Resilient European Cities: Nature-based Solutions for Clean Water

Publication

Report

Citation

Trémolet S. & Karres N. (2020). Resilient European Cities: Nature-based Solutions for Clean Water. The Nature Conservancy. London, United Kingdom.

Diffuse pollution is one of the key reasons European water bodies are failing to meet environmental objectives as specified in the EU Water Framework Directive (WFD). Outbreaks of toxic green algae affect rivers, lakes and coastal waters creating so-called "dead zones" where no aquatic life can thrive. Such outbreaks are by-products of dangerously increasing nutrient levels in water. Nutrient and soil losses have been recognised as challenges for decades across Europe and have been a key driver for freshwater biodiversity losses. With climate change, these challenges are likely to get worse: higher temperatures, lower river flows and more frequent and more violent flooding events. Other human-induced changes (such as dams and weirs) have modified the course of rivers and affected their natural flows.

This report examines how European cities can turn to nature-based solutions (NbS) to protect the water resources on which they **depend, contributing to improving environmental quality in upstream watersheds**. Specific objectives include:

- Identifying European cities that are particularly exposed to diffuse pollution due to changes in land use and poor land management practices;
- Assessing the potential for a selected range of nature-based solutions to mitigate diffuse pollution challenges and generate benefits for people and nature, when deployed at scale;
- Helping water sector stakeholders, policymakers, funders and financiers to identify practical ways to prioritise and deploy investments in nature-based solutions for water security (NbS-WS) in Europe.

Ecologic Institute and its partner EMVIS Consultant Engineers have supported The Nature conservancy (TNC) in the preparation of this report, in particular by identifying European cities relevant for analysis and supporting the development of the methodology to assess the effectiveness and costs of NbS-WS implementation.

Language

English

Authorship

Dr. Ulf Stein
Hannes Schritt
Rodrigo Vidaurre
John Tarpey
Benedict Bueb
Laurens Duin
Selma Clara Kreibich
Mona Freundt
Dr. Manuel Lago
Gerardo Anzaldúa
Sophie Trémolet
Nathan Karres

Credits

Research support was provided by a team of researchers including:

- Overall research and case studies: Anna Favero (The Nature Conservancy);
- Identification of European cities: Ulf Stein, Hannes Schritt, Rodrigo Vidaurre, John Tarpey, Benedict Bueb, Laurens Duin, Selma Kreibich, Mona Freundt (Ecologic Institute) and Serene Hanania (ICLEI);
- Support with analytical methodology: Evangelos Romas and Kyriakos Kandris (EMVIS);
- Support with cost estimations: Manuel Lago, Gerardo Anzaldúa and John Tarpey (Ecologic Institute);
- Support with data on nutrient concentrations from Bruna Grizzetti and Olga Vigiak (European Commission, Joint Research Centre).

The report benefited from reviews and comments contributed by Daniel Shemie, Andras Krolopp, Rob McDonald and Kerstin Pfliegner (TNC), Manuel Lago and Ulf Stein (Ecologic Institute), Barbara Anton (ICLEI), Kathleen Dominique (OECD) and Josefina Maestu (Spanish Ministry for the Ecological Transition and the Demographic Challenge).

Funding

The Nature Conservancy (TNC), International

Published by

The Nature Conservancy (TNC), International
Ecologic Institute, Germany
Local Governments for Sustainability (ICLEI), International

Year

2020

Dimension

118 pp.

Project

Nature Based Solutions for Water Security in Europe (NBS4WS)

Project ID

3579

Table of contents

Keywords

Adaptation
surface water quality, groundwater quality, floods, water scarcity, nature based solutions, agricultural practices
Manchester, United Kingdom, Madrid, Spain, Europe
case study
