Nature-based Solutions for Comprehensive Disaster and Climate Risk Management

Session 3: Tools and guidance supporting an integrated approach

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Trinidad and Tobago
Context

- Comprehensive disaster and climate risk management (CRM):
  - Seeks to integrate risk-centred approaches into National Adaptation Plans (NAPs), and climate/forecast information into national and subnational disaster risk reduction strategies – aiming to synergize adaptation and DRR
  - Aligned with the Target E of the Sendai Framework, and SDGs 1, 11 and 13
  - Implementation through: Guidance and technical resources; capacity development; research and analysis; and advocacy, coordination and engagement
  - Toolkit produced to support countries in applying Nature-based Solution (NbS) as a common basis for adaptation and DRR
Overview of the Toolkit

For use by various stakeholders seeking to build the case for NbS in CRM approaches
Climate change – A Risk Driver

THE SLOW ONSET EVENTS

- Desertification
- Loss of biodiversity
- Ocean acidification
- Increasing temperatures
- Sea level rise
- Salinization
- Land and forest degradation
- Glacial retreat and related impacts

INTENSIVE & EXTENSIVE
NATURAL & MAN-MADE EVENTS

- Hydrological
- Meteorological
- Climatological
- Biological
- Technological

Increase in Frequency & Intensity of Climate Sensitive Events

Hydrological
Meteorological
Climatological
Biological

1 As defined by COP decision 1/CR16
2 As defined by the Sendai Framework for DRR
NbS for CRM

- Actions to protect, sustainably manage, and restore natural or modified ecosystems
- Providing human well-being, ecosystem resilience and biodiversity benefits
- Contribute to deal with climate change, disaster risk, biodiversity loss, land degradation, food and water security, among others

UNEA (2022)

NbS encompass different ecosystem-based approaches
Source: UNDRR (2021)
NbS can provide significant protective functions

<table>
<thead>
<tr>
<th>IN 2020</th>
<th>PROTECTING COASTAL WETLANDS COULD SAVE THE INSURANCE INDUSTRY</th>
<th>FAILURE TO ACT ON ECOSYSTEM REHABILITATION IS COSTING</th>
<th>NATURE-BASED SOLUTIONS CAN CONTRIBUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>50+ MILLION</td>
<td>$52 BILLION</td>
<td>$20 TRILLION</td>
<td>37%</td>
</tr>
</tbody>
</table>

People were affected by water and climate-related events while fighting COVID-19

a year through reduced losses from storm and flood damage

to global economy in lost ecosystem goods and services

of global CO2 mitigation targets by 2030

Source: UNDRR

Source: WEF, 2020

Source: UNDP, 2020

Source: IIID

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NbS for DRR and CCA

Nature-based Solutions (NbS)

**DISASTER RISK REDUCTION (DRR)**
...aims to prevent new and reduce existing disaster risk and manage residual risk.

Eco-DRR is the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim to achieve sustainable and resilient development (Estrella & Saalismaa, 2013)

**CLIMATE CHANGE ADAPTATION (CCA)**
...refers to adjustments in ecological, social or economic systems in response to actual or expected climatic stimuli and their effects.

EbA is defined as the use of ecosystem management activities to increase the resilience and reduce the vulnerability of people and ecosystems to climate change (IPCC, 2022)

Addresses both non-climate and climate-related hazards
Focus on existing and more sudden risks

Largely addresses climate-related hazards
Focus on slow on-set and future risks

Source: © UNU-EHS
NbS for DRR and CCA

Nature-based Solutions (NbS)

for...

Comprehensive Disaster and Climate Risk Management

NbS either planned to reduce the risk of disaster or to adapt to climate change, share several goals like vulnerability reduction, sustainable development and poverty reduction, and measures like restoration and ecosystem health enhancement, which resonate with a CRM strategy at the country level.
NbS can reduce impacts from hazards in different ecosystems

How different Nature-Based Solutions can work together across landscapes to build resilience. Source: Global Commission on Adaptation, Adapt Now Report
NbS in Nationally Adaptation Plans (NAPs) – Example of Trinidad and Tobago (draft NAP)

Source: Draft NAP of Trinidad and Tobago – modelled from NDC
NbS in Nationally Determined Contribution (NDCs) – Example of Belize

Belize (2021)

- NbS aimed at protecting and restoring mangrove forests as effective mitigation action and protection of low-lying coastal areas
- NbS to protect against impacts of storms and soil erosion
- Aim is to increase resilience to climate impacts for coastal communities and habitats to reverse net coastal habitat and land loss by 2025

NbS as an enabler of integrated planning – Example of the Caribbean Region

The Caribbean Region (2014-2024)

- Maximizing ecosystem services through NbS integration at sectoral level
- NbS considered as critical for national economies and livelihoods centered on tourism, fisheries, and agriculture
- NbS as a cross-cutting theme to be featured in planning phases at national levels
Inclusive governance & stakeholder engagement – Example

Grenada, Carriacou and Petite Martinique
NAP for 2017-2021

• Ministries of Forestry, Fisheries, Environment and the Coastal Zone Taskforce being responsible

• The NAP outlines concrete objectives, measures and responsibilities

• One objective is “ecosystem resilience”, related measures include:
  • Identification of sustainable practices for harvesting mangrove
  • Their sustainable use including community co-management

Involving actors beyond climate and risk communities makes sense for uptake of NbS

Partnering between sectors can
  • Build on existing initiatives and strategies
  • Generate synergies

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## Planning integrated NbS at the sectoral level

<table>
<thead>
<tr>
<th>NbS options</th>
<th>NbS benefits</th>
<th>Climate impacts addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration of rivers and floodplains</td>
<td>Regulation of water flows</td>
<td>Droughts</td>
</tr>
<tr>
<td>River buffers (e.g. vegetation strips)</td>
<td>Reduction of floods and soil erosion</td>
<td>Floods</td>
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<tr>
<td>Water sensitive forest management</td>
<td>Recreation and aesthetic appreciation</td>
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<td></td>
<td>Biodiversity</td>
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<td></td>
<td>Water quality</td>
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<tr>
<td>Protection and restoration of forests</td>
<td>Regulation of water flows</td>
<td>Droughts</td>
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<tr>
<td>Sustainable forest management</td>
<td>Reduction of floods</td>
<td>Floods</td>
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<tr>
<td>Integration of trees/forest into the landscape</td>
<td>Control of disease and pests</td>
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<td>Slope stabilisation</td>
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<td>Carbon sequestration</td>
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<td>Biodiversity</td>
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<td></td>
<td>Recreation and aesthetic appreciation</td>
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<tr>
<td>Improved soil and water management</td>
<td>Retention of water and soil retention</td>
<td>Droughts</td>
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<tr>
<td>Crop type diversification and rotation</td>
<td>Mitigation of heat stress</td>
<td>Floods</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Control of disease and pests</td>
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<tr>
<td>Agriculture</td>
<td>Carbon sequestration</td>
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<tr>
<td>Agriculture</td>
<td>Soil fertility</td>
<td></td>
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<tr>
<td>Agriculture</td>
<td>Biodiversity</td>
<td></td>
</tr>
<tr>
<td>Parks, forest, street trees</td>
<td>Cooling air temperature</td>
<td>Droughts</td>
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<tr>
<td>Green buildings (e.g. green roofs, green walls)</td>
<td>Regulation of water runoff</td>
<td>Floods</td>
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<tr>
<td>NbS for water management (e.g. bio-swales, detention ponds)</td>
<td>Carbon sequestration</td>
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<td>Biodiversity</td>
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<td>Human health and well-being</td>
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<td></td>
<td>Water quality</td>
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<td>Urban areas</td>
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<tr>
<td>Coastal areas</td>
<td>Rehabilitation and restoration of</td>
<td>Sea level rise</td>
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<tr>
<td></td>
<td>coastal habitats</td>
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<td>Barrier islands, beach nourishment</td>
<td>Storm surges</td>
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<tr>
<td></td>
<td>Hybrid solutions (e.g. green dykes,</td>
<td>Coastal erosion</td>
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<tr>
<td></td>
<td>vegetated levees)</td>
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</tbody>
</table>

Multiple benefits of nature based solutions for addressing climate hazards across selected sectors and thematic areas (Source: EEA, 2021, pg. 49)
Overview of the NbS in CRM Toolkit

Provides a checklist for the integration of NbS in planning instruments
**Toolkit for NbS in CRM**

- Five tools, each with the following:

<table>
<thead>
<tr>
<th>What can you do with this tool?</th>
<th>Summary of why this particular tool is relevant in the process of integrating NbS in the CRM process and what can be achieved with it</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do you use this tool?</td>
<td>Explanation of how to make use of the tool, whether it consists of a list of resources, a table providing an overview on how existing plans refer to NbS, or a look-up table of NbS options for a particular environmental hazard.</td>
</tr>
<tr>
<td>What do you get out when using the tool?</td>
<td>The tool’s results are summarized and what you can deliver with them. It also outlines how the tool complements other results from tools included in the CRM-NbS toolkit.</td>
</tr>
</tbody>
</table>

- Examples and selected data sources included in each tool
Toolkit for NbS in CRM

Tool 1: Stocktaking

- Supports compiling data, information and knowledge of a country’s environment, climate, natural hazards, exposed elements, vulnerability, and impacts.
- National and sub-national context and challenges.
- Special attention given to indigenous peoples and local communities, and their traditional sources of knowledge.
- Provides more detailed info for stocktaking on: land cover/use and topography; ecosystems; climate factors; hazard factors; exposure and vulnerability factors; and impact data and information.
Toolkit for NbS in CRM

- Tool 2: Status of NbS in National Policy and Planning Landscape
  - Helps to identify whether and how NbS and NbS-related concepts may already be part of the national policy and planning landscape in relation to DRR and CCA
  - Provides an extensive list of keywords directly or indirectly related to NbS to jumpstart more in-depth analysis
  - Keywords provided are in relation to: NbS approaches and concepts; NbS measures; and ecosystem services.
**Tool 3: Guidance for NbS Selection**

- Provides a list of different types of NbS that can be customized and applied to the previously identified challenges (see Tool 1)
- Provides an overview of the benefits for both DRR and CCA and other co-benefits
- Options included for inland and coastal floods
- Template:

<table>
<thead>
<tr>
<th>Non-climate or climate-related hazard</th>
<th>Ecosystem</th>
<th>NbS measure</th>
<th>CRM benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>NbS general “category”</td>
<td>DRR benefits</td>
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<td>NbS specific intervention (examples)</td>
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Tool 4: Stakeholder engagement and inclusive governance for NbS

- Can identify relevant stakeholders for NbS at the national and sub-national levels to effectively facilitate NbS planning within the CRM process
- Important step for securing ownership and engagement
- Provides specific example that can be tailored as necessary
- Selected indicators provided, focusing on stakeholder mapping; considerations of gender, indigenous people and communities; and feedback and grievance mechanisms, etc.
Tool 5: NbS Integrated Planning
- The culmination of tools 1-4 to integrate NbS in necessary policy and planning documents

NbS as a multi-level approach in DRR strategies and NAPs

- **International**
  - NbS is used to advance international initiatives and agreements
  - Example: Colombia
    - The national DRR plan uses NbS to advance country goals framed by the Sendai Framework, the Paris Agreement

- **National**
  - NbS is a national level priority and is included in national vulnerability assessments
  - Example: Grenada
    - The NAP includes integrated coastal zone management (ICZM), a form of NbS, as a national Programme of Action

- **Sectoral**
  - NbS is used to manage the ecosystem services from watersheds, marine coasts, and forests for CCA and DRR
  - Example: Malawi
    - The national DRR plan includes NbS for the forestry and watershed sectors as part of a strategic goal

- **Sub-national/Local**
  - NbS is the focus of participatory, community-led interventions for CCA and DRR
  - Example: Bangladesh
    - A NAP goal promotes NbS for the conservation of forestry, biodiversity and the well-being of communities

Example: Timor-Leste
- NAP includes NbS as a means to sustainably manage watersheds shared with Indonesia
Thank you

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For more information, please contact your UNDRR:
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