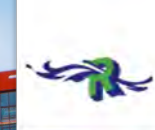


Адаптация к климатическим изменениям в проекте городского строительства г. Роттердам



This is not an ADB material. The views expressed in this document are the views of the author/s and/or their organizations and do not necessarily reflect the views or policies of the Asian Development Bank, or its Board of Governors, or the governments they represent. ADB does not guarantee the accuracy and/or completeness of the material's contents, and accepts no responsibility for any direct or indirect consequence of their use or reliance, whether wholly or partially. Please feel free to contact the authors directly should you have queries.

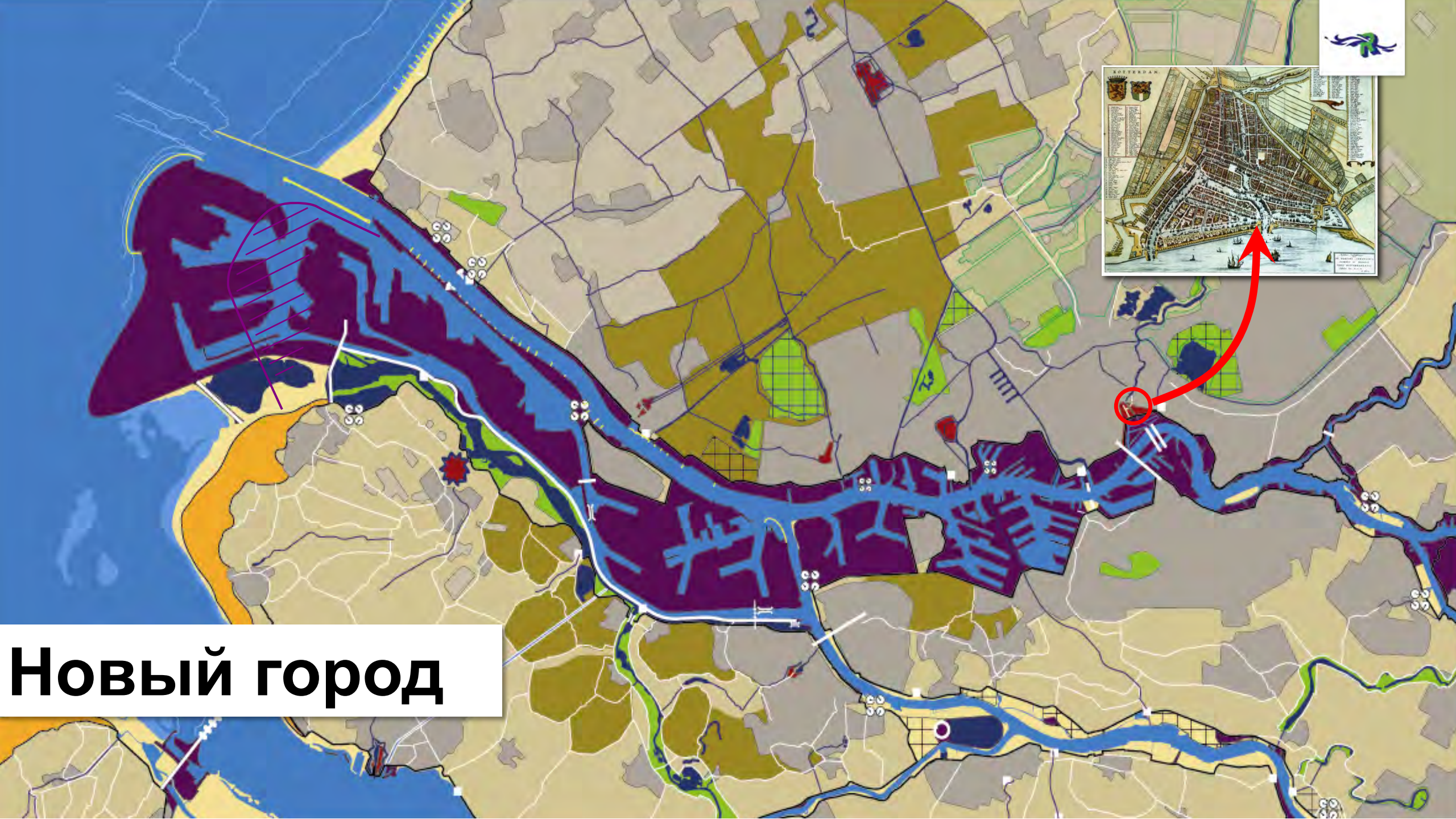
Туй До
Коммунальные услуги
г. Роттердам



Роттердам дельта-город



Новый город





Каналы г. Роттердам



Старый город



**Современный
город**



Осадки



Расход воды в
реке



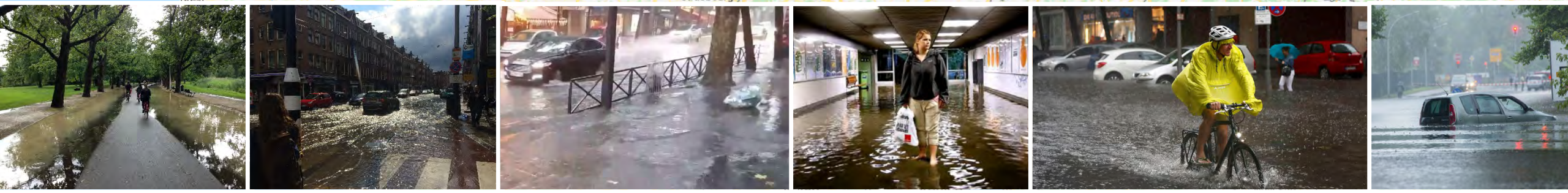
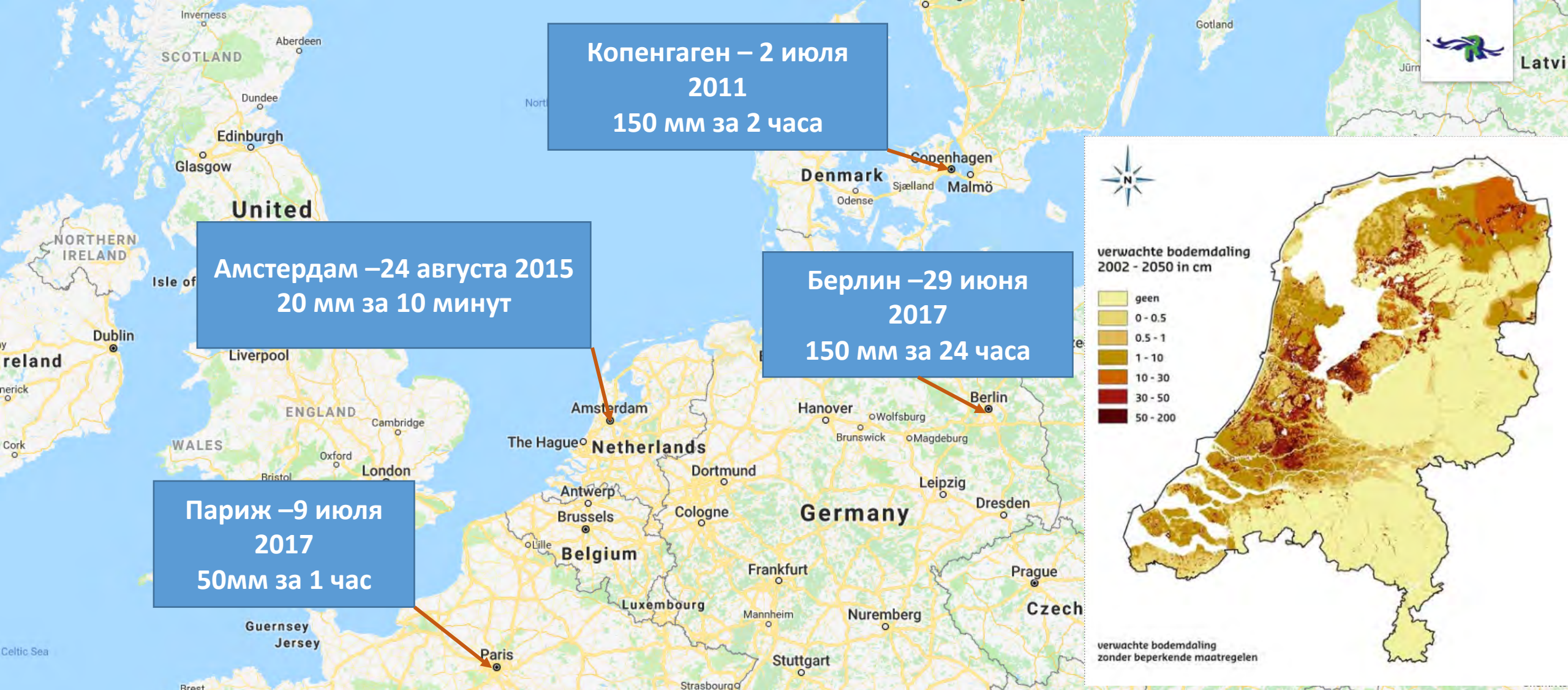
Повышение уровня
моря



Проблемы с уровнем воды

Подземные воды

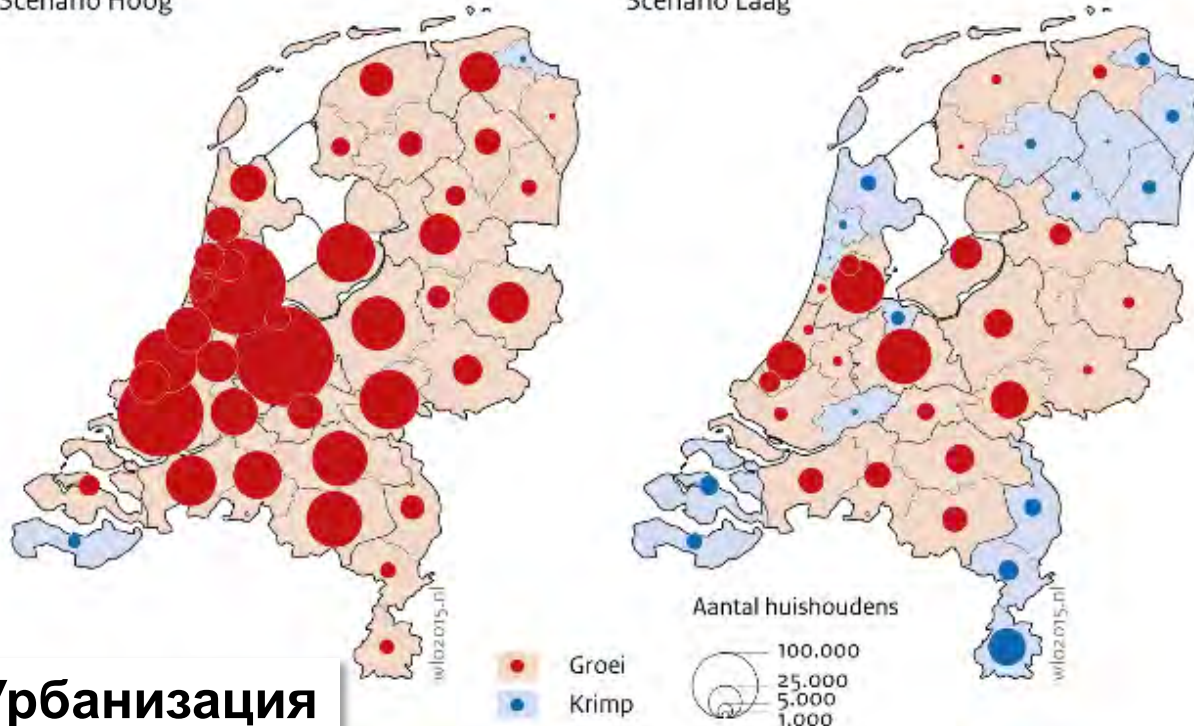




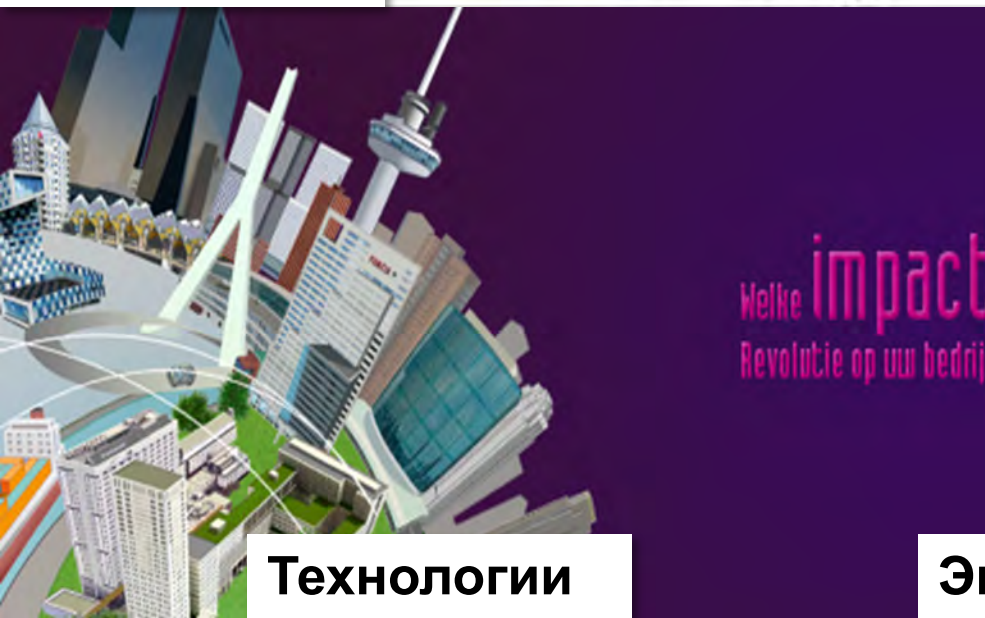
Verandering van aantal huishoudens, 2012 – 2050

Scenario Hoog

Scenario Laag

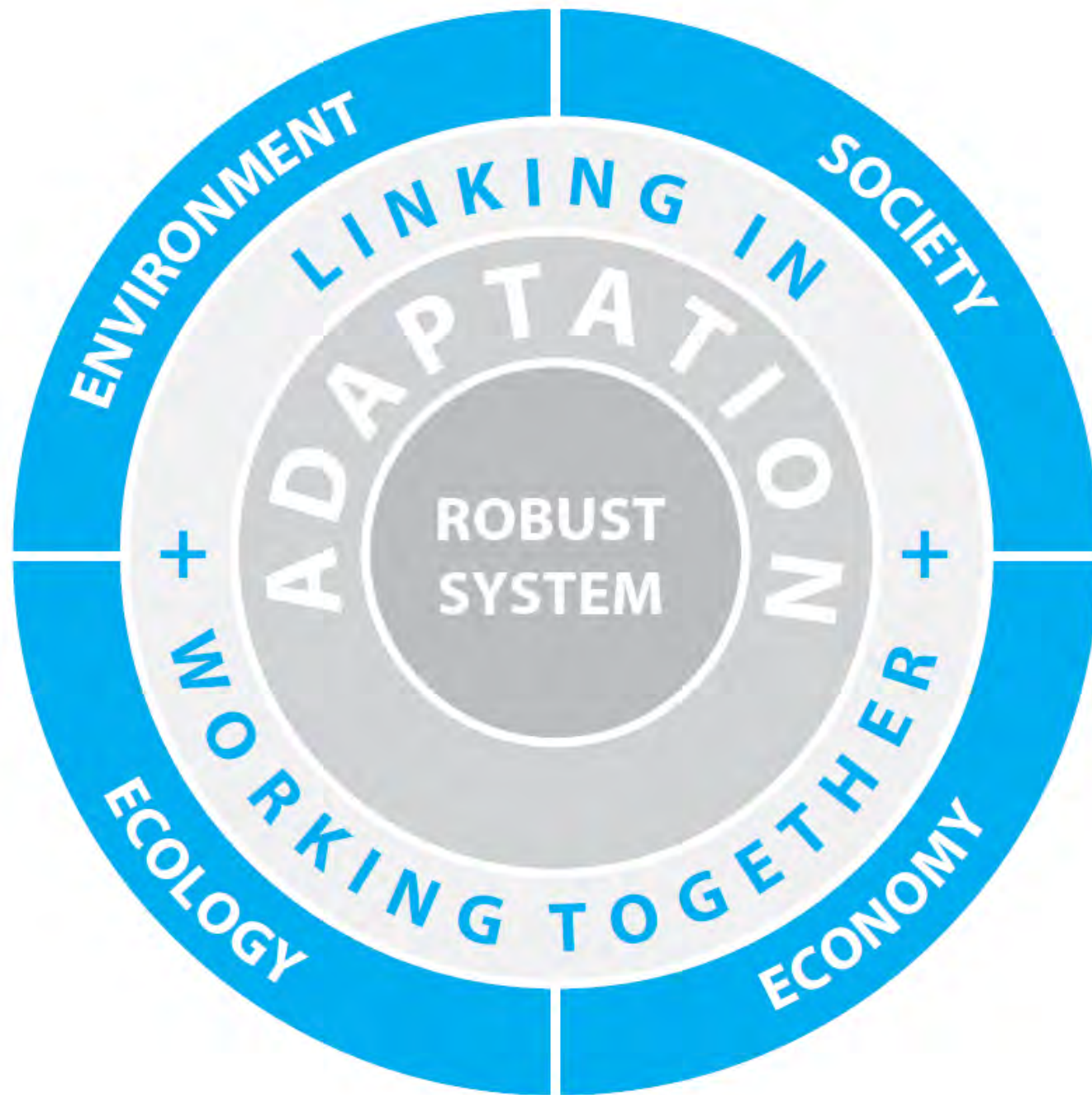


Урбанизация



Экономика





Robust and resilient



Protection and moving in tune



Delta works and small-scale projects



Technology and nature

7 ambitions

Water-resilient and
climate-proof spatial
planning in the Netherlands



Национальный дельта-план
Пространственная адаптация

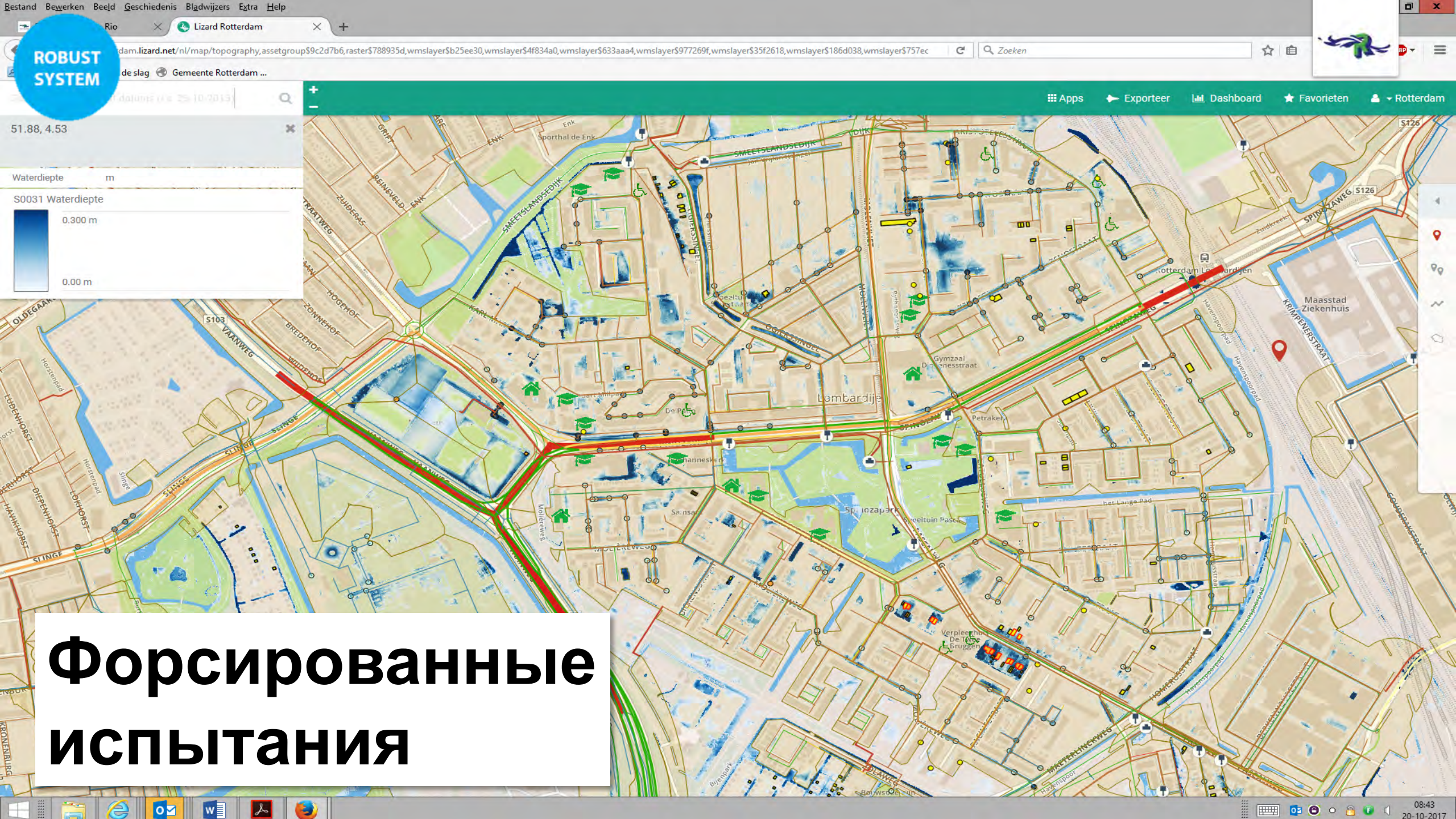
ROBUST
SYSTEM





ROBUST
SYSTEM

**Подробная информация об
критически важных и
уязвимых функциях**



Форсированные
испытания

ROBUST
SYSTEM

blue
label

A

B

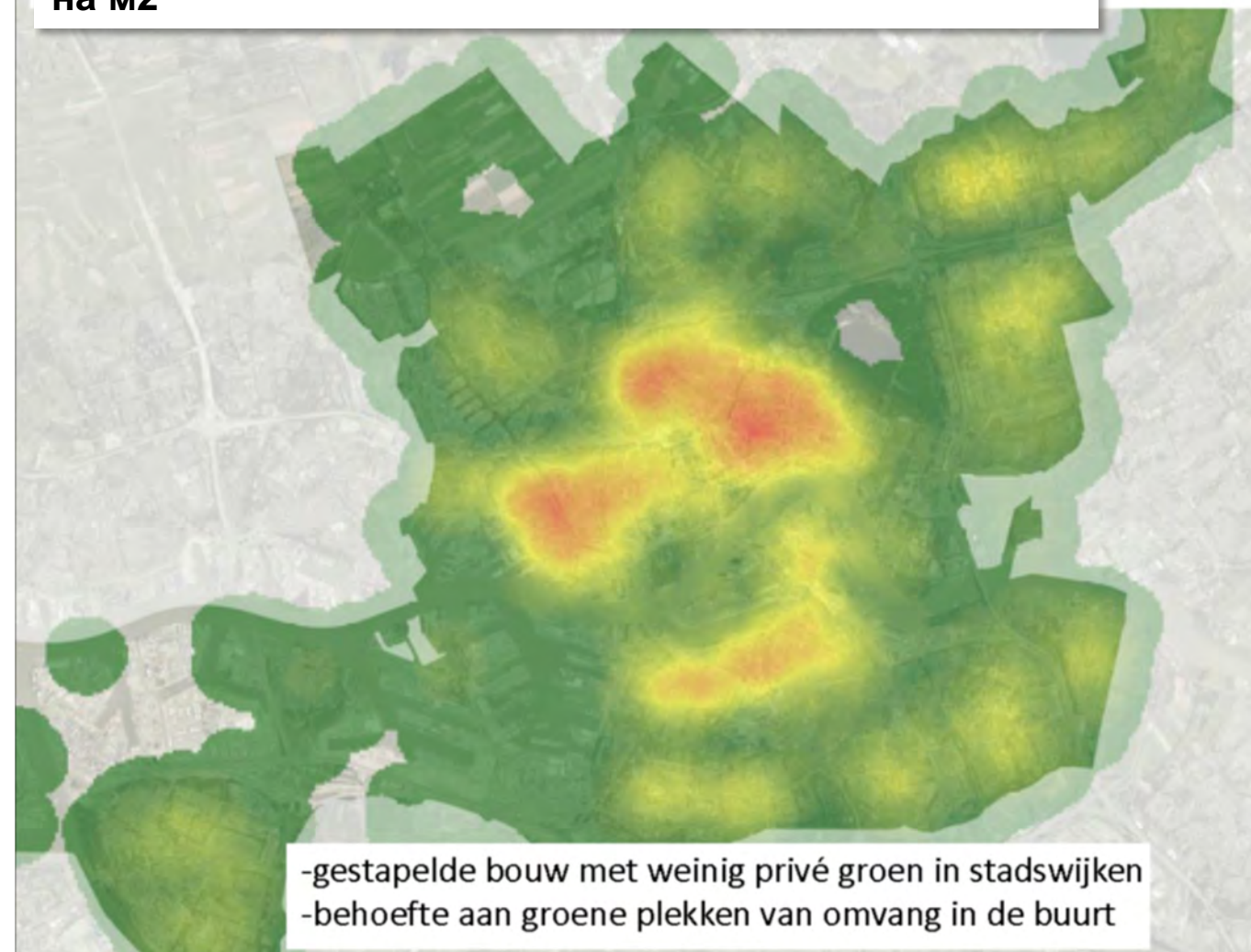
C

D

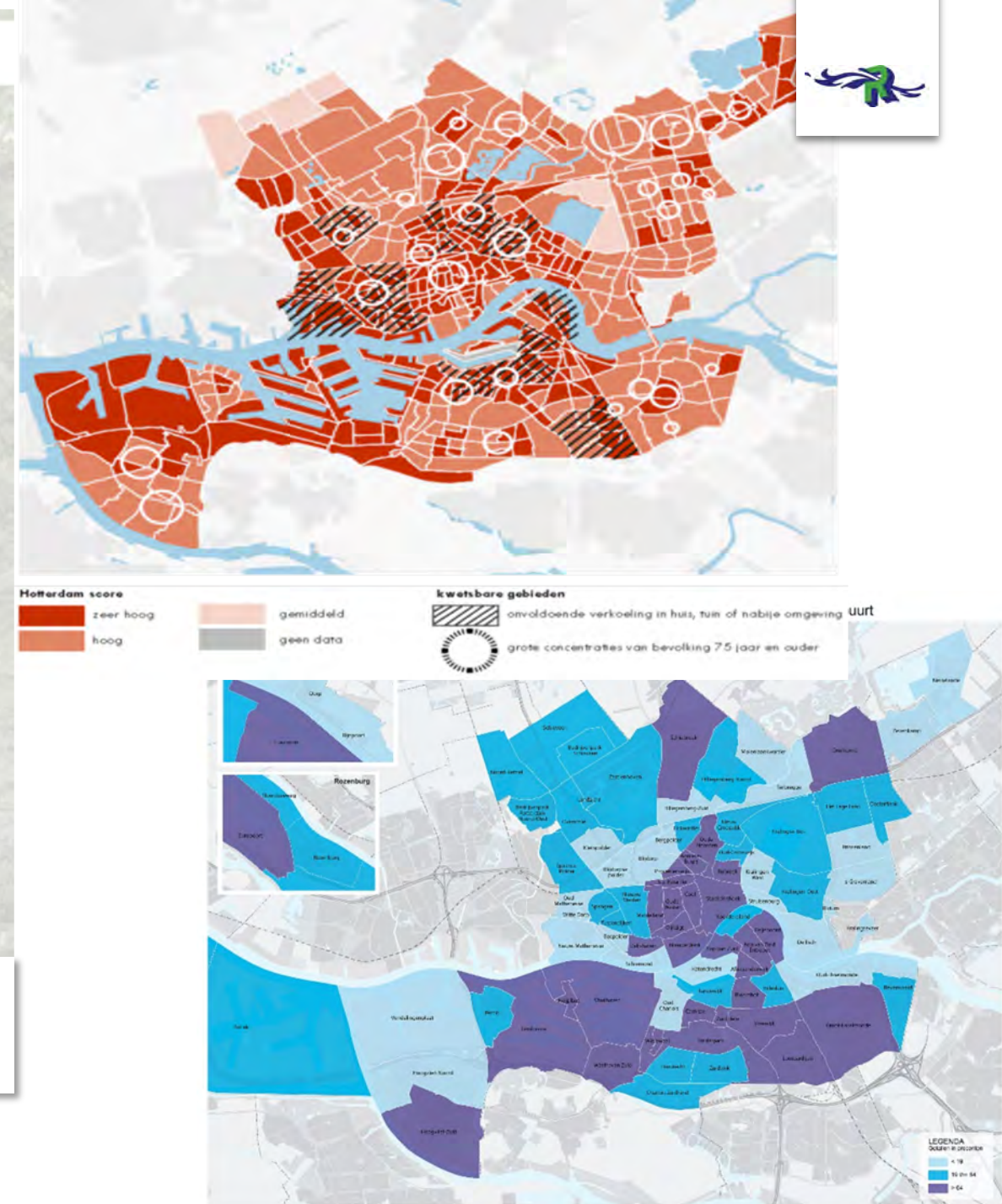
E

Маркировка
предупреждающая
об опасности

Плотность урбанизации: Количество Роттердамцев на м2



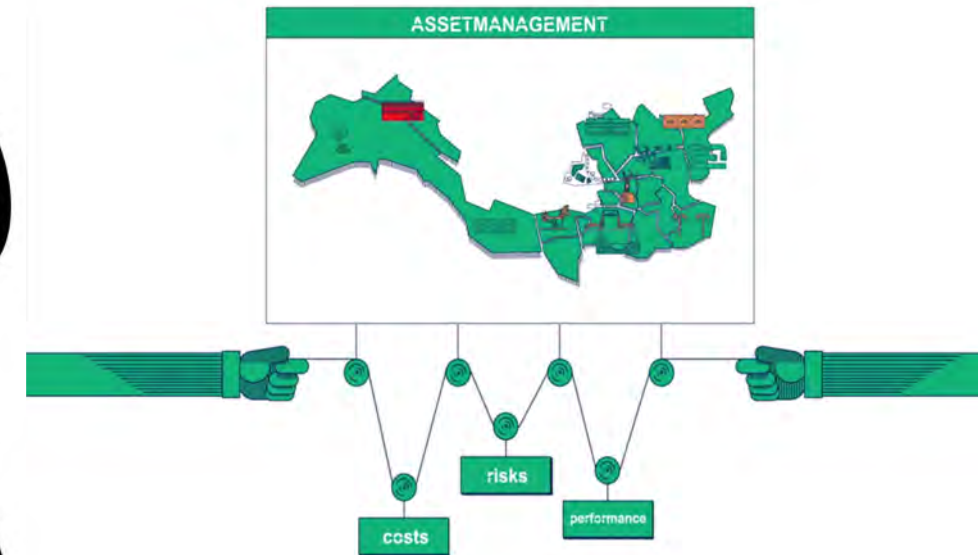
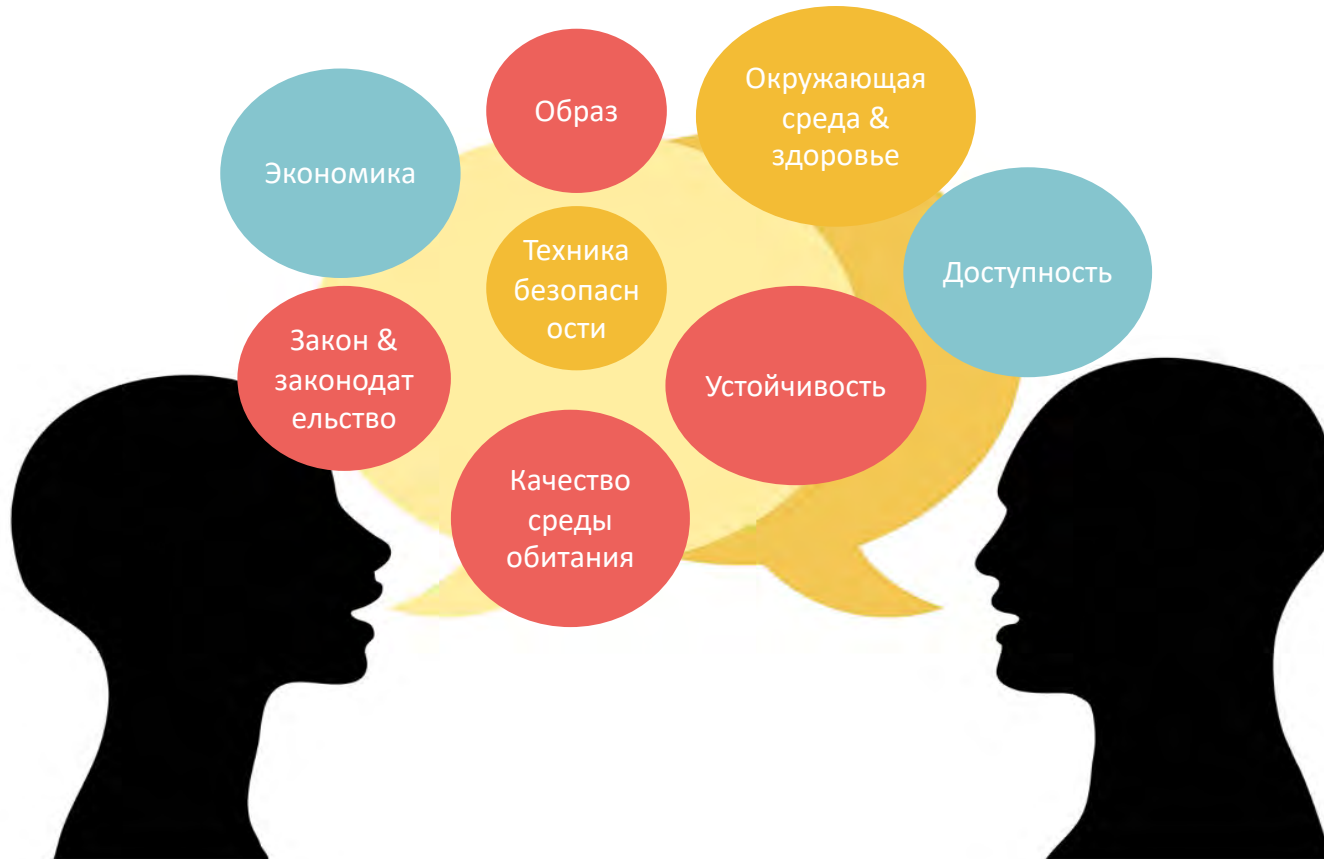
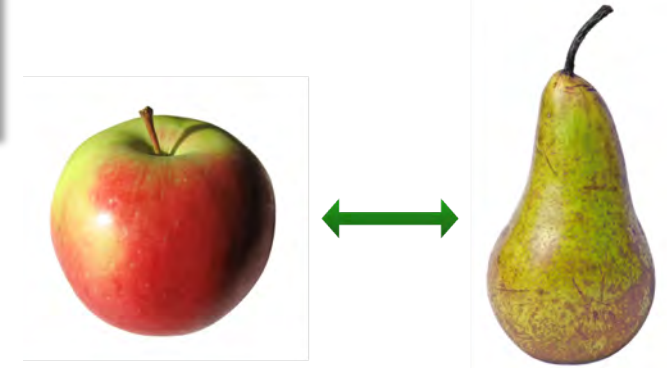
Факторы уязвимости



Управление активами

- Комплексный подход
- Рассмотреть и взвесить ключевые ценности

ROBUST
SYSTEM



Ключевые ценности г. Роттердам

Качество среды
обитания

Окружающая
среда &
здоровье

Устойчивость

Экономика

Закон &
законодательство

Доступность

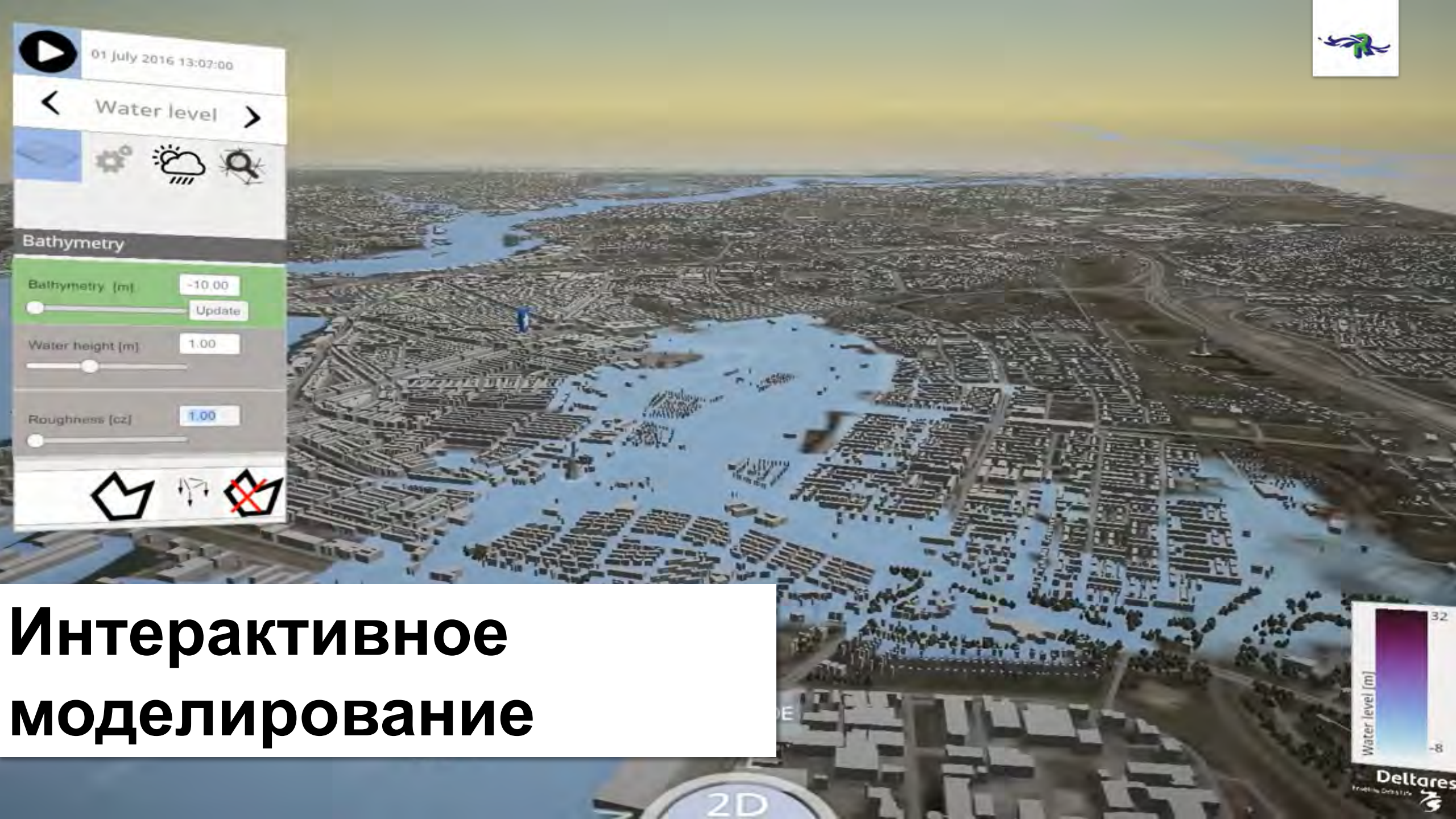
Техника
безопасности

Образ

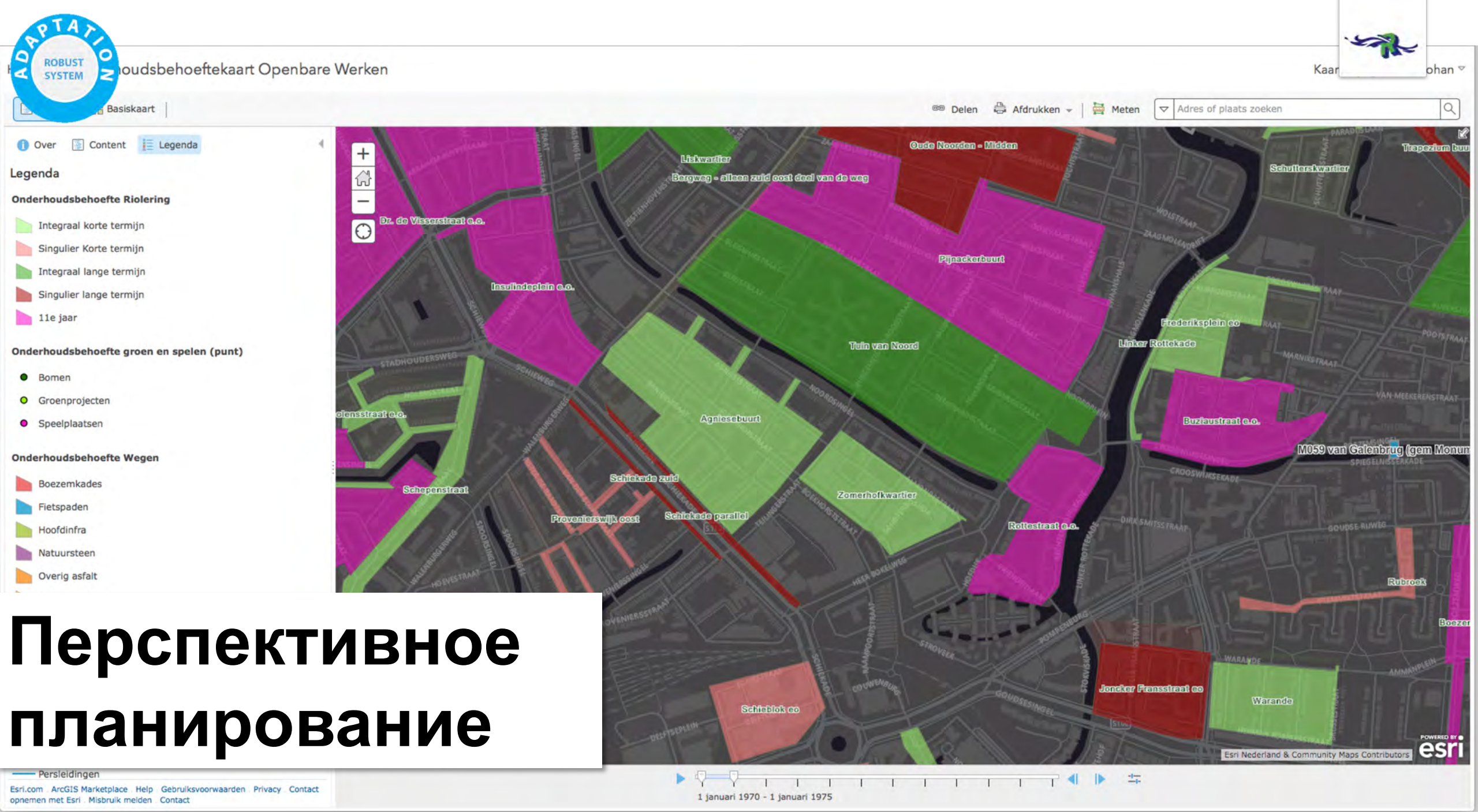
ROBUST
SYSTEM



Мониторинг



Интерактивное
моделирование



Verstedelijkingskansenkaart



HOV-knopen met inbreidings- en verdichtingskansen



Verstedelijkingszones nabij OV



Binnenstedelijke verdichtingskansen



Toekomstige stations met ontwikkelkansen



Toekomstige HOV-as

Городские ВОЗМОЖНОСТИ



Зеленые сооружения





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.



Roofs on high rise buildings offer space for recreation and concentration, unique views and new insight.



Roofs on high rise buildings are suitable for isolation; they are unreachably and provide overview for hunting animals and shelter for prey.



Roofs on high rise buildings are places for socialisation and fun with the skyline as scenery.



Roofs on high rise buildings are highly exposed to wind, especially if they are oriented directly west.



Solid, firmly constructed, roofs are revised through urban agriculture.



Large roofs of parking garages offer space for sports landscapes.



Large commercial buildings are enriched with public roof top parks.



Aesthetic roof gardens contrast with the bold scenery of the city.



The blue roof reflects the ever changing Rotterdam sky.



An energy landscape follows the urban composition of the post-war district, characterised by repetitiveness.



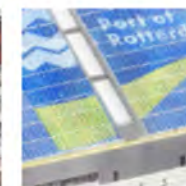
The 19th century building block has a colourful and intensely used roof landscape.



The suburban street has an efficient roof landscape.



A monument also gives opportunities for a sustainable roof.



There is space for large scale energy harvesting in solar fields on the roofs of warehouses in the harbour.



There is space for large scale roof ecology in the sunny lightfull area of the harbour.

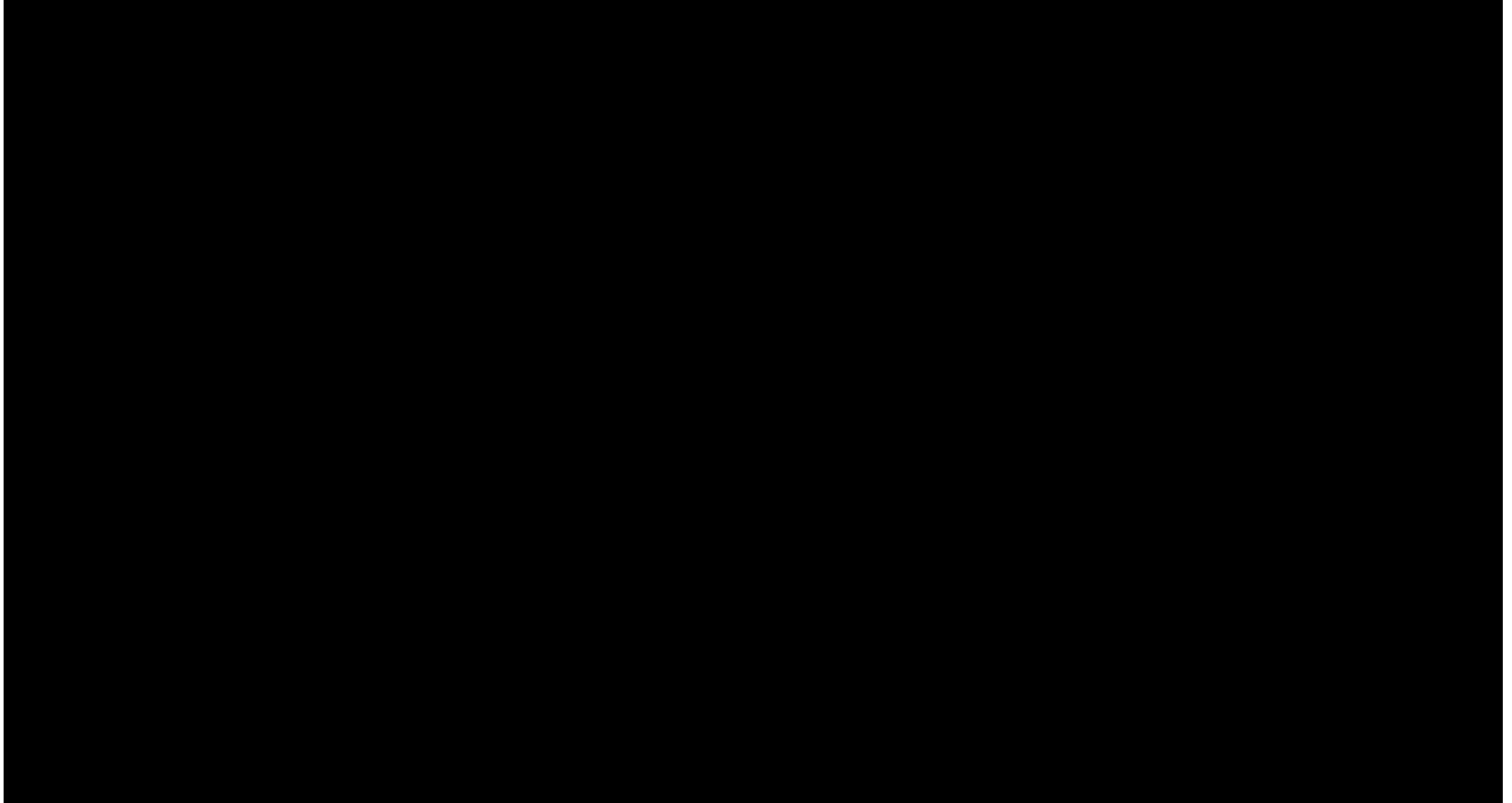


Вид на крыши

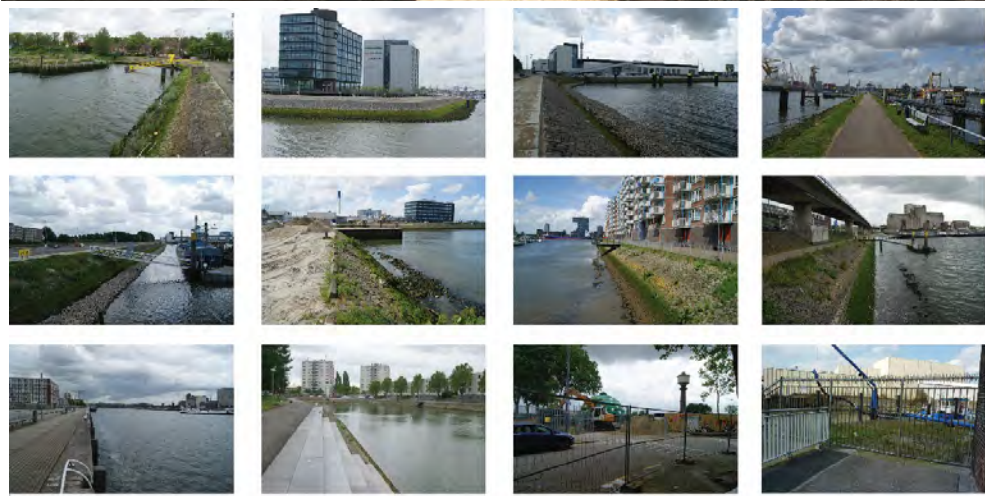


**Комплексное
проектирование**

Накопление воды, ул. Роберт Фраинштрат, Роттердам



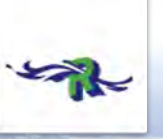
<https://youtu.be/XJ0MOeP6bWI>



Строительство с учетом природы



Многофункциональный дизайн



**Городской дизайн с
учетом водных
ресурсов**

WORKSHOP 1



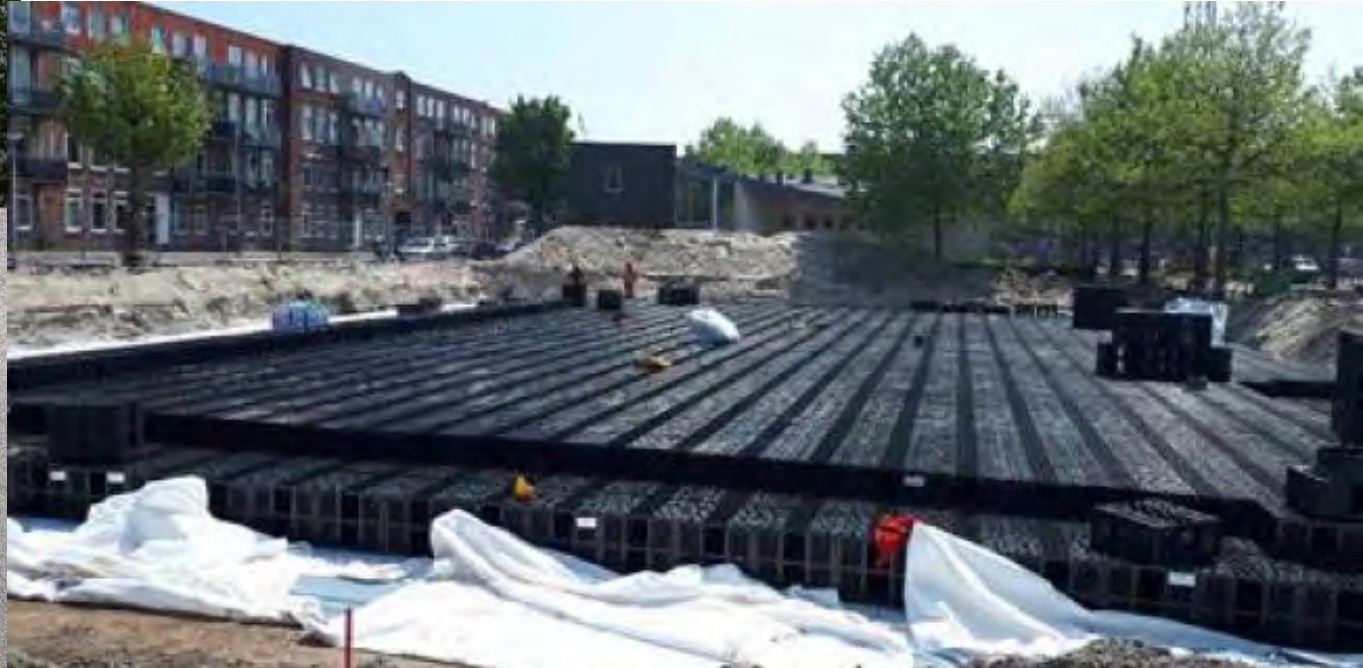
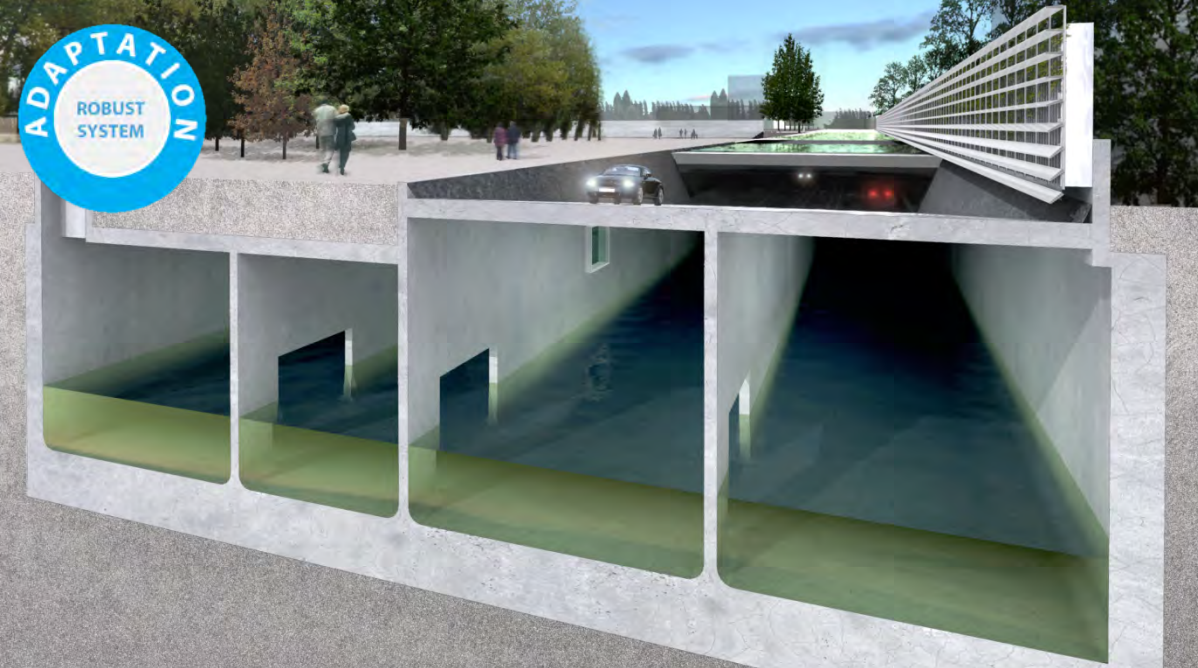
WORKSHOP 2



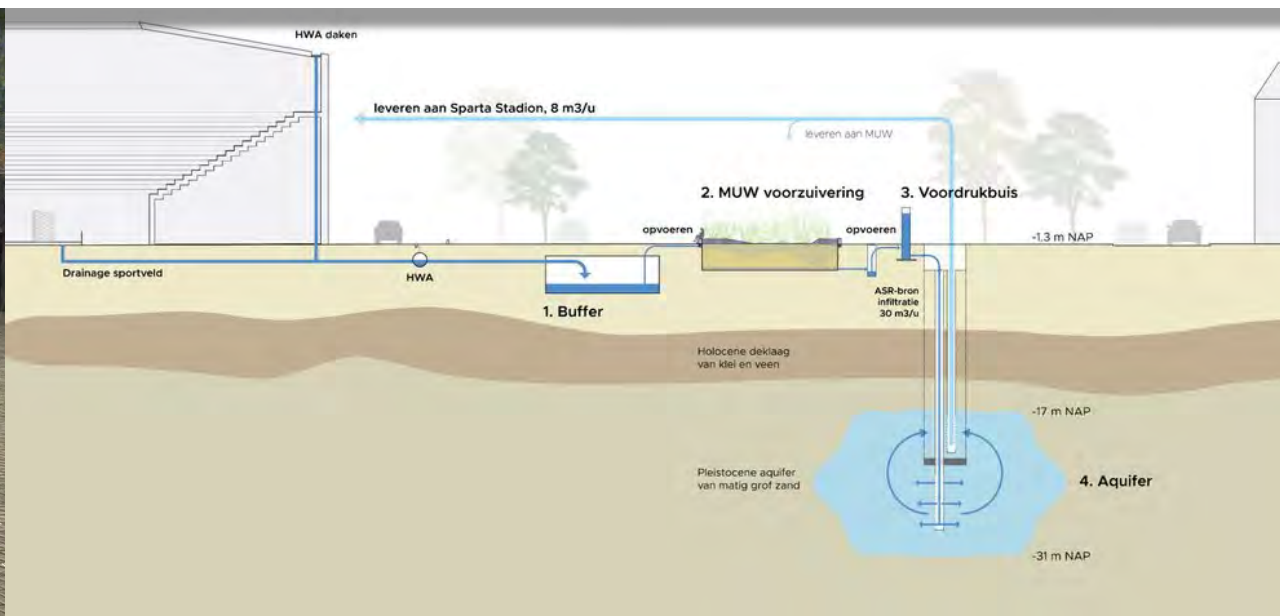
OP 3



Спроектирован при
участии

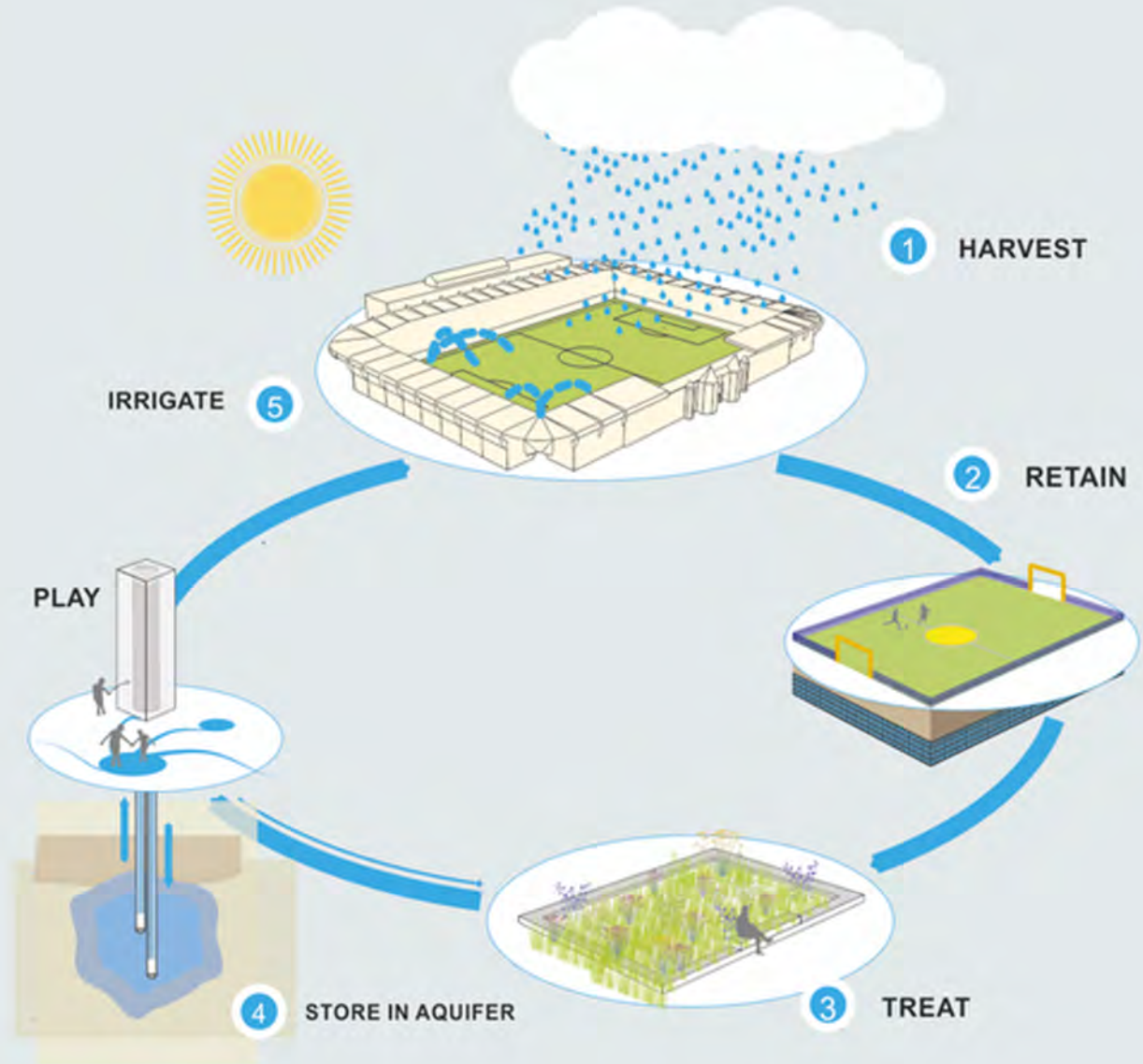


Сохранение подземных ливневых стоков





Буфер воды городского типа





Трансформация



Засуха



Сырость



Водопроницаемая мостовая



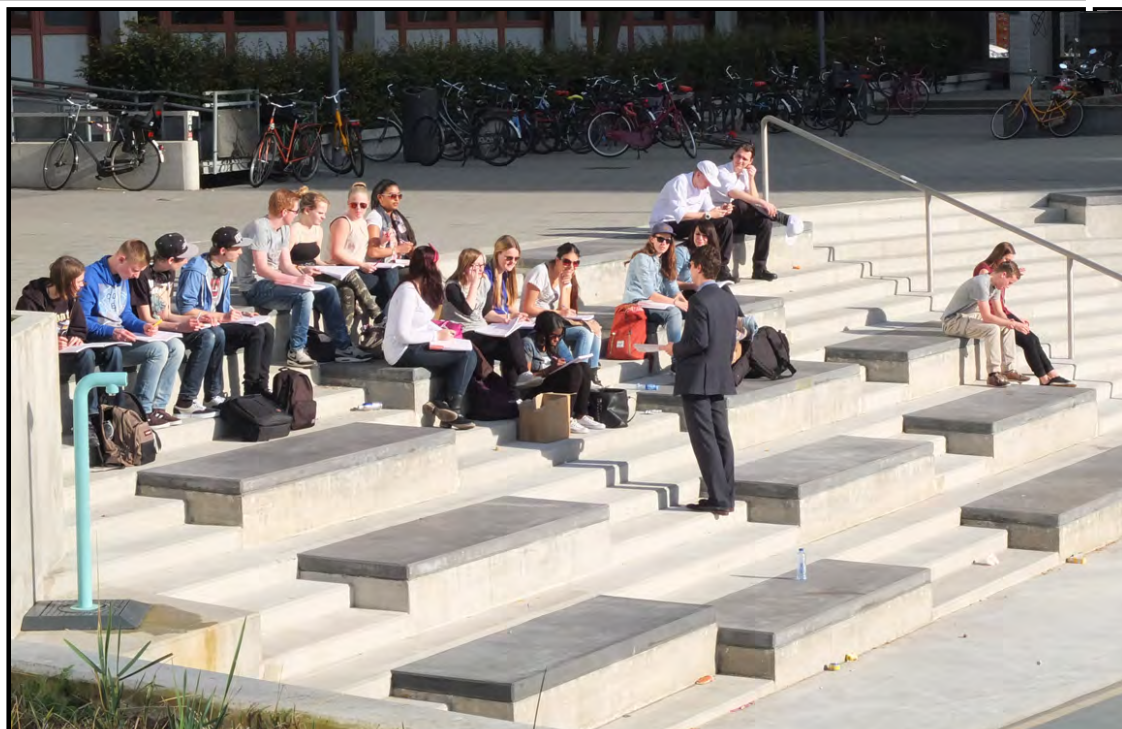


Водная площадь

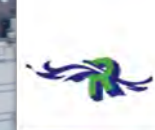


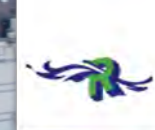
Во время дождя





**Ежедневное
использование**

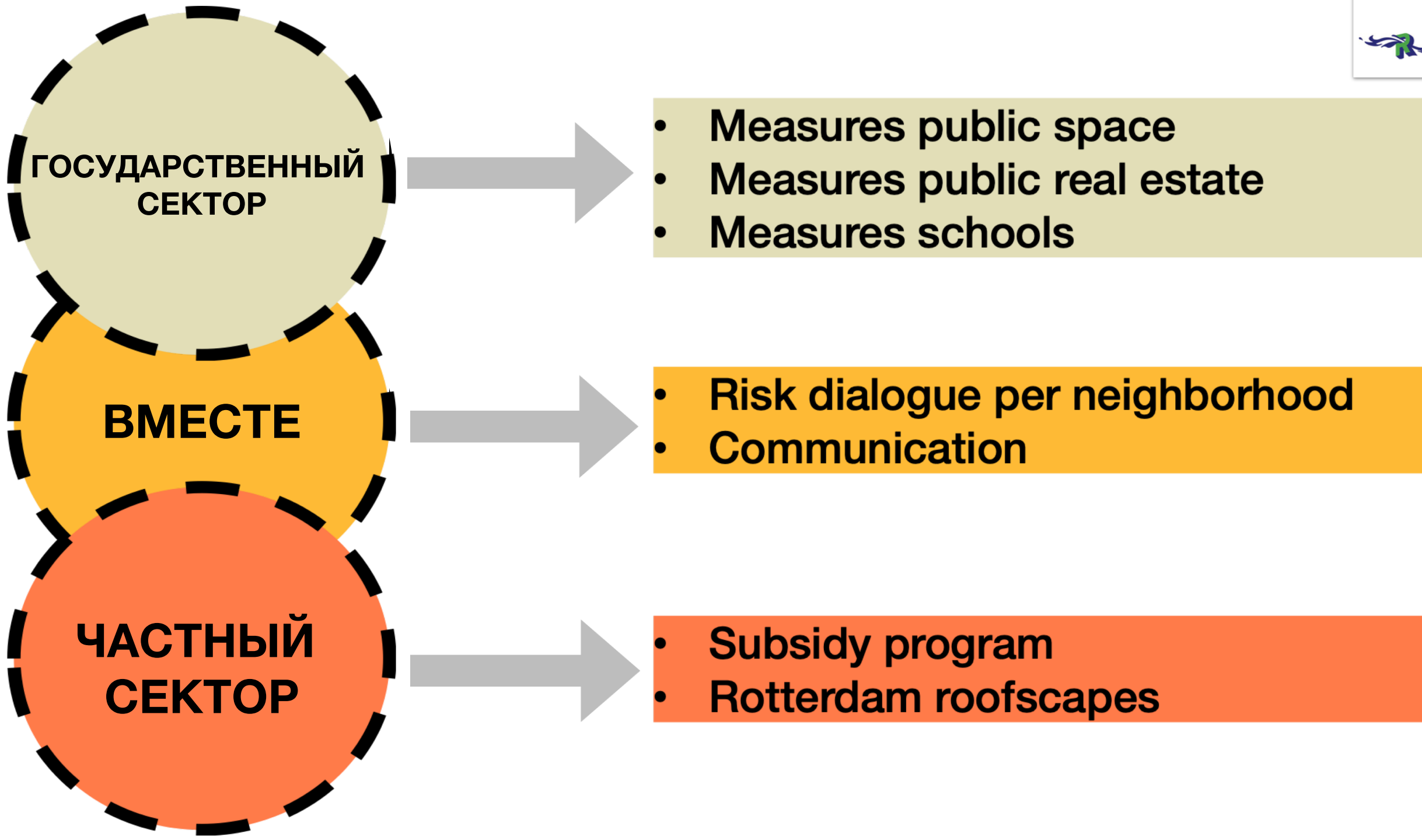


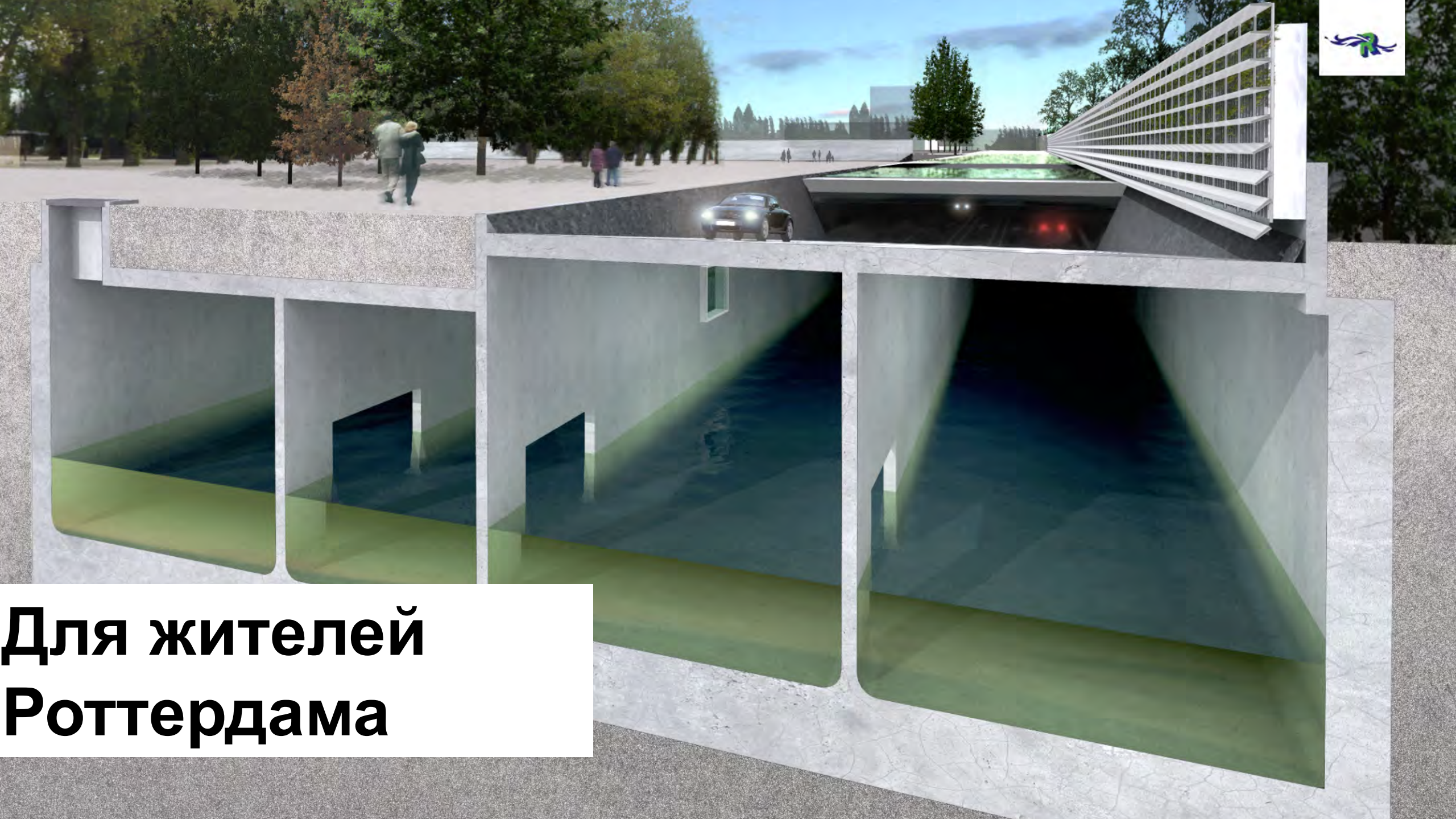


19%
Частные
арендаторы

46%
Муниципальное
жилье

35%
Частный
собственник

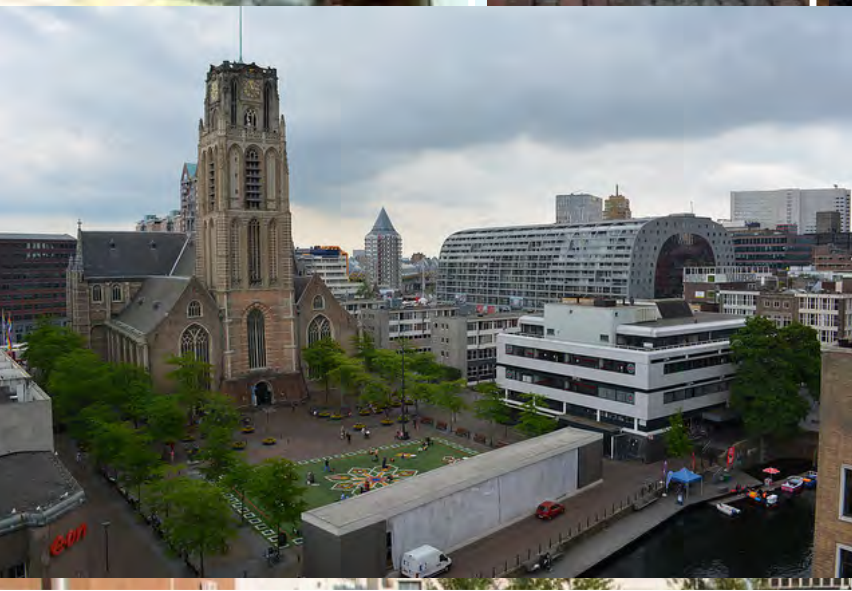




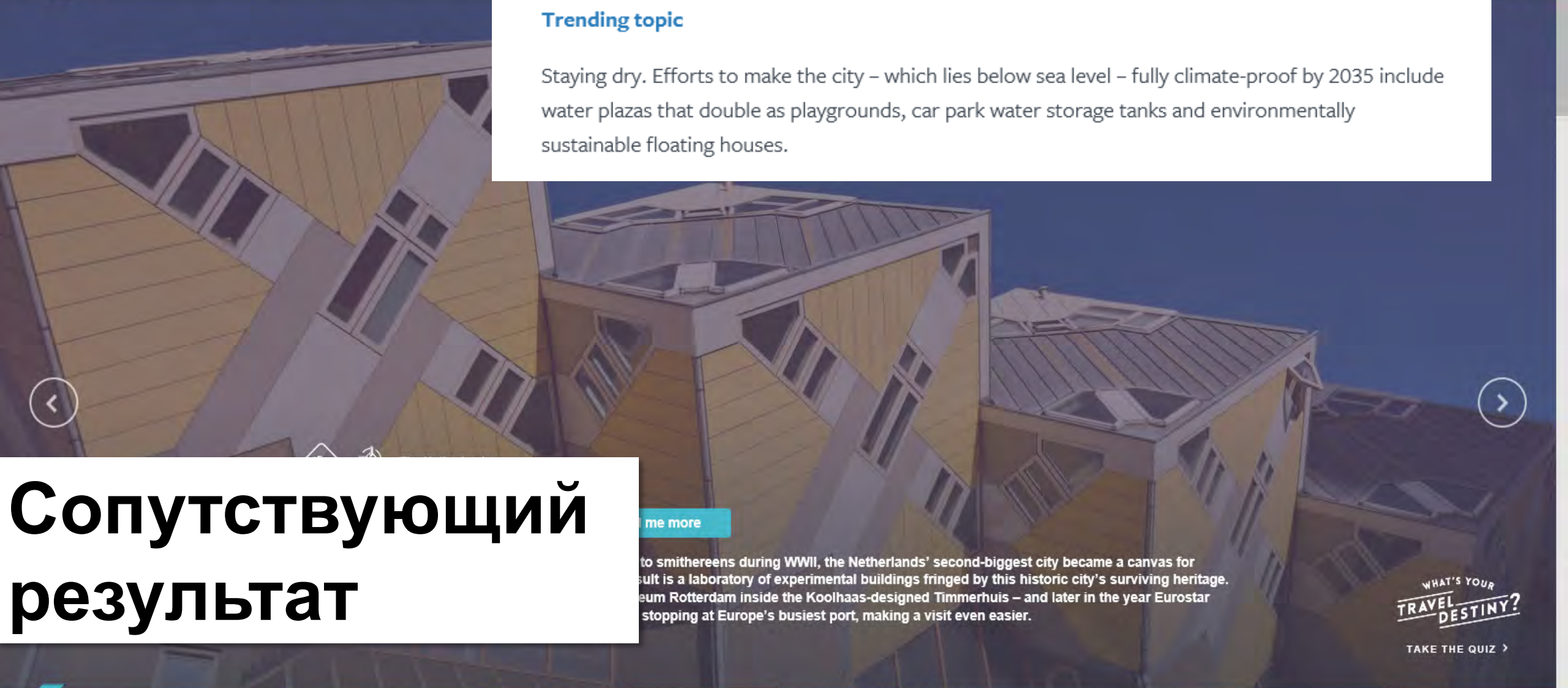
**Для жителей
Роттердама**

**Вместе с
жителями
Роттердама**





Жителями Роттердама



Trending topic

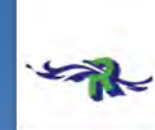
Staying dry. Efforts to make the city – which lies below sea level – fully climate-proof by 2035 include water plazas that double as playgrounds, car park water storage tanks and environmentally sustainable floating houses.

Сопутствующий
результат

me more

to smithereens during WWII, the Netherlands' second-biggest city became a canvas for
ult 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
stopping at Europe's busiest port, making a visit even easier.

WHAT'S YOUR
TRAVEL
DESTINY?
TAKE THE QUIZ >



Вопросы?

