

# Learning Brief

# Anchoring Ecosystem-based Adaptation in Networks, Policies and Sectors

June 2019

4<sup>th</sup> EbA  
Community of  
Practice Workshop,  
11 – 14 June 2019,  
Bonn,  
Germany

## Insights from the 4<sup>th</sup> EbA Community of Practice Workshop



Participants of the workshop on the riverbanks of the Rhine. Photo: © GIZ/Kolja Matzke

## Political and Social Relevance of EbA

The true scale of transformation required in order to adapt to the impacts of a changing climate and the loss of species and ecosystems might not have been grasped to its full extent. However, most relevant actors have realised that they face serious challenges that need to be addressed. These challenges have social and eco-

nomic consequences, affecting economies, livelihoods, and human well-being, and can lead to further environmental degradation. Climate change has therefore become a development issue and measures to adapt to it need to be mainstreamed into national planning in order to become part of broader development policies.

## About the EbA Community of Practice

The EbA Community of Practice (CoP) is supported by the Global Project 'Mainstreaming EbA', which is funded through the International Climate Initiative of the German Ministry for the Environment, Nature Conservation, and Nuclear Safety, and implemented by GIZ. The CoP is a knowledge and exchange network of Ecosystem-based Adaptation (EbA) practitioners representing governments, international organisations, civil society, and research institutions who are interested in strengthening EbA in planning and decision-making.

This document is a result of a meeting of 78 participants from 22 countries during the 4<sup>th</sup> international EbA Community of Practice Workshop that was organised by GIZ and hosted by UNU-EHS between the 11<sup>th</sup> and 14<sup>th</sup> of June, 2019 in Bonn, Germany.

➔ [EbA Community of Practice](#)

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## Key messages ...

- Mainstreaming EbA into other networks, policies, and sectors is essential for scaling up EbA initiatives and achieving long-lasting impacts at policy and implementation level.
- In order to mainstream EbA, convincing communication is key, which could be enhanced by:
  - sharing success stories and challenges;
  - pointing out potential climate change risks and benefits of EbA;
  - providing decision makers with economic information on risks and benefits;
  - presenting a mix of data generated by research institutions and local knowledge;
  - showing local communities the resulting benefits for their livelihoods;
  - promoting mutual understanding and the management of trade-offs, rather than accusations for environmentally harmful practices by other sectors;
  - adopting the language spoken in other sectors; and
  - taking social and cultural aspects into account.
- Ministries with no direct environmental focus (e.g. the Ministry of Finance) could also be involved in coordinating implementation and reviewing legislation, as well as holding implementation agencies accountable for results. This might have a more binding effect than having Ministries of Environment in a leading role, as these often lack the staff and financial capacities or mandates to set up and chair intergovernmental partnerships with other Ministries.
- Anchoring EbA in other networks, e.g. the Partnership for Ecosystems for Adaptation and Disaster Risk Reduction (PEDRR), the National Adaptation Planning (NAP) Global Network, and the Nationally Determined Contributions (NDC) Partnership, could facilitate the use of synergies.
- Promising policy entry points for EbA that could trigger its integration into sectoral and local plans and policies include national adaptation plans (NAPs), National Biodiversity Strategies and Action Plans (NBSAPs), overall development plans, and strategies and land-use planning processes.
- By using a mix of top-down and bottom-up approaches, EbA initiatives can be pioneered at the local level and lessons learned can be integrated into policy processes, enabling both replication and scaling-up.
- Mainstreaming EbA into the insurance sector could result in the allocation of resources for EbA implementation or in lower risk premiums when risk management includes EbA.
- Awareness raising and capacity development also need to address insurance companies' staff, as EbA solutions are not yet well understood by the insurance industry.
- The agricultural sector is not a homogeneous block, but consists of different actors with diverse interests. In order to overcome resistance to adaptation options, it is helpful to present a variety of different investment options and their respective benefits.
- Physical spaces of exchange can facilitate convergence with other sectors.
- Integrated Water Resource Management (IWRM) is an ecosystem-based management approach at the landscape level and can be a powerful framework for EbA if climate risks and adaptation responses are systematically taken into consideration (e.g. by policy-makers and practitioners).
- Water funds are well suited to integrate EbA as they aim for conservation and improved water management by using natural infrastructure and implementation of climate change adaptation (CCA).
- Natural or hybrid infrastructure approaches are more adaptable to changing climatic conditions and can provide more cost-effective and low-regret solutions.
- Developing construction standards for green solutions and the inclusion of green or hybrid solutions in engineering curricula and corporate sustainability programmes could help overcome barriers in the infrastructure sector.

Ecosystem-based approaches to adaptation offer a promising option to address the adverse impacts of climate change because they create multiple benefits for people and nature, which can thereby help achieve multiple policy objectives. EbA approaches enable planning for climate change adaptation on longer time scales, can be cost-effective compared to engineered infrastructure, emphasise community participation, and the use of traditional and local knowledge systems.<sup>1</sup> The integration of EbA measures into most NDCs indicates a growing awareness of their relevance. However, few governments have adopted these approaches as a first option or at a larger scale, and few private companies use natural ecosystems as part of their climate adaptation strategies.

In many cases, the political and economic will is missing to implement already existing policies. In order to address this, the abstract challenges that EbA practitioners face, as well as the solutions EbA can offer for a transformation towards economic, social, and ecological

sustainability, need to be 'translated' for decision makers. As many decision makers think in terms of economic incentives, this translation needs to include a valuation of ecosystems and the services they provide for human development. In order to address the prevailing time pressure, to maximise multiple benefits at the local level, and to contribute to countries' efforts towards implementing various international agreements and goals (e.g. Aichi Targets, SDGs, and the Paris Agreement/NDCs), measures need to be scaled up and be part of integrated approaches at the landscape/seascape level. Thus, EbA needs to be mainstreamed into different networks, policies, and sectors.

This document summarises discussions and insights that emerged during the 4<sup>th</sup> International Community of Practice Workshop (CoP) from 11<sup>th</sup> – 14<sup>th</sup> June, 2019 in Bonn, Germany. It focusses on anchoring EbA in various networks, policies, and different sectors: insurance, agriculture, water, and infrastructure.



Participants of the 4th EbA Community of Practice Workshop in Bonn. Photo: © GIZ/Kolja Matzke

<sup>1</sup> Cf. Secretariat of the Convention on Biological Diversity (2019): [Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information](#).



## Anchoring EbA in Networks

### Key messages ...

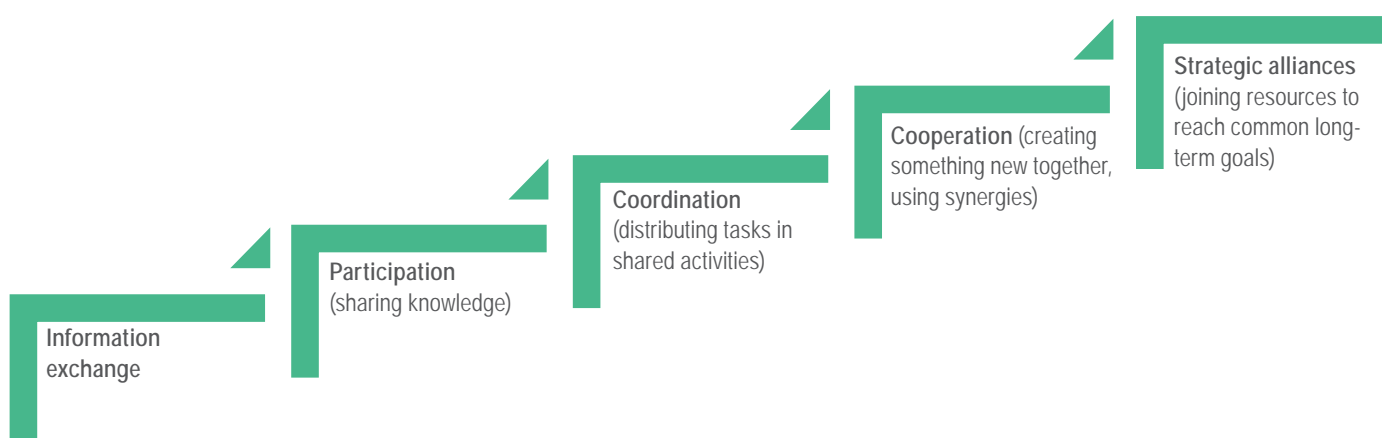
- There are **various networks focusing on EbA or Ecosystem-based Disaster Risk Reduction (Eco-DRR)**, which differ in size, geographical reach, and mode of operation, in addition to the international EbA Community of Practice (CoP). While some networks facilitate the exchange of **practical experiences**, others focus more on **lobbying for policy change**.
- Within a functioning network, its **purpose, goals, rules, and added value** are clear to all stakeholders and participants perceive the **benefits of participation** to be greater than its costs.
- Other **success factors** for a sustainably functioning network are: joint ownership and equal opportunity to contribute; political backing and relevance; long-lasting relationships and mutual trust amongst network partners; continuous exchange, learning from experiences, which can result in further development of ideas, concepts and methods.
- **Challenges:** lack of funds; lack of continuity due to changing partners and end of project cycles that networks are attached to; lack of ownership; lack of monitoring achievements.

Levels of networking and cooperation can be assessed through a five-step model, ranging from rather loose information exchange to strategic alliances (see Figure 1). Depending on aspects such as a network's goal and the motivation of its participants, networks and other forms of cooperation can move along this five-step continuum in the course of their existence.

Examples of networks working on EbA and Eco-DRR are

- [the Friends of EbA \(FEBA\)](#),
- [the Partnership for Ecosystems for Adaptation and Disaster Risk Reduction \(PEDRR\)](#),
- [the NAP-Global Network \(NAP-GN\)](#),
- [the PANORAMA – Solutions for a healthy planet partnership](#),
- [the LEDS Global Partnership](#),
- [Risk Talk](#) and
- [the EbA Community of Practice Philippines](#).

**Figure 1 five levels of networking and cooperation**



Source: denkmodell (1998)/GIZ (2015) *Cooperation Management for Practitioners: Managing Social Change with Capacity WORKS*, p. 52–59.

### Example 1 The PEDRR-network

The Partnership for Ecosystems for Adaptation and Disaster Risk Reduction (PEDRR) is a global alliance of UN agencies, NGOs, and specialist institutes. It was founded in 2008 as a global thematic platform of the International Strategy for Disaster Reduction (ISDR). Its goal is to promote and scale-up implementation of Eco-DRR and to ensure it is mainstreamed in development planning at global, national, and local levels, in line with the Sendai Framework for Disaster Risk Reduction. The network pools expertise and advocates for policy change and best practice in ecosystem management for DRR and CCA, based on science and practitioners' experiences. Core to the network is its focus on collaboration in developing outputs – all PEDRR-products need to be the result of collaborative efforts rather than individual work. Important tools to achieve and sustain this level of cooperation and commitment are advocacy, capacity development (for instance, in the form of Massive Open Online Courses), social media, weekly newsletters, and knowledge exchange.

- » [The Partnership for Ecosystems for Adaptation and Disaster Risk Reduction \(PEDRR\)](#)
- » [Sendai Framework for Disaster Risk Reduction](#)

### Example 2 PANORAMA: Solutions for a Healthy Planet

The PANORAMA partnership is an initiative to document and promote examples of replicable solutions across a range of conservation and sustainable development topics, enabling cross-sectoral learning and inspiration. So far, the network's website contains 126 EbA solutions. Due to success factors such as:

- PANORAMA's open and inclusive approach, with a wide reach to practitioners, policy makers and actors from different sectors;
- the presentation of solutions that work and are replicable elsewhere; and
- the platform's use of a wide range of delivery mechanisms (web platform, workshops, webinars, award schemes etc.),

its solutions have contributed to and have been taken up in international policies and guidelines.<sup>2</sup> They provide inspiration to a variety of policy makers and practitioners and have thereby facilitated mutual learning. However, upscaling of solutions remains a challenge that needs to be addressed in the future.

- » [PANORAMA – Solutions for a Healthy Planet](#)

*This session was supported by inputs from the following participants: Zita Sebesvari (UNU-EHS, Germany), Jihan Adil (Society of Environmental Engineers, Philippines), Mathias Bertram (GIZ, Germany), Anastasia Thomaidis (GIZ, Germany), Na-Hyeon Shin (GIZ, Germany) and Birte Derrix (GIZ, Germany).*

<sup>2</sup> Secretariat of the Convention on Biological Diversity (2019): [Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information](#).

## Anchoring EbA in Policies

### Key messages ...

- In order to scale up the implementation of EbA, it needs to be integrated into various sectoral and cross-sectoral policies.
- **Challenges:** A lack of coordination between different sectors; institutional overlap that creates uncertainty and hinders the uptake of action; lack of data proving the effectiveness of EbA measures.
- **Opportunities:** A powerful central coordinating institution, integrating EbA into NAPs; National Biodiversity Strategies and Action Plans (NBSAPs); overall development plans and land-use planning processes can also trigger its integration into sectoral and local policies; facilitating input from all stakeholders in an 'open NAP process'; the combination of local and scientific knowledge; governmental ownership.

By embedding EbA principles in local, municipal, and national policies, the effectiveness, efficiency, and longevity of EbA initiatives can be enhanced.<sup>3</sup> Promising concrete entry points for EbA include NAPs, NBSAPs, overall development plans and strategies, sector-specific policies, land-use planning processes, and the creation of strong links between national and subnational policies for effective implementation. Integration of climate change into national and sector policies and strategies should rely on a mix of top-down and bottom-up approaches. Thereby, EbA initiatives can be pioneered at the local level and joint analysis of feedback and lessons learned can be integrated into policy processes, which enables replication and scaling-up of the approach.<sup>4</sup>

### Integrating EbA into Thailand's climate change and water policies

In July 2015, the Cabinet of Thailand approved a Climate Change Master Plan 2015–2050. The Master Plan is a framework of integrated policies and action plans related to climate change. Its purpose is to support the alignment of climate change initiatives with Thailand's economic and socio-cultural context, e.g. its economic sufficiency philosophy. It focuses on adaptation and mitigation across sectors and on the creation of an enabling environment for climate change management. Additionally, Thailand's NAP focuses on adaptation needs in various sectors such as agriculture and water management and includes EbA as one of its core principles. Accordingly, ecosystem-based solutions are also considered across all six components of Thailand's Water Management Plan. Key enabling factors for this integration included the demonstration of successful EbA solutions at the local level and the clear links between EbA and policies and strategies of different sectors. For this purpose, actors and/or institutions taking on a leading role in promoting EbA are crucial.



<sup>3</sup> Cf. Secretariat of the Convention on Biological Diversity (2019): [Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information](#).

<sup>4</sup> Cf. GIZ (2019): [Emerging lessons for mainstreaming Ecosystem-based Adaptation: Strategic entry points and processes](#). Authors: Lili Ilieva and Thora Amend.

Participants of the EbA CoP workshop identified the large effort needed to coordinate with all relevant national stakeholders and different donors as one of the major challenges for the successful integration of EbA into policies. Coordination undertaken by Ministries of Environment is often found to be quite weak. Ministries with no direct environment focus (e.g. the Ministry of Finance) could also be involved in coordinating implementation, reviewing legislation and holding implementation agencies accountable for results. This might have a more binding effect than having Ministries of Environment in a leading role, as these often lack enforcing rules to control other Ministries.

Other major challenges that were discussed are a change of government leading to different priorities (e.g. in the case of Brazil), as well as the lack of data proving the effectiveness of EbA measures.

Participants identified various enabling factors, including

- the consideration of EbA as a cross-cutting issue;
- capacity building at all levels;
- a participatory process (e.g. facilitating input from all stakeholders in an 'open NAP process');
- the combination of local and scientific knowledge, and governmental ownership.

The latter could be enforced, e.g. through

- training EbA trainers within the government;
- raising awareness for successful EbA solutions and their economic benefits;
- and holding workshops with both practitioners and government representatives, providing them with opportunities for considering EbA approaches.



Participants of the workshop. Photo: © GIZ/Marie-Isabell Lenz

*The session was supported by inputs from the following participants: Nantawan Suwansatit and Prapatsorn Kongkaew (Office of the Natural Water Resources, The Prime Minister's Office Thailand), Maria Olatz Cases and Armin Deitenbach (GIZ, Brazil), Abdramane N'Golo Diarra (GIZ, Mali) and Rojina Manandhar (UNFCCC Nairobi Work Programme).*

## Anchoring EbA in Sectors

### Anchoring EbA in the Insurance Sector

#### Key messages ...

- There is **potential to link Climate Risk Finance and Insurance (CRFI) with EbA** to reduce and transfer climate related risks and increase resilience. Both concepts are gaining attention as complementary approaches for adaptation.
- Insurance support for EbA projects can have financial and social benefits.
- The **engagement between the insurance and environment sectors is relatively new** and it is not yet precisely understood which insurance scheme could work for different ecosystems.
- **Challenges:** There are few fully-integrated EbA-CRFI pilot projects which demonstrate how EbA and insurance can work together. There is a need for enhanced quantification of EbA benefits and more specifically, an integration of these benefits into the tools and approaches of the insurance industry.

Irrespective of ongoing climate policy efforts, some degree of residual risk from climate change remains in all countries. Therefore, existing efforts related to mitigation, risk preparedness, and adaptation need to be supplemented with more innovative tools to avert, minimise, and address loss and damage.<sup>5</sup> These tools could include CRFI measures, which would involve the insurance industry in order to support people to adapt through knowledge, risk transfer, or direct investments.

However, to date, it is not well understood how EbA could be included in such approaches. A GIZ study that is currently jointly undertaken by the University of California, Santa Cruz, Social Impact Partners, and The Nature Conservancy, aims to identify potential overlaps between EbA and the insurance sector. In order to pay lower insurance premiums, insured actors usually must have some kind of risk management in place. An example from Mexico shows that this could also consist of green measures.

#### Design of an insurance policy for coral reefs to protect tourism infrastructure in Mexico<sup>6</sup>

Hotel owners in Mexico are required to pay a government fee in exchange for the right to build infrastructure on coastal territory. For instance, in 2005, hurricane Wilma hit the Yucatan peninsula, with an overall impact of over USD 1.5 billion in direct and indirect costs (CENAPRED, 2006). After hotel owners voluntarily increased the fee they pay by 25% to restore the beaches needed for tourism, they began looking for a different finance scheme. Therefore, the Nature Conservancy, Swiss Re, and the Mexican hotel owners association, in coordination with the National Commission for Protected Areas (CONANP), are currently working on the implementation of a pilot insurance policy that covers for potential beach erosion. Among other measures, such as transferring sand from external sand banks as a soft engineered solution to address the immediate problem, but not the long-term vulnerability of the coast, the insurance includes the allocation of resources for the restoration of certain portions of coral reefs, which would have a longer-term effect in terms of beach protection.



<sup>5</sup> GIZ (2019): Comprehensive Climate Risk Management – Promising pathways to avert, minimise and address Loss and Damage.

<sup>6</sup> GIZ (2018): Entry Points for Mainstreaming Ecosystem-based Adaptation. The Case of Mexico. Author: Alejandra Calzada Vázquez Vela, Thora Amend (ed).



One of the main barriers to a wider application of such approaches is that quantitative adaptation (risk reduction) benefits have only been identified for a few ecosystems and have not yet been broadly evaluated. The incorporation of the EbA measure in Mexico was only possible because of the availability of solid technical evidence, which demonstrated that well-preserved coral reefs have the ability to reduce wave energy by 97 % (The Nature Conservancy, 2017), and thus help to reduce the erosion of beaches and damage of infrastructure. EbA solutions are not well understood by the insurance industry

and there is a missing link between research and people working for insurance companies on the ground. Thus, EbA capacity building also needs to address insurance staff. Setting up insurance schemes that take EbA into account is most promising in areas with existing insurance systems and where the financial benefits are the greatest. Covering events with higher frequencies helps to convince stakeholders as effects of climate change-related impacts and long-term changes are more visible.



Panel discussion about the potential of insurance and EbA. Photo: © GIZ/Kolja Matzke

*This session was supported by inputs from the following participants: Kerstin Pflieger (The Nature Conservancy, Germany), Michael Beck (University of California Santa Cruz, USA), Oliver Quast (Social Impact Partners, Germany), Daniel Stadtmüller (GIZ InsuResilience Secretariat, Germany), Sönke Kreft (Munich Climate Insurance Initiative, Germany) and Solveig Schindler (GIZ, Germany).*

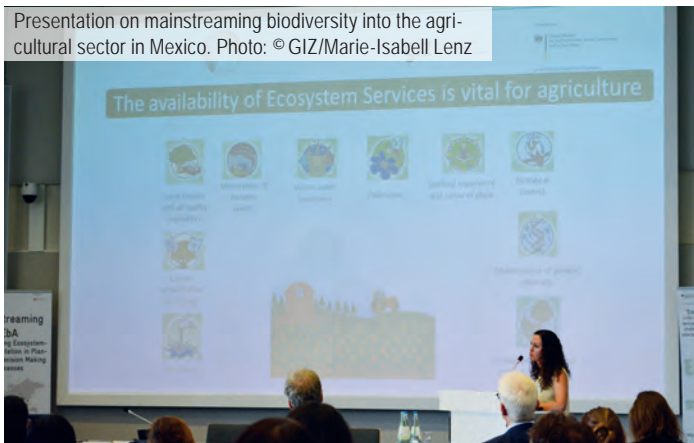
## Anchoring EbA in the Agricultural Sector

### Key messages ...

- EbA can be better integrated into agriculture when presenting demonstration sites and a variety of **different investment options with their respective benefits**.
- When communicating with the agricultural sector, it is helpful to deliver **one joint message on climate change adaptation and biodiversity**.
- Actors from the agricultural sector are aware of their role and **managing trade-offs** is part of their everyday business.
- **Different mandates** from Ministries can be challenging. **Physical spaces can support exchange** and collaboration between 'environmentalists and agriculturalists'.

The agricultural sector is strongly affected by the changing climate worldwide and the loss of biodiversity. There are severe present and future impacts on crops, livestock and fish, and farm infrastructure, significantly affecting agricultural investments, livelihoods, food production and food security now and in the future.<sup>7</sup> Agricultural production depends on well-functioning ecosystems and the services they provide such as healthy and fertile soils; water; pollination; climate regulation; natural pest management and extreme weather event buffering. At the same time, agriculture is also one of the main drivers of the two phenomena, i.e. climate change and biodiversity loss. Thus, the sector bears a certain responsibility and it is in its own best interest to use EbA measures to build agricultural production systems that are resilient and do not cause further environmental harm.

Presentation on mainstreaming biodiversity into the agricultural sector in Mexico. Photo: © GIZ/Marie-Isabell Lenz



<sup>7</sup> Cf. Secretariat of the Convention on Biological Diversity (2019): [Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information](#).

### Mainstreaming EbA through Awareness Raising with Economic Information

The Economics of Land Degradation (ELD) Initiative was originally created to raise awareness for the economic damage arising from land- and resulting ecosystem degradation and the loss of ecosystem services derived from healthy land and soil. Now, ELD has moved its focus towards calculating and communicating the economic benefits and opportunities arising from the sustainable management of ecosystems, establishing the rehabilitation of soils and land-based ecosystems as economically viable options.

#### Success factors

- Economic information raises the interest of policy makers and other stakeholders;
- it can furthermore help facilitate an understanding for EbA with government institutions/sectors that have a bigger impact on decisions related to ecosystems and EbA than the Ministries of Environment (e.g. Ministries for Agriculture, Finance and Economics);
- having a broad and enthusiastic network of partner institutions including research institutions, granting scientific credibility.

#### Challenges

- There is sufficient economic information to show the benefits of rehabilitation and of practicing Sustainable Land Management; however, detailed information for specific situations is lacking.
- Reaching all relevant stakeholders with the information, and establishing partnerships with them.

The agricultural sector is not a homogenous block but consists of different actors with diverse interests. In order to overcome resistance from within the sector, it is helpful to present a variety of different investment options and their respective benefits. In Mexico, the creation of the Center for Biodiversity Integration within the Ministry of Agriculture helped mainstream climate change adaptation and conservation concerns into the agricultural sector, which provided a physical space for exchange. Since agricultural production is required in every country, mutual understanding and managing trade-offs is needed, rather than accusations for environmentally harmful practices.

*This session was supported by inputs from the following participants: Mathias Bertram (GIZ, Germany), Mark Schauer (GIZ, Germany), Jörg Lohmann (GIZ, Germany), Paul Schütz (GIZ, Germany) and Regina Sánchez-Sosa (GIZ, Mexico)*

## Anchoring EbA in the Water Sector

### Key messages ...

- **Integrated Water Resource Management (IWRM)** is an ecosystem-based management approach at the landscape level; it can be a **powerful framework for EbA if climate risks and adaptation responses are systematically taken into consideration**.
- Water management starts with governance, i.e., clear societal responsibilities and decision-making to protect, sustainably manage, and restore ecosystems. **Without clear governance frameworks, proper management is not possible.**
- **Challenges:** multitude of actors with different interests; long periods of time to set up appropriate structures (e.g. a river basin commission, water fund etc.); strong confidence in the effectiveness of grey infrastructure.
- **Opportunities:** using existing governance structures (e.g. river basin committees) and approaches for EbA; making use of synergies between climate change adaptation and mitigation (e.g. river-basin restoration, wetland/peatland management); provision of tangible benefits (e.g. increased ownership, livelihoods) besides risk reduction.

Water management is not only a priority sector under the NDCs, it is also of multi-sectoral importance (e.g. agriculture, food security, health etc.).<sup>8</sup> In the face of climate change, as well as multiple other stresses, the resilience of freshwater resources is highly dependent upon healthy ecosystems and their services. Essential water related ecosystem services include coastal, flood, and drought protection, freshwater supply, water purification, and climate, water, erosion and sediment regulation. The holistic management of ecosystems within a landscape, by using integrated watershed management approaches, significantly strengthens water regulation services.

IWRM is an ecosystem-based management approach that does not necessarily focus on adaptation. Various EbA-relevant programmes and projects are already implemented in the water sector, e.g. from large-scale transboundary water management to micro-watershed management. Integrating climate risks into the approach could transform it into a powerful framework for implementing and scaling up EbA. Water management starts with governance, i.e. norms, institutions, and processes that determine how a society exercises power, distributes responsibilities, and makes decisions to protect, sustainably manage, and restore ecosystems (IUCN, 2019). Without clear governance frameworks, proper management is not possible.



Introductory speech about IWRM and EbA. Photo: ©GIZ/Marie-Isabell Lenz

<sup>8</sup> Cf. GIZ (2019): Emerging lessons for mainstreaming Ecosystem-based Adaptation: Strategic entry points and processes. Authors: Lili Ilieva and Thora Amend.



### Example 1

#### Wise Use of Transboundary Wetlands by the Nile Basin Initiative

The Nile basin covers 3.2 million km<sup>2</sup>, spanning across 11 countries with 250 million people. It is highly sensitive to climate change, e.g. rainfall pattern changes (which would affect 50–60 per cent of Egypt's water provision if rainfall continues to decrease). Wetlands – covering 3–5 per cent of the basin – provide essential services to people from climate regulation to flood risk reduction and water purification. The Nile Basin Initiative was founded in 1999 in order to adopt a cooperative framework agreement for the management of water resources. However, as the initiative's nine member states have not yet concluded an agreement, the initiative is still in place. In order to spark action within the riparian countries, cooperation at the transboundary level needs to be grounded in a commission or regulatory agreements. Although the initiative was spearheaded by engineers, sustainable wetland management was included, resulting in NBI climate change and wetland strategies in 2013, as well



as a strategy for the management of environmental flows<sup>9</sup> in the Nile Basin in 2016. Presently, countries are developing bi/trilateral agreements for sub-basin management initiatives (including wetlands), which provide an entry point for EbA.

» [Nile Basin Initiative](#)

» [NBI climate change](#)

» [Strategy for the management of environmental flows in the Nile Basin in 2016](#)

### Example 2

#### Implementing EbA within Watershed Management - From Plans to Implementation in Thailand

Thailand's Huai Sai Bat river basin is vital for covering many people's water needs and reducing flood risks. Conventional measures of dredging and narrowing rivers have not halted sedimentation and erosion. Based on an analysis of nature-based solutions, the construction of natural weirs was considered but was found to be less cost-efficient due to frequent renewal costs. Therefore, engineers were asked to design a grey and green hybrid weir, which was presented to local communities via a participatory process. Communities agreed to the implementation of weirs at four sites. As in many other countries, there is a strong belief in grey infrastructure approaches, and convincing stakeholders of green or hybrid solutions presents considerable challenges. Showing good examples and positive effects of EbA measures on people's livelihoods, e.g. farms in riparian areas that require irrigation, can help convince local communities. Valuing the effectiveness of EbA measures still poses a great challenge. The development of construction standards for green solutions could facilitate easier access to national budgets.



» [Publications on EbA in Watersheds in Thailand](#)

» [Grey and green hybrid weir](#)

<sup>9</sup> Environmental flows describe the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems, and the human livelihoods and their well-being that depend upon these ecosystems (Brisbane Declaration, 2007). Nile Basin Initiative (2017): [Strategy for management of environmental flows in the Nile Basin](#).



### Example 3

#### Financial Incentives for Watershed Management & EbA via Water Funds

Water funds are long-term financial mechanisms that seek and manage contributions from public and private institutions in order to invest them in improving the management of hydrological resources to support conservation efforts. They improve water management by using natural infrastructure and an integrated water resources management approach while implementing actions that have a potential for climate change adaptation. Therefore, they are well suited to support the implementation of EbA measures. In Peru, all interested stakeholders, including government authorities, user organisations, and businesses, are involved in the structuring of water funds. The scheme generates shared responsibilities between those using the water resources in the middle and lower basins and those living in the upper basin. When aiming to create a water fund, one needs to bear in mind that its set-up can take several years and requires a legal and political framework



that allows for both the creation of such a fund and the necessary capacities to manage its financial mechanisms.

» Water funds



Dipankar Aich (EbA & IWRM Consultant, Bangladesh) speaking at the workshop. Photo: ©GIZ/Kolja Matzke

*This session was supported by inputs from the following participants: Dipankar Aich (EbA & IWRM Consultant, Bangladesh), Juan Carlos Sanchez (GIZ Nile Basin Initiative, Uganda), Lorena Martinez (IUCN, Germany), Nitiphan Trongkarndee (Department of Water Resources, Thailand), Aracely Salazar (GIZ, Ecuador) and Mirella Gallardo (The Mountain Institute, Peru).*

## Anchoring EbA in the Infrastructure Sector

### Key messages ...

- **Natural or hybrid infrastructure approaches are more adaptable** to changing climate conditions and can provide more cost-effective and low-regret solutions.
- **Challenges:** Lack of awareness; strong belief in grey solutions; different (sometimes negative) connotations with ecosystems; bringing all relevant stakeholders together.
- **Opportunities:** Presenting risks and multiple benefits of green solutions to decision makers; developing construction standards for green/hybrid solutions; including them in engineering curricula and corporate sustainability programmes; taking social and cultural aspects into account; adapting to the sector's language.

Climate change impacts, especially extreme weather events, also pose high risks to infrastructure. In contrast to grey solutions, which are rather static, ecosystem-based or hybrid approaches are more able to recover and adapt to changing conditions. Moreover, natural or hybrid approaches can often provide more cost-effective and low-regret solutions, especially in the face of uncertain climate change scenarios.<sup>10</sup> A better connection of socio-ecological issues with engineered solutions is needed to achieve both climate change and biodiversity conservation goals.<sup>11</sup>

As in other sectors, bringing all relevant stakeholders together is one of the main challenges for integrating EbA into the infrastructure sector. In many cases, there is a lack of awareness on the part of governments and the private sector, who do not take climate change impacts on infrastructure and possible green solutions into consideration.



Marc Daniel Heintz (StEB Cologne) explaining the flood management concept of the Deutzer harbour area in Cologne. Photo: ©GIZ/Kolja Matzke

<sup>10</sup> See Secretariat of the Convention on Biological Diversity (2019): [Voluntary guidelines for the design and effective implementation of ecosystem-based approaches to climate change adaptation and disaster risk reduction and supplementary information](#).

<sup>11</sup> GIZ, CBD, IUCN, FEBA, PEDRR (2018): [4th EbA Knowledge Day. Documentation](#).



### **Example 1** **Risk Reduction and Climate Resilience Building in Semarang City, Indonesia**

Political will and leadership are essential as in the case of Semarang City, Indonesia. Here, identifying key government officials able to remain in their positions long enough to lead a sustainable resilience planning process helped to implement greener measures for urban infrastructure. Yet, climate change adaptation measures are often considered a drain on public budgets, rather than being seen as an investment towards protecting lives and assets by decision makers. Pointing out the risks, as well as potential green or hybrid solutions, using academic research and processing information for decision makers and local communities to show ‘what’s in it for them’, could help convince these actors of the necessity of working together.

### **Example 2** **Water Dialogues for Participatory Blue-Green Infrastructure Design for Flood Risk Reduction in Panama City**

Particularly helpful for showing decision makers and local communities “what’s in it for them” are local EbA champions, e.g. in Panama City, where a newly elected municipal government included green solutions as a policy priority for the new administration. These solutions were based on water dialogues between the governments of The Netherlands and Panama, Dutch water experts and local stakeholders, that were supported by Wetlands International. They resulted in an action plan that embraces ‘green and blue’ solutions (wetlands, river floodplains and mangroves) combined with grey infrastructure measures to reduce flood risks. Implementation of the action plan is supported by a 100 million USD loan from the Inter-American Development Bank (IDB).

- » [Living with water & wetlands: flood risk reduction in Panama City](#)
- » [Landscape scale Disaster Risk Reduction: Urban Water Dialogues, Panama City](#)

### **Example 3** **EbA & Private Sector Engagement in Latin America and the Caribbean**

A study under development by UN Environment-WCMC shows that private sector actors in Latin America and the Caribbean are aware of climate related hazards and perceive them as a risk to their investments. However, comprehensive implementation of nature-based solutions in order to increase resilience and reduce risks associated with climate related hazards is lacking. One of the insights from the UN Environment-WCMC study is that language plays an important role when addressing the private sector, which appeared to be more open when referring to ‘nature-based solutions’ (NbS) rather than ‘Ecosystem-based Adaptation’. Amongst other examples, the study identified the integration of NbS into engineering curricula and corporate sustainability programmes as potential enabling factors for anchoring EbA in the private sector.

### **Example 4** **Landslide Risk Reduction via green-grey Solutions in Rio de Janeiro, Brazil**

In Rio de Janeiro, early warning systems and grey solutions have their limits in protecting people, buildings, and infrastructure from regular landslides. The benefits that reforestation could provide in reducing the risk of landslides and the multiple accompanying co-benefits ignited political interest. However, people tend to place greater trust in built infrastructure and associate it with progress. Additionally, there are varying connotations with ecosystems such as forests. Where some people see aesthetic beauty, others see dangers in the form of fires, potential robbery, wild animals, or diseases. Thus, when designing and communicating green solutions and integrating them into different sectors, social and cultural aspects need to be taken into account.

- » [Strengthening Urban Resilience through Nature. The potential of ecosystem-based measures for reduction of landslide risk in Rio de Janeiro](#)
- » [Reforestation could provide in reducing the risk of landslides and providing multiple co-benefits](#)



## Other opportunities to integrate EbA in the infrastructure sector

- Including green infrastructure solutions in national planning processes, adaptation plans, environmental impact assessments (not just undertaken by civil engineers), and building codes;
- Presenting options for the use of hybrid solutions and green construction materials;
- If financing institutions included all adaptation options, actors would have to consider the option of using green infrastructure solutions.



Kanichaya Rodruangsri (Town Planner, Department of Public Works and Town & Country Planning, Thailand) speaking at the workshop. Photo: ©GIZ/Kolja Matzke

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## Field Trip Anchoring EbA in the Urban Area of Cologne

### Key messages ...

- Diverging responsibilities and planning processes of the municipal, local, and federal departments require planning with **longer timeframes** for establishing collaboration and a common ground among stakeholders and the public.
- There is close **collaboration** (e.g. on conservation) **among riparian countries and agencies of the transboundary Rhine catchment area**.
- Measures in the whole Rhine catchment area concern **technical** (e.g. technical retention areas or flood defences) **as well as nature-based solutions** (e.g. relocation of dikes to give the river more space).
- In dense agglomerations, however, there is **limited space** along the Rhine to implement Nature-based Solutions. Additionally, federal states set different priorities, affecting their ability to commit to investing in or adopting flood risk reduction policies and measures.

Increasing frequency and magnitude of extreme rainfall events puts cities such as Cologne, with a high amount of sealed surfaces, at risk of flooding. Therefore, innovative measures and strategies to minimize flood risk and enable an effective adaptation of the urban infrastructure are proactively implemented in and around Cologne.

Cologne's Stadtentwässerungsbetriebe (StEB Köln) works on sewage disposal, flood protection and prevention, as well as the maintenance of running water and park ponds in the city area of Cologne. Since 2004, StEB Köln is responsible for the management and implementation of constructional and preventative measures for flood protection of the city of Cologne. In a length of 65 km on both sides of the Rhine River, 18 individual sections with technical measures above and below the ground have been implemented. Without these measures,

150.000 people would be directly affected by reoccurring floods. The work is part of Cologne's climate protection and climate adjustment strategy, and the European action program in accordance with the Water Framework Directive (WFD) and Flood Risk Management Directive.

A historically strong focus on technical and grey infrastructural solutions for flood protection and prevention measures has been inherent in this field. However, with StEB's goal to ensure a healthy environment and a high quality of life for the inhabitants of the city of Cologne, ecosystem-based measures have gained more relevance within the institution.

For example, the Westhovener Aue, which was visited during the field trip, has been renatured, the natural area with room for the river expanded and a water retention area was established.

During the field trip, the workshop participants visited green-blue and hybrid examples of flood prevention in and around Cologne such as Westhovener Aue or the Weidenweg neighbourhood, and their development, strengths, and weaknesses were elaborated upon. Additionally, the Deutz Harbour served as a case study for flood-adapted urban planning adopted from the Netherlands along with a natural retention area to absorb excessive river water.

Furthermore, there was space for questions and a discussion on general opportunities, limits, and barriers in anchoring EbA in flood protection in Cologne, as well as along the Rhine River in Europe.

» Cologne's Stadtentwässerungsbetriebe  
(Municipal Drainage Operations)

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UN tower in Bonn. Photo: © GIZ/Arno Sckeyde



Welcoming speech by Dirk Messner (director of UNU-EHS). Photo: © GIZ/Kolja Matzke



Breakout group on integrating EbA into NAPs and NDC of Brazil. Photos: © GIZ/Kolja Matzke





Networking during the workshop. Photo: © GIZ/Kolja Matzke



Christoph Droßel (StEB Cologne) explains the Westhovener Aue. Photo: © GIZ/K. Matzke



Flood marks in Cologne during the field trip. Photo: © GIZ/Kolja Matzke





Participants of the workshop visiting grey-green flood management measures in the urban area of Cologne. Photo: © GIZ/Andrea Bender

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