Food, Land Use, and Restoration

ISSUE The global food system's impact on biodiversity, ecosystems, and ecosystem services is overwhelming. With 40% of the planet's landmass (excluding deserts, permanent ice, and lakes) being used to grow food, the potential for exacerbating environmental degradation will only increase as agriculture continues to expand. At the same time, nearly 2 billion hectares of cropland, grazing land, forests, and woodlands are degraded. This has negative impacts on ecosystem services, including the provision of freshwater, food, fuel and fiber, clean air and water, climate regulation, and habitat. Agriculture accounts for 70% of all freshwater withdrawn from rivers, lakes, and aquifers. An estimated 4.6 million tons of pesticides is used in the food system each year, and more than half of the nitrogen fertilizer applied to crops is lost to the environment—placing pressure on freshwater and coastal ecosystems.

Agriculture also accounted for nearly a quarter of global greenhouse gas emissions in 2010. Land use change contributed at least to 11%-15% of this, caused primarily by converting forests, woody savannas, and grasslands into crops and pastures, and by draining peatlands for agriculture. The greenhouse gas emissions associated with the entire global food system—from food transport, infrastructure, refrigeration or preparation of food throughout the value chain, to emissions from waste—are thought to be greater still. The world needs a more sustainable food system, one that embeds sustainability from farm to fork, generates agricultural commodities without deforestation and habitat conversion, and restores soils and degraded areas back into natural ecosystems or into productivity. As the challenges are integrated, the solution needs to be as well.

The emerging framework to transform the global food systems toward sustainability includes commitments by both the public and private sector. For example, under the Paris Agreement, more than 60 countries included avoided deforestation in their nationally determined contributions (NDCs) and more than 100 included actions within agriculture. By mid-2017, more than 30 nations had committed to restore 150 million hectares of degraded land under The Bonn Challenge. Many businesses are making commitments to invest in improving food and land use systems—both because it is the right thing to do and because it is a huge opportunity. At the UN Climate Summit in 2014, companies as well as governments and civil society signed the historic New York Declaration on Forests, committing themselves

to eliminating agriculture-driven deforestation by 2020. To date, more than 400 companies have pledged to reduce their impacts on forests and respect the rights of forest communities. Business stands to gain an economic benefit of US$12 trillion each year by 2030 if they align their strategies to the SDGs.

Although these commitments will play a crucial role in transforming the food systems, coordinating them in pursuit of a shared vision that follows agreed pathways remains a challenge. This is made more difficult by the complexity of the interlocking but fragmented food and land use assemblages themselves, each involving myriad private and public actors at multiple levels, with varied and often conflicting interests. Furthermore, there are the dispersed business, government, research, and advisory organizations of all shapes and sizes serving public and private stakeholders who work on parts of what could form systemic solutions to these food and land use challenges.

SOLUTIONS

How the world's food system and land use evolves will have major implications for the health of the planet. We need systems designed to protect our planet's biophysical processes and resources, absorb greenhouse gas emissions, provide nutritious and affordable food for the growing number of people worldwide and strengthen the resilience and prosperity of rural populations. Achieving these outcomes could generate 80 million jobs and create an additional US$2.3 trillion in productive growth by 2030.

While the public, private, and civil society sectors have begun to take needed steps to improve land management and food production, including making commitments critical to delivering solutions, these have not yet been shown as sufficient to generate tangible results on the ground. There is recognition by these actors that overreliance on private sector commitments to achieve progress in sustainable food production has not proven a viable strategy. If the global goals are to be met, company commitments should instead be integrated into and alongside other strategies and stakeholders through a system-wide approach that brings together both *horizontal* (interventions with actors within landscapes, policy reform, governance strengthening, etc.) and *vertical* (food value and supply chain commitments and financing) dimensions. This requires engagement of multiple actors across the full spectrum of the food system, linking actors and actions at the national, subnational and jurisdictional scales to downstream demand and finance sector private sector players. Through such an approach, sustainability is sought at all steps of the supply chain, which drives the generation of environmental benefits within landscapes important for both food production and ecosystem values.

Countries vary considerably in their approach to food systems and land use challenges. For example, production of agricultural commodities for the global food supply chains is a major driver of land use change and environmental degradation in the tropical forests and peatlands of Southeast Asia, Africa, and Latin America. In Southeast Asia, irrigated rice production is a major source of negative externalities such as methane emissions, eutrophication from excessive use of nutrients, and overexploitation of both ground and surface freshwater. Livestock are a major source of methane emissions in the savannah regions of sub-Saharan Africa, while low productivity of smallholder agriculture is an important driver of land degradation and loss of vegetative cover. A one-size-fits-all approach will not achieve the required shift to a more sustainable food and land-use system.

Comprehensive land use planning is necessary to foster a transformational change in food systems through landscape-scale interventions. In this regard, jurisdictional approaches have been touted as potentially powerful ways to align stakeholder interests across sectors in order to protect natural resources in landscapes producing commodities—and at scale. And public and private sector leaders can partner to increase investment through innovative financing mechanisms.

Finally, the use of technology is helping to increase transparency of corporate supply chains, helping to identify unsustainable suppliers and provide consumers with the power to make informed decisions about who they buy from. Other new technologies can help to sustainably increase agricultural productivity and crop resilience by collecting data, monitoring

disease, and applying farming inputs like water and fertilizer more efficiently. Equipping smallholder farmers with these technologies would help to increase yields, reduce pressure to expand into frontier natural landscapes and dramatically improve farmer livelihoods.

LOOKING AHEAD

The GEF has committed to play its part by promoting holistic and system-wide approaches in its resource programming, which will help countries reconcile competing social, economic, and environmental objectives of land management, and move away from unsustainable and irreconcilable sectoral approaches. GEF will help countries pursue comprehensive and system-wide planning approaches to underpin the transformation of food and land use systems. Such approaches will help countries meet the growing demand for increased crop and livestock production, without the risk of further expansion of farmland, erosion of genetic diversity, overexploitation of land and water resources, overuse of chemical fertilizers and pesticides, and inefficient practices that lead to greenhouse gas emissions and food loss and waste.

GEF funding will be used to support countries in ensuring that productive lands are embedded within landscapes that are providing ecosystem services and protecting the natural ecosystems and soil on which they depend. While recognizing the diverse needs across recipient countries, the GEF has identified three areas for action to foster transformational impact at scale: 1) Promoting sustainable food systems to tackle negative externalities in value chains, 2) Promoting deforestation-free agricultural commodity supply chains and 3) Promoting large-scale restoration of degradation landscapes for sustainable production and ecosystem services. These priorities are not mutually exclusive, and can be fostered through comprehensive land use planning. Where food and ecological systems are integrated within landscapes, implementation at scale of a suite of related strategies and interventions must recognize the interconnectedness of these objectives, by engaging them simultaneously as part of the specific landscape needs.

A food production landscape anchored in a sound, comprehensive land use plan will simultaneously meet a full range of local needs, including: water availability; nutritious and profitable crops for families and local markets; and enhancing human health, while also contributing to national economic development and policy commitments (e.g. Nationally Determined Contributions, Land Degradation Neutrality, Aichi targets for biodiversity conservation, Bonn Challenge); and delivering globally to the maintenance of biodiversity, climate change mitigation and adaptation, and provision of food and commercial commodities to international supply chains.