

EbA Info Brief Series #5

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Livestock and Ecosystem-based Adaptation

UPSCALING ECOSYSTEM-BASED ADAPTATION (EBA) TO CLIMATE CHANGE IN THE RAINFED REGIONS OF MAHARASHTRA, INDIA



Small ruminant management in Jawale Baleshwar village, Sangamner block, Ahmednagar, Maharashtra. Photo credit: WOTR

Livestock is integral to farming systems. Over 70% of rural households in India —especially those of poor and landless farmers—own livestock¹. In the rainfed regions, a biodiverse mixed system of growing crops as well as raising livestock is key to sustainable and climate-resilient agriculture².

Challenges to livestock management in the rainfed regions of Maharashtra

- India lost 31% (5.65 million hectares) of grassland area in a decade (2005 to 2015). Poor management, overgrazing, deforestation, and conversion of pastures into croplands to support a growing population have led to the degradation of grasslands³.
- Climate change also impacts the livestock sector. Rising summer temperatures and frequent droughts affect fodder and water availability. Moreover, unseasonal rains increase exposure to disease⁴.
- Modernised livestock systems and a shift from indigenous to exotic, high-yielding breeds have further increased greenhouse gas emissions and the sector's vulnerability to climate change⁵.

Symbiotic role of livestock in ecosystems

Pastoralism, or livestock rearing in general, involves processes like trampling, grazing, browsing, and converting edible feed and organic waste into useful dung and urine. If managed sustainably, livestock rearing can support the sustainable management of land, especially in rainfed areas, by improving soil health, mitigating desertification and protecting the local ecosystem against invasive species. Migration enables pastoralists to respond to temporal and spatial fluctuations of resource availability in ecosystems. Traditional backyard poultry also provides nutrition and income security to marginalised and vulnerable communities, especially women. Poultry can also reduce pressures on poaching and thus contribute to local biodiversity conservation.

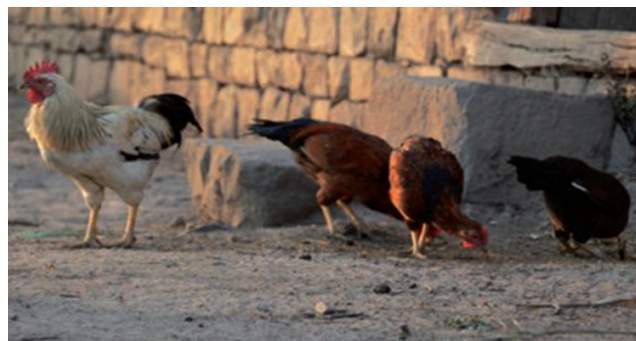
What is Ecosystem based Adaptation (EbA)

The United Nations Convention on Biological Diversity (CBD) 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” (CBD, 2009)

Opportunities for upscaling EbA in the livestock sector

Ecosystem-based Adaptation, an approach that helps people adapt to climate change through nature-based interventions (see definition in box), can play an important role in making the livestock sector more climate-resilient. This goal can be achieved by integrating an ecosystem perspective and climate information into pasture management and agro-pastoral systems. Several policies and programmes at the state and national level provide opportunities to achieve this objective:

- The 2014 National Livestock Mission aims at sustainable development of the livestock sector by improving availability of quality feed and fodder, fodder production from non-forest waste-land, and the promotion of backyard poultry. Restoration of former waste-lands and their conversion into pastureland or land for fodder production should be done in harmony with ecosystems. Small ruminants and poultry are especially important in rainfed regions due to their low ecological footprint and contribution to nutrition and income security.
- Promotion of indigenous breeds that are more resilient to climate change, and in particular heat stress, would also reduce the ecological footprint and greenhouse gas emissions. The Maharashtra State Animal Husbandry Department is responsible



Backyard Poultry Management in Bhojdari village, Maharashtra.
Photo credit: TMG Research gGmbH

for implementing the 2010 Maharashtra State Livestock Policy and the 2014 Rashtriya Gokul Mission. Both aim to conserve indigenous breeds and valuable animal genetic resources.

- Given the lack of public expenditure in the livestock sector, there is an urgent need for more research on validating and conserving indigenous knowledge. The 2013 National Livestock Policy provides opportunities in this regard, but there is scope for more action research, training and capacity building to incentivise ecosystem-based approaches to livestock management.

ABOUT THE PROJECT

As part of the [International Climate Initiative](#) by the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU), the [Watershed Organisation Trust \(WOTR\)](#), based in Pune, India, and Berlin-based [Think Tank TMG Research](#), aim to develop a roadmap for upscaling of EbA in Maharashtra. This project entails a series of participatory multi-stakeholder dialogues at both the local and state levels, with the intention of identifying promising [EbA initiatives](#). An important aspect of these processes is to identify the enabling environment for EbA to be implemented and sustained at a broader scale. These stakeholder dialogues are expected to contribute to building the required political and societal support for EbA at the country level.

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¹Ali, J. (2007). Livestock Sector Development and Implications for Rural Poverty Alleviation in India. *Livestock Research for Rural Development*. Volume 19, Article 27, accessed on 13th January 2021, <http://www.lrrd.org/lrrd19/2/ali19027.htm>.

²Bisht et al. (2020). The Future of Smallholder Farming in India: Some Sustainability Considerations. *Sustainability*, 12, 3751

³Pandey, K. (2019). India Lost 31% of Grasslands in a Decade, Down to Earth, accessed on 12th January, 2021, <https://www.downtoearth.org.in/news/agriculture/india-lost-31-of-grasslands-in-a-decade-66643>

⁴Thornton et al. (2009). The Impacts of Climate Change on Livestock and Livestock Systems in Developing Countries: A Review of What We Know and What We Need to Know, *Agricultural Systems*, Volume 101, Issue 3, accessed on 13th January, 2021, <https://doi.org/10.1016/j.agsy.2009.05.002>

⁵Sirohi, S., & Michaelowa, A. (2007). Sufferer and Cause: Indian Livestock and Climate Change. *Climatic Change*, Volume 85, Issue 3-4, 285-298, accessed on 13th January, 2021, <https://doi.org/10.1007/s10584-007-9241-8>