# NATURE-BASED SOLUTIONS FOR CLIMATE RESILIENCE

GLOBAL PROGRAM ON
NATURE-BASED SOLUTIONS
FOR CLIMATE RESILIENCE

GFDRR
Global Facility for Disaster Reduction and Recovery

Administered by
THE WORLD BANK
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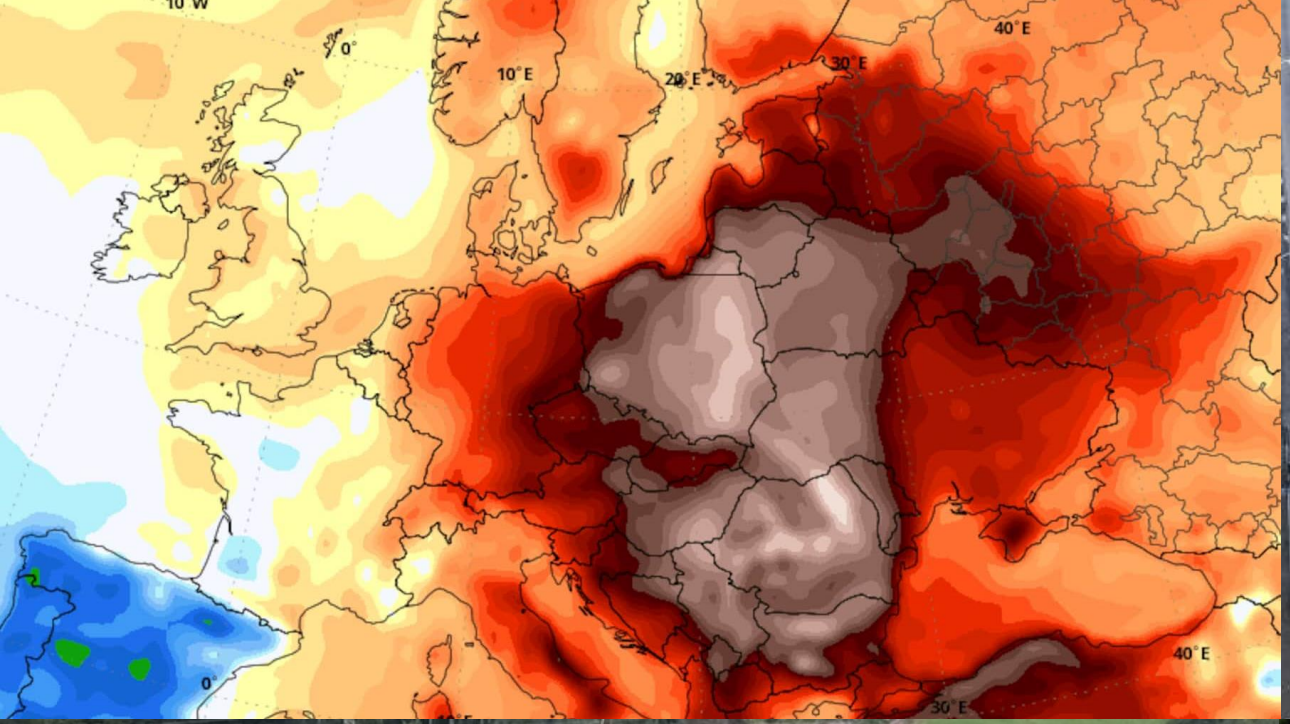
Brussels, 12th September 2024


Google Earth Timelapse
Cairo And New Cairo City, Egypt
1984

Source: Gallup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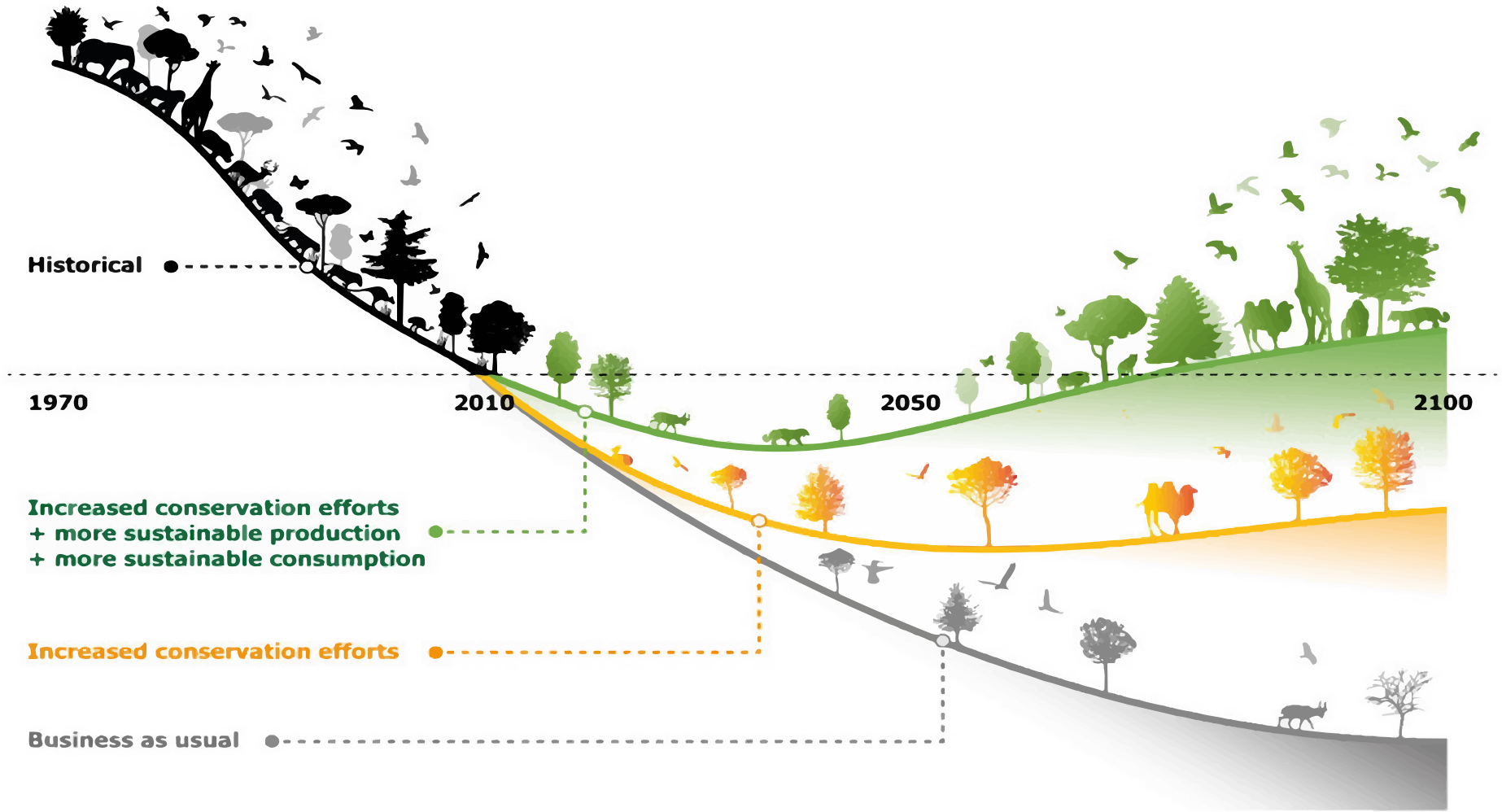
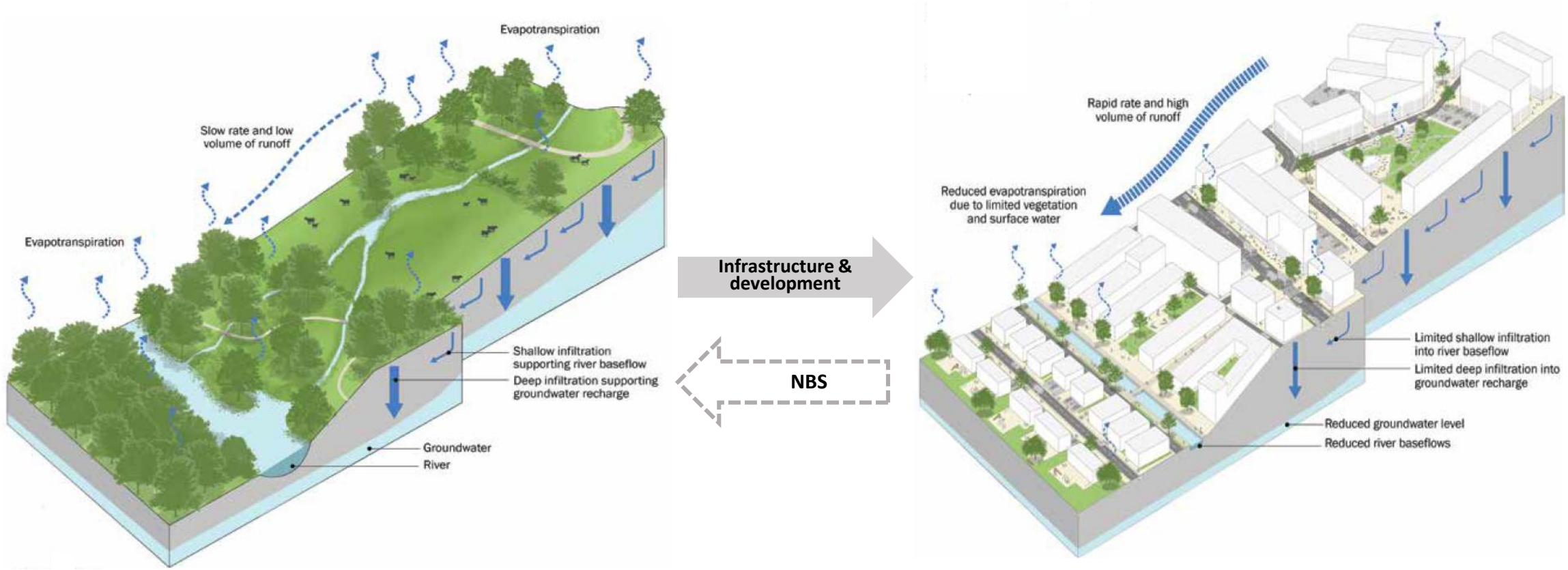
# BENDING THE CURVE OF BIODIVERSITY LOSS




*Credit: Adam Islaam | IIASA — https://bit.ly/4ggmeJv*

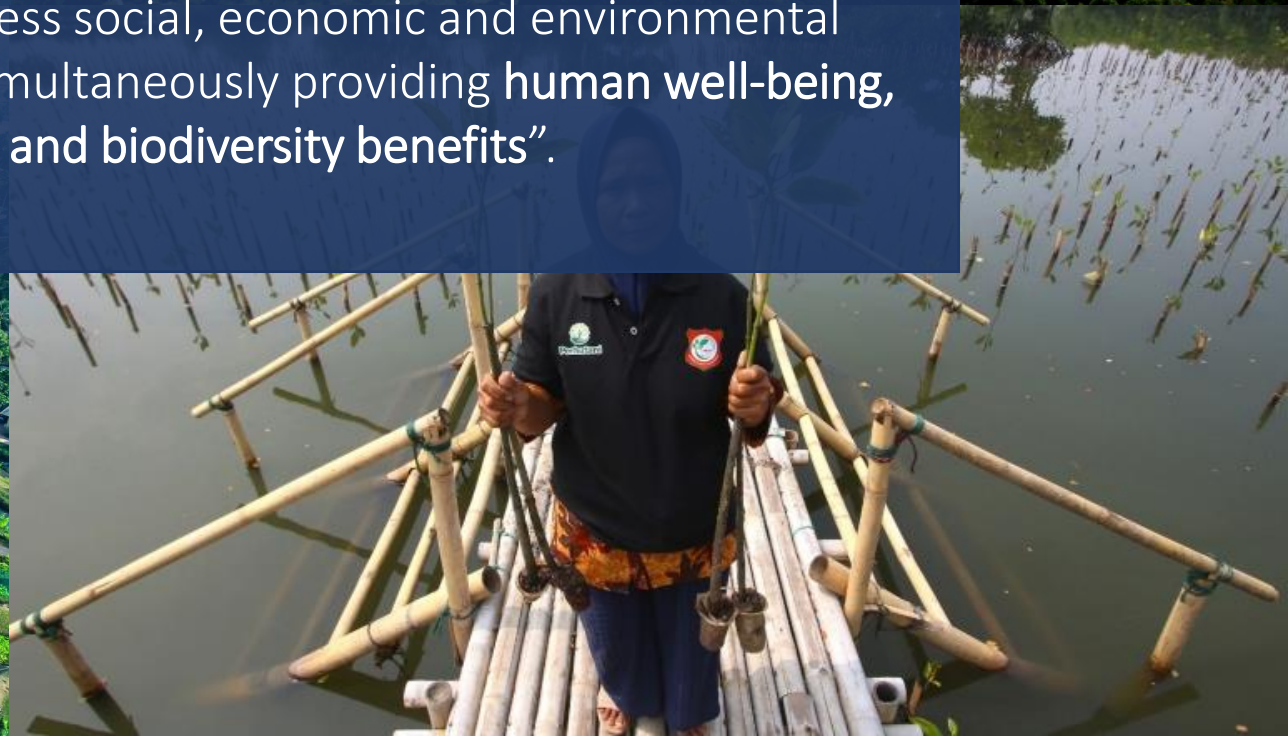
# NBS – Bringing Nature back in Infrastructure, Policy and Planning




*The SUDS Manual, CIRIA 2015*

**The UN Environment Assembly** has adopted the definition of NBS as "actions to protect, conserve, restore, sustainably use and manage **natural or modified** terrestrial, freshwater, coastal and marine **ecosystems** which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing **human well-being, ecosystem services, resilience and biodiversity benefits**".

Source: Biophilic Cities



# NATURE-BASED SOLUTIONS AT DIFFERENT SCALES

*Pocket parks*

*Bioretention areas*

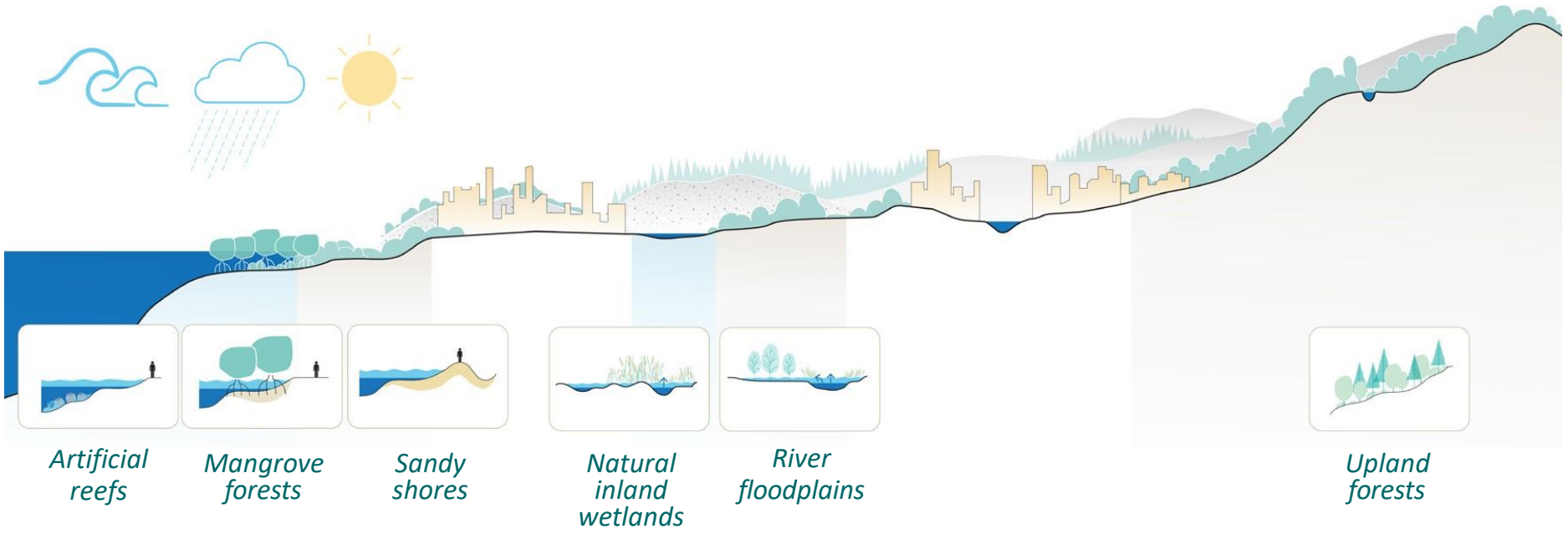
*Urban farming*

## FROM NEIGHBORHOOD SCALE...


*World Bank, 2021. A Catalogue of Nature-Based Solutions for Urban Resilience.*

# NATURE-BASED SOLUTIONS AT DIFFERENT SCALES

## ...TO NATURE-BASED SOLUTIONS AT LANDSCAPE SCALE




*Upland forests*

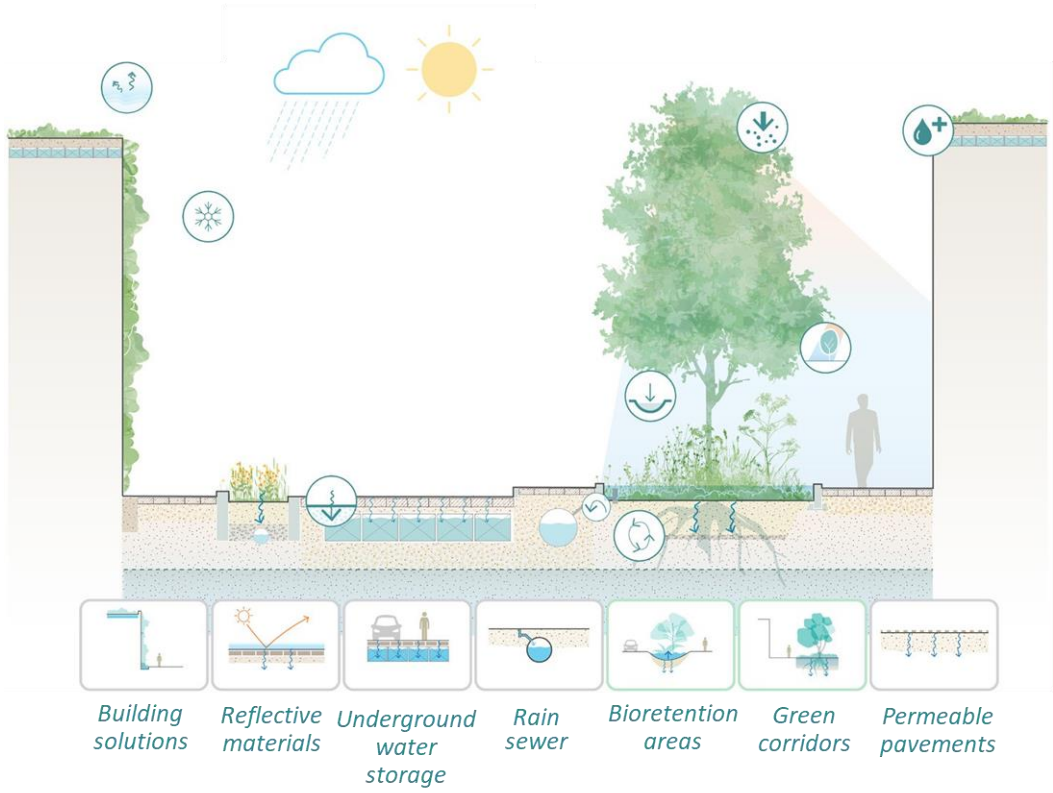
*River floodplains*

*Natural Inland Wetlands*

*World Bank, 2021. A Catalogue of Nature-Based Solutions for Urban Resilience.*

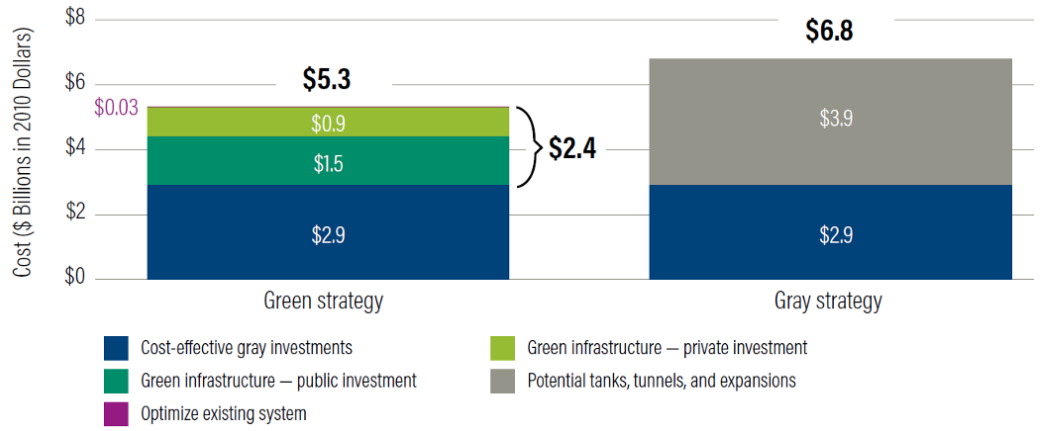
# INTEGRATING NBS WITH GRAY INFRASTRUCTURE

## Urban green space with integrated drainage infrastructure to reduce stormwater flooding



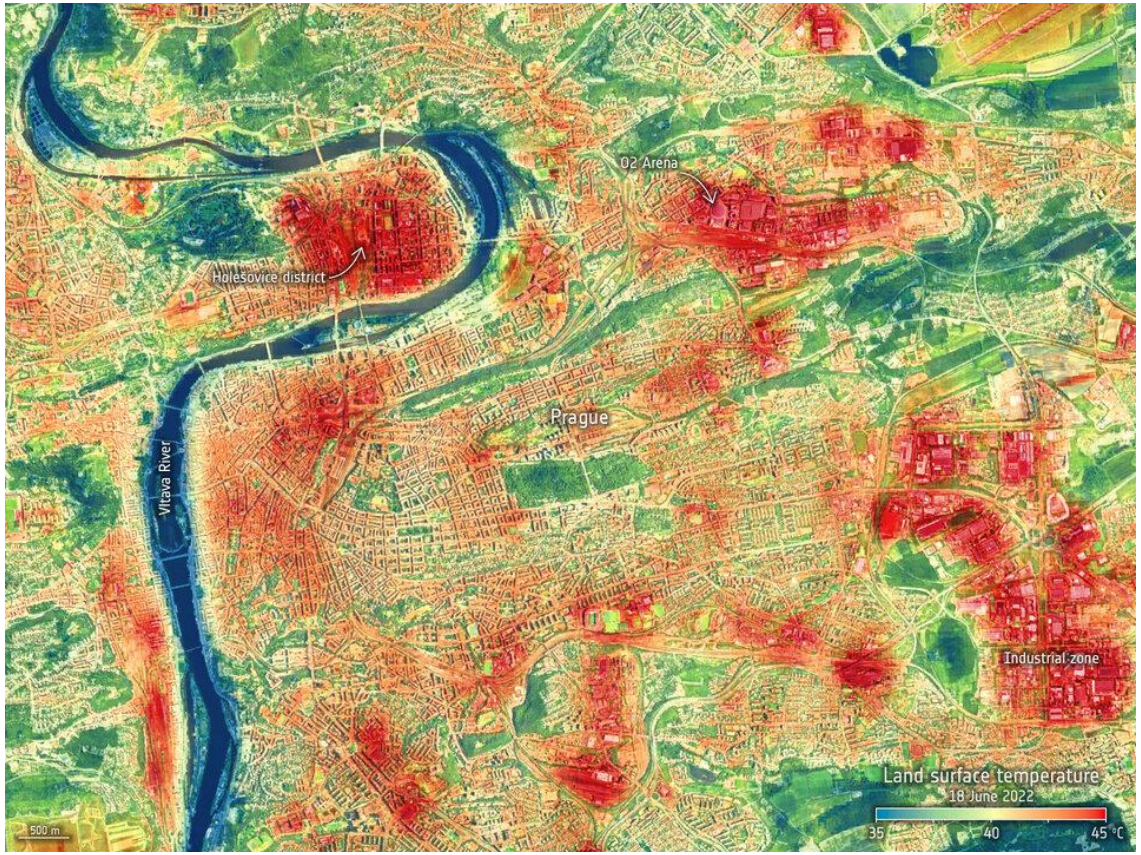

- *Carbon sequestration*
- *Water collection*
- *Cooling effect*
- *Evapotranspiration*
- *Infiltration*
- *Shade*
- *Water storage and reuse*
- *Soil cleaning*

Figure 4.2 | Reducing Cost by Mixing Green and Gray Infrastructure*, New York City

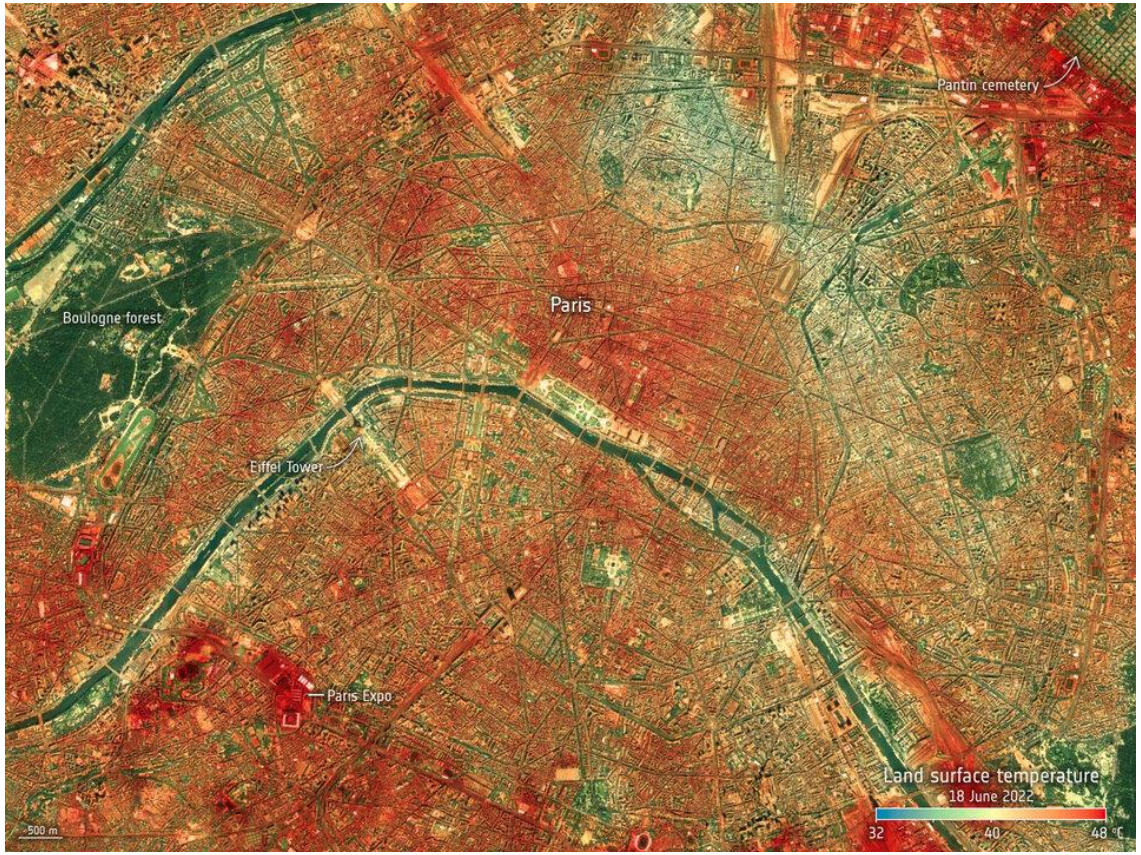



*https://openknowledge.worldbank.org/handle/10986/31430*

# NBS REDUCE THE URBAN HEAT ISLAND EFFECT



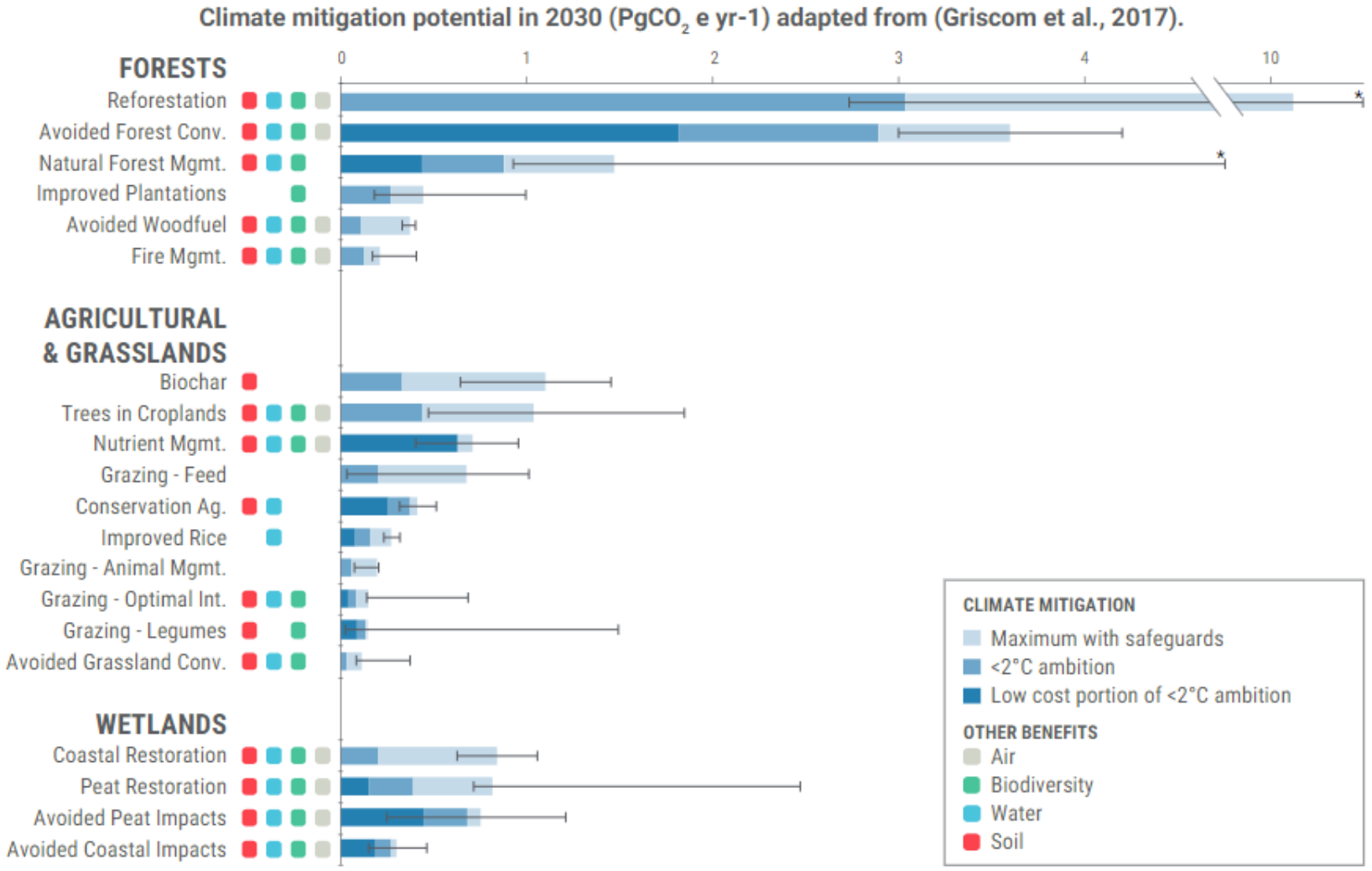

*Land-surface temperature in Prague on 18 June 2022*



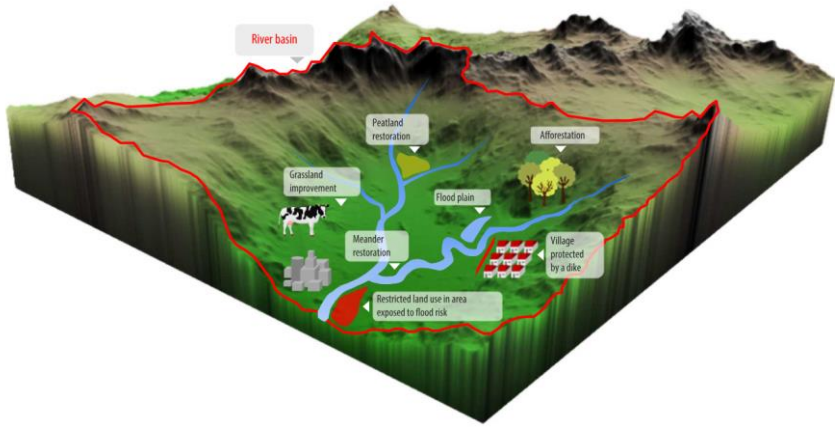

*Land-surface temperature in Paris on 18 June 2022*

*European Space Agency*

# CLIMATE MITIGATION



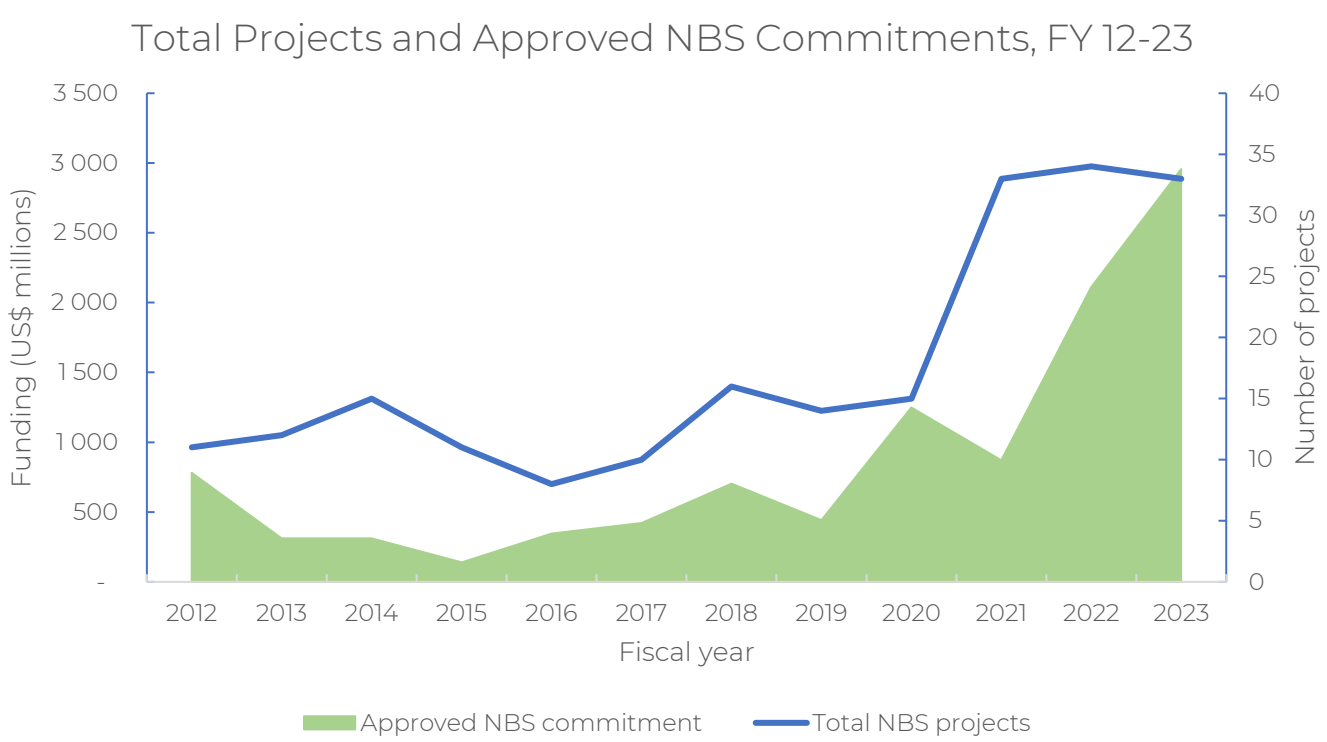
# NBS IN EU POLICIES


**EU Flood Directive**


# THE WORLD BANK'S NATURE-BASED SOLUTIONS FOR CLIMATE RESILIENCE PORTFOLIO IS GROWING

A portfolio review identified a total of **211 investment project** with project components using NBS for Climate Resilience **from FY12 to FY23**.

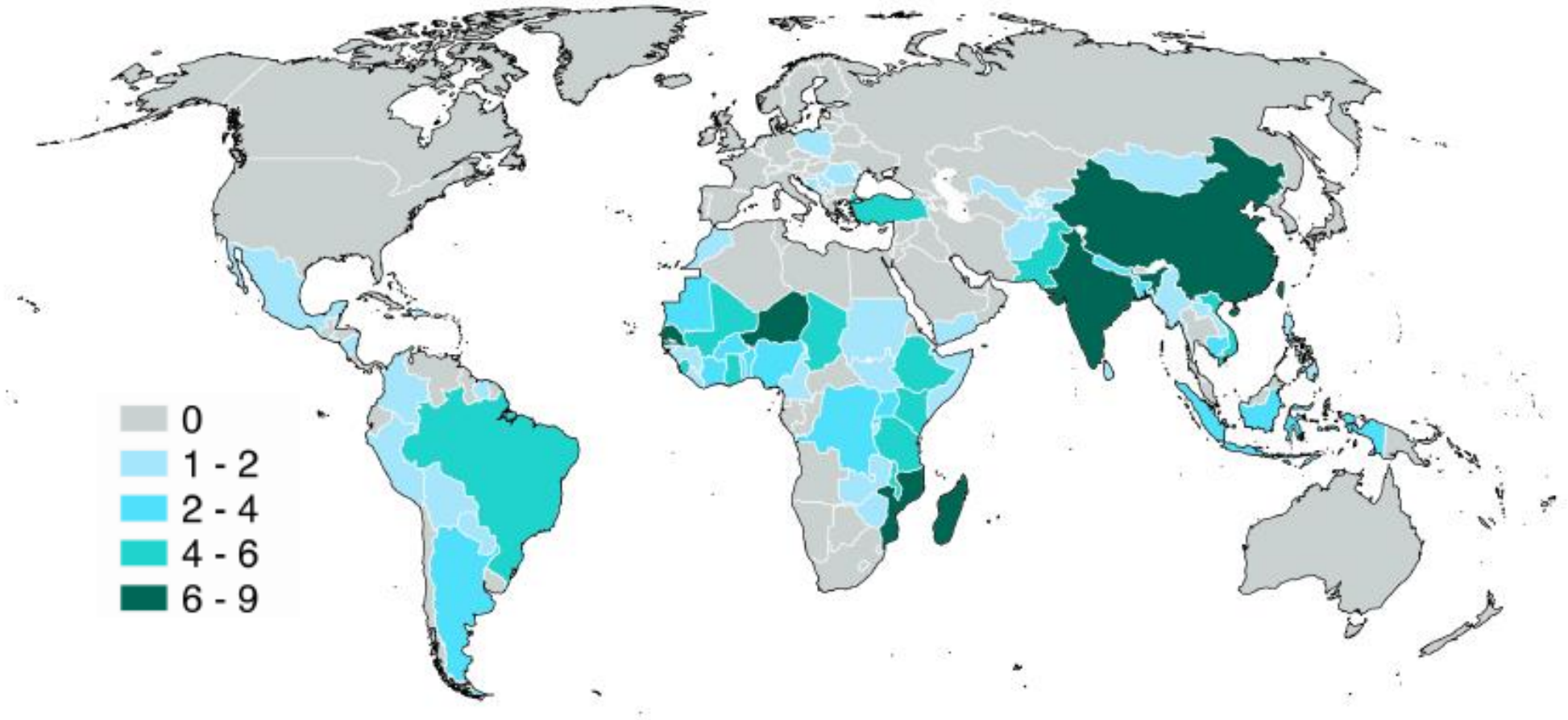



These components are valued at an estimated **10.6 Billion USD**

Rehabilitating or restoring **3 million hectares of ecosystems**

Protecting **35,000 kilometers of coastline and riverbank**

# NUMBER OF WORLD BANK NBS PROJECTS



# POLAND INTEGRATED FLOOD RISK MANAGEMENT

## Odra-Vistula Flood Management Project

## Odra River Basin Flood Protection Project

A combination of **green and green-grey approaches** are applied to **reduce flood risk and improve the environment**

- **Room for the River**: more space for rivers to flow
- **Multipurpose dry polders** to use for farming and flood overflow
- **Green zones in urban centers**
- **City by-passes**

# KYRGYZSTAN GREEN AND GREY INFRASTRUCTURE

## Kyrgyzstan Republic Resilient Landscape Restoration Project

- Kyrgyzstan faces landslides, mudflows and floods caused by land degradation and climate extremes
- The project invests in a combination of green and grey infrastructure to address hazards and support communities

*Credits: International Land Coalition*

# BOGOTA URBAN RESILIENCE AND WATER MANAGEMENT

## Rio Bogotá Environmental Recuperation and Flood Control Project

- The project has supported the construction of a wastewater treatment plants that improves the water quality, has reduce flood risk by rehabilitating the river, and has increased the environmental value by creating multifunctional urban green areas

# The World Bank and GFDRR launched a dedicated Effort to Scale Up Nature-Based Solutions globally



PILLAR 1: KNOWLEDGE

PILLAR 2: OPERATIONS

PILLAR 3: PARTNERSHIPS

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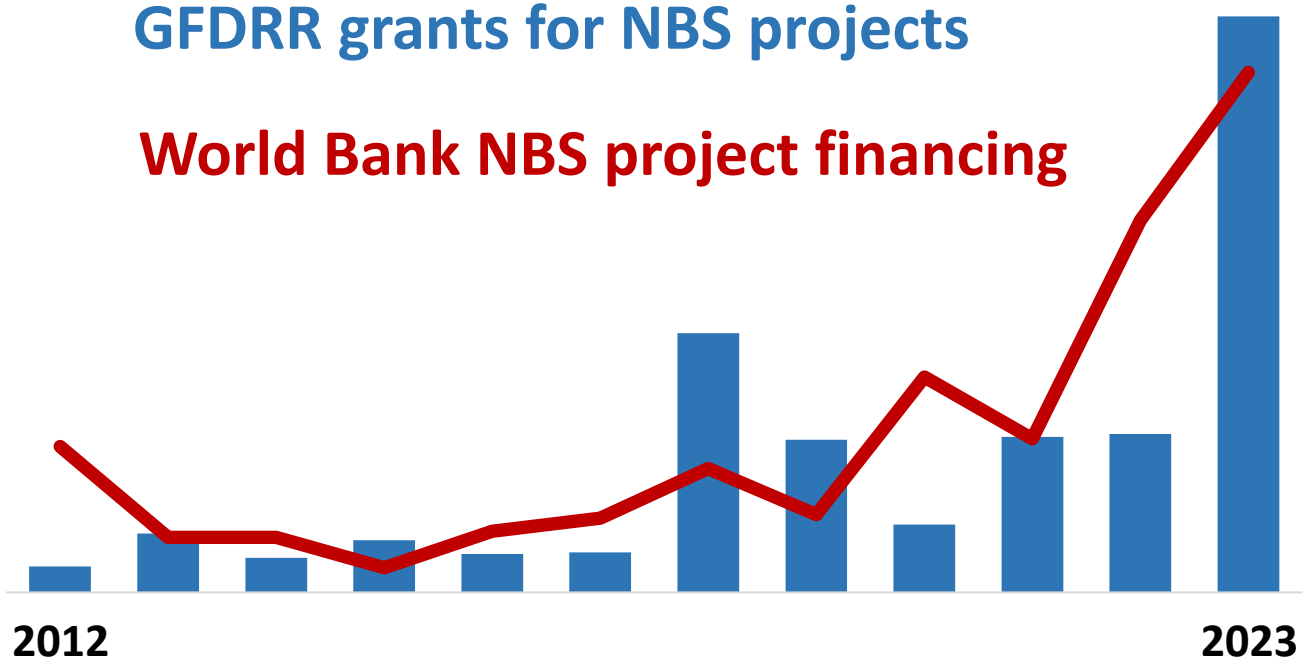
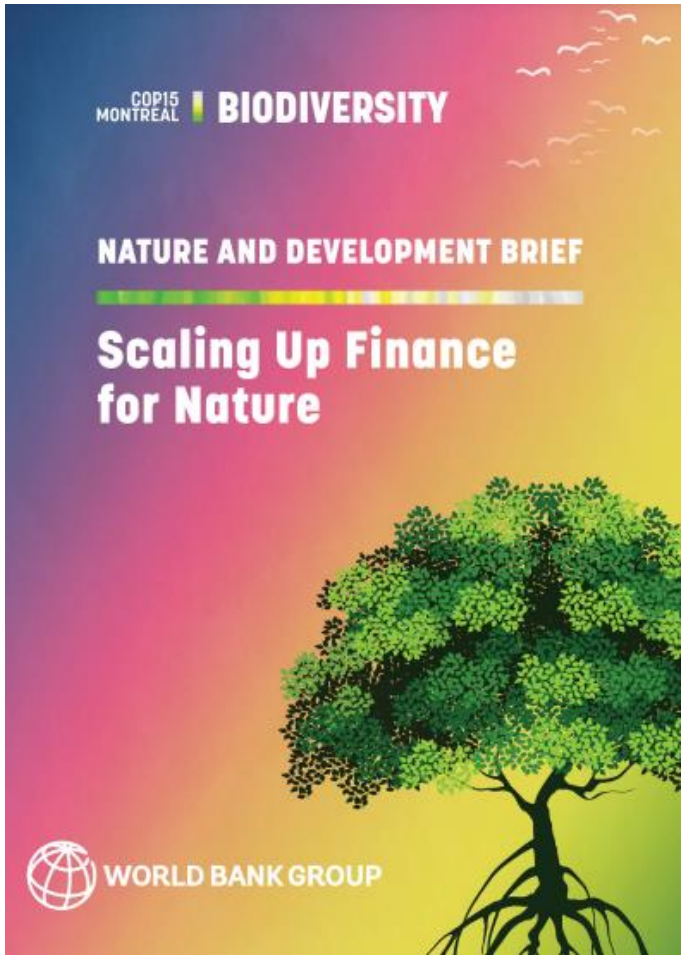
The World Bank's investments on **Nature-based Solutions for Climate Resilience** are growing and **GFDRR is a driving force** behind this growth

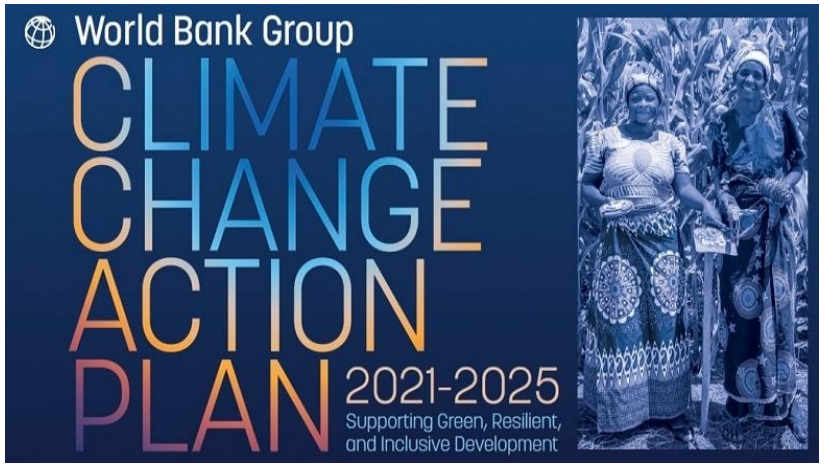
NATURE-BASED SOLUTIONS FOR CLIMATE RESILIENCE

# GFDRR DRIVES INVESTMENTS

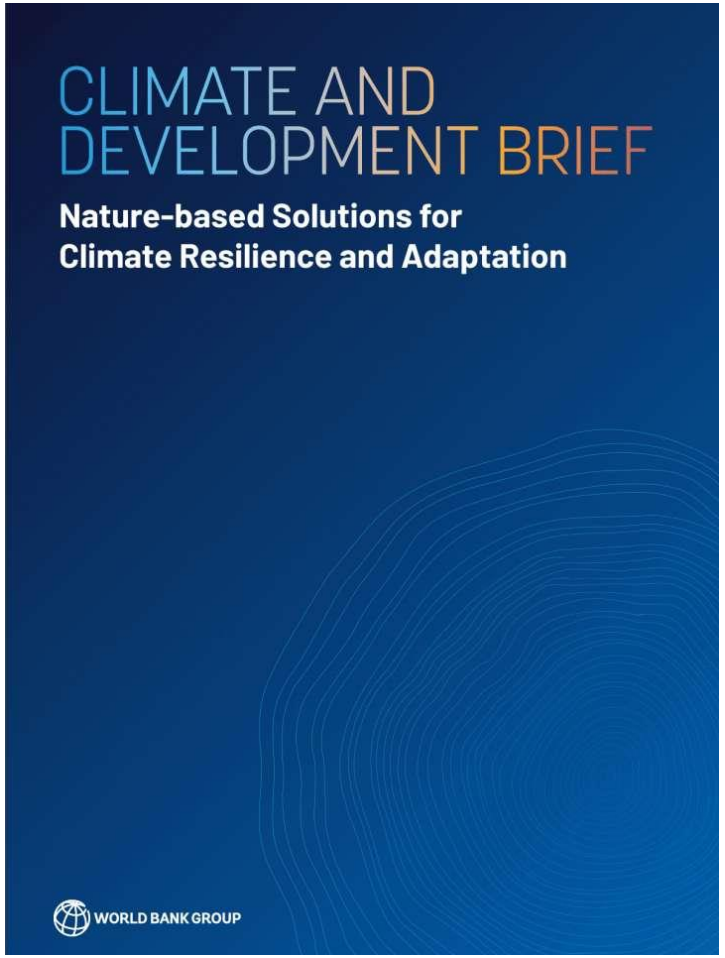


# SETTING HIGH-LEVEL NATURE AND CLIMATE GOALS AND HOW NBS CONTRIBUTES

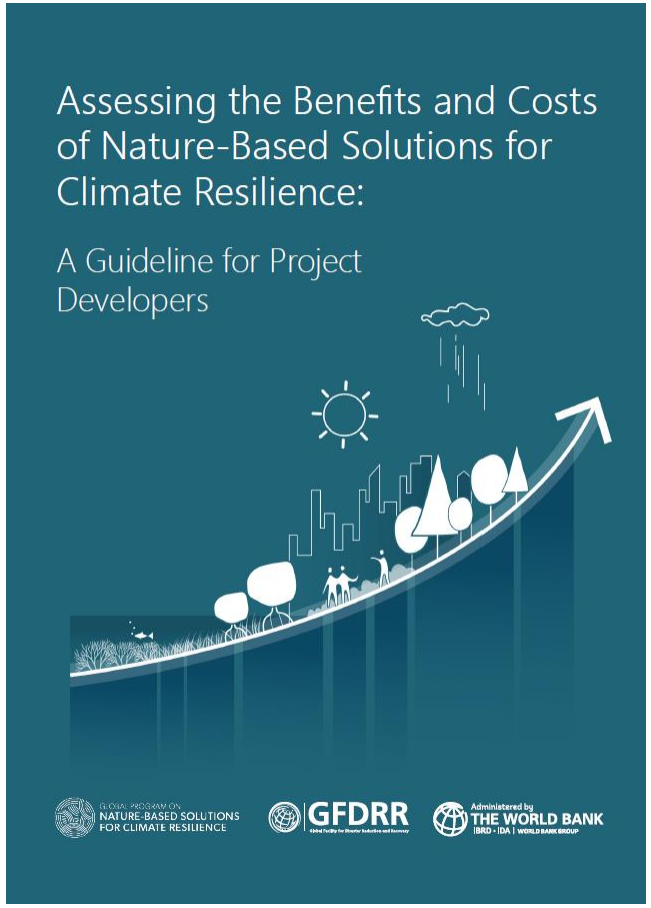


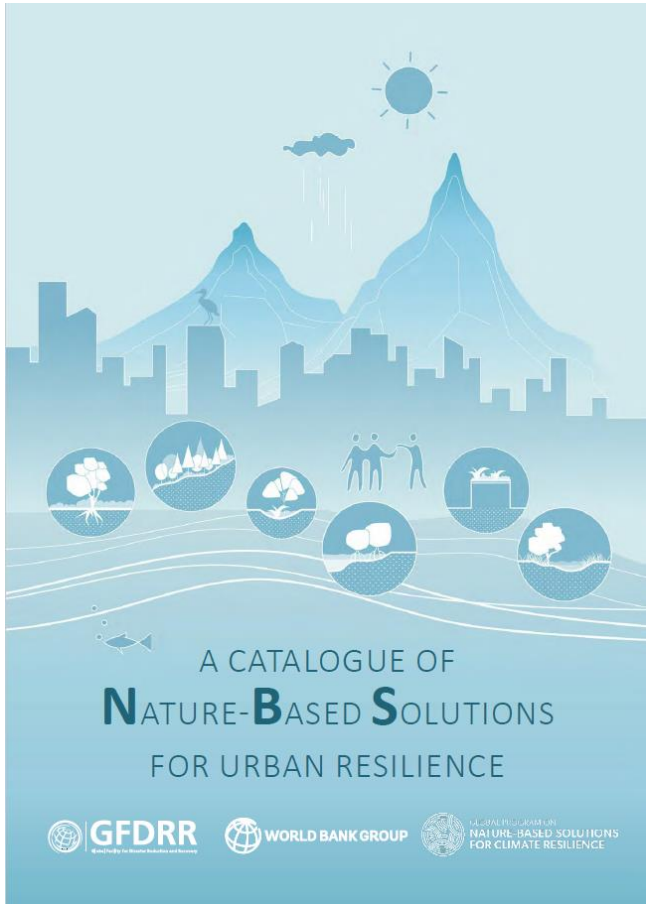



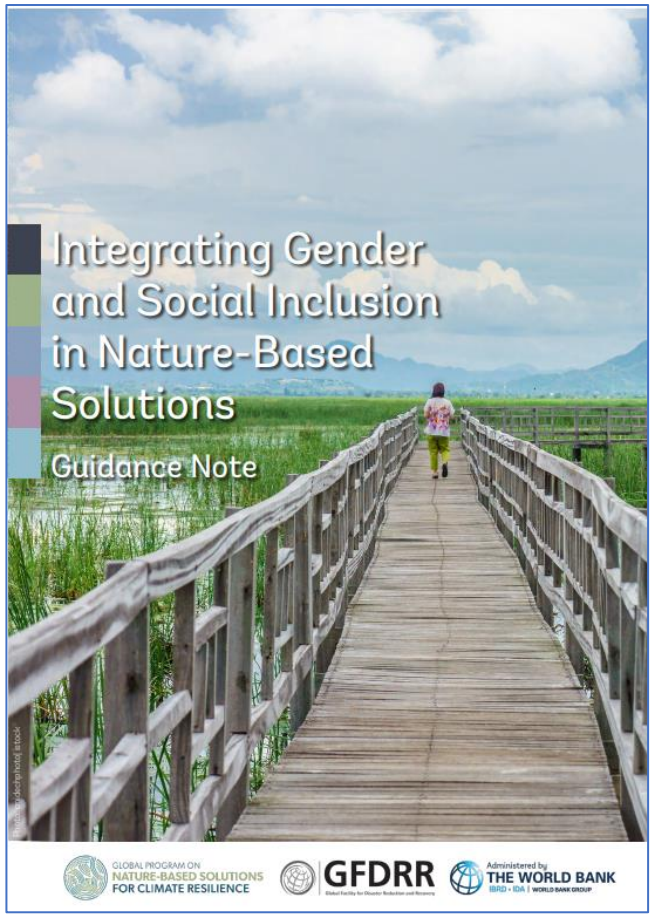




# NBS PUBLICATIONS




AVAILABLE AT **NATUREBASEDSOLUTIONS.ORG**

# Break and Q&A

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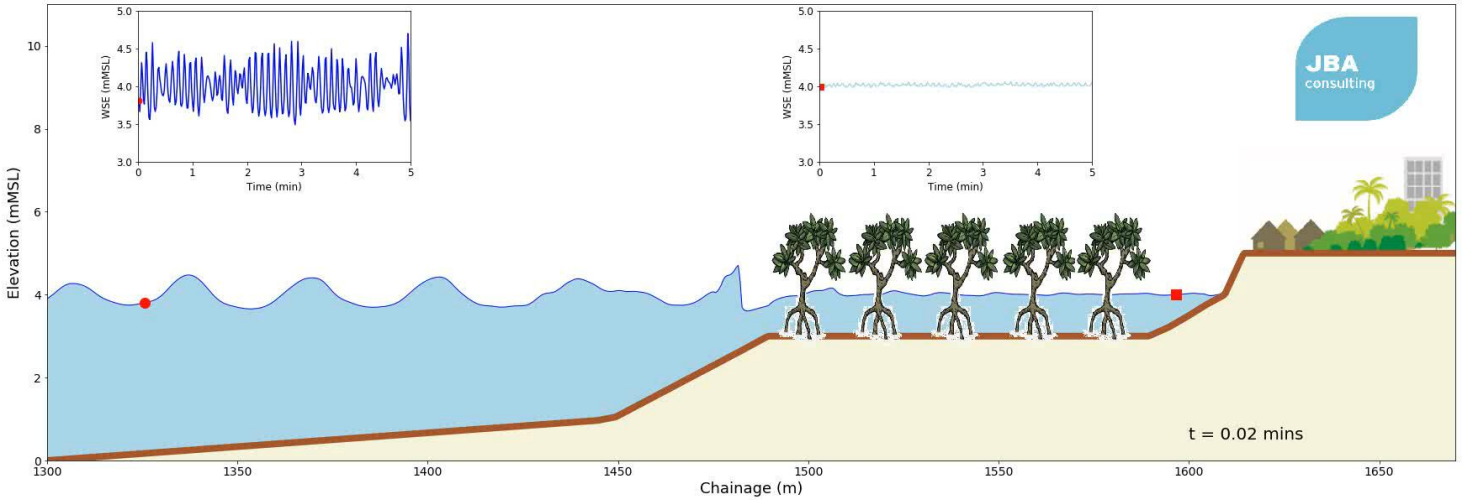
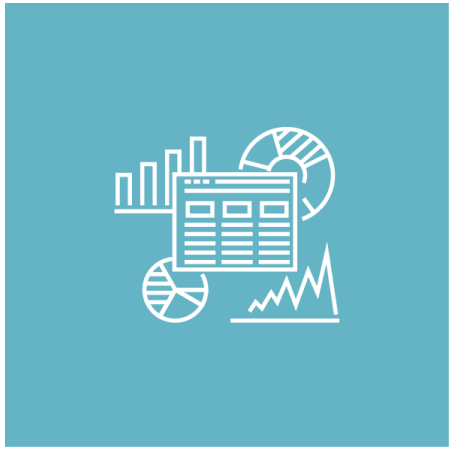
# IMPLEMENTATION CHALLENGES REMAIN



# SUPPORTING IDENTIFICATION OF NBS INVESTMENTS

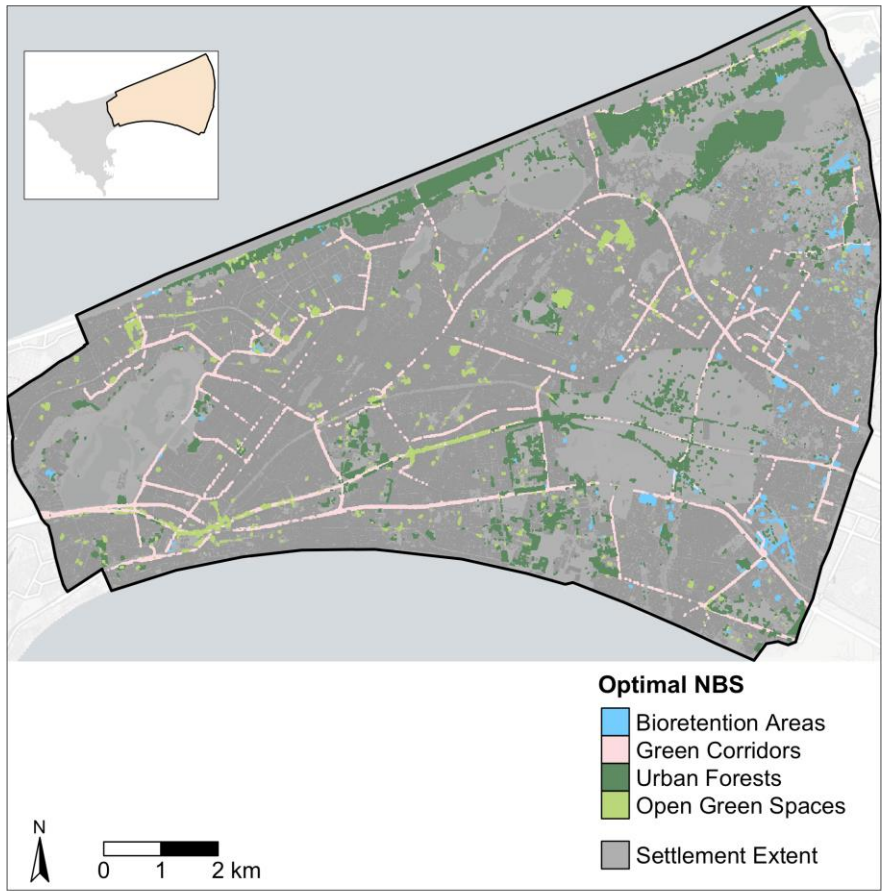

https://naturebasedsolutions.org/opportunity-scan

- **Spatial identification** of NBS investment opportunity areas
- **Applicable in any city or coastal landscape**, based on globally available geospatial (earth observation) data
- **Designed as on-demand service 4–6-week turnaround** to serve as conversation starter in projects investing in NBS

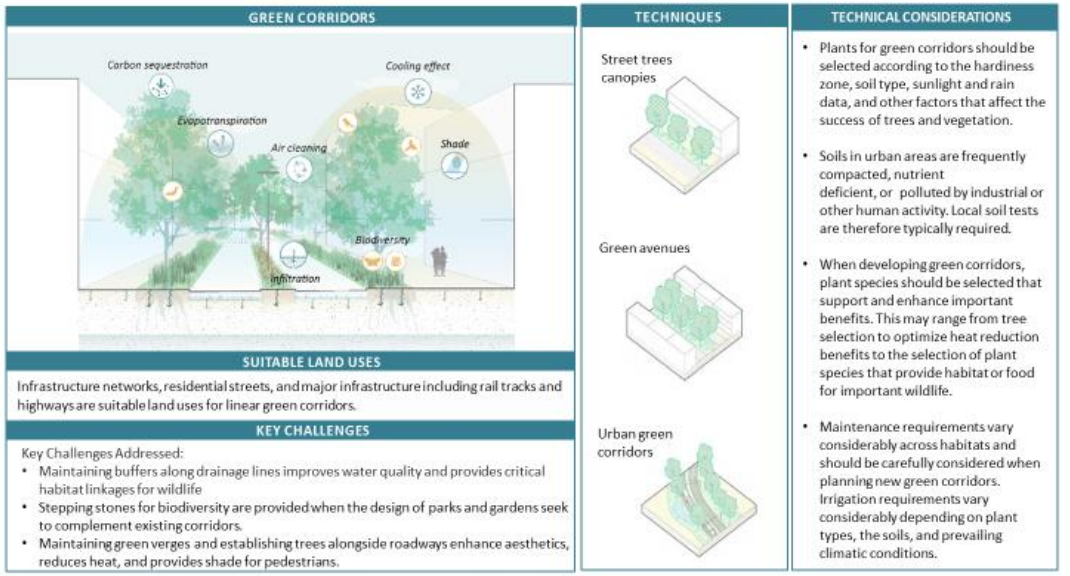
Impact

- Implemented in 20 countries (2022-2024), including **10 coastal landscapes and 70 cities**. **Informing an estimated $2.5 billion in development financing** as well as key strategic assessments
- In most projects, the NBSOS is a starting point, additional support provided
- **Applied in across sectors**, such as disaster risk management, water, environment and transport

# URBAN NBS INVESTMENT OPPORTUNITY AREAS IN DAKAR, SENEGAL




MCA to prioritize solutions and locations





## GREEN CORRIDORS EXAMPLE

Green Corridors Project, Medellin, Colombia

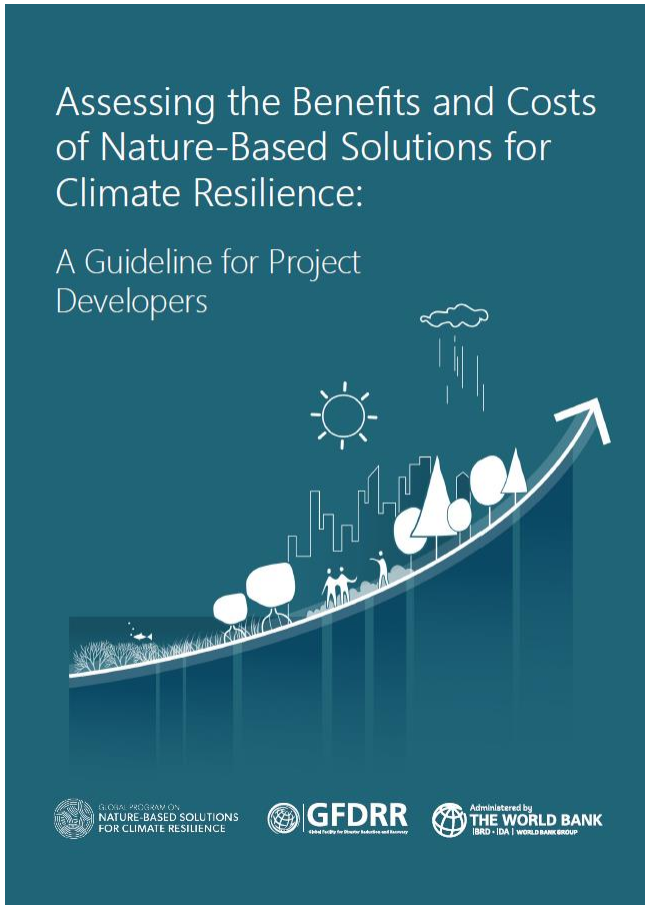
Created 36 green corridors with 8,800 trees planted

- Hazards mitigated:
  - Runoff reduction
  - 2 °C cooler on average
- Co-benefits
  - Better health outcomes
  - More recreation
  - 75 locals hired

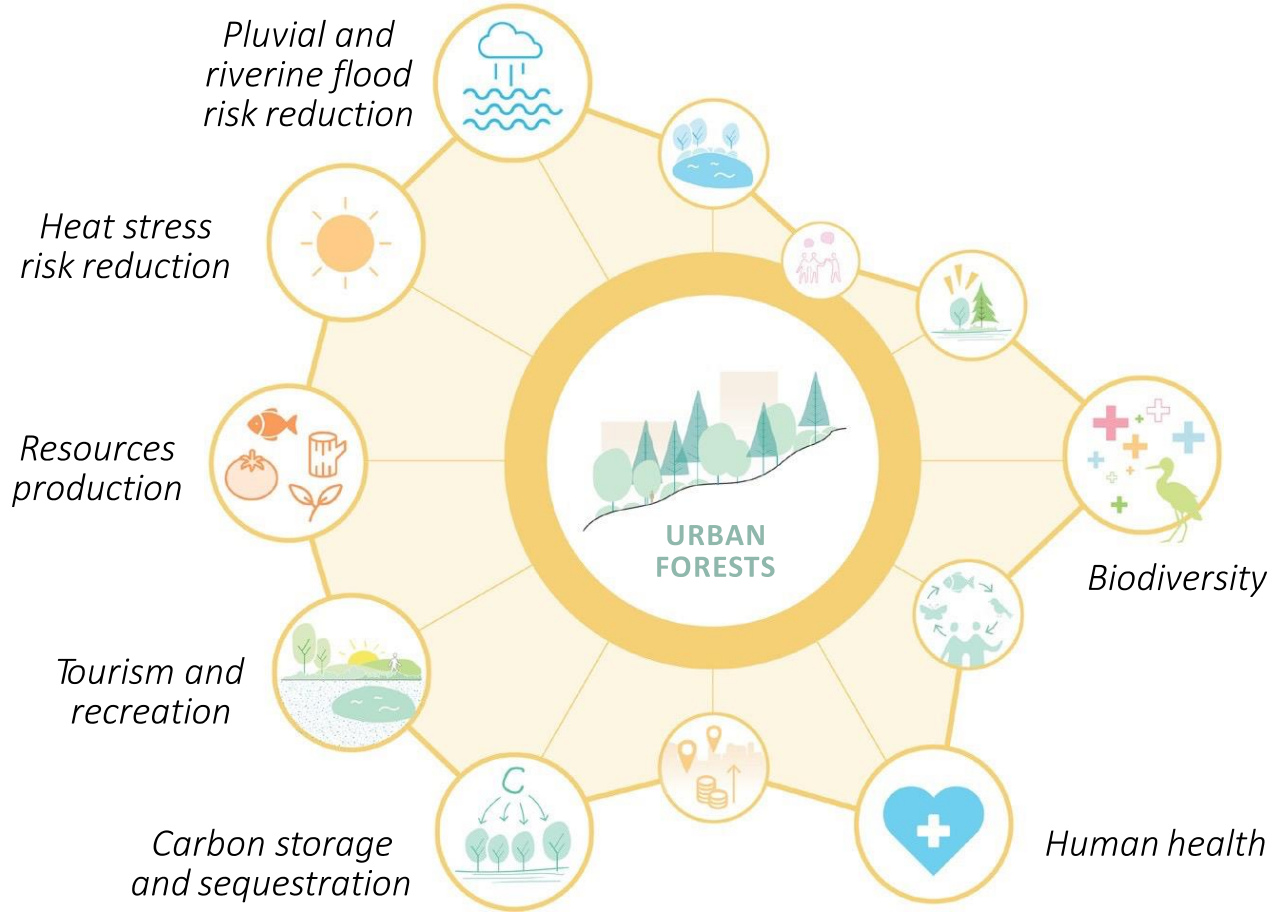
- $16 million investment
- Projected 10-year benefits: $136 million

https://wwfint.awsassets.panda.org/downloads/exe_wwf_a4_template_sbn_final2.pdf

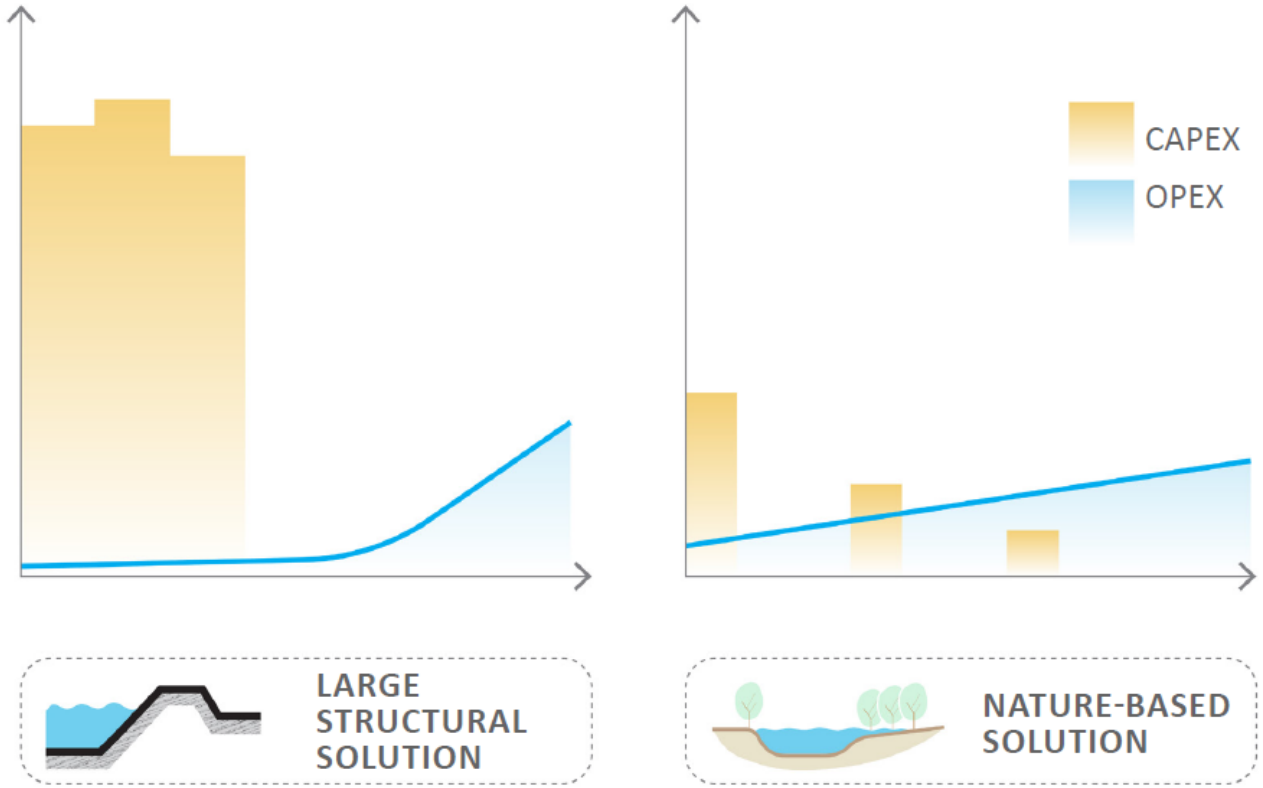
# THE ECONOMIC CASE OF NBS FOR CLIMATE RESILIENCE




https://bit.ly/abcnbs



# COST OF NBS AND GRAY INFRASTRUCTURE OVER TIME



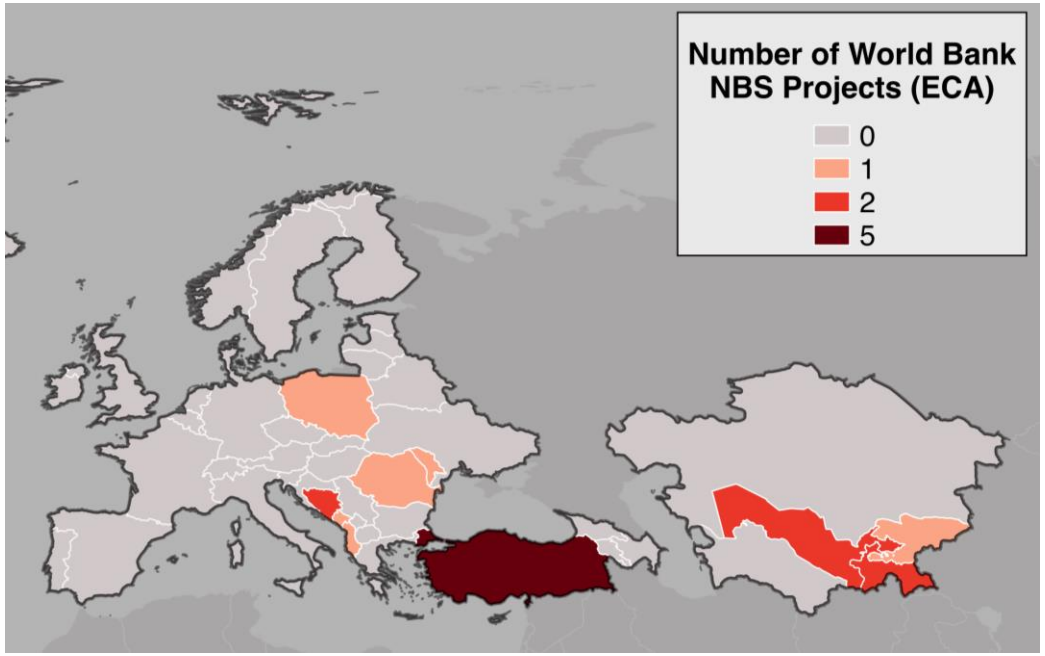
# INFORMING NBS INVESTMENT THROUGH **GRANTS AND OPERATIONAL SUPPORT**

From FY 12-23, the **World Bank approved 16 projects in Europe and Central Asia (ECA).** These projects have a net commitment for projects components containing NBS of US$655 million.

**GFDRR provides grants to support clients** and World Bank teams with NBS investment identification and project preparation.

Since 2020, **$3.6M has been allocated in ECA GFDRR grants that include NBS**

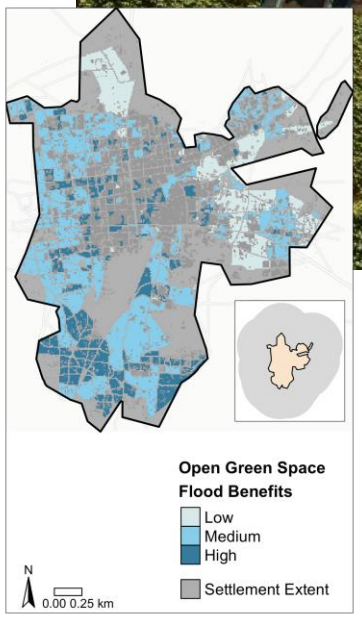
NBS support could also be leveraged through TAFF - https://www.gfdrr.org/en/taff

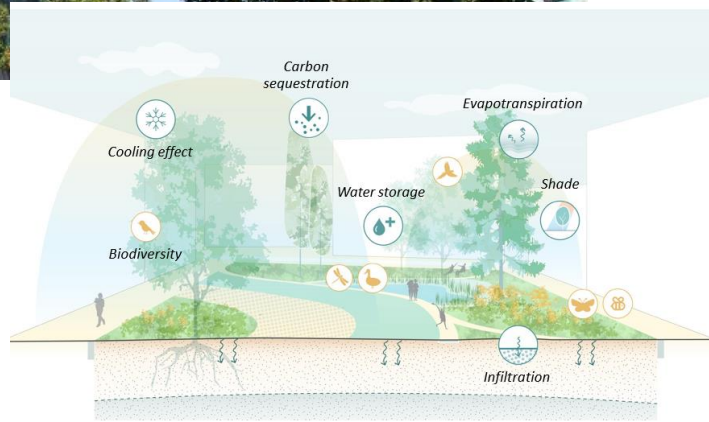


# IMPACT THROUGH **INVESTMENT OPPORTUNITY MAPPING**

The NBS Opportunity Scan has attracted interest from **several European partners** to find opportunity areas for investing in NBS for climate resilience and adaptation.

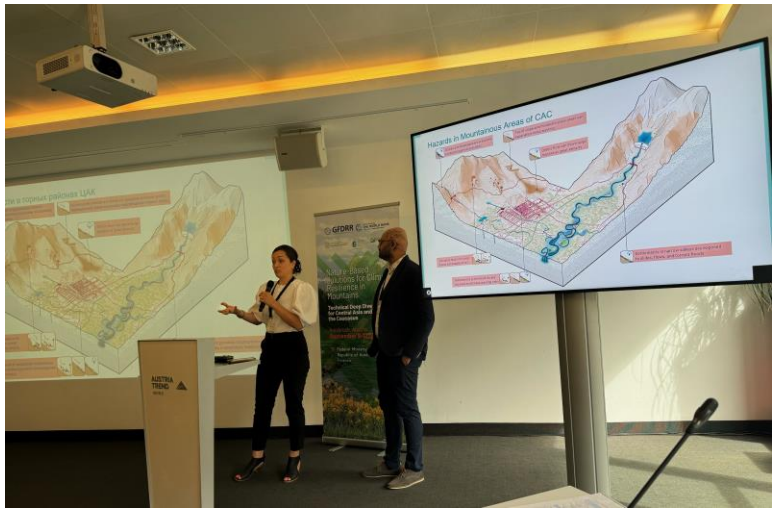
**GFDRR, ESA and the Covenant of Mayors** are exploring application of the NBSOS methodology in a group of EU cities.

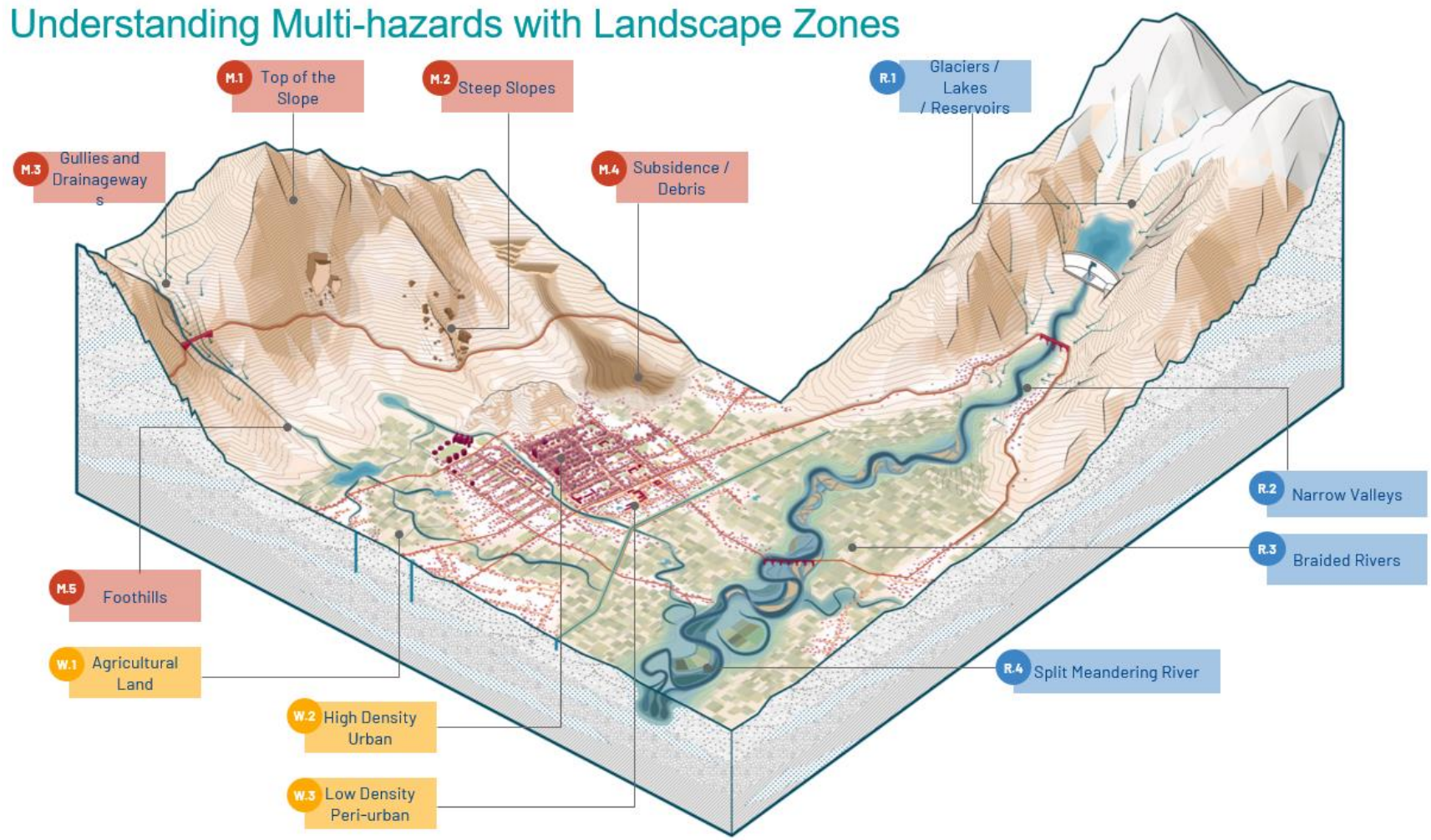


# IMPACT THROUGH **ANALYTICS AND KNOWLEDGE**

Supported by the government of Austria, **GFDRR is conducting a Regional study on NBS investment priorities** in Central Asia and the Caucasus





# IMPACT THROUGH **CAPACITY BUILDING**

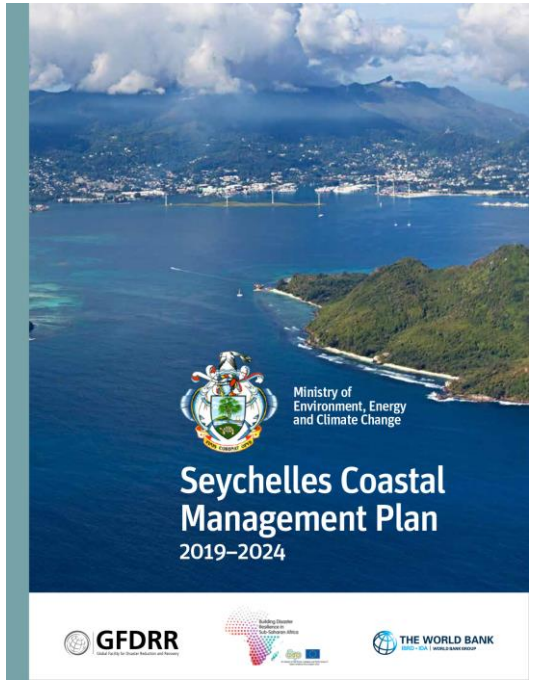
Capacity in government and implementation agencies is critical for effective NBS policy and investment

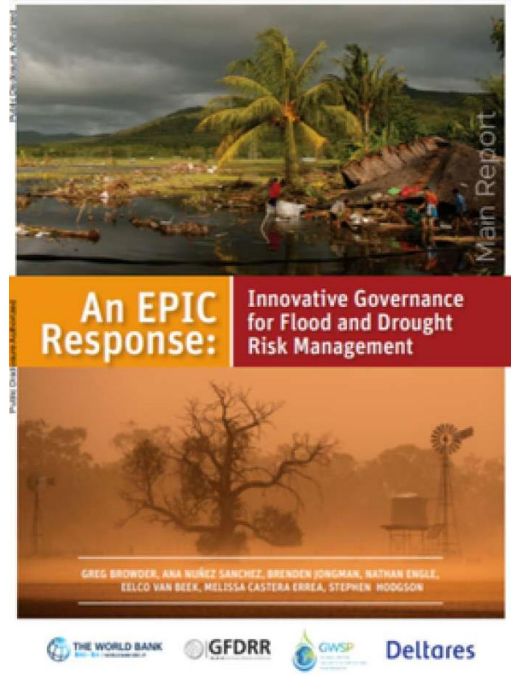
In September, **GFDRR and the World Bank** convened 35 government representatives from 6 countries in Innsbruck to learn from European experience with NBS in mountainous areas.

# IMPACT THROUGH INTEGRATING **NBS IN CLIMATE AND NATURE POLICIES**

GFDRR helps integrate NBS into climate, nature, and sectoral policies.

Strong policies are key for the systematic linkage of nature and climate resilience.



# HARNESSING **EUROPEAN KNOWLEDGE AND EXPERTISE**


Knowledge

Operational support

European Commission | Horizon 2020 European Union funding for Research & Innovation

esa

RESALLIENCE

groupehuit Développement urbain

Deltares

Royal HaskoningDHV Enhancing Society Together

DHI The expert in WATER ENVIRONMENTS

Interreg | Co-funded by the European Union

BFW AUSTRIAN RESEARCH CENTRE FOR FORESTS

# GET IN TOUCH…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