

# Promoting Nature-based Solutions for Climate Resilience in Water Sector in South Asia

Training Module (Virtual) 2023



Caption: Tanguar Hoar@IUCN



**Climate Adaptation and Resilience  
(CARE) for South Asia Project**

**Promoting Nature-based  
Solutions for Climate  
Resilience in Water  
Sector in South Asia:  
Training Module (Virtual)**

2023



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# ACRONYMS

<b>ADPC</b>	Asian Disaster Preparedness Center (ADPC)
<b>CARE</b>	Climate Adaptation and Resilience
<b>ES</b>	Ecosystem Services
<b>IUCN</b>	International Union for Conservation of Nature (IUCN)
<b>NbS</b>	Nature-based solutions (NbS)
<b>RAWES</b>	Rapid Assessment of Wetland Ecosystem Services
<b>TESSA</b>	Toolkit for Ecosystem Service Site-Based Assessment
<b>WB</b>	World Bank

# 1. BACKGROUND

## 1.1 About the training module

Capacity building is critical to developing innovative NbS for solving water sector challenges that are technically and financially feasible and sustainable. Furthermore, at the local and national scales, governments must support research and knowledge sharing, further developing local technical capacity to implement NbS and promoting the use of existing tools to perform ecosystem services valuation at scale. The results must be integrated within national targets, plans, and policies, and the benefits of NbS approaches should be captured and shared with other countries in the region.

Considering this, the NbS training module is designed for the capacity building of practitioners, and policymakers working on the management of water resources or having an influence on the water sector, such as the Ministry of Water, environment, agriculture, land use, finance, and planning.

For the development of this training module International Union for Conservation of Nature (IUCN) collaborated with the Asian Disaster Preparedness Center (ADPC), under the World Bank (WB) funded initiative, Climate Adaptation and Resilience (CARE) for South Asia. This collaboration aims to promote the mainstreaming of NbS to increase the climate resilience of the water sector in South Asia. Please click [HERE](#) for further information on the ADPC-IUCN collaboration.

## 1.2 Objective and structure

This training module is designed for virtual delivery but can be adapted for on-site training. The specific objectives of the training include:

- Introduce participants to Ecosystem Services, Nature-based Solutions, their background, definition, and examples at scale, including IUCN Global Standard for NbS;
- Understand climate projections for South Asia and NbS approaches for building resilience in specific water-dependent sectors;
- Discuss and identify opportunities and priority areas for mainstreaming NbS in policies
- Strengthen participant's understanding of grey-green (or hybrid) infrastructure solutions;
- Discuss case studies and funding opportunities for financing large-scale NbS initiatives

Training structure: The training is designed for three days, 3 hours each day, and divided into six sessions (See detailed agenda in Appendix I).

- On day 1, introduce participants to Ecosystem Services, discuss what are NbS and the tools for monitoring and verification of NbS initiatives, as well as, case studies from the region linked to the implementation of NbS at scale.
- On day 2, discuss climate projections and examples of NbS approaches for resilience in water-dependent sectors, as well as, the current status of NbS mainstreaming in policies and planning.
- On day 3, explore strategies linked to grey-green infrastructure solutions and specific funding mechanisms for financing and upscaling NbS initiatives.



## 2. SESSION'S INTRODUCTION AND FACILITATION PLAN

The sections below provide stepwise guidance and reference materials for those interested in developing training on NbS for promoting climate resilience in the water sector in South Asia.

### 2.1 Participants' introduction and icebreaking exercise

Plan an introductory session to discuss the objectives of the workshop and the flow of the agenda. See Appendix I for the indicative agenda of the three days of visual workshops.

Understand who is in the room, what is their expectation from the workshop, and how comfortable they are with the main topic of the training. Below are suggested questions to facilitate an online Mentimeter interaction with the participants.

- Which sector do you represent?
- What is your understanding of NbS? Any examples from your work?
- Level of confidence in defining, designing, implementing, and M&E for NbS?
- What are the key opportunities for NbS in your work?

### 2.2 Session 1 - Introduction to the Ecosystem Services (ES)

- 1) Objective: Understanding multiple values of the ecosystem and different types of ecosystem services. Discuss how we assess the value of the benefits that nature provides.

Ecosystem management decisions are often made without understanding the full range of values of ecosystem services. Often the ecosystem services are only recognized when they have disappeared. The session, therefore, is designed to help participants understand ES.

- 2) Content design:

- Understanding ES: Introduction to the multiple values of ecosystems and ecosystem services.
- Categories of ES: provisioning services, regulating services, cultural services, and supporting services.
- How to assess ES? Examples of ES Assessment methodologies, e.g.,
  - » [Rapid Assessment of Wetland Ecosystem Services \(RAWES\)](#),
  - » [Toolkit for Ecosystem Service Site-Based Assessment \(TESSA\)](#)

- 3) Interactive exercises: Design questions and exercises to assess participants' understanding of different ecosystem services. Show photographs of a mixed-use landscape with the ecosystem and anthropogenic activities. Ask participants to identify different types of ecosystem services. Discuss how these services are linked to each other.

Session presentation: see Appendix II

### 2.3 Session 2 – Nature-based Solutions- background, definition, examples at scale

- 1) Objective: Discuss the evolution of the NbS concept, and its definition (IUCN, 2016 and UNEA-5, 2022). Through case studies discuss the application of NbS at scale.



Figure 1: NbS - common foundation but distinct approach

## 2) Content design:

- Understanding NbS: Introduction to the definition of NbS, development of the concept, and how it is different from traditional conservation or nature-inspired solutions.
- IUCN defines Nature-based Solutions, as actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature."
- Applying NbS at landscape/basin level: NbS activities must be strategically deployed across the larger landscape/seascape, because ecosystems interact with the larger land and seascape in which they are embedded and cannot be managed in isolation, thus requiring landscape-level design of NbS.
- Case studies: discuss case studies and examples of NbS application from the Asia region, such as forest landscape restoration, and ecosystem-based adaptation. Below is a link to NbS case studies from the Asia region.
  - » [Nature-based Solutions in the Ganges Brahmaputra Meghna \(GBM\) river basin: Case Studies and lessons learned](#)
  - » [Ecosystems protecting infrastructure and Communities: lessons learned and Guidelines for Implementation](#)
  - » [Nature-based solutions in practice: the example of the Namey Nichu watershed in Bhutan](#)

## 3) Interactive exercise: Differentiate among NbS, grey infrastructure, and hybrid solutions.

Session presentation: see Appendix III.

## 2.4 Session 3 – Introduction to the IUCN Global Standards for Nature-based Solutions

- 1) Objective: Introduce participants to IUCN Global Standard for Nature-based Solutions. The standard provides a user-friendly framework for the verification, design, and scaling up of NbS.
- 2) Content design: Introduction to the eight criteria (see Error! Reference source not found.) and 28 indicators linked to the ecological, social, and economic dimensions of NbS. These criteria and indicators aim to ensure the application of Nature-based Solutions is credible and its

uptake tracked and measured for adaptive management so that its contributions can inspire others. Below is a link to the global standards and related references:

- » [IUCN Global Standard for Nature-based Solutions](#),
- » [Launch event – IUCN Global Standards](#)
- » [NbS Group Website](#).

**Table 1 NbS Criteria**

	<b>Criteria</b>
<b>1.</b>	NbS effectively address societal challenges
<b>2.</b>	The design of NbS is informed by scale
<b>3.</b>	NbS result in a net gain to biodiversity and ecosystem integrity
<b>4.</b>	NbS are economically viable
<b>5.</b>	NbS is based on inclusive, transparent, and empowering governance processes
<b>6.</b>	NbS equitably balances trade-offs between the achievement of its primary goal(s) and the continued provision of multiple benefits
<b>7.</b>	NbS have managed adaptively, based on evidence
<b>8.</b>	NbS are sustainable and mainstreamed within an appropriate jurisdictional context

3) Interactive exercise: Assess how comfortable participants are on NbS criteria.

Presentation: see Appendix IV

## 2.5 Session 4 – NbS for resilience – examples and planning cycle

- 1) Objective: Discuss how to integrate NbS into climate resilience planning, and guide participants throughout the full project cycle from planning and assessment to implementation, M&E, and mainstreaming. Explore these steps through real-life case studies from the South Asia region.
- 2) Content design:
  - NbS for resilience – criteria: Introduce participants to the following three criteria to determine whether or not an action is an NbS for resilience
    - a) Is the approach focusing on tackling a climate-induced threat and on providing adaptation benefits?
    - b) Is the proposed/implemented solution to climate threats based on (or includes elements of) restoration/conservation/management of ecosystems to maintain/ enhance ecosystem services?
    - c) Does this approach provide biodiversity benefits?
  - Understand the steps: Introduction to the eight key steps of the planning process for an NbS for a resilience project for the water sector. The eight steps of the cycle, complemented by the associated forms, aim to guide practitioners through the process of designing, implementing, monitoring and evaluating, and mainstreaming, Ecosystem-based Adaptation interventions for building water sector resilience. Below add the reference material to support the design and facilitation of this session.
    - » [The Guidebook for the Design and Implementation of Ecosystem-Based Adaptation in River Basins in Thailand](#).

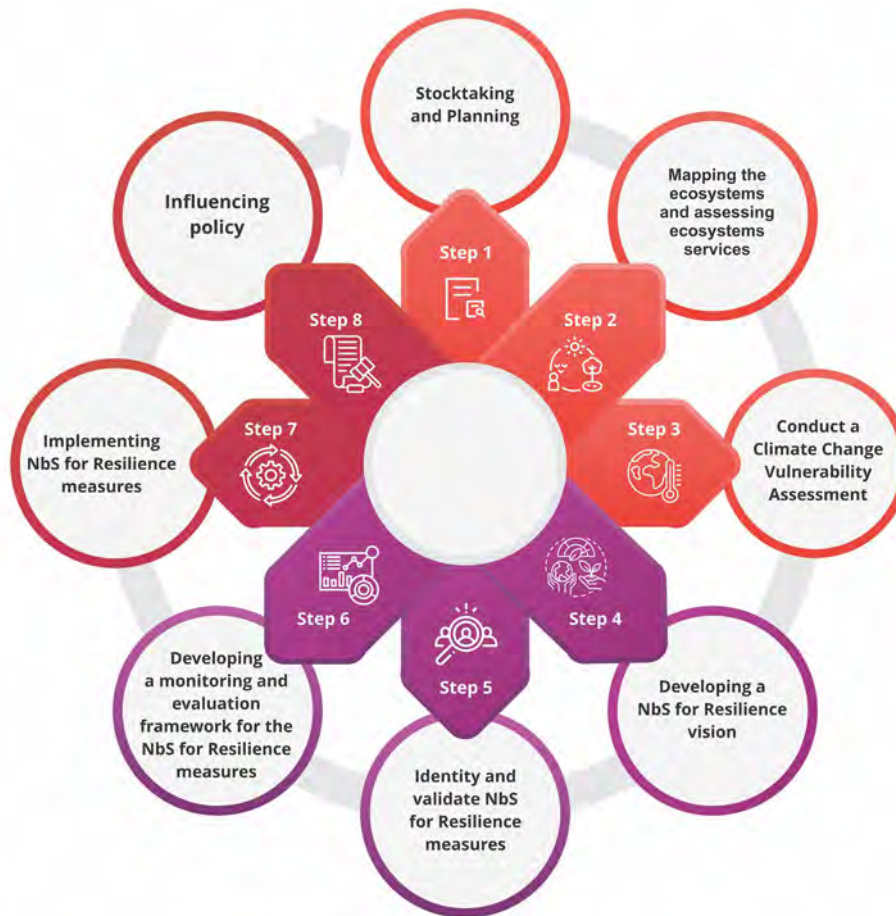
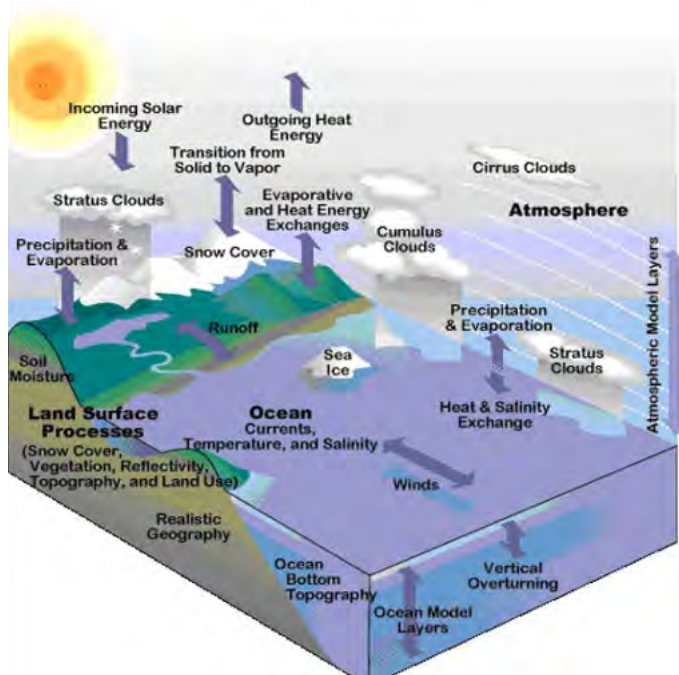


Figure 2: Steps - NbS for resilience planning in the water sector

- Discuss the global climate models, their application, and climate change projections for South Asian countries.
- Discuss case studies: Through case studies and examples explore the implementation of eight steps planning process for NSb for Water resilience projects. Examples of case studies are below:
  - » [Solving water scarcity – Banda district success story \(Uttar Pradesh, India\)](#)
  - » [Wetland Management and Conservation, Hail Haor, Bangladesh](#)

# Understanding the Climate Models

## Climate System



The animals and plants  
(the [Biosphere](#))

The oceans, lakes, and rivers  
(the [Hydrosphere](#))

Icebergs, glaciers and ice sheets  
(the [Cryosphere](#))

Air  
(the [Atmosphere](#))

Mountains, Volcanoes and  
moving continents  
(the [Geosphere](#))

**A complex system which is  
difficult to understand**

Figure 3: Understanding the climate models and systems

Session presentations: see Appendix V

## 2.6 Session 5 – Mainstreaming of NbS in Policies and Governance

- 1) Objective: Discuss how NbS is integrated into global and national policies in South Asian countries. Identification of gaps and priority areas for resilience building, and role of governments in developing the regulatory framework to support the mainstreaming of NbS in policy and planning process.

- 2) Content Design: Presentation and country group discussion

Introduction of the regional context, methodology of analysis of NbS mainstreaming in policies.

Present the mapping of NbS in existing national water governance frameworks and policies in Bangladesh, India, Nepal, and Pakistan.

- 3) Participants interaction: Questions for country group work
  - » What role can local institutions play in mainstreaming NbS?
  - » Identify priority policies and sectors for NbS integration in your country – concerning water resilience. Why are these important?
  - » What do you think are gaps and opportunities for enhancing resilience through NbS – identify 5 gaps and 5 opportunities.

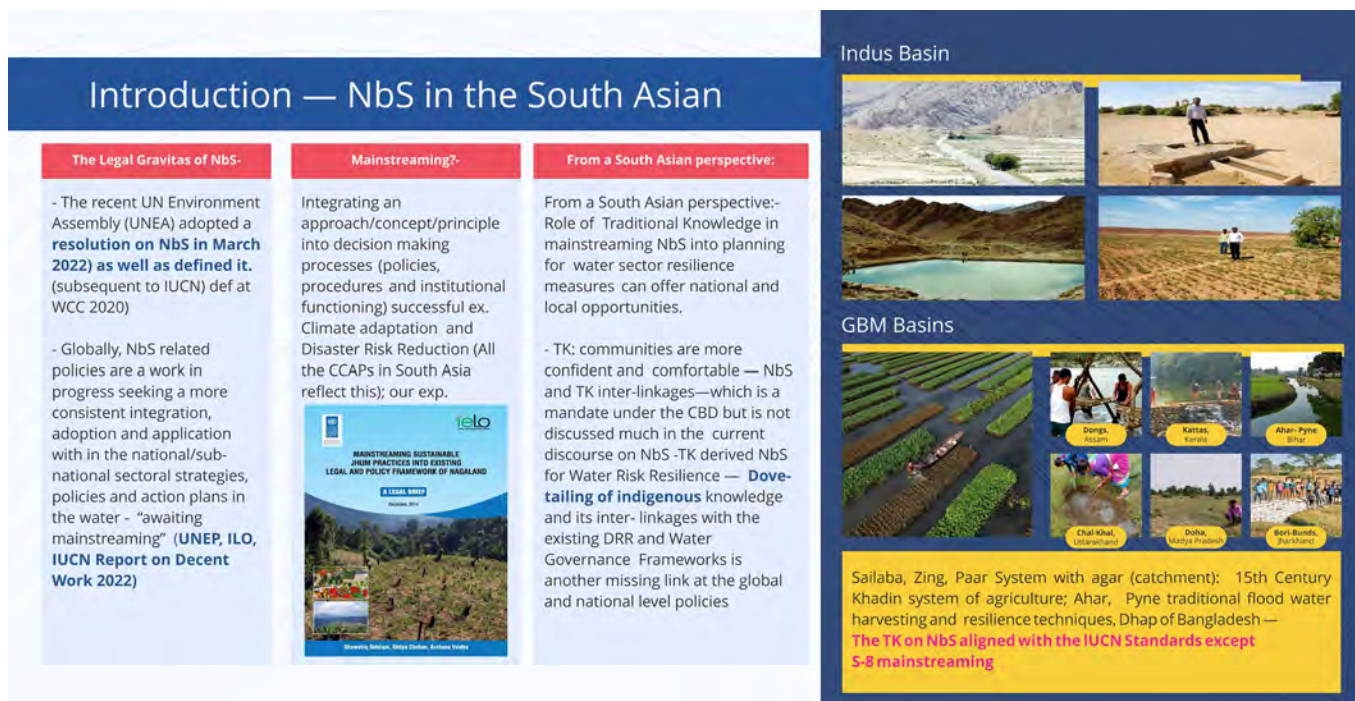


Figure 4: Introduction - NbS in the South Asian Context

Session presentation: see Appendix VI.

## 2.7 Session 6 – Green-grey infrastructure solutions and cost-benefit analysis of NbS

- 1) Objective: Improved understanding of strategies linked to grey-green (or hybrid) infrastructure solutions, and cost-benefit analysis of NbS interventions from Asia region using case studies.
- 2) Content design:

Introduction to the session and grey-green infrastructure solutions; Grey infrastructure in the water sector refers to structures such as dams, embankments, seawalls, roads, pipes, or water treatment plants, whereas, green infrastructure includes forests, floodplains, wetlands, and soils that provide additional benefits for human well-being, such as flood protection and climate regulation. Both approaches often form part of the same landscape-level strategy to adapt to risks and pressures

In a number of cases, grey and NbS infrastructure can be merged to develop complementary hybrid solutions. Overall, the long-term vision for solving a societal challenge is to progressively shift toward more NbS approaches and less grey infrastructure.

Discuss case studies highlighting the cost-benefit analysis of grey-green infrastructure solutions.

- Nepal - Water source protection in Nepal and a framework of cost-benefit analysis and actual economic benefits for the intervention. Below are references linked to the case study.
  - » [Community-based bio-engineering for eco-safe roadsides in Nepal](#)
  - » [Ecosystems protecting infrastructure and communities: Lessons learned and guidelines for implementation](#)
- Viet Nam - Designing grey-green infrastructure solutions, experiences from the Mekong Delta on flood-based agriculture systems to enhance climate and economic resilience of local communities.

- » [Scaling-up flood-friendly livelihoods to strengthen climate change resilience in the Mekong Delta](#)

### 3) Country group discussion: Questions

- » Discuss the current status of existing green-grey infrastructure in different landscapes (mountain, grasslands, coastal, flood plains).
- » What are the priorities, and hindrances to the development and implementation of hybrid infrastructure solutions? Identify 5 priorities and 5 challenges, including your suggestion on how to mitigate these.

Session presentations: see Appendix VII.

## 2.8 Session 7 – Sustainable financing for scaling up NbS

Interest in NbS is growing from both the public and private sectors, as is the desire to scale up implementation. However, one of the major hurdles keeping NbS projects from scaling up is how to finance NbS sustainably.

- 1) Objective: Improved understanding of funding mechanisms and strategies for financing NbS for the resilience of the water sector. Discuss the engagement of the private sector in resource mobilization for upscaling NbS.
- 2) Content design:
  - Discuss the current landscape of NbS financing (public and private sector) and gaps in the current investment.
  - Introducing financing opportunities for national and regional level NbS initiatives, including multilateral-funding mechanisms and country-led thematic initiatives, such as the [Global Environment Facility](#) (GEF), [Green Climate Fund](#) (GCF), [International Climate Initiative](#) (IKI), and [the Global EbA Fund](#).
  - Exploring the challenges and opportunities for private sector engagement in financing NbS, and tools for mobilizing private sector engagement, such as blended financing by governments, impact investment, the role of green taxonomy in demarcating nature friendly vs nature-destructive practices, and means to measure, report and verify (MRV) the progress on NbS.
  - Discuss case studies from the region and globally linked to private sector engagement.
    - » [Operationalising Nature-based Solutions: innovative approaches to financing ecosystem restoration](#)
    - » [KPMG True Value Case Study: Ambuja Cement, India](#)
    - » [H&M offers EUR 500 million in sustainability-linked bonds](#)

# Current financing landscape and financing gap

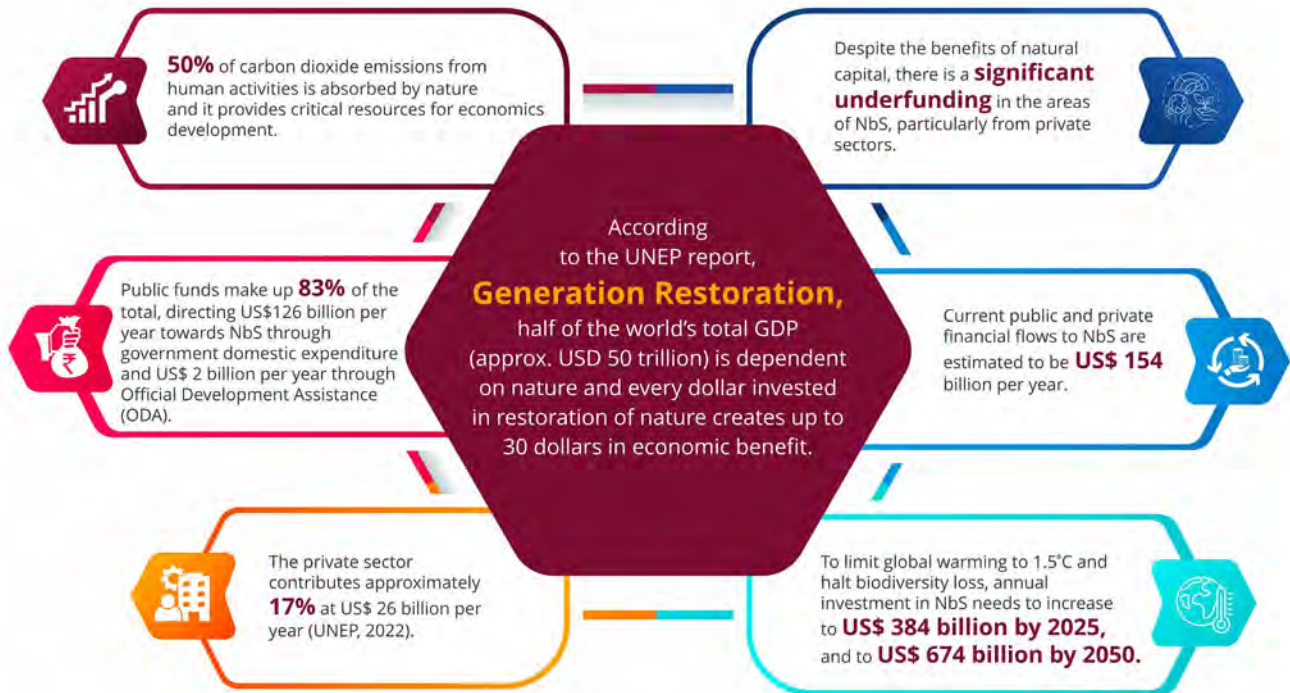


Figure 5: NbS - Financing needs and sources (source: PwC)

Session presentation: see Appendix VIII

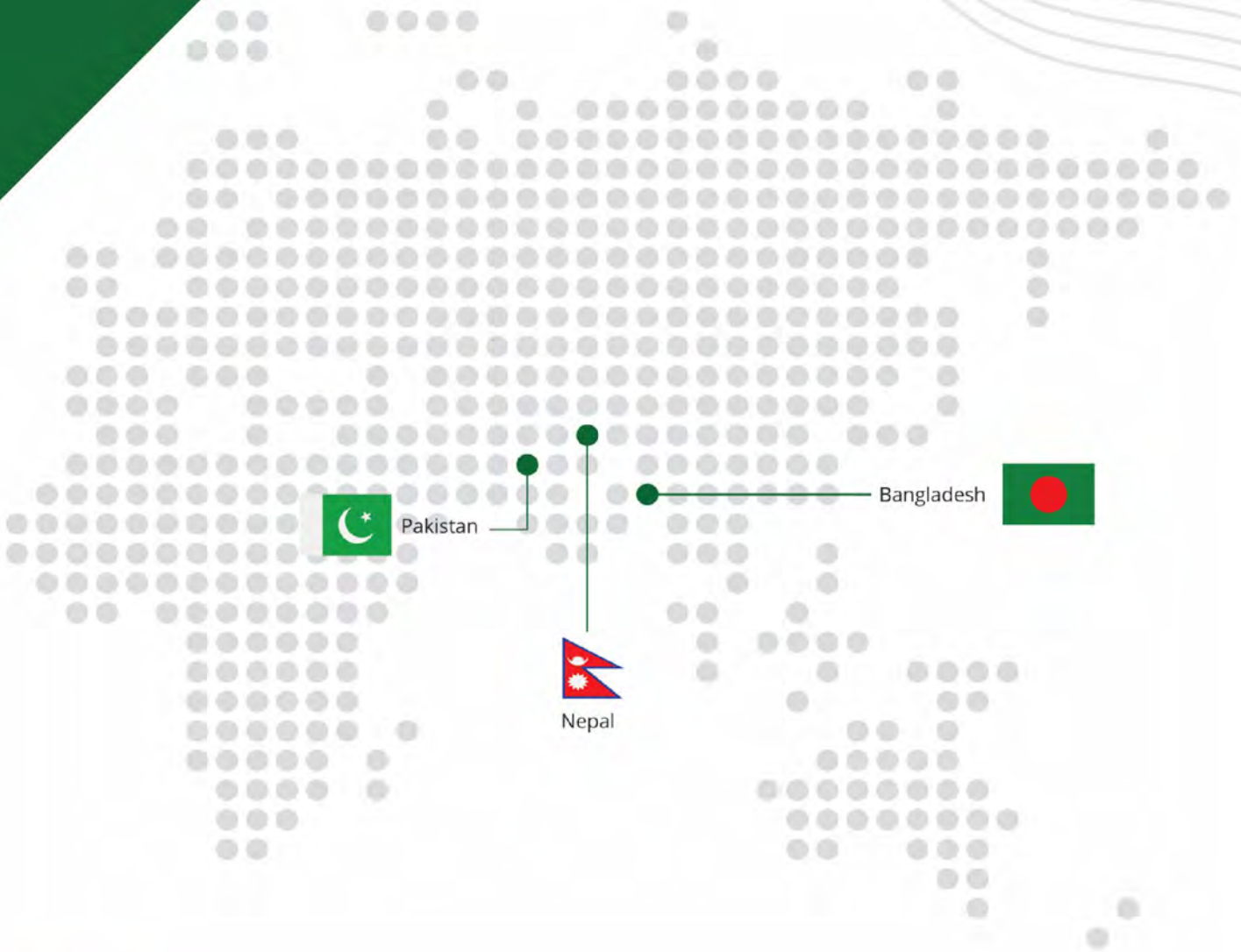


# APPENDIX I: SUGGESTIVE AGENDA FOR THREE DAYS

Duration	Sessions	Learning Outcome
<b>Day 1: Inauguration and Introduction to NbS</b>		
<b>30 mins</b>	<p>Participants welcome, housekeeping and introduction to the training module and its objectives.</p> <p><b><i>Mentimeter interaction with the participants</i></b></p> <ul style="list-style-type: none"> <li>• Which sector do you represent?</li> <li>• Confidence in defining, designing, implementing, and M&amp;E for NbS.</li> <li>• What are the key opportunities for NbS in your work?</li> </ul>	All participants are aware of the purpose and objectives of training. Participants' introduction through the Chatbox.
<b>30 mins</b>	<p><b>Session 1 – Introduction to the Ecosystem Services (ES)</b></p> <p>Introduction to the variety of ES and its linkages to the water sector.</p> <p>Interactive exercise to gauge participants' understanding of different types of ES.</p>	Understand different types of ES and the linkages among them.
<b>45 mins</b>	<p><b>Session 2: Nature-based Solutions- background, definition, examples at scale</b></p> <p>NbS background, definition, and examples at scale (35 mins,</p> <p>Mentimeter exercise – Use photos and ask participants if it is NbS or not? (10 mins)</p>	Improved participant's understanding of NbS definition and application at scale.
<b>60 mins</b>	<p><b>Session 3 - Introduction to the IUCN Global Standards for NbS</b></p> <p>Presentation on Global Standards for NbS</p> <p>Mentimeter Exercise – analyzing participant's understanding of the NbS criteria (15 mins)</p>	Understand the criteria and indicators for the design, verification, and evaluation of NbS projects.
<b>Day 2: NbS for the resilience of the water sector in South Asia</b>		
<b>10 mins</b>	<b>Recap key takeaways and questions from Day 1</b>	
<b>80 mins</b>	<p><b>Session 4: NbS for resilience – examples and planning cycle</b></p> <p>NbS for resilience: 8-step planning process (15 mins)</p> <p>Climate Change Impact and Vulnerability Assessment (10 mins)</p> <p>Case studies from South Asia (30 mins)</p> <p>Q/A and participants' feedback and interaction with case study presenters (15 mins)</p>	Understand climate projections and NbS approaches for resilience in specific water-dependent sectors.

Duration	Sessions	Learning Outcome
<b>75 mins</b>	<p><b>Session 5: Mainstreaming of NbS in Policies and Governance</b></p> <p>Overview – to what extent are NbS mainstreamed in relevant policies in South Asia? (20 mins)</p> <p>Country Group exercise – discuss how NbS is integrated with relevant water sector policies and identify gaps and national priority for enhancing resilience through NbS (35 mins)</p> <p>Country group presentation (20 mins);</p>	Improved understanding of the opportunities for mainstreaming of NbS in policies at the national level.
<b>Day 3: Green-grey infrastructure and financing of NbS</b>		
<b>10 mins</b>	<b>Recap key takeaways and questions from Day 2</b>	
<b>80 mins</b>	<p><b>Session 6: Green-grey infrastructure solutions and cost-benefit analysis of NbS</b></p> <p>Introduction to the session and grey-green infrastructure solutions (5 mins)</p> <p>Case study presentations (20 mins)</p> <p>Plenary discussion and participants' interaction with the case study presenters (10 mins)</p> <p>Country group exercise – status, priorities, hindrances to development and implementation of hybrid infrastructure solutions (30 mins)</p> <p>Presentation of group exercise in plenary discussions (15 mins)</p>	Improved understanding of strategies linked to grey-green (or hybrid) infrastructure solutions.
<b>60 mins</b>	<p><b>Session 7: Sustainable financing for scaling up NbS</b></p> <p>Opportunities for financing national and regional level NbS initiative (15 mins)</p> <p>Private sector engagement and resource mobilization for upscaling NbS (15 min)</p> <p>Plenary discussion – funding opportunities and strategies countries could prioritize (30 mins)</p>	Improved understanding of funding mechanisms and strategies for financing NbS for the resilience of the water sector nationally.
<b>20 mins</b>	<b>Workshop Conclusion and Participants' Feedback</b>	





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