

# AGROECOLOGY FOR RESILIENCE

## Why is the agroecological approach important for food systems resilience?

Wide-scale adoption of agroecology results in more sustainable integrated farming systems through 1) more sustainable soil and water management; 2) integrated farming systems; 3) better nutrient use; 4) the utilization of gene banks for long-term food diversity conservation; and 5) pastoral systems management. Moreover, its integrated practices tackle poverty, hunger, inequality, as well as production and consumption practices.

Agroecology helps accelerate socio-ecological transitions towards sustainable agriculture and in developing a food system that benefit from holistic and people-centered approaches. It is increasingly being acknowledged for its potential to bring about transformative changes required to meet the Sustainable Development Goals (SDGs).

## Why will the agroecological approach work?

With regards to evidence on the positive role of agro-ecology on food systems resilience, a survey conducted after Hurricane Mitch in Central America revealed that farmers who were practicing diversification experienced less damage and economic loss from their farms than their specialized neighboring farms (Holt-Giménez, 2002), thereby enhancing resilience.

Other studies have also found a positive relationship between diversified farming systems and household dietary diversity and nutrition (HLPE 2019). In Kenya, Ndiso et al. (2017) found cowpea-maize intercropping to result in higher soil moisture content than single maize. In Mexico, the use of agroforestry in coffee production was able to maintain high levels of soil moisture compared to a single crop (Lin 2007). In both cases, the use of integrated systems resulted in higher yields. The value of integrated and diversified agricultural activities within the farming systems, in particular the role of agroecology and diversity in reducing vulnerability against climate variability and extreme weather events, is recognized in the IPCC Special Report on Climate Change and Land (IPCC, 2019). According to this report, the diversification of different aspects of food systems is a crucial element for enhancing performance and of mineral fertilizers. The climate mitigation co-benefit (Leippert 2019) is another important benefit that could manifest into increased resilience, reduced risks, and maintained stability of food production in the wake shocks and stresses. Agroecology has potential in increasing soil carbon content and in reducing the use of chemical inputs (fertilizers and pesticides).

The HLPE 14 (HLPE, 2019)\* report identifies 13 principles that guide the agroecological approach. These are to be applied based on the local context: recycling; reducing the use of inputs; soil health; animal health and welfare; biodiversity; synergy; economic diversification; co-creation of knowledge by embracing local knowledge and global science; social values and diets; fairness; connectivity; land and natural resource governance; and participation. These factors highlight the need for an integrated and multidisciplinary approach that includes ecological, sociocultural, technological, economic and political dimensions of food systems from production to consumption with the various actors with the system. It also stresses the importance of maintaining if not enhancing biological processes, as well as valuing and utilizing indigenous knowledge and cultural values.

*\*HLPE. 2019. Agro-ecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A Report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome.*

An increasing number of key recent reports identify agroecological principles as the core for restoration and adaptation. For example, the Global Adaptation Report (2019) lists nature-based solutions. Similarly, the FOLU (2019)<sup>1</sup> Ten Critical Transitions to Transform Food and Land Use also include agroecology principles. The FAO's (2020)<sup>2</sup> on the next decade's work on restoring the earth is built around agroecology principles. Baker et al. (2019) present many case studies in their Beacons of Hope<sup>3</sup>. Nonetheless, there is still considerable debate around agroecology with some contesting the validity of existing data and calling for the need for further documentation (Leippert 2019; HLPE 2019).

### How will the agroecological approach work?

The scaling up of agro-ecological approaches represents a promising systemic solution that encourages transformative change and supports socio-ecological transitions towards sustainable agriculture and food systems. Key questions to scaling agroecology are:

- How to operationalize agroecology at different scales, at different points of time, and in different contexts?
- How to measure the multi-dimensional performance of agroecology and utilize this evidence to elicit change via an enabling framework?
- How to scale up agroecology with interested stakeholders?

Recognizing that the inherent complexity of achieving sustainability is commonly seen as a deterrent to decision-making, following an extensive multi-stakeholder consultative process between 2014 and 2018, FAO has approved the 10 Elements of Agroecology<sup>4,5</sup> as an analytical framework to support the design of differentiated paths for agriculture and food systems transformation. This framework aims to facilitate improved decision-making by policymakers, practitioners, and other stakeholders in differing contexts at a range of levels on a number of scales. Biodiversity, consumers, education, and governance are identified as promising entry points to build a structured process using visual narratives that rely on the 10 Elements of Agroecology to graphically dissect prospective social-ecological transition trajectories. Nexus approaches are used to highlight and examine salient interactions among different sectors and entry points, and to develop visual narratives describing plausible theories of transformative change towards sustainable agriculture and food systems.

FAO's Tool for Agroecology Performance Evaluation (TAPE)<sup>6,7</sup> assesses the multidimensional performance of agroecology in order to 1) Build knowledge and empower producers through the collective process of producing data and evidence on their own practices; 2) Support agroecological transitions at different scales and in different locations by proposing a diagnostic of performances over time and by identifying areas of strengths/weaknesses and enabling/disabling environment; and 3) inform policy makers and development institutions by creating references on the multi-dimensional performance of agroecology and its potential to contribute to the SDGs. When coupled together, the 10 Elements Framework provides a territorial way to think about a food system which can then be assessed using TAPE (with its territorial inference and farm/household level sampling structure). Then, the evidence can be utilized and coupled with the 10 Elements framework to analyze enabling/disabling factors of sustainability and pinpoint key interventions (technical, socio-cultural, production, policy, etc.) for advancing sustainability. Both are aligned with a complex adaptive systems approach to think about, measure and elicit changes of the food systems.

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1 FOLU (Food and Land Use Coalition). (2019). Growing Better: ten critical transitions to transform food and land use. Available Online: <https://www.foodandlandusecoalition.org/wp-content/uploads/2019/09/FOLU-GrowingBetter-GlobalReport.pdf>

2 FAO. 2020. Restoring the Earth – The next decade. Unasylva No. 252 - Vol. 71 2020/1. Rome. <https://doi.org/10.4060/cb1600en>

3 Baker, L., Gemmill-Herren, B. & Leippert, F. 2019. Beacons of Hope: Accelerating Transformations to Sustainable Food Systems [online]. Global Alliance for the Future of Food. [Cited 06/04/2020]. [https://foodsystemstransformations.org/wp-content/uploads/2019/08/BeaconsOfHope\\_Report\\_082019.pdf](https://foodsystemstransformations.org/wp-content/uploads/2019/08/BeaconsOfHope_Report_082019.pdf)

4 FAO 2018. The 10 Elements of Agroecology: Guiding transitions to sustainable food and agricultural systems. Rome. <http://www.fao.org/3/i9037en/i9037EN.pdf>

5 Barrios et al. 2020. The 10 Elements of Agroecology: enabling transitions towards sustainable agriculture and food systems through visual narratives, Ecosystems and People, 16:1,230-247, <https://doi.org/10.1080/26395916.2020.1808705>

6 FAO 2019. Tool for Agroecology Performance Evaluation: Process of development and guidelines for application <http://www.fao.org/3/ca7407en/ca7407en.pdf>

7 Mottet et al. 2020. Assessing Transitions to Sustainable Agricultural and Food Systems: A Tool for Agroecology Performance Evaluation (TAPE), Frontiers in Sustainable Food Systems, 16 December 2020, <https://doi.org/10.3389/fsufs.2020.579154>