The role of diverse agricultural landscapes in biodiversity conservation and food-system resilience: Workshop report

During the Global Landscapes Forum's Biodiversity Digital Conference 2020, Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) and World Agroforestry (ICRAF) brought together practitioners from four projects funded by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety through its International Climate Initiative for a global learning and knowledge-exchange event. Public- and private-sector experts from both the global South and the global North shared their experience and insights into the economic gains of biodiversity-friendly food production.

The COVID-19 pandemic has starkly revealed the vulnerability of the world's food systems to shocks. The post-COVID decade must be managed in a way that builds future resilience. Local and global circular economies that advance biodiverse agricultural landscapes are the way forward.

Background

Crop- and livestock-based agriculture has expanded to meet the demands of a burgeoning population that is expected to continue rising to over 9 billion by 2050. Agriculture is the planet's largest land use, taking up between 30% and 40% of the Earth's land surface. It has a disproportionate effect on biodiversity, climate change and human wellbeing. Agricultural landscapes have evolved from places where mixed crops and livestock were grown to intensively produced monocrops and livestock.

Eradication of hunger remains a global challenge but equally so does the conservation of biological diversity, the restoration of vital ecosystem services and the need to limit greenhouse-gas emissions to prevent or at least reduce catastrophic climate change.

The multiple demands on agroecosystems beyond that of food production are reflected both in the Zero Hunger target of the Sustainable Development Goals, which is asking for an increase in proportion of land area under productive and sustainable agriculture as well as the newly proposed target for agriculture in the Global Biodiversity Framework.

Our understanding of food security has also greatly advanced since the last century. We are now differentiating between 'distribution gaps' — referring to the lack of access to food — and 'nutrition gaps', referring to a lack in sufficiently diverse food to ensure our health and wellbeing.

The effects of the COVID-19 pandemic have raised even more questions about the viability of modern agriculture. Many people have lost their jobs and millions of poor people have been driven further into poverty, not even able to buy food due to the loss of income as well as increased prices and limited availability of daily goods. Crop exports, especially high-value exports that depend on air freight, have been badly affected as air borders closed and stranded exports were dumped. Demand for commodities in developed countries has slumped because people have reduced consumption during lock-downs, leading to surpluses in exporting countries.

There is a growing consensus that COVID-19 has revealed the vulnerability of our world's economies and that a "green recovery", based on principles of sustainability, must be pursued. **This can only be achieved by moving away from geographic specialization and simplified agricultural**

landscapes, shortening value chains and stimulating local and national food businesses that deliver to the dietary needs of growing urban populations. Global food trading will continue to be important, including the export of agricultural commodities from developing countries, but there needs to be a shift in balance to growing domestic markets and greatly increasing added value along national value chains. Diverse agricultural landscapes that combine modern farming technologies with practices that are based on agroecological principles will be the key to deliver the transformational change that is needed to build biodiverse, inclusive, resilient and safe food systems for all.

Key opportunities

Governments around the world are looking for recovery options that deliver new jobs and businesses. Few sectors link job creation so closely to sustainable green production as the food sector. The trillions of dollars to be invested in recovery from COVID-19 offers an unprecedented opportunity for a clean, green and just transition to a more biodiversity-friendly agricultural and food system

- Agricultural systems are vital to the conservation of biodiversity and food systems should increasingly be based on cutting-edge, field-level technologies springing from ecological principles with emphases on local processing and distribution via shorter value chains.
- International agreements and conventions need to recognise that the way we produce food is the key to mitigating the multiple crises we face: the climate emergency, massive loss of biodiversity and increasing emergence of zoonotic diseases.
- Both the Convention on Biological Diversity and the Convention on Climate Change must bring their influence to bear on nations' policies to favour investments in local production and marketing capacity to balance imported food and beverages.
- Applied research needs to produce a much better understanding of the productivity and profitability of integrated, mixed farming systems to provide governments with the data and information they need for effective policies.
- Retailers and politicians need to balance between global and national/local food value-chains to maximise the benefits of globalization while building resilience into livelihoods at local levels.

Product diversity as a business model

It can be costly to change from agriculture that is built on economies of scale and high levels of specialization — of both producers and produce — to diversified, integrated systems. When farms produce a range of unique products, the farmer needs different types of expertise, technologies and market channels for each product. An important question, therefore, is how to support farmers to keep these transaction costs low.

'There is a lot to be learned from the organic farming sector," said Anja Gassner, leader of the Research Methods Group at World Agroforestry (ICRAF) and principle investigator of the Harnessing the potential of trees-on-farms for meeting national and global biodiversity targets project, which is funded by the International Climate Initiative of the Federal Government of Germany. "Efficiency is achieved through farmer-aggregation: helping individual farmers to get access to supplies and markets that are otherwise beyond their reach. Smart marketing that uses digitalization tools to link

farmers directly to consumers are the future, especially for farmers who are not close to cities."

Peter Zens is a German farmer who manages the Gertrudenhof adventure farm near Cologne. The 130-hectare farm grows 30 different crops. His business model is multidimensional, serving different needs of his city-dwelling customers, thousands of whom visit his farm every week.

'They take guided tours of our fields, shop in the large farm shop and enjoy the delicious seasonal food directly on the fork because we also have a restaurant "mile" where we offer seasonal dishes,' said Zens.

His customers visit seven days a week to buy fresh, seasonal products and to experience farming first hand.

'This is a very important factor,' said Zens, 'because only when people experience how their food grows, when will they seek out locally grown, seasonal produce and encourage farming at this scale"

Before the COVID-19 pandemic restricted travel, Zens' farm had about 1000 guided tours per year, with school classes, kindergartens and birthday groups. The children harvested together and were shown the different dimensions of organic farming during each tour.

'On the one hand, we asked the children to understand, what is agriculture, how does agriculture work? What are the problems of agriculture, what are the connections and the difficulties, but also the topic of food waste and sustainable consumption and how can our purchases influence our climate?' said Zens. 'Because if you pluck a potato out of the ground with a child in first grade and you ask the child which potato can be thrown out but each one is a little treasure to them, the child says, "I wouldn't throw any away!" And this is exactly where you can start and explain why food waste is a madness, why it is a madness to throw away potatoes that are too small or too wide.The children become ambassadors of sustainability."

A different approach to a multidimensional farming system is that of agroforestry, the integration of trees and crops on the same piece of land.

Thomas Jacob of the Peermade Development Society Organic Spices (PDS) in India explained that, 'almost 80% of India's farms are small, with the average farm size being around 1 hectare. Due to the small land area, farmers need to use a multi-layered cropping system by integrating trees. This is like building a multi-storey building: we are optimizing the space to the fullest extent. At every level of light, we have a selection of plants that can tolerate that intensity of light and water… We have different combinations that are sustainable in the local area, providing food locally, as well as specialized products, like spices, for export. Together, this brings in more money for the small-scale farmer.'

PDS works with small-scale, marginal and ethnic minority farmers in the state of Kerala. According to Jacob, reducing transaction costs is a matter of scalability. PDS works with 3000 farmers, providing all possible assistance to assist them to follow organic farming: adding value and improving quality, purchasing products at premium prices from farm gates, monitoring farming activities, processing in their own facility and marketing products in international and domestic markets. The PDS factory produces 1 tonne of spices per hour, including pepper, turmeric, ginger, clove, vanilla, cardamom, coriander, nutmeg, mace and 'zedoary' (*Curcuma zedoaria*).

On the question of profitability, Jacob says, 'While there is a small decrease in productivity in terms of yield per hectare when compared to farmers who specialize in one spice only, PDS farmers gain in the long term. The spatial integration of crops and trees mimics natural water and nutrient processes of forests, resulting in less need for artificial inputs like fertilizers, herbicides and pesticides. Another important aspect is the sustained health of the soil.'

Reconstructing local value chains

The need to adapt our food systems to climate and other shocks coincides with a growing global recognition that our food systems are effective at delivering large quantities of a limited variety of food (mainly sources of starch and protein) but ineffective in delivering adequate amounts of nutritious food. This has affected poor people (high levels of micronutrient deficiencies) as well as those that are better off (increasing obesity and associated non-communicable diseases).

The food systems that are needed as part of national economic recovery packages should, therefore, be ecologically sustainable, resilient and capable of ensuring that people can eat adequate amounts of nutritious food.

Zens said that one of the key challenges for farmers in Germany was that 'all trade routes have collapsed in recent decades. The whole regional infrastructure that existed in my grandfather's time, with regional marketing and with small regional retailers, do not exist anymore, it is primarily a global market. .'

This is not just a problem for the 'global North'.

"Exports are easiest because local markets are more complex,' said Jacob adding that it took 10 years for PDS to stabilise."' We need strong institutions to connect farmers to consumers. Building trust and establishing the process takes time."

Alka Bhargava, Additional Secretary of India's Department of Agricultural Cooperation and Farmers' Welfare believes that sustainable agriculture and conservation are two sides of the same coin, with a strong ripple effect on the lives of people.

'The COVID crisis has taught us that governments must adapt, finding new ways of working to minimise supply-chain interruptions during such lockdowns," she said.

Food arrivals fell by around 60% following the announcement of India's lockdown but volumes recovered to near-normal levels within 2 months.

"The Government's response to the COVID lockdown in March, with the need for social distancing, caused wholesale markets to be "decongested", so we encouraged state governments to allow direct marketing to shorten supply chains. We already had an Act to track logistics digitally — the electronic agricultural market, established in 2017 — which became very useful. Railways had special trains for agriculture and agricultural exports actually increased. The Self-Reliant India Mission also provided special packages that emphasised local foods and knowledge, making things easier for farmers. The emphasis was on organics and there has been a steep increase in demand over the last few months. We relaxed norms to make it easy for retailers to trade with so farmers anywhere. As part of our long-term strategies, we facilitated contract farming to guarantee farmers would have markets for their produce before they even established their fields. We make advisory services available to

address quantity and quality and ensure that farmers get fair prices."

Business and biodiversity

Global companies — especially in food and beverage as well as the cosmetic industry — are realising that the resilience of supply chains and sustained supply depend on the health of the sourcing landscapes. Therefore, investment in these landscapes is intrinsic to survival of their businesses. While the willingness of businesses and shareholders to produce in a more sustainable way is real, companies nevertheless are challenged to find ways of adjusting operations and implementing cost-effective, practical changes.

Since the 1970s, debate has been underway about the social and ecological impacts of the ever-increasing global dimensions of production. One outcome has been the appearance of myriad public, private and global standards.

Global standards, such as voluntary certification schemes and codes of conduct introduced by nongovernmental organizations, gained prominence and these have often been adopted by companies. Voluntary certification schemes are based on two assumptions. First, that there are sufficient socially and environmentally concerned consumers who will not buy a product from a retailer known to violate the accepted norms or which cannot fully account for its certified traceability or supply chains; and, second, that there are enough consumers who are willing to pay a premium for a product that is produced according to those norms.

Regulations of food ingredients, which are part of internationally traded products, are subjected to several non-binding and binding agreements, such as the Hazard Analysis Critical Control Point system and the Food Hygiene Standards of the Codex Alimentarius Commission of the Food and Agriculture Organization of the United Nations and the World Health Organization.

The World Trade Organization regulates food safety through the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade. These two agreements complement each other and mainly focus on removing obstacles to trade, disguised as health and safety regulations that are not based on scientific evidence. Although the Technical Barriers to Trade agreement requires mandatory labelling, the regulations are based only on differences in product characteristics and not upon process or production methods.

Two examples of how businesses can be supported to transform their supply chains can be seen in the work of PUR Projet and the Global Nature Fund.

PUR Projet works directly with 150 corporate partners — such as Cargill, Clarins, L'Oreal, Nespresso — improving the livelihoods and the environment of farmers in 40 countries. It conducts risk audits of companies' supply chains — both social as well as environmental aspects — and develops mitigation interventions. Some of their key interventions are agroforestry and forest landscape restoration in coffee, cacao and rice landscapes but also regeneration of damaged coral reefs.

PUR Projet has been at the forefront of promoting 'insetting' approaches. Insetting originated as an alternative to climate-change offsetting. Insetting is the process of sourcing opportunities for mitigation activities outside the immediate confines of the company's boundary by supporting actions that are of relevance (and benefit) to the company's upstream stakeholders. For practical purposes, it can be thought of as a partnership with communities who live in the sourcing landscapes

of the company to jointly achieve a lower ecological footprint.

The Global Nature Fund through the EU-LIFE project, Biodiversity in Standards and Labels for the Food Industry, is working with food-processing companies and retailers on integrating specific biodiversity goals into standards, labels and sourcing guidelines. Together with the Private Business Action for Biodiversity project, the methodology was also successful adapted to Indian spice production and very well received by the Spice Sector. PDS Organic Spices has been one of the forerunners in testing the approach.

Tobias Ludes, programme manager for Business and Biodiversity at the Fund, said that, 'At this time, there is a certain keenness of the market to go towards biodiversity-friendly farming but there is a lot of room for improvement. Our key recommendation that really hit the ground hard was the Biodiversity Action Plan or BAP. The BAPs provide guidance in designing and implementing concrete steps on sustainable use and conservation of biodiversity when growing and sourcing natural raw materials."The BAPs are a successful example of how food companies can successfully mainstream biodiversity into their operations.

The session opened a valuable discussion on how incorporating biodiversity considerations into supply chains benefits producers, incentivizing the adoption of an approach that otherwise gets pushed into the domain of conservation organisations. ICRAF, through the TonF project has been generating evidence to enhance national level policies on agriculture and, in turn, sparking action on the ground. In 2021, TonF will work with partners to propose an indicator to measure the biodiversity conservation contributions of agricultural landscapes to the Convention on Biological Diversity.

Read more

Making the post-2020 global biodiversity framework a successful tool for building biodiverse, inclusive, resilient and safe food systems for all

Podcast: Building back better-investing in farming under covid-19

FEATURE: Go green and white: EU must mainstream natural capital accounting for sustainable food production and consumption

FEATURE: Why financing is tied to the future of a biodiverse planet

Biodiversity Action Plans: https://www.business-biodiversity.eu/en/food-standards

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- Harnessing the Potential of Trees on Farms for Meeting National and Global Biodiversity Targets (implemented by World Agroforestry (ICRAF))

- Biodiversity and Ecosystem Services in Agrarian Landscapes (implemented by GIZ)
- Impact Investments for the Sustainable Use of Biodiversity in Peru (implemented by GIZ)

Other partners involved include Global Nature Fund and the International Union for Conservation of Nature.

The session was jointly organised by: