



RESILIENT LANDSCAPES

Five Key Messages on How to Implement Agroecology as a Systemic Adaptation Response

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THE CHALLENGE

Interrelated Environmental Crises and the Failing Food Systems in Times of Climate Change

There is a wealth of compelling scientific evidence that hunger, climate change, biodiversity loss, as well as land and water degradation are not only systemic but also interrelated crises, which reinforce each other in their intensity. The consequences of these multiple crises for global food security are severe. In 2021, an estimated 702 to 828 million people – or respectively around 8.9 to 10.5 percent of the world's population – were suffering from hunger. This number is estimated to increase in the upcoming years. Climate change, in particular, is expected to heavily impact agricultural landscapes in the different world regions, as a major driver of crop failure and growing food insecurity.

At the same time, agriculture itself further contributes to climate change, biodiversity loss, and to land and water degradation (see Figure, next page). Therefore, policymakers often face difficult trade-offs in managing the equally important goals of safeguarding food security and rural livelihoods while also protecting and restoring critical ecosystems. Additionally, countries must meet international commitments in the area of environmental and climate change-related policies, as agreed to in various multi-lateral processes, such as the Rio Conventions or the United Nations Sustainable Development Goals (SDGs). These diverse commitments add to the complexity of political decision-making. Yet, efforts to address the multiple environmental crises by different policy communities remain primarily in isolation from each other. As a result, a holistic adaptation of the global food system to the changing environmental and climatic conditions is still an outstanding task.

A WAY FORWARD

Agroecology as an Ecosystem-based Adaptation Approach in Agricultural Landscapes

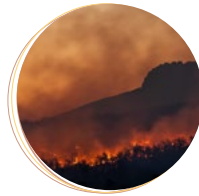
To ensure the long-term survival of the growing world population while staying within planetary boundaries, systemic and crises-responsive approaches to produce sufficient and high-quality nutrition are urgently needed. **The purpose of this brief is to suggest one such approach: implementing agroecology to enhance Ecosystem-based Adaptation (EbA) in the agricultural sector.**

Agroecology supports food security and rural livelihoods within agricultural landscapes in a sustainable and nature-friendly way (see box). Against this background, this Policy Brief outlines five key messages for decision-makers on how to strengthen agroecology as an ecosystem-based adaptation approach in the agricultural sector. The central idea behind this Paper is to synergize the achievement of multiple national-level targets and commitments, including food security, climate adaptation, biodiversity protection, as well as sustainable land and water management.

What is Agroecology?

Agroecology is a food system approach that promotes agriculture based on ecological processes. Furthermore, it proactively addresses the various linkages between farmers, consumers, and the range of other elements constituting a food system.





CLIMATE CHANGE

800 million people vulnerable to climate change impacts – droughts, floods, sea level rise, extreme weather

Food systems responsible for an average of 30% of greenhouse gas emissions

Changing weather patterns and rising temperatures exacerbate

Rising temperatures and more frequent and severe floods exacerbate

Greenhouse gas emissions from forest conversion

Reduction in carbon sequestration functions due to soil quality loss, desertification, etc.



BIODIVERSITY LOSS

→ 1 million species at risk of extinction
→ Net loss of 4.7 M ha of forest cover/year

LAND & WATER DEGRADATION

→ 34% of agricultural land degraded
→ 1.2 billion people live in areas with water scarcity

Pollinator loss leads to crop production risks

Reduced agricultural productivity and water availability

Deforestation

Soil erosion

More than 60% of agricultural land at risk of pesticide contamination

Agrochemical contamination



Increasing groundwater use for irrigation

Urgent need for agriculture to adapt to climate change

BROKEN FOOD SYSTEMS

→ 1.3 billion tonnes of food wasted every year
→ 768 million people hungry and an obesity crisis

MESSAGE 1: *Crises-responsive and nature-friendly food systems depend on a systemic transformation along the whole supply chain.*

Natural resources, like land, water, soil, and biodiversity form the base of any local and as such the whole global food system. Thus, food production is intrinsically dependent on a healthy environment, related ecosystem-services, and suitable climate conditions. Most conventional agricultural production models still seem to ignore their own strong dependency on intact ecosystems, thereby slowly destroying their own natural fundament for long-term survival. For society, the consequences of this are severe. Especially in times of global climate change, diverging rainfall patterns and resulting droughts and floods intensify systemic risks along the food supply chains and hamper the eradication of hunger. This poses a significant threat to the realization of the human right to food.

In addition to environmental conditions, food systems are embedded within diverse social and economic contexts that also strongly influence the production and consumption of food. The sustainable processing, distribution, and preparation of food along the whole supply chain are equally important elements of crisis-responsive agriculture. This includes the raising of awareness on the importance of adaptation amongst producers and consumers alike. Thus, for connecting food production with nature as well as human needs, a systemic transformation of agricultural patterns from the local to the global level is needed. Agroecology aims to address this demand by restoring and enhancing ecosystem-services and their natural environment, while also fulfilling human-rights-based claims of access to adequate amounts of healthy food for a growing world population.

MESSAGE 2: *The formation of alliances for change is needed to strengthen agroecology as an adaptation response.*

While agroecology and EbA originated in different policy and knowledge communities – agroecology from the sustainable agriculture community and EbA from the climate and biodiversity spheres – they share common principles and key characteristics that can support joint policies, programs, and strategies (see box). Indeed, the communalities between EbA and agroecology are striking: First, both approaches fall under Nature-based Solutions (NbS), with the aim to strengthen and maintain ecosystem services for sustainable livelihoods and ecological, economic, and social sustainability. Second, both concepts apply a holistic approach by encouraging interventions that target a given system in its whole – whether an ecosystem or a food system. Third, agroecology and EbA both address pressing societal challenges by speaking to a range of common policy priorities and SDGs. In many ways, EbA and agroecology are two sides of the same coin.

What is Ecosystem-based Adaptation (EbA)?

EbA is a nature-based solution that links biodiversity and ecosystem conservation approaches with sustainable socioeconomic development as part of an overall adaptation strategy. In this way, EbA is gaining significant importance in the context of climate change and biodiversity conservation policies.



However, the transformation of a crises-responsive food system so far only unfolds slowly and still depends on strong advocacy at all governance levels. Considering the ongoing global warming, the formation of alliances for change between the communities of EbA and agroecology is urgently needed. The combination of the two approaches allows for faster and larger impacts in the fight against climate change and food insecurity. By bringing together innovative minds from both communities, such an alliance can not only strengthen policy coherence for reaching the SDGs but also support the practical alignment between agricultural production and climate adaptation in farms and fields.

MESSAGE 3: *Circular knowledge transfer across sectors and scales supports farmers' resilience in diverse landscapes.*

During the implementation of agroecological practices on farms and fields, the very diverse landscapes and differing ecological and social contexts of farmers needs to be considered. As the primary implementers and innovators of agroecology, farmers work in highly diverse social and ecological landscapes. It is therefore necessary to develop ecosystem-based adaptation options that respond not only to local biophysical but also social conditions relevant for providing a resilient and sustainable agricultural production pathway. The Options by Context (OxC) approach is one such analytical tool that helps assess the suitability of different EbA-sensitive agroecological practices and related social innovations on multiple scales (see box).

Given the highly contextualized nature of agroecological practices, it follows that the identification of suitable adaptation options must be done in close consultation with local actors. This must include as well the most vulnerable members of households and communities. Additionally, relevant stakeholders from the national and local governments, the private sector, as well as civil society actors and researchers must be brought on board. Already existing learning experience from pioneering projects in Africa, Asia, and Latin America should actively be utilized and exchanged in relevant platforms. Therefore, the creation of a circular knowledge transfer between relevant sectors and scales is essential. This requires the promotion of applied agricultural research, farmer-centered extension and capacity building of local actors, including farmer-to-farmer approaches. Such participatory research is essential for empowering rural communities to successfully manage current as well as future adaptation processes in their local food systems.



What is 'Options by Context' (OxC)?

OxC is an approach to select agroecological practices and innovative approaches that contribute to the adaptation and land restoration ambitions of farmers. The aim is to match and tailor locally relevant options to the prevailing ecological, economic, and social contexts in a target area. The approach is participatory in nature, as the performance and suitability of options is evaluated during a collaborative and co-learning process between multiple stakeholders on the ground.

MESSAGE 4: *Long term success of climate-resilient agroecological innovations requires an enabling environment.*

The successful implementation of agroecology over time and space will essentially depend on the creation of an enabling environment. Inclusive governance mechanisms at all levels of decision-making must be established for supporting the scaling up and out of EbA-sensitive agroecological solutions. Furthermore, agroecology cannot be delinked from the rights of smallholder farmers, indigenous communities, and other vulnerable groups. Consequently, relevant land tenure rights and legal guarantees for gender-equitable access to land and other natural resources must be strengthened in relevant national legislation. For high adoption rates of agroecological practices amongst farmers, an economic level playing field in the form of fair market conditions for nature friendly produce will be important. Here, positive financial incentives or subsidies for sustainable food production could be an option, next to the removal of economic incentives for ecologically harmful practices (i.e., subsidies for synthetic inputs).

One of the main barriers for implementing EbA-sensitive agroecological innovations in a systemic manner is the lack of understanding of its potential in the face of climate change. Consequently, awareness raising amongst relevant decision-makers from the public as well as private sector will be essential for the creation of an enabling environment. Where 'windows of opportunity' for transformation lack at the national level, it is critical to explore social innovations that help to overcome governance constraints at the local level. In this way, the unification of top-down and bottom-up efforts can lead to an incremental yet holistic and meaningful food system transformation.

MESSAGE 5: *Strategic adaptation funding and local-responsive financial support for the agricultural sector are at the core of ensuring food security.*

Pushing forward a nature-friendly transformation of the global food system is only possible with strategic investment. Monetary streams in the national budgets are one of the main indicators of a true political will to shift public support towards more diversified and climate-resilient farming systems. Today, climate-responsive production approaches like agroecology receive far less resources than conventional agricultural approaches. Thus, there is an urgent need to significantly increase mitigation and adaptation funding for any kind of sustainable and ecosystem-friendly agricultural practices. In addition to national state budgets, multilateral institutions, private sector entities and research agencies must also reflect agroecological innovations within their funding allocations.

However, funding alone does not automatically lead to real transformative changes on the ground. Funding streams must be accessible and absorbable by the local actors and farming communities, who are actively responsible for the agroecological change in fields and farms. Community-based rural funding programs offer the opportunity to better target monetary flows towards the specific needs of a given landscape. By tailoring ecosystem-based payment schemes to local agroecological practices, financial support can directly be allocated to farming communities. In this way, farmers can better develop and align agricultural solutions to their diverse complex agroecosystems and the specific climate, biophysical, and social conditions therein. With this common vision in mind, a coalition between the EbA and agroecology communities should advocate for a stronger political will and action to invest in nature-friendly and crises-resilient agriculture.

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