

Draft

Towards a Roadmap for Ecosystem-based Adaptation in Maharashtra

A holistic approach to resilient
livelihoods and ecosystems



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Compiled by

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TMG Research gGmbH

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Introduction

India faces an escalating climate crisis. The Global Climate Risk Index 2021 ranks India as the seventh most affected country by extreme weather events in the world (Eckstein et. al., 2021). In 2019 alone, climate-related hazards like heat waves, storms and floods led to an economic loss of around USD 69 billion (approx. Rs 5 lac crore) in purchasing power parity and displaced millions of people in India (Eckstein et. al., 2021).

The state of Maharashtra is especially vulnerable to climate change, with four-fifths of its area classified as semi-arid (Kalamkar & Kiresur, 2011) which is susceptible to land degradation. Agriculture plays a major role in the state. About half of Maharashtra's population depends directly or indirectly on agriculture for a living, of which around 80% are small and marginalised farmers who cultivate less than two hectares of rainfed land. These farmers face the twin challenges of adapting to climate change as well as market risks. Over the past two decades, droughts and unseasonal rainfall have led to massive crop failures, rising debt, distress migration and farmer suicides, particularly among marginalised smallholder farmer groups (Madaan, 2020).

In 2008, the Indian government adopted a National Action Plan on Climate Change (NAPCC) with the aim to mitigate and adapt to the adverse impacts of climate change. Further in 2015, a National Adaptation Fund for Climate Change (NAFCC) was established to support concrete adaptation activities. At the state level, the State Action Plans on Climate Change (SAPCCs) guide adaptation policies and programmes. The Maharashtra SAPCC covers eight key areas: agriculture, water, forests and biodiversity, health, rural development, urban development, energy, and disaster management. In addition, several other government programmes aim to protect and restore natural resources in order to reduce the

impact of droughts in Maharashtra, such as the ongoing Integrated Watershed Management Programme (IWMP) under the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) scheme.

Despite these efforts, achieving success at scale has been a difficult challenge (Kumar, 2018; Singh, 2018). Governments and institutions have their task of climate change adaptation cut out, including the promotion of climate-resilient agriculture to sustain farmers. Climate action is therefore the urgent need of the hour.

In recent times, nature-based solutions are being advocated as cost-effective, scalable and systemic responses to climate change by several international organisations, including the Global Commission on Adaptation (GCA) and the United Nations Framework Convention on Climate Change (UNFCCC) (GCA, 2019). In this context, Ecosystem-based Adaptation (EbA) is an important example of a nature-based and human-centric approach to deal with climate change. The Convention on Biological Diversity defines EbA as "... the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change".

Adopting an EbA approach would involve actions that: (1) reduce social and environmental vulnerabilities of rural communities;

(2) restore degraded ecosystems and enhance biodiversity; as well as (3) strengthen participatory governance and benefits sharing (Figure 1). EbA is regarded as a low-cost and no-regret option. Studies show that it can be used as an effective pro-poor approach towards rural development, especially considering its social benefits such as food security and poverty reduction (Munang et al., 2013; de Condappa et al. 2021). Watershed Development (WSD) has been practised in

Ecosystem-based Adaptation

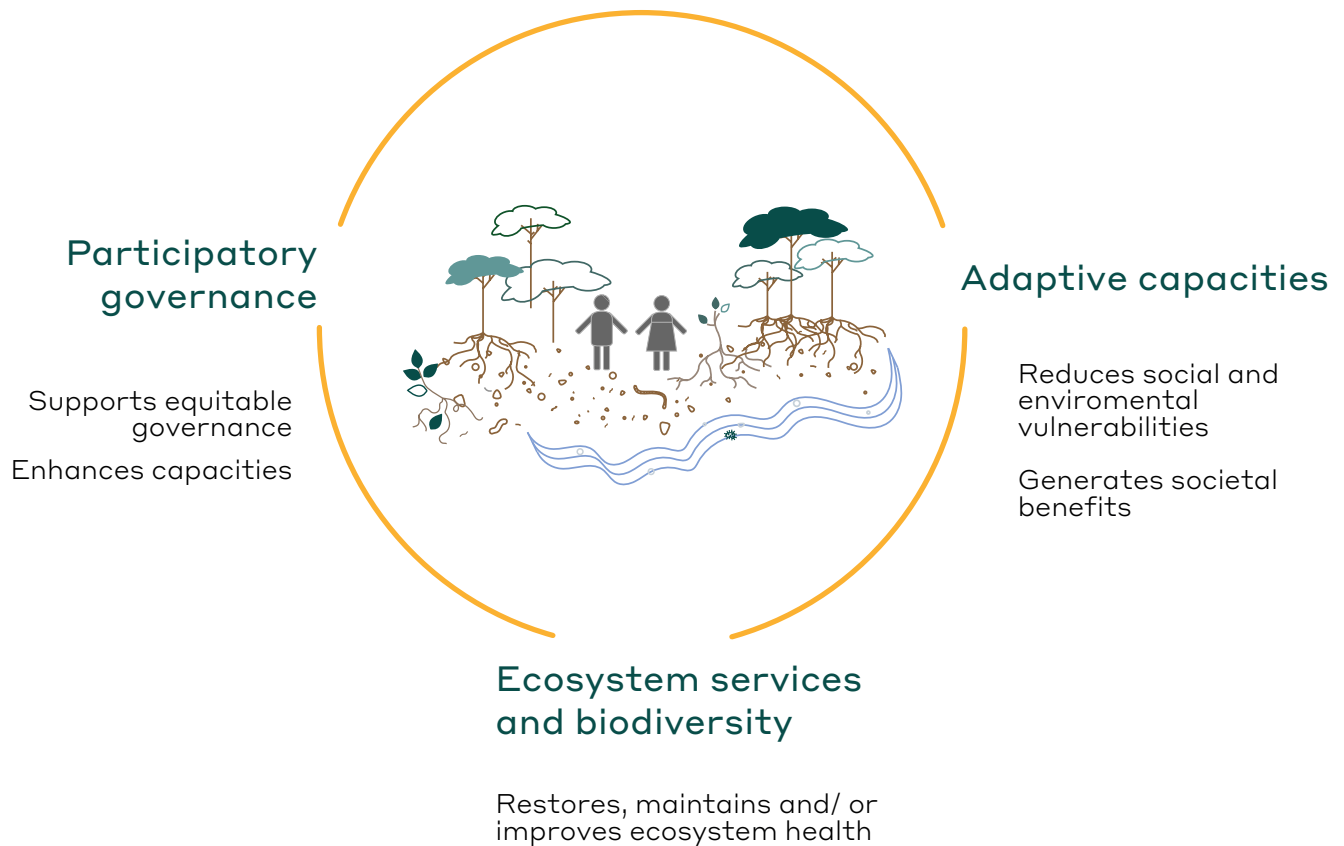


Figure 1: Elements of Ecosystem-based Adaptation. © P. Korneeva/ TMG Research gGmbH 2020

the rainfed regions of India since decades. It is an integrated approach that seeks to address environmental as well as socio-economic development challenges. When implemented holistically, WSD constitutes a human-centred, nature-based response to climate change—the essence of EbA. Transitioning to an EbA approach, from WSD involves soil and water conservation with afforestation, “from ridge-to-valley”, as well as other climate-adaptive measures such as sustainable agriculture, promotion of locale-specific crops and weather advisories, water-use management, biodiversity conservation and inclusive resource governance.

The purpose of this document is to outline a roadmap and strategy as well as propose an action plan for upscaling EbA in Maharashtra.

This roadmap has been developed based on many virtual multi-stakeholder dialogues during 2020 with senior officials of relevant ministries at the state and national level, scientists from leading research institutes, thematic experts and practitioners from renowned NGOs and Corporate Social Responsibility (CSR) institutions in the country. The stakeholders joint review of watershed development, other natural resources management and sectoral projects served to deliberate on mainstreaming and upscaling EbA in Maharashtra. This paper intends to inform policy makers in India at the central and state levels about pathways for scaling EbA. It is also of relevance for development practitioners, research institutes, corporates, academia and most importantly, rural communities in rainfed Maharashtra.

The goal of scaling Ecosystem-based Adaptation in Maharashtra

With only ten years left to achieve the Sustainable Development Goals (SDGs) of the UN Agenda 2030, the 2020s have been called the UN Decade of Action (United Nations, 2021b). With time running out to mitigate global warming and prevent a climate catastrophe, this decade is also crucial in the race towards the 1.5 °C goal.

Under the United Nations Convention to Combat Desertification (UNCCD), India is also committed to achieving land degradation neutrality (LDN) by 2030 (UN News, 2019). The overall target for achieving land degradation neutrality by 2030 includes the national target of restoring about 26 million hectares of degraded land (PIB, 2019). Recognising the importance of addressing desertification, biodiversity loss and ecosystem degradation, 70 countries including India ratified an action plan, as part of the UN Decade on Ecosystem Restoration 2021-2030 (United Nations, 2021a), which will further the Decade for Action.

For Maharashtra in particular, this decade takes on greater significance because nearly half of its cultivable land is degraded. The semi-arid areas are amongst the most vulnerable to climate change.

Being in the forefront of climate action and ecosystem restoration, Maharashtra's goal in implementing EbA is to achieve **a climate-resilient, prosperous and just future for its people**. Ecosystem-based Adaptation addresses sustainable development and environmental conservation in an integrated manner, suited to the local ecosystem and agro-ecological conditions. EbA has great potential to help Maharashtra achieve this goal. The proposed EbA roadmap aims to create a resilient, prosperous and just **future through an ecosystem-based approach that is human-centred and nature-based by 2030**. While EbA actions will hopefully unlock the goal of a resilient future by 2030, sustaining the initiatives beyond this timeframe is critical.

The expected outcomes of scaling EbA in rural Maharashtra are:

- ▶ Restore, maintain and improve ecosystem health, including soil, forest cover, water resources and biodiversity.
- ▶ Reduce social and environmental vulnerabilities through diversified and sustainable livelihoods with improved management of climate risks.
- ▶ Generate societal benefits such as increased income, health and nutrition.
- ▶ Support equitable governance, including gender balance and empowerment of marginalised groups.

Maharashtra has a long-standing history of successful initiatives in natural resource management. Hence, mainstreaming EbA and integrating it into various sectors such as land ecosystems and forests, biodiversity, water and agriculture, and allied areas is at the core of implementing the roadmap. A preliminary assessment of key government programmes and policies and the entry points for integrating EbA into various sectors was carried out during 2020 (ref Annexure 1).

This roadmap requires clear targets and indicators. The central and state governments' commitments towards the Paris Agreement on Climate Change, Land Degradation Neutrality (LDN), biodiversity and the SDGs provide quantitative measures that can serve as the basis to track EbA goals. Monitoring the progress of EbA implementation could contribute to existing reporting mechanisms, such as the SDG India Index (see table 1)."

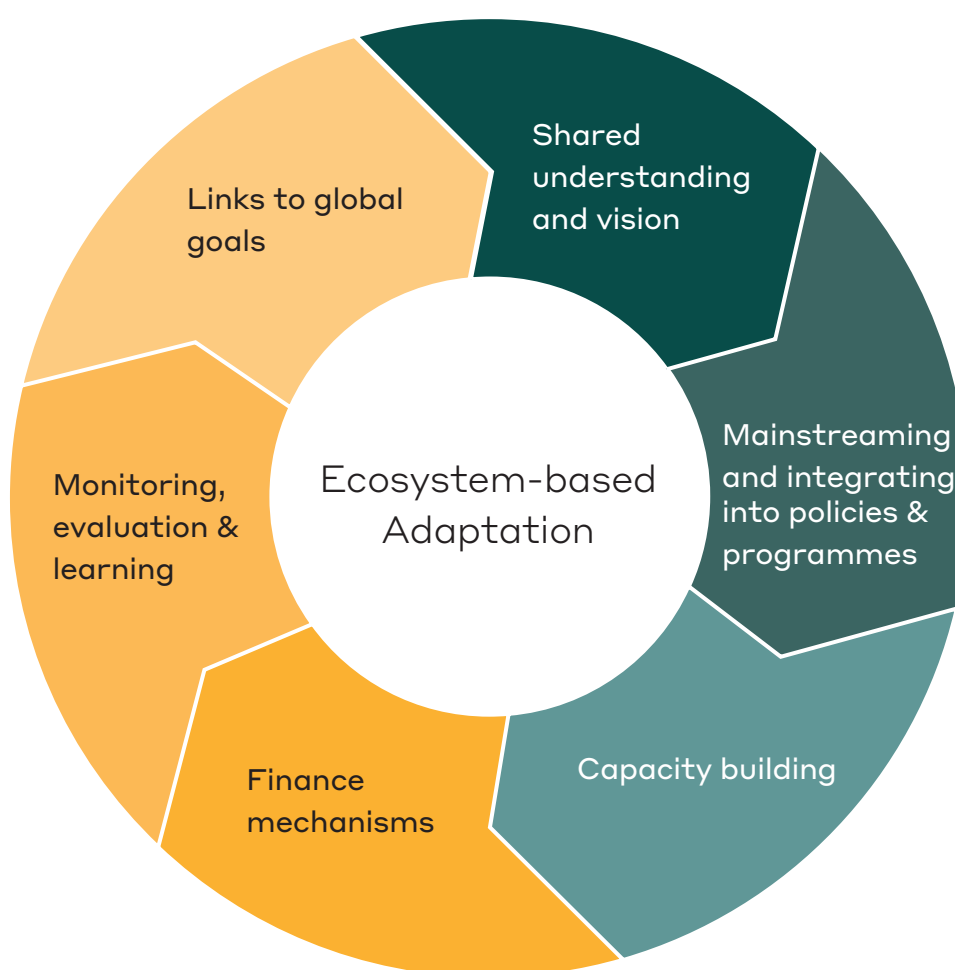


Figure 2: Objectives of a Roadmap for upscaling EbA in Maharashtra. © TMG Research gGmbH 2021

SI No.	Elements of an EbA approach	Related indicators from the SDG India Index	2019*	2030**
1	Participatory governance (equitable governance, enhance capacities)	<ul style="list-style-type: none"> ▶ Female labour force participation rate (LFPR) ▶ Gini Coefficient of Household Expenditure in Rural India 	53.1	100
2	Healthy ecosystem services and biodiversity	<ul style="list-style-type: none"> ▶ Percentage of total land area covered by forest ▶ Percentage of blocks*** where water resources are over-exploited 	16.47	33
3	Adaptation to climate change (reduce vulnerabilities, generate co-benefits)	<ul style="list-style-type: none"> ▶ Number of human lives lost per 10,000,000 population due to extreme weather events ▶ Percentage of children under 5 years who are stunted 	11	0
			34.1	2.5

*Maharashtra data as reported in SDG India Index November 2019 report from www.niti.gov.in

**Currently there are no state-level targets. Hence, the national targets are used as a proxy for the state targets.

*** A block is an administrative structure, a sub-division of a district.

Table 1: Overview of selected indicators based on the SDG India Index that are related to EbA.

The above list of indicators for tracking and monitoring EbA is not exhaustive. One of the first actions proposed in the roadmap for upscaling EbA in Maharashtra is to develop a monitoring and evaluation tool that includes a

complete list of variables, targets and indicators. While this section has outlined the objectives of the roadmap, the following section develops the strategies and a proposed set of work packages for upscaling EbA in Maharashtra.

Strategies and proposed work packages

Based on the envisioned outcomes of upscaling EbA in Maharashtra and the objectives stated in the previous chapter, a set of strategies and work packages have been identified. Putting these proposed strategies and action points into practice requires the full

and effective participation of all groups of stakeholders, at the village, state and central levels. Also, other agencies working on the rural sector, such as research institutes, corporates, practitioners, and the media need to be involved.

Objectives

Strategies

Work packages

1

Create a shared understanding of EbA and its multiple benefits, and foster political and societal will for promoting EbA, among different stakeholders.

Timeframe: 2021 to 2023

i) Establish a common vision for the broad-scale application of EbA in Maharashtra among different stakeholder groups.

a) Raise public awareness about the effectiveness and benefits of EbA for nature and society through different media channels and for the different stakeholders.

b) Provide evidence from studies and best practices to feed into public awareness-raising as well as to convince all stakeholders including policymakers, practitioners, and donors, including the local community.

2

Mainstream EbA approaches into different policies and programmes.

Timeframe: 2021 to 2024

i) Align EbA with the state-level priorities, programmes, commitments and targets set by different departments, including biodiversity and the Maharashtra State Action Plan on Climate Change.

ii) Support approaches with evidence on how the benefits of EbA contribute to meeting the state's priorities, and importantly, also benefit rural communities.

iii) Network and engage with civil society, corporates, public sector, research and donor agencies to promote the concept and practice of EbA across their activities.

In collaboration with the relevant departments:

a) Review policies and programmes of the state and national governments through the EbA lens and assess possible entry points for integrating EbA into these initiatives.

b) Identify and evaluate how EbA can concretely contribute to the objectives of existing policies and programmes. Where appropriate, tailor strategies of programmes to comply with EbA.

c) Drawing on the scientific evidence, make recommendations to the state and national governments to ensure that development is ecologically sensitive and climate responsive.

d) Initiate a pilot project to showcase holistic EbA, lessons drawn and the methodology, followed by its scaling across the state.

3

Strengthen the capacities of different stakeholder groups for the implementation of EbA

Timeframe: 2021 and Ongoing

i) Promote an EbA Community of Practice to facilitate the implementation of the roadmap on a large scale, and foster knowledge exchange on EbA best practices between different stakeholder groups.

ii) Build linkages with related sectoral networks and draw on complementary knowledge and strengths to hasten the promotion and implementation of EbA and resilience practices.

a) Provide institutional and technical support to government programmes and practitioner organisations through engagements such as workshops and network engagement.

b) Develop a pedagogy for large-scale capacity building and provide training, capacity building and knowledge sharing with planners, practitioners, and local communities on effective EbA practice.

c) Develop guidelines, contextual methodologies, and a toolbox for EbA implementation in different sectoral programmes and schemes based on scientific and traditional knowledge.

d) Coordinate and link with other related networks and collaboratives to draw on learnings and to further disseminate and promote EbA.



Table 2: Strategies and work packages in the Roadmap.

Additional considerations

The work packages required to operationalise the roadmap for mainstreaming EbA in Maharashtra are illustrated in Figure 3. The essential starting points, such as the work package on the joint review of government programmes and policies and developing a framework for assessing EbA compliance, has been placed in the first year of the timeline. Work packages that follow

will cover actions like capacity building, sector-specific toolboxes for incorporating EbA strategies, and some applied/ action research studies and pilot- scale implementation projects.

As mentioned above, this is an illustrative timeline. All the work packages have not yet been clearly defined. Such flexibility is essential for further collaborative work.

Work packages The Decade for Ecosystem Restoration: Action Plan 2021-2030 and beyond

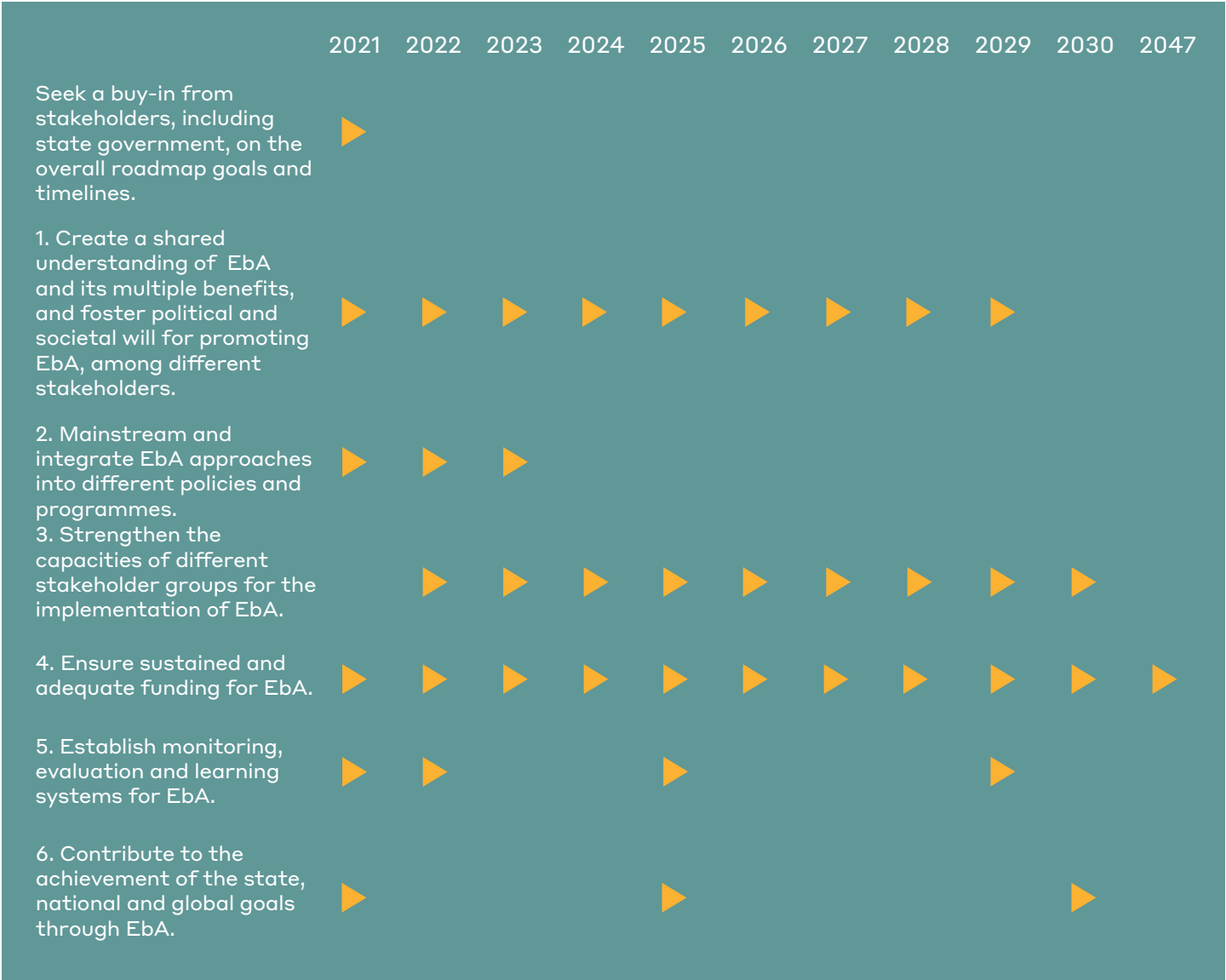


Figure 3: A tentative timeline for the work packages in the Roadmap for upscaling EbA in Maharashtra.

The way forward

The yet-to-be-detailed roadmap will elaborate on the diverse stakeholders' roles and responsibilities, including state government departments, research and academic institutes, corporates, civil society actors, and the local community. The roadmap would entail a multi-pronged approach that combines a top-down

approach for policy advocacy, and a bottom-up approach for gathering insights, good practices and evidence from the grassroots. The process of drafting and generating consensus among stakeholders for this roadmap is a complex but essential step towards unlocking the goals of an EbA approach in Maharashtra.



Community meeting at Mohagaon, Dhule District in Maharashtra. © WOTR

Annexure 1: The entry points for integrating EbA into sectoral programmes and policies

Links to EbA		Selected entry points for integrating EbA
Water	<p>Healthy ecosystems purify and store water, and mitigate floods. An ecosystem-based approach would consist of conserving and restoring ecosystems along with measures such as spring rejuvenation, water harvesting, and water budgeting. It would also involve the promotion of appropriate crop choices, measures to improve water-use efficiency and the stewardship of local resources including participatory water governance.</p>	<p>Maharashtra Groundwater (Development and Management) Act 2009; Maharashtra State Water Policy 2019</p> <p>Gaalmukt Dharan Gaalyukt Shivar (tank desiltation scheme) and other such projects</p> <p>Atal Bhujal Yojana</p> <p>The Maharashtra Water Multi-Stakeholder Platform</p>
Biodiversity	<p>The uniqueness and variety of living organisms and their interaction with non-living entities is at the heart of the functioning of ecosystems and the services they provide such as regulating water, soil health and provisioning food. Biodiversity rich ecosystems play a key role in reducing the impacts of climate change.</p>	<p>Maharashtra State Biodiversity Strategy and Action Plan</p> <p>National Mission on Biodiversity and Human-wellbeing</p> <p>People's Biodiversity Register at the village level (as per 2002 Biological Diversity Act) and the Biodiversity Management Committees</p>
Agriculture	<p>Ecosystems provide humans with food, forage, fibre, bio-energy and medicinal plants which are necessary for human wellbeing.</p> <p>EbA in agriculture will help to attain food security and prevent further degradation of vital natural resources like soil and water.</p>	<p>National target of Doubling Farmers Income</p> <p>Pradhan Mantri Krishi Sinchayi Yojana (PMKSY)</p> <p>State of Maharashtra Agribusiness and Rural Transformation (SMART)</p> <p>Project on Climate Resilient Agriculture (PoCRA)</p>
Livestock	<p>If managed appropriately, pastoralism can support sustainable management of land, especially in rainfed areas. Migration enables pastoralists to respond to temporal and spatial fluctuations of resource availability in ecosystems. Livestock rearing, which involves trampling, grazing, browsing, and converting edible feed and organic waste into useful dung and urine, can improve soil health, mitigate desertification and protect the local ecosystem against invasive species.</p>	<p>National Livestock Mission 2014</p> <p>National Livestock Policy 2013</p> <p>Maharashtra State Livestock Policy 2010</p> <p>Rashtriya Gokul Mission 2014</p>

Forests & Land Use	<p>When landscapes and forests are protected and/or re-developed suitable to their topography and local biodiversity, they provide humans with the basics of survival. These ecosystem services include food, water, oxygen, livelihoods, climate regulation, and numerous other services.</p>	<p>Integrated Watershed Management Projects (IWMP) Mahatma Gandhi National Rural Employment Guarantee Act Forests Rights Act 2006</p>
Climate Change & Disasters	<p>Ecosystems and their services play a vital role in buffering the impacts of climate change.</p> <p>Healthy ecosystems increase the resilience of nature and society to deal with climatic hazards such as droughts, floods, and storms.</p> <p>Sustainable management of ecosystems also helps to mitigate the effect of the changing climate by facilitating carbon sequestration.</p>	<p>Maharashtra State Action Plan on Climate Change Maharashtra State's Knowledge Management Centre on Climate change Nationally Determined Contributions to the Paris Agreement Maharashtra State Disaster Management Plan National Adaptation Fund for Climate Change</p>

Annexure 2: EbA knowledge products

- ▶ From Watershed Development to Eco-system based Adaptation: A Journey to systemic resilience: https://wotr-website-publications.s3.ap-south-1.amazonaws.com/From-Watershed-Development-to-EbA_March-2021.pdf
- ▶ Scaling Ecosystem-based Adaptation to Climate Change in Maharashtra, India: An Analysis of Policies and Programmes: https://wotr-website-publications.s3.ap-south-1.amazonaws.com/Scaling_Ecosystem_based_Adaptation_in_Maharashtra_India_An_Analysis_of_Policies%20and_Programmes.pdf
- ▶ EbA Info Brief Series #1 Adaptation to climate change in India: https://wotr-website-publications.s3.ap-south-1.amazonaws.com/EbA_Info_Brief_Series_2_Biodiversity.pdf?fbclid=IwAR0nEi8CelznIDLerRspmwu-u9Qqh9Y5Q3SkQPyoRk-MHT5HtRY6Of4HriaU
- ▶ EbA Info Brief Series #2 Strengthening Biodiversity: https://wotr-website-publications.s3.ap-south-1.amazonaws.com/EbA_Info_Brief_Series_2_Biodiversity.pdf?fbclid=IwAR0nEi8CelznIDLerRspmwu-u9Qqh9Y5Q3SkQPyoRkMHT5HtRY6Of4HriaU
- ▶ EbA Info Brief Series #3-Managing Land and Forests: https://wotr-website-publications.s3.ap-south-1.amazonaws.com/EbA_Info_Brief_Series_3_Land.pdf?fbclid=IwAR0nEi8CelznIDLerRspmwu-u9Qqh9Y5Q3SkQPyoRkMHT5HtRY6Of4HriaU

- ▶ **EbA Info Brief Series #4-Climate Resilient Agriculture:** https://wotr-website-publications.s3.ap-south-1.amazonaws.com/EbA_Info_Brief_Series_4_Agriculture.pdf?fbclid=IwAR0nEi8CelznID-LerRspmwu-u9Qqh9Y5Q3SkQPyoRkMHT5HtRY6Of4HriaU
- ▶ **EbA Info Brief Series #5- Livestock and Ecosystem-based Adaptation:** https://wotr-website-publications.s3.ap-south-1.amazonaws.com/EbA_Info_Brief_Series_5_Livestock.pdf

Annexure 3: Joint statement

Joint Statement on Upscaling Ecosystem-based Adaptation in Maharashtra

We, a group of experts and key stakeholders, discussing a Roadmap for upscaling Ecosystem-based Adaptation (EbA) in Maharashtra, recognise EbA as a holistic approach to foster resilient livelihoods and healthy ecosystems in rural Maharashtra. The EbA approach takes on greater significance,

Considering

1. **The climate crisis in India:** The Global Climate Risk Index 2021 ranks India as the seventh most affected country by extreme weather events worldwide. In 2019 alone, climate-related hazards caused an economic loss in India of around USD 69 billion in purchasing power parity and displaced millions of people (Eckstein et al., 2021).
2. **The climate vulnerability of Maharashtra:** Maharashtra is particularly vulnerable to climate change. About 80% of its area is classified as semi-arid. About half its population depends on agriculture for their livelihoods, of which around 80% are small and marginal farmers. Land degradation is a major issue in Maharashtra with over 43% of its cultivable lands classified as degraded (ISRO, 2016).
3. **The growing recognition of nature-based solutions as a systemic response to climate change:** Nature-based solutions (NbS) are now being advocated worldwide as a cost-effective, scalable and systemic response to climate change. Based on the vital role ecosystems play in climate mitigation and adaptation, EbA is a compelling example of NbS that enhances the resilience of nature and society to the impacts of climate change. Studies confirm that EbA can deliver pro-poor outcomes including increasing incomes of farmers, fishers, and natural resource dependent communities, enhancing food security and reducing poverty. It is also regarded as a low cost and no-regret adaptation option (Reid et al., 2019).
4. **A wealth of experience in implementing EbA type interventions exist:** Though not labelled as EbA, climate adaptation based on the sustainable management, restoration and protection of natural resources has been practiced for many years in Maharashtra, for example, through Waters-

hed Development, Climate Change Adaptation and other programmes. These valuable experiences need to be capitalised on and fed into processes of mainstreaming and scaling EbA.

5. **Mainstreaming EbA into government policies and programmes is feasible:** Aligning and integrating the EbA approach into the State Action Plan on Climate Change (SAPCC) and the State Action Plan on Biodiversity; the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and other flagship programmes such as the Prime Minister's Krishi Sinchayi Yojana (PMKSY), which includes the Integrated Watershed Management Program (IWMP) as well as bringing about effective convergence of existing schemes, can enhance outcomes related to climate resilience, livelihood improvement, food security, and ecosystem health.
6. **EbA can help India achieve its national priorities and international commitments:** This current decade (2021–2030) is critical for Maharashtra and the rest of India for several reasons: Meeting the 17 United Nations (UN) Sustainable Development Goals (SDG) by 2030; delivering on India's Nationally Determined Contributions under the Paris Agreement on Climate Change; fulfilling India's target of restoring 26 million ha of degraded land by 2030 under the Land Degradation Neutrality goals of the United Nations Convention on Combatting Desertification (UNCCD); as well as protecting biodiversity under the UN Convention on Biological Diversity (UNCBD).
7. **A participatory and inclusive process of further developing and implementing a Roadmap can significantly ramp up EbA upscaling:** The design, planning and implementation of a roadmap for scaling EbA in Maharashtra needs to consider the experiences, knowledge and perspectives of all stakeholders, including government, civil society, academia, and the private sector. A consensus-driven, evidence-based and demand-responsive roadmap for EbA will be crucial for its relevance and widespread adoption contributing to economic opportunities, food and nutritional security and environmental sustainability.

Therefore, we, the participants of the 2nd EbA state level consultation

- Acknowledge the importance of EbA as a holistic approach to resilient livelihoods and ecosystems in rural Maharashtra;
- Believe that EbA has the potential to foster a climate-resilient, prosperous and just future for Maharashtra, especially for its rural communities;
- Emphasise that EbA can significantly contribute towards achieving the Agenda 2030 on Sustainable Development, the Paris Agreement on Climate Change, the commitments under the UNCCD and the UNCBD in this important decade of 2021 to 2030;
- Recommend and urge that the people and Government of Maharashtra seize this opportunity and integrate EbA in its way of life, state development policies, convergence of programs and works.

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