

Agroecology as the Answer to Global Food and Climate Crises

Article by Doina Popusoi

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The coronavirus pandemic has exposed the fragility of today's global food systems, and the risk of a food crisis is higher than ever. Yet the failures of industrial food production have long been clear, manifest in persistent global hunger and malnutrition as well as environmental destruction that is driving the climate and biodiversity crises. Faced with this, agroecology is an alternative on the rise. Doina Popusoi traces agroecology's evolution and argues that the moment is now to redefine our food systems around principles of sustainability and justice.

The last decade has seen agroecology become one of the most notable topics in discussions about the future of food and agriculture. It has gained popularity among farmers in different regions of the world; been mainstreamed in university curricula; been researched by different organisations and institutions (including the UN); and been employed by governments searching for more sustainable agricultural policies. Through agroecology, societies benefit from local circular economies that increase producers' income and from reducing the negative environmental impacts of agriculture. By creating synergetic natural ecosystems, agroecology unlocks positive interactions, thereby reducing the need for harmful and expensive chemicals. As the need for a sustainable food system becomes ever more critical, agroecology is rising up the global agenda through international institutions and in farming practice.

A holistic approach to agriculture

Agroecology's roots go back the 1920s and 1930s when scientists Karl Klages and Basil Bensing defined it as applying ecological principles to agriculture.^[1] In the 1980s, Stephen Gliessman and Miguel Altieri – the pioneers of modern agroecology – carried on the debate by centring traditional and diverse agro-ecosystems in debates on sustainable farming in the US and Latin America. Parallel to this, Cuban universities in the 1990s developed the concept of “food sovereignty” which would guide grassroots organisations to overcome the so-called Green Revolution of 20th-century industrial food production through an agroecological transformation of farming systems.

Gliessman describes agroecology today as “the integration of research, education, action and change that brings sustainability to all parts of the food system: ecological, economic, and social.” He adds that it is transdisciplinary in valuing all forms of food systems knowledge and experience, and participatory in “the involvement of all stakeholders from the farm to the table and everyone in between.” Finally, it is action-oriented because “it confronts the economic and political power structures of the current industrial food system with alternative social structures and policy action.” Agroecology has therefore evolved in this way to become a holistic approach to agriculture and food systems in their entirety.

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of research, education, action and change that brings sustainability to all parts of the food system: ecological, economic, and social.”

Today’s global food systems are unsustainable, from their negative environmental impact to their general failure to produce a plentiful supply of healthy and safe nutrition. Despite decades of dialogue on tackling global warming, greenhouse gas emissions keep growing, as outlined in the [UN’s 2019 report on climate](#). Considerable measures are still needed to meet the Paris Agreement limit of a 1.5 degree Celsius temperature rise. According to the report, agriculture is responsible for 23 per cent of global greenhouse gas emissions through its exhaustive agricultural production and unsustainable land use. This includes large-scale monocultural cultivation, intensive livestock and fisheries production, deforestation, and more – all of which lead to soil degradation and natural resources depletion, provoking loss of biodiversity and weakening our ecosystems.

Meanwhile, it is undeniable that global hunger has been reduced with impressive results in the last decades. But while increased yields in the last 50 years have succeeded in providing enough food supply, persistent hunger and malnutrition continue to be a key problem – and one which has grown between 2015 and 2019, according to the latest available data. 820 million people worldwide are exposed to chronic hunger and undernourishment according to the most recent [UN report](#) on global hunger based on 2018 data.

Agroecology has the potential to reverse these trends by using a systemic approach, as defined through the [Ten Elements of Agroecology](#) approved by the Council of the UN’s Food and Agriculture Organisation (FAO). Applying agroecological principles can reverse biodiversity loss and enhance the resilience of ecosystems to climatic shocks.^[2] Integrating crops, livestock, and fisheries within diversified farming systems would help producers overcome reliance on harmful chemical inputs, thus avoiding both their severe consequences on human health and their extortionate cost, which the rural poor simply cannot bear. The application of agroecological methods to agriculture is the most promising strategy to support smallholders – responsible for 80 per cent of global food production – in producing healthy and nutritious food for all. Importantly, agroecology responds to the urgency of achieving the UN’s [Sustainable Development Agenda 2030](#) articulated in the 17 [Sustainable Development Goals \(SDGs\)](#). This agricultural approach alone directly covers more than half of the SDGs, and it positively affects all of them.

Evolution in the international arena

During the 1980s, social movements around the world started mobilising to counter the Green Revolution agenda that for a decade had been guiding global agriculture towards industrialisation. They proposed an agricultural transformation that recognised farmers as central pillars for a fair food production. [La Via Campesina](#), one of the largest movements fighting for food sovereignty since 1993, gathered around 200 million farmers from Africa, Asia, Europe, and North and South America to affirm their rights to access land and seeds, and to promote agroecology as the way forward. Capable of creating a fair society in which women and men are equally recognised, agroecology represents the voice of peasants, fisher-folks, pastoralists, and indigenous peoples.

Along with La Via Campesina, many other international organisations, networks, and civil society organisations have shown support. Funders are also getting involved: the [Global Alliance for Future of Food](#) – a consortium of philanthropic private organisations – supports agroecology as a core solution to the transition to sustainable food systems.

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Finally, agroecology has been widely endorsed by scientists and farmers' organisations. Its unique ability to transform the whole food system and to reconcile the economic, environmental, and social dimensions of sustainability has been recognised by the [World Bank](#), the [Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services](#), and landmark publications such as the [IPCC report on Climate Change and Land](#).

The role of the United Nations

The year 2014 was crucial for the “internationalisation” of agroecology, as the global community began to grasp its importance for food security and nutrition. FAO began running regional and international symposiums on how governments, policy-makers, scientists, and farmers could work together to transform food systems. Its [Second International Symposium on Agroecology](#) was particularly significant for highlighting how agroecology could help reduce poverty and achieve the SDGs.

It kickstarted a dialogue on how to expand and upscale the practice by establishing the [Scaling-up Agroecology Initiative](#). This brought together UN agencies with international organisations working on agriculture, food systems, and the environment, including the International Fund for Agricultural Development (IFAD), the UN World Food Programme (WFP), the UN Environmental Programme (UNEP), the World Bank, and Bioersivity International. It also offered support for national-level programmes that supported the transformation of food systems. Senegal, Mexico, and Nicaragua amongst others are currently developing such programmes, while the state of Andhra Pradesh in India has adopted the [Zero Budget Natural Farming](#) model, applied successfully to 580 000 farms.

IFAD, the UN financial institution investing in rural development, is particularly committed to [promoting agroecology](#). Through a bottom-up process of consultation and dialogue, its [Farmers' Forum](#) brings smallholder farmers and rural producers all over the world together with IFAD and its member states.

The 2020 Farmers' Forum reaffirmed the will of the majority of farmers to engage in agroecology in order to combat climate change. IFAD amongst others is conducting a [study](#) to compare agroecology's effectiveness in improving food security and nutrition in rural areas to other farming approaches. Similarly, the FAO's [Tool for Agroecology Performance Evaluation](#) provides an instrument to assess the performance of agroecology.

The Committee on World Food Security

In July 2019, the Committee on World Food Security (CFS) released its [report](#) on agroecology and other innovative sustainable agriculture approaches. The Committee comes together every October to discuss food security and nutrition issues. The expert report analyses the diversity of sustainable agricultural innovations and calls for a profound agricultural transformation to combat hunger and malnutrition.

It describes agroecology as a “transdisciplinary science” oriented towards solving real global issues using reflexive, collaborative, and participative methods. Its social dimension means that besides being a science, agroecology is a set of non-prescribed practices that consider ecological processes and human values within agricultural production. As such, it safeguards family farming collective rights.

The key word in the agroecological transformation is “innovation”, which must be responsible, democratic, and promote the “co-creation of knowledge”, a fundamental pillar of a cutting-edge agricultural transformation. Moreover, the report continues, innovative principles need to be applied at a local level and therefore adapted to different environmental and socio-economic contexts. Agroecology is by necessity a holistic vision, which sees the challenges in food systems as deeply interconnected and only tackled if addressed in a coordinated and comprehensive manner. This systemic approach can address all these challenges at the same time and unlock a paradigm shift at a food systems level.

Agroecology and sustainable agriculture innovations vary widely to suit distinct global, regional, and country contexts and there is no one-size-fits-all solution. However, the driving principle must be sustainability.

The report concludes with five sets of recommendations discussed during the Committee on World Food Security conference later that year in October 2019. Two strong positions emerged from the countries and organisations at the session. The first endorsed supporting innovative food systems based on agroecological approaches and was backed by the majority of Global South countries, such as Iran, Senegal, Burkina Faso, Chad, Mali, as well as the Civil Society and Indigenous Peoples’ Mechanism and Switzerland. The second position, taken by some Global North countries such as the United States and Australia, the Private Sector Mechanism, and Brazil, was reluctant to focus on agroecological food systems alone, either considering it as one strategy amongst many, or eschewing it altogether in favour of technological solutions like biotechnology or precision agriculture.

A more neutral position was taken by the EU, France, Spain, Hungary and China, which saw agroecology as a promising way to improve food systems. Thailand also recognised the potential while demanding – along with other countries – for more scientific evidence.

Agroecology and sustainable agriculture innovations vary widely to suit distinct global, regional, and country contexts and there is no one-size-fits-all solution. However, the driving principle must be sustainability. At a time when food systems are unsustainable for the environment, economy, and society, such transitions are vital.

Time for an agroecological transformation

In a statement on the Covid-19 pandemic, the FAO warned of a “looming food crisis” if measures were not taken to mitigate the impact of border closures, quarantines, and global food supply chain disruption. “There is no need to panic”, it ended, “globally, there is enough food for everyone.”

We need to ask ourselves why hunger and malnutrition remains such an endemic, serious problem and what price we are paying for a developed Global North and an underdeveloped Global South, with inequalities growing on both sides. Our economic systems need to be rethought, with economic development taking the environment into account. Perhaps the closing of borders can be seen as an opportunity to strengthen local food systems and achieve food sovereignty. More than ever, the most vulnerable need protecting and ways must be found to prevent more people from being pushed into vulnerability. Redefining food systems means reaching the at-risk living in rural areas – who are responsible for our food production – whilst ensuring that food systems are resilient in times of crises.

The risk of a global food crisis has never been greater. Already, global economies are suffering the effects of the pandemic. Echoing the FAO, the International Panel of Experts on Sustainable Food Systems stated that

restrictions on the movement of people and goods was already “putting major strains on local, regional, and global supply chains, and testing the resilience of food systems”. Improving food insecurity also helps to tackle other related emergencies, from climate change and health issues to economic recession. From intensive farming to deforestation, our current agricultural practices make pandemics worse by provoking human-wildlife interactions that spread diseases. Agroecological practices on the other hand mitigate their effects. Sustainable land management, extensive (as opposed to intensive) animal production, and the protection of forests and other wild habitats help to prevent the spread of diseases.

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Governments and international organisations are preparing to mitigate the pandemic’s most severe impacts. Authorities have already reacted by regularising migrant workers while local food networks linking producers and consumers, such as the Community Supported Agriculture scheme, have re-emerged around the globe. UN agencies are also engaged in responding to the Covid-19 emergency. The FAO has encouraged states to cooperate in support of the global food value chain; IFAD has established a fund to support smallholders and prevent a food crisis; and the WFP is engaged in immediate interventions providing food aid to those most in need.

The 2021 Food Systems Summit will be a crucial occasion to redefine what we want food systems to look like and to call for innovative agroecology programmes, taking into consideration the priorities of family farmers including peasants, indigenous peoples, pastoralists, and fisher-folks. As the world responds to the imminent food crises induced by the pandemic, it is increasingly clear that only a long-term agroecology-related transition of food systems can overcome current fragilities and create a resilient society composed of healthy ecosystems and conscious individuals.

Footnotes

^[1] Steve Gliessman (2018). “Defining Agroecology”. *Agroecology and Sustainable Food Systems*, 42:6, 599-600.

^[2] Clara Nicholls and Miguel Altieri (2016). “Agroecology: Principles for the Conversion and Redesign of Farming Systems”. *Journal of Ecosystem and Ecography*.



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