

BlueHealth

Linking environment, climate & health



A pan-European research investigation
linking health & urban blue space

Professor Simon Bell

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& innovation programme, grant agreement No 666773



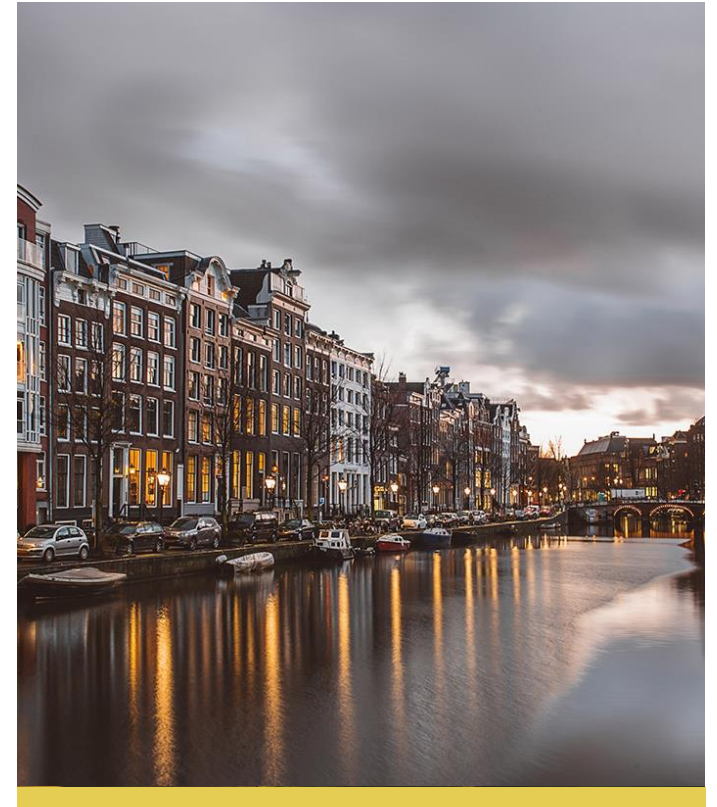
Before BlueHealth



Where were the gaps?

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- Previous work links natural environments & improved health
- Tended to focus on green spaces
- Less known about **blue space** & health



Why Europe?



The perfect test bed

- Over 91,000 km of coastline
- 194 coastal cities
- > 50% population live within 50 km of the sea & within 2.5km of fresh water



Nine institutions, 90+ researchers



An international multi-partner project



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport



LUND
UNIVERSITY



World Health
Organization

REGIONAL OFFICE FOR
Europe



Eesti Maaülikool
Estonian University of Life Sciences

www.emu.ee

ISGlobal **Barcelona**
Institute for
Global Health



cmcc
Centro Euro-Mediterraneo
sui Cambiamenti Climatici



ΑΡΙΣΤΟΤΕΛΕΙΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΘΕΣΣΑΛΟΝΙΚΗΣ



Funded by the European Union



EU Horizon 2020 programme

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- €6 million research grant
- Launched January 2016
- Runs until June 2020
- With legacy beyond



What is blue space?



In, on, near, sense

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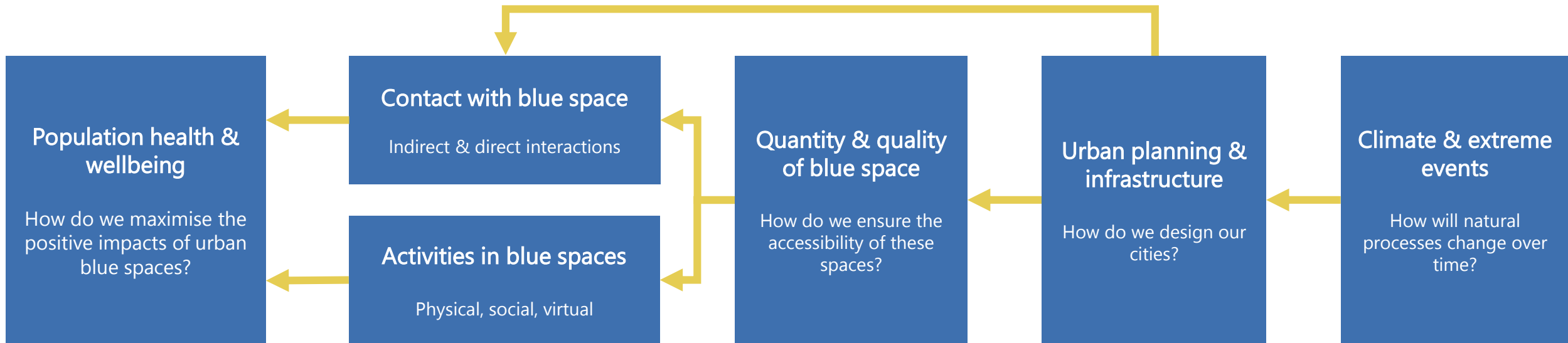
- ✔ Natural or manmade
- ✔ Outdoor environment
- ✔ Featuring water
- ✔ Accessible to humans



Conceptual model



Understanding the benefits of urban blue spaces



Interdisciplinary research



Conducted in Europe & globally

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- Systematic reviews
- Secondary survey data
- Large international survey
- Social & structural interventions
- VR lab-based experiments
- Future scenario planning
- Decision Support Tool (DST)
- Engagement & dissemination



Systematic reviews



The evidence when the project began

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


- Evidence links blue space & health
- Nature-based VR could reduce stress & anxiety for immobile patients
- Inconsistent evidence for benefits
 - Standardised design & reporting needed
 - Showing more evidence needed

Indoor Nature Interventions for Health and Wellbeing of Older Adults in Residential Settings: A Systematic Review

Nicola L Yeo, MSc ✉, Lewis R Elliott, PhD, Alison Bethel, BSc, Mathew P White, PhD, Sarah G Dean, PhD, Ruth Garside, PhD

The Gerontologist, gnz019, <https://doi.org/10.1093/geront/gnz019>

Published: 18 March 2019 [Article history](#) ▼

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Abstract

Background and Objectives

Having contact with nature can be beneficial for health and wellbeing, but many older adults face barriers with getting outdoors. We conducted a systematic review of quantitative studies on health and wellbeing impacts of indoor forms of nature (both real and simulated/artificial), for older adults in residential settings.

Research Design and Methods

Search terms relating to older adults and indoor nature were used in a scientific

Secondary survey data



Learning from existing data

- How is health predicted by residential exposures to green/blue spaces?
- Harmonise data
 - England & Wales, Catalonia, Scania
- Coordinated approach
 - Survey data processing
 - Exposure assessment
- Meta-analysis of results
 - Synthesis of results & differences between surveys



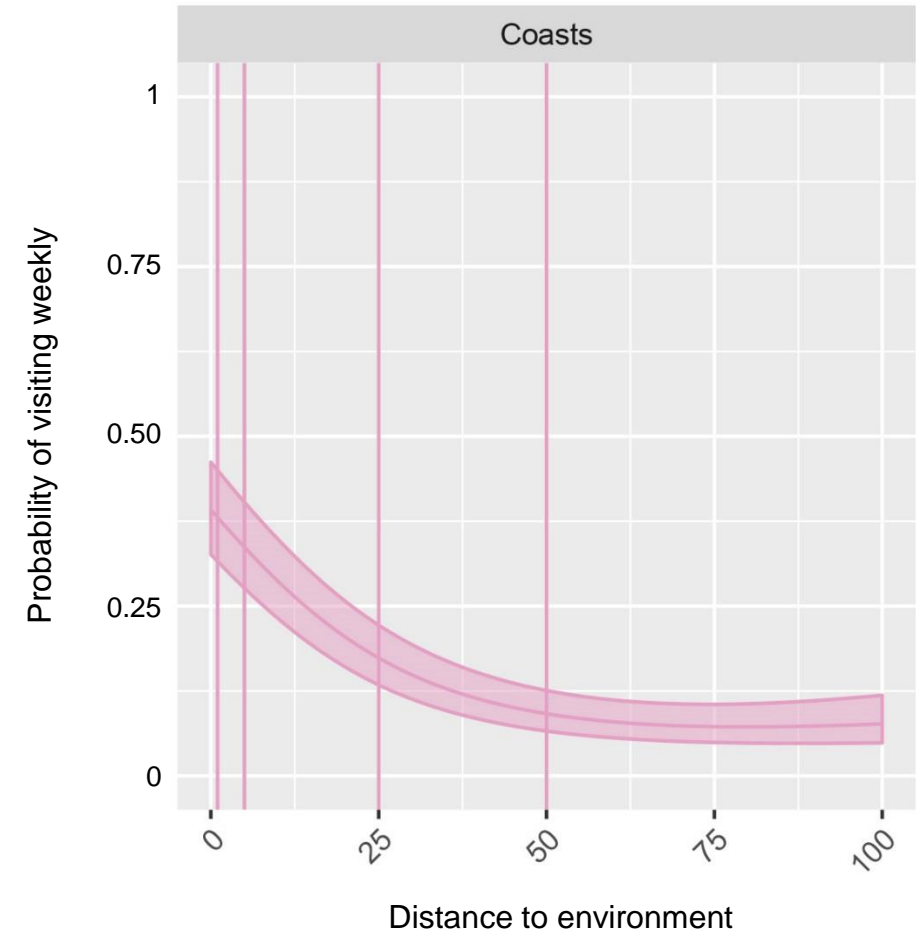
BlueHealth Survey



Largest survey of its kind in the world

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- 18,000 international respondents
 - 14 European countries + Australia, California, Canada, Hong Kong
 - Representative by age, gender, region
- Exploring several research questions
 - Physical activities near water
 - Effects on mental health
 - Differences between countries



Social & structural interventions



Urban acupuncture interventions across Europe

- 5 interventions
 - Estonia x2, Spain, Portugal, UK
- Community interaction & co-design
 - Redesign to improve access
 - Assess physical & mental health impacts
 - Pre/post intervention
- Urban Blue Space book & BlueProfiles website
 - Best practice, illustrations, examples



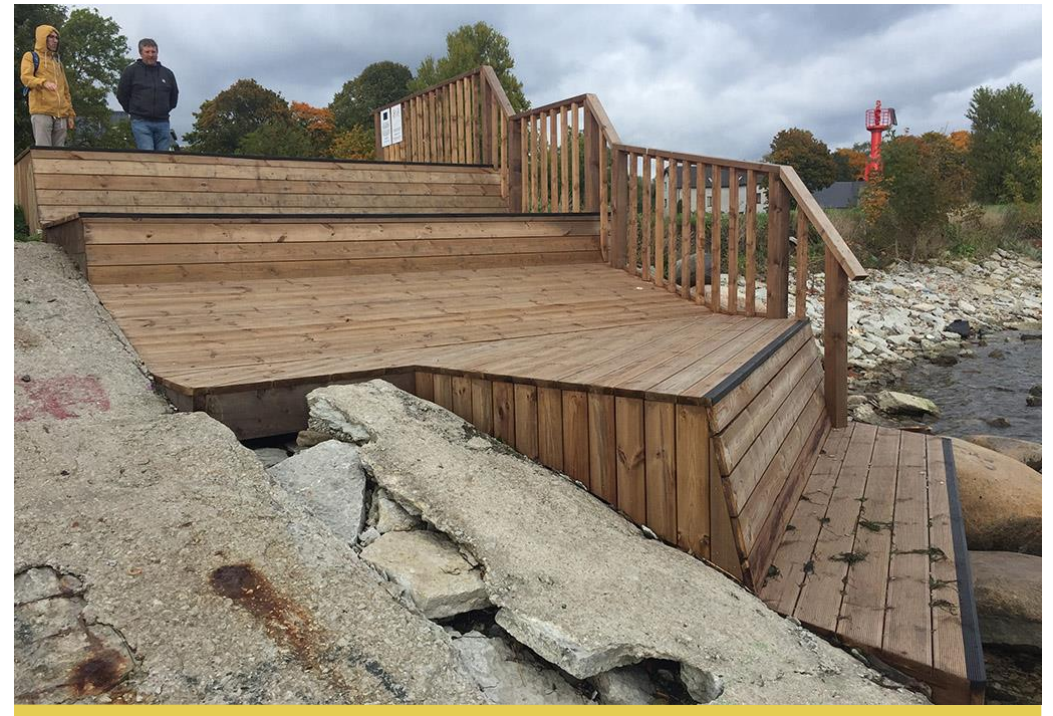
Social & structural interventions



Urban blue space in Estonia

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- Interventions in Tallinn & Tartu
 - Less used areas in urban environments
- Community participation
 - Informed via questionnaires & events
- New spaces with seating & walkways
- Evaluating impacts
 - BlueHealth Behavioural Assessment Tool (BBAT)
 - BlueHealth Community Level Survey (BCLS)
 - BlueHealth Environmental Assessment Tool (BEAT)
 - BlueHealth Decision Support Tool (DST)



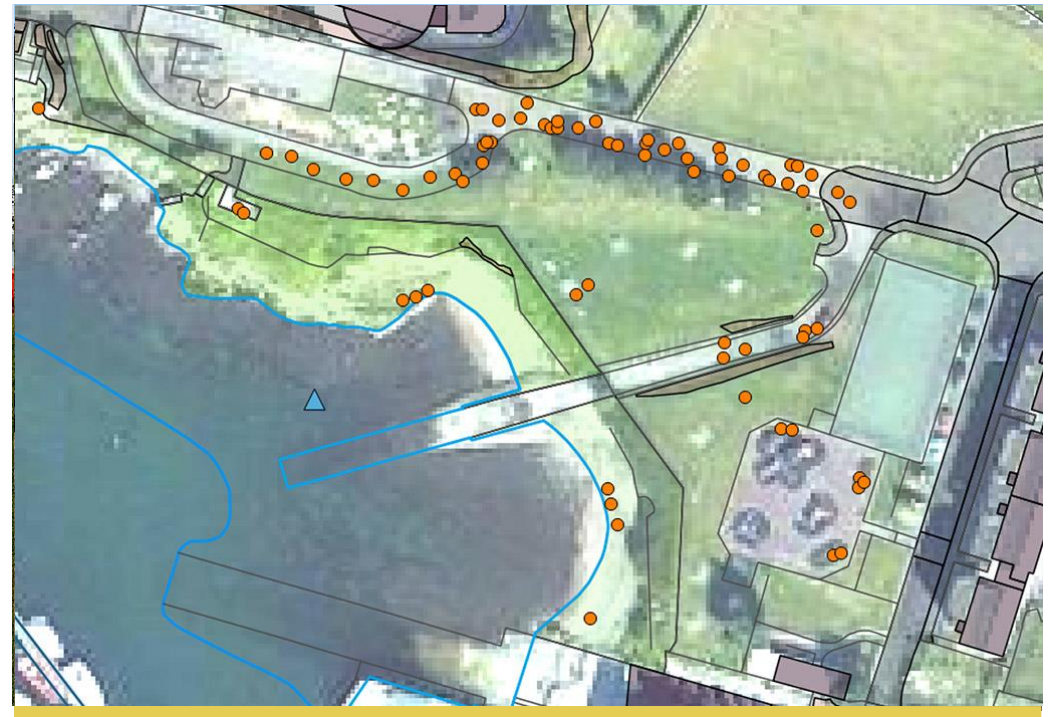
Social & structural interventions



Urban coast regeneration UK

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- Teats Hill, Plymouth, UK
 - Deprived area of coastal community
- Community and stakeholders involved:
 - Community participation for the design
 - Collaboration with council & planners
- New grass/seating/outdoor theatre
- Evaluating impacts
 - BlueHealth Behavioural Assessment Tool (BBAT)
 - BlueHealth Behavioural Assessment Tool (BEAT)
 - BlueHealth Community Level Survey (BCLS)
 - BlueHealth Slam (DST)



Social & structural interventions



Modernist spring in Spain

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- Rubi, Barcelona, Spain
 - Restoring abandoned spring – launched 2018
- Collaboration with community
 - Assess existing use
 - NGO volunteers support
- Trees planted, new bins, benches
- Evaluating impacts
 - BlueHealth Behavioural Assessment Tool (BBAT)
 - BlueHealth Community Level Survey (BCLS)
 - BlueHealth Environmental Assessment Tool (BEAT)



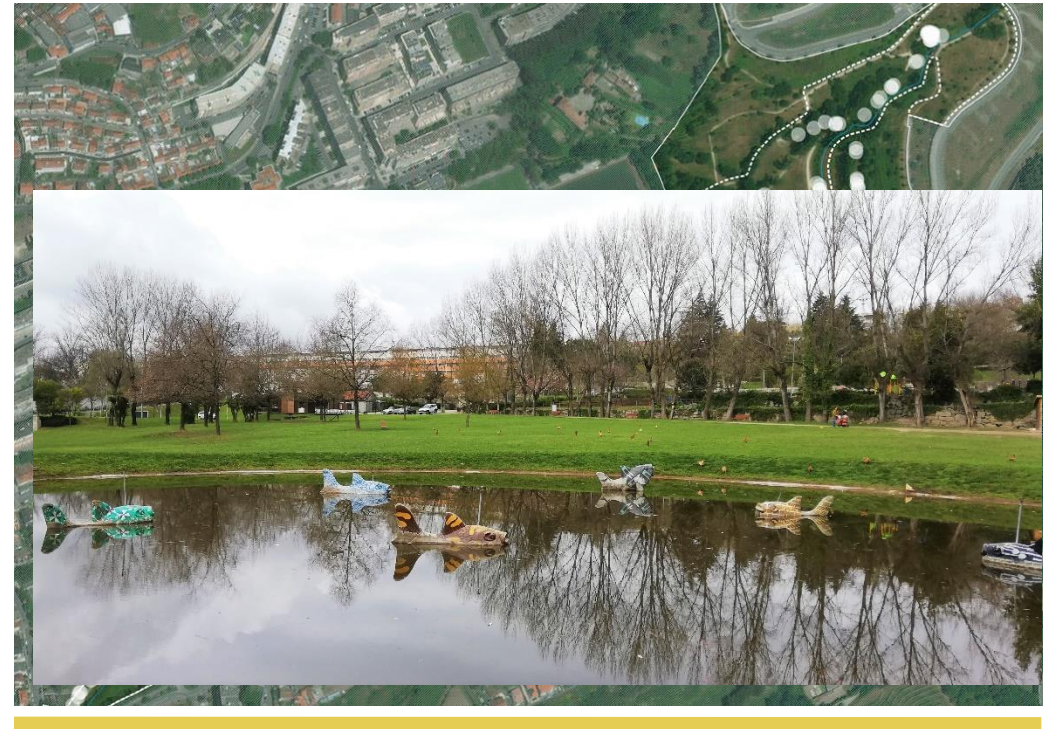
Social & structural interventions



Urban river in Portugal

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- Parque da Costa-Corso, Guimarães, Portugal
 - Park with poor access to blue space
- Collaboration with community
 - Residents, businesses, tourists, NGOs
- Cleaning and planting round a pond
- Evaluating impacts
 - BlueHealth Behavioural Assessment Tool (BBAT)
 - BlueHealth Community Level Survey (BCLS)
 - BlueHealth Environmental Assessment Tool (BEAT)



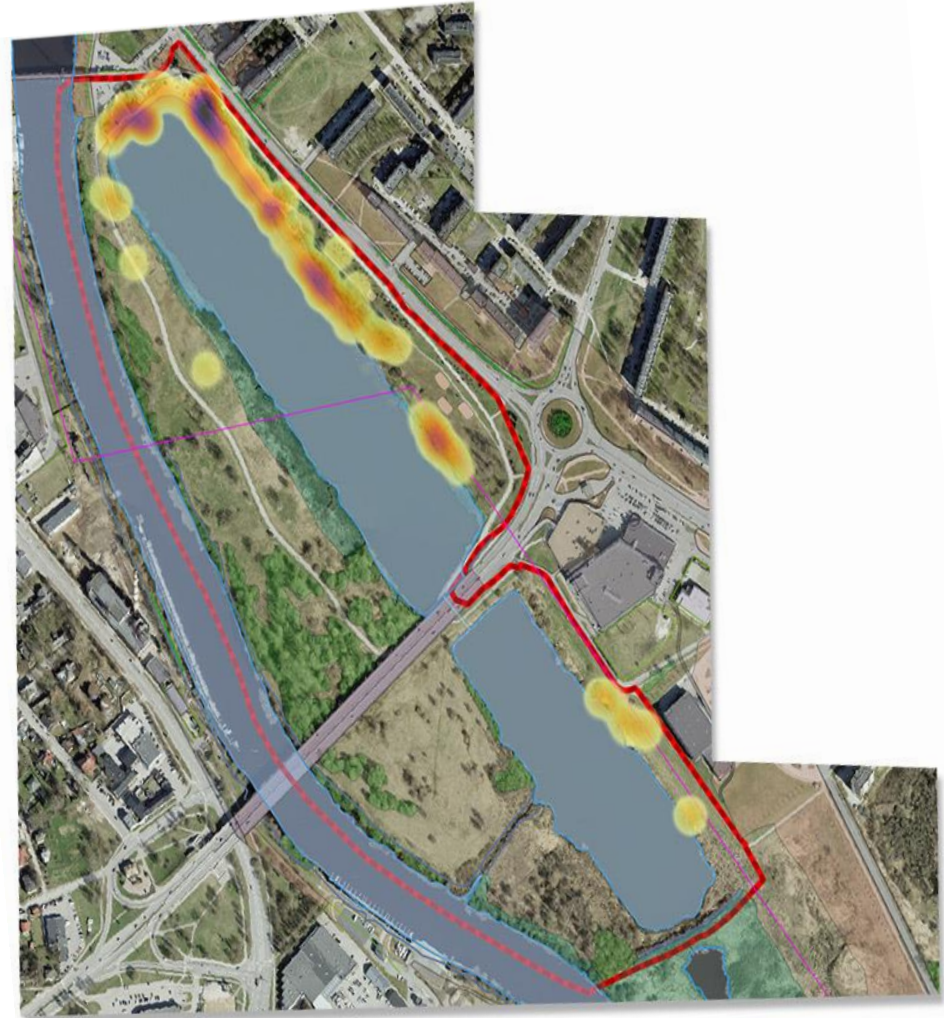
Social & structural interventions



3 new tools

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1. Behavioural Assessment Tool (BBAT)
 2. Environmental Assessment Tool (BEAT)
 3. Community Level Survey (BCLS)
 4. Decision Support Tool (DST)
- Help planners, architects, communities
 - Evaluate & monitor blue space use
 - Assessments pre/post
 - Inform blue infrastructure
 - Robust, transparent, repeatable



BlueHealth Environment Assessment Tool

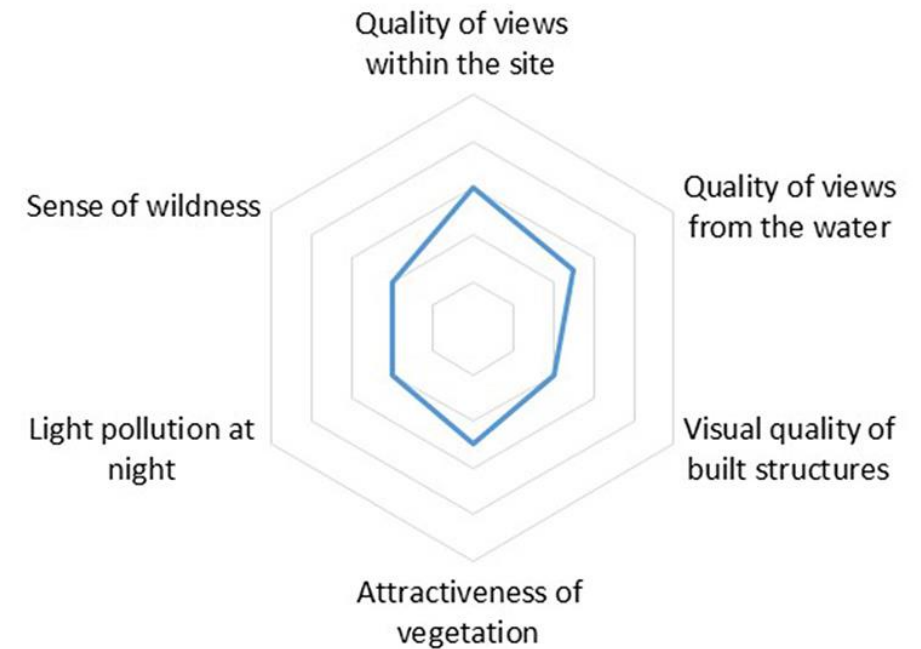


Evaluating site characteristics

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- Social, physical & ecological characteristics
 - What & where?
 - Environmental & ecological state?
- Online tool uses 4 steps:
 1. Pre-site survey desk study
 2. Description of site
 3. In situ terrestrial site survey
 4. Water ecosystem assessment

Visual Condition



BlueHealth Behavioural Assessment Tool

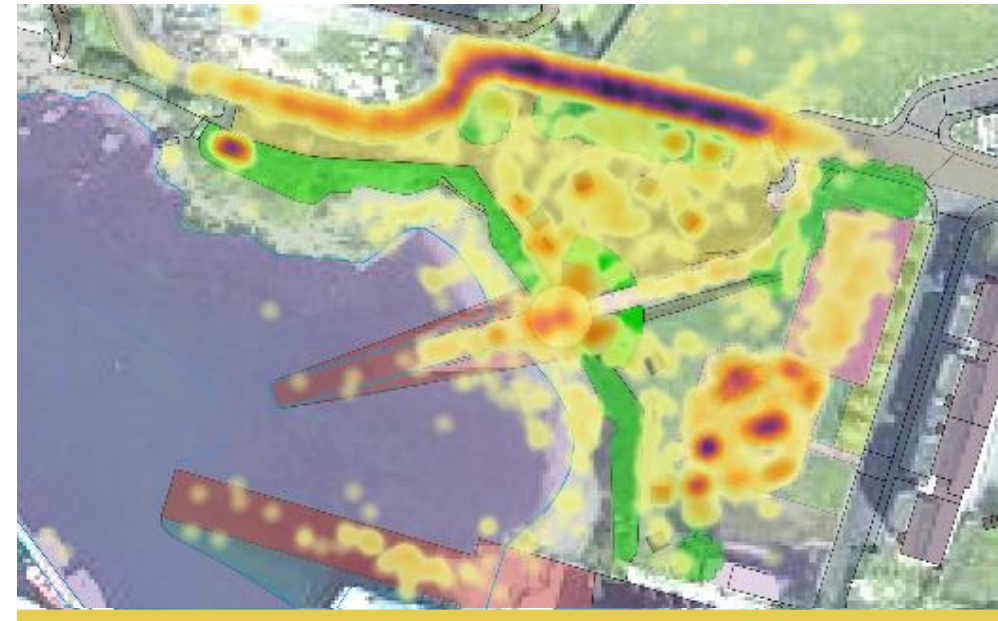


Assessing what people *do* at a site

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- Systematic observation of site
 - *Who* is doing *what*, *where*?
 - Maps passive/active behaviours
- Compares groups & activities
 - Suggests an observation protocol
- Statistical analysis
- Built in QGIS
 - Will be a plugin for public
 - Visual geographic heat maps

After intervention



BlueHealth Community Level Survey



Surveying sites at the local level

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- Measures **social context & wellbeing**:
 - Flexible surveys: online, paper, in-person
 - Adaptable: user can add questions
- Builds **evidence base** for plans:
 - People: who?
 - Visits: where/what/how?
 - Did it affect health?



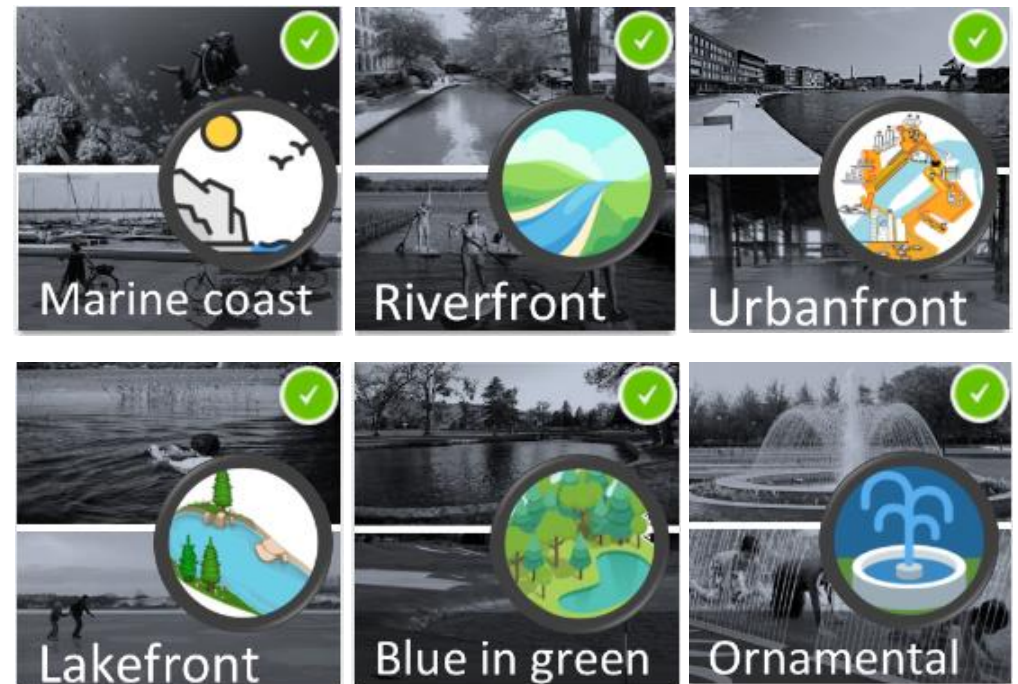
Decision Support Tool



Planning, designing & managing blue spaces

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- Aimed at planners, authorities, engineers, policy makers, businesses, and the public.
- Highlights risks & benefits to
 - public health & wellbeing
 - the environment



Future scenarios



Preparing society for the future

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- Developing future scenarios
 - To inform decision makers how to...
 - Design, manage & protect blue space
- Created in collaborative workshops
 - 5 European cities with planners, architects, environment & healthcare experts;
 - Considering risks from flooding, pollution increased heat & more.



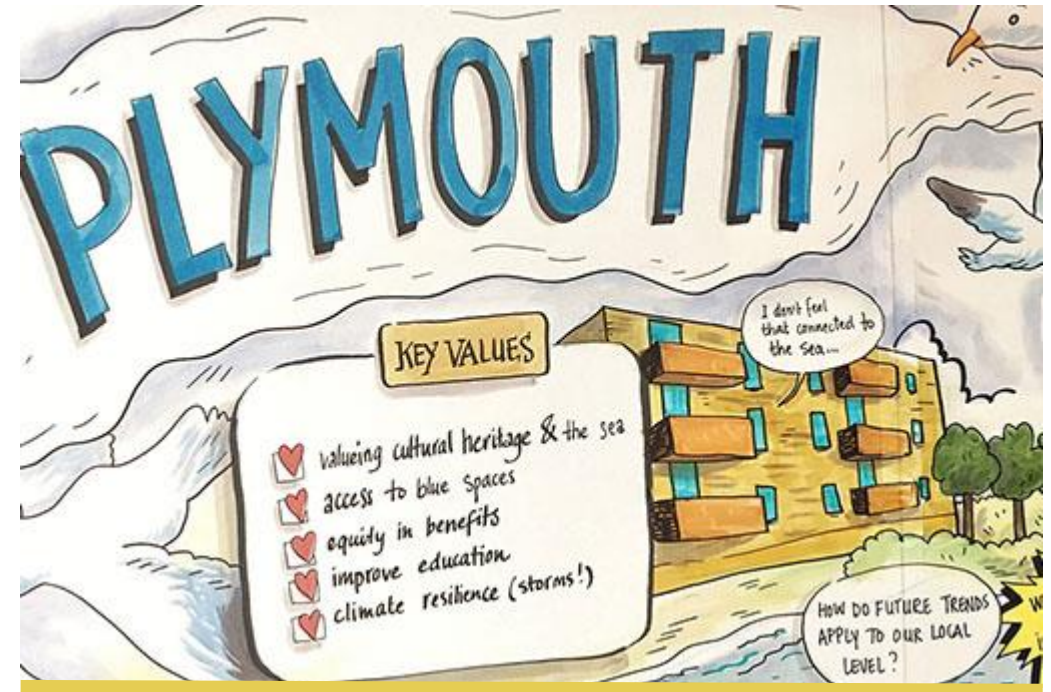
Informing governance



Blue-centred decision making

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- Comparative analyses of urban governance
- Amsterdam, Rotterdam & Plymouth
- Helping to understand:
 - How to ensure blue space is prioritised for health
 - Decision making when multiple interests at stake
 - What helps/doesn't help

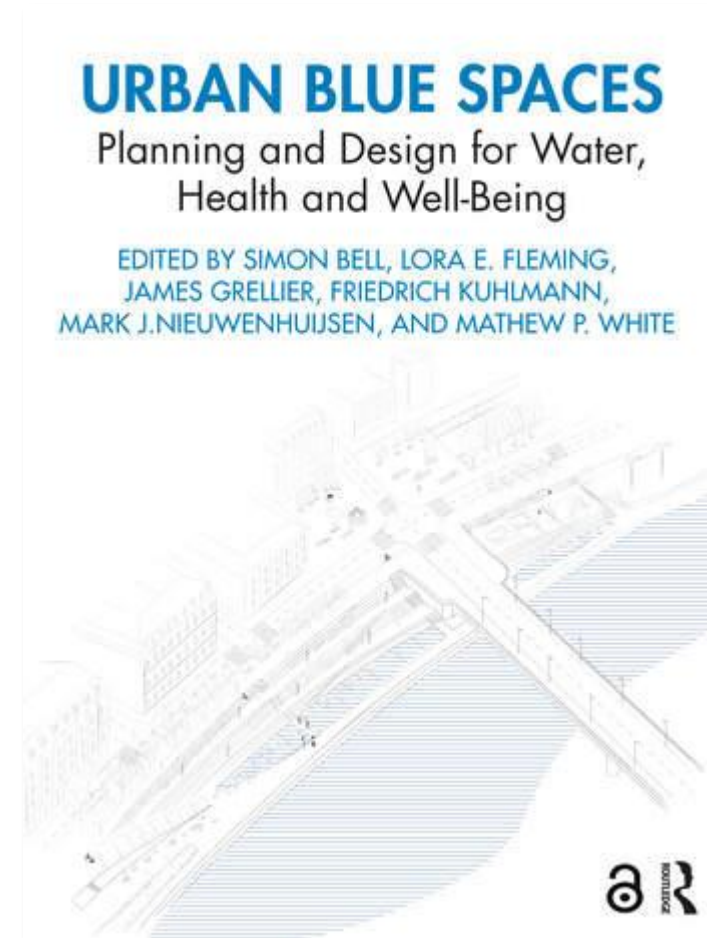


Key outputs for planners 1



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- Book: Urban Blue Spaces: planning and design for water, health and well-being.
- Open Access and downloadable from Routledge website



Key outputs for planners 2



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- BlueHealth Tools website: <https://bluehealth.tools/>
 - BEAT
 - BBAT
- BlueProfiles: a series of critically reviewed good practice examples from around the world for inspiration (will eventually comprise 180 examples):
<https://bluehealth.tools/2020/09/13/blue-profile/>

Key outputs for planners 3



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- BlueHealth Toolbox (with BEAT and BBAT but also other tools:
 - BlueHealth Community Level Survey: <https://bluehealth2020.eu/projects/bcls/>
 - Decision support tool: <https://www.bluehealth2020-dst.eu/>

BlueHealth

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Thank you

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Find out more at www.bluehealth2020.eu

Icons courtesy of www.flaticon.com

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