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NAbSA
NATURE-BASED SOLUTIONS FOR CLIMATE ADAPTATION

In partnership with Canada

OPERATIONAL FRAMEWORK
FOR INTEGRATED, INCLUSIVE, AND COMMUNITY-LED ACTION:
NATURE-BASED SOLUTIONS FOR ADAPTATION AND RESILIENCE IN PRACTICE



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About NAbSA

NAbSA — NAture-based Solutions for climate Adaptation: monitoring & impact evaluation — is a technical hub hosted by the International Union for Conservation of Nature (IUCN). Its programme of work is co-created with Global Affairs Canada's Partnering for Climate (P4C) community. NAbSA's mission is to accelerate climate resilience in Sub-Saharan Africa through inclusive, gender-responsive Nature-based Solutions (NbS) that safeguard biodiversity, empower communities and strengthen adaptation outcomes.

As a hub, NAbSA supports adaptation and resilience efforts across Sub-Saharan Africa by embedding high-integrity, gender-responsive and biodiversity-informed climate actions at the core of project design, implementation and monitoring. NAbSA also serves as a platform for capacity building, knowledge sharing and policy influence. It documents lessons and best practices, convenes dialogues, connects networks, and showcases innovations at national, regional, and international levels, reinforcing the role of nature in building resilience and reducing poverty in vulnerable communities.

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Table of contents

S. Executive Summary 7
Acronyms and abbreviations 10

1. Introduction: Understanding the Operational Framework 12
— 1.1 Why do we need an Operational Framework? 14
— 1.2 Defining Nature-based Solutions for climate change adaptation and resilience 16
— 1.3 Purpose, objectives and intended audience 17

2. The Context: addressing the climate–nature–people nexus 20
— 2.1 The climate crisis 21
— 2.2 The biodiversity crisis 23
— 2.3 Understanding the climate–biodiversity nexus 25
— 2.4 Impacts on people and communities 27
— 2.5 Climate vulnerability and disproportionate risks 29
— 2.6 Nature-based Solutions for adaptation and sustainable development 29

3. The six core principles of the Operational Framework, as cross-cutting themes 31
— PRINCIPLE 1. NbS for adaptation projects must be informed by co-creation 34
— PRINCIPLE 2. NbS for adaptation projects must focus on the nature-climate-people nexus 36
— PRINCIPLE 3. NbS for adaptation projects must be guided by environmental and social risk analysis 37
— PRINCIPLE 4. NbS for adaptation projects must be rights-based and gender-inclusive 38
— PRINCIPLE 5. NbS for adaptation projects must be climate-proofed 41
— PRINCIPLE 6. NbS for adaptation projects must be aligned with policy 43

4. The six steps of the operational framework 50
— STEP 1: Understanding the context 50
CASE STUDY: Understanding Coastal Vulnerability Through Community Knowledge and Climate Assessment 59
CASE STUDY: Co-Creating Conservation Knowledge through the Herder Conservation Network in Mount Marsabit, Kenya 60

— **STEP 2:** Assessing climate risk and vulnerabilities 62
CASE STUDY: Listening to communities, understanding climate risks and building resilience with nature across Africa 65
CASE STUDY: Assessing urban flood risks through integrated spatial analysis and community-based approaches in Kenya 66
— **STEP 3:** Identifying nature–climate actions 68
CASE STUDY: Identifying adaptation actions in Napo, Ecuador 71
CASE STUDY: Designing community-led actions to address plastic pollution and strengthen mangrove conservation in Senegal 72

— **STEP 4:** Prioritising and selecting actions 75
CASE STUDY: Conducting participatory climate risk and gender analysis in El Pedregal, Ecuador 81

— **STEP 5:** Monitoring, evaluation and learning (MEL) 83
CASE STUDY: Applying of the SEAR framework to the FproF project in Moyen Bafing National Park (Guinea) 91
CASE STUDY: Creating safe spaces for knowledge sharing, decision making and inclusive forest governance in Benin 92

— **STEP 6:** Implementing nature–climate actions 94
CASE STUDY: Evidencing Locally Led, Ecosystem-based Adaptation[9] in Nicaragua 97
CASE STUDY: Linking Indigenous and scientific knowledge on seed conservation and management through community-based participatory action research in Mozambique 98

G Glossary 101

S. Executive Summary

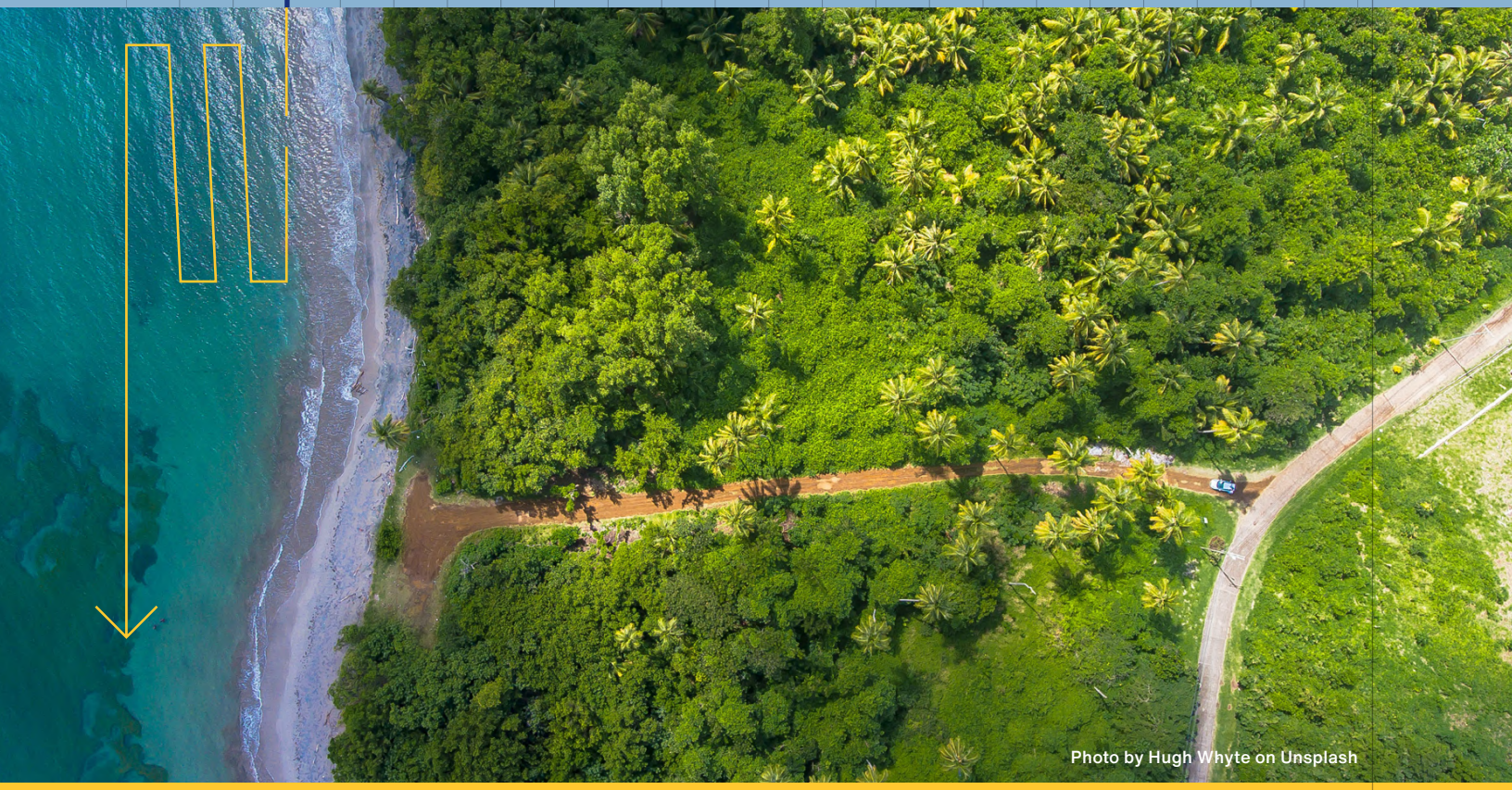


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Nature-based Solutions (NbS) for climate adaptation and resilience offer significant potential to address the interconnected challenges of climate change and biodiversity loss while delivering benefits for people and ecosystems. By protecting, sustainably managing and restoring natural or modified ecosystems, NbS can strengthen climate adaptation and resilience, reduce vulnerability to climate-related risks, and generate wider social, economic and environmental benefits. Yet good intentions are not enough. Too often, NbS are designed for communities rather than with them, overlook future climate risks, or cannot demonstrate what they have achieved. NbS must be designed, implemented and monitored in ways that respond to local climate risks, safeguard biodiversity, uphold human rights, promote gender equality and social inclusion, and deliver measurable and lasting adaptation benefits.

The NAbSA Operational Framework responds to this need by providing practical guidance to support practitioners, policymakers and other stakeholders in designing, implementing and monitoring high-integrity NbS for climate adaptation and resilience. Developed through the NAture-based Solutions for climate Adaptation: monitoring & impact evaluation (NAbSA) initiative, led by the International Union for Conservation of Nature (IUCN), the Framework draws on evidence, practitioner experiences and implementation lessons from Canada's 315 million CAD Partnering for Climate (P4C) and Nature-positive portfolios, located in 30 countries across 12 different ecosystems. It was built from practice and with people: practitioners, communities and partners have shaped its content, and it has already been tested on the ground, including across nine demonstration sites in five countries.

At its core, the Framework is structured around six interconnected steps that guide users through the key stages of developing and applying NbS for climate adaptation. Together, these steps provide a logical yet flexible pathway, from understanding the context and assessing climate risks to identifying and designing appropriate interventions, planning for implementation, and monitoring and evaluating results. Rather than prescribing a one-size-fits-all approach, the Framework encourages users to adapt its guidance to their specific contexts, objectives, capacities and governance arrangements.
This is a living document by design, as NbS for adaptation is a fast-moving field. Climate risks are shifting, the evidence base is growing, and global targets, from the Global Goal on Adaptation to the Kunming-Montreal Global Biodiversity Framework, continue to evolve. A static manual would quickly fall behind. The Framework will be refined every year with the lessons, evidence and knowledge of those applying it, including Indigenous Peoples and local communities.

The six steps are underpinned by six core principles that set the Framework apart. They are the non-negotiable standard of integrity that makes NbS effective, equitable and sustainable:



CO-CREATION:
Designing with, not only for, people. Real engagement with relevant stakeholders, rights-holders and knowledge-holders as partners from the outset and throughout the process.



THE NATURE–CLIMATE–PEOPLE NEXUS:
Recognizing and strengthening the interconnected relationships between biodiversity, climate adaptation and human well-being.



ENVIRONMENTAL AND SOCIAL RISK ANALYSIS:
Identifying, assessing and addressing potential risks and unintended consequences associated with NbS interventions.



A HUMAN RIGHTS-BASED APPROACH:
Upholding human rights, recognizing the rights and priorities of affected communities,including the right of Indigenous Peoples to free, prior and informed consent, and promoting accountability and equitable outcomes.



CLIMATE-PROOFING:
Ensuring interventions account for current and future climate conditions and remain relevant and effective under changing circumstances.



POLICY ALIGNMENT:
Connecting NbS interventions with relevant policy frameworks, strategies and commitments to strengthen coherence and enable wider uptake.

These principles are not intended to be addressed in isolation or at a single stage. They are cross-cutting considerations that should inform decision-making throughout all six steps, helping users integrate environmental integrity, social safeguards, gender responsiveness and long-term resilience into the design and delivery of NbS. This is what distinguishes high-integrity NbS from conventional conservation interventions.

Above all, the Framework puts people at its centre. It ensures that women, Indigenous Peoples, local communities and other groups who may face structural barriers to participation are meaningfully involved in shaping NbS interventions and sharing in their benefits. Their knowledge, combined with scientific evidence, is treated as essential to effective adaptation, not as an add-on. Monitoring, evaluation and learning are equally central, enabling practitioners to assess adaptation outcomes, understand ecological and societal co-benefits, identify challenges and use evidence to inform ongoing improvements.

Designed as a practical resource, the Framework brings together guidance, tools, evidence and examples to help users navigate the complexities of NbS for climate adaptation. Detailed Guidelines and support its application.



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Ultimately, the NAbSA Operational Framework aims to contribute to a stronger evidence base and more consistent practice for high-integrity, gender-responsive NbS for climate adaptation and resilience. It is intended not only to inform individual interventions, but also to strengthen the enabling conditions, institutional capacities and partnerships needed to scale effective NbS and advance more resilient, equitable and nature-positive futures. We invite practitioners, governments, funders, and Indigenous Peoples and local communities to use the Framework, test it, and help shape its next edition.

Acronyms and abbreviations

ADB	Asian Development Bank
APACs	Indigenous and Community Conserved Areas
CAD	Canadian dollars
CBD	United Nations Convention on Biological Diversity
CCAI	Climate Change Adaptation Index
CDKN	Climate and Development Knowledge Network
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CI	Conservation International
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Services
COVID-19	Coronavirus 2019
CO_2	Carbon dioxide
CSC	Conflict Sensitivity Consortium
CVCA	Climate Vulnerability and Capacity Analysis
DRC	Democratic Republic of the Congo
DRR	Disaster risk reduction
EbA	Ecosystem-based Adaptation
EbA-LLA	Ecosystem-based Adaptation – Locally Led Adaptation
Eco-DRR	Ecosystem-based disaster risk reduction
EEA	European Environmental Agency
ESMS	Environmental and Social Management System
FAO	Food and Agriculture Organisation
FEBA	Friends of Ecosystem-based Adaptation
FFLA	Fundación Futuro Latinoamericano
FODESNA	Fondo de Desarrollo Sostenible y Conservación del Agua del Napo
FONAG	Fondo para la Protección del Agua
FPIC	Free, prior and informed consent
FproF	Femmes Pro-Forêts
GBIF	Global Biodiversity Information Facility
GBV	Gender-based violence
GCF	Green Climate Fund
GEF	Global Environment Facility
GESI	Gender Equality and Social Inclusion
GFDRR	Global Facility for Disaster Reduction and Recovery
GGA	Global Goal on Adaptation
GIS	Geographic information system
GIZ	German Corporation for International Cooperation
$GtCO_2e$	Gigatonnes of carbon dioxide equivalent
HEC-RAS	Hydrologic Engineering Center's River Analysis System
HNAP	Health National Adaptation Plan
ICCAs	Indigenous and Community Conserved Areas
IDRC	International Development Research Centre
IIED	International Institute for Environment and Development
IFC	International Finance Corporation
IISD	International Institute for Sustainable Development
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
KMGBF	Kunming-Montreal Global Biodiversity Framework
LDN	Land Degradation Neutrality
LLA	Locally Led Adaptation
MAPs	Marine protected areas
MCA	Multi-criteria analysis
MEA	Millennium Ecosystem Assessment

MEDD	Ministry of the Environment and Sustainable Development (Guinea)
MEL	Monitoring, evaluation and learning
NAbSA	Nature-based Solutions for climate Adaptation: monitoring & impact evaluation
NAP	National Adaptation Plan
NaPO	Nature and People as One
NbS	Nature-based Solutions
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NTFPs	Non-timber forest products
OF	Operational Framework
OGPNRF	Guinean Office of National Parks and Wildlife Reserves
OHCHR	Office of the United Nations High Commissioner for Human Rights
P4C	Partnering for Climate
PAEGD	Community waste management action plan (Senegal)
PAR	Participatory action research
PCA	Peace and conflict analysis
PCBLT	Lake Chad Basin Conservation Project
PET	Polyethylene terephthalate
PNMB	Moyen-Bafing National Park (Guinea)
RCP	Representative Concentration Pathway
ReSea	Regenerative seascapes for people, climate and nature
RSC	Ramsar Convention on Wetlands
SDG	Sustainable Development Goal
SEAR	SEAR (Screened, Eligible, Approached, Randomised) framework
Socodevi	Société de coopération pour le développement international
SPRACC	Sistema de Información, Proyecciones, Riesgo Climático y Adaptación al Cambio Climático, Ecuador
STAR	Species Threat Abatement and Restoration metric
UAE	United Arab Emirates
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNDRR	United Nations Office for Disaster Risk Reduction
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNSCR	United Nations Security Council Resolution
UNSDG	United Nations Sustainable Development Group
UNU	United Nations University
UNU-EHS	United Nations University - Institute for Environment and Human Security
UN DESA	United Nations Department of Economic and Social Affairs
UN-Habitat	United Nations Human Settlements Programme
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
US EPA	United States Environmental Protection Agency
WBGU	German Advisory Council on Global Change
WDPA	World Database on Protected Areas
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WRI	World Resources Institute
WWF	World Wildlife Fund

1. Introduction: Understanding the Operational Framework



© Women walk home from an Oxfam water treatment centre, DRC © Oxfam East Africa, Wikimedia Commons

The impacts of global warming and climate change are already being experienced, resulting in widespread losses and damage to both people and ecosystems all over the planet (IPCC, 2022). Climate change adaptation – "the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities" (IPCC, 2022) – and resilience-building actions are, therefore, not optional but essential.

This Operational Framework, developed under IUCN's NAture-based Solutions for climate Adaptation: Monitoring & Impact Evaluation (NAbSA) initiative, provides a structured, inclusive, and evidence-based approach to designing and implementing Nature-based Solutions (NbS) for climate change adaptation and resilience. It builds on and integrates existing tools and methods. By embedding co-creation, gender responsiveness, and social inclusion as core principles, the framework maximises the equitable distribution of benefits and actively addresses power imbalances. It also intentionally and meaningfully incorporates the voices, knowledge and leadership of marginalised groups – including women, youth, persons with disabilities, and Indigenous Peoples – throughout the process. This approach not only enhances impact and sustainability but also contributes to systemic transformation toward environmental and social justice.

This framework aligns with and supports the delivery of the three Rio Conventions: the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention on Biological Diversity (CBD), and the United Nations Convention to Combat Desertification (UNCCD). It is also anchored in international instruments that recognise rights, notably the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) (UN, 2007) and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (UNGA, 1979). It operationalises NbS and ecosystem-based approaches as recognised in various resolutions and decisions, including Targets 8 and 11 of the Kunming-Montreal Global Biodiversity Framework (KMGBF) (CBD, 2022; CBD, 2025).

The approach is designed to deliver three interlinked and co-equal outcomes: reduced vulnerability of people and ecosystems to climate change; equitable socio-economic co-benefits; and improved biodiversity and ecosystem conservation outcomes. The framework also emphasises rights-based, locally led, gender-equitable action as fundamental to effectiveness and fairness, as detailed in the core principles (Section 1.3) and in Guideline 3.

This framework is designed for NbS for adaptation practitioners and decision-makers anywhere in the world (see 'For whom is this Operational Framework?' below). Because co-creation is a core principle of the framework, relevant actors identified at a selected site are expected to be actively engaged throughout the project – from design and planning to implementation, monitoring, evaluation and learning – with roles and levels of involvement that differ by actor and by stage. This process is described in the section 'The goal and structure of the NAbSA Operational Framework' below.

1.1 Why do we need an Operational Framework?



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The need for this Operational Framework (OF) arises from the urgent, complex and interconnected challenges posed by climate change, biodiversity loss, and social inequities. These challenges do not affect everyone equally and are experienced differently depending on gender, age, socio-economic status, ability, and other intersecting factors. Addressing these challenges requires an integrated approach that combines climate change adaptation with biodiversity conservation, strengthens social resilience and recognises the cultural values, practices and knowledge systems through which communities – particularly Indigenous Peoples and local communities – relate to nature (UNESCO, 2025), while actively addressing the root causes of inequity. Climate change, biodiversity loss, and inequities in human development are deeply intertwined challenges, each influencing and amplifying the others. However, they are frequently addressed in silos, and this fragmented approach is compounded by systemic barriers that work against integration, such as sector-specific mandates and budgets, separate funding streams for climate, biodiversity and development, and monitoring systems that track only single-sector outcomes. Efforts to overcome these barriers are often dismissed as too complex or unachievable. This fragmented approach can lead to unintended consequences, missed opportunities, and short-term fixes that fail to create meaningful, lasting progress for both ecosystems and all community members (IPCC, 2022) (Figure 1). The case studies included in this framework are intended to demonstrate that integrated approaches are achievable in practice.

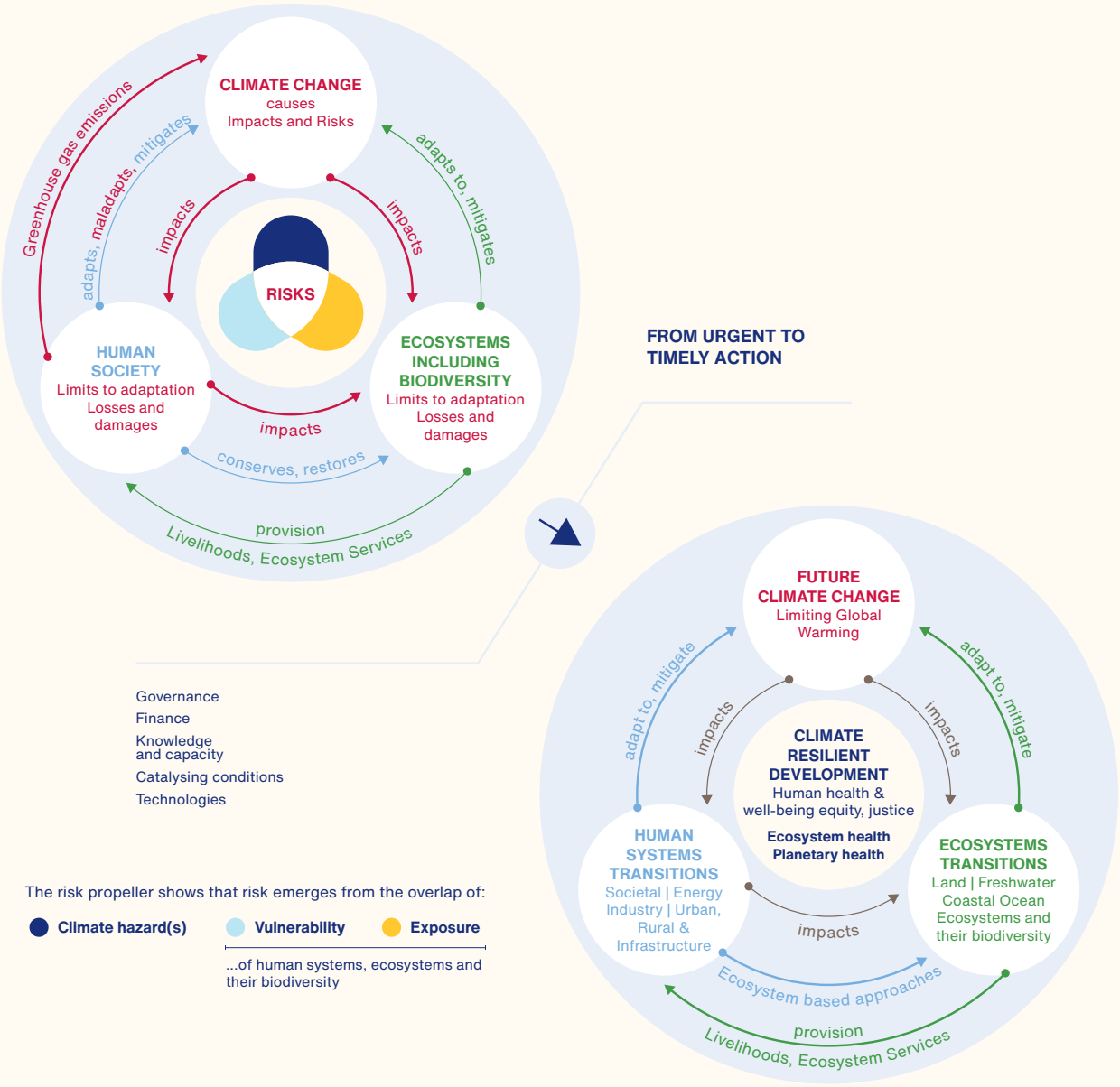


FIGURE 1 • The interconnections among climate, ecosystems (including biodiversity) and human society

Source: IPCC, 2022. (a) Anthropogenic activities cause climate change, which increases the exposure and vulnerability of both human society and ecosystems to more frequent and intense climate hazards and altered weather patterns. Human societies can adapt (or maladapt) to climate change, while ecosystems can adapt only within their ecological limits. Blue arrows = human society interactions; green arrows = ecosystem and biodiversity interactions; red arrows = impacts of climate change and human activities, including losses and damages. (b) Options to reduce climate risks and establish resilience: blue arrows = human system transitions; green arrows = ecosystem transitions; grey arrows = reduced impacts from climate change and human activities (IPCC, 2022).

The NAbSA initiative seeks to address these interlinked and complex crises together. By supporting the conservation, restoration and sustainable management and use of ecosystems, practitioners can build up and reinforce human and biodiversity resilience in tandem while providing social and economic co-benefits.

1.2 Defining Nature-based Solutions for climate change adaptation and resilience

NbS for adaptation support climate change adaptation and build the resilience of communities by increasing, maintaining or re-establishing the provision of key ecosystem services upon which communities depend for their livelihoods and protection from climate hazards.

TERMINOLOGY USED IN THIS OPERATIONAL FRAMEWORK

NbS are “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 and resilience and biodiversity benefits” (UNEA, 2022). Ecosystem-based adaptation (EbA), or “the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change” (CBD, 2009), is the NbS approach that specifically targets climate change adaptation. In this framework, the term ‘NbS for adaptation’ is used throughout to refer to EbA and related ecosystem-based approaches (e.g. ecosystem-based disaster risk reduction or Eco-DRR) whose primary purpose is to reduce the vulnerability of people and ecosystems to climate change while delivering biodiversity and socio-economic co-benefits.

The IUCN Global Standard for NbS (IUCN, 2020c & IUCN, 2026b) provides the benchmark against which the robustness of NbS for adaptation can be assessed. While this version of the Operational Framework was developed with the first edition, the second edition of the Standard is in alignment with this framework and any future versions Definitions of other key terms are provided in the glossary.

1.3 Purpose, objectives and intended audience

THE GOAL OF THIS OPERATIONAL FRAMEWORK

The goal of this Operational Framework is to provide step-by-step, practical guidance to adaptation and resilience practitioners and decision-makers on how to design and implement NbS for adaptation, from a project's inception through implementation, monitoring, evaluation and learning. It builds upon existing guidance, such as the FEBA qualification criteria and quality standards for EbA (FEBA, 2017) and the EbA online course (GIZ, IUCN & IISD, 2023) and translates them into a more fine-grained, action-oriented perspective, with concrete steps that practitioners can easily implement in diverse contexts.

This framework ensures that the three fundamental elements of NbS for adaptation identified by FEBA (2017) – climate change adaptation, socio-economic benefits, and biodiversity and ecosystem conservation – are integral to every project and are given equal prominence. Building on this foundation, the framework also aligns with more recent standards and practices that emphasise gender responsiveness, social inclusion, and locally led and rights-based approaches as essential for effectiveness and equity.

THE STRUCTURE OF THIS OPERATIONAL FRAMEWORK

This approach is rooted in the standard adaptation cycle (CBD, 2019; Adaptation Community, n.d.; GIZ, EURAC & UNU-EHS, 2018) and is organised in six steps (Figure 2):

STEP 1: UNDERSTANDING THE CONTEXT

STEP 2: ASSESSING CLIMATE RISKS AND VULNERABILITIES

STEP 3: IDENTIFYING NATURE-CLIMATE ACTIONS

STEP 4: PRIORITISING AND SELECTING ACTIONS

STEP 5: MONITORING, EVALUATION AND LEARNING (MEL)

STEP 6: IMPLEMENTING NATURE-CLIMATE ACTIONS

Each step explains why it matters, sets out its key activities, and closes with a checklist, a case study and a list of resources. The steps are supported by detailed Guidelines that provide methods, tools and worked examples, and the six core principles (Section 1.3) apply as cross-cutting themes across all steps.

The framework is designed to serve as an iterative, cyclical process that centres feedback, ongoing adaptive management, and experiential learning. The MEL plan is designed in Step 5, before implementation begins, so that baselines, indicators and feedback mechanisms are in place from the outset; it is then applied throughout implementation (Step 6). Where monitoring shows that actions are ineffective or are producing unintended outcomes, adaptive management allows the project to return to earlier steps and adjust its design (Figure 2). This ongoing learning and adaptive management process is central to climate-proofing, ensuring that actions are reviewed regularly and refined as needed.

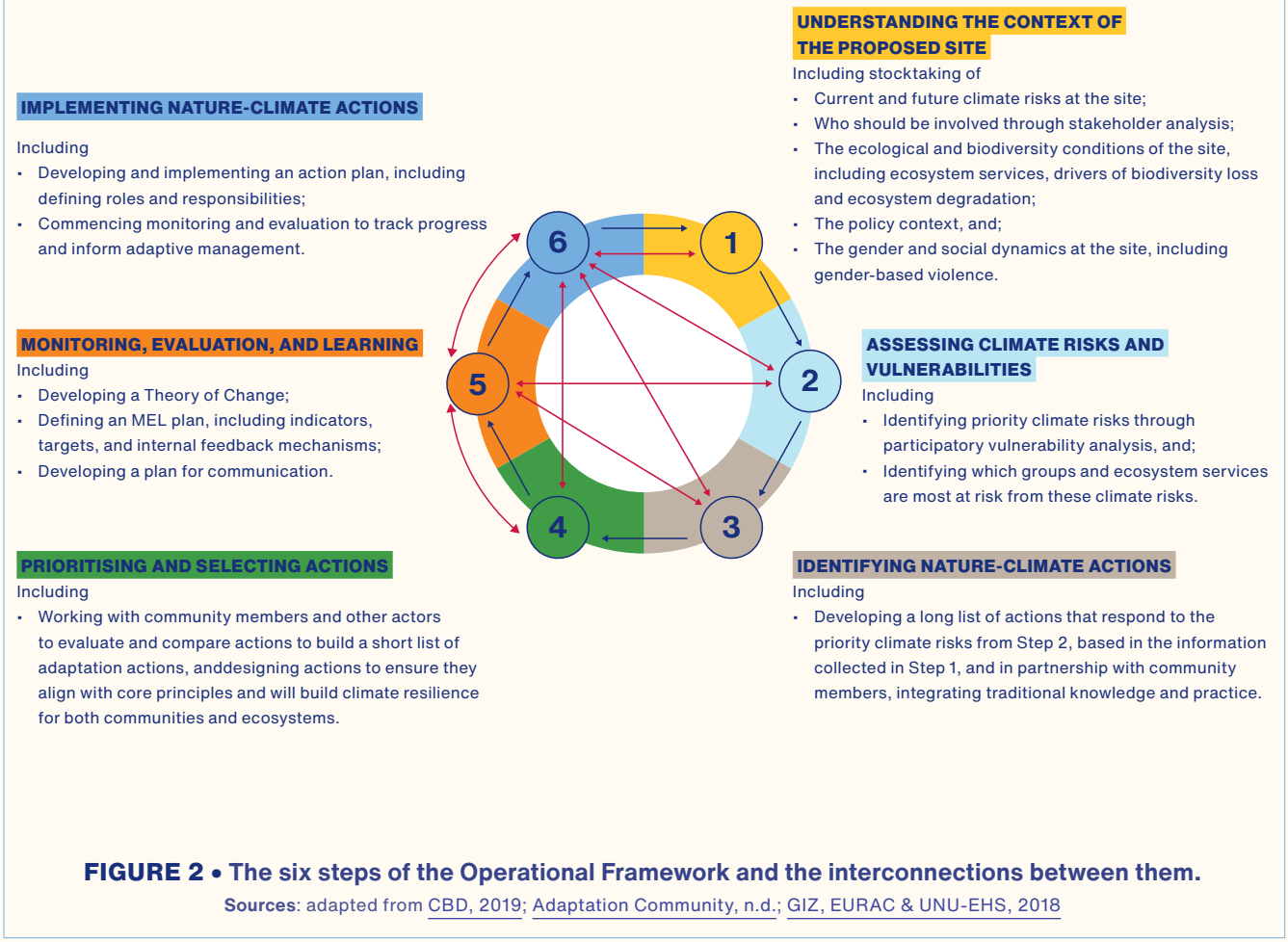


FIGURE 2 • The six steps of the Operational Framework and the interconnections between them.

Sources: adapted from CBD, 2019; Adaptation Community, n.d.; GIZ, EURAC & UNU-EHS, 2018

Critically, this learning and adaptive process throughout each of the framework's steps is grounded in locally led and participatory approaches. This framework recognises the experiences and knowledge of all community stakeholder and rightsholder groups, with an emphasis on women, Indigenous Peoples, and other marginalised groups, as fundamental to successful actions for adaptation and resilience. By strengthening local capacity to learn, reflect, and adapt autonomously, the MEL process contributes to long-term social resilience and environmental justice.

FOR WHOM IS THIS OPERATIONAL FRAMEWORK?

The Operational Framework is intended for anyone designing, implementing, financing or overseeing NbS for adaptation, including:

- project managers and technical staff of non-governmental and community-based organisations, including IUCN Members, who design and implement adaptation projects;
- national and subnational government officials in environment, climate change, agriculture, water, forestry, disaster risk reduction and planning agencies, including those responsible for National Adaptation Plans (NAPs), Nationally Determined Contributions (NDCs) and National Biodiversity Strategies and Action Plans (NBSAPs);
- Indigenous Peoples' organisations and local community groups leading or co-leading adaptation initiatives in their territories;
- funders, development partners and private-sector actors who appraise, finance or invest in NbS for adaptation; and
- researchers and MEL specialists who support the design, monitoring and evaluation of such projects.

How to use this Operational Framework. Practitioners new to NbS for adaptation are encouraged to work through the six steps in sequence. Experienced practitioners, or projects already under way, can enter at the step that matches their current project stage, use the checklist at the end of each step to identify gaps, and use the detailed Guidelines as stand-alone tools.

This framework is a living document. As lessons are derived from pilot implementation of the approach, the framework will evolve to reflect realities on the ground, developing best practices and feedback from the ongoing consultative process with practitioners.

Defined here as the following: "Conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment" (IUCN, UNEP & WWF, 1980).

2. The Context: addressing the climate–nature–people nexus



Gathering firewood during drought, Kenya © Oxfam East Africa, Wikimedia Commons

This chapter examines the climate and biodiversity crises together because of their interconnected impacts on ecosystems, human health, livelihoods, and overall human well-being, as Pörtner et al. (2023) describes:

"Climate change and biodiversity loss are inextricably connected. Climate change accelerates biodiversity loss by altering habitats, species ranges, ecosystem processes and disturbance regimes. At the same time, biodiversity loss reduces the capacity of ecosystems to regulate climate, buffer climate hazards and support human adaptation. Together, these dynamics undermine ecosystem services, human well-being, livelihoods and resilience" (Pörtner et al., 2023).

2.1 The climate crisis

Global warming, because of anthropogenic climate change, is causing ubiquitous, extensive and rapid changes on land, in the oceans, and in the atmosphere (IPCC, 2023a). The impacts of this warming on both people and ecosystems are far more extensive and serious than estimated in previous assessments (IPCC, 2023a; Boehm & Schumer, 2023). Future risks are expected to increase at an accelerating rate for each additional increment of warming. (IPCC, 2023a; Boehm & Schumer, 2023).

Already, about 3.3–3.6 billion people live in contexts that are highly vulnerable to climate change (IPCC, 2023a). Roughly half of the world's population currently experiences severe water scarcity for at least part of the year (IPCC, 2023a; Boehm & Schumer, 2023). Since 2008, extreme floods and storms have forced, on average, more than 20 million people from their homes every year (IPCC, 2023a; Boehm & Schumer, 2023). At 1.5°C of global warming, about 950 million people across the world's drylands are projected to experience water stress, heat stress and desertification, while the share of the global population exposed to flooding is projected to rise by about 24% (IPCC, 2023a; Boehm & Schumer, 2023). Climate change has severely damaged and is causing irreversible losses across land, freshwater, coastal and open marine ecosystems as well as the cryosphere (IPCC, 2023a; Boehm & Schumer, 2023). Nearly 16,000 species on The IUCN Red List of Threatened Species™ are impacted by climate change, increasing the risk of their extinction (IUCN, 2025c).

The IPCC notes that "human and ecosystem vulnerability are interdependent" and that "the loss of ecosystems and their services has cascading and long-term impacts on people globally, especially for Indigenous Peoples and local communities who are directly dependent on ecosystems to meet basic needs" (IPCC, 2023a).

It also notes that climate change adaptation actions can build the resilience of both people and ecosystems and notes that Ecosystem-based Adaptation (EbA) – a type of NbS for adaptation (see Section 1.1) – has proven to be effective (IPCC, 2023a; Boehm & Schumer, 2023) (Figure 3).



FIGURE 3 • NbS for adaptation (EbA) can save lives and livelihoods

Source: Boehm & Schumer, 2023, from the Global Commission on Adaptation, 2019

2.2 The biodiversity crisis

Biodiversity[1] is the foundation on which all life exists on Earth, in particular through ecosystem services, or "the benefits people obtain from ecosystems" (MEA, 2005) (IPBES, 2019). Healthy ecosystems provide humans with clean water, food, medicines, fuel and fuelwood. Equally importantly, they regulate the climate; sequester carbon and replenish oxygen in the atmosphere; attenuate floods, regulate diseases; purify water; acquire, store, process and release nutrients; degrade waste and pollinate plants. In addition to these immense economic and ecological values, ecosystems also provide important cultural, aesthetic, inspirational and educational benefits. These benefits are increasingly being valued, both in monetary terms through natural capital accounting (UN et al., 2024; Vardon et al., 2019) and through approaches that recognise the diverse values of nature (IPBES, 2022). The continued provision of these services – including the adaptation services on which NbS for adaptation rely – depends on maintaining ecosystem integrity, connectivity and functioning ecological processes (see Guidelines 7A and 8A).

These benefits depend on biodiversity, which is declining rapidly: a global assessment has revealed that the global rate of species extinction (used as a proxy[2] for overall biodiversity loss) is "tens to hundreds of times higher than it has averaged over the past 10 million years, [and] is further accelerating," with about one million species currently facing extinction (IPBES, 2019; Schickhoff et al., 2024).

Natural ecosystems comprise many species that interact in complex ways, forming a tightly connected web that functions as a single unit. Ecosystem functioning is "the joint effects of all processes that sustain an ecosystem" (Reiss et al., 2009 in litt. Truchy et al., 2015). Damaging even a part of this unit disrupts the whole. When ecosystem functioning is disturbed, the delivery of "ecosystem services is eroded," and human well-being is affected (Ceballos et al., 2020).

These declines result from five direct drivers of biodiversity loss: land- and sea-use change[3], primarily by agricultural expansion; direct exploitation[4], climate change; pollution; and invasive alien species[5] (IPBES, 2019; MEA, 2005). Land use and land

1 Biodiversity "means the variability among living organisms from all sources including . . . terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (UN, 1992b).
2 Also referred to as a 'substitute'.
3 Habitat loss and degradation (MEA, 2005).
4 Overexploitation (MEA, 2005).
5 Invasive alien species (IAS) are those non-native (exotic species) that, when introduced outside their natural range, can exceed the limits imposed on them. Their impacts are enormous and they have the potential to cause damage to the environment, human health, livelihoods and the economy (IUCN, 2000).

cover change and direct exploitation are dominant drivers, accounting for about half of the loss from these direct drivers (IPBES, 2019) (Figure 4; Figure 5).

Underlying these direct drivers are a range of social, demographic and economic causes such as human population increase, consumption patterns, trade and governance (IPBES, 2019; MEA, 2005). "Both direct and indirect drivers of change have accelerated in the last 50 years" (IPBES, 2019). Step 1 of this framework asks practitioners to identify how these global drivers play out at the site – for example, through land tenure regimes, governance gaps or discriminatory norms.

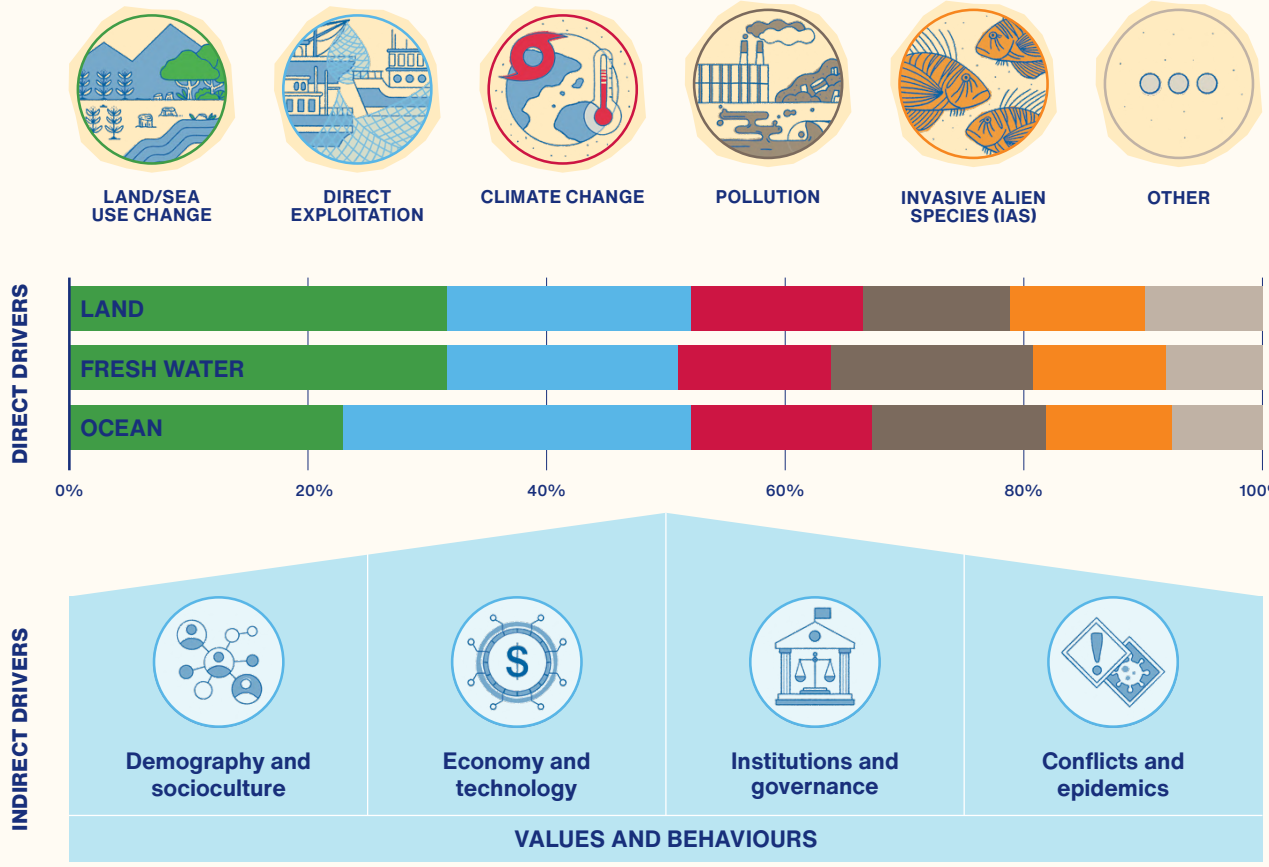


FIGURE 4 • The drivers of biodiversity loss and ecosystem change

Source: WBGU, 2021 simplified from IPBES, 2019

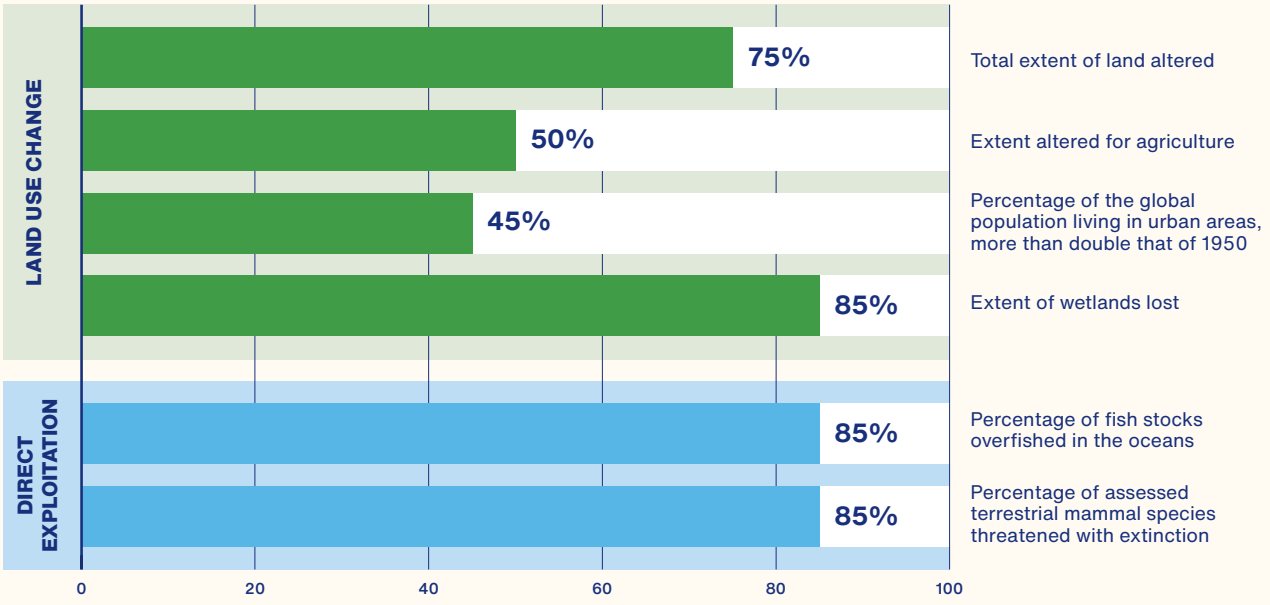


FIGURE 5 • The extent of loss of biodiversity because of the dominant drivers of change

Sources: IPBES, 2019[1]; UN DESA, 2025[2]; IUCN 2026c[3]

2.3 Understanding the climate–biodiversity nexus

The two crises interact in both directions, as the examples below show.

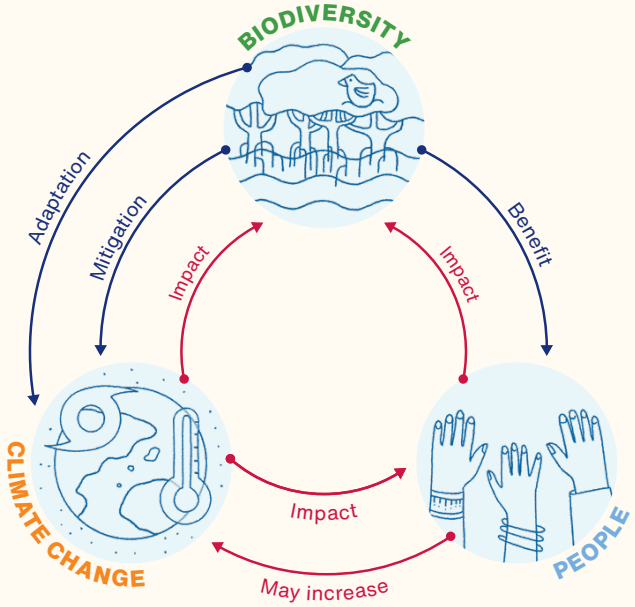


FIGURE 6 • Linkages between biodiversity, climate change and people

Apart from the direct impact on species mentioned under 'The climate crisis', there are many other ways in which climate change can affect biodiversity at the ecosystem, species and genetic levels. While some species may benefit, climate change is overwhelmingly negative for biodiversity and is an accelerating, direct driver of its loss (IPBES, 2019; IPBES, 2024a). This section discusses some examples.

As the atmosphere warms, some of the species needing cooler temperatures move towards the poles or to higher altitudes (*range shifts*). This change can result in disruptions in species linkages and domino effects on ecological functioning (Pörtner et al., 2023).

Climate change can also *impact the timing of natural events and cycles*, such as changes in the timing of flowering, fruiting, and growing seasons in plants. (US EPA, 2016). This can create ecological misfits in species interactions such as pollinators or migratory herbivores that depend on the flowering time of certain plants.

One of the most important impacts on ecosystems is that there are *changes in ecosystem interactions.* These ultimately affect food webs, such as the changes seen when sea ice melts and algae growing on the undersurface of sea ice die, disrupting a food web that includes seabirds, marine mammals and polar bears (US EPA, 2016). Therefore, while climate change may even have positive impacts for some species, the changes it brings at the ecosystem level can ultimately be detrimental. This is particularly evident in the spread of invasive alien species.

Climate change also has *serious effects on ecosystem services*. Examples include climate change-driven drought, heat and floods affecting cultivation, food and water security, and changes in the geographic ranges of species (such as fish stocks), affecting provisioning ecosystem services (US EPA, 2016; Lipton et al., 2018).

Biodiversity plays an important role in regulating the Earth's climate by supporting ecosystem functions and processes that influence the movement and storage of carbon. Plants and photosynthesising microbes are crucial for their role in carbon sequestration (Box 1). Through the process of photosynthesis, land vegetation and ocean ecosystems act as the primary natural carbon sinks, removing CO_2 from the atmosphere and storing it (Canadell et al., 2021).

BOX 1 • Examples of the role of biodiversity in carbon sequestration

Annually, it is estimated that about one-third of human-induced CO_2 emissions (12.5 ± 3.3 $GtCO^2e\ year^{-1}$) are assimilated into land via forest growth; photosynthesis by plants and subsequent carbon sequestration (Friedlingstein et al., 2020; Pugh et al., 2019; Ahlström et al., 2015; Schimel et al., 2015 in litt. Shin et al., 2022).

Another quarter of anthropogenic CO_2 emissions are absorbed by the world oceans via the photosynthesis-driven carbon cycle; natural dissolving of CO_2 in marine waters and blue carbon sequestration in coastal ecosystems (Friedlingstein et al., 2020; IPCC, 2019 in litt. Shin et al., 2022).

Soils are the largest terrestrial carbon store, holding more carbon than vegetation and the atmosphere combined; soil organisms (microbes, fungi and invertebrates) drive the processes that build and stabilise soil organic carbon (IPCC, 2019).

Coastal blue carbon ecosystems (e.g. mangroves, salt marshes and seagrass meadows) sequester carbon per hectare at higher rates than most terrestrial forests and store it in their sediments for centuries to millennia (Mcleod et al., 2011).

Natural ecosystems are among the most important buffers against global warming, yet human activities have altered 75% of the world's land, 66% of the oceans, and 85% of wetlands (IPBES, 2019). This degradation has compromised their capacity to act as substantial carbon sinks (IPCC, 2023b), thereby worsening the impacts of climate change.

Biodiversity loss can also turn carbon sinks into carbon sources. Deforestation, peatland drainage and the degradation of coastal ecosystems release stored carbon, and less diverse, degraded ecosystems are more prone to large wildfires, which release further carbon and accelerate climate change (IPCC, 2023a; IPCC, 2023b).

2.4 Impacts on people and communities

Just as human activities contribute to both the climate and biodiversity crises, these crises negatively interact with and reinforce each other to harm people and society. Climate-related disasters, for example, are associated with increased risks of gender-based violence (GBV) (Castañeda et al., 2020). Biodiversity loss and exploitation can worsen climate risks for people. For instance, converting wetland ecosystems into agricultural land can further compound exposure to climate effects, including flooding.

The loss of coastal ecosystems through land use change has increased the risk from floods and cyclones for 100-300 million people living in coastal areas (IPBES, 2019).

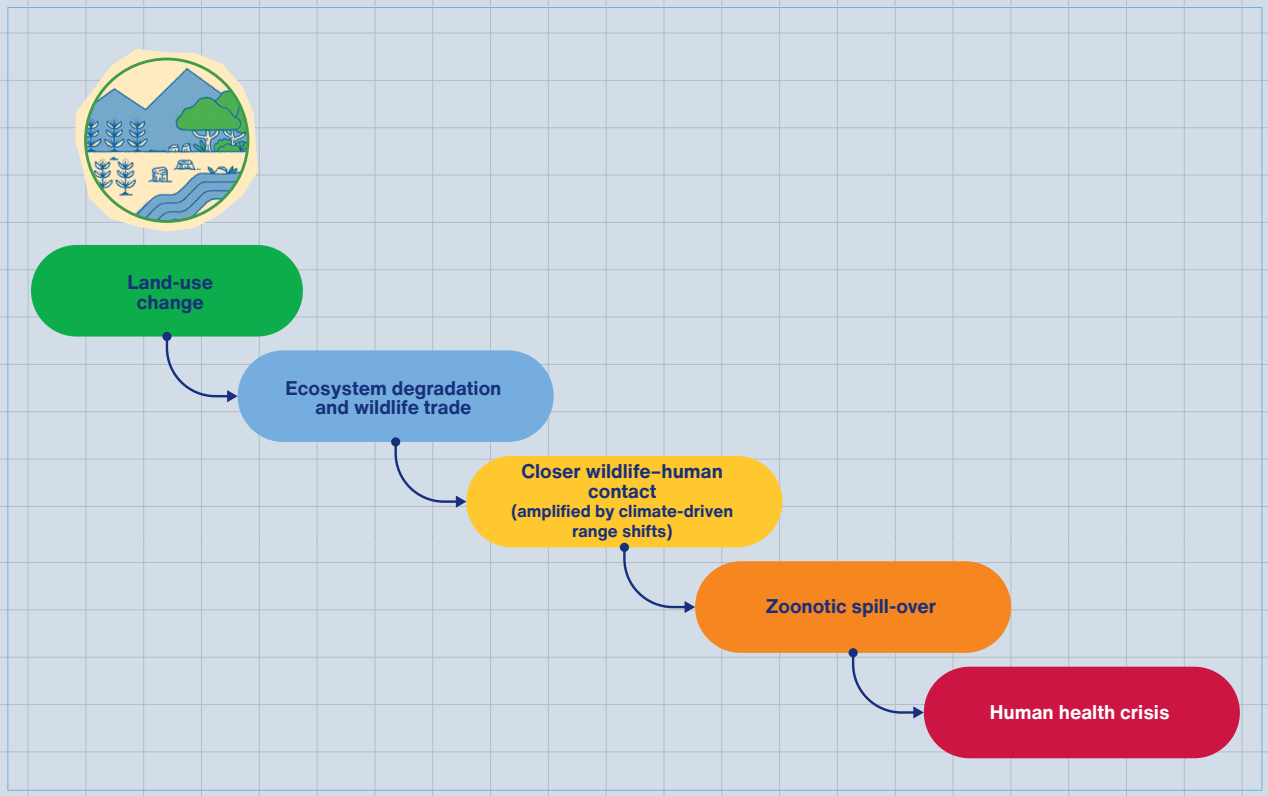
Box 2 shows how the two crises can combine into cascading risks that are difficult to predict.

BOX 2 • Cascading risks from land-use change, ecosystem degradation and climate change to human health: zoonotic disease

(Source: Pörtner et al., 2021)

The COVID-19 pandemic demonstrated how an underlying pressure, such as land-use change, can trigger cascading effects across interconnected ecological, economic and social systems, ultimately contributing to a human health crisis several steps removed. The destruction, fragmentation and degradation of ecosystems, particularly forests, through land-use change, combined with the expansion of wildlife trade, has brought humans and wildlife into closer contact. This increases opportunities for the transmission of zoonotic viruses, including those carried by species such as bats, which are known reservoirs of disease-causing pathogens (Cerri et al., 2021). Climate change exacerbates such danger by forcing range shifts and facilitating the spread of diseases through extreme weather events, such as floods and wildfires (Pörtner et al., 2021). The links between biodiversity, health and climate change are assessed in detail in the IPBES Nexus Assessment (IPBES, 2024a).

FIGURE 7 • Cascading risks from land-use change and ecosystem degradation to human health



2.5 Climate vulnerability and disproportionate risks

The impacts of the climate and biodiversity crises are not felt equally. Women, Indigenous Peoples, youth and other marginalised groups often face disproportionate climate risks due to existing inequities in access to land, decision-making spaces and climate resilient resources. Losses undermine the cultural, spiritual and economic roles that biodiversity plays in the lives of Indigenous Peoples and local communities. Women can especially be impacted, as they are often primary stewards of natural resources, yet their knowledge and leadership remain undervalued or invisible. Climate impacts are intensified for Indigenous Peoples and local communities not because of innate vulnerability but because of other barriers, such as insecure land and resource tenure, unrecognised customary governance, the exclusion of persons with disabilities, elders, youth and migrants, and weak implementation of rights, such as free, prior and informed consent (FPIC). Because these factors intersect and compound one another, effective climate action requires rights-based, intersectional and community-led approaches that secure tenure, recognise customary governance and ensure the meaningful participation of all. Where actions involve the lands, territories, resources or traditional knowledge of Indigenous Peoples and local communities, their FPIC must be obtained (see Guideline 1 and 3). The historical exclusion of marginalised groups also limits their ability to influence the very solutions that are designed to address these crises.

2.6 Nature-based Solutions for adaptation and sustainable development

Poverty and inequality can constrain adaptive capacity and increase dependence on climate-sensitive resources, while unsustainable consumption, inequitable resource use, weak governance and extractive economic systems – including large-scale land-use change and infrastructure development driven by the public and private sectors – are major underlying drivers of the climate and biodiversity crises. Addressing these structural inequalities – by strengthening inclusive governance, valuing diverse knowledge systems and promoting equitable access to resources – is essential for sustainable adaptation. Sustainable development in tandem with adaptation and ecosystem conservation and restoration actions can help to address the underlying drivers of climate change and biodiversity loss.

NAbSA offers a framework for addressing these interconnected crises. These actions can build resilience among both people and ecosystems, by linking social justice and environmental sustainability as mutually reinforcing goals (IPCC, 2023a; Boehm & Schumer, 2023).

FURTHER RESOURCES AND TOOLS

→ FOR CLIMATE CHANGE:

Intergovernmental Panel on Climate Change (IPCC). (2023a). *Climate change 2023: Synthesis report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Core Writing Team, Lee, H., & Romero, J. (eds.). https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf

This is a document which should become familiar to practitioners seeking to design and implement NbS for adaptation.

→ FOR BIODIVERSITY LOSS:

Millennium Ecosystem Assessment (MEA). (2005). **Ecosystems and human well-being: Biodiversity synthesis.** World Resources Institute. https://www.millenniumassessment.org/documents/document.354.aspx.pdf

This is the document that clearly linked ecosystem well-being and human well-being. This document should, also, become familiar to practitioners.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2019). *Global assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Brondízio, E. S., Settele, J., Díaz, S., & Ngo, H. T. (eds.). IPBES Secretariat. https://doi.org/10.5281/zenodo.3831673

This is a document that updated the state of the environment from the time of the MEA (2005) and provides newer data on the state of biodiversity and ecosystems.

→ FOR CLIMATE CHANGE IMPACTS ON BIODIVERSITY:

Pörtner, H.-O., Scholes, R. J., Arneth, A., Barnes, D. K. A., Burrows, M. T., Diamond, S. E., Duarte, C. M., Kiessling, W., Leadley, P., Managi, S., McElwee, P., Midgley, G., Ngo, H. T., Obura, D., Pascual, U., Sankaran, M., Shin, Y. J., & Val, A. L. (2023). Overcoming the coupled climate and biodiversity crises and their societal impacts. Science, 380(6642), eabl4881. https://doi.org/10.1126/science.abl4881

→ FOR BIODIVERSITY IMPACTS ON CLIMATE CHANGE: IPBES, 2019 SHOWN ABOVE.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). (2024a). *Summary for Policymakers of the Thematic Assessment Report on the Interlinkages among Biodiversity, Water, Food and Health of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. McElwee, P. D., Harrison, P. A., van Huysen, T. L., Alonso Roldán, V., Barrios, E., Dasgupta, P., DeClerck, F., Harmáčková, Z. V., Hayman, D. T. S., Herrero, M., Kumar, R., Ley, D., Mangalagiu, D., McFarlane, R. A., Paukert, C., Pengue, W. A., Prist, P. R., Ricketts, T. H., Rounsevell, M. D. A., Saito, O., Selomane, O., Seppelt, R., Singh, P. K., Sitas, N., Smith, P., Vause, J., Molua, E. L., Zambrana-Torrelio, C., and Obura, D. (eds.). IPBES secretariat, Bonn, Germany. DOI: https://doi.org/10.5281/zenodo.13850289.

3. The six core principles of the Operational Framework, as cross-cutting themes



A woman and her son collecting fodder for livestock, Nepal © Sriyanie Miththapala

WHY IS THIS CHAPTER IMPORTANT?

This chapter underscores the importance of NAbSA's core principles in achieving effective, equitable, and sustainable adaptation outcomes. Their application helps ensure that NbS interventions respond to the needs and priorities of local communities, deliver meaningful benefits for both people and nature, and build long-term resilience to climate change.

This Operational Framework for NbS for adaptation projects is predicated on six core principles (Figure 8). These principles should be treated as cross-cutting considerations and integrated throughout all six steps of the Operational Framework (Section 1.1), as they both influence and are influenced by every aspect of the project. They are as follows:



FIGURE 8 • The six core principles of the Operational Framework



FIGURE 9 • The six core principles at the centre of the six-step cycle of the Operational Framework



Photo by NaturELLES



PRINCIPLE 1

NbS for adaptation projects must be informed by co-creation

Co-creation requires a range of actors (also known as stakeholders) to work together to design, develop and implement an NbS for adaptation project. Co-creation does not happen spontaneously. It requires a designated, trusted facilitator or coordinating team that ensures gender-balanced, culturally appropriate participation while convening actors, managing power dynamics, and documenting agreements.

Co-creation ensures that solutions are context-specific, inclusive, and grounded in local knowledge. It fosters ownership, equity, and long-term sustainability by engaging all actors from the design to the implementation of any NbS action to ensure it addresses their needs and priorities. This reflects the whole-of-government and whole-of-society approach, called for in Section C of the Kunming-Montreal Global Biodiversity Framework (KMGBF) (CBD, 2022).

These actors come from:

- the government sector (the primary decision-, policy- and legislation-makers);
- civil society (including non-governmental organisations, community-based organisations, religious organisations, academia and the media), as well as individuals within civil society; and
- the private sector (including banks and other financing organisations, producers, retailers and investors) (GIZ, 2019) (Figure 10) (Box 3).

Within each sector, actors operate across different levels, including national, subnational and local governments, as well as community-based and customary institutions. How these levels interact and relate to one another varies across contexts (see Guidelines 1 and 4).

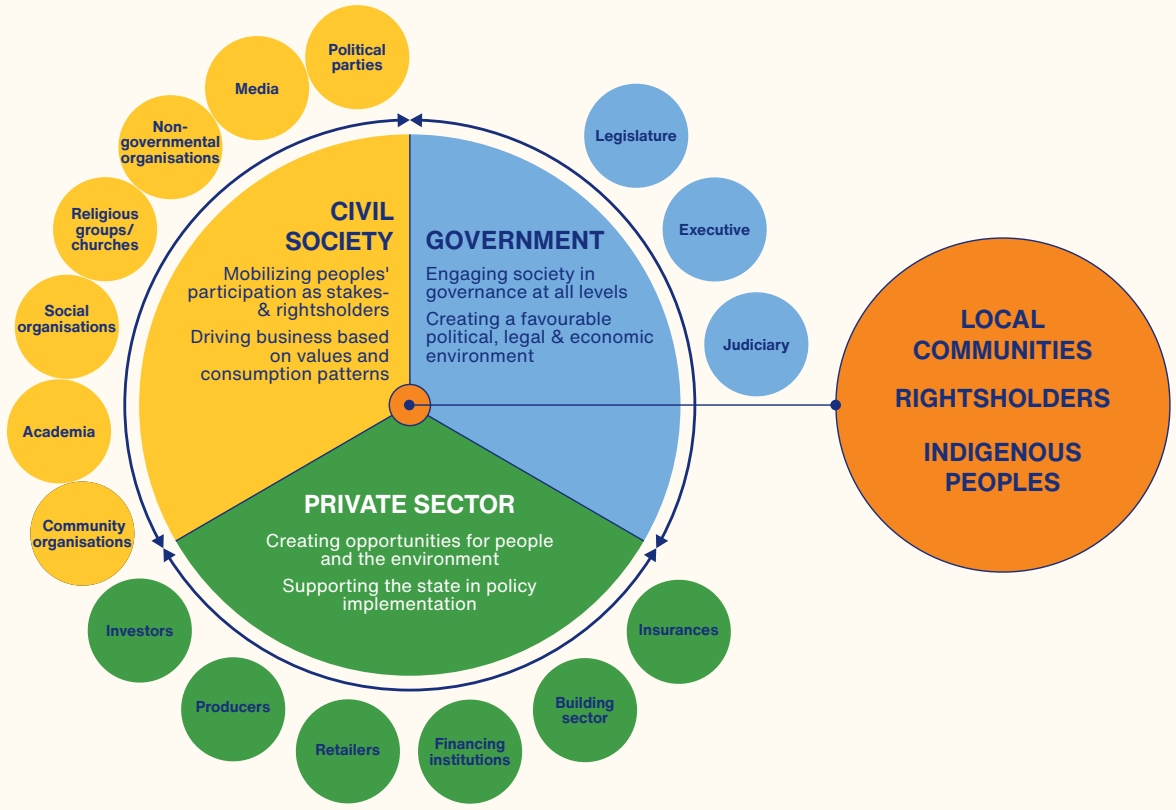


FIGURE 10 • Types of actors who should be involved in an NbS for adaptation project

Source: GIZ, 2019

BOX 3 • Clarifying terminology related to actors

Sources: GIZ, 2019; GIZ, IUCN and IISD, 2023; IPBES n.d.-h; IPBES n.d.-k

- **Stakeholders** "are involved in decision-making processes and implementation, either as influencing the decision-making process, or as being dependent on, and therefore facing the consequences of the decisions" (IPBES n.d.-k) (includes the public and private sector as well as civil society actors);
- **Rightsholders** are "a group of people (a community and its individual members), with a common identity and a shared set of rules, who rightfully has title over their territory and the natural resources belonging to it" (IPBES n.d.-h).
- The word **actor** is an "individual person or group representative that is involved in a specific decision-making context" (IPBES, n.d.-a). In the past, the term stakeholder was used instead of the term actor, but 'actor' is now used as a general term for both stakeholders and rights-holders (GIZ, 2019; GIZ, IUCN and IISD, 2023).

It should be noted that power relations – shaped by gender, class, ethnicity, land tenure and social roles – influence whose voices are heard, whose knowledge is valued, and who ultimately benefits or loses from NbS for adaptation.

The process of stakeholder mapping is used to identify who is involved and what they do, what their viewpoints are, what roles they can play in the project and how the project can engage them (GIZ, IUCN and IISD, 2023; WHO, n.d.-c). Although 'actor' is used throughout this document to encompass both stakeholders and rights-holders, the analysis retains the term 'stakeholder mapping.' This mapping is assessed using a matrix of influence and interest. Guideline 1 provides the process of stakeholder mapping.



PRINCIPLE 2.

NbS for adaptation projects must focus on the nature-climate-people nexus

In Section 1.2, the complex interconnections among the biodiversity crisis, the climate crisis and human well-being were detailed and showed how these dual crises affect people.

The complex interconnections between biodiversity, climate change and people mean that adaptation and resilience actions must embed all three of these elements in the nature-climate-people nexus. Actions should simultaneously support ecological integrity, climate adaptation, and social and economic co-benefits; not treating these as separate goals (Figure 11).

Therefore, actions should be designed within global targets set for biodiversity, climate change adaptation and supporting people's wellbeing.

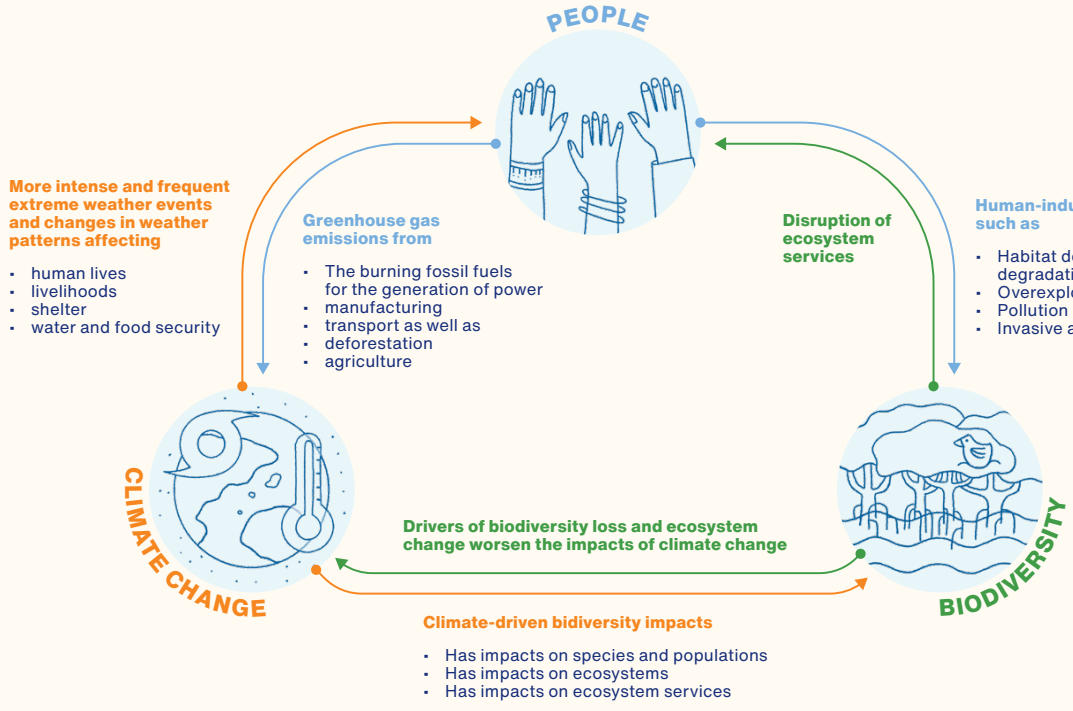


FIGURE 11 • The complex interconnections among biodiversity, climate change and people

Sources: IPCC, 2023a; Lipton et al., 2018; MEA, 2005, UN, n.d.-b



PRINCIPLE 3.

NbS for adaptation projects must be guided by environmental and social risk analysis

Project implementation can sometimes result in unintended and undesirable social, economic, cultural, and environmental impacts. For instance, when a project establishes or expands a protected area or restricts access to a forest or fishing ground, Indigenous Peoples and local communities living in the target area may be displaced or lose their traditional access to natural resources.

At other times, project actions can introduce harmful or invasive alien species into an ecosystem or can overexploit ecosystem services. For example, altering the water supply in a region can have negative social and environmental consequences that reinforce one another.

Environmental and social risk analysis ensures actions do not create new vulnerabilities or reinforce existing inequities through safeguards and screening processes. The Environmental and Social Management System (ESMS) provides a system to do so (IUCN, n.d.-b). Risk screening should also consider the risk of maladaptation (see Principle 5). Where a funder's safeguard requirements, such as those of the Global Environment Facility (GEF) or Green Climate Fund (GCF), or national legislation impose more stringent standards, these take precedence in accordance with ESMS Principle 8. See Guideline 3 for further information on IUCN's ESMS.



PRINCIPLE 4.

NbS for adaptation projects must be rights-based and gender-inclusive

The incorporation of gender responsiveness and a rights-based approach ensures that social inclusion is integral to the framework, and it requires a gender-responsive and socially inclusive approach to actions. When the knowledge, expertise and capacities of members of marginalised groups – including women, youth, persons with disabilities, and Indigenous Peoples – are fully recognised, valued and integrated, adaptation and resilience actions are stronger and more likely to succeed. This is because these groups often: hold knowledge and experience that outside experts lack; face climate risks most directly and ,therefore, assess solutions most accurately; and have adaptive capacities that are wasted if ignored. Excluding them narrows the evidence base, produces designs that do not address real needs, potentially causes unintended harm, and reduces trust and local maintenance, undermining the sustainability of actions. Inclusion builds legitimacy, and co-creation helps ensure that actions are effective for everyone, not only for the groups directly targeted. In addition, gender-responsiveness and social inclusion ensure that already vulnerable groups are not further marginalised and can actively participate in co-creation and equitably benefit from NbS for adaptation.

Hence, this principle is framed within a Gender Equality and Social Inclusion (GESI) approach. This approach observes how gender and other marginalised social identities shape people's access to resources, decision-making power and exposure to risk. It aims to ensure that projects identify and address barriers to inclusion, enabling all groups to participate in and benefit equitably from project activities. A rights-based approach and a gender-responsive approach are, thus, two sides of the same principle. In some contexts, structural, cultural or legal conditions limit how far these approaches can be applied. Guideline 3 sets out minimum requirements and practical entry points for such contexts.

USING A RIGHTS-BASED APPROACH

A rights-based approach is mandated by international human rights conventions, national constitutions and laws. Beyond this legal mandate, it is a practical necessity. It protects people from potential harms associated with NbS (e.g. displacement, loss of customary access, and exclusion from benefits) while safeguarding the tenure

rights and decision-making authority essential for local stewardship and the long-term sustainability of NbS. Projects that do not take this approach run the risk of reinforcing existing inequities, generating conflict over land and resources, and losing the local support on which their sustainability depends. Using a rights-based approach means applying international human rights values, principles, standards and goals in all stages of project formulation.

A human rights-based approach requires that any kind of discrimination be "prevented, prohibited and eliminated, and that the most marginalised or vulnerable people, with the greatest obstructions to realise their human rights, must be prioritised (Australian Human Rights Commission, 2013; OHCHR, 2006) (Box 4).

BOX 4 • Who are the marginalised groups in the world and why are they important?

Sources: IPCC, 2014; UNDP, 2016; UNESCO, 2026

- Women and girls, youth, persons with disabilities, Indigenous Peoples, non-binary people, ethnic minorities, migrants and refugees are among those who are usually the most marginalised economically, politically, socially and culturally (UNDP, 2016).
- "People who are socially, economically, culturally, politically, institutionally or otherwise marginalized are especially vulnerable to climate change" (IPCC, 2014).
- "Indigenous, traditional and local knowledge systems constitute one of the largest bodies of human knowledge about biodiversity and ecosystems. However, these knowledge systems are rarely recognized as resources for understanding, monitoring and managing biodiversity" (UNESCO, 2026).

More details of a rights-based approach are presented in Guideline 3.

USING A GENDER RESPONSIVE APPROACH

A gender-responsive approach is:

"the proactive identification of gender gaps, discriminations and biases and then the coordinated development and implementation of actions to address and overcome them. This approach helps ensure that . . . programming not only avoids exacerbating or reinforcing inequalities, but rather takes meaningful steps to reduce disparities and to empower women, girls and members of traditionally disadvantaged groups" (IUCN, 2018).

This means more than 'do no harm' and instead 'do better' (IUCN, 2018).

Key terms related to a gender-responsive approach (e.g. gender, gender identity, gender diversity, gender equality, gender equity and gender norms) are defined in the glossary and in Guideline 3.



Photo by NaturELLES

Why is gender important in NbS for adaptation projects?

Although climate change affects everyone, it can be particularly damaging for women and girls (UN Women, 2026). Gender matters in NbS for adaptation for four main reasons. First, gender norms shape who manages and collects natural resources. In many contexts, women are responsible for collecting water, fuelwood and food, and their workload rises during droughts and after extreme events. Second, climate-related disasters and resource scarcity increase the risk of gender-based violence (GBV), including domestic violence, child marriage and violence against women and girls collecting water and fuelwood (Castañeda Camey et al., 2020). Third, women hold specific knowledge of species, ecosystems and their management that strengthens the design of actions (Picot et al., 2023). Fourth, unequal access to land, assets and decision-making constrains women's adaptive capacity (Fruttero et al., 2023). The benefits of adaptation actions are therefore not automatically equitable (GIZ, IUCN and IISD, 2023); adaptation actions must be intentionally designed to ensure their equitable distribution.

More details of a gender-responsive approach, including examples and guidance on gender-based violence, are presented in Guideline 3.



PRINCIPLE 5

NbS for adaptation projects must be climate-proofed

While climate proofing in the international development context does not have an unanimously agreed definition, it is most often understood as the “protection” of international development projects, activities and developments from current and future climate risks (Box 5). In the context of NbS for adaptation, this refers to the direct risks from climate change on nature itself. As shown clearly in the previous section, climate change both directly and indirectly impacts biodiversity, and therefore, the ecosystem services provided to humans. While NbS for adaptation activities work to conserve and restore the ecosystem services that are needed to adapt to the societal challenges posed by climate change, ecosystems themselves should also be protected from climate impacts.

For example, a mangrove restoration project may aim to protect a coastal community from erosion and storm surges. However, the IUCN Red List of Ecosystems assessment of mangroves shows that over 30% of mangroves are themselves vulnerable to sea-level rise (IUCN, n.d.-h) because they depend on a specific tidal range, flooding regime and sediment supply. Climate-proofing this action would mean monitoring mangrove condition and planning space for the mangroves to migrate landward, accepting that some land will be lost to rising seas.

Failing to climate-proof can lead to maladaptation or when an action meant to help people adapt to climate change results in worse conditions, now or later (IPCC, 2022). In the example above, mangroves planted without accounting for future sea-level rise may become submerged, compromising both their survival and the protection they are intended to provide. Climate risks should therefore be assessed over the full expected lifetime of each action, drawing on near-term, mid-century, and end-of-century projections under multiple emissions scenarios, rather than relying solely on current conditions (see Guideline 2 and Figure 12).

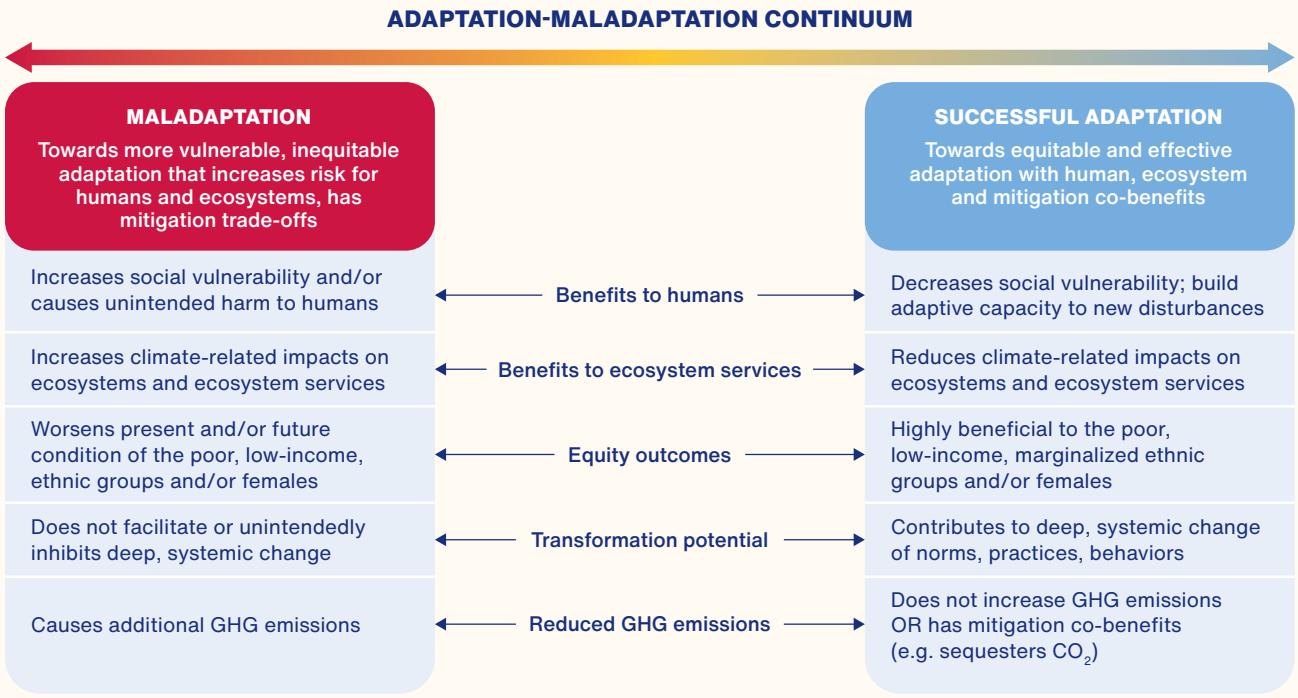


FIGURE 12 • Maladaptation risks

Actions under this framework should be climate-proofed, meaning they are resilient or can be adapted in response to future climate impacts, needs and priorities. To provide adaptation services in the long-term, ecosystems and the actions that restore and conserve them should themselves be protected from climate impacts.

BOX 5 • What is climate-proofing?
Source: ADB, 2005

Climate proofing is defined as

"identifying risks to a . . . project . . . as a consequence of climate variability and change, and ensuring that those risks are reduced to acceptable levels through long-lasting and environmentally sound, economically viable, and socially acceptable changes implemented at one or more of the following stages in the project cycle: planning, design [and implementation]" (ADB, 2005).

In summary, current and future climate risks to proposed project actions should be minimised throughout the project cycle, from design and planning to implementation, monitoring, evaluation, and learning (ADB, 2005). This requires assessing the vulnerability of proposed adaptation actions to climate change impacts, both during and beyond the project's lifetime (ADB, 2012). Downscaled climate projections and scenario analysis can help determine whether these actions will remain viable under future climate conditions (see Guideline 2). Such assessments should also consider the practical feasibility of implementing and sustaining selected adaptation actions in light of projected climate impacts (ADB, 2012).

In this way, proposed actions can be designed to support the integration of future climate change impacts, making each action more resilient (UN-Habitat, 2021).



PRINCIPLE 6

NbS for adaptation projects must be aligned with policy

NbS for adaptation are part of an overall adaptation strategy (FEBA, 2017) and should not be implemented in isolation. Actions grounded in existing local, national, and global policy frameworks are easier to scale, finance, and sustain. Aligning with policy creates pathways for replication, institutional buy-in and long-term integration (GIZ, IUCN and IISD, 2023).

LOCAL POLICY AND MANAGEMENT CONTEXT

In addition to formal laws and informal rules and social norms, in some countries, there are customary laws which are:

"a set of customs, practices and beliefs that are accepted as obligatory rules of conduct by Indigenous peoples and local communities. Customary law forms an intrinsic part of their social and economic systems and way of life. . . [Consisting of] it consists of a group of customs that are recognized and shared collectively by a community, people, tribe, ethnic or religious group" (WIPO, 2023).

These laws are very relevant to Indigenous Peoples.

For NbS for adaptation projects, understanding the policy, legal, and institutional frameworks governing climate change, biodiversity, and land management is essential. This includes identifying:

- Relevant policies, plans, and legislation at national, regional, and local levels;
- Applicable customary laws and governance systems; and
- Institutions and organisations responsible for implementing and enforcing these frameworks.

Examples of policies, laws, plans and programmes that may be in situ in the proposed project site are presented in Table 1.

Table 1 • Examples of policies, laws, plans and programmes that may be *in situ* in the proposed project site

TOPIC	POLICY	LAW	PLANS	PROGRAMMES
Climate-related	Climate Change Policy	Climate Change Act	National Adaptation Plan (NAP)	Local, regional and national climate change-related programmes
			Nationally Determined Contributions (NDC)	
	Disaster Management Policy (Floods and droughts)		Flood management plan	
			Drought management plan	
Biodiversity-related	Biodiversity policy	Biodiversity Act	National Biodiversity Strategic Action Plan (NBSAP)	Local, regional and national biodiversity-related programmes
	Forest policy	Forest Act	Forest Conservation Plan	
			Forestry Plan	
	Wildlife policy	Wildlife Act	Wildlife Conservation Plan	
			Protected Area Management Plan	
	Fisheries policy	Fisheries Act	Fisheries and fisheries Resources Management Plan	
Land-related	National Land Utilisation Policy	Spatial Planning and Land Use Management Act	Land use and spatial planning Plan United Nations Convention to Combat Desertification (UNCCD) (supports countries in developing national drought plans)	Local, regional and national land use-related programmes
			National Action Plan UNCCD (supports countries in developing national drought plans	Local, regional and national land use-related programmes
			National Land Degradation Neutrality targets UNCCD (supports countries in developing national drought plans	Local, regional and national land use-related programmes

TOPIC	POLICY	LAW	PLANS	PROGRAMMES
 **Agriculture-related**	Agriculture Policy	Agriculture Act	National Agriculture Action Plan	Innovative pilot programmes; local, regional and national agriculture-related programmes
 **Water-related**	Water Resources Policy	Water Resources Act	Integrated Water Resources Management (IWRM) Plan	Local, regional and national water-related programmes
 **Health-related**	National Health Policy	Public Health Act	Health National Adaptation Plan (HNAP)	Local, regional and national climate and health programmes
 **Urban-related**	Urban Development Policy	Urban Development Act	Urban Development Plans	Local, regional and national urban-related programmes
 **Customary laws**	The Constitution of India recognises personal laws and resource rights of the Indigenous Peoples of Naga and Mizo in northeastern India (Roy, 2005). In the South Pacific islands, up to 80% of the land and a significant percentage of coastal marine areas and their resources are under customary law. Despite a history of colonisation, currently, both Western and customary laws apply (WIPO & UNU, 2013).			

RELEVANT INTERNATIONAL CONVENTIONS

Shown in Table 2 are the main international conventions which are relevant for NbS for adaptation.

Table 2 • The main international conventions relevant for NbS for adaptation projects

TOPIC	RELEVANT INTERNATIONAL CONVENTION	CURRENTLY IMPORTANT INTERNATIONAL AGREEMENTS	NATIONAL COMMITMENT(S)
Climate-related	UN Framework Convention on Climate Change (UNFCCC) (1992)	Paris Agreement (2015)	Nationally Determined Contributions (NDC)[6]
		Global Goal on Adaptation – UAE Framework for Global Climate Resilience (2023)	
Biodiversity-related	UN Convention on Biological Diversity (CBD) (1992)	Kunming-Montreal Global Biodiversity Framework (2022)	National Biodiversity Strategic Action Plans
Land-related	UN Convention to Combat Desertification (1994)	UNCCD strategic framework (2018-2030)	National Action Plan
			Land neutrality targets
			National drought plans
General	Sustainable Development Goals (2015)	17 goals many of which have direct bearing on NbS for adaptation	National SDG targets
Disaster risk-related	Sendai Framework for Disaster Risk Reduction 2015–2030 (2015)	Seven global targets (a)–(g)	National and local disaster risk reduction strategies

Sources: CBD, 2022; UNFCCC, 2013; UNFCCC, 2015b; UNDESA, n.d.; UNFCCC, 2021b; UNFCCC, 2020; UNFCCC, 2019c; UNFCCC, 2023

6 NDCs are 'nationally determined contributions' of specific actions and targets for reducing greenhouse gas emissions and adapting to the impacts of climate change.

Other international instruments may also be relevant depending on the project site and context. These include the Ramsar Convention on Wetlands (RCS, 1971), particularly for designated Ramsar sites; the World Heritage Convention (UNESCO, 1972), for natural or mixed World Heritage sites; the Convention on Migratory Species (CMS, 1979); the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973); the International Treaty on Plant Genetic Resources for Food and Agriculture (FAO, 2001b); and the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO, 2003).

These international conventions and goals provide structures, such as NAPs, NBSAPs, Land Degradation Neutrality (LDN) targets and national disaster risk reduction (DRR) strategies, into which NbS for adaptation can contribute to, support and strengthen (Table 2 and Figure 13).



FIGURE 13 • The international conventions and their structures, which provide entry points for local NbS for adaptation

More details, with examples, on how to assess the policy and management context are provided in Detailed Guideline 4.

IMPORTANT RESOURCES AND TOOLS



→ FOR PRINCIPLE 1: CO-CREATION

German Corporation for International Cooperation (GIZ) GmbH. (2019). Governance for Ecosystem-based Adaptation: Understanding the diversity of actors & quality of arrangements. https://www.adaptationcommunity.net/wp-content/uploads/2019/09/giz2019-en-eba-governance-study-low-res.pdf

World Health Organization (WHO). (n.d.-c). *Stakeholder mapping guide: Mapping potential key stakeholders in reproductive health and family planning service delivery, in preparation for implementing WHO MEC/SPR guidance* [Toolkit]. https://cdn.who.int/media/docs/default-source/reproductive-health/contraception-family-planning/stakeholder-mapping-tool.pdf



→ FOR PRINCIPLE 2: FOCUS ON THE NATURE-CLIMATE-PEOPLE NEXUS

Secretariat of the Convention on Biological Diversity (CBD). (2024). *Introduction to the GBF. Kunming-Montreal Global Biodiversity Framework.* https://www.cbd.int/gbf/introduction

United Nations Framework Convention on Climate Change (UNFCCC). (2024a). *Decisions adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement Decision 2/CMA.5. The Global Goal on Adaptation.* https://unfccc.int/documents/637073

United Nations (UN).(2023). *The Sustainable Development Agenda.* https://www.un.org/sustainabledevelopment/development-agenda/



→ FOR PRINCIPLE 3: GUIDED BY ENVIRONMENTAL AND SOCIAL RISK ANALYSIS

International Union for Conservation of Nature (IUCN). (n.d.-b). *Environmental and social management system (ESMS) Manual Version 2.0.* Retrieved October 15, 2026, from https://iucn.org/about-iucn/accountability-and-reporting/project-accountability/environmental-and-social-management-system



→ FOR PRINCIPLE 4: RIGHTS-BASED AND GENDER-INCLUSIVE

Castañeda Carney, I., Sabater, L., Owren, C., & Boyer, A. E. (2020). *Gender-based violence and environment linkages.* International Union for the Conservation of Nature (IUCN) IUCN. https://doi.org/10.2305/IUCN.CH.2020.03.en

German Corporation for International Cooperation (GIZ) GmbH. (2021). *Toward gender-responsive ecosystem-based adaptation: Why it's needed and how to get there.* Dazé, A., & Terton, A. (authors). https://www.adaptationcommunity.net/wp-content/uploads/2021/07/Toward-gender-responsive-EbA.pdf

International Union for Conservation of Nature (IUCN).(2018). *Gender Equality and Women's Empowerment Policy: Mainstreaming gender-responsiveness within the IUCN programme of work.* https://iucn.org/sites/default/files/2022-05/iucn-policy-on-gender-equity-and-equality-october-2018-english-only.pdf

Office of the United Nations High Commissioner for Human Rights (OHCHR). (2006). *Frequently asked questions on a human rights-based approach to development cooperation. United Nations.* https://www.ohchr.org/sites/default/files/Documents/Publications/FAQen.pdf



→ FOR PRINCIPLE 5: CLIMATE PROOFING

Asian Development Bank. (2005). *Climate proofing: A risk-based approach to adaptation* (Pacific studies series). https://www.adb.org/sites/default/files/publication/28796/climate-proofing.pdf



→ FOR PRINCIPLE 6: ALIGNED WITH POLICY

United Nations (UN). (1992c). *United Nations Framework Convention on Climate Change.* https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

Secretariat of the Convention on Biological Diversity (CBD). (2011). *Convention on biological diversity: Text and annexes.* https://www.cbd.int/doc/legal/cbd-en.pdf

CBD (2024), above.

United Nations Convention to Combat Desertification (UNCCD).(1994) *United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.* https://catalogue.unccd.int/936_UNCCD_Convention_ENG.pdf

UNDRR (2015). *Sendai Framework for Disaster Risk Reduction 2015–2030.* https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

These above three references are the primary global documents.

4. The six steps of the operational framework



Understanding the context

Why is this important?

This step lays the foundation for all subsequent steps by establishing a comprehensive baseline of the site's current conditions. **It provides an understanding of not only the site's ecological and climatic characteristics but also the social, political, and economic dynamics that shape vulnerability and resilience. It also involves identifying the actors present, examining power dynamics, assessing who is most at risk, and determining whose knowledge and perspectives should be prioritised to ensure that NbS for adaptation are effective, equitable, and sustainable.**

This preliminary stocktaking step aims to gather information about the selected site and the communities that call it home. This includes understanding who lives in the landscape, what the climate risks are, which ecosystem services deliver climate adaptation and resilience, and what existing plans and policies related to adaptation are already being implemented.

Understanding who is most affected and who has access to resources and influence over decision-making is crucial for designing inclusive NbS for adaptation. Gender and social norms influence people's ability and willingness to participate in conservation efforts and benefit from them. If these dynamics are not considered, actions may unintentionally reinforce existing inequalities.

Mapping previous and ongoing climate related studies, initiatives, and projects, drawing on both grey and peer-reviewed literature, is essential to avoid duplication, build on existing evidence and lessons learned, identify knowledge gaps, and maximise opportunities for collaboration, coordination, and synergies among stakeholders. This step should also assess the successes and challenges of previous adaptation projects in the proposed site to inform future interventions, avoid repeating past mistakes, and build on proven approaches..

KEY ACTIVITIES

To this end, key activities of this step are as follows:

1. Scoping the site and its system boundaries

Before collecting data, define the boundaries of the system being assessed including its spatial extent (e.g. a watershed or seascape nested within a broader landscape), the time horizon and scope of analysis. Identify the main flows into and out of the site – including water, sediment, species, resources, information and policy decisions – that shape climate risk and the delivery of ecosystem services. The scoping process should also make explicit who defines the purpose and boundaries of the assessment, which knowledge types (scientific, local and traditional) will be included, and how power dynamics influence access to resources and the distribution of benefits.

2. Stakeholder mapping and analysis

This framework guides practitioners in identifying and engaging the full range of actors at the proposed project site, recognising their varying levels of interest and influence and the importance of their involvement throughout the adaptation process. Particular effort should be given to reaching and engaging underrepresented groups, including women, youth, Indigenous Peoples, the elderly, children and adolescents (where appropriate, with the consent of parents or guardians and following child-safeguarding protocols) and persons with disabilities, through culturally appropriate and gender-responsive facilitation methods.

Engagement should go beyond consultation to ensure meaningful participation in understanding interconnected ecological and social systems, identifying differentiated vulnerabilities and adaptive capacities, and co-designing context-specific solutions. Involving these actors from the outset is essential to ensure that their knowledge, perspectives, and expertise inform every subsequent stage of the proposed adaptation cycle (see Guideline 1).

At the outset, practitioners should also agree with communities and partners on clear working practices, including the languages and communication channels appropriate for different audiences, data collection methods, and procedures for recording, storing, sharing, and determining ownership of jointly generated information and materials. These agreements should explicitly address data protection and communities' rights to govern and control their own data.

! CONFLICT SENSITIVE

BOX 6 • Assessing conflict and fragility in the project context

Understanding the site also requires assessing whether the project area is affected by conflict, fragility, or violence, and how the proposed nature-climate action might interact with these dynamics. Nature-climate actions can affect access to and control over natural resources, intersecting with a well-documented driver of tension: competition over natural resources, particularly where governance and dispute-resolution mechanisms are weak (Rüttinger et al., 2023). Data collection should establish whether the project area or neighbouring areas have a recent history of conflict or are classified as fragile, and identify the actors involved, underlying causes, and relationships between natural resource access, climate stress and conflict. It should also identify existing relationships, institutions and norms that prevent disputes from escalating.

Where resources allow, a peace and conflict analysis (PCA) could be conducted to support intervention design by examining stakeholders' perspectives, shared and divergent interests, power relations and proposed solutions, including gender-specific vulnerabilities, risks and coping mechanisms. Where relevant, this analysis can be organised around economic factors (e.g. resource dependence), social factors (e.g. gender equality, social inclusion and intergroup relations), governance factors (e.g. dispute-resolution mechanisms and institutional trust), demographic factors (e.g. population movement), and security and political factors (e.g. armed actors and territorial control). These factors map onto the existing data categories collected in this step. The assessment should cover the conflict profile, causes, actors and dynamics (Tänzler & Scherer, 2019). It should draw on existing conflict analyses and, including national Women, Peace and Security strategies and UN Common Country analyses, and relevant expertise, with finding validated locally with communities and relevant stakeholders. For further guidance, UNEP (2022a) provides a step-by-step approach to integrating conflict sensitivity into climate adaptation and sustainable livelihoods programming.

3. Site-specific rapid assessment for data collection

This assessment compiles multiple types of data to form a holistic picture of the project site. The data types and the Guidelines that support the methods are summarised below, noting that the methods themselves are not repeated here:

- Socio-economic and livelihood data – who lives in and depends on the site, and how (Guideline 2);
- Gender and social inclusion data, including risks of gender-based violence – differentiated roles, access, needs and risks (Guideline 3);
- Climate data – observed trends and projected hazards (Guideline 2);
- Ecosystem, species and ecosystem-service data – what nature provides for adaptation and what threatens it (Guideline 2);
- Spatial data – where people, ecosystems, hazards and resources are located (Guideline 2);
- Policy and institutional context – who governs what, and under which rules (Guideline 4); and
- Conflict dynamics, in fragile and conflict-affected settings (see Box 6).

4. Socioeconomic and livelihood data (see Guideline 2).

This data should be disaggregated by factors such as gender, age, ethnicity, and disability, to capture the specific capacities, dependencies, and needs of vulnerable groups.

They should include:

- The full range of actors in the area, including women's and youth groups (and youth leaders who could lead future adaptation efforts) within communities, civil society, governments and demographic information;
- How ecosystem services are accessed, used, and governed, including for spiritual or cultural purposes, with attention to how patterns of dependence, access and control reflect gendered or power-based inequities (services should be recorded using the names and categories communities themselves use, particularly for spiritual and cultural services, and mapped to standard categories afterwards);
- How patterns of social and economic inequities may be driving unsustainable practices and biodiversity loss; and
- Traditional knowledge systems of Indigenous Peoples and local communities, including differentiated perceptions, experiences and coping strategies of people of all genders, youth and marginalised groups in response to climate risks.

5. Gender and social inclusion (GESI) analysis, including gender-based violence considerations (see Guideline 3)

This analysis will clarify how ecosystem services are accessed, used, and governed by different groups. It considers gender together with other intersecting factors, such as age, disability, ethnicity, Indigenous identity and migration status. Understanding who is most affected by climate risks, who manages natural resources, and who has access to

them is essential for designing inclusive and equitable NbS for adaptation. Gender and social norms influence people's ability to participate in conservation efforts and benefit from them. If the dynamics of access to, use of, management of and control of natural resources are not considered, actions may unintentionally reinforce existing social, gendered, or power-based inequities.

6. Data collection on climate risks in the landscape, including both current risks and future projections (see Guideline 2)

Information on climate risks can be collected primarily through desk-based research, drawing on multiple sources, such as locally-observed meteorological data, existing hydrological or flood-risk models and maps (where available), climate projections, and reliable climate data platforms. This scientific information should be combined with local knowledge and community perceptions, including community histories of past climate events and their patterns, gathered through participatory approaches. Combining scientific evidence with local and Indigenous knowledge can provide a more comprehensive and context-specific understanding of climate hazards, vulnerabilities, adaptive capacity, ultimately informing a more robust assessment of climate risks.

Climate information should include:

- **Current and projected climate hazards and risks**, including available primary and secondary source evidence on historical trends and future climate change projections. Localised impacts and vulnerabilities will be assessed in greater depth in the next step during subsequent community-based assessments.
- **Local knowledge and experience**, including community understanding of climate variability and change, past experiences of climate impacts and disasters, existing coping and adaptation strategies, and current natural resource management practices. (If this information does not yet exist, it should be gathered in the next step.)

7. Data collection on ecosystems, species and ecosystem services in the landscape (see Guideline 2)

This information should capture the specific ecosystem services (see Box 7) that currently contribute to climate resilience – known as adaptation services – or could contribute, if restored. (The framework uses the term 'ecosystem services', which remains the operative term in adaptation policy and practice; it corresponds to the material, regulating and non-material "nature's contributions to people," used by IPBES). Investigating the drivers of biodiversity loss and ecosystem degradation (threats), by exploring the causes behind these drivers in the site, such as land tenure regimes, governance gaps, or discriminatory norms, will be useful in determining what may be hampering the delivery of adaptation services.

Three types of data are needed, drawing on both scientific sources and local and traditional knowledge: (i) ecosystems type (using the IUCN Global Ecosystem Typology),

extent and condition, and their distinctiveness and strategic importance where possible; (ii) species – from a desk-based check of threatened and endemic species (e.g. the IUCN Red List, Global Biodiversity Information Facility or GBIF) to field surveys, depending on resources; and (iii) ecosystem services and the adaptation services currently or potentially provided, modelled (e.g. water flows) where capacity exists. At a minimum, projects should establish ecosystem type and extent, the key adaptation services, and the main threats alongside their underlying causes.

BOX 7 • Biodiversity, ecosystem services and co-benefits

Sources: shown in the text; Photo credits: far right © Chaminda Senewiratne; all others © Sriyanie Miththapala

Biodiversity is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD, 2011).



PROVISIONING SERVICES

These are natural resources and products (goods) obtained from ecosystems. Such goods include food, wood, medicines, fuel and fuelwood, fibre and non-timber forest products.

REGULATING SERVICES

These are the benefits obtained from the regulation of ecosystem processes, such as, for example, climate and flood regulation.

SUPPORTING SERVICES

These are ecosystem services necessary for the production of all other ecosystem services. For example, for balancing gases in the atmosphere, forming soil, degrading waste, pollinating crops and water cycling.

CULTURAL SERVICES

These are benefits obtained from recreation, relaxation tourism, spiritual inspiration reflection and the beauty of ecosystems.

FIGURE 14 • The four types of ecosystem services

While provisioning, regulating, and maintenance services provide direct benefits for climate adaptation projects,such as provision of water, flood regulation, protection from landslides, and alleviation of heatwaves. Ecosystems also deliver other multiple, indirect services, known as biodiversity co-benefits (Díaz et al., 2015, Lo & Rawluk, 2023, Seddon et al., 2021).

For example, suppose that agroforestry practices are introduced when restoring a degraded watershed forest (Jinger et al., 2022). Agroforestry will help reduce soil erosion (the primary adaptation service, a supporting service), and it will also yield products such as food, fuelwood, native medicines, and other non-timber forest products (NTFPs). Thus, in this case, enhanced provisioning services are co-benefits of the NbS action.

Use of IUCN's Global Typology for naming ecosystems (Keith et al.,2022) (Box 8). This data should include:

- The ecosystems and biodiversity in the site, including the extent of the ecosystem(s) and species composition;
- The specific ecosystem services (see Box 7) that currently contribute to climate resilience – known as adaptation services – or could contribute, if restored;
- The existing drivers of biodiversity loss and ecosystem degradation (threats), including development and climate change impacts; and
- The causes behind these drivers in the site, such as land tenure regimes, governance gaps, or discriminatory norms, will be useful in determining what may be hampering the delivery of adaptation services.

BOX 8 • The IUCN Global Ecosystem Typology

Source: Keith et al., 2022

The IUCN Global Ecosystem Typology (Keith et al., 2022) provides a standardised framework and a "globally consistent classification" of ecosystems that is a much-needed resource for any practitioners of NbS for adaptation. This resource "places all of Earth's ecosystems into a unifying theoretical context to guide the transformation of ecosystem policy and management from global to local scales". It is strongly recommended that this typology is used for describing different types of ecosystems, for the biodiversity element of NbS for adaptation, rather than national classification systems.

↘ 8. Develop a map of the area (see Guideline 2)

This map will visually represent important social, economic, and environmental factors, such as land use, population density, poverty levels, the presence of Indigenous Peoples and Local Communities, existing climate risks, climate hotspot areas and ecosystems in the project site. Ideally, the project will develop both geographic information system (GIS) maps and maps made by and with community members. These maps should reflect spatial inequities and differentiated vulnerabilities, including those based on gender, age, disability, ethnicity, identity and socio-economic differences. Before collecting new data, check for freely available spatial datasets – such as OpenStreetMap, Copernicus Global Land Cover, Global Forest Watch, Protected Planet (WDPA) and the IUCN Red List range maps – as well as maps held by national mapping, planning and environment agencies that may not yet have been digitised.

During this assessment process, it is recommended to engage community members directly in the data collection and analysis to promote a comprehensive understanding of the value of different natural resources and ecosystem services to the community. Performing this exercise without the input of community members risks missed information or a misunderstanding of how ecosystem services are perceived and used. This exercise is a key entry point for the inclusion of traditional and Indigenous knowledge, with the understanding that such knowledge should be gathered with respect, Free and Prior Informed Consent (FPIC) of knowledge holders, and recognition of their rights and intellectual property.

Engagement should aim for locally led processes with communities shaping the questions, methods and interpretation,rather than being merely locally implemented. Research ethics should go beyond procedural compliance, such as obtaining informed consent forms, to include critical reflection on practitioners' own positionality and power dynamics, recognition of experiential knowledge, and agreement with communities on how research findings will be shared and used. Participatory Action Research (Cornish et al., 2023) and the principles for good practice in participatory research outlined by Newing et al. (2024) provide useful guidance. When integrating scientific, local, and Indigenous knowledge systems,the Multiple Evidence Base approach (Tengö et al., 2014) helps to do so on an equitable basis.

ANALYSIS OF THE POLICY CONTEXT (GUIDELINE 4)

This analysis helps the understanding of how natural resources are governed and by whom, as well as the specific policies and plans that direct national processes, such as Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs) and National Biodiversity Strategic Action Plans (NBSAPs). The policy context analysis intersects with the gender analysis, as both involve investigating policies, frameworks, plans, and legal mechanisms related to gender equity and social inclusion, including in the particular context of environment- and climate-related policies. Both also require examining customary and Indigenous systems for governance of natural resources and social dynamics, assessing how they may differ from national laws. In fragile or conflict-affected settings, the analysis should also review security-related policies that shape participation and risk, such as National Action Plans on Women, Peace and Security (UNSCR 1325) and Youth, Peace and Security strategies (UNSCR 2250).

At the end of this step, a comprehensive baseline should be established, covering socioecological data, governance systems and policy context while capturing differentiated risks, capacities and knowledge. Data should be disaggregated by gender and other relevant factors, where relevant. It will also include an assessment of rights, representation, and recognition of Indigenous Peoples and Local Communities, and whether the enabling environment supports inclusive, equitable, and rights-based climate and biodiversity actions

CHECKLIST FOR STEP 1 UNDERSTANDING THE CONTEXT

		DONE	NOT DONE
1	The full range of actors identified, stakeholder mapping and analysis completed, as well as agreed working practices for engagement (languages, communication methods, data collection, storage and ownership)	○	○
2	A site-specific rapid integrated assessment carried out, that includes the following:	○	○
2a	An analysis of socioeconomic conditions and livelihoods conducted, including how social and economic factors may contribute to unsustainable practices	○	○
2b	A gender equality and social inclusion (GESI) analysis completed, assessing gender-differentiated use and governance of natural resources and gender-differentiated impacts of climate change and environmental degradation, including gender-based violence risks	○	○
2c	Climate risks and impacts identified, including both past observations and future projections, drawing on best available scientific evidence and local knowledge (where available)	○	○
2d	Ecosystems and species mapped, including identification of adaptation and other ecosystem services, groups dependent on these services, drivers of biodiversity loss and ecosystem change, and underlying causes of these drivers	○	○
2e	A map of the area to visually represent key social, economic, and environmental factors, to reflect spatial inequalities and differentiated vulnerabilities, including those based on gender, age, disability, ethnicity, and identity.	○	○
3	An institutional and policy analysis performed, including analysis of customary laws and practices	○	○
4	In fragile or conflict-affected settings conflict dynamics analysed and conflict-sensitivity measures identified	○	○



CASE STUDY

UNDERSTANDING COASTAL VULNERABILITY THROUGH COMMUNITY KNOWLEDGE AND CLIMATE ASSESSMENT

Nioumachioi, located along the southern coast of Moheli in the Comoros, is highly exposed to climate change impacts, including cyclones, sea-level rise and coastal erosion. These pressures are accelerating the degradation of mangroves, seagrasses and coral reefs, threatening biodiversity, fisheries, food security and the livelihoods of coastal communities.



Woman planting mangrove seedlings.

CREDIT: Mission Inclusion, ReSea project

Recognising the interconnected nature of these challenges, the ReSea Project adopted an integrated approach to understanding the site's climate, ecological, socio-economic and socio-cultural context before implementing NbS for adaptation. For instance, national ecosystem assessments, drawing on the IUCN Red List of Ecosystems methodology, helped identify ecosystem degradation, its underlying drivers and priority areas for conservation and restoration. These scientific assessments were complemented by community knowledge and socio-cultural research to better understand local resource dependencies, traditional governance systems and the values communities associate with coastal ecosystems.

Participatory consultations brought together 19 coastal community organisations, local authorities, technical institutions and women's groups. These processes helped identify barriers to participation, strengthen understanding of climate vulnerabilities and establish a shared vision for coastal management. The process paid particular attention to women's and young people's involvement in decision-making, recognising their important roles in coastal livelihoods and ecosystem stewardship.

The process informed a community co-management agreement defining responsibilities for ecosystem restoration, conservation, monitoring and sustainable resource use across 85 hectares of coastal and marine ecosystems. It also established a foundation for locally led adaptation planning and implementation.

Nioumachioi demonstrates the importance of combining scientific evidence with local and traditional knowledge to establish a comprehensive understanding of climate risks and site conditions. It particularly supports the principles of co-creation, by placing Gender Equality Operational-frameworkand Social Inclusion (GESI) and the integration of local and traditional knowledge with scientific evidence at the forefront of the intervention. The experience highlights how inclusive context assessments can strengthen local ownership and help ensure that adaptation interventions respond to interconnected ecological and socio-economic vulnerabilities.

Across all its seascapes in 5 countries, ReSea piloted an adapted version of the Operational Framework across nine demonstration sites to better address coastal and marine contexts. Its application generated practical evidence across the six steps and principles, including co-creation, GESI, community-led governance, integration of local and scientific knowledge, and adaptive management across various geographies and communities. These lessons provide valuable insights for refining the Framework and applying it across diverse ecosystems.



CASE STUDY

CO-CREATING CONSERVATION KNOWLEDGE THROUGH THE HERDER CONSERVATION NETWORK IN MOUNT MARSABIT, KENYA

In Mount Marsabit, herders possess deep knowledge of their environment and are uniquely positioned to monitor ecological change and inform rangeland management. Yet conventional conservation monitoring has often overlooked this local expertise, excluding pastoralist communities from formal conservation processes.



Members of the Herder Conservation Network using handheld mobile devices for wildlife and biodiversity tracking

CREDIT: Image courtesy of NaPO

Nature and People as One (NaPO), a youth-led not-for-profit organisation, established the Herder Conservation Network, a herder-led monitoring system that combines local knowledge with accessible technology. Herders are trained to use the Spatial Monitoring and Reporting Tool and phone-based data collection to track wildlife and environmental change. To ensure inclusivity, the technology uses icons instead of written text, allowing herders to record observations regardless of their literacy levels.

Today, ten Indigenous herders play an active role in shaping ecological and wildlife monitoring in Mount Marsabit. They collect data on wildlife movements, livestock routes, water points, human–wildlife conflict, and changes in natural resources linked to climate change and other environmental pressures. Combined with their extensive landscape knowledge, this information has improved understanding of species distribution and ecosystem pressures. It has also informed rangeland and forest mapping, supported the development of a seasonal grazing plan, and strengthened information sharing between communities and the Kenya Wildlife Service. A Participatory Forest Management Plan (2024-2029) has also been co-developed by the Saku Community Forest Association, the Kenya Forest Service and the Kenya Wildlife Service, signalling a shift toward more inclusive and rights-based natural resource governance.

“The Herder Conservation Network methodology enables local people to view integrated information about the movement of the livestock, the wildlife and the resources available. The information supports decision making that in turn, drives sustainability. For example, the information provides a picture of where the wildlife are at this time of the year, which species are located where. From this, we are able to help and inform the community on the different spaces they can utilise and also move according to the seasons.”—Loitiptip Loronyokwe, NaPO

Building on this work, NaPO identified the need to engage young people in rangeland restoration and launched the Conservation Cup, a soccer tournament in which young people must adopt restoration sites to participate. Their performance is assessed on both sporting achievements and ecological outcomes.

NaPO also draws on local Indigenous knowledge systems, having co-created a Ramat model (‘Ramat’ means stewardship) to guide their restoration work. The model helps ensure that rangeland restoration interventions are informed by localcontext and ancestral knowledge. NaPOcombines this knowledge with monitoring data from the Herder Conservation Network and scientific expertise from Kenya Wildlife Service, ensuring interventions are grounded in the best available evidence.

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STEP 2.

Assessing climate risk and vulnerabilities

Why is this important?

This step builds on the data gathered in the previous step to assess which parts of the community and which ecosystem services are most vulnerable to the identified climate hazards. This includes an understanding of how gender, age, disability, ethnicity, and Indigeneity shape differential experiences of climate impacts.

This step focuses on building a deeper understanding of the climate risks faced by the community and surrounding ecosystems through a vulnerability analysis using climate change impact chains and a set of guiding questions in focus group discussions. This framework recommends a participatory approach to vulnerability analyses, in which communities themselves identify priority climate risks and impacts to address, in accordance with the principle of co-creation.

This step should be carried out with the active participation of the community stakeholders and rightsholders identified in Step 1, especially those at greater risk of being excluded, such as women, youth, vulnerable populations and ethnic minorities, including Indigenous and tribal peoples (see Guideline 1). It is important to ensure that the participatory methods are culturally appropriate, gender-sensitive, and incorporate local and Indigenous languages.

KEY ACTIVITIES

Step 2 comprises:

1. Climate risk analysis – hazard, exposure and vulnerability (see Guideline 2)

Based on the data collected in Step 1, practitioners identify the key components that contribute to the climate risks communities face. These include climate hazards, the exposure of communities and ecosystems, and their vulnerability – that is, their sensitivity and their capacity to cope and adapt (IPCC, 2022). Analysing the interactions among these components helps identify the drivers of climate risk and the factors that influence community resilience. Much of the hazard and exposure information needed at this stage is openly available through platforms such as the World Bank Climate Change Knowledge Portal, WRI Aqueduct, the WWF Water Risk Filter and ThinkHazard!. These resources provide a useful starting point but are generally too coarse in resolution to substitute for local data and community knowledge. The framework assumes that many projects may have limited GIS capacity; the spatial analysis in Guideline 2 is therefore designed to produce transparent, defensible outputs using open data and basic GIS skills.

2. Participatory development of climate impact chains with community members (see Guideline 5)

This activity follows directly from the participatory mapping exercise in Step 1 of the project cycle, in which community members marked the areas most affected by different climate hazards. Developing climate impact chains involves engaging community members to identify the most pressing climate threats they face and trace the pathways through which these threats lead to direct and indirect impacts. Such an impact chain clearly shows cause-and-effect linkages between climate hazards, their direct and indirect impacts, and the underlying causes of vulnerability. Questions prompting community members to consider indirect impacts on household dynamics and access to certain resources, for example, help the impact chains incorporate both material conditions (e.g., assets, exposure) and social dynamics (e.g., power, norms, discrimination). Additional guiding questions help to reflect on climate vulnerabilities and adaptive capacities.

Critically, this process should not treat social inclusion or gender as parallel add-ons. Rather, they must inform how priorities are set, how trade-offs are negotiated, and how the success of adaptation actions is defined and measured. This involves using impact chains not only to identify biophysical vulnerabilities but also to reveal underlying social drivers of risk, such as insecure land tenure, exclusion from decision-making, and unequal unpaid care responsibilities.

By the end of the first two steps, practitioners should have identified and developed an understanding of the key climate hazards, patterns of exposure and underlying vulnerabilities that contribute to the highest climate risks in the target area. They should also have identified the people, livelihoods, ecosystems and assets most at risk;

the ecosystem services that can help build resilience and reduce risk and the relevant policies and plans that interventions can inform or support. Importantly, these risks should be understood in relation to the social, economic, cultural and governance systems that shape vulnerability, adaptive capacity and resilience.

CONFLICT SENSITIVE

BOX 9 • Integrating conflict dynamics into vulnerability assessments

Where relevant, the vulnerability assessment should also consider how conflict and fragility interact with climate vulnerability. Vulnerability is shaped by intersecting systems of inequality, including gender, age, disability, caste, ethnicity, legal status, and exposure to conflict or violence. Climate change can act as a threat multiplier, intensifying existing pressures on livelihoods, governance, and social cohesion, rather than acting as an independent driver of conflict (Doumergue et al., 2024; Ide, 2025). Conflict and fragility, in turn, can worsen climate vulnerability by disrupting governance, displacing populations, or restricting access to natural resources (Rüttinger et al., 2023).

When developing the climate change impact chain for the site, practitioners should consider whether climate stressors could intensify competition over natural resources affected by the proposed action, and whether existing institutions or norms could prevent tensions from escalating. Where the site has a history of conflict or fragility, context-specific indicators should also capture how the proposed action might affect, or be affected by, these dynamics. These could include changes in resource competition, perception of fairness and trust in the distribution of benefits. Indirect or proxy indicators may be needed where collecting data on conflict incidents directly could pose a risk to community members or project staff.

CHECKLIST FOR STEP 2 ASSESSING CLIMATE RISK AND VULNERABILITIES

		DONE	NOT DONE
1	Climate risk analysis performed based on best available climate hazard, exposure and vulnerability data.	○	○
2	Climate impact chains are developed with local communities to identify high-priority hazards, direct and indirect impacts, including identification of which groups within the community are most vulnerable	○	○

CASE STUDY

LISTENING TO COMMUNITIES, UNDERSTANDING CLIMATE RISKS AND BUILDING RESILIENCE WITH NATURE ACROSS AFRICA



People fishing at Beach Rotxa, Cabo Verde trying to catch small fish near land

CREDIT: Fauna & Flora (2025). From the ground up: lessons from African communities on climate risk and building resilience with nature (fauna-flora.org/adaptation-report). Authored by Annamária Lehoczky, Ann Komen, Tanguy Nicolas, Alice Costa.

Drawing on participatory Climate Vulnerability and Capacity Analyses (CVCAs), tailored to the conservation sector and conducted across three African countries, these case studies demonstrate that climate adaptation is most effective when grounded in both local realities and robust scientific evidence. Across Kenya, Tanzania and Cabo Verde, communities report that climate change is already undermining livelihoods, increasing poverty and exacerbating environmental degradation. Fishing communities in Cabo Verde describe increasingly dangerous sea conditions that disrupt fishing activities and reduce household incomes, while farmers and pastoralists in Kenya face crop and livestock losses due to shorter, less predictable rainy seasons and prolonged droughts. In Tanzania, heavy and erratic rainfall disrupts agricultural production, damages infrastructure and affects coastal and marine livelihoods. These impacts are also increasing food insecurity and vulnerability among already marginalised communities.

A key finding across all three countries is that healthy ecosystems are fundamental to climate resilience. Communities reported that ecosystem degradation, whether caused by unsustainable resource use or climate change itself, reduces the availability of critical ecosystem services and increases vulnerability to climate hazards. For example, mangrove loss in Tanzania has accelerated coastal erosion, while degradation of forests and river systems in Kenya has reduced water availability, biodiversity and the capacity of landscapes to recover from droughts.

The assessments also highlight the effectiveness of locally led, Ecosystem-based Adaptation measures.[1] Communities identified actions such as rangeland restoration, rainwater harvesting, climate-smart agriculture, mangrove restoration, improved early-warning systems, livelihood diversification and strengthened community governance as critical for building resilience. These solutions are rooted in local realities and reflect the close relationship between healthy ecosystems and community well-being. Gender-responsive approaches are also essential, as climate impacts affect women and men differently and can reinforce existing inequalities.

A central lesson is the importance of integrating Indigenous, local and traditional knowledge with the

1 Ecosystem-based Adaptation (EbA) is referred to as Nature-based Solutions (NbS) for adaptation in this publication

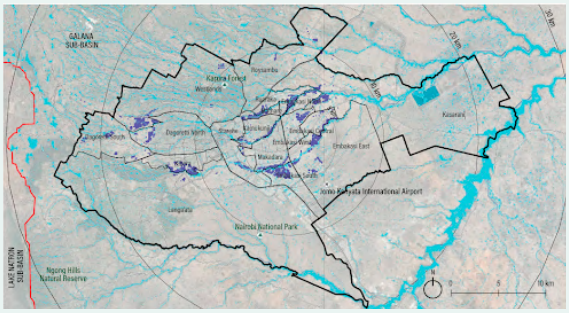
best available scientific evidence. Local knowledge provides detailed insights into changing environmental conditions, livelihood impacts and effective adaptation responses, while scientific information helps understand broader climate trends and future risks. Combining these knowledge systems creates a stronger evidence base for adaptation planning and helps ensure that adaptation measures are both technically sound and locally appropriate. The case studies therefore recommend that local knowledge should be systematically incorporated into National Adaptation Plans (NAPs), Nationally Determined Contributions (NDCs) and broader climate, nature and development planning processes. Participatory approaches such as CVCAs and multi-stakeholder co-design processes are critical for translating local knowledge and experience into effective adaptation policy and action, and ensuring that investments respond to the realities and priorities of the people most affected by climate change.



CASE STUDY

ASSESSING URBAN FLOOD RISKS THROUGH INTEGRATED SPATIAL ANALYSIS AND COMMUNITY-BASED APPROACHES IN KENYA

Flooding is an increasing challenge in Nairobi, where intense rainfall, rapid urbanisation and environmental degradation intersect to heighten risks for communities, particularly those living in informal settlements. Understanding these risks requires looking beyond climate hazards alone to consider how land-use patterns, ecosystem conditions and socioeconomic factors shape exposure and vulnerability.



Nairobi City modelled flood extent for the MAM 2024 torrential rainfall

CREDIT: WRI, County and Sub-county boundaries from Survey of Kenya; flood extent obtained from 2D HEC-RAS model; Basin polygon and stream network from FAO Basin Data & FAO Stream Network; Presence of water from JRC Global Surface Water; Google Satellite

This case study by the World Resources Institute (WRI) demonstrates an integrated approach to assessing urban flood risks through the combination of historical climate data, geospatial analysis, hydrodynamic modelling and community-based assessments. The assessment examines rainfall patterns and flood events in Nairobi, including the severe flooding experienced in 2024. A two-dimensional hydrodynamic model (HEC-RAS) was used to reconstruct flood extents, drawing on rainfall, topographic, land-use and soil datasets. Model results were calibrated and validated using field observations, including household surveys and high-water marks.

Spatial analysis was used to identify flood-prone areas and examine the distribution of exposed populations and infrastructure, including roads, schools and built-up areas. The assessment also considers environmental conditions that influence flood risk, such as wetland degradation, vegetation loss and encroachment on riparian corridors, which can reduce natural flood-buffering capacity.

Importantly, the study incorporates community-level evidence to explore how flooding affects households in informal settlements, including Kibera, Mukuru Viwandani and Mathare. A survey of 98 households

provides insight into socioeconomic factors that can compound vulnerability, including housing conditions, poverty and unequal access to basic services. The findings highlight how vulnerability is shaped not only by physical exposure to flooding, but also by underlying inequalities and differences in households' capacity to prepare for, respond to and recover from climate-related hazards.

By bringing together environmental, spatial and socioeconomic information, this approach illustrates the value of multidimensional climate risk assessments that integrate local knowledge alongside technical analysis. The resulting evidence base can help inform climate-informed adaptation planning and the consideration of nature-based solutions, such as wetland restoration, riparian buffers and urban green infrastructure. It also provides a foundation for forward-looking planning by highlighting the importance of considering how adaptation measures can remain effective under evolving climate conditions.

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STEP 3

Identifying nature–climate actions

Why is this step important?

This step builds on the information collected in the previous steps into tangible actions. Once communities have identified the priority climate threats – together with the social inequalities and structural barriers that shape who is most at risk – and the corresponding risks faced by people and ecosystems have been understood through the climate impact chains, potential interventions can be formulated to reduce these risks.



Group discussion regarding adaptation actions, Bhutan © IUCN

During this step, community members and partners collaboratively design specific NbS for adaptation to address the identified climate impacts on the site's socio-ecological systems, including the gender equality and social inclusion (GESI) barriers that compound them. The goal is to develop a longlist or catalogue of potential adaptation actions that can be assessed and prioritised for implementation in Step 4. Guideline 7A provides further guidance on designing ecosystem restoration as part of NbS for adaptation.

These actions should aim to build resilience for both ecosystems and diverse community members and, critically, be developed through an inclusive, participatory and power-aware process that enables all actors to contribute meaningfully. It is essential that women, Indigenous Peoples and members of other marginalised groups are actively engaged so that their needs, vulnerabilities, knowledge and capabilities are reflected in the design. This stage also provides an opportunity to recognise and integrate Indigenous and traditional practices and knowledge systems, including oral storytelling and knowledge associated with gendered roles in early warning, food storage and water sourcing. Such knowledge is often overlooked but can offer valuable insights for locally appropriate adaptation strategies. Without meaningful participation and consideration of diverse knowledge systems, proposed actions risk

reinforcing existing inequalities, overlooking local capacities and missing opportunities for innovative solutions. This is also an opportunity to design interventions that are not only climate-resilient but gender-transformative, addressing underlying inequalities in access, power and agency.

CONFLICT SENSITIVE

BOX 10 • Screening nature-climate actions for conflict risks

In sites affected by conflict or fragility, this process should also draw on conflict-sensitivity expertise to screen potential actions for their likely effect on tensions between actors, including whether changes in access to contested resources, impacts on livelihoods or new infrastructure could unintentionally increase social tensions (Rüttinger et al., 2023). This screening should extend to project-delivery decisions such as recruitment and the siting of assets and infrastructure, since risks can arise during implementation as well as from project outcomes.

Where possible, this screening should go beyond avoiding harm to seek peace-positive design choices that deliberately strengthen relationships and cooperation between groups. The NAbSA-supported NbS Guinean Forests project illustrates a participatory approach to restoration planning. Through 84 community dialogue sessions, community members collectively identified restoration priorities, selected sites and species, and established local management rules. Community restoration committees, comprising 60% women, were established to strengthen local ownership and decision-making (Doua, 2025).

KEY ACTIVITIES

Using the completed impact chain from Step 2 and the spatially explicit, GESI-sensitive vulnerability assessment, communities and partners can collaboratively identify potential actions that respond to the specific needs and context of the site. For example, they may identify capacity-building activities to strengthen community forest management or participatory restoration and revegetation of river embankments. The full Framework provides a hypothetical case study illustrating how adaptation interventions can be tailored to different local contexts.

Following the development of the initial longlist with communities, it is recommended that a small review team, combining local knowledge holders with technical expertise in climate change, ecosystems, NbS and GESI, review and supplement the proposed actions as needed.

Communities hold essential contextual and experiential knowledge; however, given the technical complexity and breadth of potential NbS options, they should not be expected to identify the full range of possible interventions independently. The review team should therefore help refine the longlist and introduce additional options, drawing on relevant technical expertise and evidence to ensure that a diverse range of NbS for adaptation addressing the identified climate risks is considered for prioritisation in Step 4. Examples of NbS for adaptation across different ecosystems and climate risks are provided in Guideline 7.

Proposed actions should also be assessed early against the Framework's six core principles, particularly environmental and social risk analysis (Principle 3) and rights-based and

gender-responsive approaches (Principle 4). This helps identify potential risks of harm, exclusion or unintended negative consequences so that actions can be adjusted before they are prioritised. Consideration should also be given to policy alignment (Principle 6), including opportunities to integrate proposed interventions into relevant sectoral and cross-sectoral policies, strategies and plans. This includes alignment with national gender equality and social inclusion commitments, such as gender strategies, action plans and rights frameworks, as well as relevant national and international climate and biodiversity goals. Embedding NbS for adaptation in sectors such as forestry, agriculture, fisheries, sustainable development and health can help create an enabling environment for their uptake, continuity and potential scaling.

Finally, NbS for adaptation may be combined with complementary social, behavioural and institutional measures, such as early warning systems, changes in land-use practices and improved access to climate information. In some contexts, hybrid approaches combining nature-based actions with engineered infrastructure may also be appropriate. These are commonly referred to as green-grey infrastructure (Figure 15). In such approaches, the NbS component should remain central to achieving the intended adaptation outcomes. These complementary measures can also be included in the longlist where they strengthen the effectiveness, sustainability and resilience outcomes of the proposed NbS.

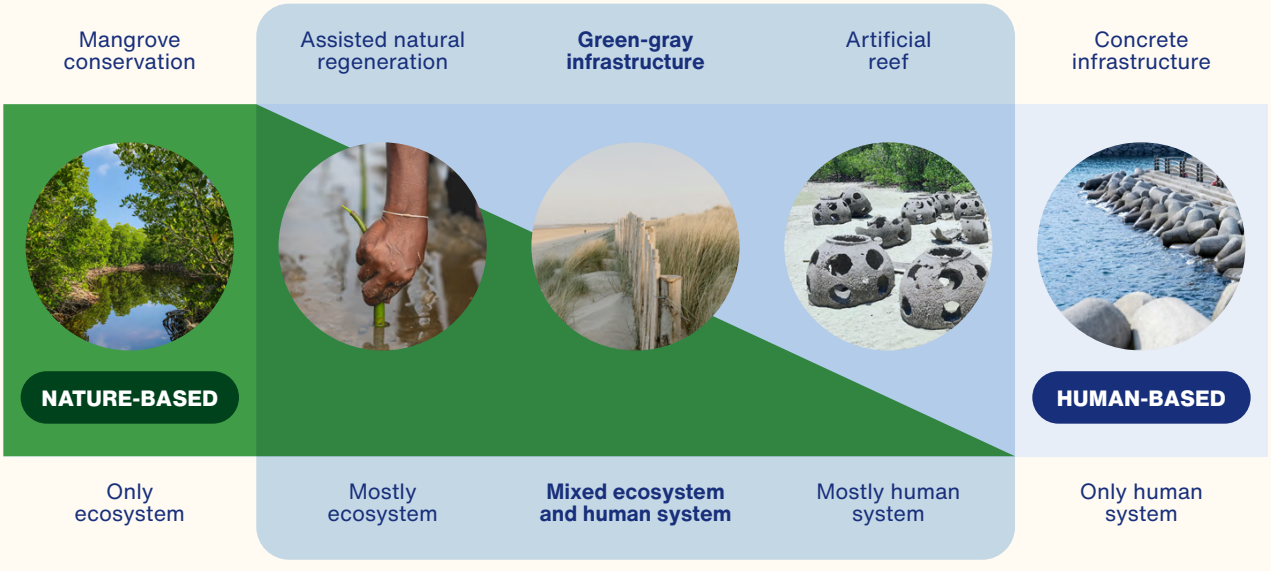


FIGURE 15 • The spectrum from green to grey infrastructure

Source: Green-Gray Community of Practice, 2020

This step concludes with the production of a long list of NbS for adaptation. This list is supplemented, as needed, with actions proposed by the small review team, designed to build resilience for both communities and ecosystems.

CHECKLIST FOR STEP 3 IDENTIFYING NATURE-CLIMATE ACTIONS

		DONE	NOT DONE
1	Community brainstorming of a longlist of potential NbS for adaptation in response to the identified climate risks has taken place in a fully participatory process that is inclusive in terms of gender and social identity (GESI)	○	○
2	Review of the longlist by a team combining local knowledge and technical climate, NbS and GESI expertise has been completed and additional actions have been included as needed	○	○



CASE STUDY

IDENTIFYING ADAPTATION ACTIONS IN NAPO, ECUADOR

The Amazonian chakra is an ancestral Kichwa agroforestry system that integrates timber, fruit, medicinal and ornamental plant species within a diverse, multifunctional landscape. It is recognised as a Globally Important Agricultural Heritage System. Around 10,000 Indigenous families in Ecuador's Napo province continue to practice this traditional system, with women playing a central role in its management and preservation.



CREDIT: Jaime Serrano on Unsplash

When FODESNA, the water fund of Napo Province, launched a project focused on Ecosystem-based Adaptation (EbA)[2] and Gender Equality and Social Inclusion (GESI), it sought to identify adaptation measures that would build on existing chakra practices and Indigenous knowledge. Through consultations with local communities, the project identified opportunities to strengthen riverbank protection, as participating Indigenous associations has not yet implemented measures to address erosion, a risk exacerbated by changing rainfall patterns.

At the project's inception workshop, representatives from five Indigenous associations belonging to the Corporación Chakra Amazónica worked together to identify suitable plant species. Two categories of species were selected. The first comprised species not currently cultivated within participating chakras: acaí, sangre de drago, achotillo, ungurahua, morete and patas muyu. The second includes species selected for their ability to stabilise soil and reduce landslide risk and water erosion: yutzo, chíparo and guadua.

Community uptake was strong because the proposed measures aligned with existing chakra practices and principles, rather than introducing an entirely new approach to land management. The project provided planting kits as a non-monetary incentive, enabling

2 Ecosystem-based Adaptation (EbA) is referred to as Nature-based Solutions (NbS) for adaptation in this publication

communities to integrate new technical guidance with their ancestral knowledge and practices. According to association leaders, this approach also helped strengthen members' ownership of the restoration activities.

Training activities followed a train-the-trainers approach, working through existing Indigenous associations to ensure that knowledge and skills could be shared more widely within communities. Learning was reinforced through traditional forms of collective work, including mingas (communal work gatherings), alongside nurseries, seed bartering and community training sessions. As a result, 43 chakras across five Indigenous associations implemented restoration measures targeting biodiversity at water resources and priority riverbanks. 35 of the 43 owners were women, and all participants identified as Kichwa Amazónico.

This initiative received support from Fundación Futuro Latinoamericano (FFLA) and the Climate and Development Knowledge Network (CDKN), which provided small grants and technical assistance to water funds implementing EbA and GESI measures across Colombia, Ecuador and Peru.

This work was carried out with the aid of a grant from the Ministry of Foreign Affairs of the Netherlands and the International Development Research Centre (IDRC), Canada, as part of the Climate and Development Knowledge Network (CDKN) Programme. The views expressed herein do not necessarily represent those of the Ministry of Foreign Affairs of the Netherlands, or of the International Development Research Centre (IDRC) or its Board of Governors, or of the entities managing CDKN.

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CASE STUDY

DESIGNING COMMUNITY-LED ACTIONS TO ADDRESS PLASTIC POLLUTION AND STRENGTHEN MANGROVE CONSERVATION IN SENEGAL

In the mangrove ecosystems of Casamance and Sine-Saloum, Senegal, the Natur'ELLES project, implemented by Socodevi, identified plastic waste management as an important but initially overlooked dimension of mangrove conservation.



Members of MPA/ICCA management committees in Casamance share their community waste management action plan during a three-day participatory workshop – a plan that links plastic recycling to the protection of mangroves and the livelihoods of women.

CREDIT: Case study prepared by SOCODEVI as part of the Natur'ELLES project, implemented by SOCODEVI with financial support from Global Affairs Canada. Sites: Marine Protected Areas (MPAs) and Indigenous and Community Conserved Areas (ICCAs) in Casamance and the Sine-Saloum region, Senegal.

Although the project focused on strengthening women's leadership in the management of marine protected areas (MPAs) and Indigenous and Community Conserved Areas (ICCAs), improving natural resource governance and developing income-generating activities, plastic bags, bottles, abandoned fishing nets and monofilaments were accumulating in mangrove channels and mudflats. This waste was suffocating young mangroves, contributing to ghost fishing and degrading important fish nursery habitats. It also posed risks to community health and represented a missed opportunity for women's groups to generate income through waste recovery and valorisation.

Recognising the links between ecosystem conservation, community well-being and local livelihoods, the project introduced a complementary waste management activity, integrating it into its existing environmental training programme rather than treating it as a series of isolated clean-up efforts. Through a three-day participatory workshop, management committees from six AMPs and APACs were equipped to develop their own community waste management action plans (PAEGD). Using a shared framework and practical guidance materials, participants undertook a collective diagnosis, identified and prioritised actions, developed cost plans, and considered opportunities to generate income through waste valorisation. Local authorities were also involved to help connect community priorities with municipal planning and local sanitation services.

The process resulted in six locally developed action plans and training for 30 committee members, including 13 women. As one member of the Kawawana community management committee reflected during the workshop: "Before, plastic in the bolong [mangrove channel] was just trash. Now, we know it's also money – and a way to protect our mangroves.

The experience demonstrates how practitioners can identify complementary actions by recognising interconnected environmental and social challenges, building on community priorities and knowledge, and involving local stakeholders in designing context-appropriate responses. It also highlights how linking ecosystem protection with women's economic opportunities can strengthen conservation efforts and community ownership.

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STEP 4

Prioritising and selecting actions

Why is this important?

Not all identified adaptation actions will be equally feasible, impactful or cost-effective. Therefore, the identified actions should be screened to prioritise the most feasible and cost-effective options (EEA, 2024). It is critical to also ensure that the selection and prioritisation of NbS for adaptation reflect the needs, aspirations, and knowledge of diverse groups – especially those most affected by climate impacts and least represented in planning processes. In that sense, for truly participatory decision-making, differentiated power relations must be taken into account. This framework recommends conducting proactive outreach to women, Indigenous Peoples and other groups who may face barriers to participation and full engagement. How actions are prioritised can either reinforce existing inequalities, or serve as a lever for shifting power, strengthening the agency of marginalised groups by recognising their knowledge and needs.



Artisanal fisher, eastern coast, Sri Lanka © Sriyanie Miththapala

In this step, practitioners work alongside diverse community members and other actors – including local government and other decision-makers – to assess the potential actions from the long list developed in Step 3. Through participatory workshops, practitioners apply the methods described below to identify and prioritise a shortlist of actions for implementation. These selected actions are then reviewed to ensure their adherence to the core principles of this framework and to other benchmarks, such

as the IUCN Global Standard for NbS. They are assessed both for environmental and social risks ('do no harm') and for their potential to address structural gender and social inequalities ('do good').

In practice, this step typically follows four stages: (1) agree on prioritisation criteria and their relative importance with diverse community members and other actors in a participatory workshop, drawing an outline theory of change of how the project is expected to reduce climate risk (see Step 5); (2) score and rank the long-listed actions (multi-criteria analysis) and identify where they are most needed through spatial analysis; (3) review the resulting shortlist against the core principles, the inclusion questions and the environmental and social risks set out below; and (4) adjust or refine the design of the selected actions and confirm the final selection with community members and other actors.

BOX 11 •Key criteria to consider when prioritising actions

The longlist developed under Step 3 should also be reviewed to assess the following:

- **How well do the actions adhere to the framework's six core principles?**
- **How well do they align with or provide synergies to existing local, regional, or national plans, policies or processes?**
- **How well do the proposed actions provide equitable, sustainable and climate-resilient livelihood benefits to local communities?**
- **How well do they reflect local priorities, taking into account gender-differentiated access to and use of resources, decision-making roles, and exposure to climate risks?**
- **How do the actions interact with traditional gender roles or time use? For instance, disproportionate increases to women's labour or care burdens may limit the uptake, implementation or sustainability of certain actions.**
- **Where the site is affected by conflict or fragility, could the proposed nature-climate action create or exacerbate tensions or grievances between actors, and have measures been identified to mitigate these risks?**
- **To what extent do the actions challenge discriminatory norms or increase leadership and economic agency of marginalised groups?**

To prioritize and select actions, there are several methods and tools available. Decision analysis[3] (New et al., 2022), especially multi-criteria decision analysis[4], is commonly used for prioritisation in the sector (*inter alia*, Longato et al., 2023; Sarabi et al., 2023 and see also the section on available resources). Depending on the type of resources available to the project, a range of tools are possible (Aghaloo & Sharifi, 2025; Croeser et al., 2021; EEA, 2024; Emerton, 2017; GCA, 2025; Khan, 2023; New et al., 2022; Viti et al., 2023).

3 "Procedures or tools that may be used by decision-makers to help develop, analyse and contrast alternative actions/adaptations" (New et al., 2022)

4 This is a decision support tool used to compare options in an explicit, transparent way where a number of considerations are at play, often with different levels of importance (Croeser et al., 2021).

This framework recommends three complementary approaches to prioritise and select actions: participatory multi-criteria analysis, which helps decide which actions to implement; spatial vulnerability (hotspot) analysis, which helps decide where to implement them; and community-based participatory action research, which provides the participatory process through which both can be carried out, combining technical analysis with local knowledge to increase the acceptability and ownership of the selected actions.

1. In multi-criteria analysis (MCA), actions are evaluated against a set of defined criteria, resulting in a score for each action that reflects the amount of benefit the action would yield. One of the most important advantages of this approach for selecting actions is how a MCA allows for community priorities to be accounted for in the decision-making. A simplified form of cost-benefit analysis or cost-effectiveness analysis can be included within an MCA framework to account for the monetary aspect, but most criteria can be defined in partnership with community members and reflect the outcomes that are most important from their perspective. This is particularly important where the value of ecosystems and their services cannot be easily expressed in monetary terms. For example, participatory valuation and mapping can help capture the cultural, social and livelihood significance of natural resources, while community members can rank and score potential actions according to their perceived benefits and co-benefits. These approaches help ensure that a range of priorities is represented in the selection process, including those of groups whose values and perspectives may otherwise be overlooked.

   a. Equity and inclusion should be a criterion in its own right (for example, benefits for women and other under-represented groups), and an action that would worsen the situation of the most vulnerable groups should not be selected on the strength of high scores against other criteria. MCA should be carried out in one or more facilitated workshops with diverse local participants – differing in gender, age, ethnicity, socio-economic status and disability – so that the criteria, their weights and the scores reflect their priorities. More information on how to carry out a MCA can be found in Guideline 7B, which includes a worked example using a 1–5 scoring scale.

2. Spatial vulnerability (hotspot) analysis, using a geographic information system (GIS), builds on the spatially explicit vulnerability assessment undertaken in Step 2 to identify the geographic areas that are most vulnerable to climate risks. Step 2 identifies the geographic areas most vulnerable to climate risks. By overlaying different datasets on climatic, socioeconomic and ecological conditions using GIS software (e.g. ArcGIS or QGIS), practitioners can visualise areas of overlapping vulnerability and identify the ecosystems and community groups most in need of support. This can help determine both priority geographic areas and the interventions best suited to their specific conditions. Where GIS capacity is limited, participatory mapping (see Guideline 2) can assist in identifying vulnerable areas and incorporating local knowledge into spatial decision-making.

Spatial vulnerability analysis is less suited to determining which actions to implement and is therefore best used alongside MCA. As this analysis does not directly involve community members in selecting interventions, it is important that the criteria used to identify priority areas are clearly communicated to and validated by communities before the analysis is undertaken. Guideline 2 shows how this hotspot analysis can be undertaken.

3. Community-based participatory action research (PAR) is not a separate scoring method but the participatory process within which multi-criteria and spatial analysis can be carried out (Cornish et al., 2023). It enables community members – particularly women, youth, Indigenous Peoples and other marginalised groups – to act as co-researchers in identifying, testing and refining adaptation actions. Through participatory mapping, transect walks, focus groups, seasonal calendars and community-led field trials, participants combine local and traditional knowledge with scientific evidence to assess climate risks, ecosystem services, feasibility and likely benefits. Findings are collectively analysed and validated, allowing communities to rank options, adapt them to local conditions and agree responsibilities for implementation and learning. This strengthens agency, ownership and the long-term sustainability of selected actions.

Regardless of which selection process is used, community buy-in is essential. The final list of NbS for adaptation chosen for implementation should be co-designed and co-implemented with diverse community members – differing in gender, age, ethnicity, socio-economic status and disability – and other relevant actors, rather than only validating them. When interventions do not respond to community needs or reflect local priorities, particularly those of women, Indigenous Peoples and other marginalised groups, they are less likely to succeed or be sustained over time. Meaningful engagement from project inception through implementation is therefore essential to building transparency, fostering local ownership and ensuring that communities have a stake in both the project and its outcomes.

Critically, this prioritisation process must be inclusive, participatory and power-aware. These requirements apply to whichever method is used. For example, the below should be built into the MCA criteria and into the choice of spatial data layers.
The process must:

- Apply explicit GESI criteria, such as: “Who benefits?”, “Who participates?”, “Who might be left behind?”, and “What barriers are removed?”
- Be co-led by local actors, including women, youth, Indigenous Peoples and other rights-holders,ensuring that the tools used are culturally relevant and accessible, and allow space for local values, knowledge, and perceptions of risk.
- Avoid favouring actions simply because they are easier to implement or align with the preferences of dominant actors. Instead, prioritise actions that address structural vulnerabilities, particularly where climate risks intersect with social marginalisation, such as landlessness, political exclusion, and livelihood insecurity.

→ Ensure that the shortlist does not rely or focus exclusively on physical interventions, but also includes – or is accompanied by – actions that address the rules, incentives, governance arrangements and narratives driving ecosystem degradation and vulnerability. The selected actions should also reinforce one another, reflecting a "leverage points" perspective (Meadows, 1999; Abson et al., 2017).

! CONFLICT SENSITIVE

Box 12 • Conflict-sensitive prioritisation

Participatory decision-making should also consider how power imbalances and conflict dynamics affect safe and meaningful participation. In conflict-affected or fragile settings, additional prioritisation questions could be considered alongside the framework's existing criteria: whether relevant actors are meaningfully included; what risks might arise and how they could be mitigated; and which actions could reduce resource-related tensions while also building climate resilience (adapted from Rüttinger et al., 2023). Actions that provide shared benefits to groups dependent on the same resources may help reduce tensions. In Uganda's West Nile region, for example, a land-sharing and agroforestry model provided livelihood opportunities for refugees while increasing agricultural production and income for host-community farmers, helping to reduce competition over natural resources (Rüttinger et al., 2023).

Environmental and social risks should already be considered when the long list is developed (Step 3) and when the prioritisation criteria are set. Once a list of actions for implementation has been determined, these actions are formally screened for social and environmental risks (see Guideline 3 for a practitioner-oriented application of IUCN's Environmental and Social Management System), including adaptability to future climate risks.

Based on the risks identified and the answers to established prioritisation criteria, practitioners can then adjust the design of the selected actions to incorporate safeguards, clarify specific policy linkages, distribute labour and leadership responsibilities more equitably, and make other necessary changes. The aim is not simply to drop actions that perform poorly against one criterion, but to understand the trade-offs involved and design measures that avoid, minimise or compensate for them. Where a significant risk or negative trade-off cannot be adequately mitigated, the action should be redesigned or dropped.

By the end of this step, a shortlist of NbS for adaptation will have been prioritised, refined to incorporate safeguards, and agreed upon with diverse community members and other actors.

CHECKLIST FOR STEP 4 PRIORITISING AND SELECTING OPTIONS

		DONE	NOT DONE
1	An appropriate method for prioritising and selecting actions has been chosen, and the selection criteria – including explicit GESI criteria – have been agreed with diverse community members and other actors in participatory workshops.	○	○
2	The long list has been reduced to a shortlist of actions using the chosen method(s), and the locations where they are most needed have been identified.	○	○
3	The selected actions have been co-designed and agreed with diverse community members (differing in gender, age, ethnicity, socio-economic status and disability) and other actors.	○	○
4	The actions have each been assessed for adherence to the six core principles of this framework, and the design of each has been adjusted as needed.	○	○
5	The shortlist has been checked to ensure that it does not rely only on physical interventions but also addresses the governance arrangements, incentives and norms that drive vulnerability, and that the selected actions reinforce one another.	○	○
6	The actions have each been assessed for environmental and social risks, and the design of each has been adjusted as needed to incorporate safeguards; actions whose risks cannot be adequately mitigated have been redesigned or dropped. Appropriate indicators have been identified to be included in the MEL plan to monitor risks.	○	○



CASE STUDY

CONDUCTING PARTICIPATORY CLIMATE RISK AND GENDER ANALYSIS IN EL PEDREGAL, ECUADOR

Loreto del Pedregal and Santa Ana del Pedregal lie just south of Cotopaxi National Park in Mejía canton, Ecuador. The area comprises approximately 5,000 hectares of páramo and pasture that feed water systems serving Quito. Dairy farming is the main livelihood.



CREDIT: Andres Medina on Unsplash

FONAG, the Quito Water Fund, conducted a climate vulnerability and GESI assessment to identify the areas most vulnerable to climate change and determine which NbS for adaptation measures, incorporating a GESI perspective, would be most appropriate. The assessment followed the methodology set out in Ecuador's National Adaptation Plan: Level I, which involves the participatory assessment of climate risk by combining local perceptions, specialist knowledge and secondary geospatial data. Risk was estimated as hazard × exposure × vulnerability, with vulnerability expressed as sensitivity relative to adaptive capacity, and assessed across five categories. Four climate hazards – drought, intense rainfall, high temperatures and frost – were assessed for a historical baseline (1981–2015) and a future scenario (RCP 4.5, 2016–2040) using the national SPRACC system. Exposed elements included páramo and pasture, as well as water intakes, canals and storage tanks.

A distinguishing feature of the assessment was its integration of gender considerations into the analysis. Five variables – participation in decision-making, time use, division of labour, access to and control over resources, and gender roles in relation to climate risk – were used to assess sensitivity and adaptive capacity, rather than being considered separately. Evidence was gathered through three community workshops and structured interviews, supported by participatory exercises such as mapping the study area.

The findings highlighted important gender inequalities. Women carry out care work in addition to milking and small-livestock production. Declining milk yields and crop losses affect women particularly severely, as they have no independent sources of income outside agricultural production. Respiratory illnesses also increase during wetter periods, adding to women's care responsibilities.

The spatial analysis identified páramo and shrub vegetation as the areas facing the highest risk, while hazard levels increased across all four threats under the RCP 4.5 scenario. These findings, considered alongside the gender analysis, helped establish criteria for determining where and with whom to implement adaptation measures.

The initiative was supported by Fundación Futuro Latinoamericano (FFLA) and the Climate and Development Knowledge Network (CDKN), which provided small grants and technical support for the implementation of NbS for adaptation and GESI measures by water funds in Colombia, Ecuador and Peru.

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IMPORTANT RESOURCES AND TOOLS

Emerton, L. (2017). *Valuing the benefits, costs and impacts of ecosystem-based adaptation measures: A sourcebook of methods for decision-making.* German Corporation for International Cooperation (GIZ) GmbH. https://www.adaptationcommunity.net/wp-content/uploads/2017/12/EbA-Valuations-Sb_en_online.pdf

An excellent introduction to valuation for NbS for climate adaptation.

Amanuma, E., Fujii, M., Nakajima, K. and Hijioka, Y. (2024). Decision analysis for prioritizing climate change adaptation options: a systematic review. *Environmental Research Letters 19*: 083004. https://doi.org/10.1088/1748-9326/ad61fe .

Croeser, T., Garrard, G. Sharma, R., Ossola, A. and Bekessy, S. (2021). Choosing the right nature-based solutions to meet diverse urban challenges. Urban Forestry & Urban Greening 65: 127337. Available at https://doi.org/10.1016/j.ufug.2021.127337 (Accessed 23 March 25).

Describes multi-criteria decision analysis and shows how cities use this tool to prioritise NbS for adaptation.

Macharia, D., Kaijage, E., Kindberg, L., Koech, G., Ndungu, L., Wahome, A., & Mugo, R. (2020). Mapping climate vulnerability of river basin communities in Tanzania to inform resilience interventions. *Sustainability,* 12(10), 4102. https://doi.org/10.3390/su12104102

Uses GIS mapping to identify vulnerability hotspots to floods, using calculated data on exposure, sensitivity and adaptive capacity of communities living in two river basins in Tanzania.

CARE (n.d.). Gender-sensitive Climate Vulnerability and Capacity Analysis (GCVCA): Practitioners Guide. https://careclimatechange.org/gender-sensitive-climate-vulnerability-and-capacity-analysis/

Participatory tools for analysing climate vulnerability and capacity with a gender lens, useful for setting criteria and convening diverse groups for prioritisation.

Cornish, F., Breton, N., Moreno-Tabarez, U., Delgado, J., Rua, M., de-Graft Aikins, A., & Hodgetts, D. (2023). Participatory action research. *Nature Reviews Methods Primers*, 3, Article 34. https://doi.org/10.1038/s43586-023-00214-1

Meadows, D. H. (1999). Leverage points: Places to intervene in a system. *The Sustainability Institute.* https://donellameadows.org/wp-content/userfiles/Leverage_Points.pdf

Abson, D. J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., von Wehrden, H., Abernethy, P., Ives, C. D., Jager, N. W., & Lang, D. J. (2017). Leverage points for sustainability transformation. *Ambio*, 46(1), 30-39. https://doi.org/10.1007/s13280-016-0800-y

STEP 5

Monitoring, evaluation and learning (MEL)

Why is MEL important?

Monitoring, evaluation and learning (MEL) is a process that:

"continually tracks the progression of the effects of an intervention from the baseline to the target; allows for course correction and informs adaptive management, if an intervention is not as successful as expected; promotes transparency and accountability; encourages participation that leads to ownership of interventions; and often results in ownership of the project, leading to sustainability of actions beyond the lifetime of a project" (extracted from GIZ, IUCN and IISD, 2023).



Bee keeping in Rasuwa, Nepal © Alisa Rai

MEL is also a space for shared learning and dialogue among knowledge systems, and it is important in promoting accountability not only upwards to donors and governments but also to rights-holders. When communities take part in defining and tracking change, MEL builds ownership not only of the interventions but also of their outcomes.

Lessons learned during this step are critical for improving adaptation practice.

The purpose of MEL is to track progress throughout the duration of the project – and ideally beyond – and assess whether the expected outputs, outcomes and impacts are being achieved in line with the project's overall objectives, particularly its adaptation benefits (EEA, 2024). The MEL plan should establish regular checkpoints or milestones to measure progress and assess changes over time. This allows projects to assess the effectiveness of interventions throughout implementation and

adjust activities when they are not delivering the expected results. However, not all monitoring requires fixed targets. In NbS for adaptation, where outcomes are shaped by interacting ecological, social, and climatic processes, monitoring can also be learning-oriented, tracking processes, emerging and unintended outcomes, and the assumptions underpinning the theory of change. This supports adaptive management and informed decision-making as implementation progresses. For small, local projects, a simple baseline-to-target approach provides a minimum foundation. Where capacity allows, this can be complemented by complexity-aware approaches, such as developmental evaluation, outcome harvesting, or the Most Significant Change technique.

Although MEL is presented here as Step 5, it does not begin only once the design is complete. Its foundations are laid in the earlier steps – baselines in Step 1, the analysis of climate risks and vulnerabilities in Step 2, and the objectives and selection criteria agreed with communities in Steps 3 and 4 – and the choices made in those steps, such as how participatory the design is and how complex the expected pathways of change are, shape what MEL needs to do. Step 5 brings these elements together into a coherent MEL system before implementation starts; MEL then informs decisions throughout implementation (Step 6).

The actions taken during this step are needed before implementation can begin.

1. Establish a theory of change (see Guideline 8). This framework recommends that monitoring, learning, and evaluation be based on a *theory of change* approach, in which pathways of change link interventions to defined outputs, outcomes, and expected impacts. The theory of change captures short- and long-term impacts and clearly demonstrates how the project feeds into national plans, policies, and processes, ultimately contributing to global goals, such as the Global Goal on Adaptation (GGA) and the Sustainable Development Goals (SDGs).
   An initial theory of change – linking the climate risks identified in Step 2 to the intended adaptation outcomes – should be co-developed with community members during Steps 3 and 4 to inform the prioritisation of actions. In this step, the theory of change is further refined and completed, with relevant indicators defined to track progress. It should then be revisited regularly throughout implementation to test its underlying assumptions and updated where evidence indicates that the anticipated pathways of change are not materialising.

   The theory of change should build on the stakeholder and rights analysis carried out in Step 1 (see Guideline 1). Intermediate outcomes should capture changes in actors' capacities and behaviours—including the ability of rights-holders to exercise their rights and participate in decision-making, and of duty-bearers to fulfil their obligations—alongside changes in ecosystem condition, as healthy ecosystems underpin the realisation of many of these rights (UNGA, 2022). Where donors require a logical framework (logframe), it can be derived from the theory of change as an operational summary of outputs, outcomes, indicators and critical assumptions.

CONFLICT SENSITIVE

BOX 13 • Integrating conflict sensitivity into the theory of change

In conflict-affected or fragile settings, the theory of change should explain how the proposed nature-climate action will build resilience while avoiding or reducing tensions and, where possible, strengthening social cohesion. This could include the expected pathways through which the action may influence resource competition, intergroup relations and trust in governance arrangements (adapted from Rüttinger et al., 2023). Practitioners could draw on tools such as the Reflecting on Peace Practice Matrix (CDA Collaborative Learning Projects, 2016) to assess how proposed activities contribute to peace outcomes, including through changes at individual and sociopolitical levels.

2. Assign indicators to each element of the theory of change (see Guidelines 8 and 8A). For every intervention, action, or activity implemented, progress is measured using indicators tied to specific targets. These indicators will include output, short- and long-term outcome, and impact indicators. In some cases, measuring changes directly may not be possible or reasonable. For example, the impacts of ecosystem restoration may not become measurable within a project's lifetime, as restored ecosystems can take decades to develop the functionality and complexity needed to deliver ecosystem services at full capacity. In such cases, indirect indicators,including proxy and modelled indicators (see Figure 16), can help assess progress towards longer-term outcomes. For instance, mangrove survival rates and canopy cover can serve as proxies for future coastal protection, while the extent of riparian vegetation can indicate potential reductions in riverbank erosion. Modelled indicators, such as IUCN's Species Threat Abatement and Restoration (STAR) metric, can also estimate contributions to reducing species extinction risk. Guideline 8A provides further practical examples. As implementation progresses, the indicator set may need to be refined to reflect emerging evidence and lessons learned, provided any changes are clearly documented and justified.

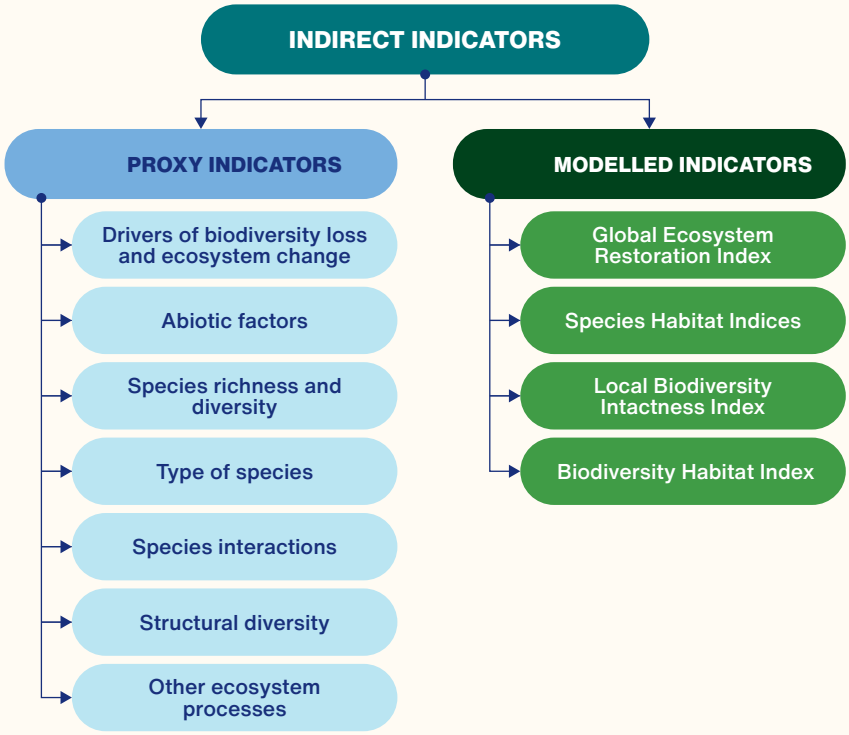


FIGURE 16 • The two types of indirect indicators and their subcategories

Sources: adapted from the attributes listed in McDonald et al., 2019; Harris et al., 2021; Parkyn et al. 2010

CONFLICT SENSITIVE

BOX 14 • Conflict-sensitive indicators

In conflict-affect or fragile settings, indicators should consider three dimensions: environment and climate (e.g. resource conditions); peace and security (e.g. dispute resolution, intergroup trust and perceptions of fairness); and development and livelihoods (e.g. resource access and income, disaggregated by group) (Rüttinger et al., 2023). Peace and security indicators should be context-specific, informed by conflict analysis and, where appropriate, draw on established peace effectiveness criteria (CDA Collaborative Learning, n.d.). These include improved intergroup relations, community-led peace initiatives, resistance to violence, increased security and strengthened mechanisms for addressing grievances. Indirect or proxy indicators may be necessary where direct data collection poses risks to communities or staff. Unintended impacts should also be captured through ongoing monitoring, community engagement and feedback and grievance mechanisms. For further guidance on developing conflict-sensitive indicators, practitioners can refer to UNEP (2022b).

Proxy indicators are used when direct metrics cannot be used or are difficult to achieve. They depend on a correlation between the factor that is intended to be captured and the factor that is actually measured, or the 'proxy' (Harris et al., 2021). They are particularly useful for assessing complex outcomes, such as biodiversity conservation and climate adaptation, that may be difficult to measure directly. The assumed relationship between each proxy indicator and the outcome it represents should be explicitly documented in the MEL plan to ensure that results are interpreted appropriately within the local context and over time.

Modelled indicators are metrics for which many types of data – such as known geographical ranges of species, threats, extinction risks, and climate data such as rainfall and temperature – are combined and modelled to generate a single metric that can be used as an indicator.

It is important to note that modelled indicators depend entirely on the data on which they are built, including the resolution of the data used. A modelled indicator based on data with a grid size of 50 km^2 may not be applicable to a local adaptation project.

In many cases, baseline values for the indicators in the Theory of Change will have been collected during Step 1 of the project cycle. For any indicators not covered by the initial data collection, baselines should be established before implementation begins.

3. Establish a MEL plan (see Guideline 8).
A MEL plan is established in this step because monitoring should begin as soon as implementation begins. The MEL plan entails assigning responsibilities for collecting data and conducting analyses, as well as clearly outlining the methodology for and frequency of data collection. Engaging community members in monitoring, with appropriate capacity-building support where needed, can strengthen local ownership of interventions and their outcomes, while laying the foundation for their long-term sustainability. The MEL plan should be co-developed with community members and other actors – including deciding what is measured, by whom, and how the results are interpreted – rather than designed by the project team and presented for approval.

The MEL plan should also establish the frequency of evaluations, accounting for both external evaluations required by donors and the more frequent internal evaluations recommended by this framework. Internal evaluations should meaningfully engage diverse rights-holders, including women and youth, and play a central role in informing adaptive management. For most projects, evaluation will involve relatively simple before-and-after comparisons to assess progress from baseline values towards established targets. More rigorous approaches, such as experimental designs with control groups and randomised controlled trials, may also be used but are often beyond the scope or capacity of adaptation and resilience projects.

The MEL plan should also include a dedicated learning component. This includes a small number of learning questions agreed with partners and communities and regular reflection workshops in which monitoring results are discussed and decisions on adjusting the interventions are taken (adaptive management, Step 6). These short learning cycles – plan, act, observe, reflect – are similar to the improvement cycles used in other fields, such as public health. Lessons should be documented and shared.

Finally, the MEL plan should anticipate what happens after the project ends. Many outcomes of NbS for adaptation (e.g.whether planted mangroves survive and go on to provide coastal protection)only become apparent years later. Institutions with long-term mandates, such as local governments, community-based organisations or protected-area authorities, should be identified early and engaged in monitoring. The MEL plan should also track the sustainability of interventions through indicators such as skills transfer, secured financing for maintenance and the viability of local revenue models.

4. Develop an internal feedback and grievance redress mechanism (see Guideline 9). The internal feedback and grievance redress mechanism forms a part of internal evaluation and serves as a key safeguard against unintended, harmful impacts from the project. The mechanism includes regular, scheduled checkpoints, as well as open reporting lines through which community members, rightsholders, and other stakeholders can share their experiences with and perceptions of intervention implementation and impact. Use of both oral and written reporting and availability of multiple channels are among the key accessibility considerations for the mechanism. Similar to the communication plan, the mechanism operates across the whole project cycle and is closely linked to the safeguards set out in Principles 3 and 4 and in Guideline 3. It is established in this step because it must be in place before implementation begins.

! CONFLICT SENSITIVE

BOX 15 • Conflict-sensitive feedback and grievance mechanisms

In conflict-affected or fragile settings, feedback and grievance mechanisms should be accessible to and trusted by all parties, including through confidential or anonymous reporting channels. Clear procedures should be established for assessing and resolving conflict-related grievances, or referring them to appropriate bodies where they fall outside the project's mandate. Where resolution or referral is not possible, the project should communicate transparently about its limitations. This is consistent with the do-no-harm principle (UNSDG, 2022). For further guidance on dispute-resolution mechanisms in conflict-affected and fragile settings, refer to GEF (2024).

5. Develop a communication plan (see Guideline 8).
A communication plan allows projects to share messages, updates, progress, results and lessons learned with key stakeholders. For instance, informing actors in local and national governments of the project's objectives is often critical not only for generating the support of authorities, but also to feed into planning and implementation of local, national, and global targets. Sharing information on outputs and results with all actors also promotes transparency and contributes to building community agency and ownership over the project. The plan details how and when the project communicates with various actors, understanding that outreach methods must be tailored to the particular audience. Decisions about communication languages, formats, channels, and timing are particularly important for ensuring the meaningful inclusion of women, youth, persons with disabilities, and Indigenous Peoples, whose communication needs and preferences are often overlooked in favour of those of groups perceived as "primary" stakeholders.The communication plan is built on data collected during the stakeholder analysis and gender analysis in Step 1.

Box 16 • A reminder about co-creation

It is essential that these indicators and frameworks are co-defined with a diverse range of actors, including local communities, rights-holders, and trusted partners, to ensure that they reflect lived realities, local priorities, and power dynamics. MEL should be collaborative processes that enable diverse actors to shape not only what is measured, but also whose knowledge is valued and who benefits from the findings. Practical approaches include community-led participatory monitoring, community scorecards, the Most Significant Change technique, and joint reflection workshops (see Guideline 8).

By the end of this step, a comprehensive MEL plan should be in place, including baselines, targets, and output, outcome, and impact indicators for each prioritised intervention (including proxy indicators where needed); a theory of change to guide progress assessment; learning questions; arrangements for monitoring beyond the project's lifetime; and a feedback and grievance redress mechanism to inform internal evaluation. A communication plan covering the full project cycle should also have been developed.

CHECKLIST FOR STEP 5 MONITORING, EVALUATION AND LEARNING (MEL)

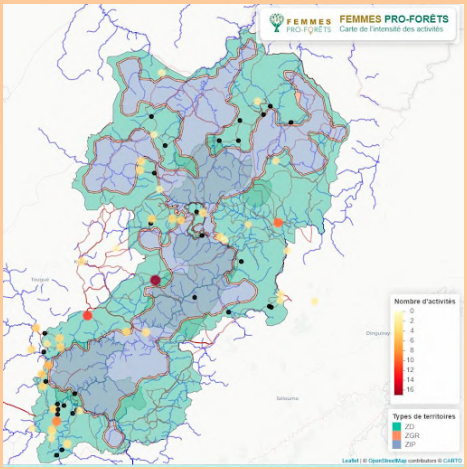
		DONE	NOT DONE
1	A goal has been formulated.	○	○
2	Baseline data are available for each indicator (from Step 1 or newly collected).	○	○
3	Targets are set for each indicator and agreed with community members and other actors.	○	○
4	A theory of change (with actions, outputs, short-term and long-term outcomes and impact, national mainstreaming and global contribution) is completed with community members and other actors, building on the outline developed during Steps 3 and 4, with its assumptions made explicit.	○	○
5	Output, short- and long-term outcome and impact indicators (including proxy indicators, with the assumed relationship to the factor they represent stated) are defined, together with any learning-oriented monitoring needed to track progress towards outcomes and impacts.	○	○
6	A plan for monitoring, evaluation and learning – with learning questions, regular reflection workshops and arrangements for monitoring beyond the project – is elaborated with community members.	○	○
7	An internal feedback and grievance redress mechanism is established and feeds into the internal evaluation process.	○	○
8	A communication plan is laid out, with appropriate outreach methods for the different actors.	○	○



CASE STUDY

APPLYING OF THE SEAR FRAMEWORK TO THE FPROF PROJECT IN MOYEN BAFING NATIONAL PARK (GUINEA)

As part of the Femmes Pro-Forêts project, implemented in the Moyen-Bafing National Park (PNMB), the SEAR approach was implemented following a framework based on rights, stakeholder systems and adaptive learning.



Activity maps for the Femmes Pro-Forêts project. representatives in Benin's sacred forests.

CREDIT: UPA DI

The process began by identifying women and young women as the primary rights-holders. The ultimate intended outcome (the sustainable improvement of their resilience to climate change) was operationalised through the Climate Change Adaptation Index (CCAI), which measures the biophysical, socio-economic and socio-political dimensions of women's vulnerability.

A stakeholder mapping exercise then identified those with obligations and responsibilities, which served as the basis for the Theory of Change and the project's logic model. The logic model was structured around three complementary pillars: adaptation to climate change and ecosystem restoration; agricultural organisation and the development of sustainable income-generating activities; and strengthening women's leadership and their role in more inclusive governance. A cross-cutting strategy for environmental awareness and gender equality underpinned all interventions.

The SEAR framework combined biophysical, socio-economic and institutional indicators with geospatial tools to pinpoint interventions, monitor restored areas and cross-reference this information with priority areas for biodiversity. This spatial analysis helped to direct investments towards sectors with the greatest potential impact on adaptation, conservation and livelihoods.

Finally, learning and sustainability were rapidly integrated through participatory reflection and knowledge-sharing exercises to inform the adaptive management of the interventions. The sustainability strategy also relied on institutional embedding of the achievements, notably through collaborations with the Ministry of Education, the Guinean of National Parks and Wildlife Reserves (OGPNRF) and the Ministry of the Environment and Sustainable Development (MEDD).



CASE STUDY

CREATING SAFE SPACES FOR KNOWLEDGE SHARING, DECISION MAKING AND INCLUSIVE FOREST GOVERNANCE IN BENIN

Through the project Revalorization of Biodiversity Based on African Traditional Knowledge in Central Benin, Survie de la Mère et l'Enfant is demonstrating how trusted spaces for dialogue can strengthen inclusive forest governance as a measure to build resilience to climate and other drivers of change.



Native tree planting by local communities and government representatives in Benin's sacred forests.

CREDIT: Image courtesy of Survie de la Mère et l'Enfant

By connecting communities, spiritual leaders, researchers, government, women, and youth through knowledge co-production platforms, solutions to forest management challenges are being co-developed while bridging different knowledge systems and experiences to jointly identify key social and environmental risks facing communities.

These dialogues, which were previously confined to sacred settings, have strengthened trust between diverse actors, increasing recognition of Indigenous approaches to conservation. In 2025, government officials formally recognised the value of Indigenous forest protection practices of sacred forests and committed to advancing their integration into legislation and biodiversity policies.

The project promotes learning and accountability through community forest management committees, community feedback sessions, and multi-stakeholder steering committees. These mechanisms ensure that local knowledge continuously informs restoration and governance, while allowing communities to see how their inputs influence outcomes. This sustained engagement is contributing to the integration of sacred forest management systems into municipal planning processes.

Gender equality and social inclusion (GESI) have been pivotal in the project's approach. A GESI analysis informed reforms to community forest management committees, expanding membership from 5–7 to 9–15 members and increasing representation of women, young people, and persons with disabilities. Capacity strengthening and peer-learning initiatives have also helped marginalised groups move beyond participation to play a more active role in forest governance.

"The objective is simply that through our forest management committees, we have total inclusion. It's a strong objective! For women, young people, people living with disabilit[ies]y to participate, they have to be empowered. It's not merely that they're physically present."

— Franck Adanmado, Survie de la Mère et l'Enfant

This experience demonstrates that safe dialogue spaces, continuous knowledge exchange, and intentional inclusion can create more equitable, adaptive, and sustainable forest governance systems.

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STEP 6

Implementing nature–climate actions

Why is this important?

This is the step in which the analysis and plans developed in previous steps are put into action and in which the climate risks and vulnerabilities identified by communities and the project in Step 2 are actually addressed through NbS for adaptation.



Digging contour trenches to reduce floods, Uganda © IUCN

An action plan is developed in this step to guide project interventions (see Guideline 10). The action plan establishes a clear timeline of milestones and deadlines for interventions and also helps to concretize the project's adherence to the six core principles of this framework. Namely, the action plan defines roles and responsibilities and allocates resources among stakeholders and rightsholders to ensure that leadership and benefits are equitably distributed among community groups, and that community actors and local organisations are equipped to lead, implement and monitor interventions. Key roles may include, for example, the formalization of male champions and allies who commit to supporting women's participation and challenge restrictive gender norms. The action plan should also address the health and safety of workers and community members involved in implementation – for example during earthworks, planting in tidal areas or work on steep slopes – including appropriate equipment, training and procedures, in line with the project's environmental and social risk management measures (see Guideline 3).

Once formulated, the action plan is implemented alongside the MEL plan, including the internal feedback and grievance redress mechanism, and the communication plan. These plans are designed to feed into one another: this framework depends on a feedback loop of experiential learning and adaptive management. Monitoring and evaluation show which interventions are succeeding; successes underpinned by monitoring results can be shared as good practices and promoted for replication in

appropriate contexts nationally, regionally and globally, contributing to the scaling up of NbS for adaptation. Monitoring and evaluation also allow for the detection of interventions that are not as successful as expected or that lead to unanticipated, unwanted outcomes. Monitoring should also look beyond the project itself to changes in its wider context – such as extreme weather events, shifts in government policy, new infrastructure developments or changes in markets and land use – that may require interventions to be adapted, added or discontinued. Actions can then be revised, constituting a return to the design process under Step 4. In some cases, it may be necessary to revisit premises established from the results of data analysis in Steps 1 and 2. This adaptive management process generates lessons learned that can be shared with relevant actors identified in the communication plan, such as key government personnel and the global adaptation community of practice.

CONFLICT SENSITIVE

BOX 17 • Conflict-sensitive implementation

In conflict-affected or fragile settings, the action plan should identify measures to minimise conflict risks, including transparent and equitable allocation of paid and unpaid roles and procurement (particularly for livelihood activities such as ecotourism activities or seed supply), secure land tenure arrangements (particularly for Indigenous Peoples and groups with customary rights), and engagement with local peacebuilding or dispute-resolution structures alongside traditional and religious leaders (GEF, 2024; GEF IEO, 2024).

Implementation can also provide opportunities to rebuild relationships and strengthen cooperation between groups, rather than only avoiding harm. The NAbSA-supported Lake Chad Basin Conservation Project, or PCBLT, combines fenced grazing enclosures to reduce farmer-herder conflicts with community-led mediation of resource disputes (Alinea, 2025). Similarly, initiatives in Sudan and Nepal have used joint natural resource management, livelihood and disaster-risk-reduction activities to rebuild trust between groups previously affected by tensions (UNEP, 2022a)

Changes in local conflict dynamics during implementation should also trigger adaptive management, including, where necessary, returning to Step 2 to reassess the situation. Monitoring should capture unintended impacts on intergroup relations and social or gender norms, informed by ongoing updates to the peace and conflict analysis. The action plan should establish clear triggers for reassessment, responsibilities for monitoring and reporting, and decision-making authority for implementing course corrections.

Adaptive management operates at more than one level (Pahl-Wostl, 2009). Single-loop learning adjusts actions when they do not produce the expected results. Double-loop learning questions the assumptions in the theory of change and in the project's plan of action, and revises them where the evidence shows that they do not hold. Triple-loop learning reflects on the underlying values, governance arrangements and power relations that frame the project's goals. Longer-term or more complex projects should plan for periodic reflection at all three levels – for example, through annual reflection workshops with community members and partners that revisit the theory of change.

This step of implementation catalyses adaptive management and returns to the previous steps of the cycle as needed. At the end of this step, the outcomes of interventions will be observed and results will be analysed and communicated.

CHECKLIST FOR STEP 6 IMPLEMENTING NATURE–CLIMATE ACTIONS

		DONE	NOT DONE
1	An action plan for the identified NbS for adaptation at the site is developed with community members and partners (see Guideline 10), specifying for each action the activities and milestones, timeline, roles and responsibilities, budget and resources, risks and safeguards, and health and safety measures.	○	○
2	The action plan is implemented alongside the MEL plan, including the feedback and grievance redress mechanism, to track progress, and the communication plan to share results.	○	○
3	Adaptive management is performed, where interventions that are not as successful are adjusted, new actions are developed as needed, and appropriate indicators are defined.	○	○
4	Periodic reflection workshops with community members and partners review not only the actions but also the assumptions in the theory of change and changes in the external context (e.g. extreme events, policy changes, new developments).	○	○
5	Progress is regularly communicated to relevant stakeholders, in accordance with the communication plan.	○	○



CASE STUDY

EVIDENCING LOCALLY LED, ECOSYSTEM-BASED ADAPTATION[9] IN NICARAGUA

To strengthen evidence on adaptation outcomes and address accountability challenges in both the conservation and climate adaptation sectors, Fauna & Flora, in collaboration with IIED, developed an integrated EbA-LLA assessment tool.



Martín Moisés Ampié Chávez removes weeds by hand in his agroecological rice plot in La Concha community, Moyogalpa, Ometepe Island, Rivas Department, Nicaragua.

CREDIT: Naiot Espinoza / Fauna & Flora / Cartier For Nature / Fairpicture

The tool combines environmental, social and climate dimensions that are fundamental to effective adaptation, bringing together the well-established Ecosystem-based Adaptation (EbA) framework and the Principles for Locally Led Adaptation (LLA). The resulting EbA-LLA tool supports the design of ecosystem-based adaptation initiatives with a strong locally led focus, while also providing a practical way to assess progress against both EbA and LLA principles.

In June 2024, the tool was piloted within Fauna & Flora's climate adaptation project on Ometepe Island, Nicaragua, in partnership with Biometepe, a long-standing local cooperative organisation.

For more than a decade, Fauna & Flora and Biometepe have worked with almost 500 farming households, representing approximately 15% of Ometepe's farmers, to strengthen resilience through agroecological and ecosystem restoration practices. These include crop diversification and rotation, forest protection and restoration, live fences, improved soil management through bio-inputs, and the elimination of burning practices. Previous assessments found that 95% of participating farmers reported reduced vulnerability to climate and economic shocks as a result of these interventions.

This case study highlights the added value of integrating ecosystem-based and locally led adaptation approaches to deliver stronger outcomes for people, nature and climate. It also demonstrates the important role of trusted intermediaries, selected by local actors, in bridging local, national and international levels, facilitating access to finance, and supporting more inclusive decision-making processes.

The assessment also reinforced that long-term sustainability depends on strengthening local capacities and institutions. In response to locally

5 Ecosystem-based adaptation (EbA) is “the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change” (CBD, 2009). It is an NbS approach that specifically targets climate change adaptation. In this framework, the term ‘NbS for adaptation’ is used throughout to refer to EbA and related ecosystem-based approaches (e.g. ecosystem-based disaster risk reduction or Eco-DRR) whose primary purpose is to reduce the vulnerability of people and ecosystems to climate change while delivering biodiversity and socio-economic co-benefits.

identified needs by the cooperative and the farmers, Fauna & Flora and Biometepe have enhanced capacity development on topics such as financial and grant management, climate literacy, monitoring and evaluation, and agroecological practices.

A further key lesson is that adaptation is most effective when it draws on both scientific evidence and local knowledge. While climate science provides essential information on current and future risks, participatory processes that incorporate local knowledge and lived experience, including those of marginalised groups, enable the co-design of adaptation measures that are both technically robust and locally appropriate.



CASE STUDY

LINKING INDIGENOUS AND SCIENTIFIC KNOWLEDGE ON SEED CONSERVATION AND MANAGEMENT THROUGH COMMUNITY-BASED PARTICIPATORY ACTION RESEARCH IN MOZAMBIQUE

Across Africa, climate change is placing growing pressure on food systems. Rising temperatures, erratic rainfall and more frequent extreme weather events are making it harder for small-scale farmers to produce food, while biodiversity loss, environmental degradation and dependence on commercial agricultural inputs are increasing social-ecological vulnerability.



Local fair in the Macoca community, where producers (mostly women) present different varieties of local seeds and their uses.

CREDIT: Micaia Foundation

In Manica Province, Mozambique, the spread of commercial seed varieties has eroded local seed diversity and weakened resilience by displacing crops better adapted to local conditions and increasing dependence on external inputs and chemically intensive systems. In response, Micaia Foundation, in collaboration with the University of Zambezi, is enhancing locally-anchored seed systems through knowledge co-creation that integrates Indigenous and scientific approaches to seed conservation and management. Using a Training of Trainers model, community representatives lead and scale these practices, strengthening local ownership and embedding both technical solutions and Indigenous knowledge to safeguard culturally and ecologically significant seed varieties. For example, farmers use techniques such as flotation tests to assess seed viability, germination trials and low-cost storage methods using locally available materials, including ash, plant leaves and repurposed PET bottles as hermetic containers.

Traditional Agricultural Knowledge Fairs are used to exhibit local seed varieties and showcase various farming techniques. These fairs strengthen recognition of local knowledge, reinforce community pride, and stimulate intergenerational dialogue, contributing to the revitalisation of production systems adapted to local ecological conditions.

Participatory seed mapping, in collaboration with the Mozambique Agricultural Research Institute, is enabling communities to reclaim agency over agricultural knowledge by identifying existing and lost seed varieties and assessing their social, economic, and nutritional value. By centring community priorities – especially those of women and young people – and Indigenous knowledge in decision-making, restoration and farming practices are increasingly aligned with local realities. Communities also lead the selection of priority species for restoring springs and riverbanks, directly addressing water scarcity while ensuring that ecosystem restoration efforts are locally relevant, climate-responsive, and sustainable.

“We have already lost a lot of local genetic heritage due to the lack of appreciation and promotion of this knowledge. Now our objective is to understand the importance of genetic sovereignty and sustainability, based on the principle that the best seed conservation technology lies in the use of seeds with resilient genetics and adapted to local conditions.” – Hosia Mavoto, Micaia Foundation

This approach by Micaia Foundation to enhance seed sovereignty is coupled by their work on supporting an inclusive women-led baobab fruit value chain in northern Mozambique, where they have created a reliable market that engages thousands of rural women as suppliers and provides opportunities for skills development, literacy, leadership, and collective organisation

By moving baobab harvesting from an informal activity to a formal commercial value chain with international reach, the initiative has helped increase women's access to and control over income, while strengthening their participation in household and community decision-making. Their climate resilience has also been enhanced by providing a drought-resilient source of livelihood and promoting sustainable harvesting and forest management practices that support long-term environmental sustainability.

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Glossary

A

Actor
Actor is a general term used for both stakeholders and rightsholders (adapted from Booker and Franks, 2019).

Adaptation services
"Adaptation services are ecosystem services that are useful in terms of climate resilience, for example, freshwater supply, flood control and protection against storm surges" (Jiménez Hernández, 2016).

Adaptive capacity
"The ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences" (MEA, 2005).

Assisted natural regeneration (ANR)
Assisted natural regeneration (ANR) is a "cost-effective restoration method that enhances productivity and ecosystem functions of degraded lands by facilitating natural successional processes. ANR involves interventions to overcome barriers to natural regeneration such as soil degradation and competition with weedy species. It is a growing field in restoration science with successful applications globally, offering a range of interventions to achieve various restoration goals and policy objectives" (FAO, n.d.-a)

Assumption
An assumption is a "belief that is accepted as true or taken for granted in defining the causal links in the causal pathway. Assumptions are sometimes called "preconditions" (assumptions about things that must be in place for the link to work, such as good governance or education levels) or "hypotheses" (assumptions that are plausible but unproven). More generally, assumptions may also involve complementary activities by other actors, as well as internal and external risks, opportunities, barriers and enablers" (Stafford Smith, 2020).

B

Biodiversity
Biodiversity is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD, 2011).

Bioremediation
"Bioremediation is the use of microbes to clean up contaminated soil and groundwater. Microbes are very small organisms, such as bacteria, that live naturally in the environment. Bioremediation stimulates the growth of certain microbes that use contaminants as a source of food and energy. Contaminants treated using bioremediation include oil and other petroleum products, solvents and pesticides" (US EPA, 2021)

B

Carbon sink
"A reservoir (natural or human, in soil, ocean, and plants) where a greenhouse gas, an aerosol or a precursor of a greenhouse gas is stored" (IPCC, 2018).

Carbon source
"Any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere'(IPCC, 2022).

C

Causal pathway
Causal pathway is a "backward mapping from an intervention goal through all the long- and short-term outcomes, to the outputs needed to achieve it, identifying a logical arrangement of "causal links" between them" (Stafford Smith, 2020).

Climate change
Climate change is "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use" (IPCC, 2022).

Climate change adaptation
"In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate" (IPCC, 2022).

Climate proofing
Climate proofing is "identifying risks to a . . . project . . . as a consequence of climate variability and change, and ensuring that those risks are reduced to acceptable levels through long-lasting and environmentally sound, economically viable, and socially acceptable changes implemented at one or more of the following stages in the project cycle: planning, design [and implementation]" (ADB, 2005).

Climate-smart agriculture (CSA)
Climate-smart agriculture "is a set of agricultural practices and technologies which simultaneously boost productivity, enhance resilience and reduce GHG emissions. Although it is built on existing agricultural knowledge, technologies, and sustainability principles, CSA is distinct in several ways. First, it has an explicit focus on addressing climate change in the agrifood system. Second, CSA systematically considers the synergies and tradeoffs that exist between productivity, adaptation, and mitigation. And third, CSA encompasses a range of practices and technologies

C · that are tailored to specific agro-ecological conditions and socio-economic contexts including the adoption of climate-resilient crop varieties, conservation agriculture techniques, agroforestry, precision farming, water management strategies, and improved livestock management" (World Bank, n.d.-a)

Co-benefits

Co-benefits refers to "the positive effects that a policy or measure aimed at one objective might have on other objectives, without yet evaluating the net effect on overall social welfare. Co-benefits are often subject to uncertainty and depend on local circumstances and implementation practices, among other factors" (IPCC, 2022).

Co-creation

Co-creation is the "active flow of information and ideas among five sectors of society: government, academia, business, non-profits and citizens . . . which allows for participation, engagement, and empowerment in, developing policy, creating programs, improving services, and tackling systemic change with each dimension of society represented from the beginning" (Agusti et al., 2014).

Customary laws

Customary laws are "a set of customs, practices and beliefs that are accepted as obligatory rules of conduct by Indigenous peoples and local communities. Customary law forms an intrinsic part of their social and economic systems and way of life. . . [Consisting of] it consists of a group of customs that are recognized and shared collectively by a community, people, tribe, ethnic or religious group" (WIPO, 2023).

D · **Decision-maker**

A decision-maker is an actor "who is known or primarily responsible for making decisions" (Merriam-Webster, n.d.).

Direct anthropogenic drivers of change

Direct anthropogenic drivers are "those that are the result of human decisions, namely, of institutions and governance systems and other indirect drivers. Anthropogenic drivers include habitat conversion, e.g., degradation of land and aquatic habitats, deforestation and afforestation, exploitation of wild populations, climate change, pollution of soil, water and air and species introductions" (IPBES, 2019).

Drivers of change

Drivers of change refer to "all those external factors that affect nature, and, as a consequence, also affect the supply of nature's contributions to people" (IPBES, 2019).

D · **Do no harm**

The principle of do no harm "ensures the process is focused on the safety and well-being of survivors and all those providing support. Because seeking help may increase the risk of harm in contexts where GBV is normalised, those providing support must clearly inform survivors of potential risks and help them create strategies to mitigate them" (IUCN, 2025b).

E · **Ecological connectivity**

"The unimpeded movement of species, connection of habitats without hindrance, and the flow of natural processes that sustain life on Earth" (CMS, 2024).

Ecological integrity

Ecological integrity is "an ecosystem's capacity to maintain its characteristic composition, structure, functioning and self-organization over time within a natural range of variability" (FAO, 2024).

Ecological restoration

Ecological restoration is the "process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed" (SER, 2004). It is "distinct from restoration ecology, the transdisciplinary science that supports the practice of ecological restoration and other forms of environmental repair in seeking the recovery of native ecosystems and ecosystem integrity" (Gann et al., 2026).

Ecosystem restoration

"This is the process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity. Ecosystem restoration encompasses a wide continuum of practices, depending on local conditions and societal choice" (UNEP, 2021). The practices include reduction of negative impacts, remediation, rehabilitation and ecological restoration. The continuum is called a Restorative Continuum.

Ecosystem-based adaptation (EbA)

Ecosystem-based Adaptation elements "reflect the 2009 CBD definition for EbA which says that EbA (i) helps people adapt to climate change (ii) by an active use of biodiversity and ecosystem services, (iii) in the context of an overall adaptation strategy. All three elements of the CBD definition must be addressed in order for an activity, initiative, project, approach, strategy and/or measure to qualify as ecosystem-based adaptation" (FEBA, 2017).

Ecosystem complexity

Ecosystem complexity is "the amount of ecological information required to describe a metric or attribute of an ecosystem" (Moreno-Mateos et al, 2020).

Ecosystem functioning

"Ecosystem functioning includes many processes such as biomass production, trophic transfer through plants and animals, nutrient cycling, water dynamics and heat transfer" (IPBES, n.d.-c).

E · Ecosystem services

"Ecosystem services are the benefits people obtain from ecosystems" (MEA, 2005). These are commonly grouped as provisioning (for example, food, water), regulating (for example, flood control or climate regulation), supporting (for example, nutrient cycling), and cultural (for example, spiritual or recreational services) (adapted from MEA, 2005).

Endemic species

Endemic species are "plants and animals that exist only in one geographic region" (IPBES, n.d.-d)

Exposure

Exposure is the "presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected" (IPCC, 2022).

F · Focus group discussions (FDGs)

Focus group discussions are "facilitated discussions, held with a small group of people who have specialist knowledge or interest in a particular topic. They are used to find out the perceptions and attitudes of a defined group of people. Focus group discussions can be applied at any stage of the project or programme cycle from design through to evaluation." (INTRAC, 2017).

Free, prior and informed consent (FPIC)

Free, prior and informed consent is "a specific right that pertains to Indigenous Peoples and is recognized in the UNDRIP. It allows them to give or withhold consent to a project that may affect them or their territories. Once they have given their consent, they can withdraw it at any stage. Furthermore, FPIC enables them to negotiate the conditions under which the project will be designed, implemented, monitored and evaluated" (FAO, 2016).

G · Gender-based violence

Gender-based violence is violence that "results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life" (UNGA, 1993).

Gender blind

The "failure to recognise that the roles and responsibilities of women/girls and men/boys are ascribed to, or imposed upon, them in specific social, cultural, economic and political contexts...Gender-blind projects, programmes, policies and attitudes do not take into account these different roles and diverse needs. They therefore maintain the status quo and will not help transform the unequal structure of gender relations" (EIGE, 2016a).

Gender diversity

Gender diversity recognises that there are "gender identities and expressions that fall between masculine and feminine or outside the gender binary. Gender identity can change over time" (GIZ, 2019).

G · Gender equality

Gender equality is "the state in which all people, regardless of their gender, have equal rights, freedoms, conditions and opportunities. It does not mean that people – for example women and men – become the same, but rather that they have equal life chances and are valued equally. This applies not only to equality of opportunity but also to equality of impact and benefits arising from economic, social, cultural and political development – as well as opportunity to shape and influence those values, norms and systems" (IUCN, n.d.-d).

Gender equality and social inclusion (GESI)

Gender equality and social inclusion is a concept that "aims to understand and address unequal power relations between different social groups. The GESI approach to development focuses on the need for action to re-balance these power relations and ensure equal rights, opportunities and respect for all individuals regardless of their social identity" (IUCN, n.d.-e).

Gender equity

Gender equity is "the process of being fair to women and men. To ensure fairness, strategies and measures must often be available to compensate for women's historical and social disadvantages that prevent women and men from otherwise operating on a level playing field. Equity leads to equality" (UNFPA, 2005).

Gender identity

Gender identity refers to each person's deeply felt internal and individual experience of gender, which may or may not correspond with the sex assigned at birth, including the personal sense of the body (which may involve, if freely chosen, modification of bodily appearance or function by medical, surgical or other means) and other expressions of gender, including dress, speech and mannerisms (adapted from International Commission of Jurists, 2007).

Gender norms

Gender norms "which are social prescriptions for the lives of women and men, have multiple layers, from concrete to abstract; sometimes refer to averages and sometimes to ideals; are often embedded in institutions rather than individual opinions; and in practice reveal diversity, contradiction and contestation as well as consensus. It is important to recognize gender-equality norms as well as gender inequality norms" (UN Women, 2014).

Gender-responsive

A gender-responsive approach is defined as "the proactive identification of gender gaps,discriminations and biases, and then the coordinated development and implementation of actions to address and overcome them" (IUCN, 2026a). In comparison to gender-sensitive (see below), gender responsive has come to mean more than 'doing no harm'; it means 'to do better'.

G · Gender-sensitive

Gender sensitivity is to "understand and give consideration to socio-cultural norms and discriminations in order to acknowledge the different rights, roles & responsibilities of women and men in the community and the relationships between them" (UN-REDD, n.d.).

Gender-transformative

Gender-transformative approaches "support gender equality by explicitly addressing the underlying causes of gender inequality... In doing so, they go further than activities that only address gender inequalities resulting from discriminatory root causes. A gender-transformative approach is a way of working that should be considered for any intervention or programme" (UNFPA, 2023).

Geographic information system (GIS)

"GIS is a technology that is used to create, manage, analyze, and map all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there). This provides a foundation for mapping and analysis that is used in science and almost every industry. GIS helps users understand patterns, relationships, and geographic context. The benefits include improved communication, efficiency, management, and decision-making" (ESRI, n.d.).

Global warming

"The estimated increase in global mean surface temperature (GMST) averaged over a 30-year period, or the 30-year period centred on a particular year or decade, expressed relative to pre-industrial levels, unless otherwise specified. For 30-year periods that span past and future years, the current multi-decadal warming trend is assumed to continue" (IPCC, 2022).

Green-grey infrastructure (GGI)

"An example of green-gray infrastructure is where natural coastal ecosystems – such as mangroves, salt marshes, inter-tidal flats, seagrasses, and coral reefs – are combined with gray infrastructure such as breakwaters, to combine the values of wave attenuation and flood control of natural ecosystems with the benefits of engineered structures. In addition, the conservation and restoration of natural coastal ecosystems can extend the lifespan of gray infrastructure, while also supporting fisheries, regulating water quality, and sequestering carbon. The combined solution can therefore be more comprehensive, robust, and cost-effective than either solution alone" (Green-Gray Community of Practice, 2020).

H · Habitat change

One of the "most important direct drivers of biodiversity loss and ecosystem service changes [is] habitat change (such as land-use change, physical modification of rivers or water withdrawal from rivers, loss of coral reefs, and damage to sea floors due to trawling)" (MEA, 2005).

H · Hazard

"The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources" (IPCC, 2022).

I · Impact

"Positive and negative, primary and secondary long-term effects produced by a... intervention, directly or indirectly, intended or unintended" (OECD, 2019).

Impact chain

"An impact chain, or cause-effect chain, is an analytical tool that helps you better understand, systemise and prioritise the factors that drive risk in the system of concern. Impact chains... always have a similar structure: a climate signal (e.g. a heavy rain event) may lead to a direct physical impact, causing a sequence of intermediate impacts (e.g. erosion upstream, contributing to flooding downstream), which – due to the vulnerability of exposed elements of the social-ecological system (SES) – finally lead to a risk (or multiple risks)" (GIZ, EURAC & UNU-EHS, 2018).

Indigenous peoples

"The term 'Indigenous peoples' is to be understood in the context of the International Labour Organization (ILO) Convention (No. 169) concerning Indigenous and Tribal Peoples in Independent Countries as: (1) tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations; (2) peoples in independent countries who are regarded as indigenous on account of their descent from the populations inhabited the country... at the time of conquest or colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions" (UNESCO World Heritage Centre, n.d.).

Indirect drivers of change

"Indirect drivers [of change] are the forces that underlie and shape the extent, severity and combination of anthropogenic direct drivers that operate in a given place. They include institutional and governance structures, and social, economic and cultural contexts" (IPBES, n.d.-e).

Inequity

The opposite of equity; inequities are unfair, avoidable or remediable differences among groups of people (adapted from WHO, n.d.-a)..

I · Intersectionality

Intersectionality recognises the "interconnectedness of socially constructed categories, such as ethnicity, class and gender, which inform a person's or group's relative privilege or disadvantage. An intersectional approach aims to understand the complex way in which the historical and ongoing effects of multiple forms of discrimination (such as racism, sexism and classism) combine, overlap or intersect and attempts to recognise and improve the impact of these effects on the experiences of individuals" (IUCN, n.d.-e).

Invasive alien species (IAS)

Invasive alien species (IAS) are "animals, plants or other organisms that are introduced by humans, either intentionally or accidentally, into places outside of their natural range, negatively impacting native biodiversity, ecosystem services or human economy and well-being" (IUCN, n.d.-g).

K · Key informant interviews (KIIs)

"A type of qualitative, in-depth interview with individuals selected for their particular knowledge about a topic of interest. The interviews may be loosely structured and resemble a conversation between acquaintances, with interviewers framing questions spontaneously from a list of issues to discuss" (SAGE Research Methods, n.d.).

L · Land degradation neutrality (LDN)

Land degradation neutrality (LDN) is "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services to enhance food security remain stable, or increase, within specified temporal and spatial scales and ecosystems" (UNCCD, n.d.-b)

Land use change

Land use change refers to "the modification or management of natural environments into human dominated environments, such as settlements, semi-natural and agricultural areas" (IPBES, n.d.-f)

Local communities

"A self-identified human group that acts collectively in ways that contribute to defining a territory and culture through time...A local community can be long-standing ('traditional') or relatively new, can include a single ethnic identity or multiple ones, and it usually ensures its own continuity by natural reproduction and care for kinship and its life environment" (ICCA Consortium, n.d.)

M · Mainstreaming

"Interdisciplinary and transdisciplinary endeavour of normalising an idea from one policy domain into the decision-making and routine activities of other policy domains necessary for effective delivery over the long term" (Scott et al., 2021).

M · Maladaptation

"Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas (GHG) emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence" (IPCC, 2022).

Marginalised groups

"Different groups of people within a given culture, context and history at risk of being subjected to multiple discrimination due to the interplay of different personal characteristics or grounds, such as sex, gender, age, ethnicity, religion or belief, health status, disability, sexual orientation, gender identity, education or income, or living in various geographic localities" (EIGE, 2016b).

Monitoring, evaluation and learning (MEL)

"Monitoring is a systematic process for collecting and reviewing data and information across the life of a project (rather than just at the end). It was designed to track, monitor and evaluate outcomes in a participatory manner that enables learning and capacity development of project participants. MEL systems provide tools and methodologies to: i) assess changes in functional capacities and their effects on agricultural innovation systems, ii) support the adaptation and refinement of capacity strengthening to achieve greater impacts and iii) stimulate continuous learning by using participatory monitoring and evaluation approaches" (IPBES, n.d.-g).

N · National adaptation plans (NAP)

NAPs "outline how countries will adapt to climate change in the medium- and long-term. These plans allow governments at all levels – national, regional and local – to take action to protect people, livelihoods, infrastructure, economic activity and ecosystems. They are designed to fit the unique challenges and climate risks that countries are facing, helping them reduce vulnerabilities and better prepare for climate change impacts. NAPs also allow countries to integrate adaptation in their existing and future policies, plans and programmes, ensuring that key sectors, such as agriculture or water, are prepared for changing climate conditions. By planning ahead, governments can reduce risks and build a more climate-resilient future" (UNDP, 2025).

Nationally determined contribution (NDC)

NDCs "embody efforts by each country to reduce national emissions and adapt to the impacts of climate change. The Paris Agreement (Article 4, paragraph 2) requires each Party to prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions" (UNFCCC, n.d.-e).

N · Nature-based Solutions (NbS)

"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" (UNEA, 2022).

NbS for climate change adaptation

NbS for climate change adaptation (or NbS for adaptation) is defined as the "sustainable management, conservation and restoration of ecosystems, as part of an overall adaptation strategy that takes into account the multiple social, economic and cultural co-benefits for local communities" (IUCN, 2009)

Nature-positive

"'Nature Positive is a global societal goal defined as "halt and reverse nature loss by 2030 on a 2020 baseline, and achieve full recovery by 2050", in line with the mission of the Kunming-Montreal Global Biodiversity Framework" (NPI, n.d.).

National biodiversity strategies and action plans (NBSAPs)

'National Biodiversity Strategies and Action Plans, or NBSAPs, are each country's plan for protecting nature. They are national roadmaps that guide how countries conserve plants, animals and ecosystems, and how they use natural resources in a sustainable and fair way. Under the Kunming–Montreal Global Biodiversity Framework (GBF), countries have committed to halting and reversing biodiversity loss by 2030 and to living in harmony with nature by 2050. To meet these commitments, they must update and implement NBSAPs that reflect the goals and targets of the GBF' (UNEP, 2025).

O · Outcome

"[A] flow-on effect outside the intervention expected as a result of the outputs interacting with events and activities in the wider world. Outcomes may be short- or long-term, decreasingly within the sphere of influence of the intervention" (Stafford Smith, 2020).

Output

"[T]he immediate results of the activities of an intervention. Outputs are within the sphere of control of the intervention" (Stafford Smith, 2020).

Overexploitation

"[T]he unsustainable use and harvesting of natural resources" (MEA, 2005).

P · Photosynthesis

"The process by which green plants and certain other organisms transform light energy into chemical energy. During photosynthesis in green plants, light energy is captured and used to convert water, carbon dioxide, and minerals into oxygen and energy-rich organic compounds" (Britannica, 2026).

P · Phytoremediation

"Phytoremediation uses plants to clean up contaminated environments. Plants can help clean up many types of contaminants including metals, pesticides, explosives, and oil. However, they work best where contaminant levels are low because high concentrations may limit plant growth and take too long to clean up. Plants also help prevent wind, rain, and groundwater flow from carrying contaminants away from the site to surrounding areas or deeper underground" (US EPA, 2012)

Practitioner

In the context of climate change adaptation, a practitioner is an individual who applies technical, planning, and engagement expertise to support the assessment, planning, implementation, and evaluation of climate adaptation and resilience actions (adapted from Gardiner et al., 2024).

Prevention

Gender-based violence prevention addresses "norms and inequalities at the individual, interpersonal, community, and structural levels to stop gender-based violence before it starts or to reduce violence that is already happening" (USAID 2024).

Proxy

A proxy climate indicator is "a record that is interpreted, using physical and biophysical principles, to represent some combination of climate-related variations back in time. Climate-related data derived in this way are referred to as proxy data. Examples of proxies include pollen analysis, tree ring records, speleothems, characteristics of corals and various data derived from marine sediments and ice cores. Proxy data can be calibrated to provide quantitative climate information" (IPCC, 2022).

R · Reference model

"A model that indicates the expected state (in its highest integrity condition) that the restoration site would exhibit in the absence of degradation (with respect to flora, fauna and other biota, abiotic elements, functions, processes, and successional states), reflecting background and predicted changes in environmental conditions. It is not the historical state, nor the baseline condition, but represents a benchmark against which the condition of the site is measured prior to, during, and after restoration" (Gann et al., 2026).

Representative concentration pathways (RCPs)

"Scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases (GHGs) and aerosols and chemically active gases, as well as land use/land cover. The word 'representative' signifies that each RCP provides only one of many possible scenarios that would lead to the specific radiative forcing characteristics. The term pathway emphasises the fact that not only the long-term concentration levels, but also the trajectory taken over time to reach that outcome are of interest (IPCC, 2022).

R · Resilience

"The capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure. Resilience is a positive attribute when it maintains capacity for adaptation, learning and/or transformation" (IPCC, 2022).

Response

Response in the context of gender-based violence refers to "immediate interventions that address survivors' physical safety, health concerns, psychosocial needs, and access to justice, in line with the survivor-centred approach" (UNHCR, 2020).

Rights-based approach

"Conceptual framework for the process of human development that is normatively based on international human rights standards and operationally directed to promoting and protecting human rights. It seeks to analyse inequalities which lie at the heart of development problems and redress discriminatory practices and unjust distributions of power that impede development progress" (OHCHR, 2006)

Rightsholder

"Rights holders are actors that possess internationally recognised human rights, e.g. under agreements like the United Nations Declaration on Human Rights or (UDHR) on the Rights of Indigenous Peoples (UNDRIP), or the voluntary guidelines on land tenure. They represent the assumed beneficiaries of sustainable development policies (for example, women are the assumed beneficiary of SDG 5 and a clear rightsholder group; other holders of recognised human rights are: youth and children, workers, farmers, and Indigenous Peoples" (GIZ, 2019).

Risk

Climate risk is "the potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems. In the context of climate change, risks can arise from potential impacts of climate change as well as human responses to climate change. Relevant adverse consequences include those on lives, livelihoods, health and well-being, economic, social and cultural assets and investments, infrastructure, services (including ecosystem services), ecosystems and species. In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards" (IPCC, 2022).

S · Sensitivity

"The degree to which a system or species is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise" (IPCC, 2022).

Shared socioeconomic pathways (SSPs)

"Describe alternative socio- economic futures in the absence of climate policy intervention, comprising sustainable development (SSP1), regional rivalry (SSP3), inequality (SSP4), fossil-fuelled development (SSP5) and middle-of-the-road development (SSP2). The combination of SSP-based socio-economic scenarios and Representative Concentration Pathway (RCP)-based climate projections provides an integrative frame for climate impact and policy analysis (IPBES, 2019).

Social norms (Gender norms)

Social norms implicated in gender equality and women's empowerment are embedded rules, standards or practices that structure relationships between people and social institutions – namely the state, market, community, family and religion – based on intersecting ideologies that uphold social hierarchies, including patriarchy. Social norms can be understood as prescriptions for where women and men are placed in relation to social institutions as well as their relative power and privileges within institutions and, consequently, in relation to one another. Social norms influence how people are treated in and by institutions, and how the institutions of the state, market, community, family and religion function to serve and reinforce social hierarchies (UN Women, 2026).

Socio-ecological system

Social-ecological systems are "complex adaptive systems in which people and nature are inextricably linked, in which both the social and ecological components exert strong influence over outcomes. The social dimension includes actors, institutions, cultures and economies, including livelihoods. The ecological dimension includes wild species and the ecosystem they inhabit" (IPBES, n.d.-i).

Species richness

Species richness is "the number of species within a defined region, which can be assessed through sampling or a census" (Kiester, 2013).

Species diversity

"Measures of species diversity are formed from species richness by further classifying the species by attributes, such as abundance, size, or ecological role" (Kiester, 2013).

S · Stakeholder

"Stakeholders (e.g. NGOs, business and industry, local authorities, science) have a stake in sustainable development policy, procedural rights and acquired rights, and they are an important intermediary target group, but they do not represent individuals whose human rights are personally affected and that are the explicit beneficiaries of Agenda 2030" (GIZ, 2019).

Stakeholder mapping

"A simple process of listing all the stakeholders of [a] project and working through a series of steps to build a strategic engagement and communication plan" (World Bank, 2023). Stakeholders are often mapped based on the level of influence or power and level of interest.

Survivor-centred

"A survivor-centered approach focuses on the empowerment of survivors by creating a supportive environment for healing. Survivors of GBV can regain or strengthen their sense of empowerment when accessing survivor-centered GBV services that uphold these four guiding principles: (1) ensure the safety of survivors, including preventing and mitigating further violence; (2) protect the confidentiality of survivors, including their right for information about them to be shared only with their informed consent and their right to choose whether and to whom to tell their experiences; (3) demonstrate respect for survivors' needs and wishes and their right to make their own choices, including those that service providers may find hard to understand or disagree with; and (4) practice nondiscrimination, ensuring that survivors, in all their diversity, are able to access and receive appropriate services and meaningful support. Do no harm is an overarching principle of all work related to GBV. Promoting survivors' agency and dignity is a key objective of a survivor-centered approach.2 Figure 1 details how the four guiding principles support survivors' agency and dignity, build empowerment, and ensure a do-no-harm approach" (USAID, 2021).

T · Terrestrial

Terrestrial refers to "relating to or occurring on the earth" (Britannica, n.d.).

The IUCN Global Standard for Nature-based Solutions™

IUCN Global Standard for Nature-based Solutions provides "a robust, evidence-based framework for the consistent and credible application of NbS across sectors and geographies. Structured as a systematic learning and quality assurance tool, the NbS-GS ensures that NbS are applied effectively and sustainably, maximizing their potential to address societal challenges, while delivering measurable benefits for people and nature" (IUCN, 2026b).

T · Theory of change (ToC)

The "process and product of developing an explicit account of how and why an intervention is expected to achieve its intended outcomes and goal, based on outlining a set of key causal pathways arising from the activities and outputs of the intervention (whether at the program or project level) and the assumptions underlying these causal connections" (Stafford Smith, 2020).

Traditional knowledge

Traditional knowledge refers to the "knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Sometimes it is referred to as an oral tradition for it is practiced, sung, danced, painted, carved, chanted and performed down through millennia. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, forestry and environmental management in general" (CBD, n.d.).

Trauma informed approach

Incorporates a strengths-based framework that seeks to understand how trauma impacts a survivor's physical, psychological, and emotional wellbeing, identifies survivor needs and opportunities to give back survivors a sense of control. At its core, trauma informed care is a relational approach that seeks to create safe and nurturing environments that allow recovery from trauma and restore resilience. A trauma-informed approach recognizes six core principles that organizations can operationalise: 1) safety, trustworthiness and transparency, 3) peer support, 4) collaboration and mutuality, 5) empowerment, voice and choice, and 6) cultural, historical, and gender lens (adapted from SAMHSA, 2014).

U · Urban heat island (UHI)

"The relative warmth of a city compared with surrounding rural areas, associated with heat trapping due to land use, the configuration and design of the built environment, including street layout and building size, the heat-absorbing properties of urban building materials, reduced ventilation, reduced greenery and water features, and domestic and industrial heat emissions generated directly from human activities" (IPCC, 2022).

V · Vulnerability

"The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt" (IPCC, 2022).

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