

Convention on Biological Diversity

Distr.
GENERAL

CBD/SBSTTA/22/8
16 April 2018

ORIGINAL: ENGLISH

SUBSIDIARY BODY ON SCIENTIFIC,
TECHNICAL AND TECHNOLOGICAL ADVICE
Twenty-second meeting
Montreal, Canada, 2-7 July 2018
Item 9 of the provisional agenda*

BIODIVERSITY AND CLIMATE CHANGE: ECOSYSTEM-BASED APPROACHES TO CLIMATE CHANGE ADAPTATION AND DISASTER RISK REDUCTION

Note by the Executive Secretary

INTRODUCTION

1. On various occasions, guidance has been developed under the Convention on the integration of biodiversity-related considerations when addressing climate change, and on ecosystem-based approaches for climate change adaptation, mitigation and disaster risk reduction.¹
2. At its thirteenth meeting, the Conference of the Parties requested the Executive Secretary:
 - (a) To prepare voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation (EbA) and disaster risk reduction (eco-DRR),²
 - (b) To promote and enhance synergies with other bodies with respect to the impacts of climate change on biological diversity and the role of ecosystems for climate change adaptation, mitigation and disaster risk reduction, as well as with work on ecosystem restoration on land degradation neutrality and sustainable land management.³
3. Section I of the present document describes the preparation of the voluntary guidelines, with the draft guidelines themselves provided in the annex. Section II describes activities to support the implementation of EbA and Eco-DRR, taking into account also relevant earlier decisions,⁴ while section III provides an update on scientific and technical information that is related to the above-mentioned synergies.

I. VOLUNTARY GUIDELINES FOR THE DESIGN AND EFFECTIVE IMPLEMENTATION OF ECOSYSTEM-BASED APPROACHES TO CLIMATE CHANGE ADAPTATION AND DISASTER RISK REDUCTION

4. In decision XIII/4, paragraph 10, the Conference of the Parties requested the Executive Secretary to prepare voluntary guidelines for the design and implementation of EbA and eco-DRR. In paragraph 11, it requested that the voluntary guidelines include information on:

* [CBD/SBSTTA/22/1](#).

¹ See decisions [X/33](#), [XI/19](#), [XI/21](#), [XII/20](#) and [XIII/4](#).

² Decision XIII/4, paras. 10-11.

³ Decision XIII/4, paras. 12-13.

⁴ In particular, decision X/33, para. 9, and decision XII/20, para. 7(a).

- (a) Tools for assessing the effectiveness of ecosystem-based approaches to climate change adaptation and disaster risk reduction while safeguarding biodiversity at various scales;
- (b) The design and implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction at different scales, including at the subnational and local levels;
- (c) Trade-offs in the provision of various ecosystem services and limits to ecosystem-based approaches for climate change adaptation and disaster risk reduction;
- (d) Tools and indicators for monitoring the effectiveness of ecosystem-based approaches to climate change adaptation and disaster risk reduction;
- (e) Options for integrating alternative policy approaches into ecosystem-based approaches to climate change adaptation and disaster risk reduction; integrating knowledge, technologies, practices and efforts of indigenous peoples and local communities related to addressing and responding to climate change and impacts on the biodiversity;
- (f) Methods making use of ecosystem-based approaches to climate change adaptation and disaster risk reduction in combination with hard infrastructure.

5. The draft voluntary guidelines were prepared under the guidance of a technical reference group.⁵ A technical workshop to review the first draft of the guidelines and provide additional information to strengthen the draft was hosted by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) at their premises in Bonn from 20 to 22 November 2017. With geographically balanced representation, the workshop was attended by experts and practitioners from a wide range of countries and organizations.⁶ Funding for the preparation of the guidelines and the technical workshop was generously provided by the European Union and the Governments of Germany and Sweden. The draft voluntary guidelines were subsequently submitted for peer review and finalized in the light of the comments received.⁷

6. The draft voluntary guidelines presented in the annex for consideration by the Subsidiary Body are intended to support practitioners and implementers in operationalizing EbA and Eco-DRR at the programme and project levels. An expanded version of the guidelines which includes a primer for policymakers, a list of relevant tools, and sectoral briefs on the use of EbA and eco-DRR is presented in an information document on the subject (CBD/SBSTTA/22/INF/1).

⁵ The group comprised representatives of the following organizations: Convention on the Conservation of Migratory Species, Food and Agriculture Organization of the United Nations, United Nations Convention to Combat Desertification, United Nations Development Programme, United Nations Educational, Scientific and Cultural Organization, United Nations Environment Programme, UNEP-World Conservation Monitoring Centre, United Nations Framework Convention on Climate Change, United Nations Office for Disaster Risk Reduction, United Nations University, Ramsar Convention on Wetlands, World Meteorological Organization, BirdLife International, Conservation International, Deutsche Gesellschaft für Internationale Zusammenarbeit, International Union for Conservation of Nature, SwedBio at the Stockholm Resilience Centre, Wetlands International, and World Wildlife Fund.

⁶ For a list of the experts who participated in the Technical Workshop to Review the Voluntary Guidelines for the Design and Effective Implementation of Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction, held in Bonn from 20 to 22 November 2017, see the report on the workshop (CBD/CCB/WS/2017/1/1).

⁷ The peer review period was from 23 January to 16 February 2018. Submissions were received from the Technical Workshop as well. A total of 32 submissions were received from 14 Parties (Australia, Canada, Ethiopia, European Union, Germany, India, Japan, Madagascar, Mexico, Slovakia, South Africa, Sweden, Togo and United Kingdom), 3 United Nations organizations (United Nations Environment Programme – World Conservation Monitoring Centre, United Nations University and International Labour Organization), 1 indigenous peoples and local communities organization (Global Forest Coalition), 1 subnational government (Northern Cape Provincial Government – South Africa), 11 international and non-governmental organizations (International Union for Conservation of Nature, World Wildlife Fund, International Institute for Environment and Development, Network of Regional Governments for Sustainable Development, GIZ, SwedBio at the Stockholm Resilience Centre, Wetlands International, International Petroleum Industry Environmental Conservation Association, BirdLife International, Conservation International, Mediterranean Marine Protected Areas Network) and 2 academic institutions (University of Nairobi and Colorado State University).

II. ACTIVITIES TO PROMOTE AND SUPPORT ECOSYSTEM-BASED APPROACHES

7. In decision X/33, the Conference of the Parties requested the Executive Secretary to support, as appropriate, Parties and relevant organizations and processes to design and implement ecosystem-based approaches for mitigation and adaptation as they relate to biodiversity. In decision XIII/4, it requested the Executive Secretary to promote ecosystem-based approaches to climate change disaster risk reduction, as well as adaptation.

8. Further, in decision XIII/4, paragraph 2, the Conference of the Parties encouraged “Parties and other Governments, when developing their nationally determined contributions (NDCs) and, where appropriate, implementing associated domestic measures, to fully take into account the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity, and to integrate ecosystem-based approaches”.

9. In the same decision, the Conference of the Parties requested the Executive Secretary to further promote synergies with the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC), the [Sendai Framework for Disaster Risk Reduction 2015-2030](#) and the [2030 Agenda for Sustainable Development](#), ensuring that this includes increasing knowledge and sharing of information, guidance and tools developed under the Convention on Biological Diversity relating to the impacts of climate change on biological diversity and the role of ecosystems in climate change adaptation, mitigation and disaster risk reduction, with a view to identifying possible solutions (para. 12), and to further enhance synergies between the work of the Convention on ecosystem restoration, ecosystem-based approaches to climate change adaptation and mitigation and the work on land degradation neutrality and sustainable land management under the United Nations Convention to Combat Desertification (UNCCD) and ensure coherence with relevant approaches under other United Nations bodies (para. 13).

10. This section describes activities carried out pursuant to these decisions.

A. Scientific and technical needs of Parties

11. In order to better support the Parties in relation to addressing biodiversity and climate change, the Secretariat undertook a rapid assessment to better understand the capacity needs of and facilitate support for Parties.

12. The assessment was carried out as a desktop review of national biodiversity strategies and action plans (NBSAPs), fifth national reports and action plans for the [Programme of Work on Protected Areas](#) (PoWPA). Other sources of information include NDCs, national communications (NCs), national adaptation programmes of action (NAPAs) and technology needs assessments (TNAs) developed under UNFCCC. The assessment updated the note by the Executive Secretary for the sixteenth meeting of the Subsidiary Body.⁸ The main findings are as follows:

(a) Countries identified limited institutional and organizational capacity as a barrier to addressing climate change in the context of biodiversity management. This was a concern for developing and developed countries alike and is the barrier that is most directly related to the uptake of scientific and technical knowledge. Many countries indicated a lack of ability to research and transfer scientific and technical knowledge and to disseminate knowledge of biodiversity and climate change-related issues. Countries also stated that there were limited human resources in terms of professionals in the field;

(b) Inadequate access to financial resources was mentioned as one of the most significant contributors to a Party’s inability to design and/or implement biodiversity-related climate change adaptation and mitigation projects. Many least developed countries stated that a lack of financial resources was an overwhelming barrier to the implementation of the climate-related decisions of the Conference of the Parties;

⁸ [UNEP/CBD/SBSTTA/16/9](#).

(c) Inadequate policy, legal and regulatory frameworks hinder coordination among levels of government and, thus, the adoption of biodiversity- and climate change-related projects. This was a problem especially for least developed countries, as well as fragile States and States experiencing internal conflict. Recurring examples among countries included the lack of harmonization of laws, regulations and strategies;

(d) Greater emphasis should be placed on the co-benefits generated by synergistically implementing biodiversity and climate change mitigation and adaptation plans. Coordinating biodiversity-related strategies and climate-related national adaptation plans and nationally determined contributions would multiply benefits by dividing the work;

(e) Greater focus needs to be placed on building capacity for Parties to prepare more robust NBSAPs, gather relevant data and perform scientific analyses related to biodiversity and climate change. This will allow countries to build coherent, measurable and meaningful climate-related biodiversity targets, which allows for more easily quantifiable progress.

13. A significant limitation to this assessment was that the majority of NBSAPs, fifth national reports and PoWPA action plans have not sufficiently addressed matters related to climate change. It was therefore difficult to reach detailed conclusions beyond the broad categories identified below. With climate change predicted to grow as a driver of biodiversity loss, and with the potential of biodiversity to contribute to climate change mitigation and adaptation, it is important that climate change be integrated and reported on in the main documents produced under the Convention. The information would be very useful for identifying and monitoring successes, understanding challenges and facilitating action to address them. The dissemination of scientific and technical knowledge can realign targets and actions and emphasize the effectiveness of ecosystem-based approaches to climate change adaptation and mitigation.

B. Regional dialogues and learning missions

14. In collaboration with SwedBio at the Stockholm Resilience Centre, the Secretariat is organizing a series of regional dialogues and learning missions which support countries in learning from each other at the subregional level.

15. The aim of the regional dialogues is to raise awareness, strengthen capacities and identify opportunities for effective policy coherence, implementation and mainstreaming of ecosystem-based approaches to climate change adaptation and mitigation, and disaster risk reduction at the national level. They focus on the challenges and opportunities in incorporating the role of ecosystems in NDCs and NAPs under UNFCCC. They also consider related policies under the United Nations Convention to Combat Desertification, and the other biodiversity-related multilateral environmental agreements, and the 2030 Agenda for Sustainable Development.

16. Each regional dialogue is held over three days and includes such topics as sustainable development, EbA and eco-DRR, financing and safeguards, and linkages between national NBSAPs, NDCs and NAPs. It is followed by a two-day learning mission, whereby the participants interact with and learn from the experience of the host country through visits to project sites, and discussions with scientific institutions, local government, and indigenous peoples and local communities.

17. To date, three regional dialogue and learning missions have been organized.⁹

(a) For southern and eastern Africa, hosted by the Government of South Africa (Durban, 2-6 October 2017);

(b) For the Pacific, organized and hosted by the Government of Fiji and the Secretariat of the Pacific Regional Environmental Programme (SPREP) (Suva and Nadi, 23-27 October 2017);

⁹ Funding was provided by SwedBio at the Stockholm Resilience Centre, the European Union, the Governments of Germany and South Africa, and the Secretariat of the Pacific Regional Environmental Programme's [Pacific Ecosystem-based Adaptation to Climate Change \(PEBACC\) project](#). In-kind contributions were received from the Governments of Fiji and Colombia.

(c) For South America, hosted by the Government of Colombia and the Alexander von Humboldt Institute (Bogota, 27 November – 1 December 2017);

18. Participants in each dialogue included biodiversity and climate change practitioners as well as representatives of indigenous peoples and local communities, United Nations organizations and non-governmental organizations (NGOs). Further information will be made available in the reports on these meetings.

19. Three further dialogues are planned for 2018 (Central America and the Caribbean, Central and West Africa, and South-East Asia) and two for 2019 (West Asia, and North Africa and the Middle East).

C. Other collaborative activities

20. The Japan Biodiversity Fund generously funded the International Union for the Conservation of Nature (IUCN), working in close collaboration with the Secretariat to undertake a project entitled “Resilience through investing in ecosystems – knowledge, innovation and transformation of risk management,”¹⁰ or RELIEF-Kit in short. The project has accomplished the following:

(a) It has published regional eco-DRR and biodiversity assessments for West and Central Africa, East and Southern Africa, Asia, Central America, South America and Oceania. The regional assessments contain information on climate, ecosystems and biodiversity, hazards and impacts of disasters in each region, as well as information on eco-DRR experiences and relevant policies in each region. They also provide information on opportunities for designing and implementing eco-DRR measures;

(b) It has conducted training needs assessments in four regions, followed by five regional training workshops for – Africa, Asia, Oceania, Central America and the Caribbean, and South America – as well as a two-day global training at the IUCN World Conservation Congress;

(c) It has published a global report that includes an extensive scientific literature review on the role of biodiversity in disaster risk reduction, a synthesis of the six regional assessments, and policy gaps as well as resulting recommendations to address the gaps.

21. The Secretariat is an active member of the Friends of Ecosystem-based Adaptation (FEBA), an informal network, launched in 2014, of more than 50 government ministries and subnational agencies, United Nations organizations, NGOs, research centres, and other institutions with an interest in promoting collaboration and knowledge sharing on EbA. IUCN serves as the coordinating institution, with support from the [International Climate Initiative](#) of Germany.

22. FEBA promotes integration of EbA into international climate change adaptation negotiations, policies, strategies, and action planning; develops and disseminates knowledge to strengthen EbA implementation through tools, methodologies, and evidence of impact; and collaborates to showcase the progress and promise of EbA at international and regional forums. To date, FEBA has accomplished the following:

(a) It has engaged with diverse sectors, funders, and Parties at UNFCCC and CBD conferences to demonstrate the benefits of mainstreaming EbA into broader adaptation strategies and national policies;¹¹

(b) It has drawn international attention to the need for enhanced coordination between national policy instruments for sustainable development, particularly through ecosystem-based

¹⁰ <https://www.iucn.org/theme/ecosystem-management/our-work/environment-and-disasters/relief-kit-project>

¹¹ <https://www.iucn.org/theme/ecosystem-management/our-work/ecosystem-based-approaches-climate-change-adaptation/friends-eba-feba/events-meeting-reports-and-presentations>

approaches that address multiple priorities under CBD, UNFCCC, the Sendai Framework, and the Sustainable Development Goals;¹²

(c) It has improved the outcome potential of EbA interventions worldwide by defining qualification criteria and quality standards for EbA;¹³

(d) It has contributed directly to multilateral processes by facilitating the preparation of reports and guidelines requested by Parties to CBD and UNFCCC, including the synthesis report “[Adaptation planning, implementation and evaluation addressing ecosystems and areas such as water resources](#)” and the “Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction” (see annex).

23. The Secretariat continues its membership in the [Partnership for Environment and Disaster Risk Reduction](#) (PEDRR). Formally established in 2008, it is a global alliance of United Nations agencies, NGOs and specialist institutes that seeks to promote and scale up implementation of ecosystem-based disaster risk reduction and to ensure that it is mainstreamed in development planning at the global, national and local levels, in line with the Sendai Framework for Disaster Risk Reduction. The PEDRR Secretariat is hosted at the Post-Conflict and Disaster Management Branch (PCDMB) of the United Nations Environment Programme in Geneva, Switzerland. PEDRR has contributed actively to the development of the voluntary guidelines for the design and implementation of EbA and eco-DRR.

24. Beyond the above-mentioned activities, the Secretariat continues to collaborate with UNFCCC, the Ramsar Convention, the Convention on Migratory Species (CMS), and other international processes on issues related to climate change and biodiversity. The Secretariat also continues to collaborate with UNCCD on issues relating to dry and sub-humid lands biodiversity, land degradation neutrality and ecosystem restoration. Further information on collaborative activities can be found in the note by the Executive Secretary on cooperation with other conventions, international organizations and partnerships to be submitted to the Subsidiary Body on Implementation at its second meeting (CBD/SBI/2/10). Related recent scientific and technical information is discussed in the section below.

III. SCIENTIFIC AND TECHNICAL INFORMATION WITH RESPECT TO THE IMPACTS OF CLIMATE CHANGE ON BIODIVERSITY, THE ROLE OF ECOSYSTEMS FOR CLIMATE CHANGE ADAPTATION, MITIGATION AND DISASTER RISK REDUCTION, AND ECOSYSTEM RESTORATION AND SUSTAINABLE LAND MANAGEMENT

25. As noted in the report of the Executive Secretary to the Subsidiary Body on Scientific Technical and Technological Advice at its twentieth meeting,¹⁴ under baseline climate predictions, biodiversity would be faced with catastrophic impacts. Even at 2°C, climate change would place many species and ecosystems with limited adaptive capacity under very high risk. The report also noted that keeping global temperature increases closer to 1.5°C rather than 2°C, is likely to significantly reduce the negative impacts on biodiversity, especially in the most vulnerable ecosystems. A number of recent publications reinforce these findings.¹⁵

¹² Epple, C., Wicander, S., Mant, R., Kapos, V., Rossing, T., Rizvi, A. R. (2016). Shared goals – joined-up approaches? Why action under the Paris Agreement, the Sustainable Development Goals and the Strategic Plan for Biodiversity 2011-2020 needs to come together at the landscape level. FEBA discussion paper developed for CBD COP 13. UNEP-WCMC, Cambridge, United Kingdom, and IUCN, Gland, Switzerland. 8 pp.

¹³ FEBA (Friends of Ecosystem-based Adaptation). (2017). Making Ecosystem-based Adaptation Effective: A Framework for Defining Qualification Criteria and Quality Standards (FEBA technical paper developed for UNFCCC-SBSTA 46). Bertram, M., Barrow, E., Blackwood, K., Rizvi, A.R., Reid, H., and von Scheliha-Dawid, S. (authors). GIZ, Bonn, Germany, IIED, London, United Kingdom, and IUCN, Gland, Switzerland. 14 pp.

¹⁴ UNEP/CBD/SBSTTA/20/10 and UNEP/CBD/SBSTTA/20/INF/29.

¹⁵ Smith, Molotok, Warren and Malhi (2018). Impacts on terrestrial biodiversity of moving from a 2°C to a 1.5°C target, Phil. Trans. R. Soc. A 376: 20160456; Nicholls et al. (2018) Stabilization of global temperature at 1.5°C and 2.0°C: implications for coastal areas. Phil. Trans. R. Soc. A 376: 20160448.

26. According to the 2017 update of the *Emissions Gap Report*,¹⁶ there is an urgent need for accelerated short-term action and enhanced longer-term national ambition to achieve the goals of the [Paris Agreement](#): to hold the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C. The report found that practical and cost-effective options are available to make this possible. It found that NDCs that form the foundation of the Paris Agreement cover only approximately one third of the emissions reductions needed to stay well below 2°C. It also found that, if the emissions gap is not closed by 2030, it would be extremely unlikely that global warming could be held to well below 2°C.

27. The report also showed that land-use-related options offer a significant annual greenhouse gas reduction potential. Several recent studies¹⁷ are in general agreement with these findings. They demonstrate that ecosystem-based approaches could contribute, in a cost-effective manner, a third of the climate mitigation effort needed by 2030 to stay below 2°C without compromising food security and biodiversity objectives. As noted in an earlier analysis prepared for the Subsidiary Body,¹⁸ this could be achieved by cutting land-based emissions (for example, reducing deforestation) and ecosystem restoration, as well as through improved management of crop and livestock systems.

28. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Assessment approved the Summary for Policymakers of the Assessment Report on Land Degradation and Restoration in March 2018. As detailed in the updated scientific assessment of progress towards selected Aichi Biodiversity Targets and options to accelerate progress (CBD/SBSTTA/22/5), the findings of the assessment are relevant to the Convention.

29. In October 2018, the Intergovernmental Panel on Climate Change (IPCC) will publish its “special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty” (SR1.5). This report is expected to inform the Talanoa Dialogue being held under UNFCCC. Officially launched at the twenty-third session of the Conference of the Parties to UNFCCC, and due to begin in January 2018, the Talanoa Dialogue will take stock of the collective efforts of Parties to UNFCCC in relation to progress towards the long-term goal of the Paris Agreement, and to inform the preparation of nationally determined contributions.

IV. SUGGESTED RECOMMENDATIONS

30. The Subsidiary Body on Scientific, Technical and Technological Advice may wish to recommend that the Conference of the Parties at its fourteenth meeting adopt a decision along the following lines:

The Conference of the Parties

1. *Adopts* the voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction, contained in the annex to the present decision;

2. *Encourages* Parties, other Governments and relevant organizations to make use of the voluntary guidelines when designing and implementing ecosystem-based approaches to climate change adaptation and disaster risk reduction;

3. *Encourages* Parties, pursuant to decisions [IX/16](#), [X/33](#), [and XIII/4](#) and [XIII/5](#), to further strengthen their efforts:

¹⁶ UNEP (2017). [The Emissions Gap Report 2017](#). United Nations Environment Programme, Nairobi.

¹⁷ For example: Griscom et al (2017). Natural climate solutions. *Proceedings of the National Academy of Sciences of the United States of America* 114:11645-11650. doi:10.1073/pnas.1710465114; Turner, Will. (2018). Looking to nature for solutions. *Nature Climate Change*. 8. 10.1038/s41558-017-0048-y.

¹⁸ [UNEP/CBD/SBSTTA/20/INF/29](#).

- (a) To identify regions, ecosystems and components of biodiversity that are vulnerable to climate change, and assess the threats and impacts of climate change;
- (b) To integrate climate change concerns into national biodiversity strategies and action plans;
- (c) To promote ecosystem restoration;
- (d) To take appropriate actions to address and reduce the impacts of climate change, and climate change mitigation and adaptation activities, on biodiversity and biodiversity-based livelihoods;
- (e) To monitor the impacts of climate change on biodiversity and biodiversity-based livelihoods;
- (f) To include information on their efforts in this regard in their reports to the Convention;

4. *Invites* Parties to provide, on a voluntary basis, information on their activities and results from the implementation of the voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction, to be made available through the clearing-house mechanism;

5. *Invites* the Friends of Ecosystem-based Adaptation and the Partnership for Environment and Disaster Risk Reduction, and their respective members, to continue to support Parties in their efforts to promote ecosystem-based approaches to climate change adaptation and disaster risk reduction;

6. *Requests* the Executive Secretary, subject to the availability of resources, to support the efforts of Parties in making use of the voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction by, among other things:

- (a) Enabling capacity-building and supporting the use of tools in collaboration with relevant partners and initiatives;
- (b) Updating, as necessary, the information on guidance, tools and initiatives available in the voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction,¹⁹ making it available through the clearing-house mechanism;

7. *Also requests* the Executive Secretary to review the findings of the special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty published by the Intergovernmental Panel on Climate Change, in order to identify the potential implications for the work of the Convention for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice.

¹⁹ CBD/SBSTTA/22/INF/1.

Annex

VOLUNTARY GUIDELINES FOR THE DESIGN AND EFFECTIVE IMPLEMENTATION OF ECOSYSTEM-BASED APPROACHES TO CLIMATE CHANGE ADAPTATION AND DISASTER RISK REDUCTION

1. Introduction

1. Ecosystem-based approaches to climate change adaptation and disaster risk reduction are holistic approaches that use biodiversity and ecosystems to manage the risks of climate-related impacts and disasters. Ecosystem-based adaptation (EbA) is the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change. EbA aims to maintain and increase the resilience and reduce the vulnerability of ecosystems and people in the face of the adverse effects of climate change.²⁰

2. Ecosystem-based disaster risk reduction (Eco-DRR) is the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development.²¹

3. These voluntary Guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction have been prepared pursuant to paragraph 10 of decision XIII/4. The voluntary guidelines are intended to be used as a flexible framework for planning and implementing EbA and Eco-DRR.

1.1. Overview of the voluntary guidelines

4. The guidelines begin with an overall introduction to the mandate and basic terminology of EbA and Eco-DRR. Section 2 presents principles and safeguards that provide standards and measures to bear in mind during all of the steps of planning and implementation presented in section 4. Section 3 presents other important overarching considerations on: integrating knowledge, technologies, practices and efforts of indigenous peoples and local communities, mainstreaming, and raising awareness and building capacity. The overarching considerations should also be kept in mind when undertaking the steps of planning and implementation in section 4. Section 4 presents a step-wise approach intended to work iteratively for EbA and Eco-DRR planning and implementation along with suggested practical actions. Supplementary information including a primer for policymakers, tools linked with the step wise process, further detailed actions, advocacy briefs for more effective outreach into sectors, as well as supporting references, glossary, and lists of policies and other relevant guidelines is also available.²²

1.2. What are ecosystem-based approaches to climate change adaptation and disaster risk reduction?

5. The Convention on Biological Diversity published Technical Series 85²³ which presents a synthesis report on experiences with the implementation of EbA and Eco-DRR. It provides detailed information on experiences with policy and legal frameworks, mainstreaming, integrating gender and the contribution of indigenous peoples and local communities. Additional examples of EbA and Eco-DRR activities are presented in the table below.

²⁰ Derived from CBD Technical Series 41. 2009. Connecting Biodiversity and Climate Change Mitigation and Adaptation: Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change.

²¹ Estrella, M. and N. Saalismaa. 2013. Ecosystem-based Disaster Risk Reduction: An Overview, In: Renaud, F., Sudmeier-Rieux, K. and M. Estrella (eds.), *The Role of Ecosystem Management in Disaster Risk Reduction*. Tokyo: UNU Press

²² CBD/SBSTTA/22/INF/1.

²³ *Synthesis Report on Experiences with Ecosystem-Based Approaches to Climate Change Adaptation and Disaster Risk Reduction* (<https://www.cbd.int/doc/publications/cbd-ts-85-en.pdf>)

Table. Examples of EbA and Eco-DRR interventions and outcomes²⁴

<i>Hazard/climate change impact</i>	<i>Ecosystem type</i>	<i>EbA or Eco-DRR intervention options</i>	<i>Outcome</i>
Drought Soil erosion Erratic rainfall	Mountains and forests	Sustainable mountain wetland management	Improved water regulation
		Forest and pasture restoration	Erosion prevention
		Restoration of pastures with deep-rooting native species	Improved water storage capacity
Erratic rainfall Flood Drought	Inland waters	Conservation of wetlands and peatlands	Improved water storage capacity
		River basin restoration	Flood risk reduction
		Transboundary water governance and ecosystem restoration	Improved water provisioning
Erratic rainfall Temperature increase Shift of seasons Drought	Agriculture and drylands	Ecosystem restoration and agroforestry	Improved water storage capacity
		Intercropping of adapted species	Adaptation to higher temperatures
		Using trees to adapt to changing dry seasons	Adaptation to shifting seasons
		Sustainable livestock management and pasture restoration	Improved water provisioning
		Drought resilience by sustainable dryland management	
Extreme heat Temperature increase Floods Erratic rainfall	Urban	Green aeration corridors for cities	Heat wave buffering
		Storm water management by green spaces	Adaptation to higher temperatures
		River restoration in urban areas	Flood risk reduction
		Green facades for buildings	Improved water regulation
Storm surges Cyclones Sea level rise Salinization Temperature increase	Marine and coastal	Mangrove restoration and coastal protection	Storm and cyclone risk reduction
		Coastal realignment	Flood risk reduction
		Sustainable fishing and mangrove rehabilitation	Improved water quality
		Coral reef restoration	Adaptation to higher temperatures

6. In order for climate change adaptation and disaster risk reduction activities to be recognized as EbA and Eco-DRR, they must encapsulate the following characteristics:

(a) Enhance resilience and reduce social and environmental vulnerabilities to current and future climate change impacts and disaster risk, contributing to incremental and transformative adaptation and disaster risk reduction;

(b) Generate societal benefits, contributing to sustainable and resilient development using equitable, transparent and participatory approaches;

(c) Make active use of biodiversity and ecosystem services through sustainably managing, conserving and restoring ecosystems;

(d) Be part of overall strategies for adaptation and risk reduction that are supported by policies at multiple levels, and encourage equitable governance while enhancing capacity.

²⁴ Source PANORAMA database <http://panorama.solutions/en>

2. Principles and safeguards

7. The voluntary guidelines are underpinned by principles and safeguards that were developed by reviewing existing literature and guidelines on EbA and Eco-DRR²⁵ and complement other principles and guidelines²⁶ adopted under the Convention or under other bodies. The safeguards are social and environmental measures to avoid unintended consequences of EbA and Eco-DRR to people, ecosystems and biodiversity; they also facilitate transparency in throughout all stages of planning and implementation, and promote the realization of benefits.

2.1. Principles

8. The principles serve as standards for guiding the planning and implementing process. They integrate elements of EbA and Eco-DRR practice and serve as high-level standards to guide planning and implementation. The principles are clustered into themes: building resilience and enhancing adaptive capacity, inclusivity and equity, consideration of multiple scales, and effectiveness and efficiency. The guidelines in section III provide suggested steps, methodologies and associated tools to implement actions on EbA and Eco-DRR according to the principles and safeguards.

Principles for building resilience and enhancing adaptive capacity through EbA and Eco-DRR

- 1 Consider a full range of ecosystem-based approaches to enhance resilience of social-ecological systems as a part of overall adaptation and disaster risk reduction strategies.
- 2 Use disaster response as an opportunity to build back better for enhancing adaptive capacity and resilience²⁷ and integrate ecosystem considerations throughout all stages of disaster management.
- 3 Apply a precautionary approach²⁸ in planning and implementing EbA and Eco-DRR interventions.

Principles for ensuring inclusivity and equity in planning and implementation

- 4 Prioritize and target EbA and Eco-DRR interventions to prevent and avoid the disproportionate impacts of climate change and disaster risk on vulnerable groups, indigenous peoples and local communities, and ecosystems.

Principles for achieving EbA and Eco-DRR on multiple scales

- 5 Design EbA and Eco-DRR interventions at the appropriate scales, recognizing that some EbA and Eco-DRR benefits are only apparent at larger temporal and spatial scales.
- 6 Ensure that EbA and Eco-DRR are sectorally cross-cutting and involve collaboration, coordination, and cooperation of stakeholders and rights holders.

Principles for EbA and Eco-DRR effectiveness and efficiency

- 7 Ensure that EbA and Eco-DRR interventions are evidenced-based, integrate indigenous and local knowledge where available, and are supported by the best available science, research, data, practical experience, and diverse knowledge systems.
- 8 Incorporate mechanisms that facilitate adaptive management and active learning into EbA and Eco-DRR, including continuous monitoring and evaluation at all stages of planning and implementation.
- 9 Identify and assess limitations and minimize potential trade-offs of EbA and Eco-DRR interventions.
- 10 Maximize synergies in achieving multiple benefits, including for biodiversity, conservation, sustainable development, gender equality, adaptation, and risk reduction.

²⁵ Including “Guidance on Enhancing Positive and Minimizing Negative Impacts on Biodiversity of Climate Change Adaptation Activities” (UNEP/CBD/SBSTTA/20/INF/1).

²⁶ See Ecosystem restoration: short term action plan (decision [XIII/5](#)); [the United Nations Declaration on the Rights of Indigenous Peoples](#); and Principles, Guidelines and Other Tools Developed under the Convention, available at <https://www.cbd.int/guidelines/>.

²⁷ The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment ([UNISDR definition of “build back better”](#), 2017, as recommended by the open-ended intergovernmental expert working group on terminology relating to disaster risk reduction ([A/71/644A/71/644](#) and Corr.1) [Corr.1](#)) and endorsed by the United Nations General Assembly (see [resolution 71/276](#))).

²⁸ The precautionary approach is stated in the preamble of the Convention on Biological Diversity: “Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.”

Safeguards for effective planning and implementation of EbA and Eco-DRR	
<i>Applying environmental impact assessments and robust monitoring and evaluation</i>	1. EbA and Eco-DRR should be subject, as appropriate, to environmental impact assessments including social and cultural assessments (referring to the Akwé: Kon guidelines) at the earliest stage of project design, and subject to robust monitoring and evaluation systems.
<i>Prevention of transfer of risks and impacts</i>	2. EbA and Eco-DRR should not result in adverse impacts on biodiversity or people, nor result in the displacement of risks or impacts from one area or group to another.
<i>Prevention of harm to biodiversity, ecosystems and ecosystem services</i>	3. EbA and Eco-DRR, including disaster response, recovery and reconstruction measures, should not result in the degradation of natural habitat, loss of biodiversity or the introduction of invasive species, nor create or exacerbate vulnerabilities to future disasters. 4. EbA and Eco-DRR promote and enhance biodiversity and ecosystem services, including through rehabilitation/restoration and conservation measures as part of post-disaster needs assessment and recovery and reconstruction plans.
<i>Sustainable resource use</i>	5. EbA and Eco-DRR should not result in unsustainable resource use nor enhance the drivers of climate change and disaster risks, and should strive to maximize energy efficiency and minimize material resource use.
<i>Promotion of full, effective and inclusive participation</i>	6. EbA and Eco-DRR ensure full and effective participation of indigenous peoples and local communities, women, minorities and the most vulnerable, including the provisioning of adequate opportunities for informed involvement.
<i>Fair and equitable access to benefits</i>	7. EbA and Eco-DRR promote fair and equitable access to benefits and do not exacerbate existing inequities, particularly with respect to marginalized or vulnerable groups. EbA and Eco-DRR interventions should meet national labour standards, protecting participants against exploitative practices, discrimination and work that is hazardous to well-being.
<i>Transparent governance and access to information</i>	8. EbA and Eco-DRR promote transparent governance by supporting rights to access to information, providing all stakeholders and rights holders, particularly indigenous peoples and local communities, with information in a timely manner, and supporting the further collection and dissemination of knowledge.
<i>Respecting human rights including rights of indigenous peoples and local communities</i>	9. EbA and Eco-DRR measures respect the rights of women and men from indigenous peoples and local communities, including access to and use of physical and cultural heritage.

3. Overarching considerations for EbA and eco-DRR design and implementation

9. When undertaking the step-wise process for planning and implementing EbA and Eco-DRR provided in section 4, there are three main overarching considerations to keep in mind at each step: integrating knowledge, technologies, practices and efforts of indigenous peoples and local communities; mainstreaming of EbA and Eco-DRR; and raising awareness and building capacity. Taking these actions into account can enhance uptake of EbA and Eco-DRR approaches, and improve effectiveness and efficiencies, enabling more and better outcomes from the interventions.

3.1. Integrating knowledge, technologies, practices and efforts of indigenous peoples and local communities

10. Indigenous peoples and local communities have managed variability, uncertainty and change through multigenerational histories of interaction with the environment. Traditional knowledge and coping strategies can thus form an important basis for climate change and disaster risk reduction responses, complementing established evidence, and bridging gaps in information. Indigenous, traditional and local knowledge systems – and forms of analysis and documentation, such as community mapping – can play a significant role in identifying and monitoring climatic, weather and biodiversity changes and impending natural hazards, similarly to early warning systems. Ecosystem-based approaches can also serve to bring back abandoned practices, such as traditional agricultural practices in Burkina Faso and Senegal. Integrating the knowledge of indigenous peoples and local communities also involves an appreciation of their *cosmovisión*,²⁹ and an acknowledgement of their role as knowledge holders and rights holders. Ways to incorporate indigenous and traditional knowledge and practices in EbA and Eco-DRR planning and implementation throughout all stages of planning and implementation include the following:

Key actions

- (a) Discover and document linkages between local, indigenous and traditional knowledge and practices and the goals and objectives of climate change adaptation and disaster risk reduction;
- (b) Consult multi-stakeholder working groups to facilitate knowledge-sharing across sectors on the role of ecosystems in adaptation and disaster risk reduction;
- (c) Put in place effective participatory and transparent mechanisms to seek the best available evidence;
- (d) Integrate traditional knowledge into assessments after obtaining free prior and informed consent.

3.2. Mainstreaming EbA and Eco-DRR

Purpose

11. Mainstreaming EbA and Eco-DRR is the integration of ecosystem-based approaches into climate- and disaster-sensitive planning and decision-making processes at all levels. Mainstreaming may start with integrating ecosystem considerations into adaptation and disaster risk reduction objectives, strategies, policies, measures or operations so that they become part of national and regional development policies, processes and budgets at all levels and stages. Mainstreaming enhances the effectiveness, efficiency, and longevity of EbA and Eco-DRR initiatives by embedding their principles into local, municipal and national policies, planning, assessments, financing, training, and awareness campaigns, among other policy tools. The overall goal is enhanced support and implementation of EbA and Eco-DRR where it proves effective.

12. Mainstreaming occurs continuously throughout EbA and Eco-DRR planning and implementation. The process begins in Step A with the achievement of a broad understanding of the political and institutional set-up of the target system, which enables the identification of potential entry points for mainstreaming. Other key components of mainstreaming include enhancing sectoral outreach, raising awareness, and capacity-building.

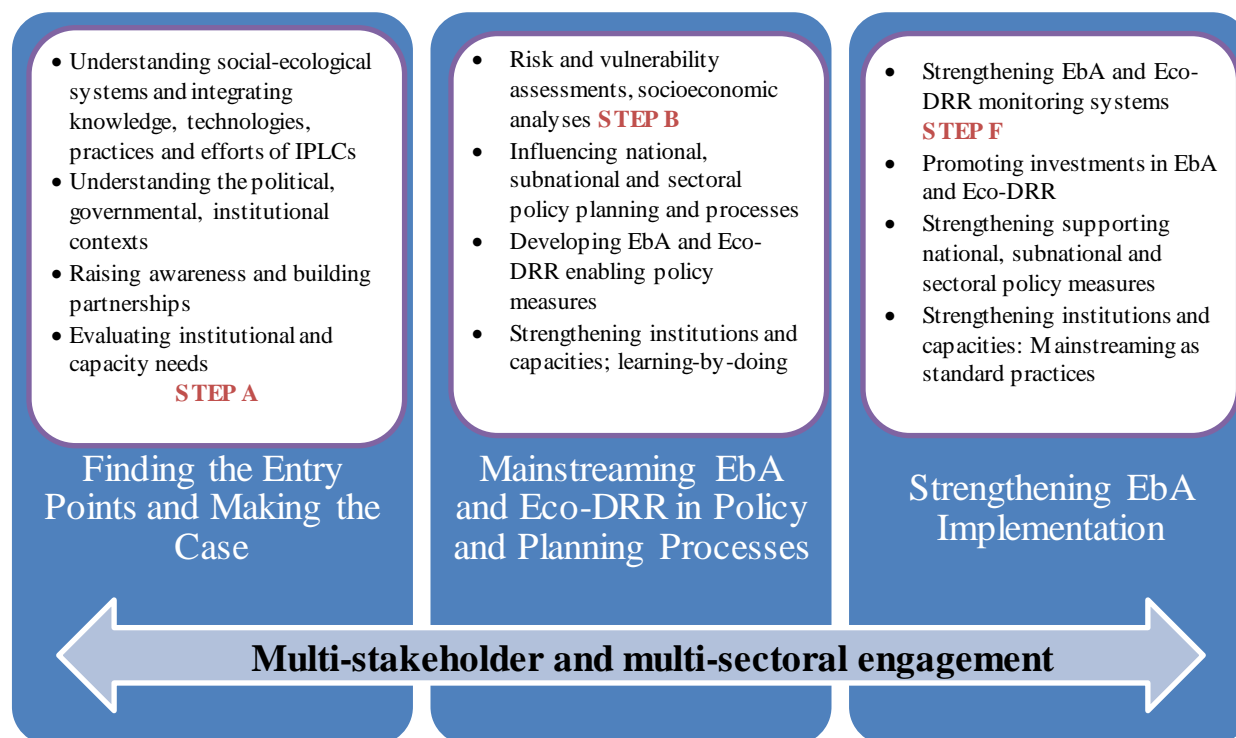
13. When mainstreaming EbA and eco-DRR, it is important to align with national and subnational development frameworks and mainstream into relevant plans, policies and practice at multiple scales in order to enhance long-term sustainability and possibilities for funding (figure 1 and box 1). It is also important to align with international frameworks and conventions, such as the Sustainable Development

²⁹ A worldview that has evolved over time that integrates physical and spiritual aspects (adapted from [the Indigenous Peoples' Restoration Network](#)).

Goals and the [Strategic Plan for Biodiversity 2011-2020](#). It is also important to incorporate a disaster and climate risk reduction lens when implementing environmental impact assessments and strategic environmental assessments to prevent unintended impacts that may exacerbate risk and to promote EbA and Eco-DRR measures.

14. A sample framework for mainstreaming is shown in figure 1. Tools and further detailed actions accompanying this step are available as supplementary information in the “Toolbox for mainstreaming adaptation and DRR”.³⁰

Figure 1. Example framework for mainstreaming EbA and Eco-DRR in development planning



Note: Adapted from: World Wildlife Fund (2013), [Operational Framework for Ecosystem-based Adaptation: Implementing and Mainstreaming Ecosystem-based Adaptation Responses in the Greater Mekong Sub-Region](#); and UNDP-UNEP (2011), [Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners](#).

15. A key aspect of mainstreaming is finding appropriate entry points for integrating EbA and Eco-DRR into concrete but also often complex policy and planning frameworks and decision-making processes. Entry points can be dynamic, depending on three key aspects:

- The awareness of stakeholders about an existing problem, challenge or risk;
- Available solutions, proposals, tools and knowledge;
- Political will to act, mandates and roles.

16. If all three aspects come together in favourable ways, there is a “momentum” for policy change. In cases of disaster, there is generally openness towards stakeholders’ needs, innovative tools and approaches, joint searches for best available solutions, and a willingness to invest and (re)build better. These are important opportunities to include EbA or Eco-DRR aspects. Entry points may occur at all

³⁰ CBD/SBSTTA/22/INF/1.

levels of government, and can imply different levels of governance, or collaboration with the private sector.

17. In general, entry points for mainstreaming may be found in:

(a) The development or revision of policies and plans, e.g. development or sectoral plans, nationally determined contributions, national adaptation plans, national biodiversity strategies and action plans, strategic environmental assessments, land-use plans;

(b) Command and control instruments, e.g. climate change and environmental laws, standards, and environmental impact assessments;

(c) Economic and fiscal instruments, e.g. investment programmes, funds, taxes, fees;

(d) Educational and awareness-raising measures, e.g. environmental education, extension programmes, technical careers and university curricula;

(e) Voluntary measures, e.g. environmental agreements with private landowners, or the definition of standards.

18. As emphasized throughout the EbA/Eco-DRR planning and implementation process, reaching out to sectors is key to raising awareness of and integrating EbA and Eco-DRR into sectoral plans and national-level planning, and encouraging cross-sectoral collaboration for joint implementation.

Box 1. Opportunities for mainstreaming EbA and Eco-DRR into funding priorities

EbA and Eco-DRR contribute to multiple objectives, including development, disaster risk, adaptation, mitigation, food and water security, and to ensure risk-informed investments. The cross-sectoral and transdisciplinary approaches of EbA and Eco-DRR, and the potential realization of multiple benefits offer several opportunities to attract/enhance funding.

- Encourage new financial incentives for investments in sustainable ecosystem management that emphasize ecosystems as part of adaptation and disaster risk planning. Examples include developing incentive programmes for farmers to implement practices that contribute to maintaining resilient ecosystems, such as agroforestry and conservation tillage.
- Unlock new investments for EbA and Eco-DRR through the climate-proofing of existing investment portfolios.
- Work with the private sector (including insurance, tourism, agriculture and water sectors) to harness their expertise, resources and networks. This helps in encouraging and scaling up investments in EbA and Eco-DRR, and identifying public-private partnerships.
- Engage government regulatory bodies to support and endorse private sector investments in natural infrastructure and EbA and Eco-DRR.
- Identify partnerships with industry associations that can aid in the identification of climate risks, impacts and adaptation strategies. Examples include the development of climate risk assessment tools for use by private sector investors and insurance companies, adoption of hydro-meteorological and climate information services, and working with developers to improve land-use planning, including such EbA and Eco-DRR activities as ecosystem restoration.
- Create national-level incentive structures for EbA/Eco-DRR, especially for private landowners and companies.

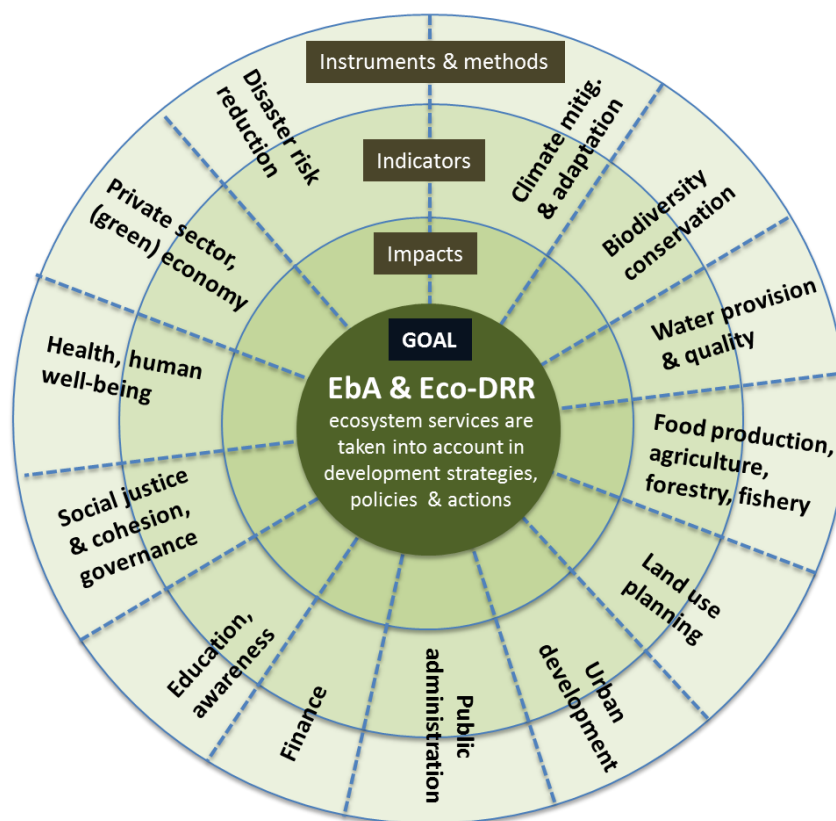
The mainstreaming of EbA and Eco-DRR into funding priorities should ensure that initiatives adhere to the EbA and Eco-DRR principles and safeguards with clear intentions to achieve enhanced social-ecological resilience to climate change impacts and disasters.

19. A key action in this respect is to consider integrating EbA and Eco-DRR in sectoral development plans at local, national and regional scales, such as in land use and water management, in both rural and

urban contexts. Additional detailed actions, as well as briefs for supporting EbA and Eco-DRR practitioners to undertake outreach into sectors are provided as supplementary information tools.³¹

20. Considering the information provided above, a simple framework for mainstreaming EbA and Eco-DRR into development and sectoral plans is presented as supplementary information³² in figure 2.

Figure 2. Entry points for mainstreaming EbA and Eco-DRR within key development and sectoral strategies by embedding ecosystem-based approaches into existing instruments and methods tools, selecting appropriate indicators for monitoring and evaluation, ensuring successful impact by developing a theory of change



3.3. Raising awareness and building capacity

21. Communicating the multiple benefits of EbA and Eco-DRR across sectors, communities of practice, and disciplines is crucial to enhancing uptake and sustainability of initiatives, in addition to opening avenues for funding. National and international policy agreements provide an opportunity to bridge the gap between different communities of practice. Interlinkages between ecosystem management, climate change and disaster risk reduction are all reflected in various targets under the Sustainable Development Goals, the Sendai Framework for Disaster Risk Reduction, the Paris Agreement on Climate Change, decisions of the Parties to the Rio conventions, and resolutions of Parties to the Ramsar Convention.³³

³¹ CBD/SBSTTA/22/INF/1.

³² Ibid.

³³ CBD/SBSTTA/22/INF/1, annex; [CBD Technical Series No. 85](#), annexes II and III.

22. A detailed list of suggested actions to raise awareness and build capacity is provided as supplementary information.³⁴ Some key actions include conducting baseline assessments of: (a) the existing skills and capacity of policymakers to address gaps and needs; and (b) institutional capacities and existing coordination mechanisms to identify needs for sustainably mainstreaming and implementing EbA and Eco-DRR. It is also useful to consider the different information and communication needs of different stakeholder groups in order to develop effective outreach, build a common knowledge base and seek to identify a common language among stakeholders to support their cooperation. There are many networks available to support these efforts and which offer platforms for sharing information and experience.³⁵

4. Stepwise approach to design and implementation of effective EbA and Eco-DRR

23. In developing a conceptual framework for these guidelines, various climate change adaptation and disaster risk reduction processes were considered, in addition to broader problem-solving approaches such as the landscape and systems approach frameworks.^{36,37} These guidelines employ a broad perspective on all ecosystems and include considerations for mainstreaming EbA and Eco-DRR. The guidelines integrate these approaches within a series of iterative steps. The process is intended to be flexible and adaptable to the needs of a project, programme or country, region, or landscape/seascape. The principles and safeguards for EbA and Eco-DRR are central to the planning and implementation process, and the overarching considerations are provided to improve effectiveness and efficiencies. Steps are linked to a toolbox providing a non-exhaustive selection of further guidance and tools available as supplementary information.³⁸ Stakeholder engagement, mainstreaming, capacity-building, and monitoring should be conducted throughout the process.

Step A. Understanding the social-ecological system

Purpose

24. This exploratory step is aimed at enhancing the understanding of the social-ecological system targeted for adaptation and disaster risk management interventions. This includes identifying key features of the ecosystem/landscape, including biodiversity and ecosystem services, and interlinkages with people. Step A enables addressing root causes of risk in coping with current and future climate change impacts. Additionally, it generates baseline information to ensure that EbA/Eco-DRR measures reconcile conservation and development needs and do not harm biodiversity, cultural diversity or ecosystem services or the people and livelihoods that depend on such services, in line with the principles and safeguards.

25. Moreover, Step A includes in-depth stakeholder analysis and multi-stakeholder and participatory processes that feed into subsequent steps, and, therefore, more detailed actions are presented to undertake these analyses (box 2).

Outcome

(a) A defined social-ecological system of interest (biodiversity, ecosystems and services, socio-economic characteristics and dependencies) and related goals and objectives for adaptation and disaster risk reduction;

³⁴ CBD/SBSTTA/22/INF/1.

³⁵ Such as the Partnership for Environment and Disaster Risk Reduction (PEDRR), Friends of EbA (FEBA), PANORAMA, BES-Net (Biodiversity and Ecosystem Services Network), Ecoshape, Ecosystem Services Partnership's Thematic Working Group on Ecosystem Services and Disaster Risk Reduction, IUCN Thematic Groups, and CAP-Net (UNDP).

³⁶ Including: National adaptation plans (UNFCCC), Operational Framework for EbA (WWF), Adaptation mainstreaming cycle (GIZ), Disaster risk management cycle (European Environmental Agency), Eco-DRR cycle (Sudmeier-Rieux 2013), Ecosystems protecting infrastructure and communities (IUCN, Monty et al. 2017), and the Landscape Approach (CARE Netherlands and Wetlands International).

³⁷ Additional details are provided in CBD/SBSTTA/22/INF/1.

³⁸ CBD/SBSTTA/22/INF/1.

- (b) Defined stakeholders and rights holders;
- (c) Defined political and institutional entry points for EbA/Eco-DRR within the system.

Key actions

(a) Undertake an organizational self-assessment to understand strengths, weaknesses, capacity (including technical and financial) and opportunities for partnership on EbA and Eco-DRR. Based on this, a multi-disciplinary team (including but not limited to indigenous peoples and local communities, other experts, representatives from relevant sectors and government bodies) is organized for planning and implementing EbA and Eco-DRR;

(b) Identify and define the social-ecological system of interest (for example, a watershed, sector or policy);

(c) Conduct analyses and consultations, making use of the multidisciplinary team, in order to understand the drivers of risk, capacities and assets of communities, societies and economies, and the wider social and natural environment;

(d) Analyse the problem, determining its scope (geographical and temporal) by defining the boundaries of the system (see supporting guidance in the associated toolbox³⁹) and set goals and objectives for adaptation and disaster risk reduction without harm to biodiversity or ecosystem services. The spatial scale for risk management should be broad enough to address the root causes of risk and to deliver multiple functions to stakeholders with different interests, and sufficiently small to make implementation feasible;

(e) Identify and map key provisioning, regulating, supporting and cultural services in the system that contribute to resilience. As 90 per cent of disasters are water-related, including drought or floods, understanding the hydrology of the landscape is crucial for scoping and designing EbA or Eco-DRR interventions;

(f) Determine initial entry points for EbA and Eco-DRR interventions;

(g) Screen relevant entry points for EbA and Eco-DRR particularly in a policy, planning or budgeting cycle at different scales and levels where considerations of climate change risk and adaptation could be incorporated;

(h) Map out the institutional responsibilities for intersections of development, conservation, disaster risk reduction and climate change adaptation, including relevant sectors;

(i) Conduct an in-depth stakeholder analysis (box 2);

³⁹ Available in CBD/SBSTTA/22/INF/1.

Box 2. Stakeholder and rights-holder analysis and establishment of participatory mechanisms

An assessment of the system or landscape helps to analyse the problem, define the boundaries for climate change adaptation and disaster risk reduction interventions, and screen for entry points for EbA and Eco-DRR. This information should feed into an in-depth stakeholder analysis before engaging stakeholders throughout the adaptation/DRR process, and also iteratively benefits from information from stakeholders. Prior and informed engagement of stakeholders and rights holders will increase ownership and likely success of any adaptation/DRR intervention. In-depth stakeholder analyses and development of multi-stakeholder processes and participatory mechanisms are key to meeting principles on equity and inclusivity and related safeguards. The Akwé: Kon Voluntary Guidelines (<https://www.cbd.int/traditional/guidelines.shtml>) outline procedural considerations for the conduct of cultural, environmental and social impact assessments, which are widely applicable to EbA and Eco-DRR.

Key Actions

- Identify indigenous peoples and local communities, stakeholders and rights holders likely to be affected by EbA and Eco-DRR interventions, and identify people, organizations and sectors that have influence over planning and implementation, using transparent participatory processes.
- Ensure full and effective participation of all relevant stakeholders and rights holders, including the poor, women, youth and the elderly, ensuring they have the capacity and sufficient human, technical, financial and legal resources to do so (in line with the safeguards).
- Engage with civil society organizations and/or community-based organizations to enable their effective participation.
- Where appropriate, identify and protect the ownership and access rights to areas for the use of biological resources.

Step B. Assessing vulnerabilities and risks

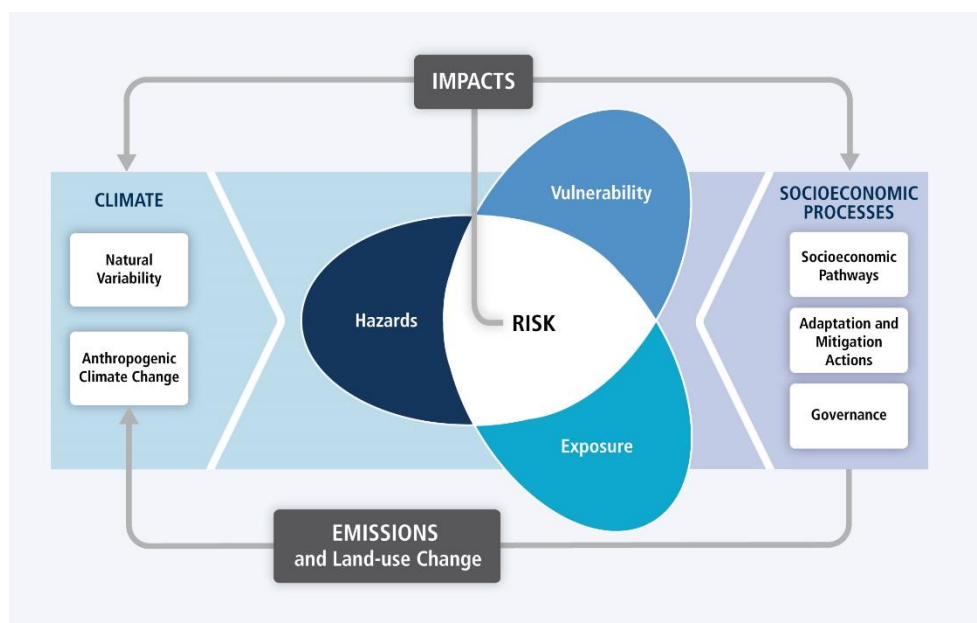
Purpose

26. Vulnerability and risk assessments are undertaken to identify the main climate change and disaster risks and impacts on the social-ecological system of interest, for example, taking stock of biodiversity and ecosystem service information to identify species or ecosystems that are particularly vulnerable to the negative impacts of climate change. The assessments are then used to identify, appraise and select targeted adaptation and disaster risk reduction interventions in planning and design. Risk and vulnerability assessments also aid in allocating resources to where they are most needed, and establishing baselines for monitoring the success of interventions.

27. Vulnerability describes the degree to which a natural or social system is susceptible to, and unable to cope with, adverse effects of climate change.⁴⁰ Vulnerability, exposure and hazards together determine the risks of climate-related impacts (figure 3). The overarching framework of the Intergovernmental Panel on Climate Change since the fifth assessment report is managing current and future climate risks principally through adaptation, but also through disaster risk reduction, resilience and sustainable development informed by an understanding of the risk. Thus, the concept of risk reduction is central to adapting to current and future climate risks and disasters. While they have different definitions and underlying assumptions, both risk and vulnerability assessments follow a similar logic.

⁴⁰ Intergovernmental Panel on Climate Change, *Fourth Assessment Report*, 2007.

Figure 3. Illustration of the core concepts of the contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change



Note: Risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems. Changes in both the climate system (left) and socioeconomic processes including adaptation and mitigation (right) are drivers of hazards, exposure and vulnerability (Intergovernmental Panel on Climate Change, [Climate Change 2014: Impacts, Adaptation and Vulnerability](#), 2014).

28. Risk assessments generally consist of three steps: risk identification (finding, recognizing and describing risk); risk analysis (estimation of the probability of its occurrence and the severity of the potential impacts); and risk evaluation (comparing the level of risk with risk criteria to determine whether the risk and/or its magnitude is tolerable). These steps consider both climate and non-climate factors that generate a climate or disaster risk.

29. The advantage of an integrated risk and vulnerability assessment approach, as opposed to assessing only vulnerability, is that it addresses the large proportion of impacts that are triggered by hazardous events, and that it integrates both climate change adaptation and disaster risk reduction approaches. A relatively new practice is moving from single hazard approaches to multi-hazard/multi-risk assessments. This approach can account for regions or classes of objects exposed to multiple hazards (e.g. storms and floods), and cascading effects, in which one hazard triggers another.

30. Key considerations and general activities for undertaking risk and vulnerability assessments are discussed below. Tools and examples and more detailed stepwise guidance are provided in the Step B Toolbox: Conducting risk and vulnerability assessments, available as supplementary information.⁴¹

Outcome

- (a) A risk and vulnerability profile in current and future climate scenarios of the social-ecological system covering hazards, exposure, and vulnerabilities (including sensitivities and adaptive capacities);
- (b) Main drivers of risks and underlying causes.

⁴¹ See CBD/SBSTTA/22/INF/1.

Key actions

- (a) Develop or make use of frameworks and concepts that recognize the linkages between people and ecosystems as integrated social-ecological systems rather than viewing adaptation and risk reduction only through a human lens;
- (b) Assess past and current climate and non-climate risks to the social-ecological system with flexible criteria that address the linkages between human and environmental systems:
 - (i) Consult previous assessments of climate change impacts on biodiversity and ecosystem services; for example, national impact and vulnerability assessments prepared for UNFCCC, or vulnerability assessments from forest, agriculture, fisheries or other relevant sectors;
 - (ii) Conduct socioeconomic and ecological field surveys to identify vulnerabilities in both communities and ecosystems (including ecosystems that provide critical services for climate change adaptation or DRR) (see supplementary information for further detail⁴²);
 - (iii) Assess future risks based on climate change projections or scenarios that are at the appropriate scale, e.g. downscaled to the local level where appropriate;
- (c) Integrate quantitative approaches (based on scientific models) and qualitative approaches, which are grounded in expert judgment and traditional and local knowledge (more detail provided below). For example, use participatory rural appraisals to understand local perceptions and past experiences;
- (d) Develop hazard and risk maps, such as through the use of participatory 3-D modelling of risks.

Step C. Identifying EbA and Eco-DRR options

Purpose

31. Having defined the boundaries of the social-ecological system/landscape and identified initial entry points for EbA and Eco-DRR, as well as vulnerabilities and risks (Step A), potential options are identified by the multi-stakeholder group within an overall strategy of adaptation and disaster risk reduction. A list of relevant tools linked to this step is provided in the Step C Toolbox: Identifying EbA and Eco-DRR Strategies, available as supplementary information.⁴³

Outcome

A list of available strategies and options for reducing the exposure and sensitivity of social-ecological systems to climate hazards and enhancing adaptive capacity

Key actions

- (a) Identify existing coping strategies and responses to climate change and disaster risks, and analyse viability for future climate impacts and risks;
- (b) Refine the initial entry points identified for EbA/Eco-DRR. Criteria for selecting entry points can include:
 - (i) High probability of effectiveness from previous experiences in a similar social-ecological setting;
 - (ii) Strong support from stakeholders;
- (c) In collaboration with multi-stakeholder groups, inclusive of stakeholders, rights holders and experts, formulate appropriate strategies within an overall adaptation strategy to address the risks and vulnerabilities identified in Step B;

⁴² Ibid.

⁴³ Available in CBD/SBSTTA/22/INF/1.

- (d) Assess specific issues and priorities of the vulnerable groups, sectors, and ecosystems.
- (e) Ensure that EbA and Eco-DRR are planned at the local, community and household levels and at the landscape or catchment level, as appropriate;
- (f) Identify the EbA and Eco-DRR strategies that meet the objectives defined in Step A, and that adhere to its main elements;
- (g) Consider the qualification criteria and standards for EbA.⁴⁴

Step D. Prioritizing, appraising and selecting EbA and Eco-DRR options

Purpose

32. In this step, the EbA and Eco-DRR options identified in Step C are prioritized, appraised and selected to achieve the goals set out in Step A, as part of an overall adaptation and disaster risk reduction strategy for the system of interest. A list of relevant tools is provided as supplementary information⁴⁵ in the Step D Toolbox: Prioritizing, appraising and selecting EbA and Eco-DRR options.

33. Given the importance of evaluating trade-offs and limitations, more detailed actions are provided (Box 3). Associated tools are available in the Step D Toolbox: Prioritizing, appraising and selecting adaptation and DRR options and identifying trade-offs available as supplementary information.⁴⁶ Information on ways to increase scientific and technical knowledge of EbA and Eco-DRR approaches are also elaborated within supplementary information.⁴⁷

Outcome

- (a) List of prioritized options based on selected criteria;
- (b) Selection of final options for implementation.

Key actions

- (a) Using participatory approaches (Step A), identify the criteria/indicators to be used to prioritize and appraise the adaptation and disaster risk reduction options identified in Step C. For example, using multi-criteria analysis or cost-effectiveness to evaluate adaptation options;⁴⁸
- (b) Ensure that trade-offs and limitations of options are part of the appraisal process (box 3), and include consideration of green or hybrid solutions before grey when more effective;
- (c) Consider multiple values and benefits, including non-monetary, to capture the full value of different adaptation and risk reduction options;
- (d) Assign weights to the proposed criteria, and use the criteria to rank the adaptation and disaster risk reduction options;
- (e) Prioritize and short-list adaptation and disaster risk reduction options based on the agreed-upon criteria;
- (f) Make use of the multi-stakeholder group and consult other rights holders to identify the best options and develop a business case;

⁴⁴ See “[Making Ecosystem-based Adaptation Effective – A Framework for Defining Qualification Criteria and Quality Standards](#)” (FEBA Technical Paper).

⁴⁵ See CBD/SBSTTA/22/INF/1.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Methods for appraising the value of EbA and Eco-DRR activities, excerpted from [Frontier Economics \(2013\), “The Economics of Climate Resilience: Appraising flood management initiatives – a case study”](#) are available in CBD/SBSTTA/22/INF/1.

(g) Analyse the costs, benefits, impacts and trade-offs of different risk management scenarios, and the costs of inaction, to capture gains or losses in ecosystem services provisioning that have an impact on adaptation and disaster risk reduction and resilience (e.g. consideration for wetlands);

(h) Consider the sustainable use of local ecosystems, services and/or materials in EbA/Eco-DRR options that could bring additional local benefits and reduce carbon emissions from transport, rather than outsourced labour and materials;

(i) In appraising options, consider the costs and benefits of interventions over the long term, as the time period in economic comparison of various options is important, and consider both upfront capital and longer-term maintenance costs. For example, engineered structures, such as dykes, can be relatively inexpensive at the investment level but carry high maintenance costs, whereas ecosystem-based approaches, such as wetland restoration, may be less expensive in the long term;

(j) Assess the strength of proposed EbA and Eco-DRR measures by examining how they adhere to the elements, principles and safeguards, considering available qualification criteria and standards;⁴⁴

(k) Before the design and implementation of selected projects (Step E), conduct environmental impact assessments (EIA) of the recommended options, ensuring that: (i) possible social and environmental impacts have been clearly identified and assessed; (ii) appropriate measures have been taken to avoid or, if not possible, mitigate risks; and (iii) the measures taken to avoid/mitigate risks are themselves monitored and reported on throughout project life cycles. The EIA should incorporate a summary of recommendations from past, ongoing and planned projects and programmes within the relevant geographic jurisdiction.

Box 3. Evaluating trade-offs and limitations

Part of the process of prioritizing, appraising and selecting adaptation/DRR options involves the identification and evaluation of potential trade-offs. Trade-offs may arise when an activity protects one group of people at the expense of another, or favours a particular ecosystem service over another. Some trade-offs are the result of deliberate decisions; others occur without knowledge or awareness. For example, the implementation of adaptation actions upstream may have effects on downstream communities, and at different times. Ecosystems are subject to climate change, and, therefore, EbA, Eco-DRR and other practices that use ecosystem-based approaches should be designed to be robust in the face of current and projected impacts of climate change. Trade-offs and limitations should be considered and integrated within overall adaptation and disaster risk reduction planning and aligned with national policies and strategies. They should also be implemented alongside other measures of risk reduction, including avoidance of high-risk zones, improved building codes, early warning and evacuation procedures. A trade-off analysis across scales and considering multiple benefits can help to place EbA and Eco-DRR options on equal footing alongside other options.

Key actions

- Develop indicators of short- and long-term changes across various spatial scales to detect potential trade-offs and limitations of EbA and Eco-DRR (see Step F for more detail).
- Use geospatial data and models (such as those available in InVEST (<https://www.naturalcapitalproject.org/invest>)) to understand how changes in ecosystem structure and function as a result of adaptation or DRR interventions will affect ecosystem services across a land- or seascape.
- Consider the full range of infrastructure options from “green” to “hybrid” to “hard” and their compatibility, recognizing that different combinations are needed in different situations.
- Ensure that EbA and Eco-DRR are informed by the best available science and indigenous and traditional knowledge to fully account for possible trade-offs and limitations.
- Ensure the integration of EbA and Eco-DRR into overall adaptation or disaster risk reduction strategies, in recognition of potential limitations of ecosystem-based approaches. Consider and minimize trade-offs or unintended consequences of EbA and Eco-DRR throughout all stages of planning and implementation, including accounting for uncertainties in climate projections.

Step E. Project design and implementation

Purpose

34. In this step, the interventions selected in Step D are designed and implemented according to the principles and safeguards. Throughout the design and implementation, it is important to continually revisit the principles and safeguards and ensure ongoing stakeholder engagement, capacity-building, mainstreaming and monitoring.

35. Given the added importance of transboundary and cross-sectoral cooperation, coordination and policies, more detailed actions are provided (see box 4). Associated tools are provided in the Step E toolbox: Project design and implementation, available as supplementary information.⁴⁹

Outcome

A project design and implementation plan (including a finance strategy, capacity development strategy, defined actions for institutional and technical support measures)

Key actions

- (a) Consider the EbA and Eco-DRR elements, principles and safeguards throughout design and implementation (See Step B);
- (b) Consider the qualification criteria and standards for EbA;⁴⁴
- (c) Design interventions at the appropriate scale to address the goals set out in Step A;
- (d) Engage relevant experts, and strengthen linkages between the scientific community and project executors to ensure optimal and appropriate use of ecosystems for adaptation and DRR;
- (e) Select appropriate tools, and if needed, plan for the development of new methodologies;
- (f) Determine technical and financing requirements and develop a budget accordingly;
- (g) Establish a workplan, including timelines of activities, milestones to achieve, multi-stakeholder consultations needed, and allocation of tasks and responsibilities;
- (h) Develop strategies to mitigate identified risks and trade-offs and enhance synergies (see Step D);
- (i) Establish linkages between the project and national, subnational, and/or local development plans, strategies, and policies;
- (j) Consider principles for building resilience in social-ecological systems (see box 5).

⁴⁹ Available in CBD/SBSTTA/22/INF/1.

Box 4. Transboundary and cross-sectoral cooperation, coordination and policies

Climate change impacts and disaster risks extend beyond political boundaries; therefore, an integrated landscape or systems approach aids in problem-solving across sectors and boundaries. Transboundary cooperation can enable the sharing of costs and benefits and prevent potentially negative impacts of measures taken unilaterally. Transboundary cooperation can also provide opportunities for socioeconomic development and managing issues at appropriate ecosystem scales.

EbA and Eco-DRR interventions increasingly call for cooperation with other sectors, including agriculture, water, urban development and infrastructure.

Transboundary and cross-sectoral considerations can be integrated into EbA and Eco-DRR by:

- Integrating the different scales of critical ecosystem functioning needed for adaptation and disaster risk reduction in EbA and Eco-DRR;
- Greater coherence between regional/transboundary EbA and Eco-DRR-strategies and policies contributes to improved effectiveness of actions;
- Learning from well-established cross-sectoral planning mechanisms, such as integrated water resources management (IWRM), integrated coastal zone management (ICZM) and land-use planning, to strengthen cross-sectoral cooperation and enhance uptake of EbA and Eco-DRR into relevant sectoral frameworks (also applicable to mainstreaming EbA and Eco-DRR);
- Setting up a commission or task group with transboundary partners and sector; representatives to develop a joint vision, goals and objectives for EbA and Eco-DRR;
- Developing a common understanding of vulnerabilities at the transboundary scale and for different sectors through the use of common models and scenarios and agreed-on methodologies and sources of information;
- Adopting an iterative monitoring and evaluation process (see Step F) to ensure that transboundary and cross-sectoral EbA and Eco-DRR strategies continue to meet national adaptation and disaster risk reduction targets and maximize the potential for multiple benefits.

Box 5. Applying resilience thinking in EbA and Eco-DRR design

A resilience approach to sustainability focuses on building capacity to deal with unexpected change, such as the impacts of climate change and the risk of disaster. Applying a resilience lens to designing EbA and Eco-DRR interventions involves managing interactions between people and nature as social-ecological systems to ensure continued and resilient provisioning of essential ecosystem services that provide adaptation and disaster risk functions. There are seven key principles in applying resilience thinking, distilled from a comprehensive review of different social and ecological factors that enhance the resilience of social-ecological systems and the ecosystem services they provide (Stockholm Resilience Centre, 2014):

1. Maintain diversity and redundancy, for example, by maintaining biological and ecological diversity. Redundancy is the presence of multiple components that can perform the same function, can provide “insurance” within a system by allowing some components to compensate for the loss or failure of others.
2. Manage connectivity (the structure and strength with which resources, species or actors disperse, migrate or interact across patches, habitats or social domains in a social-ecological system), e.g. by enhancing landscape connectivity to support biodiversity and ecosystem services that contribute to adaptation and risk reduction.
3. Manage slowly changing variables and feedbacks (two-way “connectors” between variables that can either reinforce (positive feedback) or dampen (negative feedback) change).
4. Foster complex adaptive systems thinking by adopting a systems framework approach (Step A).
5. Encourage learning, such as by exploring different and effective modalities for communications.
6. Broaden participation, such as by dedicating resources to enable effective participation.
7. Promote polycentric governance systems, including through multi-institutional cooperation across scales and cultures.

Step F. Monitoring and evaluation of EbA and Eco-DRR

Purpose

36. Monitoring and evaluation (M&E) of EbA and Eco-DRR actions are critical for assessing progress and effectiveness of interventions. Monitoring enables adaptive management and is ideally carried out throughout the lifetime of the intervention. Evaluation assesses an ongoing or completed project, programme or policy, its design, implementation and results. M&E can encourage continual learning to help inform future policy and practice.

37. There is a movement towards integrating approaches for M&E from both adaptation and disaster risk reduction fields. A myriad of approaches and frameworks have been developed, including logical frameworks and results-based management. Key actions and considerations related to M&E are outlined below.⁵⁰ Tools associated with this step are available in the Step E Toolbox: Monitoring and evaluation of EbA and Eco-DRR, available as supplementary information.⁵¹

Outcome

A monitoring and evaluation framework that is realistic, operative and iterative, including protocol for data collection and evaluation, and information generated on outcomes and impacts of interventions

⁵⁰ Several of the key actions and considerations are based on the M&E Learning Brief (in development), to be published in 2018 by Deutsche Gesellschaft für Internationale Zusammenarbeit.

⁵¹ See CBD/SBSTTA/22/INF/1.

Key actions

- (a) Set up an M&E framework, establishing its objectives, audience (who uses the information from an M&E assessment), data collection, mode of dissemination of information, and available technical and financial capacity;
- (b) Develop a results/outcomes framework within the M&E framework that details the expected effects of the EbA/Eco-DRR intervention, including short- and medium-term outcomes and long-term results;
- (c) Develop indicators at the appropriate temporal and spatial scales to monitor the quantity and quality of change:
 - (i) Ensure that monitoring and evaluation include indicators⁵² formulated to the SMART criteria, which are specific, measurable, achievable and attributable, relevant and realistic, time-bound, timely, trackable and targeted and/or the ADAPT principles (Adaptive, Dynamic, Active, Participatory, Thorough);
 - (ii) Ensure that indicators are vulnerability and risk-oriented and focused, and that they are able to measure high risks versus low risks and how EbA/Eco-DRR interventions reduce risk over time. It is important to define “risk layers” and to prioritize which risks should be measured using indicators;
 - (iii) Use targets and indicators under the Sustainable Development Goals, Aichi Biodiversity Targets and other relevant frameworks to track progress in sustainable ecosystem management and biodiversity enhancement, which also deliver towards strengthening resilience to climate change impacts and disasters;
 - (iv) Align indicators with existing M&E frameworks where possible;
- (d) Determine baselines for assessing effectiveness;
- (e) Use appropriate participatory and inclusive tools for monitoring and evaluation of EbA and Eco-DRR, ensuring the engagement of local communities, stakeholders and rights holders.⁵³ Ensure the relevant experts are engaged, such as specialists on ecosystems/species status, and ecosystem function;
- (f) Test EbA/Eco-DRR related indicators for local relevance.

⁵² More information on indicators is available through the CBD website (<https://www.cbd.int/indicators/default.shtml>) and in IPCC Fifth Assessment Report (see <https://www.ipcc.ch/report/ar5/>)

⁵³ See CBD/SBSTTA/22/INF/1, annex III.