

# COOL TOWNS

**'Thinking Outside the Pot'**  
**22<sup>nd</sup> January 2020**

**Interreg**   
EUROPEAN UNION  
**2 Seas Mers Zeeën**  
European Regional Development Fund





UNITED NATIONS

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SEVENTY-THIRD SESSION, HIGH-LEVEL MEETING ON CLIMATE AND SUSTAINABLE DEVELOPMENT (AM &

# Only 11 Years Left to Prevent Irreversible Damage from Climate Change, Speakers Warn during General Assembly High-Level Meeting



# UK heatwave: Met Office confirms record temperature in Cambridge

© 29 July 2019

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The UK's highest-ever temperature has been officially recorded in Cambridge, the Met Office has confirmed.

Cambridge University Botanic Garden **measured 38.7C (101.7F) on Thursday** beating the previous UK record of 38.5C (101.3F), set in Kent in 2003.



## Climate emergency declarations in 1,261 jurisdictions and local governments cover 798 million citizens

Posted on 18 December 2019



1,261 jurisdictions in 25 countries have declared a climate emergency. Populations covered by jurisdictions that have declared a climate emergency amount to 798 million citizens, with 55 million of these living in the United Kingdom. This means in Britain now over 80 per cent of the population lives in areas that have declared a climate emergency, almost 400 councils all together. In New Zealand, the percentage is nearly as high: 74 per cent of the population.

<https://climateemergencydeclaration.org/climate-emergency-declarations-cover-15-million-citizens/>

# UK Landscape Architects Declare Climate & Biodiversity Emergency

Over 200 local councils  
in England  
have declared

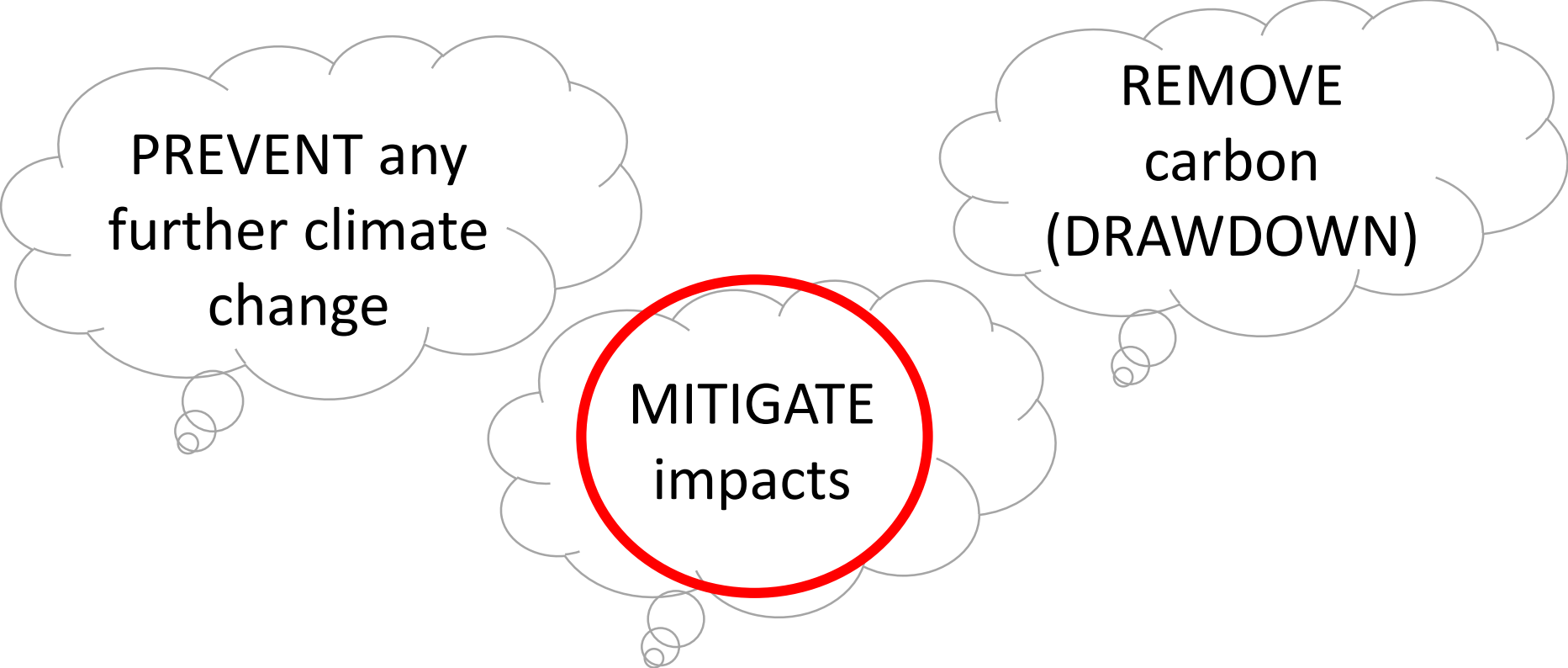
✓ **Aware**

✓ **Action**

?



# Three approaches



PREVENT any  
further climate  
change

MITIGATE  
impacts

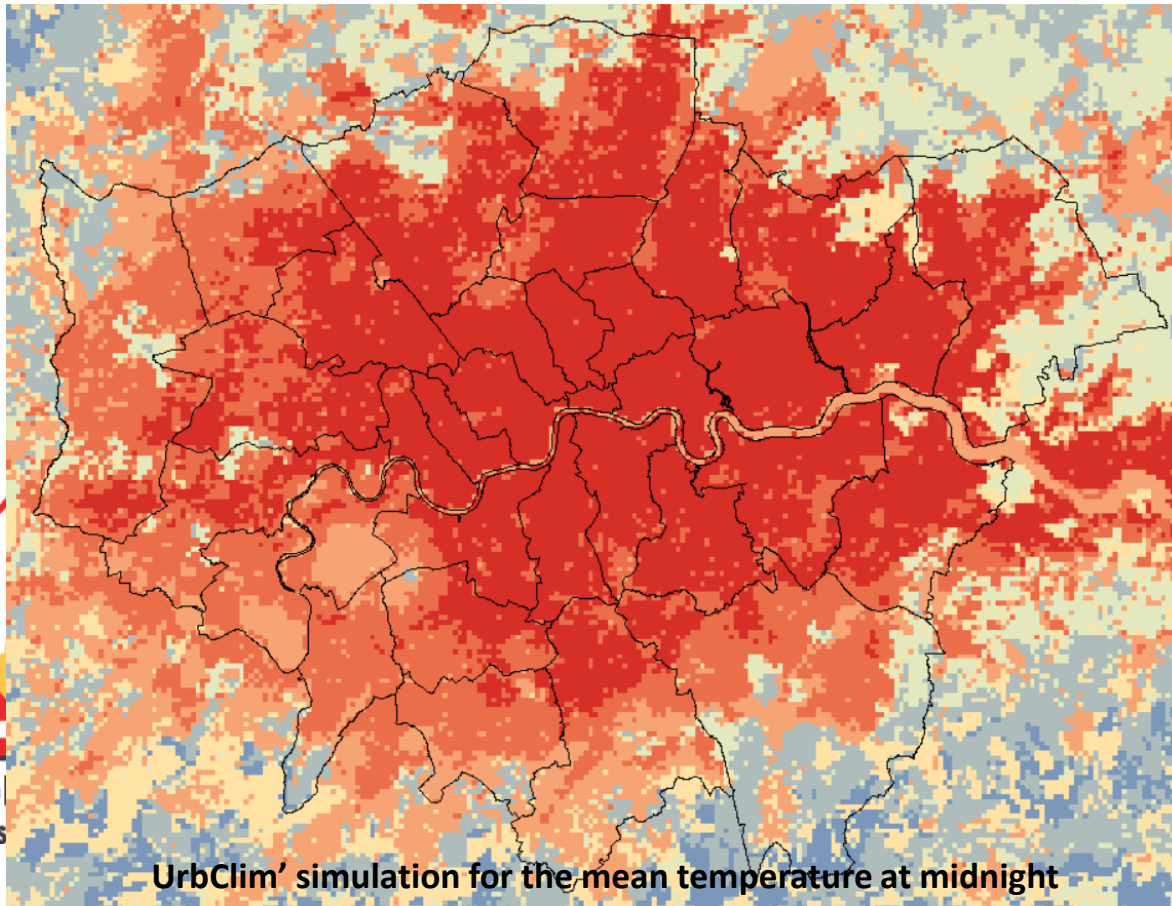
REMOVE  
carbon  
(DRAWDOWN)

Late afternoon temperature °C



Rural

Su  
Res



UrbClim' simulation for the mean temperature at midnight



Suburban  
residential

Rural  
Farmland

interreg



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# The Economic Impacts of Climate Change

## Global warming

nature  
climate change

LETTERS

PUBLISHED ONLINE: 4 MAY 2015 | DOI: 10.1038/NCLIMATE2623

### Heat stress causes substantial labour productivity loss in Australia

Kerstin K. Zander<sup>1\*</sup>, Wouter J. W. Botzen<sup>2</sup>, Elspeth Oppermann<sup>1</sup>, Tord Kjellstrom<sup>3</sup> and Stephen T. Garnett<sup>5</sup>

Industrial Health 2013, 51, 3–15

Review Article

### Effects of Heat Stress on Working Populations when Facing Climate Change

Karin LUNDGREN<sup>1\*</sup>, Kalev KUKLANE<sup>1</sup>, Chuansi GAO<sup>1</sup> and Ingvar HOLMÉR<sup>1</sup>

Estimated that in a future warm year economic **loss due to heat stress** on productivity could be 0.4% of Gross Value Added (GVA) totalling around **£1.9 billion for London** .

Centre for Climate Change Economics & Policy/Grantham Research Institute on Climate Change and the Environment (Costa et al, 2016)

# HEAT STRESS CAN BE LIFE THREATENING

KNOW THE SIGNS AND PREVENT IT

Curr Epidemiol Rep 2014 Jun 1(2): 67-74  
Published online 2014 Apr 5. doi: 10.1007/s40471-014-0009-1

PMID: 25422797

Health impacts of heat in a changing climate: how can emerging science inform urban adaptation planning?

Elisaveta P. Petkova, DrPH, Hanika Morita, MPH, and Patrick L. Kinney, ScD<sup>1</sup>



Health and Safety Executive

## UK heatwave may have caused hundreds of deaths

Fears for elderly and vulnerable as sharp rise in fatalities is linked to hot weather



▲ Women enjoy the hot weather in Weymouth, Dorset. An official health alert is in place warning that the heatwave poses a risk to the elderly and vulnerable. Photograph: Kathy deWitt/Alamy

Britain's heatwave could have caused a sharp rise in deaths over the past two weeks, health officials warned today.

## Heat stress in the workplace

A brief guide

## Summer heatwaves caused 1,500 more deaths than usual in France, minister says



Issued on: 08/09/2019 - 21:49 Modified: 08/09/2019 - 21:51

## Cool Towns: European cooperation to combat heat stress in cities

Cool Towns is a cooperation between 13 European partners aimed to counteract the negative effects of climate change and find attractive solutions that make cities climateproof and robust so that heat stress is prevented or limited as much as possible. The project brings together leading European research/academic institutions, governmental organisations and industries from the climatology and climate adaptation domains. The project has received funding from the Interreg 2 Seas Programme 2014 – 2020.

### Projectpartners:



Gemeente Breda



[www.cooltowns.eu](http://www.cooltowns.eu)



## Reducing incident radiation

- Shade
- Reflecting radiation

## Reducing conductivity

- Light colour
- Texture

## Perception of coolness

- Fluttering material
- Movement of water
- Rustling of leaves

## Increasing evaporation

- Water feature
- Misting/spraying on surfaces
- Vegetation

## Increasing air movement

## INTERVENTIONS

- ✓ Geometric
- ✓ Surface
- ✓ Constructed Shade
- ✓ Green infrastructure
- ✓ Blue infrastructure

# Ways to Cool the Microclimate

# Which intervention is most suitable?



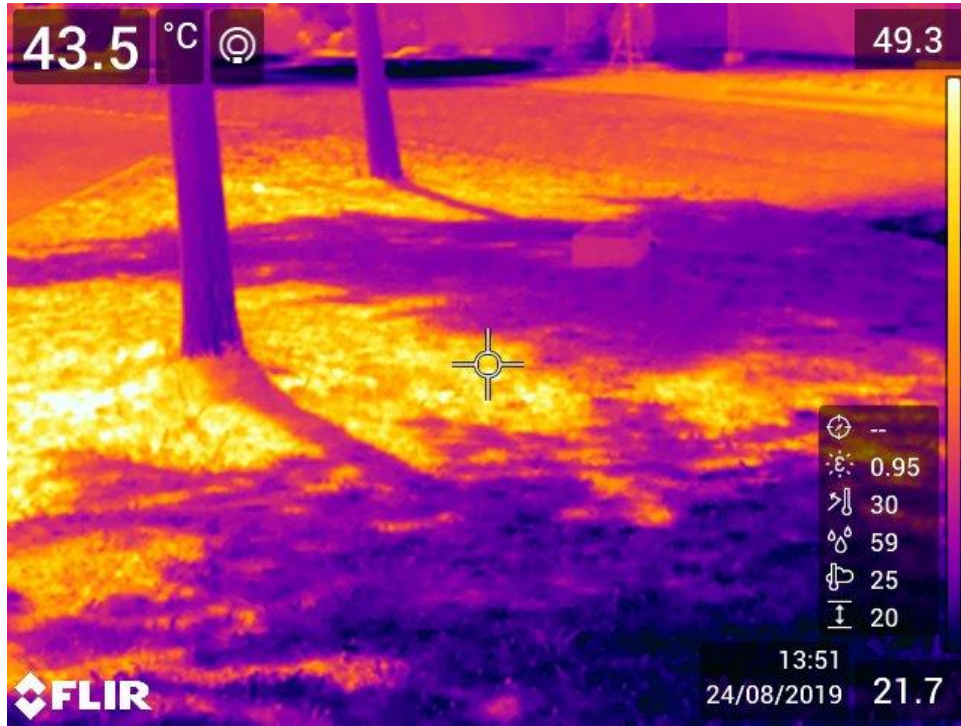
## Stakeholder workshops Belgium, France, the Netherlands & UK

Elected members, landscape architects, technical staff, facilities management etc

### Summary of key issues



# Tree planting



Effectiveness depends on:

- Foliage shape and dimensions
- Leaf area density
- Seasonal cycle
- Daily transpiration
- Water availability

For shade:

- Height of trunk
- Canopy spread

Benefits

Evapo-transpiration cooling  
Shade

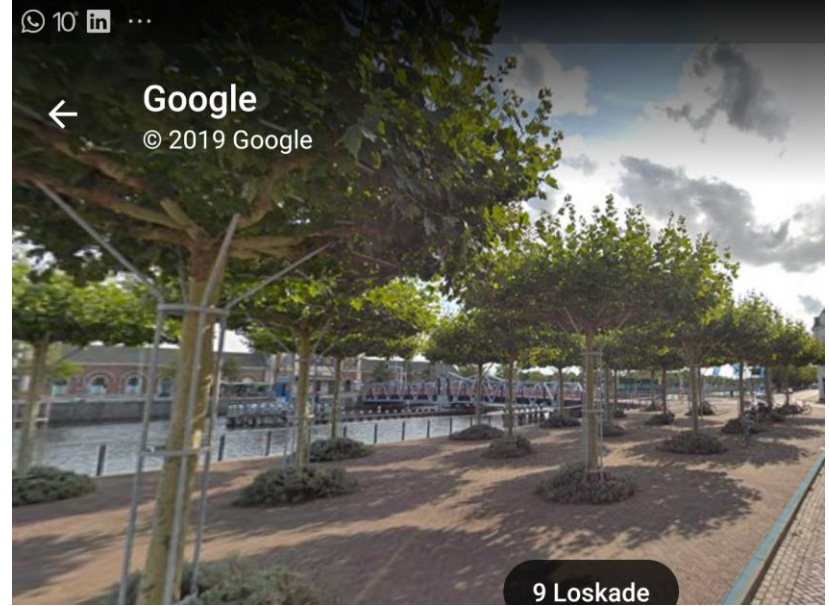
Disbenefits

maintenance – watering  
time to grow  
clearing fallen leaves

Co-benefits

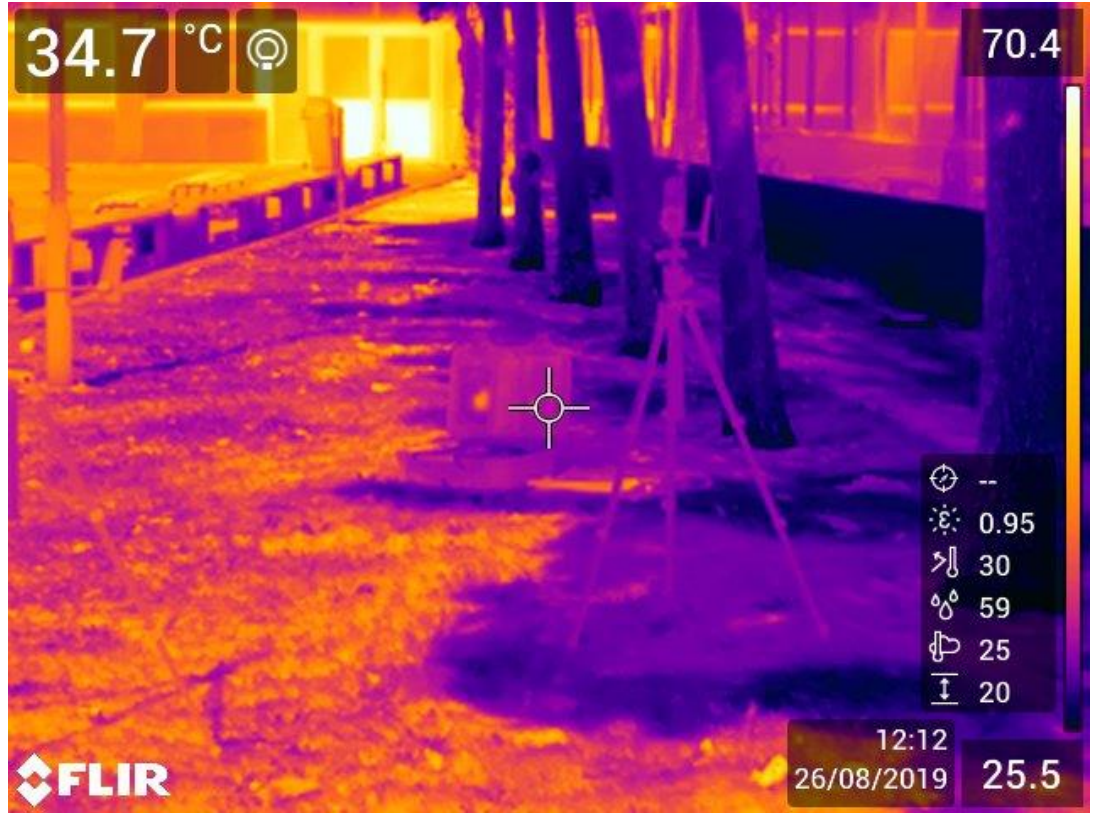
aesthetics  
recreation, relaxing, health,  
air quality  
biodiversity





# Decision Support Tool

- ✓ Effectiveness at mitigating heat stress
- ✓ Cost/maintenance implications
- ✓ Product information/case studies
- ✓ Public opinion
- ✓ Co benefits





**We're looking for case studies:**

**have you included heat stress mitigation in a design?**

**Do you have an installation we could measure?**

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