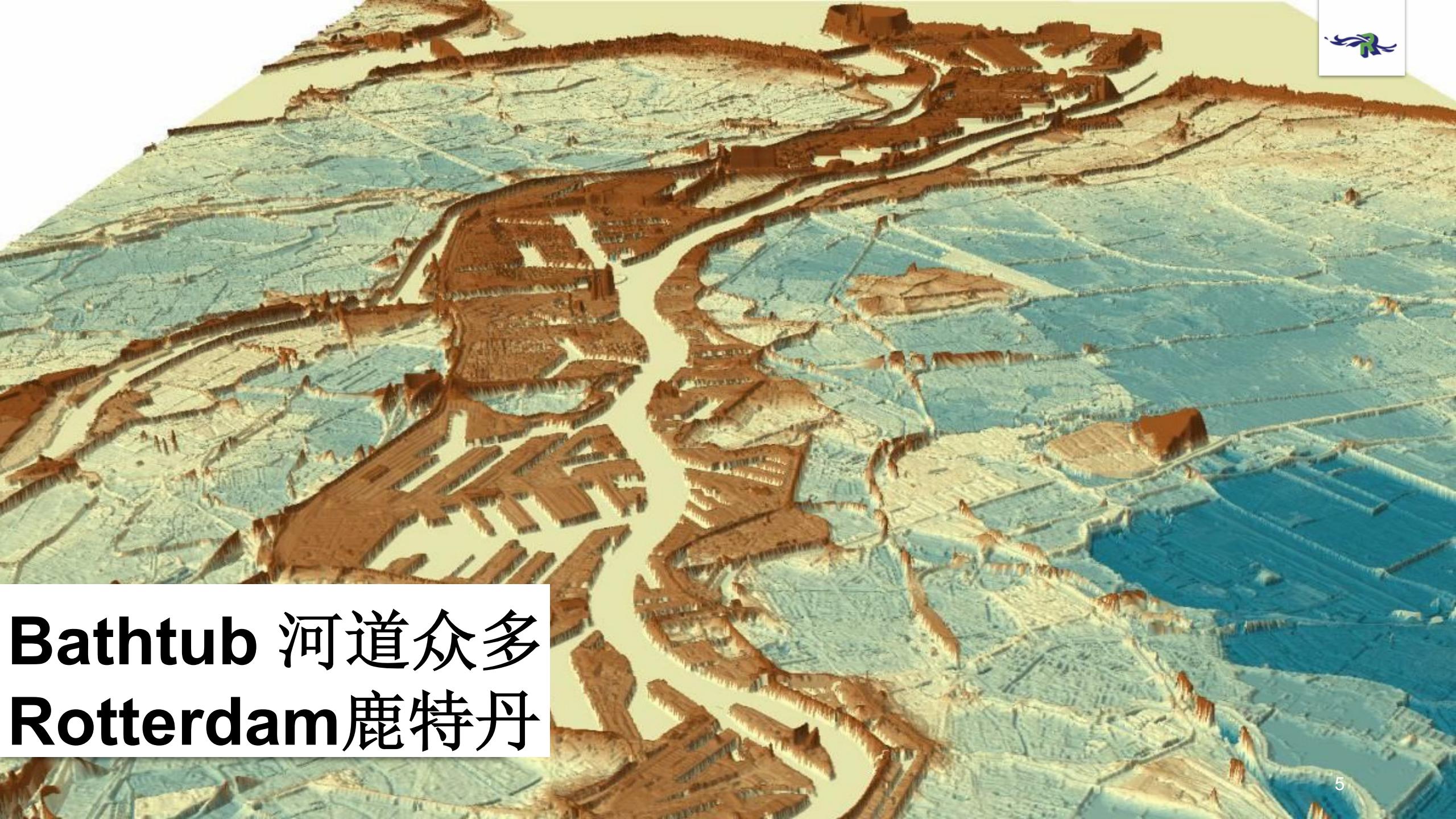


Rotterdam 鹿特丹
delta city 三角洲城市





New 新貌



**Bathtub 河道众多
Rotterdam 鹿特丹**



Old 旧貌



New 新貌



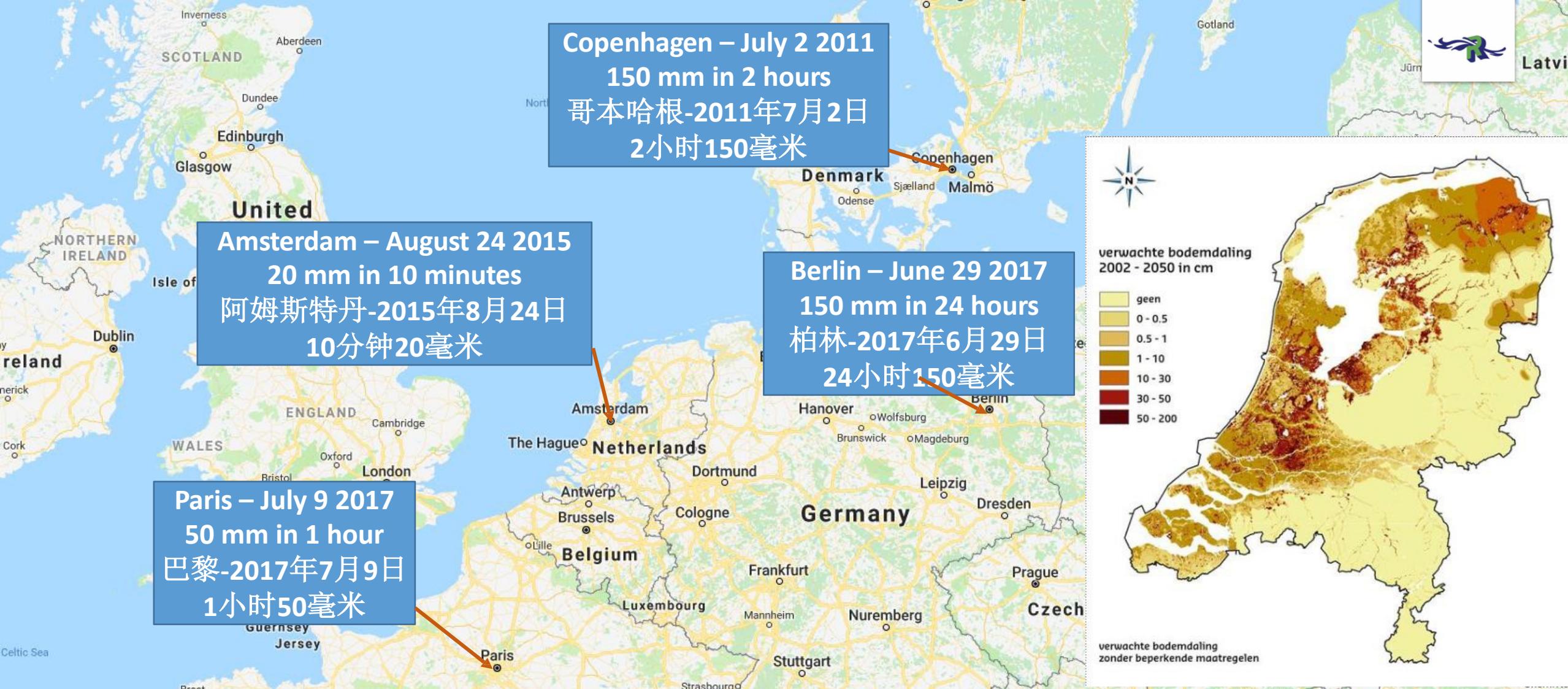
Precipitation 降水

Sea level rise 海平面上升

River Discharge
河流径流

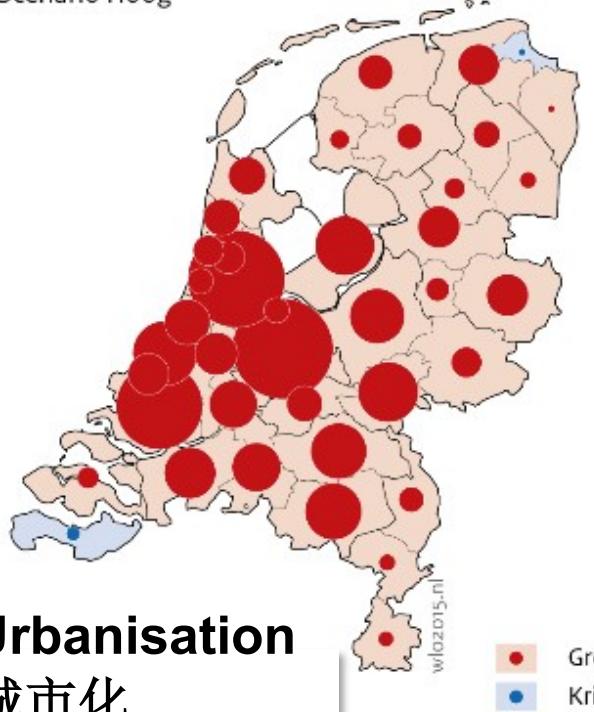
Water 水资源 Challenges 挑战

Groundwater 地下水

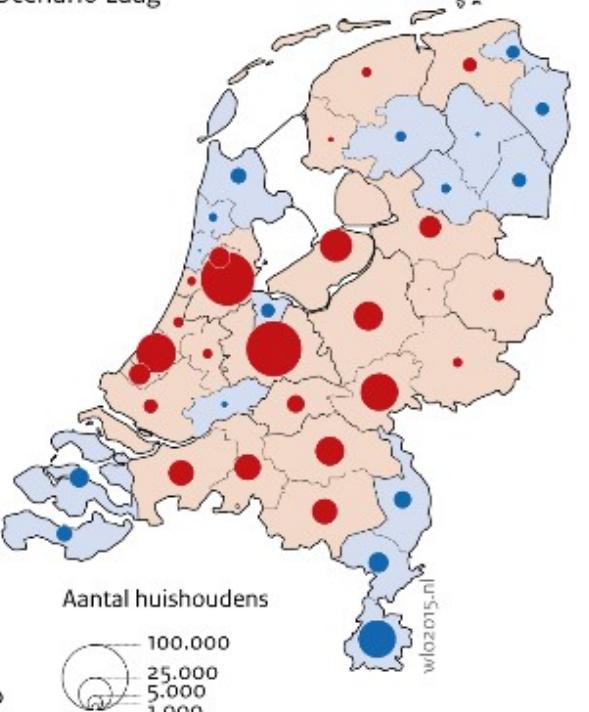


Verandering van aantal huishoudens, 2012 – 2050

Scenario Hoog



Scenario Laag



Urbanisation

城市化

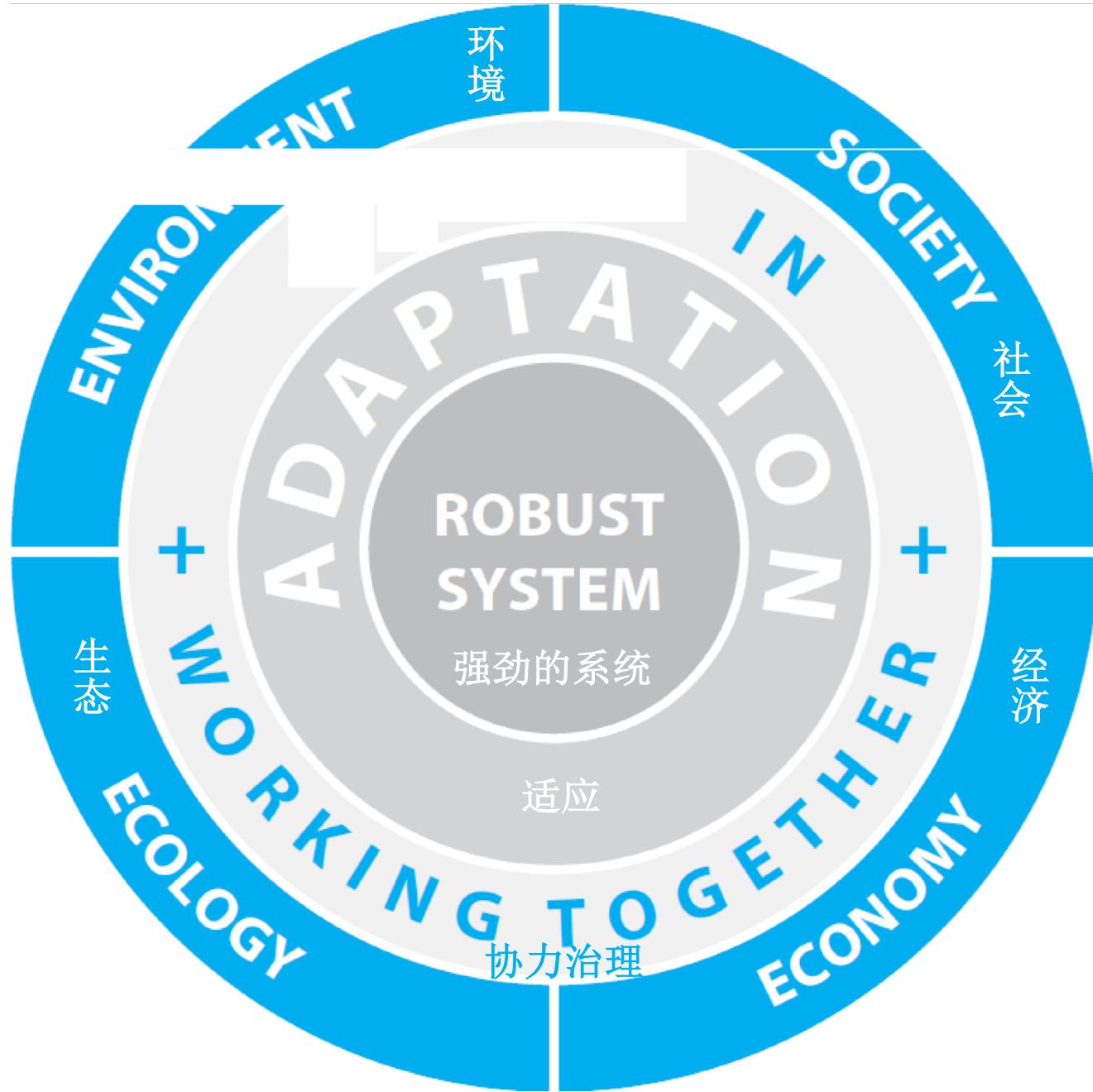


Technology
科技

Economy
经济



Society
社会





7大目标

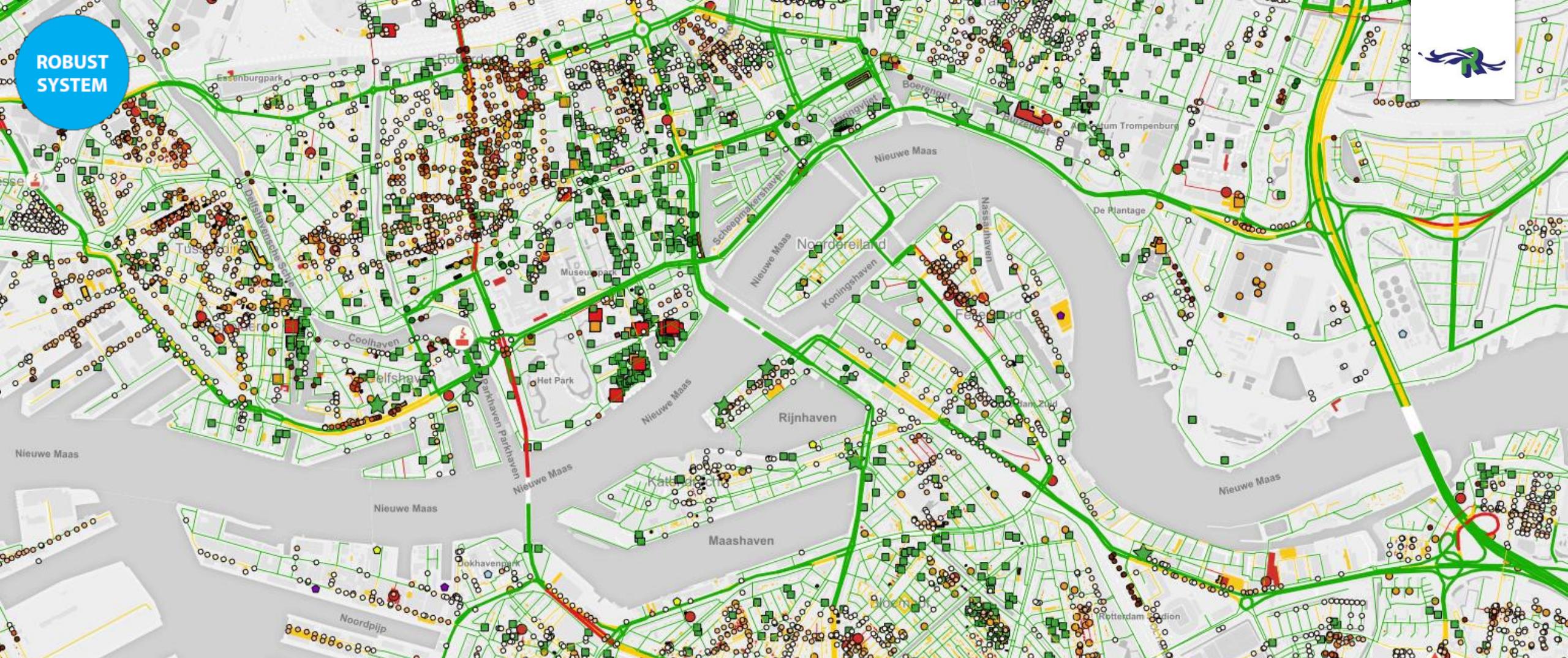
韧性城市和气候防御空间规划

制定实施方案



National Deltaplan 国家三角洲计划 Spatial Adaptation 空间适应





**High detail information about
vital & vulnerable functions**
关于重要但脆弱功能的详细信息

ROBUST SYSTEM

Stress-Tests

压力测试



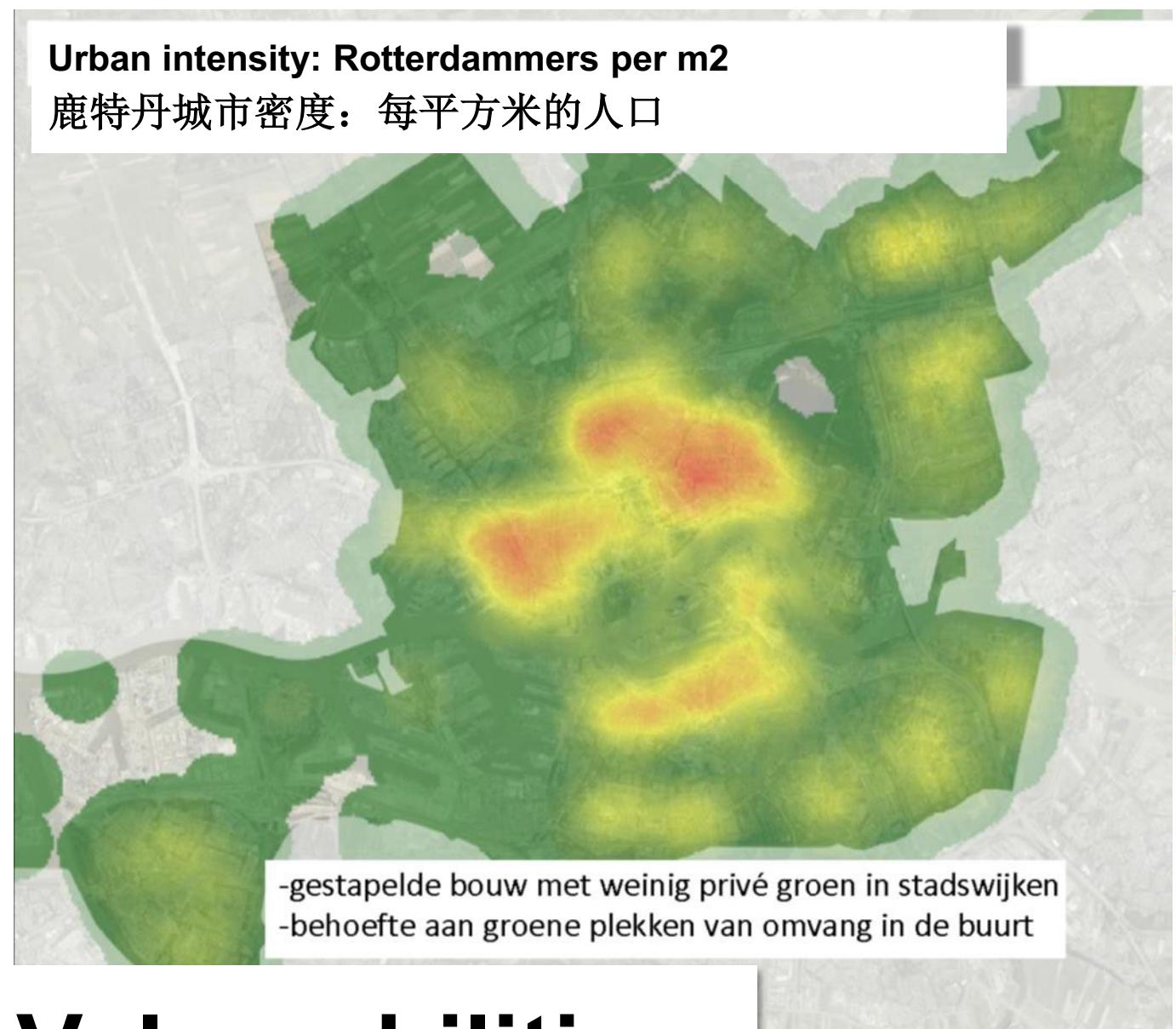
Risk labels
风险标签

blue
label

A
B
C
D
E

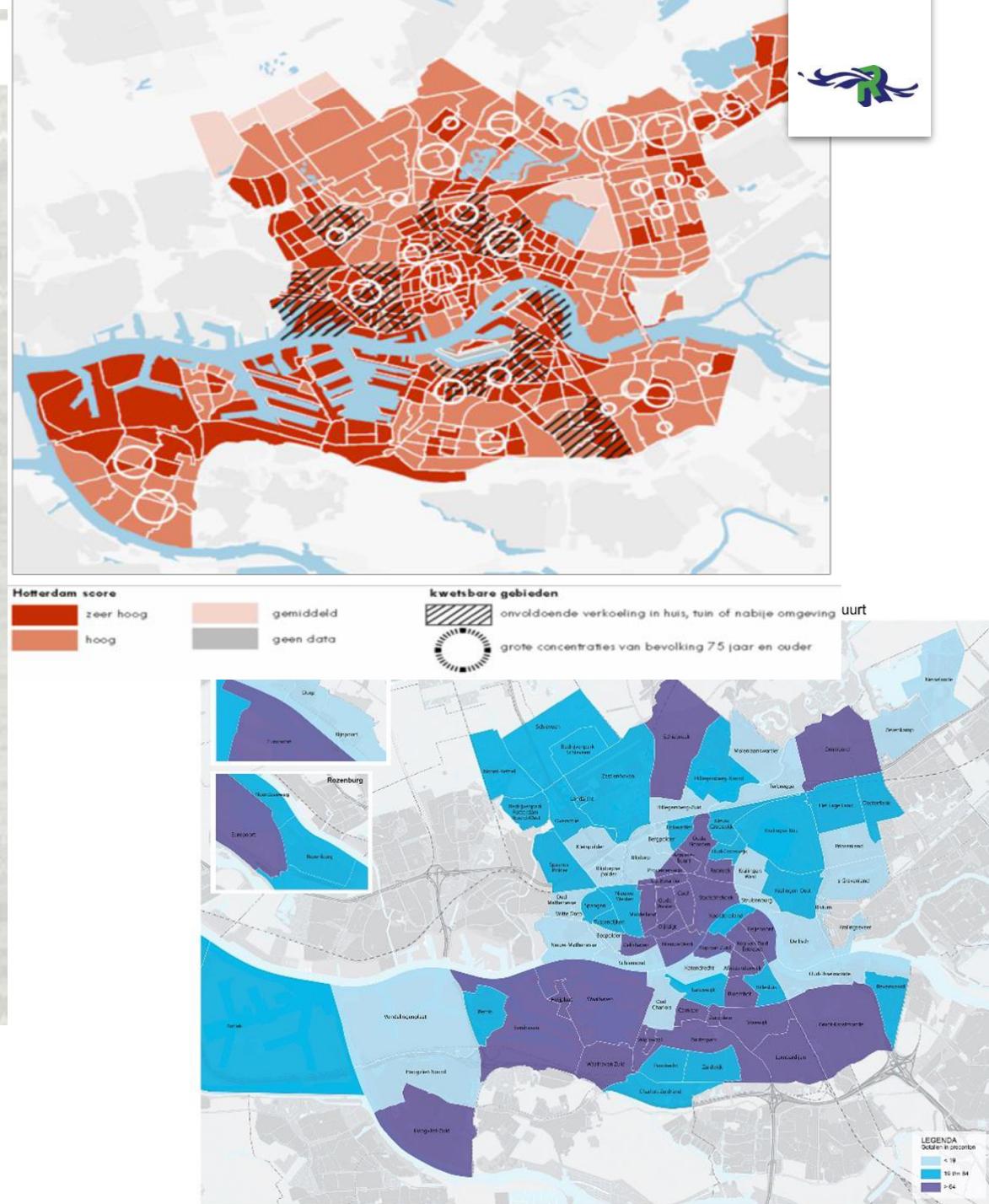
Urban intensity: Rotterdammers per m²

鹿特丹城市密度：每平方米的人口



Vulnerabilities

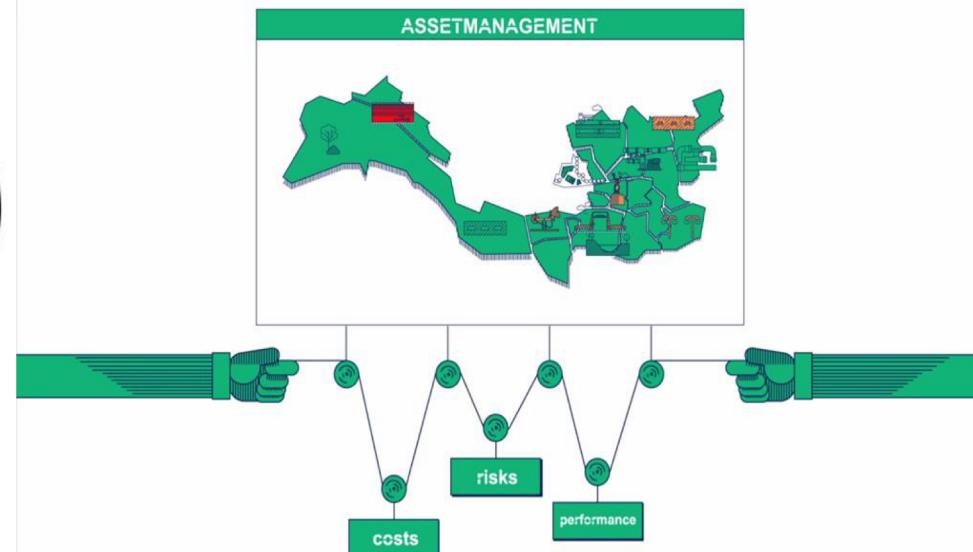
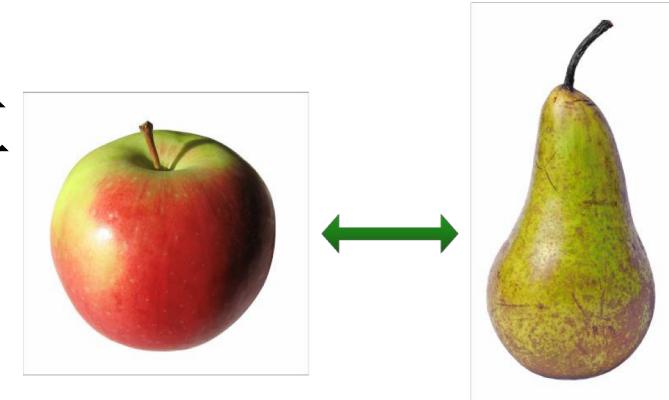
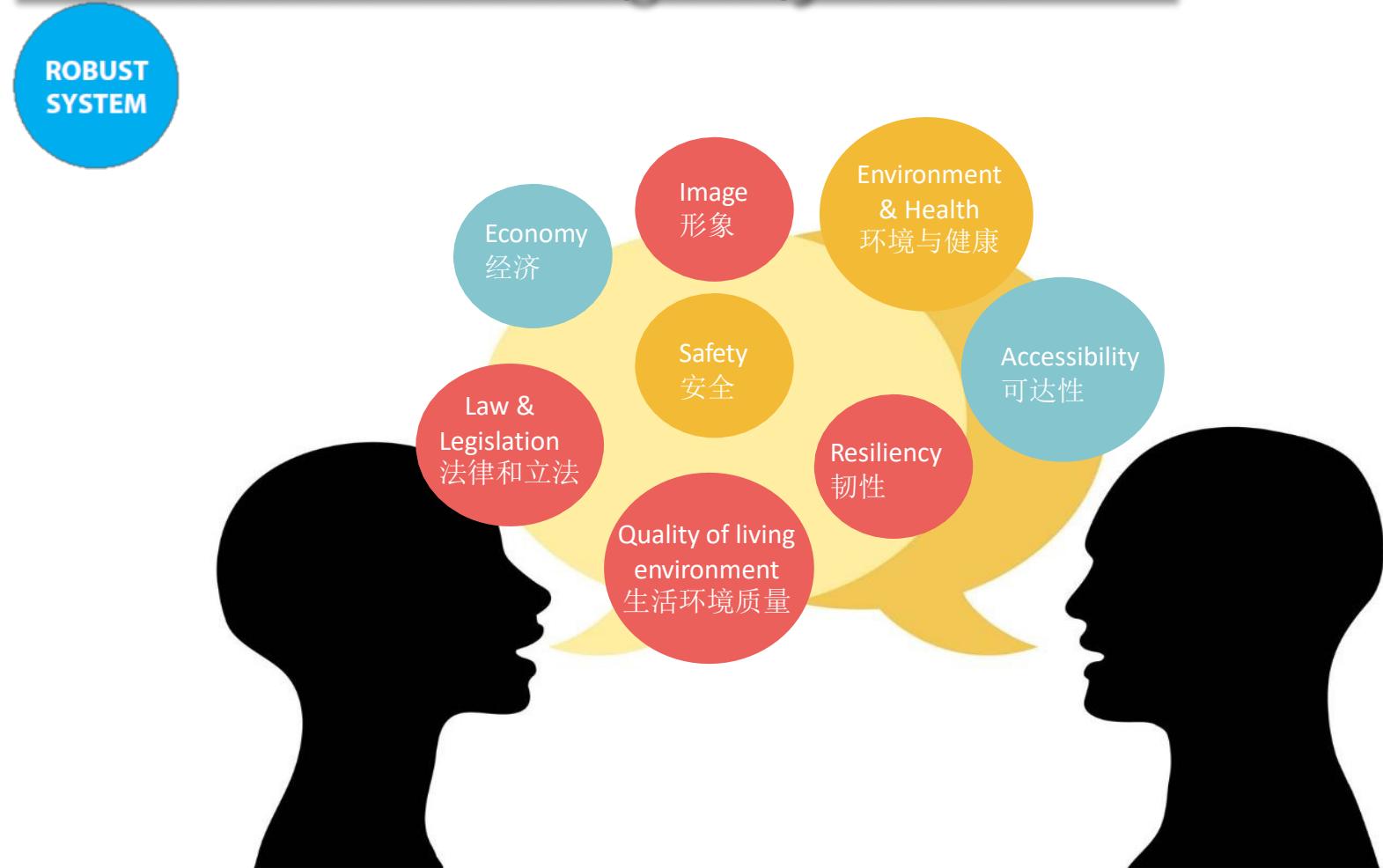
脆弱性





Asset Management 资产管理

- Integrated approach 综合方法
- Consider and weigh **key values** 考虑关键价值



Rotterdam key values

鹿特丹关键价值

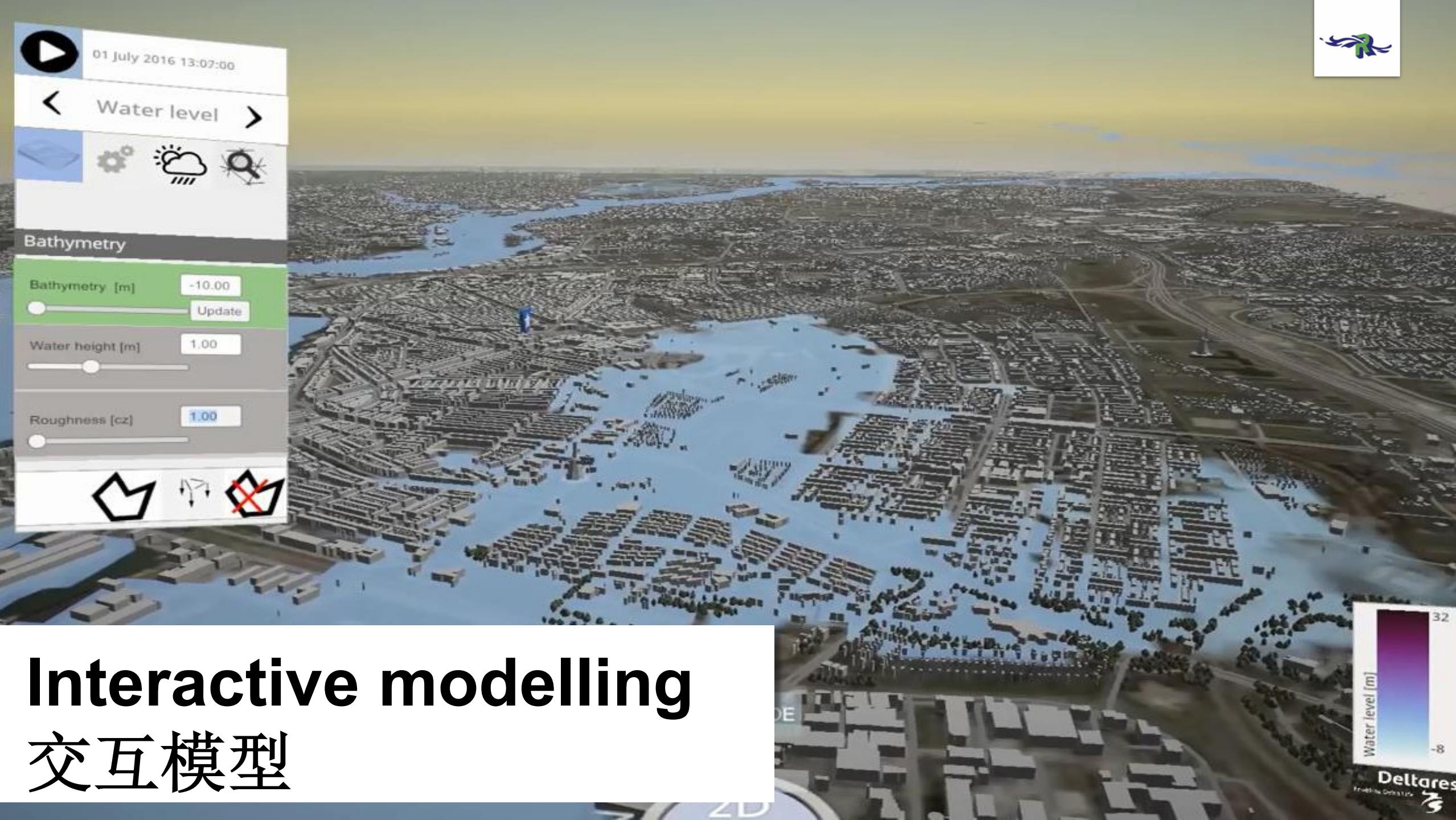




ROBUST
SYSTEM

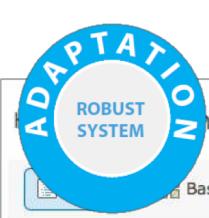
Monitor 监控





Interactive modelling

交互模型



Basiskaart |

Delen

Afdrukken

Meten

Adres of plaats zoeken



Over Content Legenda

Legenda

Onderhoudsbehoefte Riolering

- Integraal korte termijn
- Singulier Korte termijn
- Integraal lange termijn
- Singulier lange termijn
- 11e jaar

Onderhoudsbehoefte groen en spelen (punt)

- Bomen
- Groenprojecten
- Speelplaatsen

Onderhoudsbehoefte Wegen

- Boezemkades
- Fietspaden
- Hoofdinfra
- Natuursteen
- Overig asfalt
- Paden in parken
- Particel onderhoud elementen



Plan ahead

提前规划



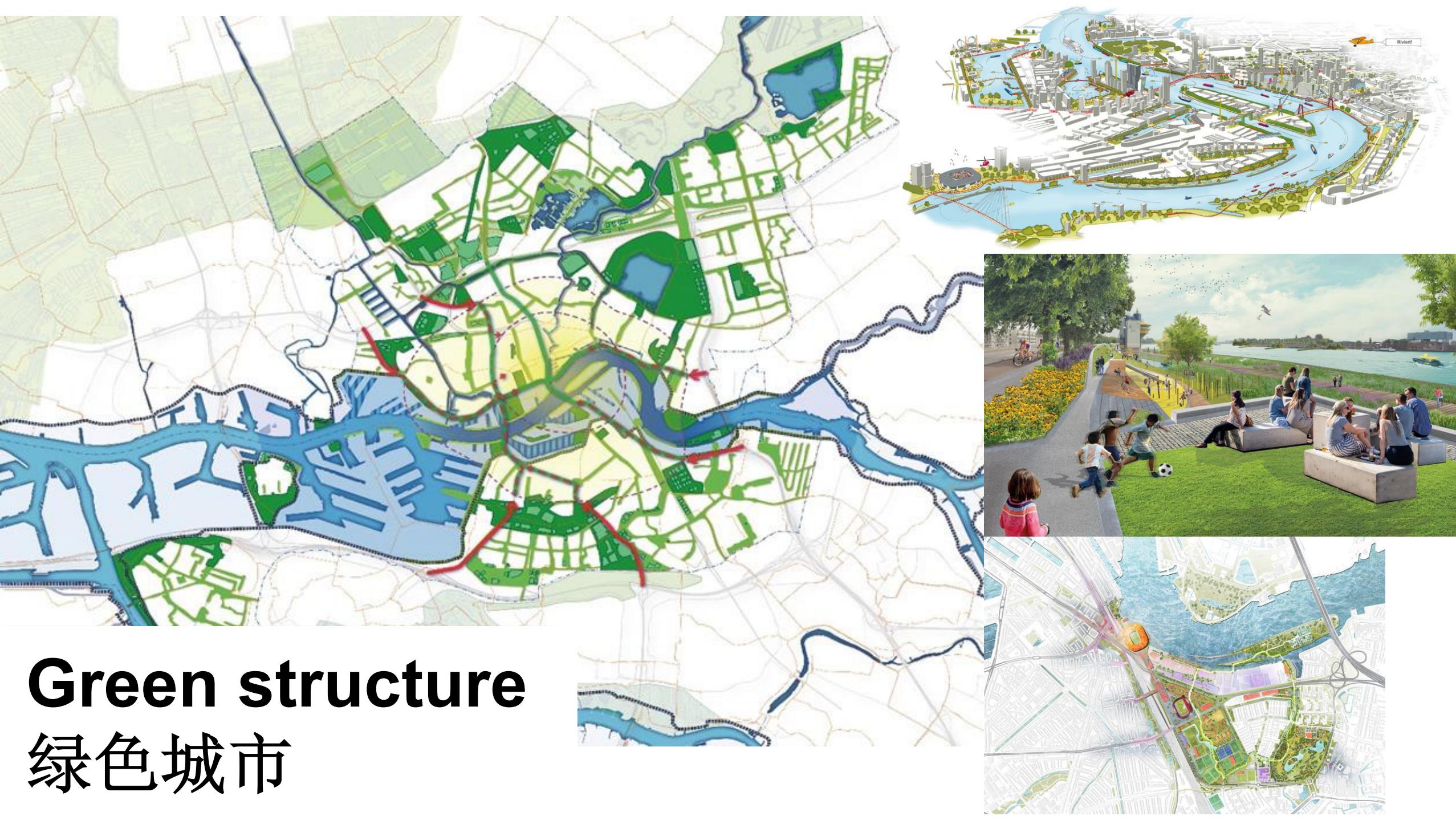
Verstedelijkskansenkaart

- HOV-knopen met inbreidings- en verdichtingskansen
- Verstedelijkszones nabij OV
- Binnenstedelijke verdichtingskansen
- Toekomstige stations met ontwikkelkansen
- Toekomstige HOV-as



Urban Opportunities

城市机会



Green structure

绿色城市



OPPORTUNITIES FOR A SUSTAINABLE ROTTERDAM ROOFSCAPE

Rotterdam has a unique roof landscape created by historic events. After the 2nd world war, a lot of flat roofs have been built ranging from low rise buildings in the harbour to high rise buildings in the city centre. Rotterdam consists of 14.5 km² of flat roofs. All these roofs – From flat to inclined and from large to small – offer much more possibilities than expected. The municipality of Rotterdam wants to encourage citizens to actively use their rooftops. With joint forces, a colourful and unique roof landscape can arise in Rotterdam.

In a busy city with a high density, the roof landscape provides space for a multifunctional use. A potential that demands to be exploited. Rotterdam has challenges in terms of water storage, cooling and greening the city and generating sustainable energy. The roofs of the city offer plenty of space to deal with these challenges. The Rotterdam roof landscape is also perfectly suitable for urban activities, such as private terraces and public rooftop parks.



DIFFERENT TYPES OF SUSTAINABLE ROOFS



Green roofs are vegetated roofs. These can be extensive; for example a sedum roof or a grass roof. An intensive green roof is accessible and contains a broad mix of plants.



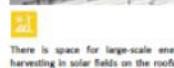
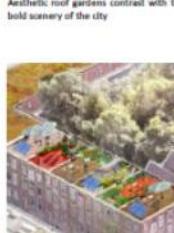
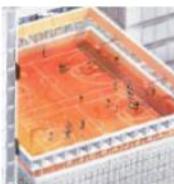
Blue roofs buffer extra rainwater in times of heavy precipitation. These roofs often have a special collecting system below a layer of vegetation.



Red roofs are actively used for purposes such as sports, parties, meetings and receptions.



On yellow roofs sustainable energy is generated, e.g. with solar panels or urban wind turbines.



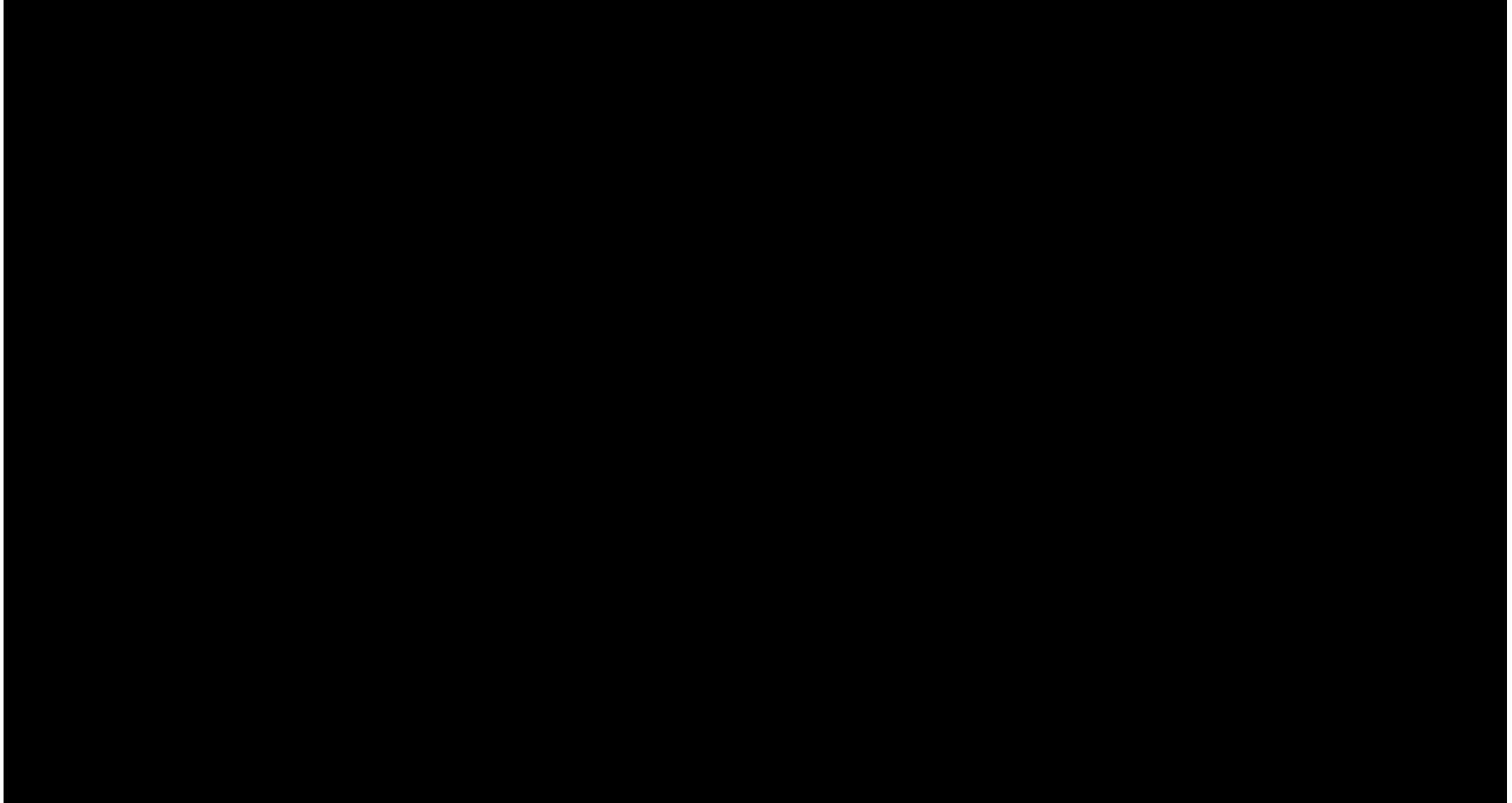


Integrated Design

综合设计



Water storage Robert Fruinstraat Rotterdam 蓄水



<https://youtu.be/XJ0MOeP6bWI>

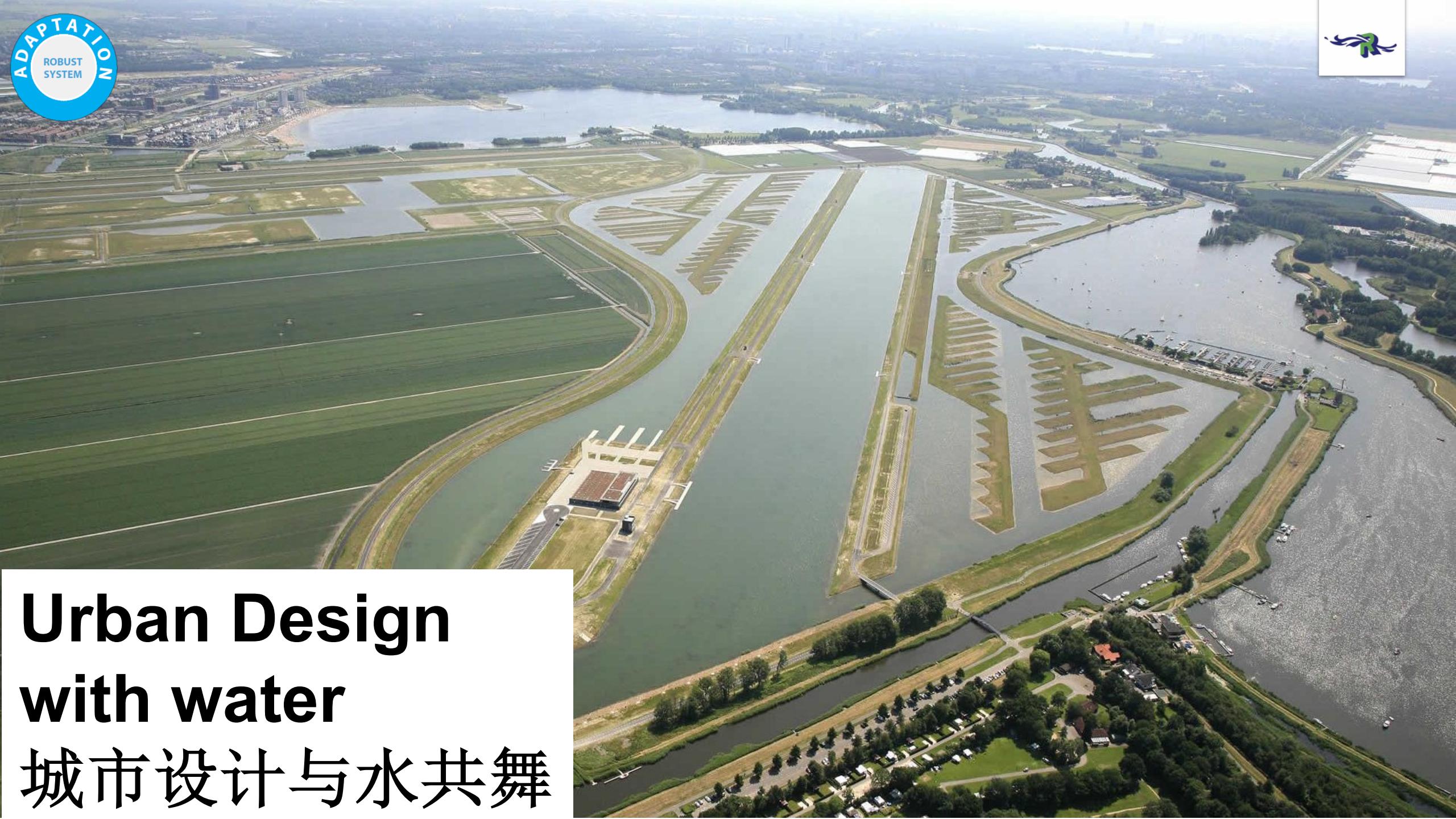


Building with nature 与自然融合



Multifunctional design

多功能设计



Urban Design with water

城市设计与水共舞



WORKSHOP 1

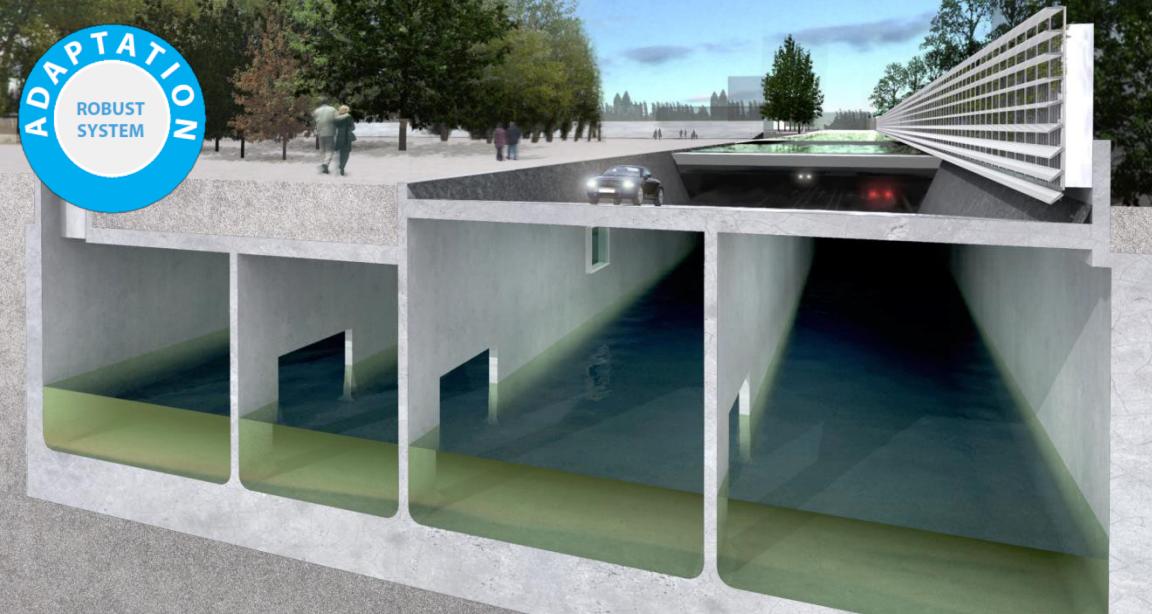


WORKSHOP 2



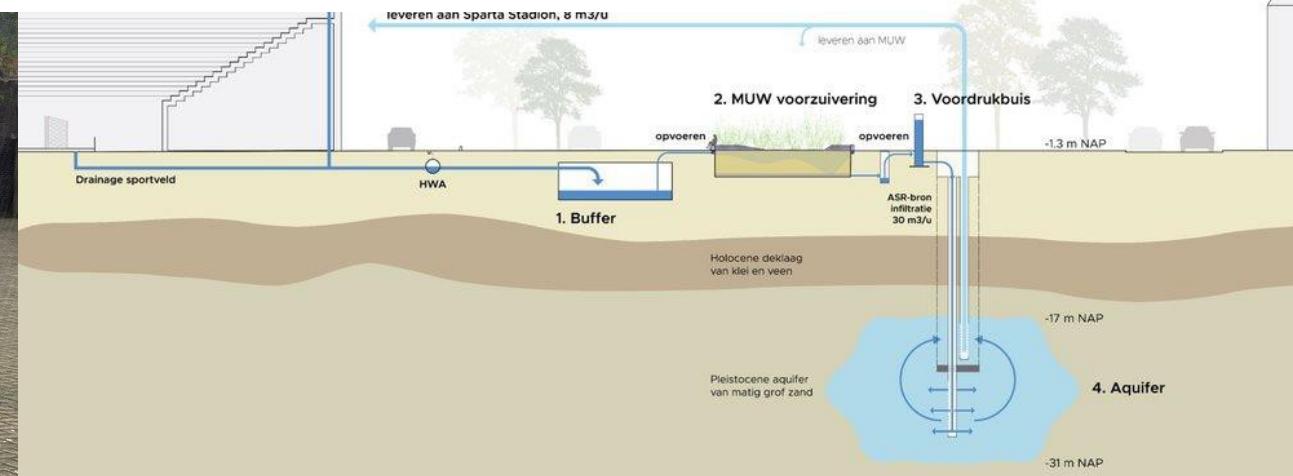
Designed by participation 参与式设计

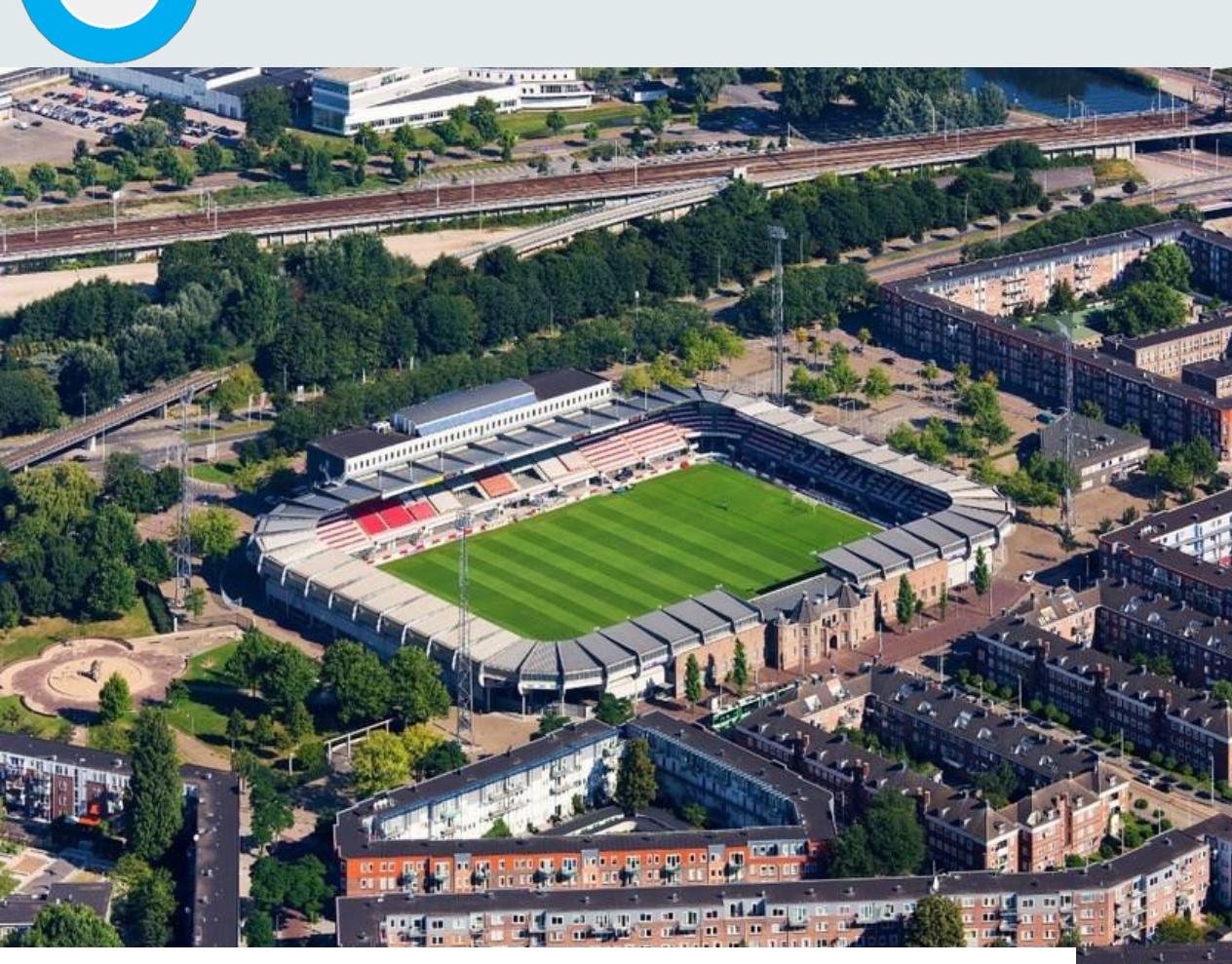




Underground storm water retention

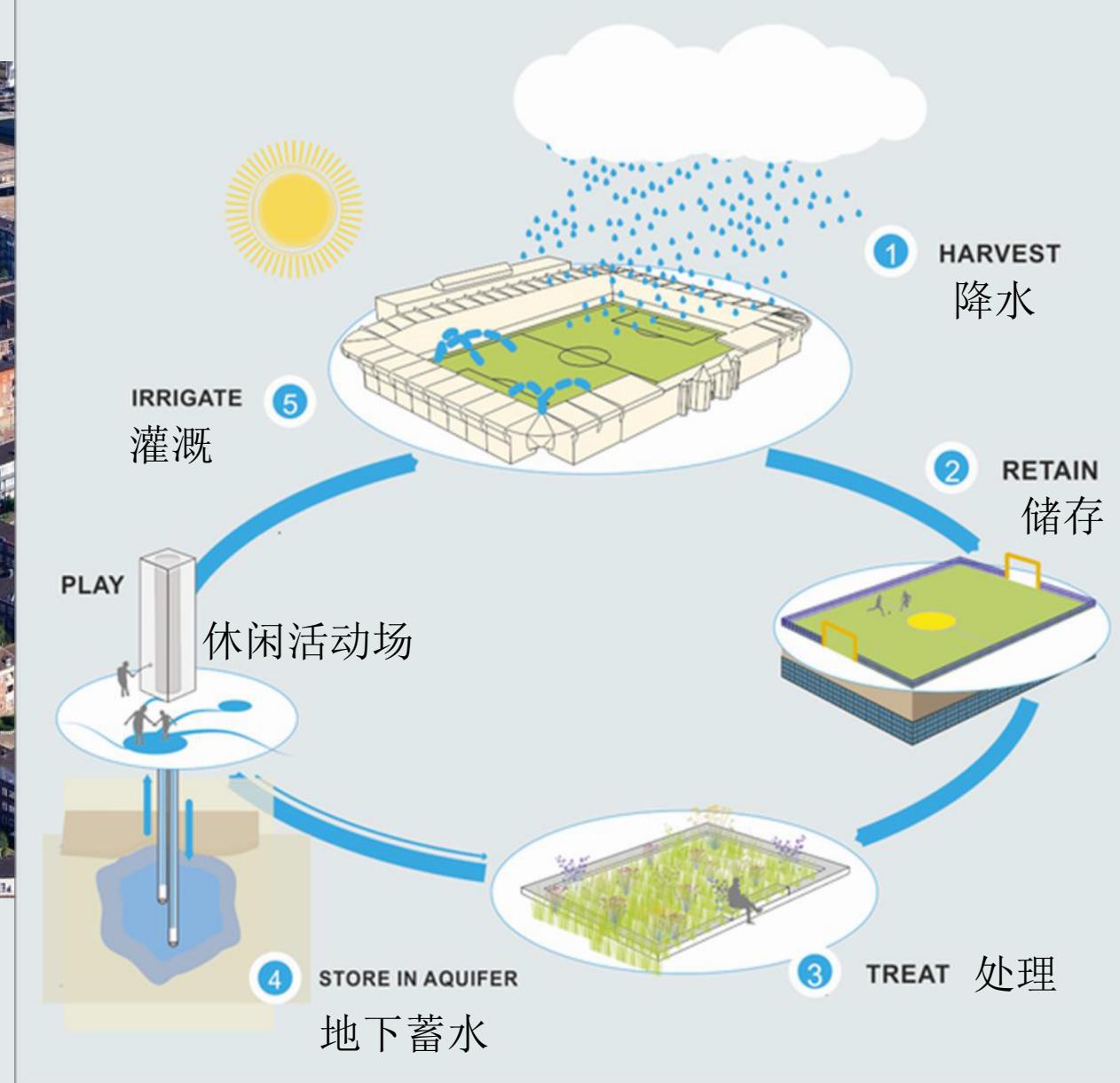
地下雨水储存





Urban Waterbuffer

城市水缓冲





Transformation 改造



Dry 晴天



Wet 雨天



Permeable Pavement

透水路面

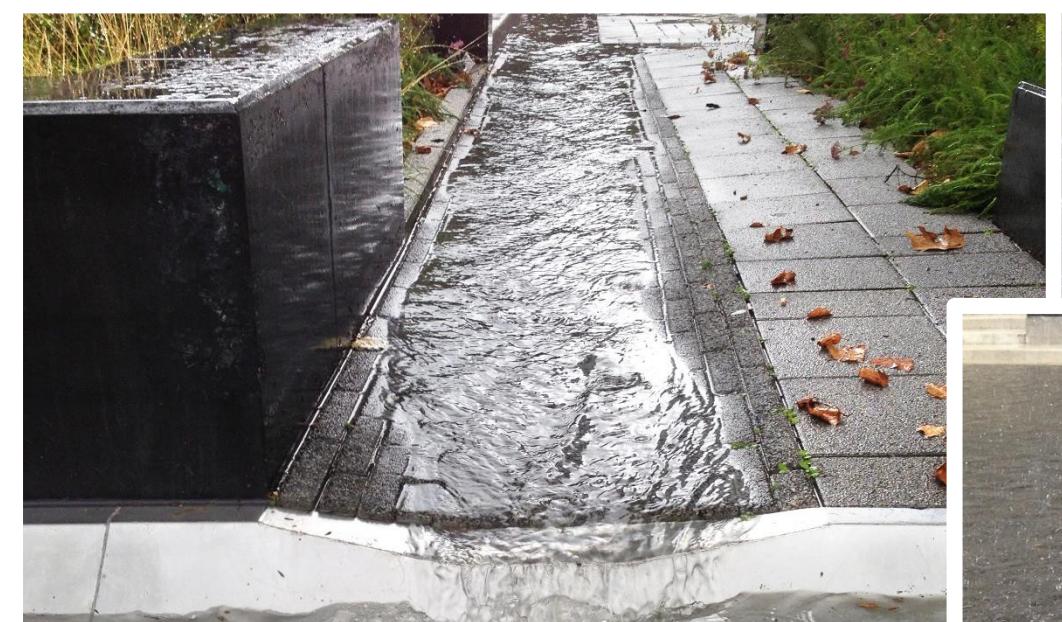




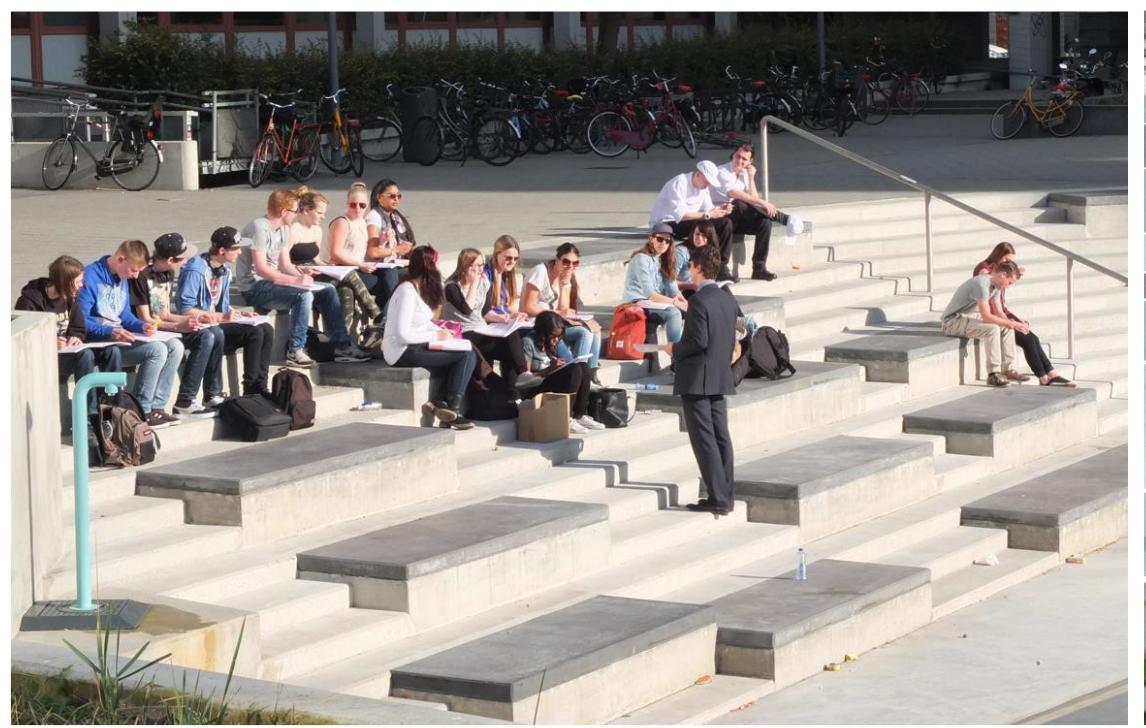
Water Square

水广场





During rain
下雨时



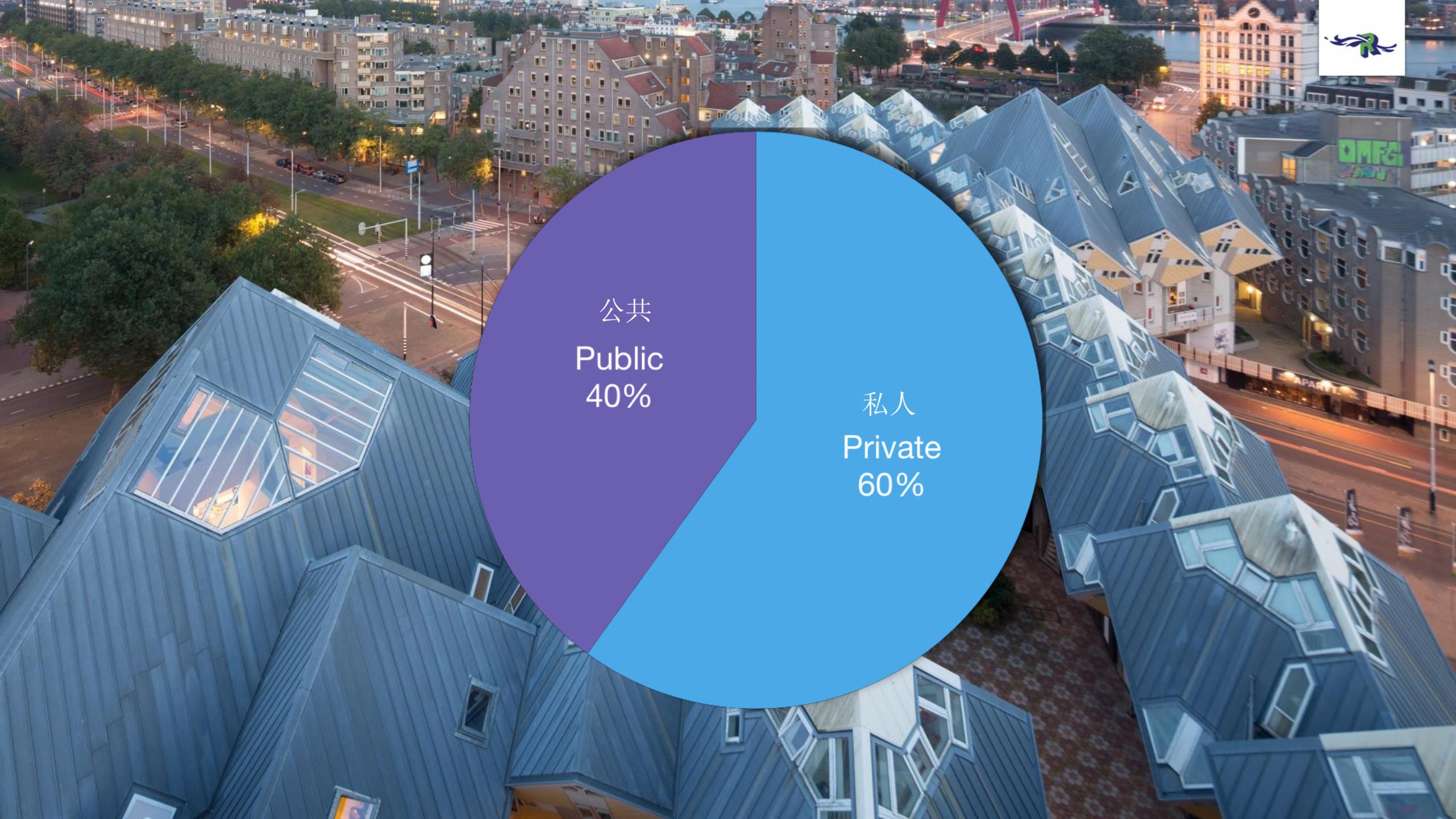
Daily use
日常使用



An aerial photograph of a city at dusk or night, showing modern residential buildings with illuminated windows, a bridge over a river, and a road with light trails from traffic.

公共
Public
40%

私人
Private
60%



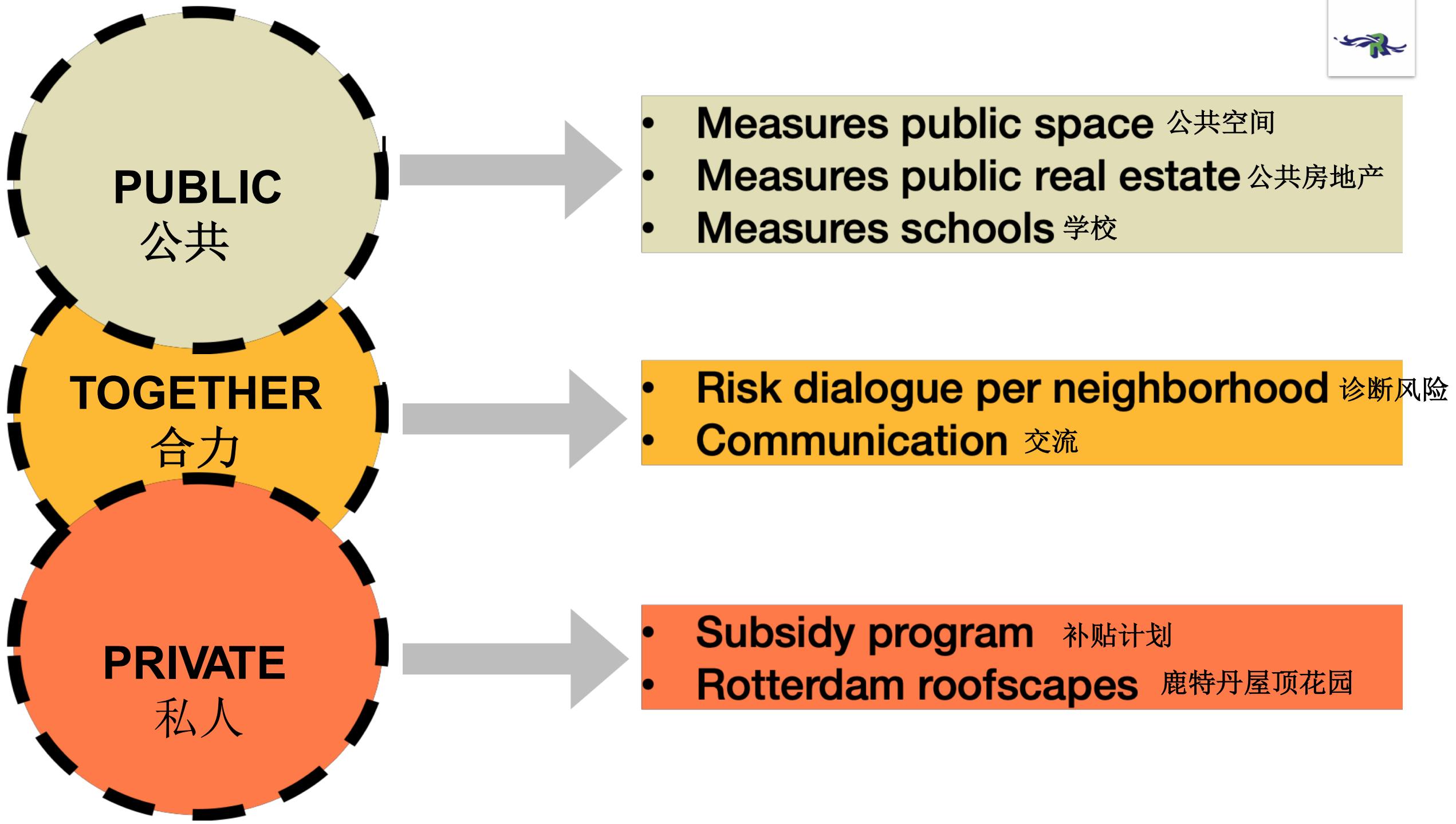


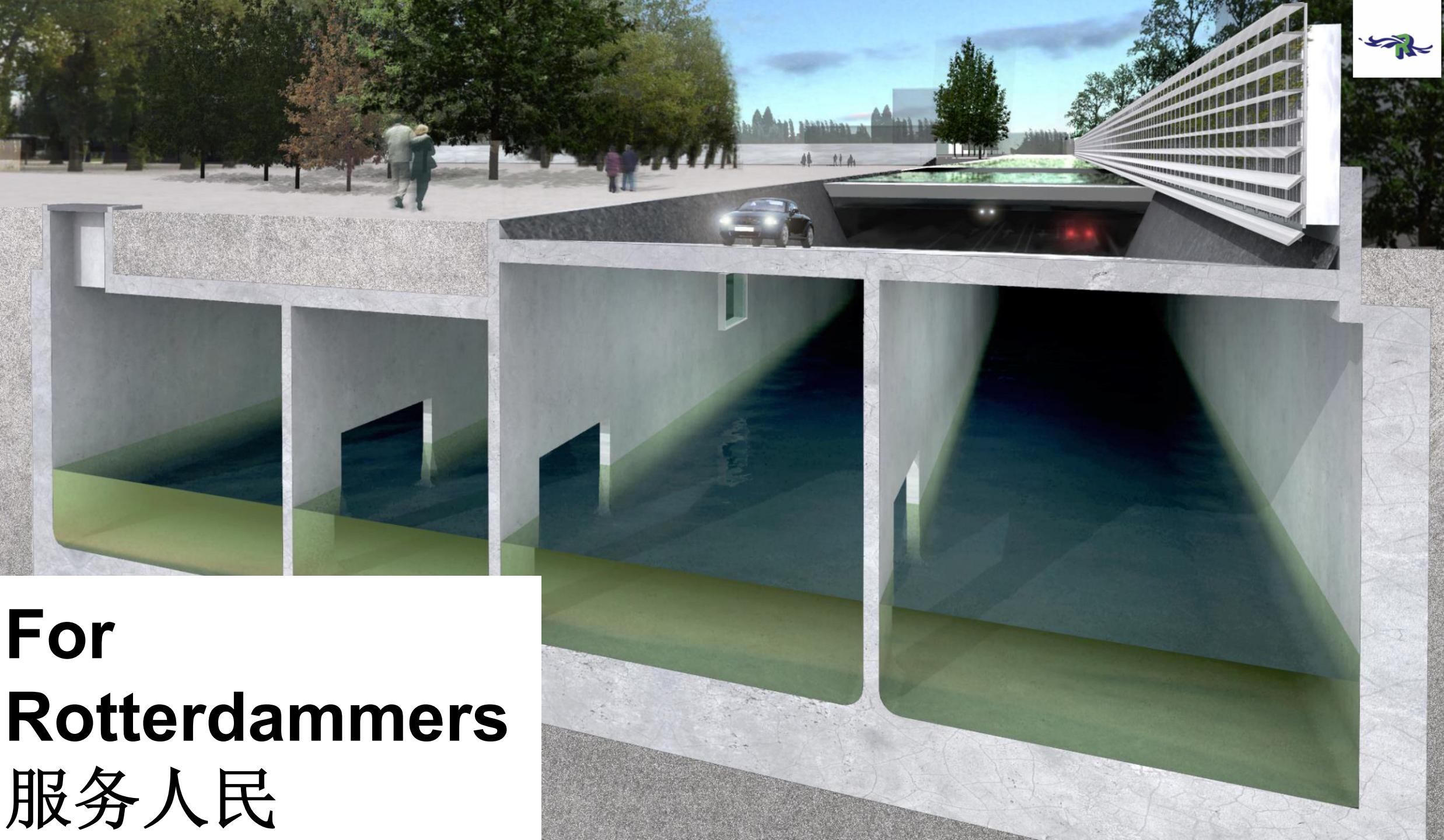
46%
Social
Housing
社会住房

19%
Private
Renters
私人出租

35%
Private
Owners
私人拥有







For
Rotterdammers
服务人民



With
Rotterdammers
大众参与





By
Rotterdammers
人民创造

Trending topic

Staying dry. Efforts to make the city – which lies below sea level – fully climate-proof by 2035 include water plazas that double as playgrounds, car park water storage tanks and environmentally sustainable floating houses.

热门话题

防范雨洪。为了在2035年前实现完全不受气候灾害影响，这座位于海平面以下的城市所采取的措施包括：建造兼作游乐场的水广场、兼作停车场的储水罐、以及具有环境可持续性的可浮动的房屋

Spin off 最后

services between London and Amsterdam will start stopping at Europe's busiest port, making a visit even easier.

me more

to smithereens during WWII, the Netherlands' second-biggest city became a canvas for
sult is a laboratory of experimental buildings fringed by this historic city's surviving heritage
eum Rotterdam inside the Koolhaas-designed Timmerhuis – and later in the year Eurostar
t stopping at Europe's busiest port, making a visit even easier.

WHAT'S YOUR
TRAVEL
DESTINY?

[TAKE THE QUIZ >](#)



Questions? 问题?