

The potential of agroecology and organic

Insights from scientific evidence in the tropics

Agroecology and organic agriculture have the potential to facilitate the transition towards inclusive, healthy and sustainable food systems. An increasing number of high-level experts find the evidence for agroecology and organic agriculture compelling, and farmers worldwide have shown it is possible: 30 percent of farms have transitioned to agroecology, and nearly 3.7 million farmers are certified organic.

Despite technological advancements, food systems are failing to meet the needs of society and the environment. The challenges and hidden costs of food systems are most evident in the tropics, where disproportionate food insecurity, malnutrition, and the impacts of climate change pose significant threats.

This factsheet dispels misconceptions about agroecology and organic agriculture, showing that they 1) can nourish a growing population, 2) are profitable and affordable, and 3) are scalable. It highlights key information for policy makers, derived from a comprehensive, evidence-based policy dossier.

Note: The terms agroecology and organic agriculture are defined in the policy dossier. Only references that are not included in the policy dossier are cited in-text. See last page for more information.

Agroecology and organic can nourish a growing population

Diverse agroecological and organic production systems produce a wide variety of crops, contributing to food and nutrition security in rural communities as well as diversifying income. This is exceedingly important as poverty and inequality are at the root of hunger, rather than a global food shortage. Currently, the majority of grain produced is used for fuel and animal feed^[1], while food waste accounts for up to 40 percent of total food produced globally. With proper strategies we can, therefore, already feed a future population of 10 billion people with the food we produce today.

Furthermore, studies show that the “yield gap” between conventional and organic agriculture has been largely overestimated in the literature and is minimal for many crops. In fact, diversified systems



1 in 3 individuals worldwide face **hunger** or malnutrition. If current trends continue, **1 in 2** individuals are projected to be malnourished by 2030.



Hidden costs of the current agricultural system add up to almost **10%** of global GDP.



The food system is responsible for **1/3** of global **greenhouse gas** emissions.

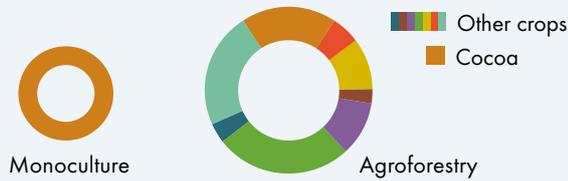
can produce twice as much yield per hectare as monocultures in low and middle-income countries and can support yield in the face of environmental stress. With 33 percent of soils worldwide already degraded and more than 90 percent at risk of degradation by 2050, agroecological and organic approaches are essential. These systems foster soil health, crucial for ensuring future yields and sustainable food production.

Given the potential of agroecology and organic agriculture to produce sufficient, nutritious and diverse food, discussions about “feeding the world” should shift away from the “yield gap” between agroecology/organic and conventional. Instead, we must look at the whole food system from farm to fork, considering inequality and long-term resilience. Efforts to address hunger should focus on equalising access to food, markets, resources and other opportunities, while also reducing food waste and re-evaluating the priority given to animal feed and fuel.

Selected benefits of agroecology and organic

Higher total yields and more nutritional diversity

Up to 2 times higher yields in diversified systems in low-income countries and in the tropics, for example:



More biodiversity on and off farms with healthier soil

Improves soil health and helps reverse soil degradation. 30% higher species richness.

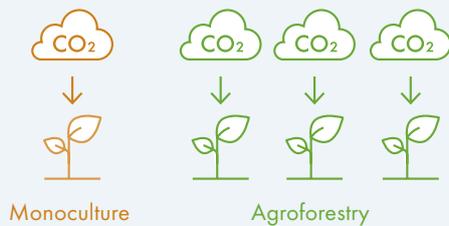


Better climate resilience and smaller carbon footprint

Globally, up to 2–4 times more energy efficient than conventional.



Carbon stocks up to 3 times higher in diverse systems.



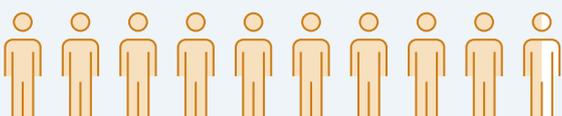
Improved income and household resilience

Profits on par, or up to 35% higher with organic premiums globally.



Reduced exposure to harmful agrochemicals

95% of the 385 million people who suffer from pesticide poisoning each year live in the global South. Dangerous synthetic pesticides are not allowed in organic.



Agroecology and organic are profitable and affordable

Agroecology and organic agriculture can improve household income and livelihood resilience compared to conventional, especially in diverse systems or with price premiums. At the same time, they reduce costs to the public, which will be increasingly important as climate change impacts worsen.

For example, although synthetic agrochemicals can increase yields in the short term, they also lead to ecological degradation and negative health impacts over time. The “hidden costs” of the current global food system amount to around 10 percent of global gross domestic product (GDP), increasing to 27 percent in low-income countries^[2]. This is far more than a transition to agroecology and organic would cost^[3].

Diverse agroecology and organic agriculture directly improve livelihood resilience compared to conventional. Such systems are less reliant on purchased inputs and produce a wider variety of crops for direct consumption and sale. This enhances nutritional and economic autonomy while fostering adaptive capacity, which will be increasingly important as the negative impacts of “business as usual” worsen into the future, e.g., climate change, food insecurity and undernutrition.

If the hidden costs were accounted for in market prices, agroecology and organic products would be even more profitable and affordable. Instead, hidden costs are currently generated and exacerbated by market, institutional and policy failures. For example, input subsidies for synthetic agrochemicals make conventional agriculture and its products artificially more profitable and affordable than agroecological and organic systems. These costs of current food systems amount to more than they contribute to global GDP, signalling an urgent need to transform food systems toward agroecology and organic^[3]. Thus, investments into agroecology and organic agriculture are not only morally sound but also an economic win.

Graphic references (top to bottom): 1) Dittmer et al., 2023/FiBL, 2023; 2) Tuck, 2013^[4]; 3) Chappell, 2011; 4) FiBL, 2023; 5) Crowder, 2015; 6) Tostado and Bollmohr, 2022^[5].

Agroecology and organic are scalable

Agroecology and organic agriculture have proven to be effective approaches to transform food systems. Despite the potential of agroecology and organic agriculture, and recognition gained in recent years, they still remain on the fringes. However, agroecological and organic practices are adaptable to diverse agro-climatic conditions and farming contexts, making them scalable solutions that can be implemented at various scales. Bringing agroecology and organic agriculture to scale is essential given the pressing need to transform food systems.

The full benefits of agroecology and organic agriculture have not been realised in part due to

political and institutional barriers and lock-ins, including incentives and funding mechanisms that favour “business as usual” food systems. Conventional agriculture has enjoyed disproportionate support since the green revolution, dwarfing funding for agroecology and organic agriculture, which has likely contributed to the “yield gap” and underdevelopment of solutions to key challenges. At the production level, major bottlenecks include pest pressure, nutrient availability, lack of suitable crop varieties and access to appropriate mechanisation. Beyond, challenges include certification costs, limited market access, lacking resources and lack of financial support.

There are many policy opportunities to address these bottlenecks and facilitate the scaling of agroecology and organic farming in the tropics.

Opportunities to facilitate sustainable food systems



Economic

- True-cost accounting
- Long-term-funding
- Value chain and market development to support fair pricing



Knowledge

- Bolster knowledge and capacity development, i.e. strengthen farmer organisations and extension services
- Support education, research, knowledge co-creation and exchange



Social

- Improve consumer food literacy
- Empower farmers and supply-chain actors through knowledge and resources



Resources

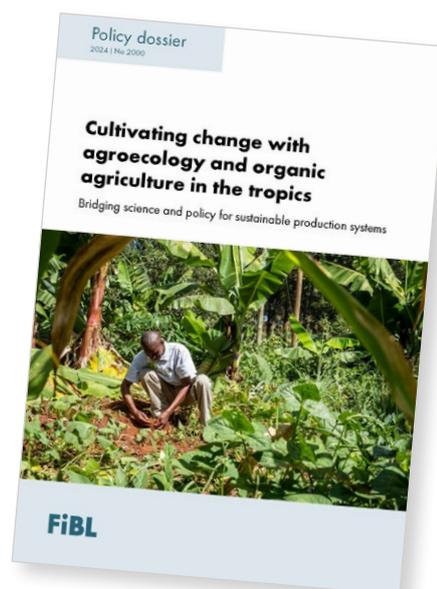
- Discontinue financial support and subsidies for harmful agricultural practices
- Support for appropriate mechanisation and digitalisation
- Land tenure reform



Governance

- Smart policies to incentivise and support transition to agroecology and organic

This factsheet presents the key messages from the policy dossier “Cultivating change with agroecology and organic agriculture in the tropics”. The dossier provides a thorough overview of the scientific evidence showing how agroecological and organic approaches can contribute to food system transformation in the tropics as well as opportunities to facilitate change. The full dossier is available at www.fibl.org/en/shop-en/2000-tropics-policy-dossier



References

For references, see the policy dossier (QR code above). References not mentioned in the policy dossier are listed below.

- [1] HLPE. (2020). Food security and nutrition: building a global narrative towards 2030. www.fao.org/cfs/cfs-hlpe
- [2] FAO. (2023). The State of Food and Agriculture – Revealing the true cost of food to transform agrifood systems. In *The State of Food and Agriculture 2023*. FAO. <https://doi.org/10.4060/cc7724en>
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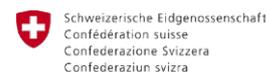
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