

**Ghent  
Climate Proof City  
2030**

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Environmental and  
Climate Service  
City of Ghent





# INTRODUCTION

## Geographical location

- Belgium, Flanders region
- 156 km<sup>2</sup>, 259.000 inhabitants → 1.660 inh./km<sup>2</sup>
- 50 km from the coast line
- on average 8m, maximum 20m above sea level
- soil sealing: 45%, in inner city up to 80%





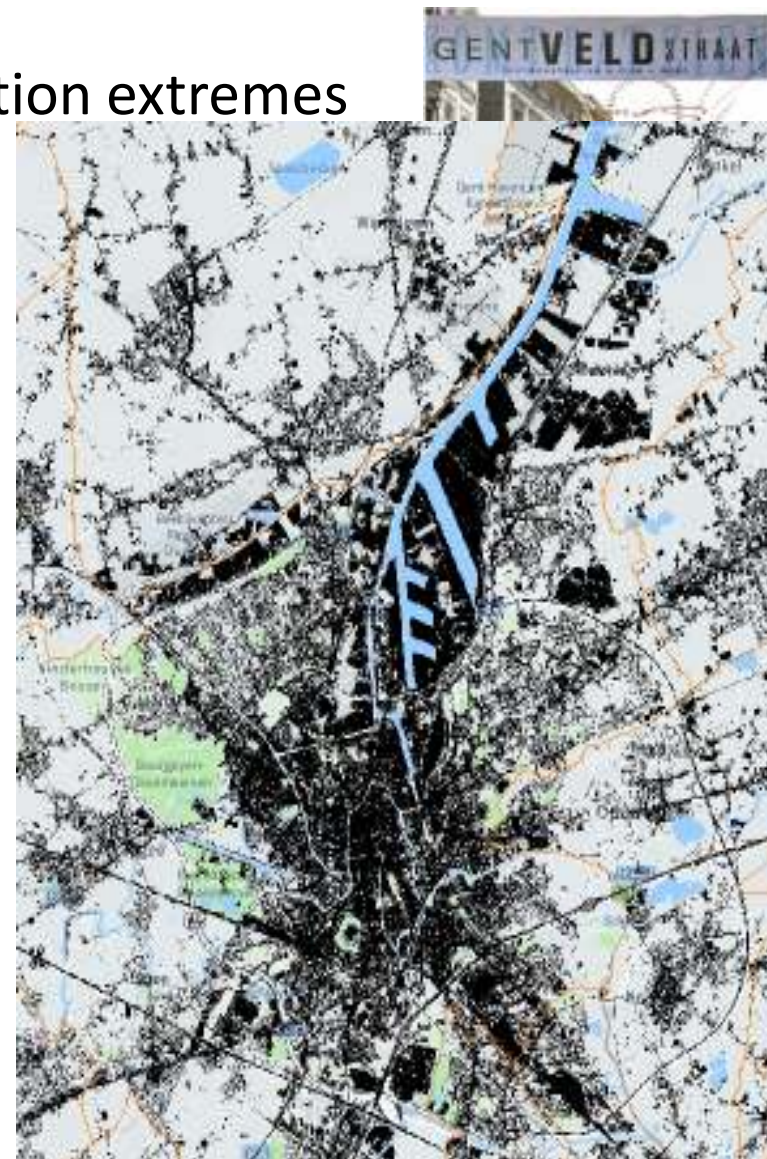
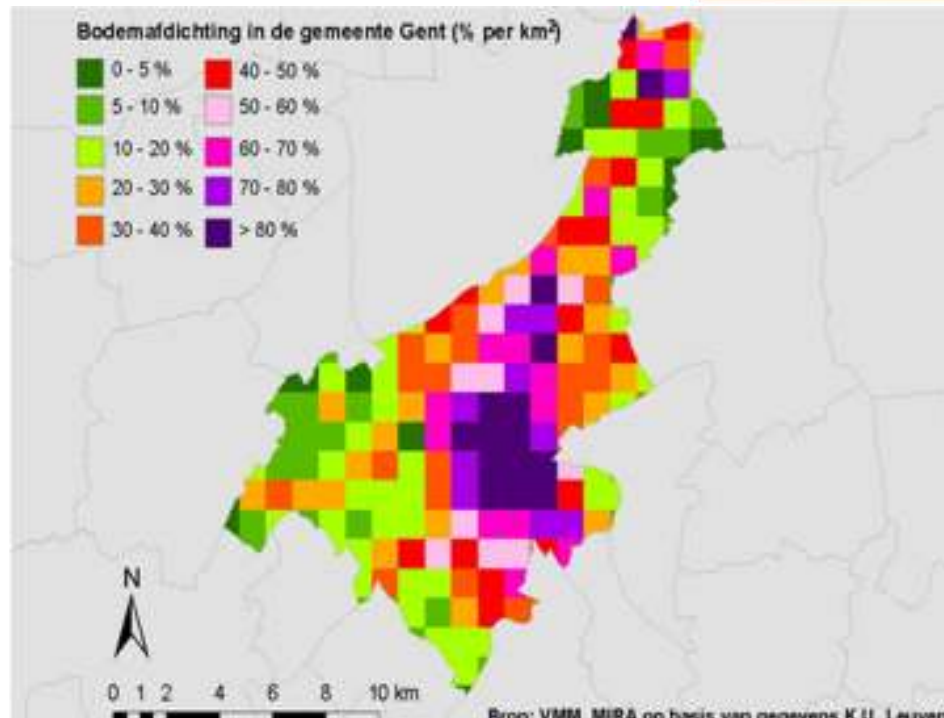


# INTRODUCTION

## Climate impacts considered

### PLUVIAL AND FLUVIAL FLOODING

because of soil sealing & precipitation extremes





# VULNERABILITY ASSESSMENT

## Flooding



### **Fluvial flooding (winter situation)**

- long term precipitation
- flooding from rivers and canals



### **Pluvial flooding (summer situation)**

- heavy precipitation
- flooding from sewage system

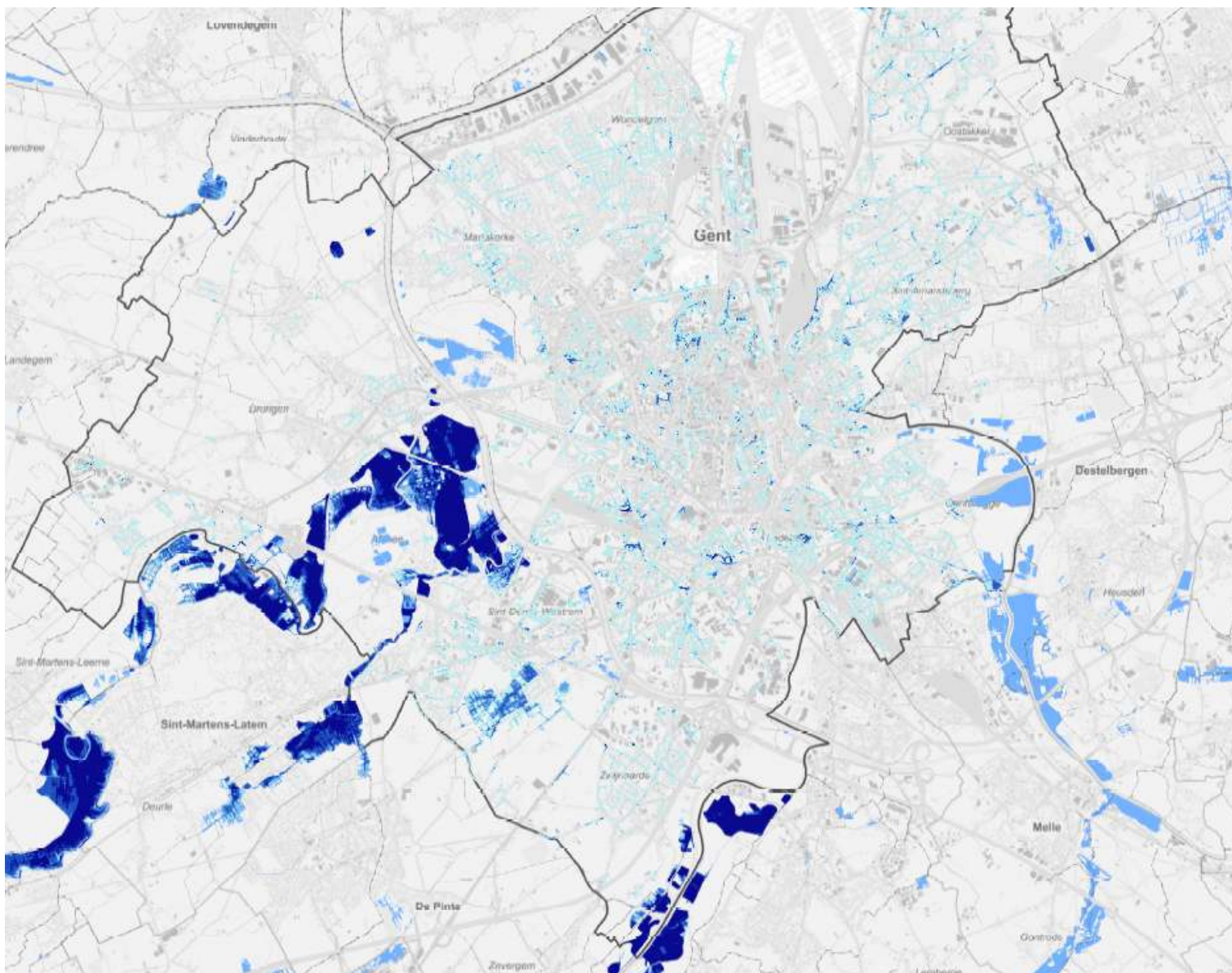
*Flooding models and maps have been designed by water authorities*





# VULNERABILITY ASSESSMENT

## Flooding







# VULNERABILITY ASSESSMENT

## Flooding





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### **HEAT STRESS**

because of built-up area, urban heat island effect  
& higher temperatures, more heat waves

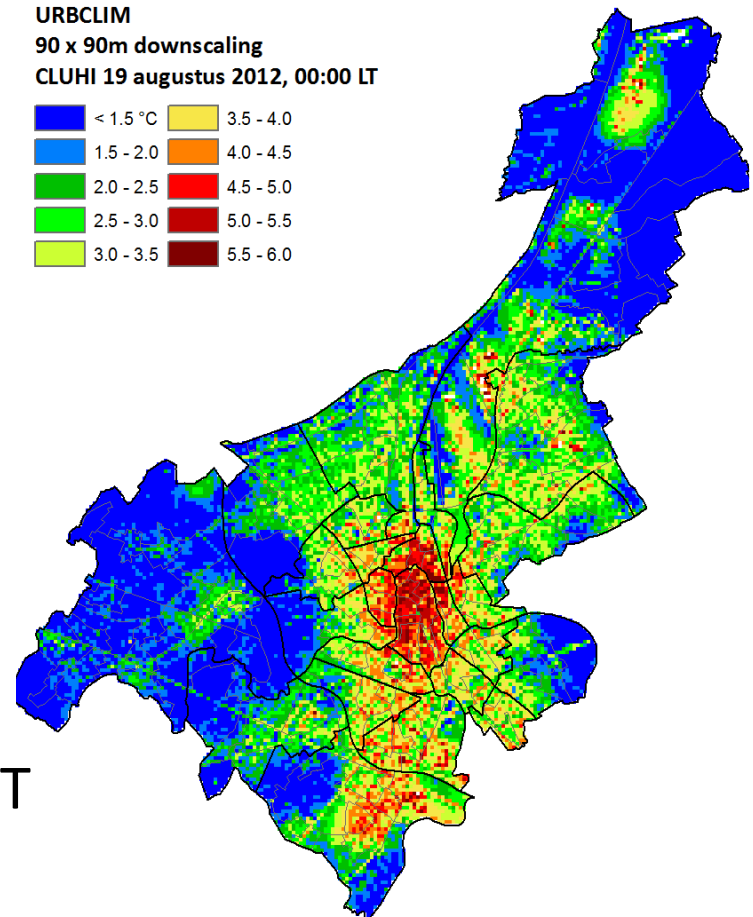
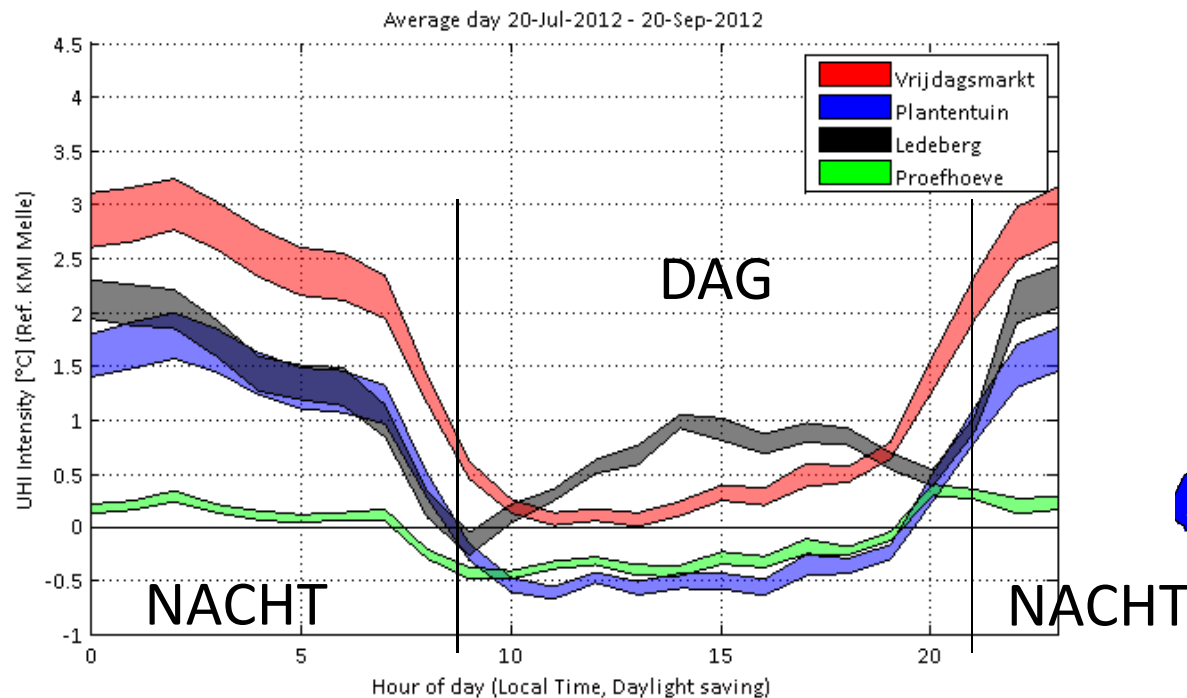




# VULNERABILITY ASSESSMENT

## Heat study

- Gent-centre in summer **at night on average**  $3^{\circ}$  C warmer than surroundings  
After hot days the difference can rise to  $8^{\circ}$  C!
- City park in summer **at night on average**  $1,5^{\circ}$  C cooler than centre
- During the day the difference  $< 0,5^{\circ}$  C





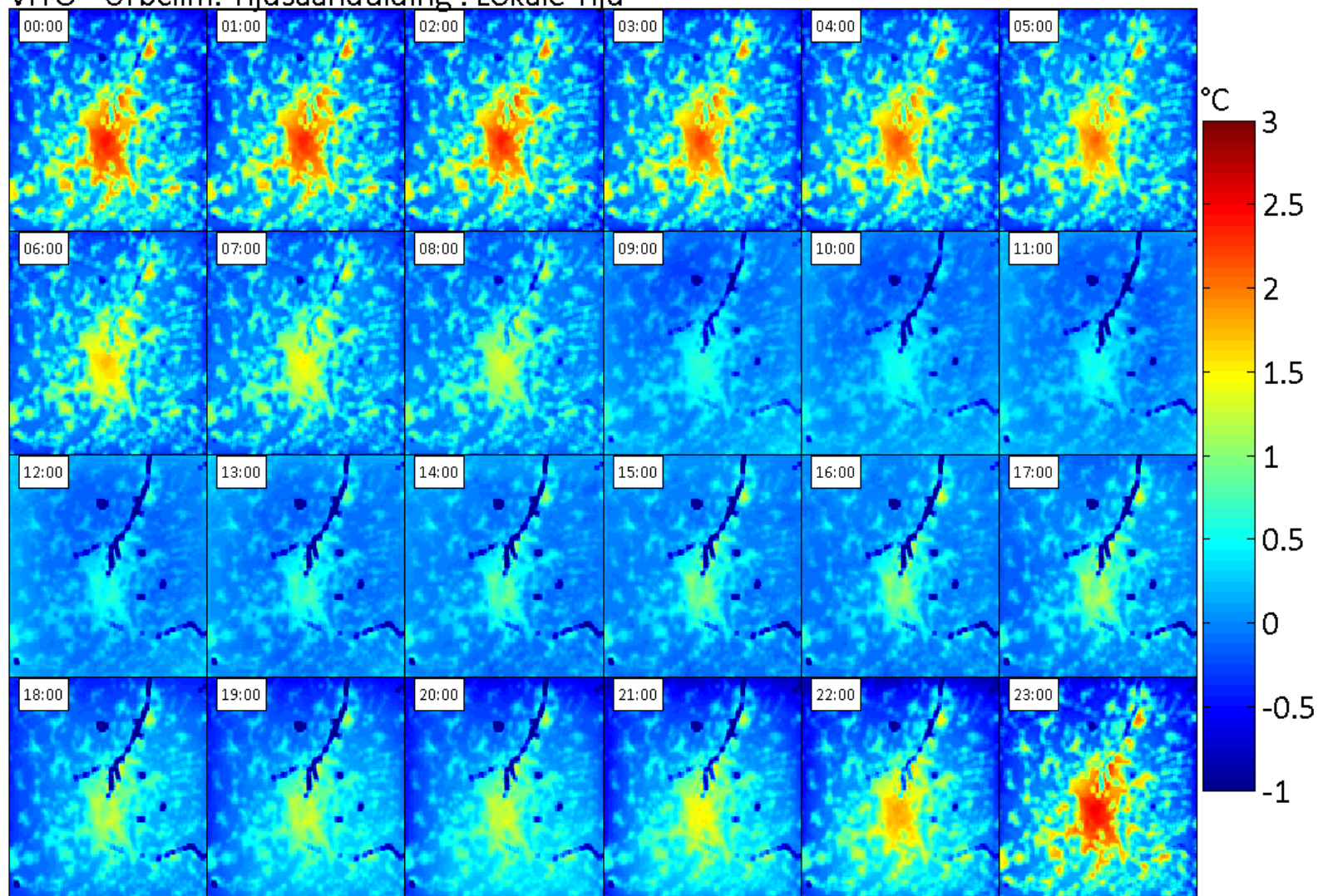


# VULNERABILITY ASSESSMENT

## Heat study

Gemiddeld  $T - T_{\text{rural}}$  Gent : July - Aug. 2003

VITO - Urbclim. Tijdsaanduiding : Lokale Tijd





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### **WATER SHORTAGE**

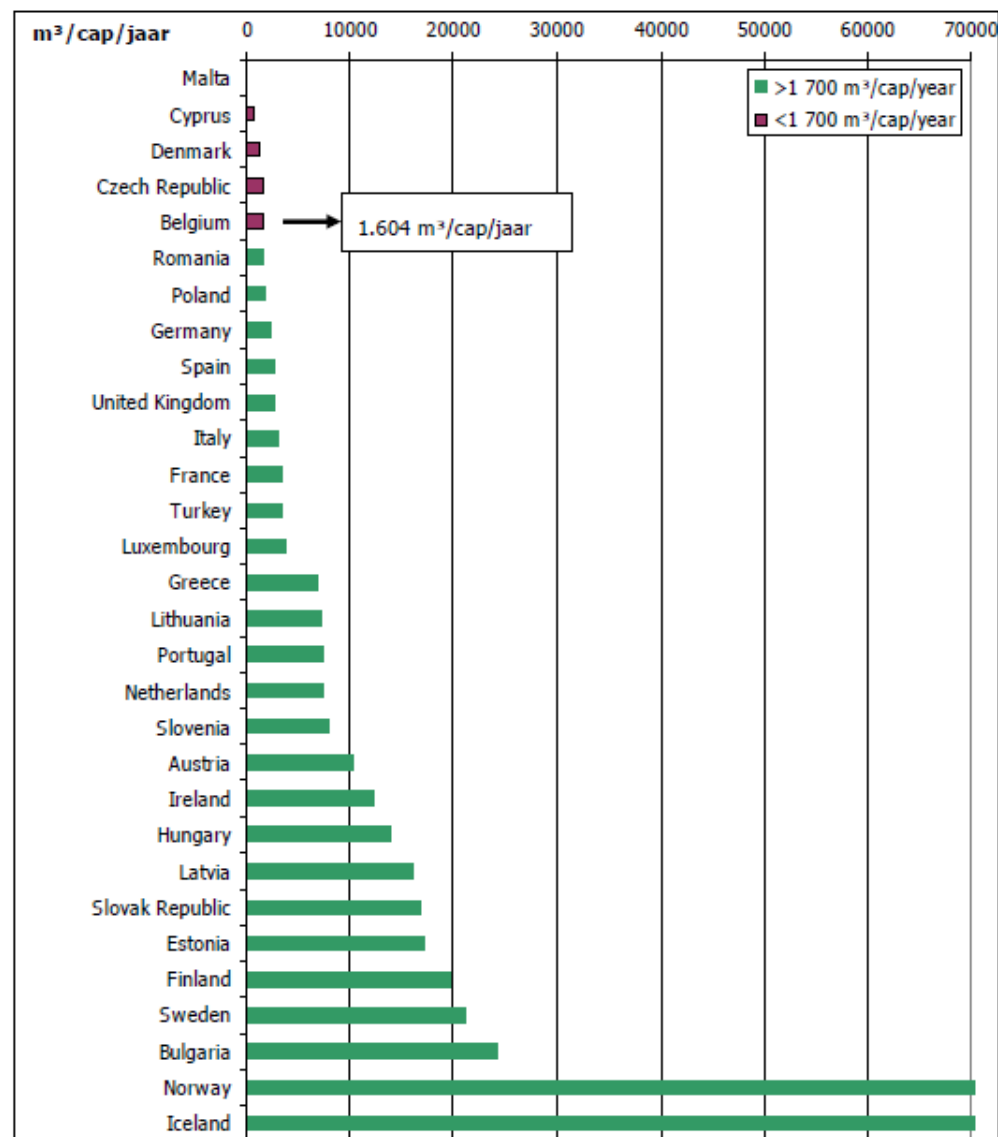
because of high need for water & drought  
& low water availability





# INTRODUCTION

## Climate impacts considered



Figuur 2.1: Jaarlijkse waterbeschikbaarheid per capita (2001)



# INTRODUCTION

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### ***EFFECTS OF SEA LEVEL RISE***







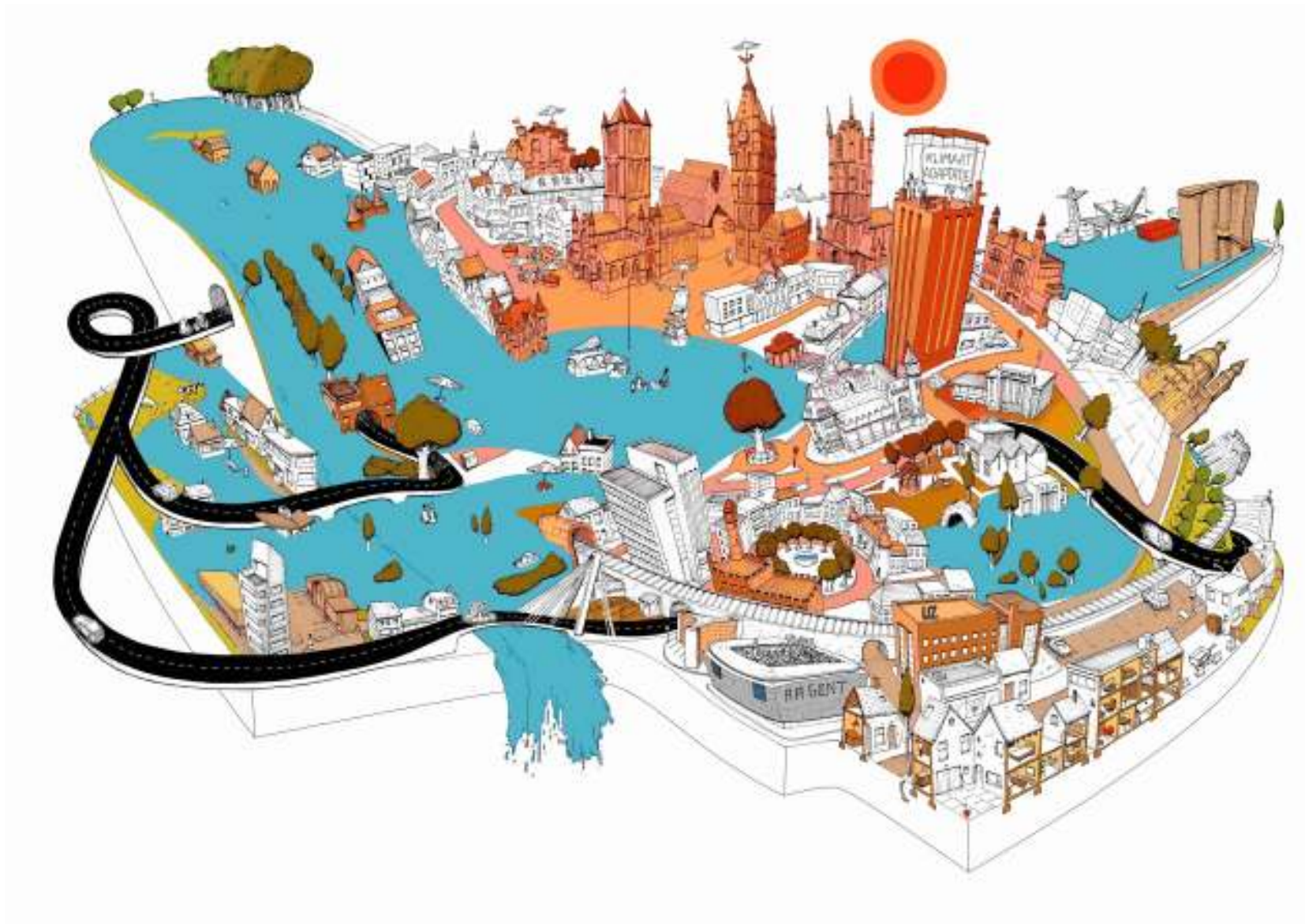
# INTRODUCTION

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# CLIMATE ADAPTATION PLAN

## Towards a Climate Resilient City







# CLIMATE ADAPTATION PLAN

## Towards a Climate Resilient City

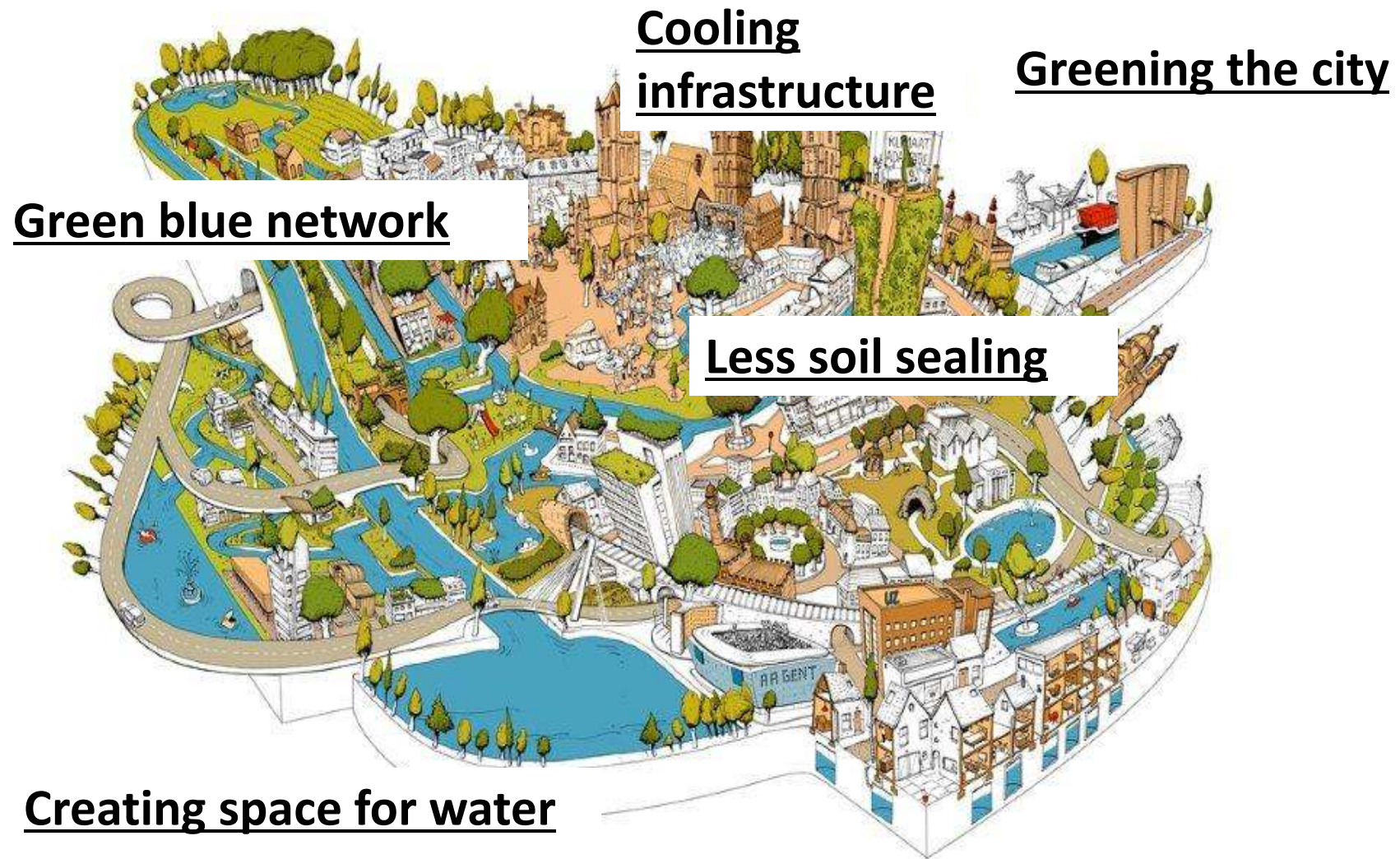






# CLIMATE ADAPTATION PLAN

## Towards a Climate Resilient City





# CLIMATE ADAPTATION PLAN

## Towards a Climate Resilient City

### Ghent Climate Adaptation Plan 2016-2019

#### **The pillars of the Ghent climate adaptation strategy:**

1. Political support base and broadening within the city organization
2. Knowledge build-up regarding climate scenarios, impact, and vulnerability of Ghent
3. Knowledge build-up regarding possible measures at the local level
4. Integration into city policy plans, instruments, and processes
5. Implementation by means of example projects
6. Targeted communication and awareness-raising
7. Partnerships and multi-stakeholder approach
8. Monitoring and evaluation

#### **Ghent Climate Adaptation Plan 2030**

<https://stad.gent/ghent-international/city-policy-and-structure/ghent-climate-plans/ghent-climate-adaptation-plan-2016-2019>





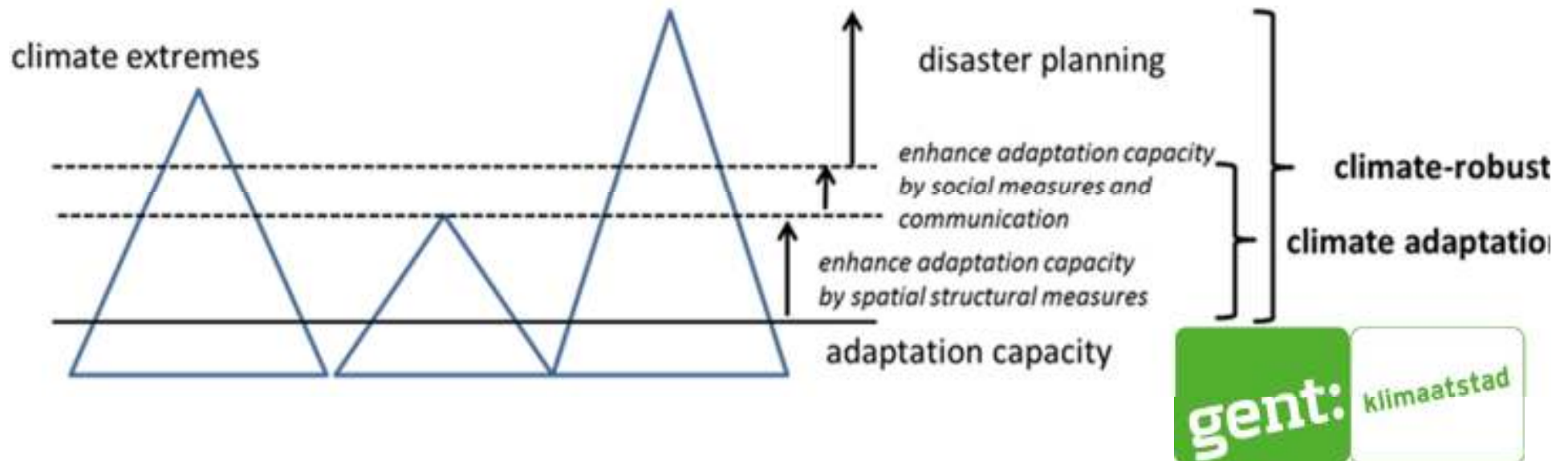
# CLIMATE ADAPTATION PLAN

## Towards a Climate Resilient City

Focus on 2 major topics

- *Urban heat*
- *Urban water system (water nuisance and drought)*

Focus on spatial structural measures and awareness





# ADAPTATION MEASURES

## Green roofs



- Building code for new projects

*All flat roofs not needed for rain water collection and re use*

- Subsidy programme for existing buildings (31 €/m<sup>2</sup>)





# ADAPTATION MEASURES

## Green roofs

- 250 EUR for a roof stability study
- minimum conditions for the substrate: 6 cm thick
- higher subsidy for high-quality green roofs:
  - min. 50 l / m<sup>2</sup> and more than sedum plants -> 45 € / m<sup>2</sup>
  - max. 50.000 € / building

2002-2016	
N° projects	551
Subsidy amount	1.380.349 €
Surface green roofs	58.219 m <sup>2</sup>

Movie on Youtube

<https://youtu.be/Zj9En5iM0y4>



Op de wagon wordt een groendak geplaatst dat Gentenaars moet tonen hoe ze thuis zelf zo'n dak kunnen aanleggen. Foto's: fvv





# ADAPTATION MEASURES

## Green walls





# ADAPTATION MEASURES

## Less soil sealing



# ADAPTATION MEASURES

## Street trees



Belfortstraat





# ADAPTATION MEASURES

## City parks

arbedpark



park "prettige wildernis"



visserijpark







# ADAPTATION MEASURES

## City parks



Arbedpark



Wijkpark Moriaanstraat

# ADAPTATION MEASURES

## Street ditches



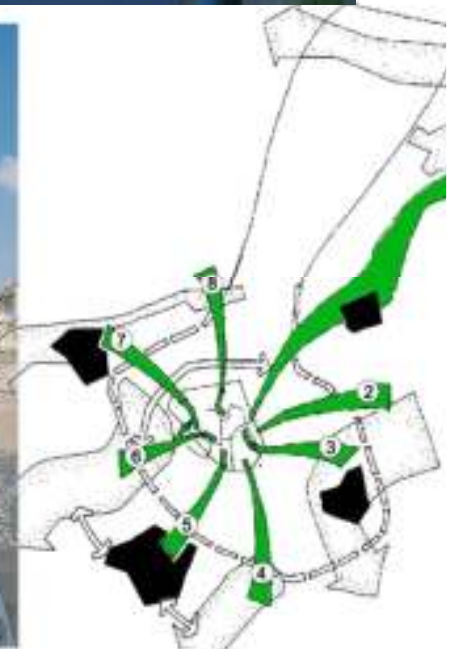


# ADAPTATION MEASURES

## Green-blue corridors



Franse Vaart







# ADAPTATION MEASURES

## Water in the city





[www.gentklimaatstad.be/klimaatverandering](http://www.gentklimaatstad.be/klimaatverandering)





# COMMUNICATION AND SENSIBILISATION

## Network and partnership



**MAYORS ADAPT**

THE COVENANT OF MAYORS INITIATIVE  
ON ADAPTATION TO CLIMATE CHANGE

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[ABOUT](#)

[TAKING ACTION](#)

[MATERIALS](#)

[FAQs](#)

[CONTACT](#)

# Mayors Adapt

Promoting urban leadership in adaptation  
to climate change

[Take action](#)

[Find out more](#)

**gent:**

klimaatstad



## CONTACT DETAILS

Any questions, please feel free



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