Nature-based solutions for Disaster Risk Reduction and Climate Change Adaptation

UNESCO
cience for
Sustainable
Development

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UNESCO's Role in Science

Addressing complex global challenges through scientific cooperation.

Global Challenges

Science drives economic growth and social progress.

Economic Development

Science fosters international diplomacy and collaborative solutions.

International Cooperation

Promoting ethical and inclusive scientific practices globally.

Inclusive and Ethical Science

Strengthening scientific capacities in Member States.

Capacity Building

Sustainable Development and Peace

UNESCO Science for Sustainable Development

UNESCO's Science Family

TRANSDISCIPLINARY
approach to operational activities

UNESCO has a distinct role that no other bilateral or multilateral development partner can match in generating relevant data and knowledge products, providing expert advice, and convening power to its members.

NORMATIVE/ POLICY/ KNOWLEDGE
IHP, MAB, IGGP and IBSP, Recommendations

NETWORKS
C2C, Chairs, National Commission, National Committees, sites, Cat. 1 Insitutes, scientific regional networks

Intergovernmental Scientific Programmes

MAB

Advances sustainable development via biosphere reserves

IGGP

Fosters scientific research using geosciences

IHP

Enhances water security through research and education

IBSP

Improves capacity for scientists in the global south

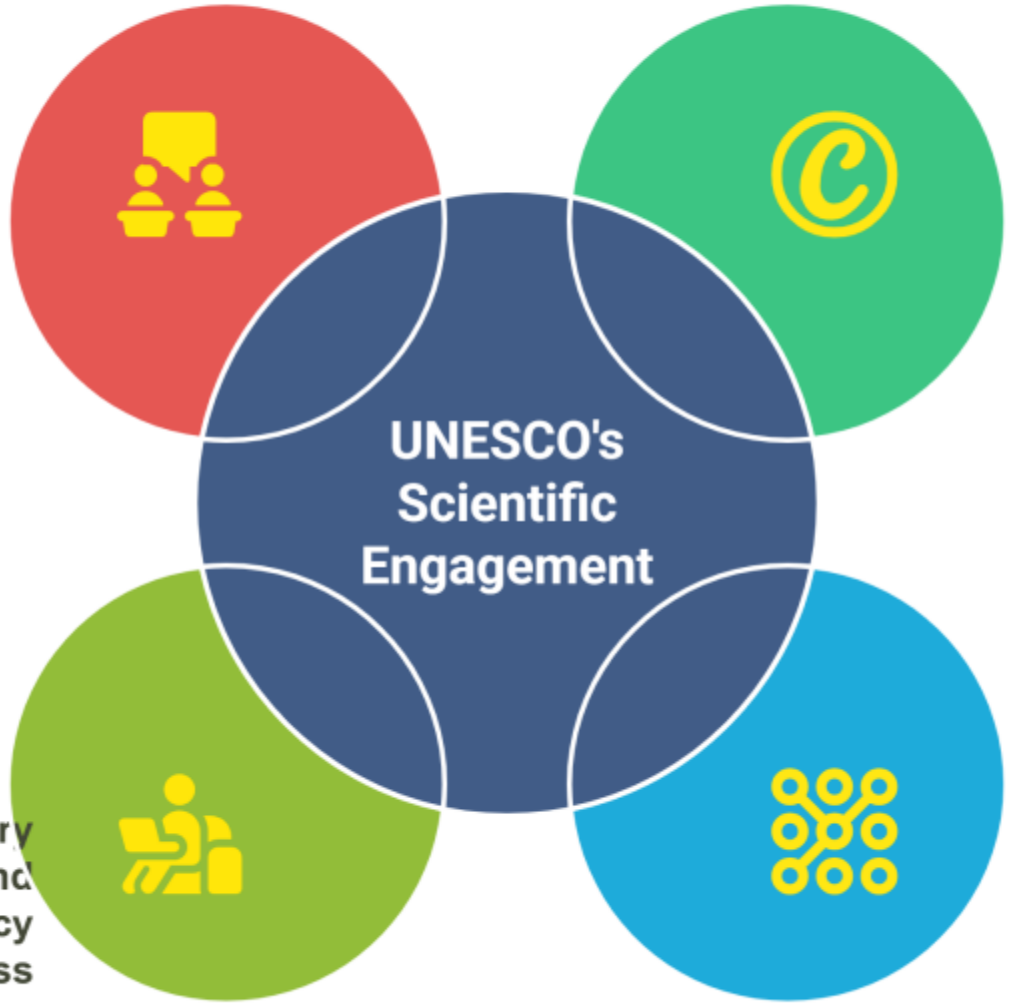
UNESCO Networks

National Committees

Engage stakeholders in implementing scientific initiatives and integrating advancements into national policies.

National Commissions

Serve as interfaces between governments and scientific communities to embed science policy in national agendas.



UNESCO Chairs

Foster interdisciplinary research and innovation-driven policy solutions across borders.

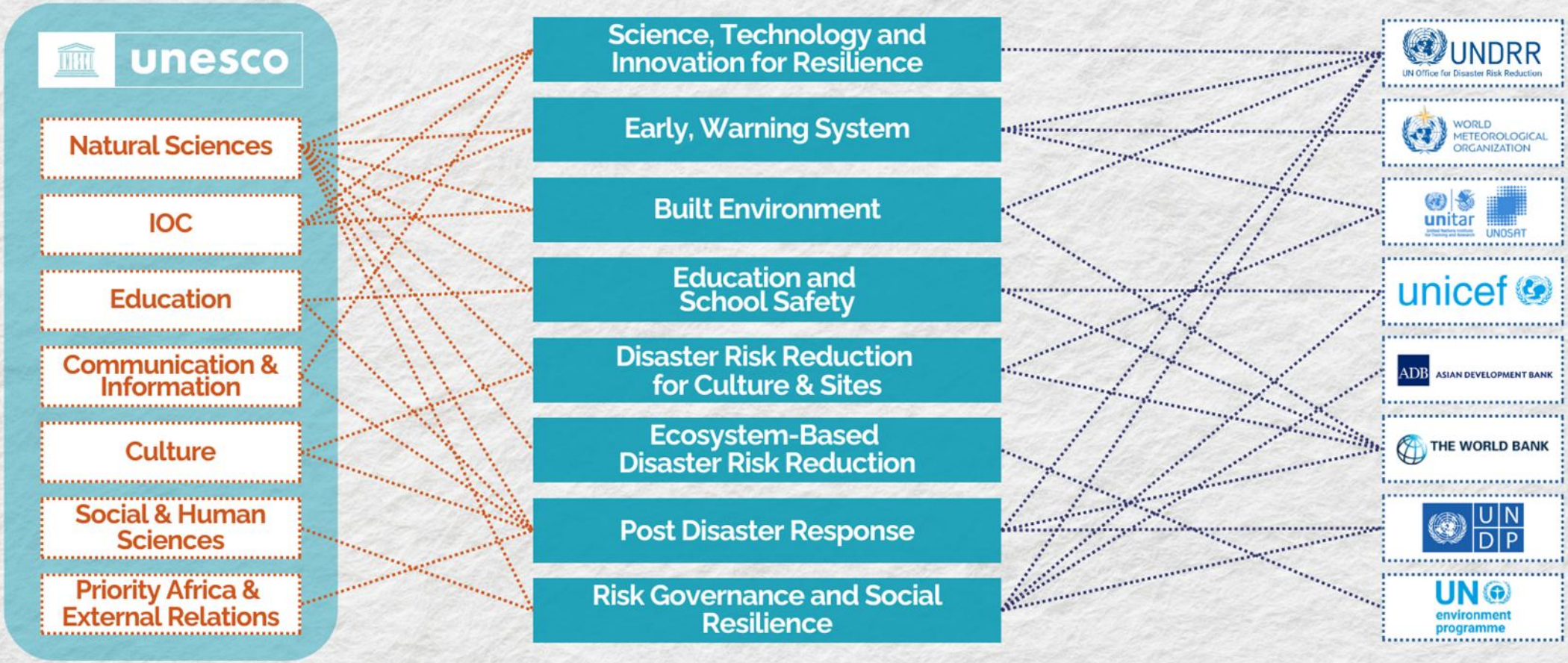
Category 2 Centres

Form a global network to advance research and policy implementation in scientific domains.

UNESCO’s approach to DRR

- At the interface of a wide mandate - Natural and Social Sciences, Education, Culture, and Communication and Information, UNESCO takes **a multi-hazard, multi-disciplinary and multi-stakeholder participatory approach**.
- **8 cross-cutting thematic (NBS is one of the thematic)**
- UNESCO explores **both conventional and innovative solutions** for effective preparedness and response.
- **UNESCO’s priority areas**: Africa, gender, SIDS, youth.

Intersectorial and inter-agency links



NBS: Global environmental policies

UN World Conference on Disaster Risk Reduction
2015 Sendai Japan

Disaster Risk Reduction
Sendai Framework for DRR (UNDRR)

Priorities for Action 1-3

NbS/ Eco-Disaster Risk Reduction / Climate Change Adaptation

UNITED NATIONS PARIS CLIMATE AGREEMENT SIGNING CEREMONY — 22 APRIL 2016 —

Climate Change Adaptation
Paris Agreement (UNFCCC)

Preservation of ecosystems for adaptation

United Nations
Convention to Combat Desertification

11 SUSTAINABLE CITIES AND COMMUNITIES
6 CLEAN WATER AND SANITATION
2 ZERO HUNGER
13 CLIMATE ACTION
15 LIFE ON LAND

Sustainable Development
Sustainable Development Goals (UN)
IUCN's NbS Global Standard

SDG Targets 2.4, 6.5, 6.6, 11.4, 11a, 13.1, 13.2, 13.3, 14.2, 15.1, 15.3

IUCN Nature based Solutions
The nature of progress

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Man and the Biosphere Programme

Ramsar Wetlands for our future
Convention on Biological Diversity

Environmental and Biodiversity Conservation Outcomes, Decisions and Targets

Aichi Target 15, CBD COP 12 Decision, Ramsar Decision XII/13

Kunming-Montreal Global Biodiversity Framework, EU Biodiversity Strategy for 2030, Bonn Challenge

2020 UN BIODIVERSITY CONFERENCE
COP 15 · CP/MOP10·NP/MOP4
KUNMING – MONTREAL

unesco
Global Geopark

Priority 1 | Priority 2 | Priority 3 | Priority 4 | Priority 5 | Priority 6

Priority 6: Nature-based Solutions and Ecosystems-based Approaches for Disaster Risk Reduction

Ecosystem-Based Approaches (EBA) and Nature-Based Solutions (NbS) offer sustainable pathways for DRR by leveraging natural ecosystems to mitigate hazards and build resilience. Recognizing this, the G20 DRR WG emphasizes the role of NbS in climate adaptation and land-use planning. By restoring ecosystems like wetlands, forests, and mangroves, countries can enhance environmental resilience, reducing the impact of disasters such as floods, droughts, and landslides.

These natural buffers serve as protective barriers, absorbing excess water, stabilizing soils, and regulating microclimates, thereby protecting vulnerable communities. Incorporating NbS into DRR strategies can also address social and economic inequalities, as these approaches often provide multiple co-benefits, including biodiversity conservation, enhanced local livelihoods, and support for sustainable development.

Yet scaling up EBA and NbS for DRR faces challenges such as limited funding, insufficient technical expertise, and competing land-use priorities. These approaches require sustained investments and knowledge-sharing among stakeholders, while also needing policy support and cross-sectoral collaboration to effectively integrate into national and local disaster strategies.

Deliverables - South Africa (2025)

Compendium of case studies and analysis of policies that incentivize investment in NbS, such as subsidies, tax benefits, and climate finance integration, which encourage both public and private sector engagement (UNESCO with the engagement of UNDRR, CDRI, AfDB, WB, UNEP, Ministry of Forestry, Fisheries and Environment of South Africa).

Deliverables - Brazil (2024)

G20 Compendium of Good Practices for NBS & EBS Volume 1

G20 Compendium of Good Practices for NBS & EBS Volume 2

Deliverables - India (2023)

Working Paper on Increasing the Application of Ecosystem-Based Approaches to DRR

Priority 6 - Ecosystems-Based Approaches for DRR / Nature-Based Solutions Compendium

Axis 1 - Financing Schemes for NbS

1.Preferential tax treatments: tax incentives and fee reductions under certain property conditions or actions – Tax incentives, tax credits, tax allowances, reduction in permit costs

2.Subsidies and Grants: Direct and indirect subsidies and grants as payment for the public benefits of private investments attached to private properties.

3.Debt for Nature Swaps: Countries restructure national debt in exchange for investments in environmental protection. Example: Seychelles' marine conservation efforts through debt restructuring.

4.Municipal Bonds, Green bonds, Blue bonds

5.Private financing through Corporate Stewardship, PPP, Pay-for-success models OR Corporate Social Responsibility (CSR) funding

6.Blended Financing such as Water funds

7.International financing through global funds such as Green Climate Fund/Global Environmental Facility etc

Axis 2 -Cost Benefit Analysis

- Quantifying **Ecosystem Services**
- **Monetizing benefits** and comparing to **implementation and maintenance costs**.
- **Tangible Benefits**: Reduced flood risk, improved air quality, carbon sequestration.
- **Intangible Benefits**: Enhanced biodiversity, improved public health, social well-being.

Real-World Case Studies:

- Demonstrating **long-term cost-effectiveness** of NbS versus traditional **grey infrastructure**.

Axis 3 - Enabling Policies to Scale up NbS

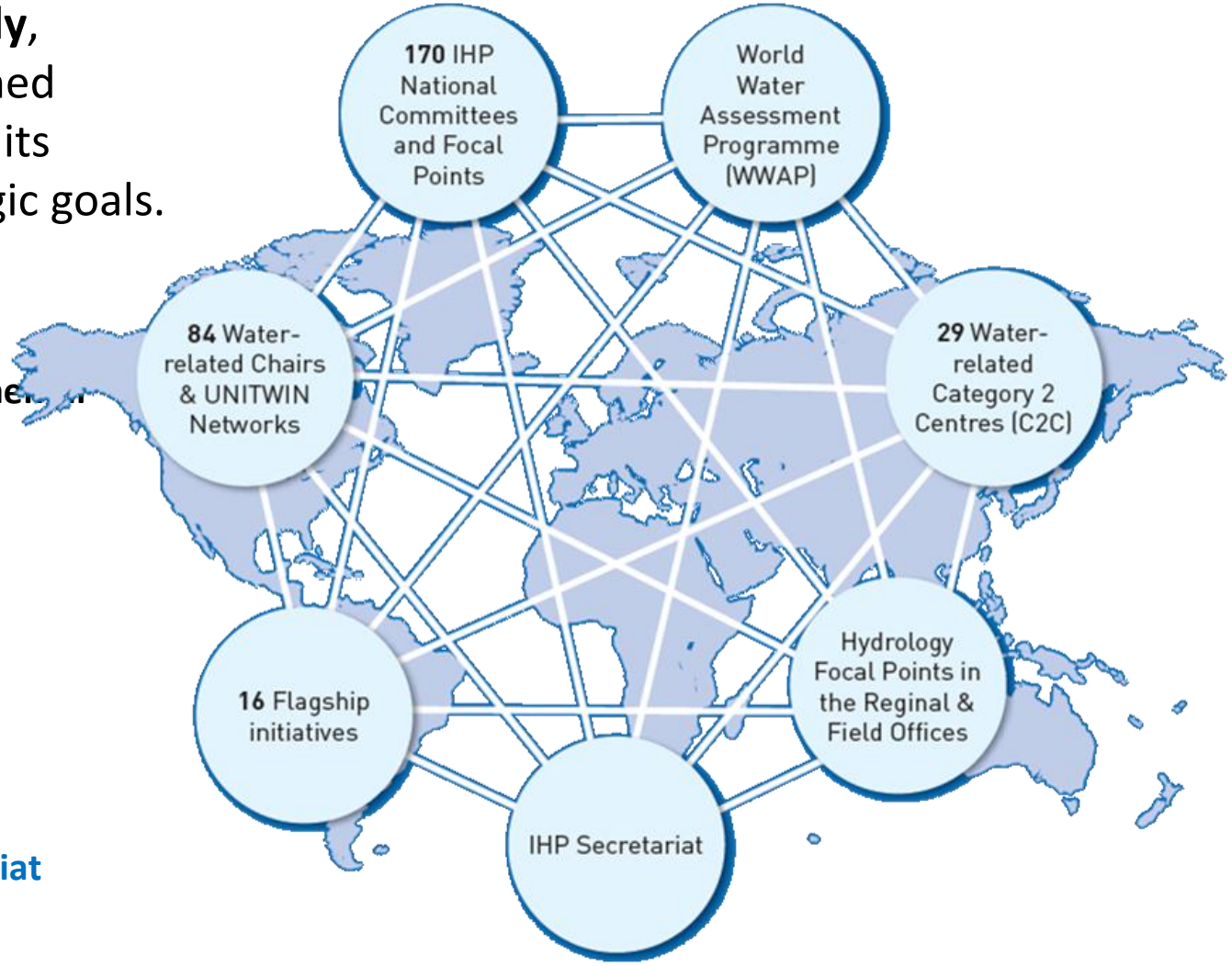
- Strategic Planning and Integration
- Regulatory and Legal Frameworks
- Governance and Institutional Arrangements
- Capacity Building and Knowledge Management
- Stakeholder Engagement and Partnerships
- Awareness Raising and Communication

The UNESCO Water "Family"

A network of networks, the **UNESCO Water Family**, composed of different water institutions that joined forces in order to support the implementation of its water programmes and the Organization's strategic goals.

The UNESCO Water Family consists of:

- **National Committees and Focal Points of the Intergovernmental Hydrological Programme (IHP)**
- **Water-related Category 2 Institutes and Centres under the auspices of UNESCO**
- **Water-related UNESCO Chairs/UNITWIN Networks**
- **IHP Flagship Initiatives**
- **World Water Assessment Programme (WWAP)**
- **Intergovernmental Hydrological Programme (IHP) Secretariat**
- **Hydrology Focal Points in UNESCO's Field Offices**



Together, they represent more than 3000 water experts worldwide

UNESCO‘s action: Knowledge

NBSINFRA is an innovative project funded by the EU, with a primary focus on promoting nature-based solutions (NBS) to protect crucial urban infrastructure against both natural and human-induced hazards.

Our mission extends to creating resilient, and sustainable urban environments capable of withstanding the challenges posed by climate change by collaborative designing, monitoring, and creating through NBS.

Project duration:
2023 - 2026

Empower, Enhance, Protect:
NBSINFRA Paving the Way for Resilient Urban Futures

Funded by
the European Union

NBSINFRA aims to:

- Validate NBS Effectiveness
- Innovate Hazard Response Methodology
- Empower Communities
- Develop a toolkit for empowerment
- Share best practices EU-wide
- Highlight that NBS is socially acceptable and affordable

UNESCO‘s action: Knowledge

OPERANDUM

OPEn-air laboRAtories for Nature baseD solUtions to Manage hydro-meteo risks

Project duration: 2018 - 2023

The Project is funded by the European Union

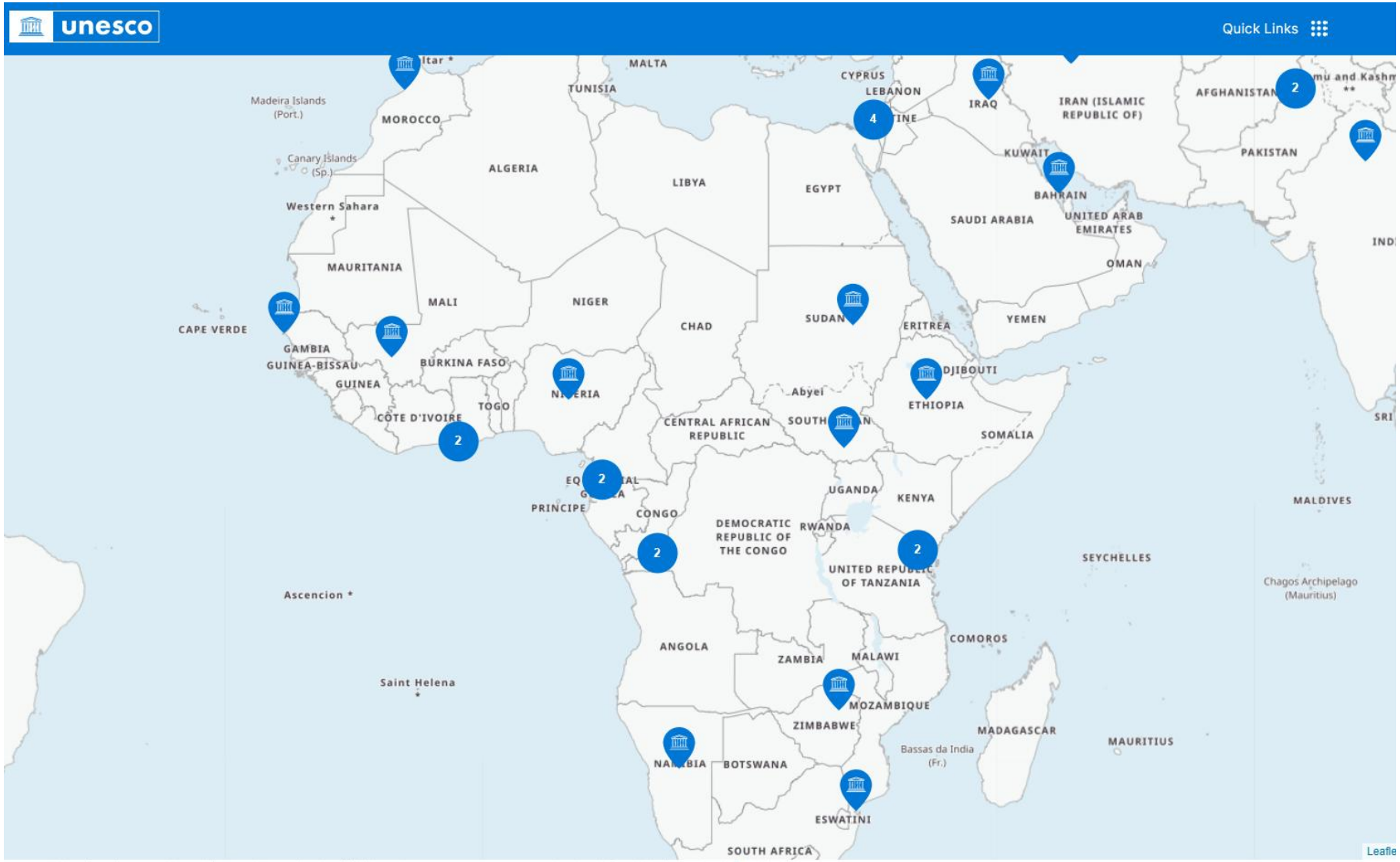
OPERANDUM *aims to* ***reduce hydro-meteorological risks*** *through co-designed, co-developed, deployed, tested and demonstrated innovative* ***green and blue/grey/hybrid Nature-based Solutions***

SPECIFIC OBJECTIVES:

Integrate knowledge about NBS efficacy against hydro-meteorological risks

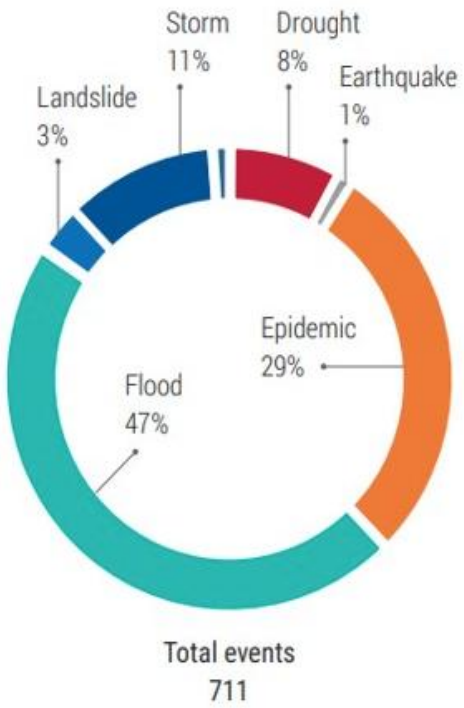
- Inclusive communication and planning (policy makers, communities, academic)
- Validate solutions by science and engineering at open laboratories
- Opportunities and challenges in policy
- Interactive information platform (GeoIKP)

The UNESCO Field Offices



Disaster Risk Reduction in Africa

Risk Profile in Africa



Data from 2008-2018 (Africa Regional Assessment Report 2020, UNDRR)

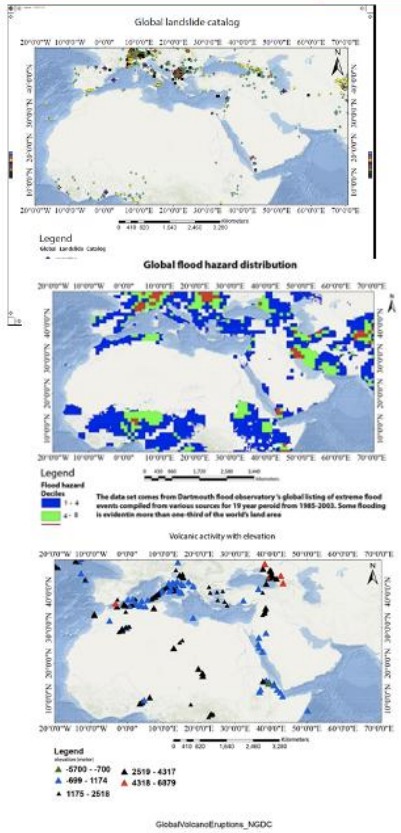
Gaps and Challenges

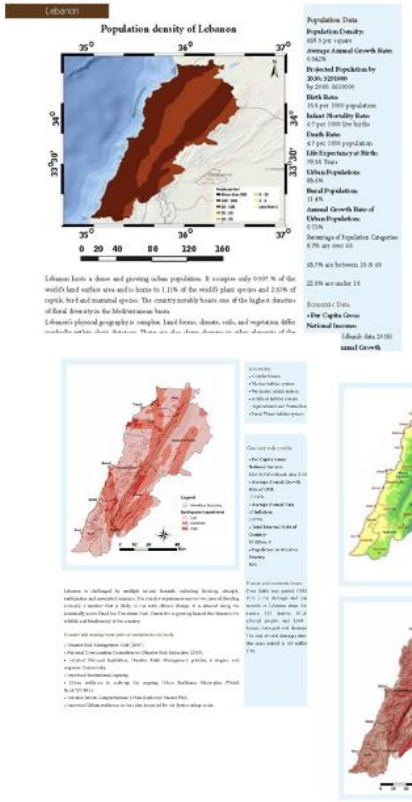
Based on the Mid-Term Review of Sendai Framework for Disaster Risk Reduction in 2023, the following are the gaps and challenges in Africa:

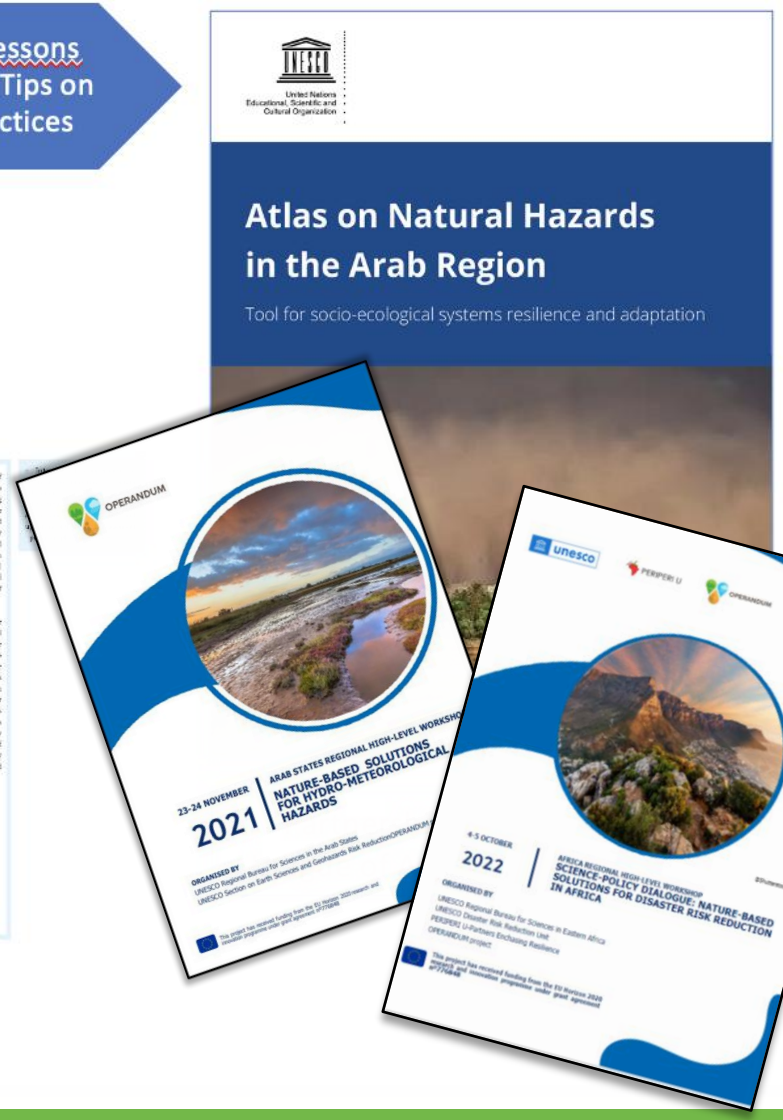
- Only 40% of African countries have an Early Warning System, while the global average is 60%.
- 33% African countries updated their DRR strategies, compared to 64% in Europe and Central Asia, 75% in Asia-Pacific, and 90% in Latin America and the Caribbean
- States cite insufficient funding for DRR as primary challenges.
- African countries recognize the need for a better understanding of systemic risk and capacity building for nationwide, gender-sensitive, multi-hazard, and impact-based risk assessments.

UNESCO‘s action: Capacity Building

Regional Profile on Natural Hazards → Arab Country Profiles (19 countries covered by UCO) → Case studies on Eco-DRR and NBS from the region → Case studies on UNESCO Designated Sites → Provide Lessons Learned & Tips on Good Practices







Recommendations for NbS uptake in Africa

Technical

- Develop clear definitions and concepts of NbS and highlight the importance of NbS co-benefits (wellbeing, recreation, agriculture);
- Promote opportunities for capacity development and enhancement in NbS among practitioners (ie. creating short course trainings and workshops);
- Exploit available capacities, knowledge, and data (educated people, satellite imagery, statistics) and collect data in a systematic way and create data sharing systems;

Institutional

- Perform a mapping of regional institutional stakeholders and NBS related initiatives and mobilize action across countries through multiple stakeholder groups;
- Strengthen the leadership of local and regional governance to implement NbS effectively and encourage community-based engagement and participation in NbS based projects / initiatives;
- Engage media to help share information about NbS and increase public awareness and acceptance;

Policy

- Promotion of comprehensive risk approach (DRR & CCA)
- Promote cooperation between academic and science-based institutions and policymakers to raiseawareness and enhance collaboration and communication across sectors
- Strengthen policy coherency at different administrative and cross-sectors levels and acrosscountries and strengthen and harmonise NbS concepts/terminology in regional and national policies, Generate evidence for policy action / to guide and form policy

ALBATROSS

Advancing knowledge for long-term benefits and climate adaptation through holistic climate services and nature-based solutions

WHAT IS ALBATROSS?

ALBATROSS is an EU-funded project focused on accelerating Sub-Saharan African countries' adaptation to climate change, working with local and national actors in five countries: Ghana, Kenya, Tanzania, South Africa and Madagascar.

After understanding the complex interconnections between climate, ecosystems and society, ALBATROSS will translate its findings into guidelines, user-friendly tools and climate services to assist decision-making and design nature-based solutions with local communities to adapt to climate change.

The Project is funded by the European Union

Project duration: 2024 - 2027

ALBATROSS Hubs

Thank you

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Educational, Scientific
and Cultural Organization

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