



**WWF PERSPECTIVE PAPER:**

# **THE ROLE OF REGENERATIVE AGRICULTURE TO DRIVE FOOD SYSTEMS TRANSFORMATION**

**2023**

# CONTENTS

<b>1 THE URGENCY OF NOW</b>	<b>3</b>
Business as usual is not an option	4
Hope for the future—we can and must do better	4
<b>2 STRENGTHENING ALIGNMENT BETWEEN AGROECOLOGY, REGENERATIVE AGRICULTURE, AND NATURE-POSITIVE APPROACHES</b>	<b>5</b>
<b>3 WWF'S APPROACH TO REGENERATIVE AGRICULTURE</b>	<b>6</b>
<b>4 ROADMAP FOR ACTION ON REGENERATIVE AGRICULTURE</b>	<b>7</b>
Ensure food systems are aligned with planetary boundaries	7
Create a positive food enabling environment	7
Lead with people at the center	8
<b>5 THE PATH FORWARD</b>	<b>9</b>



# 1 THE URGENCY OF NOW

COP28 provides a crucial opportunity to transform our global food system to confront the climate crisis and protect nature and biodiversity for future generations. Feeding ten billion people sustainably and equitably by 2050 is one of humanity's greatest challenges. Achieving this will require all stakeholders—country governments, corporate actors, researchers, financial institutions, and civil society—to work together to raise the ambition and align on a shared vision for accelerated action for food systems transformation at the global, landscape, and local levels.

WWF acknowledges there are many different approaches and frameworks to achieve food systems transformation. While there are no silver-bullet solutions, meeting the goals and outcomes at the heart of the United Nations' [Sustainable Development Goals \(SDGs\)](#), the [Paris Agreement](#) to address climate change, and the [Kunming-Montreal Global Biodiversity Framework](#) to conserve nature and ecosystems must be prioritized as shared objectives above all else, including

- Achieving a 1.5°C future;
- Ending and reversing biodiversity loss;
- Protecting and restoring nature and healthy ecosystems;
- Ensuring healthy food access for all;
- Ensuring safe, and just livelihoods for all; and
- Ensuring the rights, resources, and food sovereignty of Indigenous and local communities.

This paper outlines WWF's perspective on fundamental principles we believe should inform the dialogue around food systems transformation. With these principles, we seek to find common ground between the interests of a diverse but complementary set of approaches needed to catalyze systems change at scale: agroecology, regenerative agriculture and nature-positive production. The diversity of food systems and stakeholders around the world means that there is no one-size-fits-all set of solution. Many approaches are needed to accelerate the food systems transformation we so desperately need, provided we are aligned on a common vision about what success should look like regarding the future of food.

## BUSINESS AS USUAL IS NOT AN OPTION

Global trends driving humanity's production and consumption of food are one of the primary reasons that planetary boundaries—key processes and environmental conditions that regulate the stability and resilience of the Earth's systems—are pushing the Earth's natural systems to the brink of collapse. Global food production depends on healthy ecosystems, natural resources, and a stable climate, but current models of unsustainable industrialized agriculture in many parts of the world are putting an impossible strain on the planet—degrading soil, land, water, and biodiversity—and threatening our collective ability to nourish all people for generations to come. Half of the planet's habitable land is occupied by agriculture, and the global food system is the largest driver of deforestation, conversion of natural habitat, and biodiversity loss both on land and in freshwater ecosystems. Current agricultural production is responsible for a third of global greenhouse gas emissions—including an increase in nitrous oxide from inefficient and excessive use of fossil fuel-based fertilizers, carbon dioxide released from the deforestation and conversion of natural habitats including grasslands and wetlands, and methane emissions that stem largely from livestock systems and food waste in landfills. The food sector is also the largest polluter and consumer of freshwater around the world, using over 70% of the supply. And one quarter of global irrigated food production currently depends on the unsustainable extraction of groundwater.

Business as usual in agriculture isn't just pushing nature to the brink either—its impacts have also been linked to a dramatic rise in our exposure to zoonotic diseases like Ebola, SARS, and COVID-19 too.

All told, the combined environmental, health, and economic costs of the world's current food system is estimated to be almost \$12 trillion a year, and could rise to \$16 trillion by 2050. For all these reasons and more, we cannot afford to wait any longer to elevate the critical role that systems-level change in food and agriculture must play in combating climate change and nature loss.

## HOPE FOR THE FUTURE—WE CAN AND MUST DO BETTER

The challenge ahead is to chart a new course and create a shared vision for a food system that delivers integrated benefits for healthy people, healthy communities, healthy economies, and a healthy planet. We can employ new technologies and innovations alongside ancient Indigenous knowledge to shift our food systems to be more aligned with nature and meet the nutritional needs of a growing population. But this requires a paradigm shift to rebalance our food systems to be more nature-positive and regenerative and to build resilience into supply chains, landscapes, and livelihoods—reducing agricultural greenhouse gas emissions, protecting freshwater resources, and stopping land conversion and deforestation along the way.

That kind of systems transformation also requires an unwavering commitment to place-based impacts that are inclusive, just, and culturally appropriate to their local context. We must put the rights and resources of Indigenous and local communities front and center on the agenda—whether that is in countries with well-established industrialized agricultural economies or emerging ones in developing countries around the world.

Despite considerable progress made already to achieve these outcomes, the work that remains is even greater. However, there is reason for hope. No other sector has the same opportunity to be as significant a part of the solution while also improving the lives and livelihoods of people around the world. Never has there been so much attention, dialogue, innovation, and opportunity to galvanize a cross-cutting set of actors to make positive, systemic change in our global food system.

# 2 STRENGTHENING ALIGNMENT BETWEEN AGROECOLOGY, REGENERATIVE AGRICULTURE, AND NATURE-POSITIVE APPROACHES

WWF believes COP28 presents an opportunity to strengthen alignment among stakeholders on the core principles underlying approaches to food systems transformation—namely agroecology, regenerative agriculture, and nature-positive solutions. WWF believes these three approaches can be complementary to each other. By expanding the framing of regenerative agriculture to include essential elements of agroecology and nature-positive frameworks, we can align behind common objectives and catalyze necessary changes to our global food system.

Regenerative agriculture has gained considerable traction in recent years, despite being a relatively newer concept that does not have a single, standard definition. Regenerative agriculture is generally grounded in a commitment to revitalizing soil health through low-impact practices like cover crops, rotational grazing, and low or no-tillage. Adoption of regenerative practices can improve how food production is balanced with nature by reducing soil erosion, increasing soil biodiversity, and reducing the use of synthetic inputs too. The concept has been embraced by many in the private sector, especially in the United States, leading to significant investments and public-private partnerships that should be expanded and built upon.

However, many champions of regenerative agriculture have often zeroed in on field-level practices to improve soil health and overemphasized carbon sequestration and the potential for climate change mitigation especially. That narrow focus has pushed other important dimensions of food systems change to the margins—including nature and agrobiodiversity; natural resource management including land and water, climate adaptation and resilience; and socioeconomic considerations such as equity, justice, and access.

That's where the integration of agroecology and nature-positive solutions will be key to informing future framing of regenerative agriculture and priority actions.

WWF celebrates and acknowledges agroecology as a set of principles and elements for food systems change that is rooted in Indigenous knowledge and has been codified and ratified by the 197-state-members of the Food and Agriculture Organization of the United Nations. Over time, agroecology has taken on multiple dimensions as a science, a set of practices, and a social movement. It includes many elements that regenerative agriculture does not explicitly consider, such as critical approaches like circularity and water stewardship, as well as embedding human and social considerations into sustainable food systems. Agroecology also focuses on social, economic, and cultural dimensions which, in some contexts, can take on overtly political dimensions.

Along with agroecology, nature-positive solutions should also inform efforts to expand the embrace of regenerative agriculture. As outlined in WWF's recent publication, *Farming with Biodiversity*, it is evident that the future viability of our food systems requires that they be driven by the interests of nature, and that there is a clear relationship between these different approaches. By implementing nature-based solutions, food systems can simultaneously provide food, feed, fuel and support wild habitats and corridor functions that improve biodiversity, climate resilience, and enhanced ecosystem services.

A framework for regenerative agriculture that incorporates agroecological and nature-positive principles is necessary because collectively they prioritize the protection and restoration of natural ecosystems, biodiversity, and human wellbeing. Together, they can inspire and accelerate food system transformation.

# 3 WWF'S APPROACH TO REGENERATIVE AGRICULTURE

**W**WF's approach to food system transformation is rooted in the fundamental belief that the health of the planet, humans, and livelihoods are interconnected. By drawing on the elements of agroecology and nature-based solutions, this belief can be realized in a more holistic understanding of regenerative agriculture.

- **Planetary health:** The global food system can and must be climate and nature-positive, which includes conversion-free and deforestation-free agriculture, sustainable protein production and consumption, sustainable surface and ground-water use, enhanced carbon sequestration, and reduced food loss and waste through a circular food economy. Aligning with these critical planetary outcomes is not only critical to enabling our food system to become a driving part of mitigating and adapting to climate change but is a win-win scenario because this alignment is essential to sustaining agricultural productivity as well.
- **Human health:** The global food system can and must ensure that everyone has access to healthy, safe, and nutritious foods. While cultural and social factors do influence individual dietary practices, access, affordability, and availability to

nutritious food are often driven by government policies, market incentives, and other factors beyond the purview of individual consumers. That means ensuring a food system that prioritizes providing all consumers with access to good, healthy food is essential.

- **Socioeconomic health:** The global food system can and must better support the people who grow and raise our food and the communities where they live. This is particularly true for smallholder producers who account for an estimated 50-70% of global food production, many of whom struggle with food insecurity themselves. Supporting vibrant rural economies, enabling farmers and ranchers to make a good living, and providing agricultural workers with safe working conditions and fair wages is essential. Ensuring the rights, resources and food sovereignty of Indigenous and local communities is equally important as it is clear they are the best stewards of our agricultural future. Transforming the food system will likely result in seismic shifts for people's livelihoods and current jobs, which requires leading with a people-focused perspective mindful of local context.

# 4 ROADMAP FOR ACTION ON REGENERATIVE AGRICULTURE

**M**aking the approach outlined above a reality will require engaging a wide range of stakeholders to leverage regenerative agriculture to catalyze action that leads to needed outcomes. To advance this objective, WWF developed a high-level roadmap for regenerative agriculture to guide its role in systems transformation at COP28 and in the coming years, building on good work already happening around the globe.

## ENSURE FOOD SYSTEMS ARE ALIGNED WITH PLANETARY BOUNDARIES

- **Promote and conserve biodiversity.** We must safeguard biodiversity across all terrestrial and aquatic ecosystems—including ocean and freshwater ecosystems. Diversifying crop and livestock integrations; planting cover crops between harvests; managing agricultural lands to foster wildlife habitat; keep and restore vegetation; and protect pollinators and wildlife.
- **Protect and conserve ecosystems and land and water resources.** We must end deforestation and land conversion including grasslands and savannahs, wetlands, peatlands, and river systems. Regenerative agriculture must protect the quality and quantity of water resources critical ecosystems rely on, including reducing nutrient and sediment runoff to water. Regenerative production must also include solutions like [aquaculture](#), which can provide a low impact source of protein and reduce stress on fisheries and land when managed responsibly.

- **Restore soil health.** Producers must have access to the information and support they need to prioritize improving soil health and increasing soil organic matter, which increases carbon sequestration in soils and plant biomass and increases their resilience to the impacts of climate change. Improving soil health and safeguarding water resources are two sides of the same coin. Droughts, flooding, and other increasingly frequent weather occurrences jeopardize efforts to improve soil organic matter levels. Prioritizing soil health can increase productivity of crops and forages, help improve the resilience of farmers and ranchers, enhance food security, and protect water quality and scarce water resources.

## CREATE A POSITIVE FOOD ENABLING ENVIRONMENT

- **Align public and private incentives.** Policymakers and governments must realign the more than half a trillion dollars a year globally in public funding spent on agriculture to support regenerative production so that we can achieve our shared goals for food systems transformation. We can build on existing policy progress related to conservation, food loss and waste, and climate-smart agriculture to drive and accelerate scaled behavior change across the food system.
- **Drive circularity by design.** Stakeholders along food supply chains must advance circularity practices to optimize the use of resources

(including energy, water, and nutrients), protect groundwater and surface water systems, minimize waste and loss (including crop loss), and encourage recycling within the agricultural system. Circularity practices are especially crucial to minimize the on-farm losses that have an adverse effect on local economies and carbon emissions. For example, access to tools to understand on-farm crop loss can enable farmers to save money by addressing that loss or contributing that food to those in need. In addition, diverting food waste as animal feed and converting waste into energy are often overlooked and significant ways to reduce agricultural greenhouse gas emissions.

- **Ensure supply chains are responsible and accountable.** Corporate entities along the supply chain must prioritize shifting how they do business to support the implementation of regenerative agriculture at scale. Meeting the challenges of skyrocketing growth while also confronting the realities of a fragile global economy, weather variability, and an increasingly scarce natural resource base pose a real dilemma for any business. Regenerative practices can help ensure more stable production during uncertain conditions. Making this change requires implementing responsible sourcing policies, tracking their supply chains, catalyzing improvements via their demand signals, and measuring impacts along the way.
- **Drive innovation and investment.** Policymakers and private sector actors must prioritize innovative financing solutions—including landscape financing measures and impact investing strategies that can provide catalytic funding—that are critical to addressing market gaps in specific sectors and spurring transformative action along the food and agriculture value chain.

## LEAD WITH PEOPLE AT THE CENTER

- **Ensure healthy, diverse food access for all.** Food systems must deliver healthy, agrobiodiverse, nutritious food to all. Companies and governments must measure the success of the food system not only by yield, but by how the system meets nutritional outcomes and economic needs of producers themselves. Regenerative agriculture can be a net positive due to reduced input costs, better crop quality and nutritional value, greater resilience to environmental changes and revenue stream diversification it can bring.
- **Center Indigenous and local community food sovereignty and rights.** Producers and policymakers must support community-led solutions through diverse stakeholder engagement, and ensure systems-change is inclusive, just, and culturally appropriate to the local context where it is happening. Elevating the voices of historically underrepresented groups and producers as food systems undergo change is critical.
- **Ensure just, equitable livelihoods across supply chains.** Policymakers and production stakeholders must prioritize strengthening the livelihoods of farmers, ranchers, and workers across the supply chain. That includes diversifying revenue streams by incentivizing the production of multiple crops and/or animal products and creating the market conditions for a wider range of producers to sell into a variety of markets.



# 5 THE PATH FORWARD

The time is now for country governments, corporate actors, researchers, financial institutions, and civil society to raise our ambitions and transform the global food system. This is no moment for incremental change. Feeding the world, protecting nature, and creating economic prosperity in communities around the world—all while fighting the consequences of climate change—requires an overhaul of the status quo.

At COP28, WWF is working with governments around the world to incorporate an integrated approach to food and agriculture sustainability in their Nationally Determined Contributions (NDCs) and identify concrete actions to advance regenerative agriculture. To accelerate that work, WWF is developing country leadership models and case studies in line with the roadmap above that cast a strategic vision for food system transformation, and WWF is providing resources for the practical implementation of ambitious goals at scale.

WWF is also committed to creating the conditions for collaboration between diverse sectors. That includes partnering with financial institutions and private sector actors—both large and small, and particularly those in the food, beverage, and textile industries—to help finance the estimated \$350 billion annually that will be needed by 2030 to achieve the global targets for food systems outlined in the United Nations' Sustainable Development Goals (SDGs), the Paris Agreement, and the Kunming-Montreal Global Biodiversity Framework.

WWF's work at COP28 will not end there, and we recognize that the road ahead will not be easy. WWF will continue to push for public and private sector investments in innovation, research, and technical and educational support for producers; policy changes that support the adoption of sustainable practices at the farm and ranch levels in ways that connect across landscapes; investments in infrastructure across the global value chain to ensure affordable and nutritious food for all humankind; and real accountability to accelerate meaningful action.

This change will not happen overnight, but WWF is committed to providing leadership and bringing as many partners as possible along with us. We look forward to sharing more resources and plans for how to make this vision a reality in the months ahead.

Building a better food system is possible if we do it together—and fast. ■



**together possible**

**CONTACT**

Katrin Park  
Senior Director, Communications  
Freshwater and Food, WWF-US  
[katrin.park@wwfus.org](mailto:katrin.park@wwfus.org)

Peter McFeely  
Global Head of Communications  
Food Practice, WWF International  
[pmcfeely@wwfint.org](mailto:pmcfeely@wwfint.org)

Cover photo: © iStock.com / coldsnowstorm

© 1986 Panda symbol WWF – World Wide Fund for Nature (Formerly World Wildlife Fund) ® “WWF” is a WWF Registered Trademark. WWF, Avenue du Mont-Blanc, 1196 Gland, Switzerland. Tel. +41 22 364 9111. Fax. +41 22 364 0332.