

CER Centre for Ecology & Hydrology

NATURAL ENVIRONMENT RESEARCH COUNCIL

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Designing Sponge Cities through Innovation in Policy, Health and Environmental Research

URBANEUROPE

A 3-year project funded by JPI Urban Europe and NSFC

Overview

Change in exposure to

Ave: -0.06 µg/m3 (-1%)

 Atmospheric chemistr transport models calculate health benefits of urban

vegetation via **pollution**

removal

PM2.5

Key Questions

Climate change will intensify current urban problems like flooding, water quality, high temperatures and air pollution. In China, where cities are expanding rapidly, and Europe, there are opportunities to better manage the greenspace (parks, trees, woodland) and bluespace (rivers, lakes) to provide multiple benefits to people.



Environmental quality indicators

water and air pollution, high temperatures and noise, and improve recreation and health opportunities. We will work with businesses to design and finance innovative solutions in Chinese and European cities, which can be followed around the world.

Approach

- New and existing case studies will provide the evidence base.
- Novel modelling techniques will assess multiple benefits.
- Big data, social media and participatory citizen science will help identify how to improve equitable access to urban green space.
- Engagement with key stakeholders will identify how business innovation can contribute to NBS.





Terminology

Water context:

- Sponge Cities
- Water Sensitive Cities
- Water Smart Cities
- Sustainable Drainage Systems Multiple contexts:
- Green Infrastructure
- Nature-Based Solutions (NBS)
- Low Impact Development

Expected Results

(1) How do changes in climate and societal drivers affect the co-benefits

and trade-offs between a range of environmental quality indicators that

(2) How can business, technology, science, planning and governance learn

from each other and work together to co-design novel solutions for liveable

arise from implementing Nature-Based Solutions (NBS)?

- A multi-domain framework for co-benefits and trade-offs arising from NBS implementation, formulated as an assessment tool.
- Defining how environmental impacts at larger

scales inform the choice of solutions adopted in urban areas.

Evidence-based recommendations on design criteria and management strategies to be applied in developing NBS to optimise cobenefits.

Expected Impact

DeSCIPHER aims to become the European and Chinese reference point for NBS for practitioners, researchers, policy makers, industry citizen science participants and wider society. It will allow a whole range of local stakeholders to assess how best to design NBS for optimal benefit (i.e. maximising co-benefits and minimising trade-offs in different environmental health and societal domains). As DeSCIPHER is designed specifically to identify suitable ways in which policy can be developed to incentivise business and society to help cities adapt successfully to future pressures from climate and population growth, it should have direct influence on Chinese economic development and welfare. In summary, it can foster a more informed decision-making process for a wide range of users.