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Reintegrating Biodiversity into Agri-Food Systems

Global Policy Report

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About This Report



Reintegrating Biodiversity into Agri-food Systems examines the structural relationship between biodiversity and the future of food systems. The report is built on a central premise: biodiversity is not an external environmental consideration added onto agriculture; it is the ecological foundation that enables agricultural systems to function, adapt and endure.

Food systems have historically been shaped around goals of productivity, efficiency and scale. While these approaches have contributed to increased production, they have also contributed to ecosystem simplification, declining genetic diversity, soil degradation and reduced resilience. The consequences are increasingly visible through climate instability, ecosystem decline, food insecurity and growing vulnerabilities across agricultural landscapes.

This report explores the transition required to move from simplified production models toward biodiversity-positive food systems. It examines the interconnected roles of policy, finance, markets, knowledge systems, technology and governance in enabling this transformation.

The report does not present biodiversity as a constraint on agricultural development. Instead, it highlights biodiversity as a pathway toward stronger resilience, improved productivity, sustainable livelihoods and long-term food security.

Drawing on perspectives from scientists, practitioners, policymakers, businesses, financial actors and food-system stakeholders, the report presents a systemic view of the challenges and opportunities involved in reintegrating biodiversity into the design and operation of agri-food systems.



Purpose and Scope

The purpose of this report is to advance understanding of the systemic changes required to make biodiversity a central pillar of future food systems.

The report focuses on the gap between recognition and implementation. While the importance of biodiversity is increasingly acknowledged through global commitments and scientific evidence, the transition toward biodiversity-positive agriculture remains constrained by fragmented policies, misaligned financial incentives, limited market recognition and insufficient support for farmers and communities managing landscapes.

The report examines five interconnected areas:

1. **Production systems:** How agroecology, agroforestry, regenerative approaches and diversified farming systems can strengthen ecological and agricultural resilience.
2. **Knowledge and innovation systems:** How scientific knowledge, traditional practices and farmer-led innovation can be integrated to support context-specific solutions.
3. **Finance and markets:** How investment systems and value chains can be redesigned to reward biodiversity outcomes rather than reinforce ecosystem degradation.
4. **Governance and policy:** How institutions can move beyond fragmented approaches and align agriculture, biodiversity, climate and development priorities.
5. **Measurement and accountability:** How biodiversity can become visible within decision-making systems through credible indicators and practical tools.

The report recognises that biodiversity transitions will look different across regions, landscapes and production systems. It therefore emphasises place-based approaches that respect ecological realities, local knowledge and the lived experiences of those producing food.

Approach and Methodology

This report adopts a systems approach to understanding biodiversity transformation in agri-food systems. Rather than treating biodiversity loss as a standalone environmental issue, it examines the economic, institutional and governance structures that shape agricultural decisions. The analysis draws on expert contributions, policy discussions, scientific evidence and practical experiences from across food-system actors. It brings together perspectives from agriculture, ecology, finance, business, governance and community-based approaches to identify both barriers and pathways for transformation.

The methodology is guided by several principles:

1. **Systems thinking:** Recognising that biodiversity outcomes are shaped by interconnected decisions across production, markets, finance, policy and consumption.
2. **Evidence and practice integration:** Connecting scientific understanding with real-world implementation, including farmer experiences, local innovation and landscape-level approaches.
3. **Transition-focused analysis:** Moving beyond identifying problems toward understanding the institutional conditions required for scaling solutions.
4. **Inclusivity and participation:** Recognising farmers, Indigenous peoples, local communities and land stewards as central actors in biodiversity management and transformation.

The report does not seek to provide a single universal model. Instead, it identifies shared principles and enabling conditions that can support diverse pathways toward biodiversity-positive food systems.



A Note on Language and Terminology

The language used in this report reflects the evolving global conversation around biodiversity, agriculture and food-system transformation.

The term “biodiversity-positive” refers to approaches that actively contribute to maintaining, restoring or enhancing biodiversity while supporting productive and resilient food systems. It is used to describe outcomes and pathways rather than a single production method or certification standard.

The terms agroecology, regenerative agriculture, sustainable agriculture and nature-positive approaches are related but not interchangeable. They represent overlapping areas of practice and thinking, with different histories, principles and applications. This report recognises these distinctions while focusing on their shared contribution to building more resilient and ecologically aligned food systems.

The report uses the term agri-food systems broadly to include production, processing, distribution, markets, consumption and governance structures that influence how food is produced and accessed.

The term transition is used intentionally. Transforming food systems requires more than adopting new practices; it requires changes in incentives, institutions, investment patterns and decision-making structures.



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This report is intended to support dialogue, knowledge exchange and informed decision-making among stakeholders working toward biodiversity-positive food systems.

The analysis and perspectives presented are intended to contribute to broader discussions on agri-food-system transformation and should be interpreted within the context of evolving scientific evidence, policy developments and regional realities.

The report does not provide technical, legal, financial or investment advice. Specific interventions and approaches should be evaluated according to local ecological conditions, social contexts, economic realities and applicable regulatory frameworks.

The inclusion of particular approaches, examples, organisations or perspectives does not represent endorsement of any individual initiative or institution. The report aims to highlight pathways, principles and systemic conditions that can support the broader transition toward resilient and sustainable agri-food systems.

Responsibility for the interpretation and application of the insights presented remains with users and stakeholders applying them within their respective contexts.

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Foreword



Biodiversity and Agri-food systems are too often treated as separate agendas pursued by different institutions, funded through different budgets, and measured against different indicators. I have seen this divide play out for decades: agriculture, environment and finance each retreating into their own vocabulary, their own metrics, their own institutions. The result is what I would call pillar thinking; a habit of separating problems that are, in reality, one problem, and solutions that only work when pursued together. We have seen this divide play out in policy rooms and in fields alike: the language of conservation rarely

speaks to the language of production, and the reverse is just as true. It is precisely this thinking that this report, and the dialogue behind it, sets out to challenge and is offered as a contribution to closing that divide.

Under the World Agriculture Forum, we convened scientists, farmers' representatives, policymakers, business leaders and financiers around a single, deceptively simple question: what would it take to make biodiversity a central pillar of agri-food systems, rather than an afterthought to them? What emerged from these conversations, held against the backdrop of the Kunming–Montreal Global Biodiversity Framework and the Sustainable Development Goals, was not a call for more evidence. The evidence, and the practical solutions, already exist; in agroecological systems, in farmer-led innovation, in landscapes actively being restored today. What is missing is alignment between policy and practice, between finance and stewardship, and between the ambition of global frameworks and the lived realities of the farmers and communities who will ultimately decide whether this transition succeeds.

I would go further. What we need is not only alignment, but integration: unifying concepts that let agriculture, environment and finance speak a common language; unifying approaches that connect production, restoration and finance as a single system rather than competing claims on the same land; and unifying leadership that is willing to act across institutional boundaries rather than defend them. This is where I believe the World Agriculture Forum can contribute most; not as one more actor advocating for one more pillar, but as a platform for the integration this transition requires.

We offer this report not as a finished blueprint, but as a shared foundation for the systemic work ahead.

Best regards,

A handwritten signature in dark ink, appearing to read 'Rabbinge', written over a light blue horizontal line.

Prof. Rudy Rabbinge
Chair, Board of Trustees
World Agriculture Forum

Acknowledgements

This report draws on the insights, evidence, and perspectives shared by a diverse group of experts and practitioners. The World Agriculture Forum gratefully acknowledges their time, expertise, and contributions, which have been instrumental in shaping the discussions and informing this report.

We extend our sincere appreciation to Sara J. Scherr (1000 Landscapes for 1 Billion People), Lauren Baker (Global Alliance for the Future of Food), Dr. Dennis Garrity (Healthy Planet Action Coalition), Dr. Wuletawu Abera (Alliance of Bioversity International and CIAT), Lucy Smith (One Planet Business for Biodiversity, World Business Council for Sustainable Development), Dr. Neville Ash (UNEP World Conservation Monitoring Centre), Matthew Aghai (Viridian Ecosystems), and Dr. Nahuel Schenone (Biodiversity Intelligence), whose expertise and contributions provided a strong foundation for the evidence, analysis, and key messages presented in this report.

The World Agriculture Forum also acknowledges the broader community of scientists, policymakers, practitioners, farmers' organizations, private sector leaders, and financial institutions whose ongoing work in biodiversity conservation, agroecology, regenerative agriculture, and sustainable finance continues to advance knowledge and inform policy. Their collective efforts have strengthened the evidence base underpinning the findings and recommendations presented in this report.

Executive Summary



Biodiversity is not an external environmental consideration layered onto agriculture, it is the ecological foundation that allows food systems to function, adapt and endure. Yet decades of production models built around yield maximisation, efficiency and scale have simplified landscapes, narrowed genetic diversity and degraded soils, leaving agri-food systems less resilient at precisely the moment climate volatility is intensifying.

This report argues that the barrier to change is no longer a lack of evidence or workable solutions. Agroecology, agroforestry, regenerative agriculture and diversified farming systems have repeatedly demonstrated their capacity to restore biodiversity while strengthening resilience, productivity and livelihoods. The persistent barrier is systemic: fragmented governance that separates agriculture, environment and finance; financial structures that reward extraction and simplification over stewardship; knowledge and extension systems built for standardised inputs rather than adaptive, knowledge-intensive practice; and markets that fail to recognise or reward the value of diversity.

Drawing on the perspectives of scientists, farmers' representatives, businesses, financiers and policymakers, the report examines four interconnected pathways toward transformation: rebuilding agri-food systems around diversity, knowledge and regeneration; scaling biodiversity-positive production through agroecology and landscape restoration; integrating policy, knowledge and investment across landscapes; and building the institutions, markets and metrics needed to finance and measure the transition at scale.

Farmers, Indigenous population and local communities hold critical knowledge and are essential partners in designing biodiversity-positive food systems. They are not simply the recipients of biodiversity solutions, but key contributors to their design and implementation, working alongside governments, businesses, scientists and other stakeholders. At the same time, the costs and risks of transition must not fall disproportionately on those producing our food. The report concludes with seven recommendations for accelerating biodiversity-positive transformation, spanning governance, finance, markets, knowledge systems and place-based implementation.

Key Messages

1

Biodiversity is not an external environmental consideration, it is the critical infrastructure that sustains food systems and planetary health.

Soil biology, pollinators, watersheds and genetic diversity are the operating system underpinning agricultural productivity. Treat them as infrastructure, and agriculture becomes a key part of climate and biodiversity solutions, rather than a driver of their decline.

2

There is now clear evidence on the performance of biodiversity-positive production systems across the world . But the scale-up hasn't started.

Agroecology, agroforestry and regenerative farming are already being used in diverse agricultural systems around the world, demonstrably meeting production, social and environmental objectives. The barrier to scaling isn't proof; it's finance, policy and markets that still reward the old model.

3

Every biodiversity commitment made in a policy meeting is undone by a different policy or subsidy signed the next day that harms biodiversity.

Agriculture, environment and finance must start planning together. Fragmented governance is the single biggest reason ambition doesn't reach the farm gate.

4

Farmers are not resistant to adopting solutions. They are assessing their risks rationally.

When early-stage yield loss, cash-flow strain and habitat/wildlife management fall entirely on producers, hesitation isn't resistance to change; it's common sense. Fix the risk-sharing and support strong producer organizations, and adoption follows.

5

Biodiversity finance has been a side project. It needs to become core infrastructure investment.

Blended finance, landscape-level capital and stewardship-based models– and not isolated pilots– are what move biodiversity from a nice-to-have to a bankable asset class.

6

Labeling a product "biodiversity-positive" will not motivate a farmer unless it means more resilience, economic or social benefits.

Markets won't shift on ethics alone. They shift when diversity is demonstrably tied to productivity, revenues, cost and risk, across the value chain.

7

You can't manage what you can't measure, but measurement systems built for auditors or buyers, but not farmers or local communities, will fail.

eDNA, satellite data and landscape-scale monitoring tools only matter when they empower better decision-making across farms and landscapes, placing actionable information in the hands of those managing the land.

8

There is no universal fix. Biodiversity is won or lost at the landscape level, place by place.

Because biodiversity management is so landscape-specific, global and national frameworks can only set direction. Transformation happens where farmers, communities, other environmental stewards, businesses and governments sit at the same table, locally, to co-design solutions.

Introduction

Biodiversity underpins the stability, productivity and resilience of global agri-food systems; it is not an 'externality' it's critical infrastructure that sustains food systems, as well as planetary health. Soil biology, pollinators, watershed for irrigation and flood control, and genetic diversity are the operating system that underpin agricultural productivity and resilience. Yet biodiversity-positive agriculture extends beyond sustaining production. It also includes protecting wild plant and animal species and their habitats, maintaining natural areas, restoring perennial vegetation for soil protection, conserving native species and riparian buffers along waterways, and strengthening ecological connectivity across landscapes. Treating biodiversity as infrastructure positions agriculture as a key part of climate and biodiversity solutions, rather than a driver of their decline.

Yet modern agri-food systems have increasingly moved away from these ecological foundations. Production models designed around yield maximisation, efficiency and scale have contributed to simplified landscapes, reduced genetic diversity and weakened resilience. A limited number of crops now dominate global production systems, while ecosystem degradation continues to threaten the long-term sustainability of food production.

Farmers are increasingly combining biodiversity-positive practices within crop fields with stewardship beyond field production, including protecting watersheds that sustain irrigation and flood control, maintaining natural habitats and coordinating with other resource managers across landscapes. These actions strengthen both agricultural resilience and the ecosystems on which food production ultimately depends.

The challenge before us is not a lack of knowledge or solutions. Approaches such as agroecology, agroforestry, regenerative agriculture and diversified farming systems have demonstrated the potential to restore biodiversity while strengthening resilience, livelihoods and food security. The challenge is creating the enabling conditions for these approaches to move from successful examples to widespread transformation.

Global commitments, including the Kunming-Montreal Global Biodiversity Framework and the Sustainable Development Goals, provide important direction for reversing biodiversity loss and creating sustainable food systems. However, persistent degradation alongside available solutions highlights a deeper issue: the need for stronger alignment between policies, finance, institutions and implementation pathways.

Biodiversity loss within agri-food systems is not only an environmental challenge. It is a reflection of systemic governance, economic and institutional failures. Agriculture, environment and finance systems often continue to operate separately, creating contradictions where biodiversity commitments exist alongside incentives that encourage monocultures, ecosystem degradation and unsustainable production models.

Transforming agri-food systems requires action across the entire food system, not only on farms. Agribusinesses, processors, retailers, financial institutions and other value-chain actors play a critical role in shaping production decisions through investment, sourcing requirements, technical support and market incentives. Financial systems must recognise biodiversity and ecosystem health as long-term assets. Policies must connect global commitments with practical action across farms and landscapes. Markets must reward diversity, regeneration and sustainable production, while farmers, Indigenous population and local communities are recognised as critical knowledge holders and essential partners in designing and implementing biodiversity-positive agri-food systems.

This report explores the pathways needed to reintegrate biodiversity into agri-food systems by addressing the interconnected challenges of policy alignment, finance, knowledge systems, measurement and implementation. It calls for a transition from fragmented interventions toward coordinated system transformation, where biodiversity is recognised not as an additional objective, but as the foundation of resilient and sustainable agri-food systems.

Food Systems by the Numbers

The current industrial food system is generating compounding crises



The transition to biodiversity-positive Agri-food systems is ultimately an institutional transformation. It requires recognising biodiversity not as an environmental objective, but as the living natural capital that underpins agricultural productivity, climate resilience and long-term prosperity and redesigning policies, finance, markets and governance so that ecological stewardship becomes the rational choice across farms, landscapes and food systems."

— Sara J. Scherr, Co-Founder and Advisor of 1000 Landscapes for 1 Billion People



1. Rebuilding Food Systems Through Diversity, Knowledge and Regeneration

The relationship between biodiversity and food systems is rooted in the ways communities have cultivated, protected and adapted agricultural landscapes over generations. The foundations of this understanding emerge from the recognition that biodiversity is not separate from food production; it is embedded within the seeds, cultures, knowledge systems and ecological relationships that sustain agriculture.

Urban food systems also illustrate the close relationship between biodiversity and communities. Across Toronto's community gardens, diverse seeds brought from around the world have created spaces where agricultural and cultural diversity reinforce one another. These gardens demonstrate how seeds and food traditions preserve knowledge, identity and resilience, while showing how scientific innovation and traditional ecological knowledge can work together to support biodiversity and sustainable food systems.



Photo: Community garden in Toronto managed by Chinese seniors, presented by Lauren Baker during the WAF Biodiversity Policy Dialogue (2026).

Research in Mexico further reinforces this relationship. Work focused on maize agrobiodiversity revealed that local maize varieties represent dynamic systems of evolutionary knowledge, shaped through generations of farmer selection and adaptation. Farmers are not simply custodians of biodiversity; they are active contributors to its creation and continuation. The evolutionary services provided through farmer-led selection practices demonstrate that biodiversity management is inseparable from agricultural practice itself.

1.1 Moving Beyond a System Built on Simplification

The prevailing model of food production has contributed to multiple interconnected crises, from biodiversity decline and soil degradation to greenhouse gas emissions and the erosion of food cultures. These impacts have often been treated as externalities, while economic and policy systems continue to reward simplification, concentration and uniformity.

A transition toward regenerative, agroecological and biodiversity-positive food systems requires addressing deeper structural issues, including questions of power, political economy and how value is defined. Current investment approaches risk reinforcing the very challenges they seek to address when environmental and social costs remain invisible within decision-making processes.

Approaches such as the TEEB AgriFood framework have helped reveal the hidden costs embedded within conventional food systems by demonstrating the wider economic value of nature, ecosystems and sustainable production. However, fragmented governance remains a significant challenge, with commitments made across global frameworks often weakened by limited alignment between institutions, policies and implementation pathways. The challenge is therefore not only identifying solutions, but transforming the systems that determine which solutions receive support.

1.2 From Simplification to Diversification

A resilient future for food systems requires a shift from increasing simplification toward increasing diversification across farms, landscapes and value chains. Diversity must be

understood as dynamic rather than fixed. Soil biology, seed diversity and locally adapted crop varieties provide the foundations for resilience by strengthening the ability of agricultural systems to respond to uncertainty. Under changing climate conditions, diversified systems increasingly demonstrate greater adaptive capacity compared with simplified monoculture approaches. Agroecology provides a framework for this transition by strengthening biodiversity across three interconnected levels: genetic diversity, species diversity and diversity across broader agroecosystems. These approaches recognise that ecological complexity need not be a barrier to productivity, but can often be a source of resilience.

1.3 Decentralisation as a Pathway to Resilience

Recent geopolitical disruptions have exposed the vulnerabilities of highly centralised, long-distance and fossil-fuel-dependent food supply chains. Building resilient food systems requires creating stronger conditions for locally adapted production, diversified markets and territorial approaches that connect producers and consumers.

Emerging initiatives demonstrate how these models can be advanced, including investments supporting small and medium agricultural enterprises, regenerative landscape approaches, agroecological networks and efforts to reduce dependence on harmful agricultural inputs.

The transition requires markets capable of valorizing biological diversity, locally adapted production systems and the knowledge of farmers, Indigenous Peoples and local communities, rather than treating diversity as inefficiency. Locally adapted crops and regenerative practices need pathways to consumers through flexible processing systems, multi-channel sourcing and stronger territorial markets.

1.4 Aligning Finance with Transformation

The transition toward biodiversity-positive agriculture will depend on moving beyond fragmented and short-term investment models. Regenerative and agroecological approaches require financing structures designed around transformation rather than isolated projects.

National Biodiversity Strategies and Action Plans, alongside emerging climate implementation pathways, provide opportunities to align action on biodiversity, climate, food security, poverty reduction and human well-being. Achieving this requires a nexus approach, not only as a governance concept but as a practical framework for coordination and implementation.

Governments, markets and financial institutions have a critical role in reshaping incentives so that policies and investments reinforce biodiversity rather than undermine it. Blended finance mechanisms must integrate biodiversity principles from the outset, rather than treating them as additional considerations.

The opportunity ahead is to invest in regenerative and agroecological transitions. These investments have been siloed, fragmented and short-term, and our collective challenge is to think differently: shifting from conservation logic to transformation logic, from simplicity to diversity, embedding agroecological and biodiversity principles into the design of blended finance facilities (not as a bolt-on), and bringing diverse partners and stakeholders together to work on these transitions through more coordinated and systemic approaches.



Our collective challenge is to rethink food systems, not through the logic of simplification and conservation alone, but by embracing transformation through diversification, regeneration, agroecology, and biodiversity, recognizing that the future of food and the future of nature are inseparably linked."

— Lauren Baker, Deputy Director, Global Alliance for the Future of Food



2. Biodiversity-Positive Production Systems

2.1 Scaling Agroecology, Landscape Restoration and Resilience

Agricultural systems have the potential to become powerful drivers of biodiversity restoration and climate resilience. The integration of ecological principles into food production through agroecology, agroforestry, landscape restoration and sustainable land management offers a pathway toward systems that are not only more environmentally sustainable but also more productive, resilient and capable of supporting livelihoods under increasing climate pressures.

Biodiversity-positive approaches demonstrate that ecological health and agricultural productivity are not opposing objectives. These approaches strengthen the capacity of managed ecosystems to absorb carbon, reduce greenhouse gas emissions, improve soil health and enhance resilience to climate variability. This convergence of productivity, climate adaptation and ecosystem restoration is driving renewed global interest in scaling agroecological and agroforestry approaches across diverse agricultural systems.

Applying Ecological Principles Across Agricultural Landscapes

Agroecology represents the application of ecological knowledge to agricultural production, creating diverse systems adapted to local environments, cultures and farming realities. Rather than relying on uniform models, these approaches recognise that resilience emerges from diversity across crops, species, landscapes and knowledge systems.

Agroforestry provides a powerful example of how biodiversity can be integrated into productive agricultural landscapes. Across drought-prone regions of West Africa, millions of farmers have restored and maintained indigenous trees within crop fields, creating systems where agriculture and natural ecosystems function together. These trees provide protection against drought stress, improve soil fertility through natural nutrient cycling and support increased productivity in crops such as millet and sorghum. Such practices demonstrate that biodiversity is not simply an environmental benefit added onto agriculture; it can be a foundation for stronger, more adaptive production systems.

Responding to the Overshoot of Planetary Boundaries

The transition toward biodiversity-positive agriculture is unfolding within a rapidly changing planetary context. The accelerating disruption of climate systems and the continued decline of biodiversity are creating conditions that challenge the assumptions underlying conventional agricultural planning.

Rising temperatures, increasingly severe droughts, floods, storms and other climate extremes threaten the stability of agricultural systems worldwide. The question facing humanity is not only how to improve farming practices, but how agricultural landscapes can continue functioning as climate pressures intensify.

The scale and speed of planetary change require a reassessment of current approaches. Strategies designed for a relatively stable climate are no longer sufficient in a world experiencing accelerating environmental disruption. The communities working on agroecology, sustainable land use and biodiversity restoration must respond with an understanding of the magnitude of the challenge ahead.

Beyond Emissions Reduction: Protecting the Conditions for Agricultural Survival

While reducing greenhouse gas emissions remains essential, climate stabilisation will also require approaches that address the broader imbalance affecting Earth systems. Expanding carbon absorption through trees, soils and restored landscapes can contribute significantly, but these processes require time; a resource increasingly constrained by the speed of climate change.

The future of biodiversity and food security depends on expanding ecosystem stewardship while also confronting the larger drivers of planetary instability. Without addressing accelerating climate disruption, efforts to integrate biodiversity into agricultural systems risk being overwhelmed by further land degradation, ecosystem decline and rising food insecurity, particularly among vulnerable populations.

This creates a need for expanded research, innovation and careful exploration of additional climate interventions capable of reducing systemic risks. Approaches that could help stabilise global temperatures require scientific assessment, responsible experimentation and learning pathways that allow societies to understand both opportunities and risks. The overarching imperative is clear: protecting biodiversity and transforming agriculture cannot be separated from protecting the planetary conditions that allow both nature and food systems to thrive.



Safeguarding biodiversity demands more than conservation alone, it requires transforming agricultural systems through agroecology, ecosystem restoration and sustainable land management to build resilience against the accelerating impacts of climate change."

—Dr Dennis Garrity Chair, Healthy Planet Action Coalition



2.2 Bridging Evidence, Implementation and System Change

The scientific foundation for biodiversity-positive agriculture is increasingly clear. Across different geographies and production systems, approaches such as agroecology, regenerative agriculture and nature-positive practices demonstrate strong potential to improve productivity, strengthen resilience and enhance climate adaptation. The challenge is no longer proving that these approaches can work; it is understanding why proven solutions remain localised and how they can be translated into widespread, sustained adoption among smallholder farmers.

The gap between evidence and implementation reflects deeper challenges across knowledge systems, advisory services, markets, incentives and governance structures. Scaling biodiversity-positive agriculture requires more than transferring technologies or replicating isolated projects; it requires systems capable of supporting locally adapted transitions.

Closing the Gap Between Research and Real-World Transitions

Current scientific approaches have generated valuable evidence on the ecological benefits of biodiversity-positive practices, but much of this knowledge remains disconnected from the realities of farmers and landscapes.

Research has often focused on measuring ecological outcomes rather than understanding the pathways required for transition. Evidence is frequently generated at the plot or field level and at specific points in time, while farmers operate within complex systems shaped

by household realities, market conditions, labour availability, land tenure and long-term landscape dynamics.

A stronger evidence base requires participatory, on-farm and long-term research that captures the full transition process. Farmers need knowledge that reflects their specific environments and supports decision-making under real conditions, rather than general principles that are difficult to translate into practice.

Rethinking Extension Systems for Knowledge-Intensive Agriculture

Biodiversity-positive agriculture differs fundamentally from conventional models that rely heavily on standardised recommendations and external inputs. These approaches are knowledge-intensive, requiring experimentation, adaptation and an understanding of ecological interactions.

However, many existing extension systems across both developing and developed economies were designed around the dissemination of standardised recommendations, technologies and external inputs. In many countries, including advanced agricultural systems, farmers increasingly rely on advice from input suppliers whose incentives may not always align with regenerative and biodiversity-positive approaches. These systems are often not structured to support the complexity and adaptive learning required for biodiversity-positive farming.

Supporting Farmers Through the Transition

Even when farmers have access to knowledge and technical support, transitioning toward biodiversity-positive systems involves risks. Some practices may involve reduced yields during early stages, delayed returns or additional labour requirements before benefits become visible.

Smallholder farmers often operate with limited financial flexibility and cannot absorb these transition costs alone. Challenges such as cash-flow pressures, insecure land rights and uncertainty around outcomes can create significant barriers.

Resistance to change in these circumstances is not a rejection of innovation; it is a rational response to risk. The broader system must create mechanisms that share and reduce transition risks so that the benefits of biodiversity restoration are not achieved at the expense of the farmers responsible for implementation.

Aligning Markets and Incentives with Diversity

Agricultural markets and value chains remain largely structured around uniformity, volume production and simplified commodity systems. This creates a mismatch with biodiversity-positive approaches, which often generate multiple benefits, diverse products and outcomes that emerge over different time horizons.

Although biodiversity-positive systems may deliver significant ecological benefits at farm and landscape levels, farmers often do not receive direct economic returns for those contributions. Existing procurement systems, subsidies and market incentives rarely recognise the value of diversity.

Creating pathways for scale requires market systems that reward biodiversity outcomes and support diversified production models rather than reinforcing monoculture-based approaches.

Moving from Fragmented Governance to Landscape Coordination

Biodiversity-positive agriculture operates across multiple dimensions like productivity, environment, livelihoods and ecosystem services, yet governance structures often remain divided across institutional boundaries. Agriculture ministries typically focus on production

objectives, environmental institutions focus on biodiversity conservation, and rural development actors focus on livelihoods. When these priorities are not aligned, farmers are left navigating fragmented systems where successful approaches remain isolated pilots rather than becoming part of coordinated transformation strategies.

Effective advisory systems also require stronger coordination between agricultural extension services and natural resource and biodiversity management agencies. Farmers benefit most when advice on production, soil health, water management, biodiversity conservation and landscape stewardship is integrated rather than delivered through separate institutional channels. Coordinated extension strategies can help align productivity, resilience and conservation objectives at both farm and landscape scales. Scaling biodiversity-positive agriculture also depends on engaging farmer organisations, producer groups and local communities, not only individual farmers. Collective learning, peer-to-peer exchange and community-based experimentation have consistently been shown to accelerate the adoption, adaptation and long-term maintenance of knowledge-intensive agricultural practices.

The pathway to biodiversity-positive agriculture, therefore, depends on aligning science, institutions, markets and governance around the realities of farming communities. The transition will succeed when farmers, Indigenous Population and local communities are recognised as critical knowledge holders and essential partners in designing, adapting and sustaining biodiversity-positive food systems.



The path to biodiversity-positive food systems lies in reducing the risks of change through participatory science, coordinated governance and systemic action that empowers farmers instead of leaving them to navigate transformation alone."

—Dr Wuletawu Abera Senior Scientist, Alliance of Bioversity International and CIAT



3. Integrating Strategies Across the Landscape: Aligning Policy, Knowledge and Investment for Systemic Transformation

The transition toward biodiversity-positive food systems requires moving beyond isolated interventions and creating stronger alignment across agriculture, water, ecosystems, finance and governance. While multiple actors are advancing solutions, fragmented approaches often limit their collective impact. Achieving transformation at scale depends on integrating these efforts within shared landscapes, where ecological, social and economic priorities can reinforce one another.

3.1 Five Shifts for Integration

Lauren Baker outlined that systemic transition requires a fundamental shift in how biodiversity, agriculture and investment are connected. Five key shifts can help create stronger pathways for integration, implementation and long-term impact:

The first shift is to reposition agriculture within National Biodiversity Strategies and Action Plans (NBSAPs). Rather than viewing agriculture primarily as a driver of biodiversity loss that requires management, agricultural systems must be recognised as part of the solution. Farming landscapes have the potential to restore ecosystems, strengthen resilience and deliver biodiversity outcomes when supported by the right policies and approaches.

The second shift is embedding biodiversity commitments directly into agricultural policies and financial flows. These systems determine what is produced, where production occurs and who benefits. Without aligning incentives and investment decisions with biodiversity objectives, existing structures will continue reinforcing simplified production models.

The third shift is integrating regenerative and agroecological approaches into emerging implementation pathways, including those linked to global climate and biodiversity commitments. The focus must move beyond ambition and commitments toward practical implementation mechanisms that enable change on the ground.

The fourth shift is recognising that the biodiversity, climate, food and water nexus is not only a governance challenge but also a collective coordination challenge. Delivering landscape-level outcomes requires different actors to work together in new ways, particularly as communities face increasingly complex risks and constrained resources.

The fifth shift involves redesigning subsidies and incentives so that they reward positive outcomes rather than reinforcing practices associated with biodiversity decline. Transforming these systems will be essential to creating economic signals that support diversity, regeneration and ecological complexity.

3.2 Building Knowledge Systems for Biodiversity-Positive Agriculture

Dr Dennis Garrity suggested that scaling biodiversity-positive approaches requires recognising that these systems are fundamentally knowledge-intensive rather than input-intensive.

Unlike conventional models that can often be supported through the purchase and application of standardised inputs, agroecological approaches depend on understanding ecological relationships, adapting practices to local conditions and continuously learning from landscapes. Building this knowledge requires time, effort and investment from farmers.

The challenge is that acquiring ecological knowledge can appear more complex than adopting simplified input-based solutions. However, long-term resilience depends on strengthening farmers' capacity to manage productive systems that work with nature rather than relying on external inputs alone.

This requires a transformation of agricultural education and extension systems. Farmer advisory services must move beyond input delivery and become platforms for learning, experimentation and knowledge exchange around agroecology, biodiversity management and landscape restoration.

3.3 Co-Designing Solutions and Sharing Transition Risks

Dr Wuletawu Abera suggested that biodiversity-positive transitions cannot be achieved by transferring externally developed solutions into different contexts. Successful implementation requires recognising local knowledge, ecological conditions and farming realities as central components of innovation.

Co-design is therefore essential. Rather than developing approaches elsewhere and introducing them into communities, solutions must emerge through collaboration with farmers and local actors who understand the landscapes in which change must occur. This collaborative approach must also extend beyond producers to include local enterprises, agribusinesses, traders, processors, retailers and other value-chain actors whose investment, sourcing and procurement decisions shape agricultural practices and influence the pace of biodiversity-positive transformation.

Risk-sharing is equally important. Smallholders cannot be expected to carry the full burden of transition when early-stage costs, uncertainty and delayed returns remain significant barriers. Without mechanisms that reduce these risks, adoption will remain limited. Sharing these risks across value chains and fostering collaboration at the landscape level can strengthen resilience for all actors by reducing exposure to climate impacts, biodiversity loss, resource degradation and labour-related challenges while creating more stable production systems.

Transitional finance, safety nets and improved access to credit are needed to support farmers through periods when investments in biodiversity-positive practices have not yet generated full returns. At the same time, markets and policies must evolve to recognise and reward differentiated, diverse production systems.

Creating long-term pathways for biodiversity-positive agriculture requires an enabling environment where farmers can sustain innovation, rather than one where they absorb all the costs of transformation. Achieving this will require coordinated action by farmers, businesses, financial institutions, governments and civil society, working together across landscapes to align incentives, share responsibility and build resilient, biodiversity-positive food systems.



4. Institutional Innovations and Pathways to Scale: Building the Systems, Markets and Metrics for Biodiversity-Positive Transformation

The transition toward biodiversity-positive food systems requires more than improved agricultural practices. It requires institutional innovation, reshaping how businesses invest, how governments design policies, how markets value production, and how biodiversity outcomes are measured and rewarded.

Across the food system, the challenge is moving from isolated commitments and pilot initiatives toward integrated systems capable of mobilising finance, aligning incentives and enabling action across landscapes.

4.1 Mobilising Business Action Through Value-Chain Collaboration

Businesses across the food system are increasingly recognising biodiversity risks and the need to support regenerative agriculture and nature-based solutions. However, translating ambition into implementation requires stronger collaboration across entire value chains and new approaches to investment.

Emerging multi-stakeholder initiatives are bringing together actors from across the food system including producers, processors, manufacturers, retailers, financial institutions and other private-sector partners to strengthen collaboration and accelerate the transition toward biodiversity-positive production. By connecting upstream producers with downstream markets, these partnerships create opportunities to mobilise investment, align sourcing practices and support landscape-scale restoration.

Two critical pathways shape this work. The first is helping businesses build the internal case for investment by demonstrating the long-term economic, environmental and resilience benefits of regenerative and biodiversity-positive practices. The second is ensuring that responsibility for financing the transition does not rest with individual companies alone, but is supported through broader public-private financing mechanisms that attract public investment, concessional finance and private capital.

Leading companies are increasingly integrating biodiversity-related metrics, standards and sustainability criteria into procurement decisions, investment strategies and supply-chain management. A landscape approach is particularly important because biodiversity outcomes extend beyond individual farms and depend on collaboration among farmers, communities, businesses, financial institutions and public agencies managing shared natural resources.

Practical tools and collaborative platforms are also emerging to help organisations identify opportunities for partnership, coordinate investment and improve capital allocation across regenerative agriculture and nature-based solutions. At the same time, landscape finance models are being developed to enable banks, insurers, water utilities and other institutions to jointly support large-scale transitions that generate environmental, social and economic benefits.



We need to ensure that the financial burden of transitioning to more sustainable practices does not fall on individual companies alone.
— Lucy Smith, Lead, One Planet Business for Biodiversity (OP2B), World Business Council for Sustainable Development



4.2 Redesigning Food Systems Governance

Global biodiversity frameworks have created significant ambition, but the central challenge now lies in implementation. The gap is not a lack of recognition; it is the failure to fully integrate biodiversity into the decisions that shape agricultural systems.

Food systems must be understood as ecological systems. Biodiversity from soil organisms and fungi to pollinators, insects, forests, wetlands and wider ecosystem functions forms the foundation upon which agricultural productivity depends. At the same time, agricultural landscapes play a critical role in conserving wild species, protecting habitats, maintaining watershed functions, strengthening ecological connectivity and sustaining the multiple ecosystem services on which both agriculture and society depend. Biodiversity is therefore not a competing land use, but the underlying infrastructure that supports productive, resilient and multifunctional landscapes.

The current structure of agri-food systems reflects a historical design choice. Agricultural systems have largely been optimised for productivity and efficiency rather than resilience, health outcomes or ecological outcomes. This has contributed to dependence on a narrow range of commodity crops, fossil fuels, synthetic inputs and systems that generate significant waste. The challenge therefore is not simply changing behaviour; it is redesigning the systems themselves.

From Understanding the Problem to Implementing Solutions

Scientific understanding of biodiversity and food-system interconnections has advanced significantly. The challenge has shifted from identifying problems and solutions toward creating the institutional willingness and capacity to implement them.

Fragmented governance including the formal and informal institutions, policies, incentives and collaborative decision-making processes that shape agricultural land and natural resource management remains one of the largest barriers. Agriculture, biodiversity, climate, water and health are deeply interconnected, yet responsibilities often remain divided across ministries, institutions and stakeholder groups with limited coordination.

The consequences of this fragmentation are visible in declining agricultural diversity, ecosystem degradation and continued investment flows that reinforce environmentally harmful outcomes.

A transformation requires three major governance shifts:

First, integrated and collaborative governance. Biodiversity-positive agriculture requires coordinated action among agriculture, environment, water, finance and planning institutions, alongside meaningful participation by farmer organisations, Indigenous population, local communities, businesses and civil society. Shared planning at the landscape scale is essential to balancing food production with biodiversity conservation and ecosystem stewardship.

Second, mainstreaming biodiversity into core decision-making. Biodiversity cannot remain primarily an environmental issue. It must become part of the mandate of agriculture, finance, trade and economic institutions.

Third, accountability for outcomes. Measurement systems must operate across global, national, farm and landscape levels, using indicators that are meaningful to those implementing change, particularly farmers.

Biodiversity must ultimately be treated as the operating system of food systems rather than as a separate environmental consideration.



Food systems are ecological systems. Biodiversity is the substrate and foundation of food production, not a competing land use.”
 — Dr Neville Ash, Director, UNEP World Conservation Monitoring Centre



4.3 Aligning Finance with Land Stewards and Landscape Partnerships

Current agricultural finance structures continue to reward simplification because investment decisions are often organised around projects, commodities and measurable outputs rather than the people and landscapes responsible for sustaining biodiversity.

Three fundamental misalignments shape the current system:

1. Investment is directed toward projects rather than the farmers, Indigenous Population, local communities and other land stewards responsible for managing agricultural landscapes;
2. Accountability is often placed on the farmers, communities and landscape partnerships implementing biodiversity-positive practices, while buyers, investors and financial institutions face comparatively fewer incentives or obligations to support or reward these outcomes;
3. Production is measured primarily through yield and commodity output rather than ecosystem outcomes.

These structures create a system where biodiversity is treated as an additional cost rather than an essential component of agricultural resilience. Land stewards often become residual beneficiaries, carrying the responsibility for change while receiving limited recognition or reward.

A different approach requires building institutions that place land stewards at the centre of biodiversity transformation. Emerging organisations and partnerships are developing institutional, financial and operational models that position nature as critical infrastructure. These approaches integrate agroforestry, ecosystem restoration and biodiversity stewardship into agricultural value chains, enabling the farmers, communities and organisations managing landscapes to access new sources of finance and long-term investment.

Many of these models build on farmer cooperatives, producer organisations and landscape partnerships that strengthen local institutions while connecting producers with markets, finance and biodiversity incentives. Rather than treating biodiversity finance as a stand-alone mechanism, they integrate it into existing agricultural systems, value chains and commercial relationships.

Blended finance plays an important role in reducing investment risk and building trust among farmers, communities, investors and markets. Beginning with philanthropic and concessional capital, these approaches can catalyse commercially viable financing models that reward long-term stewardship of biodiversity while supporting resilient agricultural livelihoods at scale.



Until we start to finance institutions or organised groups that actually steward the land, biodiversity will continue to be a nice-to-have or a bolt-on.”
 — Matthew Aghai, Founder, Viridian Ecosystems



4.4 Measuring Biodiversity: From Indicators to Decision-Making and Incentives

Effective biodiversity transformation requires the ability to measure change in ways that support decision-making across both farms and landscapes. Biodiversity outcomes emerge through interactions among fields, farms, watersheds and surrounding ecosystems, making it essential that monitoring systems capture not only conditions at individual farms but also the ecological connections that sustain resilient landscapes. This has important implications for the design of indicators, survey methodologies and monitoring frameworks that can inform management, policy and investment at multiple scales.

Emerging advances in biodiversity measurement combine environmental DNA (eDNA), metagenomics, satellite and drone observations, remote sensing and climate data to provide more comprehensive assessments of ecosystem health. These approaches address limitations in traditional ecological monitoring, which often struggles to capture the complexity, connectivity and dynamics of biodiversity across agricultural landscapes. By integrating multiple sources of ecological information, they create more robust and science-based systems for tracking biodiversity outcomes over time.

The challenge, however, extends beyond developing better metrics. Measurement systems must move beyond certification labels and compliance reporting to become practical tools that support adaptive management, accountability and decision-making by farmers, Indigenous Peoples, local communities, landscape partnerships, businesses, investors and policymakers alike. Biodiversity data should not simply satisfy reporting requirements; it should provide meaningful information that enables those managing the land to improve agricultural performance, strengthen ecosystem resilience and make informed management decisions.

Early biodiversity initiatives often focused on labelling production practices associated with positive environmental outcomes. While these approaches have increased awareness, labels alone cannot provide the standardised, outcome-based evidence needed to guide investment, public policy or long-term stewardship. The next generation of biodiversity measurement must therefore establish credible methodologies capable of translating ecological outcomes into indicators that can support financial mechanisms, policy design and adaptive management.

Robust measurement systems also create opportunities to better align incentives with biodiversity outcomes. Reliable indicators can underpin payments for ecosystem services, biodiversity stewardship programmes and outcome-based financing that reward farmers and farming communities for protecting watersheds, conserving habitats, restoring ecosystem functions and maintaining healthy agricultural landscapes. The beneficiaries of these services extend well beyond agriculture and may include water utilities, municipalities investing in greener and more climate-resilient environments, companies seeking biodiversity offsets or insets, tourism and recreation sectors, and public and private organisations working to achieve biodiversity, climate and sustainability commitments.

At the same time, effective measurement systems can support more balanced policy and market frameworks. While positive incentives remain essential, governments and markets should also consider appropriate regulations and disincentives for practices that contribute to biodiversity loss, helping to ensure that producers adopting biodiversity-positive approaches are not placed at a competitive disadvantage. Such measures are most

effective when developed through multi-stakeholder processes that engage farmers, Indigenous Peoples, local communities, businesses, researchers and policymakers in designing practical, equitable and locally relevant solutions.

Environmental DNA-based assessments, together with satellite observations and other monitoring approaches, can provide insights into how agricultural practices influence biodiversity across both farms and landscapes, and how biodiversity, in turn, supports productivity, resilience and ecosystem performance. This creates a bridge between science, farmers, landscape stewards, finance and policy. For farmers, local communities and other land stewards, the value lies in understanding how management practices affect both environmental outcomes and agricultural performance, enabling more informed decision-making. For investors, businesses and policymakers, robust and standardised metrics create the foundation for biodiversity finance, payments for ecosystem services and outcome-based incentives that recognise and reward long-term stewardship.

Ultimately, the transition toward biodiversity-positive agri-food systems will require science and technology to become integral components of decision-making, connecting ecological outcomes with economic incentives while strengthening accountability across farms and landscapes. When designed to serve farmers and landscape stewards alongside governments, businesses and investors, biodiversity measurement becomes more than a reporting tool, it becomes the foundation for coordinated action that rewards stewardship, supports resilient livelihoods and enables the long-term transformation of food systems.



What we choose to measure shapes what we choose to value. Biodiversity metrics must reward stewardship, strengthen resilience and connect ecological outcomes with economic decision-making."
— Dr Nahuel Schenone, Co-founder and CEO, Biodiversity Intelligence



5. Building the Architecture for Scale

The pathway to biodiversity-positive food systems depends on aligning the institutions, incentives and tools that shape agricultural decisions. Businesses need mechanisms to invest beyond individual projects. Governments need integrated governance frameworks. Financial systems need to recognise landscape stewards. Farmers need support to manage transition risks. Science and technology need to provide credible ways to measure progress.

Scaling transformation requires moving from fragmented interventions toward coordinated systems where biodiversity becomes embedded within the core architecture of food production, investment and decision-making.

Moving from biodiversity commitments to real-world transformation requires addressing the institutional systems that shape agricultural decisions. While businesses, governments and investors are increasingly recognising the importance of biodiversity, implementation remains uneven because incentives, policies, markets and financial structures often continue to operate around conventional production models.

The transition requires moving beyond ambition statements toward practical mechanisms that embed biodiversity into supply chains, public policy, investment decisions and farmer realities.

5.1 Embedding Biodiversity into Business Strategy and Value Chains

The organisations making meaningful progress on biodiversity integration are those recognising sustainability not as a standalone commitment, but as a strategic component of long-term business resilience.

Companies that are integrating biodiversity into their supply chains increasingly view regenerative and sustainable practices as a competitive advantage. By embedding biodiversity considerations into sourcing, production and operational decisions, these organisations are strengthening the resilience of their value chains while preparing for changing environmental and market conditions.

However, transformation cannot depend solely on individual corporate action. An enabling environment is required to connect public policy, agricultural incentives and private investment around shared outcomes.

Emerging work on improving the interoperability of public and private incentive structures aims to address this challenge by exploring how national funding programmes and agricultural policy frameworks can be redesigned to attract private-sector capital toward biodiversity and sustainability objectives.

The opportunity lies in creating aligned incentive systems where governments, businesses and financial actors are working toward common outcomes rather than operating through disconnected mechanisms.

5.2 Mainstreaming Biodiversity Across Government and Economic Systems

The gap between global biodiversity commitments and implementation remains one of the central challenges facing transformation. International agreements on biodiversity and climate have established ambitious goals, yet delivery often depends on institutions that have not historically been responsible for environmental outcomes.

Biodiversity ambition is frequently developed within environment and foreign ministries, while implementation relies on agriculture, finance, planning, development and trade institutions. Bridging this divide requires mainstreaming biodiversity into the core mandates, budgets and accountability systems of the sectors that shape economic activity.

A growing number of countries are beginning to integrate biodiversity considerations across government systems, creating opportunities for broader replication. The transformation challenge is not only mobilising new biodiversity finance, but aligning the wider global economy with nature-positive outcomes.

The scale of the challenge extends beyond the biodiversity finance gap. The critical question is how the broader economy including public spending, private investment and existing subsidy systems can be redirected toward outcomes that support nature.

Within the Kunming–Montreal Global Biodiversity Framework, the integration of biodiversity values into policies, regulations, planning and financial systems represents one of the most important systemic shifts. Mainstreaming biodiversity across sectors is essential because agricultural production, economic planning and investment decisions determine the future condition of ecosystems.

5.3 Building New Institutions and Market Pathways for Transformation

Transforming food systems requires moving beyond the assumption that existing institutions alone can deliver the scale and speed of change required. Rather than focusing exclusively on reforming established systems, governments, businesses, civil society and local communities must work together to establish new institutional arrangements that demonstrate how biodiversity-positive approaches can be implemented at scale.

The priority is to create operational, bankable models that prove successful alternatives, build leverage and establish pathways for scaling. Demonstrating what works creates the foundation for wider adoption while reducing dependence on slow-moving institutional change. Governments have an important enabling role by strengthening coordination across agriculture, environment, water and rural development institutions, supporting integrated landscape action plans and creating dedicated mechanisms that facilitate collaboration among local landscape partnerships and other stakeholders.

This approach requires diversification of revenue models, stronger organisational structures and systems capable of adapting to changing policy and market conditions. Transformation cannot depend on short-term interventions; it requires institutions built with long-term horizons. Strong farmer organisations, producer cooperatives and landscape partnerships are essential components of this institutional architecture, enabling collective planning, market engagement, knowledge exchange and coordinated stewardship of shared natural resources.

Trust is a central component of this transition. Building relationships with land stewards, communities and markets requires time and consistency. Biodiversity-positive systems depend on the same principles as ecological restoration itself: gradual growth, patience and sustained investment. Building public understanding of the value of agricultural landscapes through education, awareness and multi-stakeholder engagement can also help mobilise broader societal support for landscape regeneration and strengthen long-term political commitment.

New institutional architecture can create stronger links between financial markets and the people managing landscapes. Rather than allowing resources to become diluted through multiple layers of intermediation, new models can create more direct pathways between capital and land stewardship.

When combined with coordinated government support, collaborative landscape governance and long-term investment, these institutions can create enabling environments where biodiversity-positive agriculture becomes the norm rather than the exception.

5.4 Making Biodiversity Measurement Relevant for Farmers

The ability to measure biodiversity outcomes is essential for moving from ambition to implementation. As discussed in Section 4.4, effective measurement systems should support decision-making across farms and landscapes while providing credible evidence for policy, finance and markets. Their success ultimately depends on whether they create value for the people managing agricultural landscapes rather than becoming additional compliance requirements.

The priorities of farmers and policymakers may differ, but both are connected by the goal of sustaining productive, resilient and biodiverse landscapes. For farmers, the priority is not simply increasing productivity, but securing sustainable livelihoods through reliable income, manageable risks and long-term resilience. Biodiversity-positive practices can improve soil health, strengthen resilience and enhance farm performance, while also creating new revenue streams through payments for ecosystem services, biodiversity stewardship programmes, watershed management, ecotourism, biodiversity credits and other outcome-based financing mechanisms.

Measurement should do more than verify environmental performance. It should provide farmers, communities and other landscape stewards with practical information that supports better management decisions while generating trusted evidence that unlocks financial incentives and market opportunities. Equally important, markets must evolve to recognise biodiversity stewardship through long-term purchasing commitments, premium pricing and procurement contracts that reward biodiversity-positive outcomes, reducing investment risks and encouraging producers to adopt practices whose benefits often accrue over time.

Farmers remain the foundation of food systems, and successful biodiversity transitions depend on ensuring that measurement systems, financial incentives and market mechanisms strengthen their economic viability rather than increase administrative burdens. Biodiversity measurement should become a tool that helps farmers improve decision-making, diversify income, reduce risk and build resilient farming enterprises.

The pathway from ambition to implementation depends on aligning the systems that shape agricultural decisions. Businesses need enabling policies, long-term sourcing commitments and investment pathways. Governments need biodiversity embedded across economic planning while supporting integrated landscape management. Financial systems need institutions that connect capital with stewardship. Farmers, Indigenous Peoples and local communities need trusted tools, fair incentives and equitable partnerships that recognise and reward their role as biodiversity stewards. Biodiversity-positive transformation will depend on building the institutional architecture that enables these actors to move together, shifting biodiversity from a peripheral sustainability objective to a central principle of resilient agri-food systems.

Recommendations

The transition towards biodiversity-positive food systems requires a fundamental shift in how food systems are designed, governed and financed. While many practices and innovations already demonstrate pathways toward more resilient and regenerative systems, scaling these approaches requires addressing the structural conditions that shape agricultural decisions including governance, finance, markets, knowledge systems and local implementation capacities.

The following recommendations identify priority areas for accelerating the transition.

1: Place farmers, local communities and knowledge systems at the centre of biodiversity-positive transitions

Biodiversity-positive food systems will only be achieved when farmers, fishers, Indigenous peoples, local communities and landscape stewards are recognised as central actors in shaping sustainable transitions.

The transition must be built around the knowledge, practices and innovations of those managing landscapes, while ensuring that the costs and risks of change are not transferred disproportionately to food producers. Finance, technical support and policy frameworks must be designed to enable local actors to participate meaningfully and benefit from the transformation they help deliver.

A successful transition requires alignment between three interconnected pathways: addressing immediate vulnerabilities within food systems; providing transitional support and finance that enable adoption of new approaches; and advancing longer-term reforms in governance, investment and market systems.



Priority actions:

1. Strengthen participatory approaches that integrate scientific, traditional and local knowledge.
2. Develop mechanisms that reduce transition risks for farmers and small-scale producers.
3. Ensure financial resources reach the actors responsible for managing landscapes.
4. Recognise local innovation and stewardship as essential components of biodiversity conservation and food-system resilience.

“The burden of transition must not fall on the shoulders of the people producing our food. The financing must reach those who need it most.”

2: Mainstream biodiversity across agriculture, finance and economic governance

Biodiversity must move beyond being treated as an environmental concern and become integrated into the core decision-making systems that shape agriculture, finance, trade and development.

The current separation between biodiversity commitments and agricultural implementation has created a disconnect between ambition and action. Aligning policies, subsidies, investments and regulatory systems is essential to ensure that economic decisions reinforce rather than undermine biodiversity outcomes.



Priority actions:

1. Integrate biodiversity objectives into agricultural and economic planning.
2. Align subsidies, procurement systems and incentives with nature-positive outcomes.
3. Strengthen coordination across agriculture, environment, finance and trade institutions.
4. Embed biodiversity considerations within public and private investment decisions.

3: Scale agroecological, regenerative and biodiversity-positive practices through enabling systems

Evidence increasingly demonstrates that agroecology, agroforestry and regenerative approaches can strengthen resilience, productivity and climate adaptation. However, scaling these approaches requires moving beyond isolated projects toward systems that support long-term adoption.



Priority actions:

1. Expand research focused on transition pathways, not only production and ecological outcomes.
2. Strengthen extension and advisory systems to support knowledge-intensive practices.
3. Promote landscape-level approaches linking agriculture, ecosystems and livelihoods.
4. Support context-specific solutions adapted to local conditions.

4: Redesign finance systems to support long-term biodiversity transitions

Current finance models often remain structured around short-term projects and conventional production systems. Biodiversity-positive transformation requires investment approaches that recognise landscapes, communities and stewardship as long-term assets.



Priority actions:

1. Develop blended finance models that reduce transition risks.
2. Move from project-based approaches toward landscape-level investment strategies.
3. Create incentives that reward biodiversity and ecosystem outcomes.
4. Position farmers and land stewards as central partners in investment models.

5: Build markets that recognise and reward biodiversity-positive production

Markets continue to favour standardisation and volume-based production, creating barriers for diversified and regenerative systems. Transition requires market structures that recognise the value of biodiversity outcomes.



Priority actions:

1. Develop value chains for diversified and biodiversity-positive products.
2. Improve procurement and sourcing approaches.
3. Strengthen consumer awareness of biodiversity-related benefits.
4. Create economic incentives for sustainable production systems.

6: Strengthen science, data and measurement for implementation

Reliable evidence and measurement systems are essential to making biodiversity visible within agricultural decision-making. However, measurement approaches must support farmers and decision-makers rather than become additional compliance requirements.



Priority actions:

1. Develop accessible biodiversity measurement tools.
2. Connect biodiversity indicators with productivity, resilience and livelihoods.
3. Strengthen science-policy-practice collaboration.
4. Use data to support landscape-level decision-making.

7: Establish place-based collaboration platforms for implementation

Biodiversity is inherently place-based. Successful transitions must reflect local ecosystems, communities and production systems. Global commitments and national strategies must connect with the landscapes where transformation occurs through collaborative platforms bringing together farmers, communities, businesses, governments and investors.



Priority actions:

1. Support landscape-level coordination mechanisms.
2. Enable collaborative investment and planning.
3. Align local priorities with national and global biodiversity objectives.
4. Strengthen long-term partnerships for stewardship and implementation.

“Biodiversity is intensely place-based: it matters where it is, what it is connected to, and how production and biodiversity interact.”

Conclusion

Biodiversity is not a constraint on the future of agri-food systems; it is their foundation. This report has traced that argument across production, knowledge, finance, governance and measurement, and a consistent picture emerges. The ecological knowledge and the agronomic practices needed to restore biodiversity while strengthening productivity and resilience already exist, from agroforestry across the drylands of West Africa to farmer-led seed selection in Mexico and diversified landscapes in community gardens worldwide. What has been missing is not proof of concept, but the institutional architecture to move these approaches from isolated success to systemic transformation.

That architecture depends on aligning systems that too often operate in isolation. Agriculture, environment and finance ministries must plan around shared landscape outcomes rather than separate mandates. Financial flows must reward the stewards of land and ecosystems rather than treating biodiversity as an externality or a bolt-on to conventional investment. Markets must recognise and pay for diversity instead of penalising it as inefficiency. Extension and knowledge systems must evolve from delivering standardised inputs to supporting the experimentation and adaptive learning that biodiversity-positive agriculture demands. And measurement systems must generate information that is useful to the people managing landscapes, not only to those auditing them.

Underlying every pathway examined in this report is a single, non-negotiable principle: farmers, fishers, Indigenous peoples and local communities must sit at the centre of this transition, not at its margins. They hold the knowledge, carry the risk and will ultimately determine whether biodiversity-positive food systems take root at scale. A transition that leaves them to absorb its costs while others capture its benefits will not endure, however sound its science or ambitious its finance.

Global frameworks, including the Kunming–Montreal Global Biodiversity Framework and the Sustainable Development Goals, provide the ambition and the direction. The task now is implementation: translating commitments into the policies, financial instruments, market signals and place-based partnerships that allow agriculture to function as a driver of biodiversity restoration rather than a cause of its decline. The recommendations set out in this report offer a starting point for that work, but they will only take effect where governments, businesses, financial institutions, scientists and, above all, food producers choose to act on them together.

The choice facing food systems is not between productivity and biodiversity. It is between a model of agriculture that continues to simplify the ecological foundations it depends on, and one that rebuilds them. Reintegrating biodiversity into agri-food systems is how food security, climate resilience and rural livelihoods are secured together not a cost to be managed, but the foundation on which the future of food must be built

Annex A. Contributors and Speaker Profiles

This report draws on perspectives shared by the following contributors, whose insights inform the analysis presented throughout. Affiliations are listed as they appear at the time of contribution.

Sara J. Scherr: A globally recognized leader in landscape restoration, integrated food systems, and sustainable agriculture. She is Co-Founder and Advisor of 1000 Landscapes for 1 Billion People and Founder and former President/CEO of EcoAgriculture Partners. Her work has focused on advancing integrated landscape approaches that connect biodiversity conservation, climate resilience, livelihoods, and agricultural development.

Dr. Dennis Garrity: A systems agronomist, restoration leader, and Chair of the Healthy Planet Action Coalition. His decades-long career has focused on improving smallholder farming systems, land restoration, agroforestry, and climate resilience across tropical regions. He is internationally recognized for advancing sustainable land management and resilient agricultural systems that integrate ecological restoration with rural livelihoods.

Dr. Neville Ash: Director of the UNEP World Conservation Monitoring Centre (UNEP-WCMC), a global center specializing in biodiversity data, assessment, monitoring, and policy support. His work focuses on strengthening the science-policy interface, biodiversity governance, ecosystem monitoring, and global environmental accountability systems supporting international biodiversity frameworks and implementation.

Dr. Nahuel Schenone: Co-founder and CEO of Biodiversity Intelligence, where he works on advancing biodiversity metrics, monitoring systems, and accountability tools for nature-positive transitions. His work focuses on making biodiversity measurable, actionable, and operational within decision-making systems across agriculture, finance, and sustainability frameworks.

Lauren Baker: Deputy Director of the Global Alliance for the Future of Food, where she leads program strategy and supports global initiatives focused on climate, biodiversity, food security, and equity. A systems thinker, skilled facilitator, and practical problem-solver, Lauren has worked for over 20 years in non-profit, government, academic, business, and philanthropic contexts.

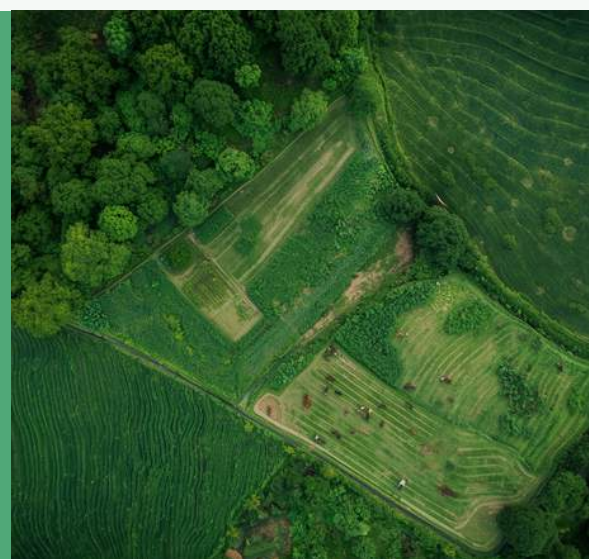
Dr. Wuletawu Abera: Senior Scientist at Alliance Bioversity International & CIAT, specializing in resilient agricultural systems, landscape restoration, biodiversity integration, and climate adaptation. His work focuses particularly on implementation realities within African agricultural systems, including sustainable land management, ecosystem resilience, and smallholder-centered transitions.

Lucie Smith: leads work on value chains and business transition at One Planet Business for Biodiversity (OP2B), a global coalition working to accelerate biodiversity-positive agriculture. Her work focuses on private-sector engagement, sustainable sourcing, regenerative agriculture, and integrating biodiversity into food value chains and business systems.



Recording Link:

[https://youtu.be/uzm1EIRqvok?
si=kQCS6yFbAuzRhAPe](https://youtu.be/uzm1EIRqvok?si=kQCS6yFbAuzRhAPe)



Annex B. Key Concepts and Glossary

This glossary draws on the terms and concepts used throughout the report, expanding on the definitions introduced in "A Note on Language and Terminology."

Agroecology

An approach to agriculture that applies ecological concepts and principles to the design and management of farming systems, integrating biological, social and economic dimensions of food production.

Agroforestry

The deliberate integration of trees and shrubs into crop and livestock systems, used in this report as a pathway for landscape restoration and biodiversity-positive production.

Biodiversity-positive

Approaches that actively contribute to maintaining, restoring or enhancing biodiversity while supporting productive and resilient food systems, as distinct from a fixed certification standard.

Blended finance

The use of public or philanthropic capital to mobilise additional private investment, referenced in this report as a mechanism for financing landscape-scale, biodiversity-positive transitions.

Co-design

The practice of developing solutions jointly with farmers and communities, rather than delivering pre-defined interventions, referenced throughout as a condition for effective knowledge and extension systems.

Ecosystem services

The benefits people obtain from ecosystems, including soil fertility, pollination, water regulation and pest control, which underpin agricultural productivity.

Extension systems

The institutions and services that transfer agricultural knowledge and practices to farmers, discussed in this report as requiring transformation to support adaptive, biodiversity-positive practice.

Genetic diversity

The variation in genetic resources within crop and livestock species, identified in the report as a foundation of resilience that has been eroded through agricultural simplification.

Landscape approach

A framework for aligning management, policy and finance decisions within a defined area to achieve holistic social, economic, and environmental objectives. The approach acknowledges the interconnectedness of natural and human systems, connecting farm-level action with landscape-scale strategies.

Nature-positive approaches

Practices and strategies aimed at halting and reversing nature loss, related to but distinct from agroecology, regenerative agriculture and sustainable agriculture.

Diversified farming systems

Production systems that intentionally maintain multiple crop, livestock or agroecological components, used as a counterpoint to simplified, monoculture-based production.

Sustainable land management

The use of land resources to meet current needs while safeguarding their long-term productive potential and ecological function.

Value chains

The full range of activities involved in bringing agricultural products from production to consumption, referenced as a lever for rewarding biodiversity-positive practices through procurement and market design.

Genetic diversity

The variation in genetic resources within crop and livestock species, identified in the report as a foundation of resilience that has been eroded through agricultural simplification.

Annex C. Source and Contact Information

Source

This report is informed by the insights, perspectives, and discussions shared during the policy dialogue. Quotations and contributions have been transcribed and lightly edited for clarity and readability while preserving their original intent. The analysis, synthesis of key themes, interpretations, and resulting recommendations are the responsibility of the World Agriculture Forum Policy Unit.



Contact

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About the World Agriculture Forum

WAF is a global platform connecting diverse stakeholders to drive sustainable agricultural development through policy advocacy, trade facilitation, and technology-driven solutions. WAF unites governments, farmers, agribusinesses, experts, and development institutions to bridge implementation gaps and drive sustainable agriculture and food systems transformation towards a resilient, food-secure future. With a strong focus on collaboration, innovation all along the value chain, and public-private partnerships, WAF is committed to transforming agriculture worldwide.

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