# Nature-Based Solutions in Europe: Policy, Knowledge and Practice for Climate Change Adaptation and Disaster Risk Reduction

## EEA Report No 1/2021

### **Publication**

<u>Report</u>

## Citation

Castellari,S and Davis, M (2021). "Global and European policy frameworks". Naturebased solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction. EEA Report No 1/2021.

Climate change, biodiversity loss and degradation of ecosystems are linked and all have devastating consequences for our economic and social stability, health and well-being. Working with nature is increasingly recognised as an efficient way to tackle these growing challenges, according the new European Environment Agency (EEA) report '<u>Nature-based</u> solutions in Europe: Policy, knowledge and practice for climate change adaptation and disaster risk reduction.'

This EEA report, which Ecologic Institute's McKenna Davis co-authored, provides up-to-date information for policymakers on the how to apply nature-based solutions for climate change adaptation and disaster risk reduction and at the same time making use of multiple societal benefits that these solutions can bring. Drawing on selected examples across Europe, the report shows how impacts of extreme weather and climate-related events are already tackled in this way. It also assesses global and European policies and how nature-based solutions are increasingly being integrated in the efforts to shift towards sustainable development.

# How nature can protect us

Many countries are already restoring nature in river valleys and uplands to reduce downstream flooding risks. In coastal regions, natural vegetation helps to stabilise coastlines, while re-forestation is increasingly used for storing carbon. Nature is also brought back into cities by greening urban spaces or reopening old canals or rivers, which increases resilience to heatwaves and brings additional health and wellbeing benefits. Despite their increasing prominence, nature-based solutions could be mainstreamed further, the report notes.

# Other key findings of the report

• An EU-wide mapping of existing and potential nature-based solutions can help to identify priority areas for enhancing ecosystem services and addressing climate change and biodiversity loss concerns.

- Agreed standards, quantitative targets, measurable indicators and evaluation tools for nature-based solutions at EU level can help to assess progress, effectiveness and multiple benefits.
- As nature-based solutions depend on healthy ecosystems, which are themselves vulnerable to climate change, their potential for climate change adaptation and disaster risk reduction may decline in the future.
- Stakeholder involvement, dialogue and co-design of tools and measures are key to increase awareness, to resolve potential stakeholders' conflicts and to create social acceptance and demand for nature-based solutions.
- Further implementation of nature-based solutions to climate change adaptation and disaster risk reduction in Europe requires development of technical standards, increased knowledge of potential trade-offs, collaborative governance, capacity building and sufficient funding.

## Language

English

## Authorship

McKenna Davis

#### Credits

Lead authors

Sergio Castellari (EEA), Marianne Zandersen (ETC/CCA; Aarhus University and Aarhus University Interdisciplinary Centre for Climate Change, iClimate), McKenna Davis (European Topic Centre on Biological Diversity, ETC/BD, and Ecologic Institute), Clara Veerkamp (ETC/CCA and PBL Netherlands Environmental Assessment Agency), Johannes Förster (ETC/CCA and Helmholtz Centre for Environmental Research — UFZ), Mika Marttunen (ETC/CCA and Finnish Environment Institute, SYKE), Jaroslav Mysiak (ETC/CCA and Euro-Mediterranean Centre on Climate Change, CMCC and Ca' Foscari University Venice), Marie Vandewalle (ETC/CCA and Helmholtz Centre for Environmental Research — UFZ), Silvia Medri (ETC/CCA and CMCC), José Ramón Picatoste (EEA

#### Funding

European Environment Agency (EEA), International

#### **Published by**

European Environment Agency (EEA), International

#### Year

2021

#### Dimension

164 pp.

## ISBN

978-92-9480-362-7

## ISSN

1977-844

# DOI

# 10.2800/919315

## Project

European Topic Center on Biological Diversity (ETC/BD) 2014-2018

# **Project ID**

<u>2257-01</u>

# Table of contents

Contents

Acknowledgements

Key messages .

Executive summary

- 1 Introduction
- 1.1 Rationale and aim
- 1.2 Nature-based solutions for climate change adaptation and disaster risk reduction
- 1.3 Nature-based solutions and societal challenges
- 1.4 Structure of the report
- 2 Global and European policy frameworks
- 2.1 Approach
- 2.2 Global policy framework
- 2.3 EU policy framework
- 2.4 Gaps, barriers and opportunities

3 Knowledge base on nature-based solutions for climate change adaptation and disaster risk reduction

3.1 Climate hazards for selected European sectors and thematic areas

3.2 Climate change adaptation, disaster risk reduction and nature-based solutions

3.3 Multiple benefits of nature-based solutions for climate change adaptation and disaster risk reduction

3.4 Opportunities for implementing nature-based solutions for climate change adaptation and disaster risk reduction

3.5 Limitations of nature-based solutions for climate change adaptation and disaster risk reduction

3.6 Water management and nature-based solutions for climate change adaptation and disaster risk reduction

3.7 Forests and forestry and nature-based solutions for climate change adaptation and disaster risk reduction

3.8 Agriculture and nature-based solutions for climate change adaptation and disaster risk reduction

3.9 Urban areas and nature-based solutions for climate change adaptation and disaster risk reduction

3.10Coastal areas and nature-based solutions for climate change adaptation and disaster risk reduction

3.11 Knowledge gaps and research needs

4 An analysis of practical uses of nature-based solutions for climate change adaptation and disaster risk reduction in Europe

- 4.1 Introduction
- 4.2 Review and examples of analysed cases
- 5 Financing nature-based solutions
- 5.1 Introduction
- 5.2 Economic policy instruments
- 5.3 Insurance-related instruments
- 5.4 Debt and equity instruments
- 5.5 Business model innovation
- 5.6 European funds
- 6 Conclusions
- 6.1 Global and EU policy frameworks
- 6.2 Improving the knowledge base
- 6.3 Challenges for the implementation
- 6.4 Financing the implementation
- 6.5 Knowledge platforms
- Abbreviations and symbols.

References

Annex 1 Links to EEA activities

Annex 2 Overview of the key climate hazards identified for Europe

Annex 3 The selected cases of nature-based solutions in Europe

Annex 4 Descriptions of the example cases of nature-based solutions in Europe

A4.1 Brague case (France): flash flooding and wildfire hazards in a Mediterranean catchment

A4.2 Serchio river basin case (Italy): floods and drought risks in a Mediterranean basin

A4.3 LIFE Resilient Forest case (Germany, Portugal and Spain): coupling water, fire and climate resilience with biomass production in forestry to adapt watersheds to climate change

A4.4 Agroforestry case (France): increasing resilience and productivity

A4.5 Tullstorpsån 2.0 case (Sweden): adapting agriculture to wetter and drier climates

A4.6 Paludiculture case (Germany): peatland restoration for climate change mitigation and adaptation

A4.7 Blue-green corridors case (Belgrade, Serbia): mitigating natural hazards and restoration of urbanised areas

A4.8 Green roof case (Hamburg, Germany): combining regulation, dialogue, incentives and science

A4.9 Ugento case (Italy): using beached leaves of Posidonia (seagrass) to protect dunes

A4.10 Hermes case (Albania, Bulgaria, Cyprus, Greece): a harmonised framework to mitigate coastal erosion

A4.11 Terracing in mountains (France and Spain): preventing landslides with old techniques

Annex 5 Knowledge platforms addressing nature-based solutions for climate change adaptation and disaster risk reduction at European and national levels

A5.1 Introduction

A5.2 Overview of relevant platforms

Annex 6 Glossary

#### Keywords

<u>Biodiversity</u> <u>Cities</u> <u>Nature-based Solutions and Green Infrastructure</u> nature-based solutions, cities, urban, governance, innovation, transition, disaster risk reduction, green infrastructure, ecosystem-based management, sustainable forest management, natural water retention measures, EU Europe

**Source URL:** *https://www.ecologic.eu/18038*