



FOODSYSTEMS
2030

Repurposing Agricultural Support

2025 Policy Compendium

FOOD SYSTEMS 2030 MULTI-DONOR TRUST FUND

Table of Contents

Table of Contents.....	2
Acronyms	4
Foreword	8
Introduction: Repurposing Agricultural Support: 2025 Compendium	10
Recognizing the Need for Change.....	11
Policy in Action	11
Key Lessons Learned from Country Case Studies	12
Next Steps	13
East Asia and the Pacific.....	14
Australia: Policies to support a climate-smart, sustainable agricultural sector	14
New Zealand: Accelerating Emissions Reduction Through Innovation	17
Philippines: Sequencing Rice Market Reforms to Enable Inclusive Agricultural Growth	19
Viet Nam: Scaling Low-Carbon Rice Production Through Integrated Extension and Value Chains	22
Europe and Central Asia	25
Denmark: Agreement on a Green Denmark: A Model for the Green Transition	25
England: From Design to Delivery: Environmental Land Management Schemes Driving Sustainable Farming	28
Germany: Innovative approaches to incentivize soil health for resilient production, climate change mitigation and adaptation	31
Ireland: Food Vision 2030: A world leader in sustainable food systems.....	33
Uzbekistan: Liberalizing Agricultural Prices to Unlock Investment and Sustainable Growth	36
Latin America and the Caribbean	39
Brazil: Redirecting Agricultural Credit Toward Climate-Smart Farming and Land Restoration	39
Costa Rica: Modernizing Agricultural Support Through Digital Platforms and Environmental Incentives.....	41
Middle East and North Africa	44
Jordan: Sequencing Reforms to Link Agricultural Support with Water Efficiency and Export Readiness	44
Morocco: Repurposing Irrigation Subsidies to Address Water Scarcity and Boost Market Integration	46

Pakistan: Phasing Out Wheat Procurement to Enable Market-Led Agricultural Transformation.....	50
South Asia	53
Bangladesh: Identifying Repurposing Options for Fertilizer Subsidies to Promote Diversification and Climate Resilience	53
Sub-Saharan Africa	56
Ghana: Digitizing Input Delivery to Enable Market-Driven and Climate-Smart Agriculture	56
Malawi: Piloting Soil Health-Based Input Support to Improve Productivity and Targeting..	58
Sierra Leone: Bundling Inputs and Advisory Services to Boost Productivity and Market Linkages.....	60
Tanzania: Improving Soil Health Through Targeted Fertilizer Reform and Digital Extension	63
Zambia: Transforming Input Subsidies Through E-Vouchers and Private Sector Engagement	65
Bibliography	68

Acronyms

3R3G	three reductions, three gains (Viet Nam)
1M5R	one must do, five reductions (Viet Nam)
\$A	Australian dollar (currency)
ABC+	Agricultural Policy for Climate Adaptation and Low Carbon Emission (Brazil)
ADOPT	Accelerating Development of Practices and Technologies (England)
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
AgPER	Agriculture Public Expenditure Review
AKIS	Agricultural Knowledge and Innovation (Uzbekistan)
AIP	Agricultural Input Program (Malawi)
ARDI	Agriculture Resilience, Value Chain Development and Innovation (Jordan)
ASEAN	Association of Southeast Asian Nations
ASP	Agriculture Sector Plan (Costa Rica)
BZE-LW	Agricultural Soil Inventory (Germany)
CAP	Common Agricultural Policy (European Union)
CAR	Rural Environmental Cadastre (Brazil)
CCDR	Country Climate and Development Reports
CLIFF-GRADS	Climate, Food and Farming-Global Research Alliance Development Scholarships Program
COP28	28th Conference of the Parties
COP30	30th Conference of the Parties
CSA	climate-smart agriculture
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
CSAP	Climate-Smart Agriculture Program (Australia)
DAFF	Department of Agriculture, Fisheries and Forestry (Australia)
DEFRA	Department for the Environment, Food and Rural Affairs (United Kingdom)

DKr	Danish krone (currency)
DLIs	disbursement linked indicators
DPF	Development Policy Financing
DPL	development policy loans
DPO	development policy operations
EIP	European Innovation Partnership
ELM	environmental land management
€	Euro (currency)
FAO	Food and Agriculture Organization of the United Nations
FDF	Future Drought Fund (Australia)
FIF	Farming Investment Fund (England)
FIP	Farming Innovation Programme (England)
FISP	Farmer Input Subsidy Program (Zambia)
FRA	Food Reserve Agency (Zambia)
FS2030	Food Systems 2030 Umbrella Multi-Donor Trust Fund
GAPs	Good Agriculture Practices
GCFF	Global Concessional Finance Facility
GDP	gross domestic product
GGs	Generation Green Strategy (Morocco)
GhAAP	Ghana Agriculture and Agribusiness Platform
GHG	greenhouse gas emissions
GNI	gross national income
GRA	Global Research Alliance on Agricultural Greenhouse Gases
IFAD	International Fund for Agricultural Development
ha	hectares
IPF	investment projects

JAP	National Sustainable Agriculture Plan (Jordan)
JD	Jordanian dinar (currency)
JRI	joint research initiative
M&E	monitoring and evaluation
MAF	Ministry of Agriculture and Finance (Sierra Leone)
MKD	Mekong Delta (Viet Nam)
MIGA	Multilateral Investment Guarantee Agency
MoA	Ministry of Agriculture
MPI	Ministry for Primary Industries (New Zealand)
MRV	monitoring, reporting, and verification
NAMA	Nationally Appropriate Mitigation Actions
NAP	National Agriculture Policy (Zambia)
NFA	National Food Agency (The Philippines)
NHT	Natural Heritage Trust (Australia)
NWC	Native Woodland Conservation (Ireland)
ONSSA	National Office for Food Security (Morocco)
P	Philippine peso (currency)
PARTNER	Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship, and Resilience (Bangladesh)
PASA	Programmatic Advisory Services and Analytics
PES	payments for environmental services
PFJ	Planting for Food and Jobs (Ghana)
PforR	Program for Results
PMV	Green Morocco Plan (Plan Maroc Vert)
PNCPD	National Program for Converting Degraded Pastures into Sustainable Agriculture and Forestry Systems (Brazil)
PYMPAs	small and medium agricultural producers

R\$	Brazilian real (currency)
RCEF	Rice Competitiveness Enhancement Fund (The Philippines)
RTL	Rice Tariffication Law (The Philippines)
SisDNEA	Information System of the National Directorate of Agricultural Extension (Costa Rica)
SFI	Sustainable Farming Incentive (England)
SPS	sanitary and phytosanitary systems (Jordan)
SMART	Punjab Strengthening Markets for Agriculture and Rural Transformation Program for Results (Pakistan)
SWAT	Sindh Water and Agriculture Transformation (Pakistan)
TFP	total factor productivity
UAE	United Arab Emirates
UNFCCC	United Nations Framework Convention on Climate Change
VnSAT	Viet Nam Sustainable Agricultural Transformation Project
WFD	Water Framework Directive (European Union)
ZAMGRO	Zambia Growth Opportunities
ZARC	Agricultural Risk Zoning (Brazil)

Foreword

By Juergen Voegelé, Vice President, Planet, World Bank and Minister Mary Creagh, Minister for Nature, Parliamentary Under-Secretary of State for Department for Environment, Food and Rural Affairs, UK

Each year, governments spend approximately US\$650 billion to support agriculture. While this support is essential to feeding the world's population, it can also inadvertently incentivise practices that harm both people and the planet, with a large share driving unsustainable production, increasing emissions, degrading land, and neglecting nutrition. Repurposing agricultural support to address these challenges holds transformative potential, with trillions of dollars in possible benefits for people, economies and the planet.

To address these issues and realize the potential of repurposing this support, the UK and the World Bank Group launched the Global Policy Dialogue for Sustainable Agriculture in 2021, as a peer platform for policymakers to share experiences, build partnerships and drive ambition on the policy reforms needed to achieve sustainable agriculture. Since then, we have witnessed a significant shift in global perspectives. More countries are starting their journey toward food systems transformation.

The Policy Dialogue has helped this shift, creating a trusted space for countries to exchange ideas, confront challenges and develop solutions. We are thrilled to share this updated compendium, which showcases evidence that countries are increasingly committed to use public funds more effectively. It highlights the importance of maintaining support for farmers, while shifting its purpose to achieve “triple wins”: improved livelihoods, enhanced environmental outcomes, and greater climate resilience. The case studies reveal common challenges and underscore the need for gradual, sequenced reform—grounded in transparency, trust, and shared learning.

The UK's Department for Environment, Food and Rural Affairs has been working closely with the Foreign, Commonwealth and Development Office to share with other countries through the Policy Dialogue England's experience of moving to farming support that gives incentives for nature-friendly farming. The case study on England's Environmental Land Management Schemes shows how the priorities of producing food and enhancing the environment can go hand in hand.

This reflects the integrated approach to food systems in the UK and the desire we share with our international partners for food systems that support stability, economic growth and protect the most vulnerable. Sustainable and resilient food systems are of the utmost importance both nationally and internationally, as set out in the [Food Strategy for England](#) published in July.

The Dialogue is building momentum on policy reforms for sustainable agriculture and food systems, through regional dialogues, international events and digital knowledge sharing. Over

50 countries and institutions from across the world have participated to date, reflecting a growing commitment to transform how agricultural support is delivered.

As the Dialogue evolves, it is increasingly focused on regional priorities—such as soil health and fertilizer use in Africa, and rice cultivation and methane reduction in Asia—ensuring that reform efforts are context-specific and impactful.

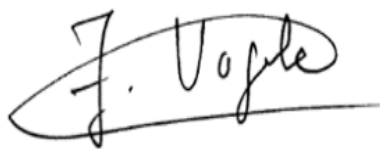
In a time of constrained resources and limited fiscal space, policy reform offers a cost-neutral way to achieve better outcomes. Current agricultural support systems often deliver poor value for money, with only 35 cents of every dollar generating additional value of agricultural output. Yet, by repurposing these funds, governments can reward farmers for practices that ensure smarter use of inputs to generate more outputs, restore soils, reduce emissions, and provide ecosystem services—turning agriculture into a driver of global public goods.

We are delighted to share updates from the Policy Dialogue in 2024 and 2025, along with plans for future regional and global dialogues to promote continued learning. This compendium includes 20 country case studies of Policy in Action, developed in collaboration with participating countries. These findings are intended to support and further mobilize the urgent action needed for Food Systems Transformation, including delivering on the commitments made under the COP28 Emirates Declaration on Sustainable Agriculture, Resilient Food Systems and Climate Action.

As we reflect on progress made under the Emirates Declaration, this collection serves both as a testament to what is possible and a guide for what comes next. Looking ahead to COP30, where agriculture will take center stage, the opportunity to accelerate food systems transformation has never been clearer. We hope this resource will inspire continued action to ensure agriculture becomes a cornerstone of climate and development solutions.



*Minister Mary Creagh, Minister for
Nature, Parliamentary Under-
Secretary of State for Department
for Environment, Food and Rural
Affairs, UK*



*Juergen Voegelé, Vice President,
Planet, World Bank*

Introduction: Repurposing Agricultural Support: 2025 Compendium

Over the past 60 years, significant strides have been made in reducing poverty and food insecurity, with global agrifood production increasing substantially. The proportion of people living in extreme poverty has decreased from one in every two people to one in every ten people, and the number of people experiencing undernourishment has decreased from one in three to one in eight or nine. This progress has been driven by investments in agricultural research, innovation, technology, and market reforms, triggering improvements in agricultural productivity that are critical for agricultural output growth.

While progress is undeniable, food insecurity remains a massive problem and is again on the rise, particularly in places that have been unable to improve agricultural productivity. Furthermore, the agrifood system has incurred hidden costs, contributing to climate change, resource degradation, ecosystem damage, and unhealthy diets. These costs, estimated at \$10 to \$15 trillion¹ annually, have eroded past agricultural productivity gains and increased food production volatility. The challenge has shifted from an exclusive focus on how much food we produce to also encompass how we produce food.

Thus, resetting our food systems is urgent. Public policies and agricultural support are critical levers that can be used to guide the transformation process and help achieve both production and sustainability goals.

Globally, [the support provided to agriculture and food exceeds \\$650 billion a year](#). While this support is needed, much of it is poorly targeted: farmers receive only 35 cents of each dollar in production growth equivalent; and often the types of support provided encourage practices that undermine productivity growth while contributing to environmental damage, climate pressures, and poor nutrition outcomes.

Policymakers must decide how to redirect this financing to speed up agriculture and food system transformation. This requires changing the way that governments and other public institutions support agriculture at national and regional levels to encourage behavior consistent with sustainable food production. This is complex and challenging. Solutions need to be context specific; there is no “one size fits all” solution.

There are options for governments to repurpose current agricultural support—mostly used for price support, input subsidies and direct payments to producers—and instead use them to incentivize farmers’ uptake of climate smart agriculture practices. Support can also be used to help reduce risks, catalyze private sector investments, and incentivize new technologies that have already shown promise, such as cattle feed additives that reduce greenhouse gas emissions, or rice production techniques that reduce methane emissions.

Evidence-based, inclusive policy actions that help reduce budget deficits and can maximize the impact of agricultural support when deciding on the best course of action are needed. Such repurposing does not mean removing current support for producers but using those funds in a different way: to align policies and deliver the support needed to most effectively reach the goals and objectives of a sustainable food system.

¹All dollar amounts are US dollars unless otherwise indicated.

Recognizing the Need for Change

In January 2021, the United Kingdom and World Bank launched [the global Policy Dialogue for Sustainable Agriculture](#) to build momentum on policy reforms for sustainable agriculture and food systems. The dialogue provides a forum to share experiences and learning, facilitate partnerships, and build global ambition for reforms. To date, more than 45 countries from the Global North and Global South have participated in the dialogue.

COP28 carried this momentum forward, placing agriculture and food security at the center of climate action. 160 Heads of State have now endorsed [the COP28 UAE Declaration of Sustainable Agriculture, Resilient Food Systems and Climate Action](#), a first of its kind commitment to ‘revisit or reorient policies and public support’ to transform food systems. The next step is to implement these commitments.

This 2025 Policy Compendium expands on [the 2023 Policy Compendium](#) prepared for COP28, and highlights a growing number of countries taking action and adopting emerging best practices in agricultural policy reform.

Policy in Action

The Agriculture Policy Dialogue is building a body of experiences that countries have shared about policy actions they are taking, as well as the challenges faced lessons learned and next steps. This includes experiences such as scaling sustainable rice management, reshaping subsidies to encourage soil health management and monitoring, and increased investment in research and development for emissions-reducing technologies and approaches.

In [East Asia and the Pacific](#), countries are promoting climate-smart agriculture by promoting sustainable practices, improving input efficiency, and strengthening value chains. [Viet Nam](#) scaled low-carbon rice production through integrated extension and farmer training, while the [Philippines](#) redirected rice tariff revenues to modernize farmer support, enhance competitiveness, and lower consumer costs. [New Zealand](#) prioritized emissions reduction via public-private research and standardized measurement, and [Australia](#) is helping farmers adapt to climate change and boost productivity through targeted, minimal-subsidy investments and policies. Across the region, reforms emphasize sustainability, innovation, and market integration.

In [Europe and Central Asia](#), countries are repurposing agricultural support, moving toward policies that promote sustainability, innovation, and resilience. [Uzbekistan](#) phased out state-controlled pricing and quotas, enabling farmers to earn market-level prices and redirected support to soil health, irrigation, and research. [Germany](#), [Denmark](#), and [Ireland](#) are investing in emission-reducing technologies, collaborative research, and stakeholder-driven strategies, while Denmark has introduced the world’s first carbon tax on agriculture and large-scale land restoration. [England](#) has replaced area-based subsidies with schemes that reward farmers for delivering environmental outcomes. Across the region, gradual, well-sequenced reforms—anchored in strong stakeholder engagement, evidence-based policy, and investment in innovation—are proving essential for building competitive and sustainable agri-food systems.

Across [Latin America and the Caribbean](#), countries are redirecting financial incentives toward sustainable agriculture. [Brazil](#) is investing in concessional credits tied to environmental compliance and blended finance models to restore degraded land, while [Costa Rica](#) is modernizing agricultural support through digital platforms, traceability systems, and payments

for environmental services. Both countries emphasize targeted support for smallholders, environmental compliance, and private sector engagement to improve sustainability, productivity, and resilience.

The [Middle East and North Africa](#) are shifting from broad subsidies to targeted investments in climate resilience, water efficiency, and market competitiveness. [Morocco](#) and [Jordan](#) both used sequenced reforms backed by diagnostics and results-based financing to redirect spending toward public goods like irrigation, advisory services, and export-enabling infrastructure, while engaging the private sector to scale impact and improve sustainability. [Pakistan](#) is phasing out costly wheat procurement policies to enable market-led transformation, including development of a roadmap focused on redirecting public spending toward research, infrastructure, and private sector engagement.

In [South Asia](#), countries are repurposing agricultural support through phased reforms grounded in analysis, stakeholder engagement, and pilot programs. [Bangladesh](#) is piloting e-vouchers to shift away from general fertilizer subsidies and promoting diversification and climate resilience.

In [Sub-Saharan Africa](#), countries are shifting from broad input subsidies to targeted, productivity-enhancing investments in soil health, digital extension, and climate-smart practices. Reforms emphasize the use of e-voucher systems, digital farm registries, and bundled advisory services to improve efficiency and resilience, while gradually scaling pilots to manage implementation risks. Countries like [Malawi](#) and [Sierra Leone](#) are integrating soil testing and conservation practices; [Tanzania](#) and [Zambia](#) are redesigning fertilizer programs and subsidy delivery; and [Ghana](#) is leveraging digital platforms to crowd in private sector participation and improve value-for-money in public spending.

Key Lessons Learned from Country Case Studies

The following key lessons summarize the most effective practices and considerations identified through these experiences with agricultural policy reform. They serve as a practical guide for policymakers seeking to design and implement impactful reforms in a variety of contexts.

1. Gradual, Sequenced Reform Is Most Effective

Countries consistently found that phased, sequenced reforms—starting with analysis, stakeholder engagement, and pilots—are more successful than abrupt, wholesale changes. Piloting and phased scale-up allow for learning and adjustment, especially when introducing new digital systems or subsidy models. This approach helps manage political economy risks and builds consensus for change, particularly when paired with cross-country comparisons.

2. Targeted, Evidence-Based Support Improves Efficiency of Agricultural Support

Shifting from broad, untargeted subsidies to targeted support—using digital registries, e-vouchers, and data platforms—improves efficiency, transparency, and impact. These systems also enable and crowd in private sector actors for input delivery, advisory services, and market access. Continuous evidence-based adjustment and monitoring are crucial for credibility and effectiveness.

3. Prioritize Sustainable, Climate-Smart Practices

Conditional support for climate-smart agriculture—such as concessional credit linked to sustainable practices and environmental compliance—drives adoption of technologies that

reduce emissions and improve resilience. Private sector innovation and investment are essential for scaling these solutions.

4. Strong Institutional Capacity and Targeted Technical Assistance Are Essential

Building institutional capacity and providing targeted technical assistance are crucial for designing, implementing, and evaluating reforms. Inclusive dialogue helps manage transition risks, ensures ownership, and leads to successful adoption. Creating enabling environments for private sector investment and market-driven solutions is key for sustainability and scaling impact.

5. Protecting Vulnerable Groups and Ensuring Flexibility Is Critical

Reforms should include stopgap measures and targeted support—such as temporary cash transfers—for vulnerable groups to avoid shocks to poor farmers and consumers during transitions. Piloting and phased scale-up allow for learning and adaptation, ensuring reforms are equitable and effective.

Next Steps

Partnering with client countries, the [World Bank is scaling up](#) the benefits of repurposing through financing policy reforms, projects, and knowledge. Between 2017 and 2024, \$4.3 billion was invested in agricultural Programs for Results (PforR) across 14 countries—14 percent of the World Bank’s total agricultural lending—informing over \$6 billion in annual agricultural budgets. Additionally, over the same period, \$4.8 billion was allocated toward Development Policy Financing with prior agricultural actions in 53 countries, addressing price disincentives and supporting reforms. Meanwhile, agricultural public expenditure reviews are either completed or underway in 43 countries.

Through [the Food Systems 2030](#) (FS2030) Multi-Donor Trust Fund, with funding from Germany’s Federal Ministry for Economic Cooperation and Development (BMZ) and the UK’s Foreign, Commonwealth and Development Office (FCDO), the World Bank has allocated [more than \\$100 million in implementation grants to seven countries for repurposing projects](#). These projects test new approaches to repurposing agricultural support, including input subsidies, access to finance, and service delivery. Lessons learned from these projects will help scale-up future reforms.

The [policy dialogue](#) at regional and global levels—both as an independent channel and through other, existing forums—will continue to provide a platform to share knowledge and experience, to build partnerships and to scale public and private investment into resilient, sustainable approaches. In sub-Saharan Africa and East Asia and Pacific Regions, the regional dialogues will be integrated into two World Bank Impact Programs on [Scaling NextGen Rice](#) and [Repurposing of Agriculture Support for Soil Health](#)—to be launched in early 2026—whilst continuing in other regions (i.e. Latin America and Caribbean) and globally.

The following section presents a set of case studies about the policy actions of individual countries aiming to redirect investment and practices toward more sustainable agriculture that delivers results to create healthy people, a healthy planet and healthy economies.

East Asia and the Pacific

Australia: Policies to support a climate-smart, sustainable agricultural sector

Summary

The Australian government is working with the agriculture sector to promote climate-smart, sustainable practices that boost productivity, profitability, and environmental protection. Australian farmers are some of the least subsidized in the world according to the Organization for Economic Co-operation and Development (OECD): just over 2 percent of Australian farmer revenues in 2021–2023 were derived from government support. Through targeted investments and integrated policies, including the [Agriculture and Land Sector Plan](#) supporting the [Net Zero Plan](#), Australia aims to help farmers adapt to climate change, manage emissions, and secure long-term food and fiber production.

Context

Agriculture and land are critical to Australia's economic prosperity and wellbeing, providing food and fiber for tens of millions of people across the world and supporting valuable ecosystem services. However, the effects of the changing climate are already widely felt across the continent. More frequent and extreme weather events, together with changing seasonal conditions, are putting pressure on productivity, farm performance, water resources, and landscape health.

Analysis by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) has shown that recent seasonal conditions (2001–2020) have reduced the profitability of Australian broadacre farms by an average of 23 percent, or around \$A29,200 per farm, relative to the previous 50 years.

The agriculture and land sectors make up a significant part of Australia's greenhouse gas emissions. In the year to March 2025, agriculture contributed 18.1 percent to Australia's net emissions and the land sector was a net sink, equivalent to -16.7 percent of Australia's net emissions ([Department of Climate Change, Energy, The Environment, and Water 2025](#)). The sectors emissions are dominated by methane (mainly from livestock) and management of manure and nitrous oxide from agricultural soils.

Approach

The Australian government is supporting the agriculture sector to integrate sustainable and climate-smart practices through targeted investments and integrated policies. From reducing emissions, improving biodiversity, managing soil health, driving innovation, and supporting research, development and extension, Australia is committed to ensuring farmers and producers can confidently face our climate future.

The Australian government has released a Net Zero Plan, guiding Australia's transition to net zero greenhouse gas emissions by 2050. The [Agriculture and Land Sector Plan](#) (herein, the plan) is one of six sector plans supporting the [Net Zero Plan](#) and will help ensure Australian producers remain leaders in low-emissions food and fiber production in the transition to net zero. The plan builds on the significant work underway across Australian industry, supply chains, banks, governments, and other organizations.

The plan does not set an emissions target for agriculture and land. Instead, it establishes a framework that enables producers and land managers to contribute to the whole-of-economy transition. The plan identifies four foundational action areas to guide effort and investment:

1. Improved understanding of business and sector emissions,
2. Supporting innovation needed to further develop commercially viable abatement options,
3. Strengthening on-the-ground action, and
4. Enhancing the role of land in a net zero economy.

The [Natural Heritage Trust](#) (NHT) is the Australian government's key investment platform for achieving its natural resource management, sustainable agriculture, and environmental protection outcomes. Through the NHT, the Australian government has established the \$A302.1 million Climate-Smart Agriculture Program (CSAP) over the five years from 2023-2024 to 2027-2028. CSAP is supporting farmers to adopt climate-smart practices that reduce emissions and build resilience to climate change, harness carbon and biodiversity incentives, implement industry sustainability frameworks and drive agricultural growth while adopting sustainable natural resource management practices that protect and conserve natural capital and biodiversity.

The [Future Drought Fund](#) (FDF) was established in 2019. Managing drought across the Australian landscape will be increasingly challenging as the climate continues to change. The program represents a key investment by the Australian government to provide secure and continuous funding for initiatives that support farmers and regional communities to prepare for drought and build climate resilience. The FDF invests in programs to help farmers grow and prepare their businesses for dry conditions, such as farm business resilience planning, climate tools and demonstrating and extending drought resilient farming practices. The FDF also supports agriculture-dependent communities by investing in strong local planning, networks and leadership.

Experiences and Results

Through the Agriculture and Land Sector Plan, the Australian government is investing across the four foundational areas:

- An initial investment of \$A87 million to establish the Zero Net Emissions Agriculture Cooperative Research Centre (CRC), a major vehicle for long-term research into emissions reduction from Australian agriculture). An additional \$A4.4 million, delivered over 10 years, is committed to fund a Department of Agriculture, Fisheries and Forestry (DAFF)-CRC partnership.
- The Carbon Farming Outreach Program commits \$A27.8 million over 4 years to accelerate on-ground action through upskilling trusted advisors.
- Improving greenhouse gas accounting in the agriculture and land sector at the national level through to farm level, with an investment of \$A28.7 million over 10 years.
- An additional \$A1 billion for the Regional Investment Corporation to help boost climate resilience, productivity and support agriculture to be part of the net zero transition.

This funding builds on Australia's other investments, including:

- Australia's Rural Research and Development Corporations receive approximately \$A1 billion per annum for research and development to address priority issues including climate resilience, adaptation, and mitigation.
- The [Methane Emissions Reduction in Livestock](#) program (\$A29 million) and [investment in the seaweed industry](#) to support commercialization of the methane-reducing livestock feed additive Asparagopsis (\$A8 million).
- The [National Soil Carbon Innovation Challenge](#), a \$A40 million investment in research and development related to reliable, more rapid, and lower cost soil carbon measurement technologies.

The CSAP is made up of nine grant and procurement investment streams and a total of 178 projects have been awarded to address sustainable agriculture outcomes.

- Through the Regional Delivery Partner panel, 106 contracts have been awarded across 52 regions across Australia, totaling \$A121.1 million, addressing sustainable agriculture outcomes.
- Through the grant investment streams, 70 grants have been awarded across Australia, totaling \$A90 million.
- Through the CSIRO, two national soil programs have been procured, totaling \$A27.6 million.

Since its establishment in 2019, the FDF has made a significant contribution to bolstering Australia's drought and climate resilience. This includes:

- Eight Drought Resilience Adoption and Innovation Hubs established across Australia, providing regionally focused support that connects farmers and communities to experts, innovation and new practices.
- Over 67,000 farmers accessing direct support to improve business planning and risk management skills.
- 69 regions taking part in regional drought resilience planning, of which 60 plans have been finalized.
- Development of a world-leading online climate tool, providing scientifically rigorous data for historical seasonal outlooks and future climate projections, supporting 22 agricultural commodities and covering around 90 percent of the value of Australian agriculture.

Lessons Learned

- Engaging with local communities and considering farmers' perspectives is key when developing sustainable agriculture programs and policies.
- Programs should aim for transformational change where appropriate, while respecting the readiness and unique contexts of farmers and regions and, where needed, supporting innovation to identify and progress commercially available solutions.
- Programs must be flexible and responsive to emerging challenges and opportunities.

- Long-term adaptive planning is underpinned by continuous learning. Monitoring, evaluation and learning play an important role in assessing the appropriateness, inclusivity, effectiveness, and efficiency of government-funded programs.

New Zealand: Accelerating Emissions Reduction Through Innovation

Summary

Having removed subsidies for agricultural production in the mid-1980s, New Zealand is focused on the provision of public goods in the form of long-term research and development. Significant efforts in this space include developing emission reduction solutions and getting them on the market and into the hands of farmers. Collaborating internationally accelerates research outcomes that contribute to global emission reductions.

Context

New Zealand faces a unique challenge, with more than half its total greenhouse gas (GHG) emissions stemming from agriculture, over 80 percent of which is methane. Agriculture in New Zealand is export-oriented, with 95 percent of dairy production exported (35 percent of world trade) and 86 percent of beef production exported. There are no direct subsidies provided to New Zealand farmers based on what they produce or their means of production. Reducing agricultural emissions is critical for meeting the country's climate goals and maintaining competitiveness in global markets.

To provide farmers with options to reduce on-farm emissions, the New Zealand government has scaled up its support for accelerated research, development, and commercialization of emissions reduction tools and technologies through a joint venture with industry. [AgriZero^{NZ}](#) is a pioneering, 50:50 public-private partnership investing NZ\$191 million over its first four years (from June 2022) to accelerate the development and deployment of emissions reduction tools. AgriZero^{NZ} invests in research and the commercialization of technologies to reduce methane and nitrous oxide emissions on pasture-based farms.

To support farmers to understand the main drivers of emissions and ways to reduce these, as well as enhance the credibility of sustainability claims made by New Zealand food and fiber exporters, the New Zealand government has:

- Established [a standardized measurement methodology](#) for agricultural GHG emissions, and;
- Funded the development of a pre-competitive emissions calculation platform that can integrate with agritech and fintech providers.

To promote global collaboration, the New Zealand government continues to support"

- [The Global Research Alliance on Agricultural Greenhouse Gases \(GRA\)](#), which brings countries together to find ways to grow more food without growing greenhouse gas emissions.

- Low and middle income countries' agricultural emissions accounting and mitigation through, for example, [the Climate Smart Agriculture Initiative](#)² and a significant contribution to the World Bank's [Food Systems 2030 Multi Donor Trust Fund](#) (FS2030) focused on enhancing the adoption of climate-smart agriculture and repurposing environmentally harmful subsidies.

Approach

To boost research and development investment, the New Zealand government is providing funding to the Ag Emissions Centre and AgriZero^{NZ}. These investments sit within a wider Accelerating New Mitigations Programme, which includes fundamental research (principally through the Ag Emissions Centre), commercialization (principally through AgriZero^{NZ}), Māori-led research projects, streamlining regulatory systems to manage any risks from the new technologies, and supporting market acceptance of foods produced using these technologies, including through the international food safety body Codex Alimentarius.

In 2022, New Zealand's Ministry for Primary Industries (MPI) commenced a project to develop a standardized way to calculate emissions on-farm, conducting an intensive period of research and consultation with farming organizations. To support adoption, the MPI worked with the Bioeconomy Science Institute and Ag Emissions Centre to develop an emissions calculation platform for integration with the farm management tools, enabling the processors and other agritech companies to use the same methodology.

Initiatives such as the [Global Research Alliance on Agricultural Greenhouse Gases](#) (GRA) support global action to increase cooperation and investment in research activities, including flagship projects on feed additives, rumen microbial methanogens, emissions from pastures and agricultural soils, and agroforestry systems. The aim of the GRA is to help reduce the emissions intensity of agricultural production systems. Under the GRA is a highly successful capability program, the Climate, Food and Farming-Global Research Alliance Development Scholarships Program (CLIFF-GRADS), which, since 2017, has benefited 200 students from 35 low- and middle-income countries.

Experiences and Results

AgriZero^{NZ} is investing in a wide range of solutions workable for New Zealand's pasture-based ruminant livestock systems. To date, AgriZero^{NZ} has invested in 14 ventures and research projects such as low-methane ryegrass, feed additives, probiotics and enzymes, methane inhibitors, and vaccines. This includes co-investment with the Ag Emissions Centre to support New Zealand-based research for a methane inhibitor and vaccine.

AgriZero^{NZ} expects to have the first tool from its portfolio available to farmers in 2026 and up to 11 mitigation tools available by 2030. Once the tools are available for use in farming practice they will be incorporated into the standardized emissions methodology.

New Zealand published its [standardized measurement methodology](#) for estimating GHG emissions at the end of 2024, adapting national inventory methods and recognizing mitigation technologies to ensure consistency and ease of reporting.

² The [Climate Smart Agriculture Initiative](#) has been delivered in Southeast Africa, Association of Southeast Asian Nations (ASEAN) and Latin America and the Caribbean through the GRA.

Lessons Learned

- Close collaboration with the agricultural sector was crucial to developing standardized emissions methodologies that meet farmers' needs and are practical to implement.
- Funding research is essential for accelerating the delivery of emission-reducing technologies and tools to farmers. Rapid deployment of products and practices, coupled with comprehensive training for farmers, enhances the effectiveness of technology adoption.
- Engaging global expertise and leveraging commercially driven innovation speeds up progress in agricultural emissions mitigation.
- Seeking to establish international food safety standards for environmental inhibitors, i.e. bromoform (a methane inhibiting compound), boosts farmer's confidence in adopting new technologies.
- International collaboration, as seen in the GRA partnership, gives participating countries access to expertise, infrastructure, and scale, with large datasets from multiple sites, accelerating research outcomes.
- Building research capacity, particularly in developing countries, is key for improving productivity with current and future technologies.
-

Philippines: Sequencing Rice Market Reforms to Enable Inclusive Agricultural Growth

Summary

The Philippines policy reforms are an example of a strategic sequenced approach to: (a) remove rice price distortions to reduce the cost of a staple food, and then (b) increase value for money by repurposing agricultural public expenditures to support more sustainable agricultural development.

Context

Rice is safeguarded as a key staple crop in the Philippines. The government has prioritized rice self-sufficiency as a key objective and provides one of the highest levels of agricultural support in the world, at 2.3 percent of gross domestic product (GDP).

However, the impact of these policies was limited. From 2011 to 2020, agricultural production grew only 0.5% annually. Rice yields grew marginally and remained well below regional averages.³ Rice prices were high and volatile, fueling inflation and penalizing poor consumers the most ([World Bank Group 2007](#)). Filipinos were generally paying two to three times more for their rice than Thai or Vietnamese consumers.

In response, the government of the Philippines passed the [Rice Liberalization Act](#) in 2019, a set of reforms designed to address concerns about rice availability and affordability, tackle issues of corruption and inefficiency in the rice market, meet international trade commitments, and

³Yields rose only marginally, from an average of 3.4 ton/hectare (ha) in 2003 to 4.7 ton/ha in 2023. This is well below average yields in Vietnam (6.1 ton/ha) and well below the 8 to 10 ton/ha demonstrated to be achievable.

generate funds to support and modernize the local rice industry. Through the act, the government abolished rice import quotas and replaced them with tariffs, facilitating private rice imports and lower, more stable rice prices.

[A Rice Competitiveness Enhancement Fund](#) (RCEF) was established using the repurposed revenues from the rice tariffs to improve rice farmers competitiveness and incomes, with an annual budget of ₱30 billion (\$515 million). The RCEF supports farmers through four key interventions: (a) rice farm machinery and equipment; (b) rice seed development, propagation and promotion; (c) expanded rice credit assistance; and (d) rice extension service.

Approach

The Philippines agricultural reforms were underpinned by long-term analytical support and policy engagement on the cost of inaction and options for reform by [the World Bank](#) and other development partners such as the [Asian Development Bank](#), [International Rice Research Institute](#), and [the Food and Agriculture Organization](#) of the United Nations. Short and timely policy notes helped inform quick and impactful advice for senior policy makers that underpinned the World Bank's development policy operations (DPOs⁴).

The World Bank's 2019 DPO series supported the Government of the Philippines to liberalize rice imports, and in [2020](#) to establish the RCEF that led to reduced market distortions, lower rice prices, enhanced support to farmers, and record-high rice production. The reforms aligned with the government's domestic policy agenda of promoting climate-resilient, diversified, and spatially optimized agrifood systems.

To take the reforms one step further, the World Bank is finalizing the Philippine Sustainable Agriculture Transformation Program-for-Results (PforR) to help achieve the government's targets. PforRs focuses on achieving measurable development results by linking funding disbursements to the successful program outcomes. Key results include: (a) enhanced production and incomes in rice-based farming systems; (b) enhanced efficiency and resilience of food value chains; and (c) enhanced institutional delivery and performance.

The PforR's implementation will be supported by a grant for repurposing of agricultural support from the [World Bank's Food Systems 2030 Multi-Donor Trust Fund](#) (FS2030).⁵ The grant aims to improve agricultural support by exploring ways to repurpose the rice fertilizer subsidy program for greater input use efficiency and resilience, and by enhancing soil health through site-specific nutrient management strategies and digital advisory services.

The World Bank is also finalizing a two-year programmatic advisory services and analytics activity supporting the Government of the Philippines' strategic priorities of strengthening food security and accelerating key reforms in the agriculture sector. This demand-led program has conducted reviews of the Rice Tariffication Law (RTL), recent operations of the National Food Agency (NFA), impacts of rice prices on food security, and supported the development of a data management and governance framework for the Department of Agriculture, as well

⁴ DPOs are a financial instrument that provides budget support to governments in exchange for implementing policy and institutional reforms.

⁵ FS2030 is a multi-donor trust fund hosted by the Global Department for Agriculture and Food at the World Bank. FS2030 MDTF is designed to address the hidden health, environmental, and economic costs arising from the current global agrifood system, thereby helping countries build sustainable agrifood systems. FS2030 MDTF is supported by 11 donors (listed in chronological order of contributions received): BMZ-Germany; Bill and Melinda Gates Foundation; European Commission; UK FCDO; Netherlands; Ireland; Israel; Denmark; Japan; Norway; and New Zealand.

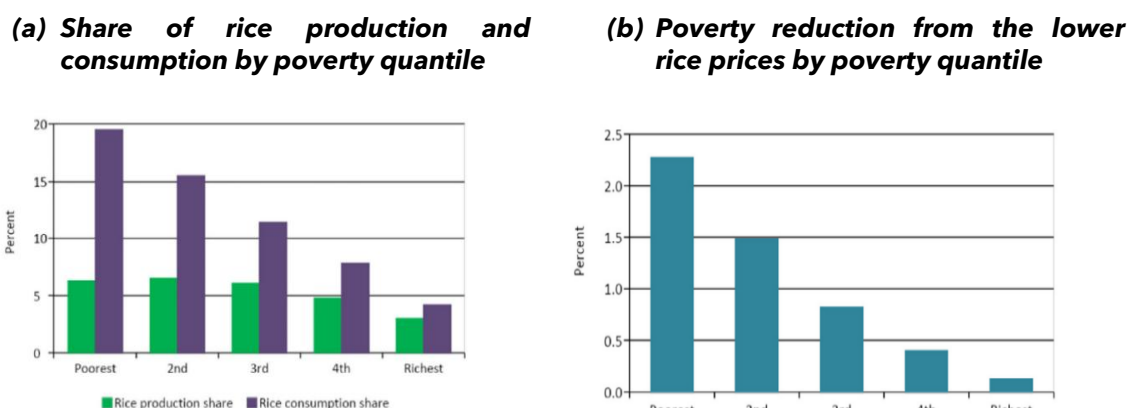
as identified opportunities for mainstreaming climate-smart agriculture at local government level.

Experience and Emerging Results

The Philippines policy reforms are an example of the long-term engagement required to deliver repurposing of agricultural support. Early results from the 2019 Rice Liberalization Act have demonstrated that repurposing tariff revenues can safeguard rice farmers, improve local rice productivity, lower rice prices, and help to reduce poverty amongst Filipinos (Figure 1).

Comparing the five years prior to the implementation of the Rice Tariffication Act (2015–2019) with the five years following its implementation (2020–2025), paddy production increased by 6.0 percent, with the poorest Filipinos benefiting the most. The cost of rice for the consumer has declined since the reforms were implemented, and rice production has increased. In July 2024, the government further reduced the import tariff for rice from 35 to 15 percent until 2028.

Figure 1. Impact of the Rice Tariffication on Poverty Reduction in the Philippines



Source: Balie et al., 2021.

Lessons Learned

The following key lessons emerged from the Philippines agricultural reforms:

- Reforms require the right political momentum and champions among senior policy makers. Analytical evidence on the costs of inaction and specific policy options should be available on time to underpin reforms.
- Short and timely policy notes combined with more detailed analytical work are useful for providing quick and impactful advice for senior policy makers.
- Reforms take time, and a gradual sequence of actions is often more feasible than big bang wholesale reforms.
- Reducing market price support often requires transitional support for farmers to help them reduce production costs to compete at lower food prices.
- Institutional support is critical to improve the design of agricultural support programs, ensuring they accelerate a sustainable agriculture transformation.

Viet Nam: Scaling Low-Carbon Rice Production Through Integrated Extension and Value Chains

Summary

The fundamental premise underlying the government of Viet Nam's agricultural support, through the [Agricultural Restructuring Plan](#), has been to “gain more from less” by achieving more economic value—and improved farmer and consumer welfare—using less natural and human capital and less harmful intermediate inputs. The government focused on supporting farmers through various programs to improve their farming practices and value chains while reducing agriculture's environmental footprint.

Context

Viet Nam has successfully transitioned from a largely agrarian society to a more diversified modern industrial economy. During this transition, the agricultural sector made enormous progress, but faced concerns about the sustainability of the sector's growth, its impact on the environment and nature, and its significant contribution to the country's greenhouse gas emissions ([World Bank, 2022](#)).⁶

Recognizing the urgent need for a new agricultural development model, the government has implemented a series of policy and regulatory reforms since the early 2010s. Examples include the *Agricultural Restructuring Plan* and the pilot promoting high-quality and low-carbon rice, supported by [the World Bank's Sustainable Agriculture Transformation \(VnSAT\) project](#). The reforms emphasized environmentally sustainable and climate-resilient practices, shifting from state-led to market-driven approaches, and repositioned government roles to facilitate private and community investments and services.

Approach

Modernizing the rice value chain in Viet Nam required improving/repurposing the design of public investments for upgrading irrigation and road infrastructure, and research and extension services to enable farmers to adopt climate-resilient practices, as well as support for value chain development. With the support of the International Rice Research Institute (IRRI) and the World Bank under the [VnSAT project](#), agricultural extension services have promoted new approaches to rice cultivation across eight Mekong Delta (MKD) provinces that are strategically important for rice production.⁷

[Low carbon rice initiatives](#) were introduced, such as “three reductions, three gains” (3R3G) and “one must, five reductions” (1M5R). 3R3G was an evolution of previous programs promoting integrated pest management practices, with the aim of reducing input requirements without sacrificing yield. Three reductions encompassed reduced use of seed, fertilizer, and insecticide spraying to give three gains of increased yield, quality of farm produce, and net farm profit.

1M5R was introduced in 2021, building on a 3R3G principle of using certified seeds (one must) with five reductions being seed rate, use of fertilizer, use of pesticides, amount of water used,

⁶Agriculture is the third-highest emitting sector, accounting for about 19% of total national emissions (in 2020). Approximately half (48%) of the agricultural sector's emissions and over 75% of methane emissions come from one single commodity, rice.

⁷These provinces are Long An, Tien Giang, Kien Giang, Can Tho, An Giang, Dong Thap, Soc Trang, and Hau Giang.

and post-harvest losses. This was done alongside approved technical protocols on sustainable rice cultivation, with the overall goal of increasing yield and profitability.

The success of the VnSAT project paved the way for the [One Million Hectares High Quality and Low-Carbon Rice Program](#), which is currently under implementation.

Experiences and Results

The VnSAT has generated [significant transformational development impacts](#), having:

- Established and improved the capacity of 308 rice farmer organizations.
- Trained more than 155,000 households in climate-resilient and low-carbon practices.
- Brought 184,000 hectares under sustainable farming practices.
- Reduced farmers' production costs by 25 percent by reducing the use of seeds, fertilizers, and chemicals, and increased net profits by 30 percent.
- Cut CO₂ emissions by 1.5 million tons annually.
- Improved the quality and reputation of Vietnamese rice, increasing the share of high-quality rice exports from 56 percent in 2012-2013 to 83 percent in 2024-2025, including securing premium exports to Japan.

These results created a foundation for the [World Bank Group's Scaling Next Generation Rice Impact Program](#) to share experience across, and with, other major rice-producing countries in Asia.

Lessons Learned

The following key lessons emerged from Viet Nam's agricultural reforms:

- Providing a comprehensive package that is both climate and business smart can provide the experiences, knowledge and good practices needed to encourage high adoption of low-carbon cultivation technologies among farmers.
- To be successful, the approach should be holistic, focusing on training, technical assistance, public investments in infrastructure, credit policy, and other public regulation support, including the carbon market.
- To roll out this climate-resilient, low-carbon rice model, farmers should also benefit from increased profitability. These include reduced production costs through the efficient use of inputs while maintaining, and even increasing, production yield and quality.

As Viet Nam moves forward with its reforms, including the One Million Hectares High Quality and Low-Carbon Rice Program, the country will need to build on the advances of repurposing policies and programs made under the VnSAT program by:

- updating the Agriculture Restructuring Plan,
- increasing investments in infrastructure, research and extension,
- reforming water pricing from 'fee-based' to 'charge-based', and
- diversifying farming and establishing legal frameworks for carbon credit trading to scale low-carbon rice production effectively.

Viet Nam represents a successful introduction of low-carbon rice farming practices and boosting agricultural productivity while reducing resource consumption—to “gain more from less.” This example demonstrates that rice productivity can increase while reducing the crop’s ecological footprint.

Europe and Central Asia

Denmark: Agreement on a Green Denmark: A Model for the Green Transition

Summary

Denmark is moving ahead with the world's first carbon tax on agriculture. The Danish government, private business, and non-government actors have agreed a historic tripartite package of measures, *A Green Denmark*, that will:

- Tax agricultural greenhouse gas emissions from livestock from 2030, gradually increasing until 2035.
- Introduce a 60 percent tax rebate to provide a balance between tax, climate related initiatives, and incentives for implementation.
- Return the revenue raised to the agriculture sector through greening initiatives, including:
 - Providing Dkr40 billion (approximately €5.4 billion) in government funding for afforestation (250,000 hectares) and peatland recovery (140,000 hectares);
 - Introducing a subsidy program for biochar through pyrolysis and other measures.

Context

Historically, agriculture is of great importance to Denmark, with around 60 percent of Denmark's land-area used for agricultural production. Two-thirds of agricultural land is currently used to produce livestock feed. The food industry contributes 22 percent of Danish good exports and currently produces approximately 22 percent of the nation's greenhouse gas emissions—a figure expected to reach 39 percent by 2030. Denmark also faces declining biodiversity and significant strain on its aquatic environment.

In November 2024, Denmark took a bold step towards achieving its climate and environmental goals with the [Agreement on a Green Denmark](#), also known as the *Green Tripartite Agreement*. This broad agreement, reached among political parties in the Danish Parliament, aims to deliver systemic change in the agricultural sector, towards a historic transformation of Denmark's land use for the benefit of the climate, environment, and biodiversity, while upholding a strong and competitive agrifood sector.

The political agreement was based on consensus reached in June 2024 between the Danish government and a wide range of stakeholders (the agricultural sector, civil society, municipalities, employer organizations and trade unions) on long-term solutions to the agrifood sector's climate and environmental challenges.

The agreement addresses four core challenges:

- 1) Reducing greenhouse gas emissions from land use and livestock by restoring 140,000 hectares of drained peatlands (including peripheral areas), introducing a tax on CO₂ emissions from livestock and carbon rich peatlands in agricultural use, and supporting the uptake of climate mitigation measures.

- 2) Achieving a good ecological status for all water bodies by establish 250,000 hectares of forest by 2045 and rewetting 140,000 hectares of peatland and introducing a new emission-based nitrogen regulation.⁸
- 3) Reversing the loss of nature and biodiversity by increasing the land area of natural and semi-natural habitats by 40 percent, increasing forest coverage by 40 percent, establishing new rewilding national parks, etc.
- 4) Strengthen competitiveness and rural employment in agriculture and the food industry by, for example, setting up a team of representatives from the food and agriculture industry to lay out a growth plan for the industry.

The *Agreement on a Green Denmark* introduces a tax on greenhouse gas emissions from livestock, where the revenue will be returned to the agricultural sector through schemes that strengthen the green transition of the sector. Further, the agreement envisions an ambitious target of increasing forest coverage by 40 percent and rewetting of peatlands. The agreement will create a strong and competitive agrifood sector that produces high quality, healthy food. This should, in turn, ensure attractive jobs and support business opportunities.

Approach

to the vision outlined in the agreement takes a holistic and multifunctional approach to land management where climate mitigation, nature conservation, biodiversity, and water objectives align with efficient and contemporary food production.

The agreement paves the way for a Danish agrifood sector that can deliver tangible solutions to some of the evolving challenges related to climate and nature. It will lead to a change in land use, making more space for nature and creating better conditions for biodiversity and drinking water reserves.

The agreement also sets out principles to ensure compliance with [the European Union Water Framework Directive](#) (WFD), and introduces a shift in the approach to nitrogen management, combining regulation with strategic land management, supportive transition, and modern spatial planning.

Recognizing the large and complex task of implementation by 2030, the *Agreement on a Green Denmark* sets out three guiding principles: (1) simple and efficient solutions for quick implementation and transparency; (2) minimizing administrative burdens; and (3) focus on stabilizing land prices. Moreover, the agreement recognizes the need for land reform, afforestation, and funding of new technologies such as pyrolysis.

To drive the transition, the agreement introduces local green tripartite councils and coastal water councils across Denmark, ensuring a collaborative approach to planning and implementing land use changes. These councils will involve local stakeholders, including municipalities, agricultural organizations, and environmental groups.

Key elements of the agreement include:

⁸The new nitrogen regulation model is scheduled to take effect from 2027, shifting from an input-based to an output-based system. Instead of limiting fertilizer use, each farm will receive a nitrogen emission quota based on local conditions such as soil type and crop rotation. The model aims to target reductions where they have the greatest environmental impact, improve fairness, and ensure more flexible and cost-effective management.

- Reducing greenhouse gas emissions by between 1.8 and 2.6 million tons of CO₂ equivalent by 2030, increasing to 3.3 million tons of CO₂ equivalent by 2035. This leads the Danish agricultural sector to a 60 percent decrease in emissions from 1990 to 2030.
- A tax on greenhouse gas emissions from livestock, with an efficient tax increasing from DKr120 (approximately €16) per ton CO₂ equivalent in 2030 to DKr300 (approximately €40) per ton in 2035. This includes a base reduction of 60 percent of revenues from the livestock tax in 2030–2031 will be redirected to the agricultural sector through a transition scheme that will strengthen the green transition of the sector.
- Establishment of a new [Green Area Fund](#) of approximately DKr40 billion (approximately €5.4 billion) to support efforts such as afforestation, rewetting of drained peatlands in agricultural use, strategic land acquisitions and additional initiatives related to managing nitrogen reductions. The initiatives in the Area Fund will change 15 percent of the existing agricultural area to forests, rewetted areas etc.
- 250,000 hectares of afforestation that will enable an expansion of the forest area by 40 percent, from 15 to 21 percent of the land cover.
- Rewetting and restoration of 140,000 hectares of drained peatlands in agricultural use, including buffer areas.
- A target of at least 20 percent of land area designated as protected nature. Altogether, the planting of 80,000 hectares of private, set-aside forest, 20,000 hectares of set-aside state forest, and the rewetting of drained peatlands will help Denmark reach its 20 percent target.
- Establishment of five additional national parks focused on protecting and restoring biodiversity. This brings the total number of planned national parks up to 20.
- A subsidy scheme for the storage of biochar produced by pyrolysis. Funding for this initiative totals approximately DKr10 billion (€1.3 billion) until 2045.
- Allocation of a total of €56 million to promotion of plant-based foods via [the Foundation for Plant-Based Food](#) in 2025–2030.

Experience and Results

The goals and targets of the *Agreement on a Green Denmark* will be achieved by the following means of implementation:

- Digital and research-based integrated planning of land use catchment areas, utilizing detailed, high-quality digital planning systems to support decision-making and planning processes.
- Sound regulation, planning, and land allocation, involving incentives for landowners through regulation, taxes, and subsidies to undertake a green transformation of the agricultural sector.
- Public and private investments to speed up green technologies that support initiatives such as pyrolysis, innovative biotech, and development of a plant-based food sector.
- Local, national, and international partnerships, including the establishment of 23 local tripartite groups with the purpose of developing land conversion plans. Land conversion

planning should take place at the local level, where in-depth knowledge of environmental, social, and economic conditions ensures the most effective solutions.

At this moment, the governance framework is in place, and the implementation phase has begun. In February 2025, the local green tripartite groups started work on developing local land conversion plans for each of the 23 main water catchment areas, covering the whole country, to be finalized by the end of 2025.

Lessons Learned

The engagement of stakeholders at both the national and local level in the formation, as well as implementation, of the agreement is pivotal to its success. Having the Danish Agriculture and Food Council—the largest Danish farmers’ organization—and the Danish Society for Nature Conservation on board from the beginning has been key to securing the support of both agricultural and environmental interests. A key element in moving the transition forward is continued engagement of the same stakeholders at a local level, including in the development of local land conversion plans.

England: From Design to Delivery: Environmental Land Management Schemes Driving Sustainable Farming

Summary

England⁹ has shifted from the European Union’s (EU) area-based agricultural subsidies to voluntary, incentive-driven Environmental Land Management schemes, such as the [Sustainable Farming Incentive](#) and [Countryside Stewardship](#). This new approach supports farm businesses in improving productivity, resilience, and environmental outcomes, including air and water quality, biodiversity, and reduced emissions. The reforms contribute to national goals to achieve net zero, restore biodiversity, and protect natural resources, all while maintaining sustainable food production and regularly assessing food security.

Context

Following the United Kingdom’s exit from the EU and its Common Agriculture Policy (CAP), England has reformed agricultural support to reward farmers for delivering environmental and climate benefits rather than continuing with area-based subsidy payments, as was the case under CAP.

[Environmental Land Management schemes \(ELM\)](#) are the foundations of this new approach. England’s agricultural reforms will contribute to the goals of:

1. Achieving net zero by 2050 by increasing farmers’ adoption of low carbon practices and reducing emissions through land-use change away from agriculture.
2. Restoring and safeguarding 30 percent of land for biodiversity by 2030 by helping nature to recover, creating and restoring habitats, and farming sustainably in line with the targets and goals of the [Kunming-Montreal Global Biodiversity Framework](#).

⁹Agriculture in the United Kingdom is devolved. Thus, other United Kingdom nations (Northern Ireland, Scotland, Wales) are responsible for their own agricultural policies and are each making their own reforms to agricultural support to prioritize sustainability and environmental benefits.

3. Improving air and water quality, habitat condition, and species abundance in line with legally binding targets published in the government's [Environmental Improvement Plan](#).

These goals are delivered in tandem with supporting sustainable food production. Under the [Agriculture Act 2020](#), the UK Department for the Environment, Food and Rural Affairs (DEFRA) has committed to presenting a [UK Food Security Report](#) to Parliament every three years, assessing the impact of the ELM schemes and reporting on the commitment to maintain food production at its current levels.

Approach

Under the [Agricultural Transition Plan \(2021-2028\)](#), England is implementing a program of payments through ELM schemes and productivity and innovation grants to help farmers invest in new technologies.

Three schemes are available to pay for environmental and climate goods and services:

- [The Sustainable Farming Incentive](#) (SFI) pays for sustainable farming actions that protect and enhance the natural environment alongside food production.
- [Countryside Stewardship](#) pays for targeted actions to create habitat and to promote cooperation across local areas to deliver better outcomes.
- [Landscape Recovery](#) pays for bespoke, long-term, landscape-scale projects that enhance the natural environment.

[The Farming Innovation Programme \(FIP\)](#) is DEFRA's flagship investment in agricultural research and development through competitive grants. This program brings together farmers, growers and foresters with agritech businesses and academics to help drive increased productivity, sustainability, and resilience through technology and innovation. From April 2025, FIP has been extended to include [the Accelerating Development of Practices and Technologies \(ADOPT\) Fund](#), that offers support to farmer-led demonstration trials of new technologies, building critical evidence of return on investment for the wider community.

Additionally, further funding opportunities through [Farming Investment Fund](#) (FIF) one-off grants have been available to help farmers invest in equipment, technology, and infrastructure to improve farm productivity and environmental benefits.

Key to the success of the transition is not just what policies are being changed but how it is managed. This includes:

- Policy co-design: Working directly with farmers has been fundamental to designing new schemes.
- Simplifying things: DEFRA has simplified application processes, making it easier and quicker to apply online, and introduced rolling applications so farmers can apply at any time of year.
- DEFRA has worked hard to make the offer work for all farmers: All farm types, regardless of size, location, ownership or the systems used, can access funding and support that works for them. This includes making the offer attractive to smaller farms and adjusting options to ensure they work for upland farmers and tenant farmers.

- Finally, DEFRA has improved the way rules around farming and the countryside are set and controlled to make regulation fairer, more proportionate, and more effective. For instance, issuing warnings rather than imposing minor penalties.

Experience and Results

Natural England, through the Agri-Environment Scheme Monitoring and Evaluation Programme, produce [annual reports](#) on the evidence of the effectiveness and impact of agri-environment schemes. The monitoring programme's findings inform policy development and scheme design and help to monitor ELM's contribution to government targets.

Over the first half of the seven-year agricultural transition period, a universal offer of schemes and grants were rolled out to farmers and land managers. There are over 70,000 agreements in place for England's agri-environment schemes, the SFI, and Countryside Stewardship.

Over half of farmers in England are now in ELM schemes. On 1 April 2025, the SFI had more than 39,000 live agreements. This includes the expanded SFI offer, which provides farmers with more than 100 options for environmental action. This means

- 885,000 hectares (ha) of arable land farmed without insecticides,
- 330,000ha of low input grassland managed sustainably, and
- 85,000 kilometers of hedgerows protected and restored.

£2.6 billion was committed to supporting farming during 2024-2025. This includes the £1.39 billion for ELM schemes, helping farms across England to be more sustainable, profitable and resilient for the future.

Through the FIF, over £160 million has been paid in grant funding since 2021 (as of September 2025). This includes funding for equipment, technology, and infrastructure to improve farm productivity, slurry management, animal health and welfare, and benefits the environment.

Through the FIP there are over 290 projects underway, involving more than 600 organizations driving innovations in robotics and automation, more environmentally sustainable pesticides and fertilizers, and making use of artificial intelligence to support animal health and welfare.

Lessons Learned

- The importance of a gradual transition. This is the biggest change to farming policy in the UK in 40 years. Therefore, reforms are being rolled out over a seven-year transition period, which includes gradually phasing out direct payments before delinking them from the land, to enable farmers to plan and adjust to the new schemes.
- Co-design/farmer engagement is vital. To incentivize farmers to join schemes and deliver target outcomes for the environment, the schemes must be attractive and workable for all types of farms. Farmers were brought directly into the policy design process from the beginning and engaged throughout. Co-designed pilots, tests, and trials have been run with more than 5,000 farmers and other stakeholders (e.g., land agents), as well as several stakeholder organizations, since 2019.
- Take an iterative approach. Farming is a long-term endeavor that must also be responsive to changes such as climate change. The UK government will continue to work directly with farmers to adapt and improve schemes and incentives. Listening to feedback and adjusting

has been crucial. The Agricultural Transition Plan update in 2024 announced upgrades to the ELM schemes that included:

- Making payment rates fair and keeping them-up-to date by paying more for actions in some ELM schemes. The schemes will also pay farmers a premium for high ambition actions and the delivery of packages of actions that go further in delivering environmental benefits.
- Offering actions that support the full range of target environmental outcomes by increasing the number of environmental actions available under SFI to over 100.
- Making it easier for farmers to participate in schemes by streamlining the application process for the SFI and Countryside Stewardship Mid-Tier. A single application window was developed, simplifying applications further and enabling schemes to slot seamlessly into farm businesses.

Germany: Innovative approaches to incentivize soil health for resilient production, climate change mitigation and adaptation

Summary

Germany prioritizes preserving and, where necessary, enhancing soil fertility to support resilient agricultural production and climate change mitigation. Through innovative programs and research, Germany aims to optimize soil organic matter management tailored to diverse farming contexts.

Context

Germany is pursuing several approaches to fostering soil health and soil fertility through regulation, incentives, and research. The main focus is on national implementation of the [European Union Common Agricultural Policy](#), fertilizer regulations, soil protection law and investments in modern technologies to support less invasive and more resource-efficient cultivation.

Healthy soils offer a wide range of ecosystem services. They sustain agricultural production by providing water and nutrients to crops, they regulate the water cycle, constitute an uncaptured reservoir of biodiversity, and play an essential role in climate change adaptation and mitigation. For all these reasons, the build-up and conservation of organic matter through sustainable management practices is essential.

Protecting and increasing carbon storage in soils is a central element of Germany's path to carbon neutrality. However, there is no one-size-fits-all solution; sustainable soil management decisions need to be context-specific, taking into consideration the prevailing agroecological conditions and farming systems.

Both conventional and organic farmers show strong interest in maintaining healthy soils. However, knowledge exchange between scientists and farmers remains inadequate, limiting informed, site-specific, and economically viable humus management. More evidence and proof of concept are needed to demonstrate the effectiveness and financial feasibility of tailored management practices.

To expand the adoption of agricultural practices targeting the build-up and conservation of organic matter, Germany launched the [Federal Humus Programme](#) in 2022. Furthermore, Germany is investing in long-term soil monitoring through its [Agricultural Soil Inventory](#) (BZE-LW).

Approach

The Federal Humus Programme is made up of research projects and model demonstration initiatives designed to test on-farm practices in arable soils and with specialized crops such as apples, vegetables, vines, and hops. More than 250 participating farms work closely with federal research institutes or universities to explore and optimize management approaches tailored to each farm's agroecological and socioeconomic conditions. Data are collected to evaluate both the ecological impact of these practices and the benefits to farm enterprises.

The program further aims to expand promising approaches by disseminating the knowledge generated and the experiences gleaned during its lifetime. One approach is to foster peer-to-peer learning in "humus clubs" and during field days, where program participants and other interested land managers regularly meet to reflect on challenges and exchange solutions. The program equally targets conventional and organic farms.

Research initiatives have also been launched to assess agroforestry and agrivoltaics for their potential in relation to humus formation and soil carbon storage. There is also a focus on evaluating biochar through practical trials and long-term field studies, examining its effects on soil fertility, carbon dynamics, ecotoxicology, and yields in marginal soils.

Reliable data are essential for informed decision making and accurate reporting on how management practices affect organic carbon stocks in soil. Therefore, Germany is investing in long-term soil monitoring. From 2011 to 2018, the Thünen Institute conducted the first uniform nationwide inventory of agricultural soils, examining physical and chemical soil properties, management methods, and climatic drivers at over 3000 sites. The first re-sampling campaign is currently underway (2023–2027) and will identify changes in carbon stocks over time. The results will inform national climate reporting to the United Nations Framework Convention on Climate Change (UNFCCC). Participation by farmers is voluntary.

Experiences and Results

The Federal Humus Programme has been positively received by both organic and conventional farmers. The first broad evaluation of carbon stock changes on participating farms will take place after five years. All participants in the program emphasize the necessity of long-term projects for reliable results. Reflecting strong interest from the sector and research institutions, Germany has committed to sustained support and recently increased annual funding for the program.

The German Agricultural Soil Inventory provides reliable information on the condition and potential development of humus stocks in Germany's agricultural soils. Findings from the first re-sampling campaign (2023–2027) will be crucial for validating nationwide carbon stock models, thereby enhancing the accuracy of national emissions reporting. The data will also clarify how climate factors—such as water availability and temperature rises—and management practices influence soil organic carbon stocks. A preliminary report of the re-sampling campaign is expected by the end of 2025.

Lessons Learned

- Soil organic carbon sequestration is a long-term process that requires a long-term perspective.
- Different measures can contribute to soil health and soil organic carbon sequestration. These measures differ not only in their impact on soil health but also come with different implementation costs and challenges.
- Tailor-made regional approaches can help to support long-term, sustainable implementation of measures. Farm-advice support focusing on these regional particularities can help increase performance of measures.
- Investing in long-term research, demonstration initiatives, and the testing of on-farm practices supports farmer engagement and improves the sustainability and resilience of the sector.

Ireland: Food Vision 2030: A world leader in sustainable food systems

Summary

The agrifood sector is Ireland's oldest and largest indigenous exporting sector. The sector is globally orientated, with approximately 90 percent of Irish beef, sheep meat, and dairy produce exported each year to over 190 markets worldwide. In 2024, agrifood exports reached a record €19 billion, highlighting the excellent global reputation and exceptional quality of Irish produce.

The agrifood sector has benefited from strategic planning through the development of stakeholder-led strategies since their inception 20 years ago. These strategies have ensured that the sector has a coherent, stakeholder-led vision and clear strategy to underpin its continued development. Ireland's strategic plan, [Food Vision 2030](#), envisions a dynamic, sustainable, and innovative agrifood sector ready to adapt and to embrace change for a more sustainable future.

Context

The agrifood sector includes primary production in farming, fishing, and forestry, and the processing and manufacture of food, beverages, and wood products. The sector accounts for 6 percent of modified gross national income (GNI*)¹⁰ and 8.6 percent of merchandise exports in value terms. The sector employs 169,300 people as a main occupation, accounting for 6.1 percent of total employment, with a far greater proportion in rural and coastal areas. Including both full-time and part-time roles, almost 300,000 people are employed on Irish farms alone.

Approach

Food Vision 2030, Ireland's current stakeholder-led strategy for the agrifood sector, was developed for the sector, by the sector, and has the potential to transform the agriculture, food, forestry, and marine sectors, with environmental, economic and social sustainability at its core. Its vision is for Ireland to be "A World Leader in Sustainable Food Systems" and it takes a food systems approach, recognizing the importance of greater policy coherence and the involvement of all food system stakeholders.

¹⁰ Modified GNI or GNI* is an indicator designed specifically to measure the size of the Irish economy by excluding globalization effects.

Food Vision 2030 consists of 22 goals and 218 actions grouped into four high-level missions for the sector.

Mission 1 of *Food Vision* is to progress “A Climate Smart, Environmentally Sustainable Agri-Food Sector” with an overall target of a climate-neutral food system by 2050, with verifiable progress by 2030. There are seven goals within this mission, encompassing emissions reductions, carbon sequestration, improvements in air quality, restoration and enhancement of biodiversity, improvements in water quality, development of diverse forests, enhanced seafood sustainability, exploring the bioeconomy, and strengthening [Origin Green](#)¹¹.

Mission 2 is “Viable and Resilient Primary Producers, with Enhanced Wellbeing.” This mission places primary producers, farmers, fishers and foresters at the center of *Food Vision 2030*, improving the competitiveness and productivity of primary producers; increasing the creation of value and distributing it fairly; introducing greater diversification in production systems and incomes; and improving the social sustainability of primary producers across areas such as generational renewal, gender balance, health and safety, mental health and wellbeing, and wider rural development.

Mission 3 is “Food which is Safe, Nutritious and Appealing, Trusted and Valued at Home and Abroad,” with a particular focus on the importance of trade. *Food Vision 2030* looks to protect and build on Ireland's global reputation as a trusted supplier of high quality, safe, sustainable food to consumers at home and abroad, built on sustainable, steady value growth. This mission prioritizes building coherent food and health policies for better health outcomes, enhancing consumer trust in Ireland's food system, and value-adding through insight, innovation and product differentiation.

Mission 4 is an “Innovative, Competitive and Resilient Agri-Food Sector, Driven by Technology and Talent,” with key enabling goals around research, innovation, and talent. There are seven goals in this mission, all of which are relevant to all other missions and will act as key enablers. They include moving to a challenge-focused innovation system, having a strategic approach to funding research and development, developing dynamic knowledge exchange practices, enhancing the use of technology and data, improving competitiveness and resilience, attracting and nurturing diverse and inclusive talent, and improving policy coherence in sustainable food systems between Ireland's domestic and foreign policy. The strategy envisages a more output-focused collaborative innovation system by 2030, with private research and development to reach 1 percent of turnover.

Experience and Results

Each of the missions in *Food Vision 2030* have ambitious goals rooted in a strongly practical approach to what needs to be achieved for future environmental, economic, and social sustainability. The third [Food Vision Annual Report](#), published in September 2025, outlines progress to date. Reductions in greenhouse gas emissions, expansion of organic farming, and strengthened supports for producers demonstrate the agrifood sector's capacity for transformation when guided by a clear vision and strong collaboration.

¹¹Origin Green is Ireland's pioneering food and drink sustainability program. Operating on a national scale, the initiative unites government, the private sector, and the full supply chain from farmers to food producers, through to the food service and retail sectors. It is the world's only national food and drink sustainability program and enables the industry to set and achieve measurable sustainability targets that respect the environment and serve local communities more effectively.

- In terms of overall progress to date, 79 percent of the actions have either been completed or have had substantial action undertaken; the remaining 21 percent have commenced and are progressing.
- Among the key achievements in 2024 were the publication of Ireland's [National Biomethane Strategy](#) and [National Organic Strategy](#), the launch of the [Farming for Water European Innovation Partnership \(EIP\)](#), the [Better Farming for Water Campaign](#), the opening of the [Native Woodland Conservation \(NWC\) Scheme](#) and the continued expansion of the Origin Green Programme.
- Further significant developments included [the Dairy Calf to Beef Action Plan](#), [the Women in Agriculture National Action Plan](#), [the Food Vision Tillage Group Final Report](#), the introduction of the Beef and Sheep Welfare Schemes, [the National Seafood Development Programme](#) and a number of important [farm safety initiatives](#).
- Innovation and knowledge transfer were further supported through the opening of the [BIA¹² Innovator Campus](#), increased funding for the [Thematic Research Call](#), increased funding for the [Ireland-New Zealand Joint Research Initiative \(JRI\)](#), and the publication of the [Sustainable Food Systems Ireland Statement of Strategy](#). Ireland also significantly increased its [funding contribution to international development assistance](#).
- A new [Food Vision 2030 dashboard](#) has been developed. The dashboard displays baseline environmental, economic and social data for a number of key performance indicators.

Lessons Learned

- A food-systems approach to sustainability involves considering the interconnectivity of the food system. According to the Food and Agriculture Organization of the United Nations (FAO), a sustainable food system is one that delivers food security and nutrition for all in such a way that the economic, environmental, and social bases to generate food and nutrition for future generations are not compromised.
- Food Vision 2030 advances a holistic approach. Progress made in 2024 reflects this and shows a sector actively embracing change, innovation, and sustainability. However, significant challenges remain.
- Meeting the ambitious goals of Food Vision 2030 will require an unwavering focus on evidence-based policy, continued investment in innovation and knowledge transfer, and a renewed emphasis on partnership across stakeholder groups.
- The evolution of measurement and monitoring systems, particularly through the Food Vision Dashboard, will further support transparency and accountability.

¹²Bia is an Irish word that means *food* in English.

Uzbekistan: Liberalizing Agricultural Prices to Unlock Investment and Sustainable Growth

Summary

The reforms in Uzbekistan are an example of a sequenced approach aimed at abolishing price disincentives for reform to repurpose and meaningfully increase the value of public expenditures. The policy actions are intended to (a) remove agricultural price distortions, enabling farmers to invest more in their farms, then (b) begin repurposing agricultural public expenditures to support a more sustainable sector growth model. Policy actions have so far sought to shift the behavior of both farmers and policy makers regarding the role of the markets vis-à-vis the state in supporting agriculture.

Context

Uzbekistan has undertaken significant agricultural reforms since 2017, transitioning from a state-controlled, centrally planned system to a market economy. Despite the relatively high rate of growth between 2010 and 2016, Uzbekistan's agricultural sector was considered underperforming compared with its potential. Growth stagnated in 2017, averaging 1.8 percent per annum from 2017 to 2020.

The agricultural sector was state-led and plagued by extractive policies, including low procurement prices for cotton and wheat far below market prices, and strict production plans and quotas. The cost of this policy was estimated at 1.6 percent of gross domestic product (GDP) in 2018. As a result, the country was faced with stagnating yields, increasing soil degradation, low crop diversification, rising imports of wheat—the nation's staple food—and decreasing exports of cotton (World Bank Group [2022](#); [Zorya 2021](#)). Government expenditure for agriculture was high at 2 percent of GDP but lacked adequate effectiveness, efficiency, and support for inclusive and sustained growth (Abdul-Hamid et al. 2021).

In response, the government adopted an ambitious [Strategy for Agriculture Development 2020-2030](#), which outlined market-friendly reforms to modernize and increase the competitiveness of the agricultural sector. The reforms focused on reduced state control, creation of opportunities for the private sector, price liberalization, trade facilitation, crop diversification into horticulture, and water-efficient irrigation and soil health programs. The government also started repurposing public expenditures toward more sustainable development and green growth.

Implementation of key policies has transformed the agricultural sector. In 2019, the government abolished the subsidy for cotton production on plots with low-quality soil. In 2020, the state order system for cotton was phased out completely and cotton prices were liberalized, followed by liberalization of wheat prices in 2022.

In 2021, the government started an investment program with matching grants and soft credits to promote water-efficient irrigation in cotton production and horticulture. They also launched the Agricultural Knowledge and Innovations (AKIS) program to strengthen collaboration between agricultural education and research and advisory services and have since increased funding for AKIS. Special attention has been given to improving soil health through digital soil mapping, modernized soil testing, and an update of site-specific fertilizer recommendations ([World Bank 2022](#)).

Approach

Uzbekistan's agricultural reforms are underpinned by estimates of the cost of inaction, and consequent analytical support for the preparation of Uzbekistan's Strategy for Agriculture Development 2020–2030, including the design of reform options. Short, just-in-time policy notes were especially useful to provide quick and impactful advice for senior policy makers and supported the World Bank's Development Policy Operations (DPOs).¹³

The agricultural price liberalization reforms were supported by Word Bank's DPOs in 2019 ([removal of horticulture export restrictions](#)), 2020 ([abolishment of the state administrative system for cotton](#)), and 2021 ([wheat price liberalization](#)). Price liberalization was accompanied by improvements in coverage and support provided through the social safety net to shield poor and vulnerable population more effectively from food price spikes.

The removal of major agricultural price distortions has paved the way for more funding from development partners to help improve the quality of agricultural public expenditures and repurpose it for better alignment with green growth and sustainable development objectives. Investments in better agricultural public services have been supported, for example, through the [Agriculture Modernization Project](#) for Uzbekistan, the [Korean Green Growth Trust Fund](#) for soil information system, [agricultural budget support and technical assistance from the European Union](#), and investment projects and technical assistance financed by other development partners.

Experience and Emerging Results

As a result of these reforms, Uzbekistan's agricultural growth accelerated to 3.8 percent annually over the four years from 2021 to 2024, outperforming its other low-middle income peers, who averaged 3.2 percent per annum over the same period. More diverse set of subsectors, such as horticulture and livestock, not only cotton and wheat, also make growth more sustainable. More specific results generated between 2018 and 2022 included:

- Increased cotton and wheat yields.
- Higher cotton and wheat prices for farmers who received market-level farm gate prices, with an additional gain of about 1.6 percent of GDP and an enabling policy for higher rates of return from public expenditures.
- Increased public investments for AKIS, including soil health, and water-efficient irrigation.
- Removal of the subsidy that encouraged farmers to produce cotton on degraded soils, which accounted for 5 percent of total agricultural expenditure. The government subsidy on interest rates for working capital inputs to cotton and wheat production was reduced. This redirected resources to support diversification and other investments, such as irrigation.
- The Digital Soil Information and Land Management Geoportal was established, and soil testing has been undertaken. Investments in soil testing infrastructure (i.e. laboratories) and staffing increased.

¹³ A DPO is a financial instrument that provides budget support to governments in exchange for implementing policy and institutional reforms.

These results represent the shifts in policy and public expenditures from 2018 to 2022. Since then, the government has started second-generation reforms. It phased out the crop placement system in 2023 and further reformed the cotton value chain in 2024 by promoting more competition among cotton buyers and encouraging farmers to invest in primary cotton processing. These reforms were supported by World Bank DPOs in [2023](#) and 2025 (forthcoming).

Further reforms are needed to improve the quality of AKIS programs, including for soil health; deeper reforms are needed in areas such as access to finance, crop diversification, and the irrigation-agriculture nexus—critical for promoting climate-smart agriculture.

Lessons Learned

The following lessons emerged from the recent agricultural reforms in Uzbekistan:

- Reforms require the right political momentum and champions among senior policymakers. Analytical evidence on the costs of inaction and specific policy options should be available to underpin reforms.
- Agricultural public expenditure reviews with cross-country peer comparisons are critical to create buy-in for reforms and strengthen reform proposals.
- Short, just-in-time policy notes, combined with more detailed analytical work, are useful for providing quick and impactful advice to senior policy makers.
- Reforms take time, and a gradual sequence of actions is often more feasible than big bang wholesale reform.
- The successful design and implementation of soil health programs requires a shift in behavior and public funding, as well as technical assistance from development partners on best global practices. Improvements relating to soil testing and soil information systems should be complemented by programs that increase soil fertility to make a difference on the ground.

Latin America and the Caribbean

Brazil: Redirecting Agricultural Credit Toward Climate-Smart Farming and Land Restoration

Summary

Brazil is leading the way on redirecting agricultural credit towards climate-smart solutions, simultaneously advancing productivity, climate adaptation, and emissions mitigation. Among its ambitious goals is the restoration of millions of hectares of degraded agricultural land into sustainable farmland—doubling the area available for food production without deforestation. A strong legal framework, anchored by the [Agricultural Policy for Climate Adaptation and Low Carbon Emission](#) (ABC+) strategy, steers priorities for the sector. There is significant potential to further support family farmers, expand climate-smart lending, and reallocate existing support toward investments in public goods like research and infrastructure.

Context

[Brazil's agrifood sector is a cornerstone of its economy](#), contributing 22 percent of gross domestic product (GDP) and 16.2 percent of employment. It accounts for 40 percent of exports and makes Brazil the largest net food exporter in the world. Despite its economic importance, the agrifood sector faces significant challenges including extreme poverty, food insecurity, and climate vulnerability.

Extreme weather events are costing Brazil about 1 percent of agricultural production annually, whilst four major events between 2004 and 2024 caused estimated cumulative damages of \$8.11 billion (Paviot et al. 2025). Land use change and agriculture make up nearly [70 percent of Brazil's greenhouse gas \(GHG\) emissions](#).

Public support to agriculture has declined over time, with total support dropping from 0.7 to 0.5 percent of GDP and direct farmer support from 7.6 to 3.1 percent of total gross farm receipts between 2000 and 2023. Key areas of support include input payments (mainly preferential credit), risk management instruments (such as crop subsidies), and market price support.

Brazil launched a new national strategy to adapt its agricultural sector to climate change, the [ABC+](#). The ABC+ strategy promotes sustainable practices such as reforestation, pasture restoration, and integrated farming. Ambitious 2030 targets include restoring 30 million hectares of degraded land and expanding the use of bio-inputs and irrigation.

Brazil's main farm credit package is *Plano Safra* (Harvest Plan), with a budget of R\$516 billion in 2025–2026—Brazil's highest ever—including a 17 percent increase for family farmers from the previous year. *Plano Safra* ensures sustainable farming practices remain a priority and is supported by increased subsidies from the National Treasury that lower interest rates for rural producers.

Additionally, the National Program for Converting Degraded Pastures into Sustainable Agriculture and Forestry Systems (PNCPD—*Caminhos Verdes*) aims to convert 40 million hectares of low-productivity pasture into sustainable farmland. This will double the area of food production in Brazil without additional deforestation. The program will support only CAR-registered enterprises with plans to reduce emissions and/or enhance GHG absorption through sustainable practices.

Approach

Plano Safra includes a dedicated credit line—RenovAgro—directly linked to climate-smart agriculture (CSA) practices.¹⁴ For 2025–2026, it has allocated R\$8.2 billion at interest rates between 8.5 percent and 10 percent, the lowest among all programs. Additional credit lines are also expanding, supporting sustainable technologies and the recovery of degraded areas.¹⁵

All concessional agricultural credit is conditional on environmental compliance. A key requirement is registration in the Rural Environmental Cadastre (CAR), which involves georeferencing property boundaries and identifying legal reserves and protected areas. CAR also limits how much native vegetation can be cleared and which areas should be permanently preserved.

Credit eligibility also depends on alignment with Brazil’s Agricultural Risk Zoning (ZARC) and the Forest Act, which set standards for preserving native vegetation for each zone of climate risk. These conditions ensure that farming practices are climate-resilient and environmentally responsible.

Farms with validated CAR registration can access a further reduction of 0.5 percentage points on the concessional interest rates. Another 0.5-point reduction is available for organic farms, those with good agricultural practices, integrated production certificates, or those participating in RenovAgro. Farms with cancelled or suspended CAR registrations are ineligible to access concessional finance.

Financial support is linked to the provision of technical assistance and extension services to promote CSA adoption. This includes the World Bank-supported [Sustainable Multiple Use Landscape Consortia in Brazil](#), which aims to expand sustainable land management, biodiversity conservation, and the recovery of degraded areas in beef and soybean landscapes.

Innovative financing mechanisms are being used with a particular focus on regenerating degraded pastureland. In April 2025, Brazil announced the launch of the [2nd Eco Invest Auction](#) using a blended finance model where Eco Invest’s public funds will serve as catalytic capital to attract private investment. The aim is to convert 1 million hectares of degraded lands across five biomes into sustainable production systems. Projects must meet strict environmental standards, including soil recovery and environmental conservation.

The World Bank Group is also supporting Brazil through a \$1.2 billion [Multilateral Investment Guarantee Agency \(MIGA\)](#) guarantee for loans to Banco do Brasil. These funds will support micro, small, and medium farmers on conservation agriculture cultivation of 978,000 hectares and help avoid nearly 11.87 million tons of GHG emissions over ten years. Another operation of \$400 million with Banco do Brasil is being designed to further support adoption of climate-smart agriculture in degraded areas, blending credit with technical assistance and, in some cases, with upfront carbon credit.

¹⁴Amongst the supported practices are recovery of degraded areas and pastures, integrated crop-livestock-forestry systems, conservation practices for the protection of natural resources, organic agriculture, the restoration of permanent preservation areas or legal reserves, fire prevention and control, reforestation, the production of bio-inputs and biofertilizers, and systems for generating renewable energy.

¹⁵These include the Program to Encourage Technological Innovation, the Program for Modernization of Agriculture and Conservation of Natural Resources, the Program for Modernization of Mechanization, and the Program for Irrigation.

The World Bank is working closely with Brazil on opportunities to improve agricultural policies by increasing support for family farmers, expanding concessional lending for climate-smart agriculture, and strengthening the conditionality of other programs (Paviot et al. 2025). Repurposing some current support towards investments in public goods such as research and development and infrastructure, which have not kept up pace with the sector's growth, is also a clear opportunity for the country to face future climate challenges (OECD 2024¹⁶) For example, a 10 percent reallocation from private to public goods could boost value added per capita by 5 percent.

Experiences and Emerging Results

In 2022, land use change and agriculture were responsible for 39.5 percent and 30.5 percent of Brazil's total GHG emissions, respectively. The expansion of the RenovAgro plan and other concessional credit lines, which are tied to environmental compliance, presents a strong opportunity to reduce emissions in agriculture, forestry, and land-use sectors.

Projections suggest that full implementation of Brazil's climate-smart agriculture plans could [reduce greenhouse gas emissions by 48 percent by 2030](#) compared to a business-as-usual scenario (World Bank Group 2023). Additionally, offering interest rate incentives to farmers with validated CAR registrations could accelerate the enforcement of the Forest Code, curb illegal deforestation, and promote the restoration of degraded protected areas.

Lessons Learned

- *Plano Safra's* concessional credit has had a significant effect, supported producers and helped Brazil's agricultural production increase rapidly.
- Reforms linking credit to climate-smart practices and environmental conditionality are helping reduce deforestation and restore degraded land.
- As a policy lever, targeted and conditional agricultural credit is assisting Brazil to meet its targets under its own agricultural strategy and its international commitments.
- There are opportunities to further refine the eligibility criteria of public programs to further enhance environmental outcomes, expand technical assistance to foster adoption of climate-smart agriculture practices, and place more emphasis on the provision of public goods, including research and development, which have an increased return on investment for the government as they benefit the whole sector.

Costa Rica: Modernizing Agricultural Support Through Digital Platforms and Environmental Incentives

Summary

Costa Rica demonstrates a compelling example of the importance of aligning agricultural support with climate and sustainability objectives. Repurposing public support—through increased investment, targeted reforms, and strengthened partnerships—offers a powerful lever to modernize institutions, catalyze sustainable practices, and ensure that producers benefit from enhanced digital infrastructure and financial incentives. These policy actions are

¹⁶Organization for Economic Co-operation and Development

vital for driving the sector's transformation toward greater competitiveness, resilience, and environmental stewardship.

Context

Costa Rica's agricultural sector plays a vital role in the national economy, contributing 13 percent of gross domestic product (GDP), 13.4 percent of employment, and accounting for 42 percent of exports, including coffee, bananas, pineapples, and palm oil. The sector is vital for rural livelihoods but faces challenges; specifically, boosting productivity and competitiveness while upholding sustainability. According to [the World Bank Climate Change Knowledge Portal](#) (2021), emissions are projected to rise sharply without reforms.

Government support is modest and often directed through inefficient or distorting policies and initiatives. The *Agriculture Sector Plan* (ASP) 2023–2027 aims for sustainable, competitive, and inclusive growth, but struggles with budget alignment for climate and sustainability targets. Key interventions such as agricultural information systems, research and development, and public-private partnerships remain underfunded.

Increased investment and better budget alignment can spur innovation, build partnerships, and expand access to finance and markets. Modernizing public sector institutions will further empower producers and advance the sector's sustainability and competitiveness.

Approach

In 2025, Costa Rica's first [Program for Sustainable and Competitive Agriculture Program for Results \(PforR\)](#) will be implemented with support from the World Bank (\$120 million) and the International Fund for Agricultural Development (IFAD; \$20 million). Building on the ASP, the PforR aims to improve sustainability, competitiveness, and economic participation among small and medium agricultural producers (PYMPAs).

The PforR focuses on modernizing extension services; scaling traceability and certifications; accelerating climate-smart, low-emission production models (Nationally Appropriate Mitigation Actions–NAMAs) with tailored finance and technical assistance; improving water management; and piloting payments for environmental services (PES) for soil carbon in agricultural soils.

A unified producer information system (the Information System of the National Directorate of Agricultural Extension, known as SisDNEA) is being developed to integrate producer registration, service records, and linkages to extension, certification, and inclusion tracking, emphasizing data privacy and interoperability to reduce transaction costs for PYMPAs.

Traceability and certification efforts will target key commodities, equipping PYMPAs with tools and coaching to meet regulatory standards. Upgrades in food safety and input control will improve lab testing and regulatory frameworks for bio-inputs and responsible pesticide use. Digital extension and research and development will provide extensionists with climate and market tools, strengthen partnerships, and create targeted “green extension lines” for climate resilience and inclusion.

The PES pilot will include legal reforms, dedicated funding, and robust monitoring, reporting, and verification (MRV) systems, including equity safeguards. Targeted agrifinance for NAMA producers will be operationalized through state development banks, combining credit, guarantees, and performance incentives, with potential interest rate rebates tied to verifiable practices.

Experiences and Expected Results

The full impact of recent policy shifts and investments are yet to be realized. Some specific emerging and expected results include:

- A PES mechanism for soil carbon that is operational, channeling resources to 1,000 NAMA producers who deliver measurable environmental services, with gender- and youth-sensitive participation.
- More than 20,000 producers registered in Trazar-Agro, an electronic traceability application; 15,000 have attained certification to meet regulatory standards and enter premium markets.
- An operational Digital Producer Information Platform will centralize producer data, integrate with institutional systems, and register 30,000 producers through five targeted outreach campaigns. It will improve extension targeting, beneficiary tracking, food safety, and input control, making extension services more client-focused and digitally enabled.
- Robust policy frameworks that regulate pesticide use, promote bio-input adoption, certify resilient crop varieties, and recognize NAMA producers through [the Ecological Blue Flag Program](#).¹⁷
- Wider adoption of sustainable production models driven by the NAMA financing facility, tailored exclusively to PYMPAs.

Lessons Learned

- Agricultural policy reform options should emerge from local needs and priorities, address development challenges, and involve all stakeholders in the country to ensure ownership.
- Tailored technical assistance by the development partners is essential for enhancing institutional capacity and ensuring that alternative strategies, along with their associated impact evaluations, are based on rigorous and methodologically sound approaches.

¹⁷Ecological Blue Flag is a program that encourages communities, businesses, schools, beaches, and institutions to adopt eco-friendly and sustainable practices.

Middle East and North Africa

Jordan: Sequencing Reforms to Link Agricultural Support with Water Efficiency and Export Readiness

Summary

Jordan's experience demonstrates the importance of a sequenced approach to implementing policy reforms. Key steps included analytical and diagnostic work reviewing agricultural support, creating a shared evidence base. This was followed by early high-return investments (e.g. extension, rainwater harvesting) with time-bound policy steps (e.g. regional subsidy optimization) to build momentum and manage transition risks while reducing the fiscal burden.

Context

Jordan's agricultural sector is a cornerstone of income, employment, and exports, contributing 5.6 percent directly to gross domestic product (GDP), and up to 25 percent through the broader agrifood value chain. Agriculture supports 14 percent of the workforce, offers vital opportunities for vulnerable populations including refugees, and provides income for a quarter of the poor. Food exports represent 20.1 percent of merchandise exports.

Despite recent gains in agriculture value-addition, Jordan's agriculture industry still faces structural hurdles: lagging competitiveness, climate risks—particularly water scarcity—weak extension services, inadequate post-harvest infrastructure, significant gender and inclusion gaps, and poor access to finance for smallholders. By 2050, climate change could cost the sector \$88 million annually.

Jordan spends 1.5 percent of GDP on agricultural subsidies, with 62 percent covering operational rather than transformative investments—a 6.5-to-1 ratio that perpetuates inefficiencies and hinders modernization. Input subsidies for water and electricity undermine climate adaptation by encouraging overuse of scarce resources. Market inefficiencies reduce producer prices by 30 to 37 percent for key export crops, limiting Jordan's \$600 million export potential in high-value fresh produce.

To tackle these challenges, Jordan introduced several key policy frameworks, including the [National Agricultural Development Strategy 2020-2025](#) and the *National Sustainable Agriculture Plan 2022-2025* (JAP). These initiatives signal a strategic shift towards sustainable agricultural growth. They adopt a cross-government, coordinated approach that lays the foundation for institutionalizing agricultural reform and guides the sector's transition towards greater resilience, productivity, and sustainability.

The JAP, with a JD422 (US\$595 million) investment targets six priorities: developing the business environment, improving irrigation water efficiency, encouraging modern technology adoption, enhancing product competitiveness, strengthening agricultural exports, and sustainably developing forest and rangeland ecosystems.

This renewed commitment was institutionalized in [Jordan's Economic Recovery Plan \(2021-2023\)](#), which identified the agri-food sector as one of four growth pillars, and the [Jordan Economic Modernization Vision 2033](#), launched in June 2022, where agriculture and food security feature prominently among eight priority economic sectors for investment and growth, with specific targets to increase agricultural exports and improve food security indicators.

Approach

Jordan's policy reforms were underpinned by a two-track approach of analytical work through policy diagnostics and a commitment to rationalize support by the World Bank and other development partners.

Under [the Economic Opportunities for Jordanians and Syrian Refugees Program for Results](#) (PforR), the government committed to assessing agricultural subsidies, support schemes (including water), and relevant tariffs. Findings were presented to Cabinet, who committed to adopting a strategy that re-optimized support toward the most water-efficient crops; that is, a formal repurposing lens linking support to water efficiency and sustainability.

This analytical foundation enabled investment and results-based support to help shift agricultural spending through the [Agriculture Resilience, Value Chain Development and Innovation](#) (ARDI) PforR, which aims to strengthen climate resilience and competitiveness by focusing on public goods and enabling services rather than untargeted subsidies.

ARDI finances rainwater harvesting at scale, modernizes extension and veterinary services, deploys digital early warning and advisory systems, upgrades traceability and sanitary and phytosanitary systems (SPS), and market intelligence to unlock higher-value exports—complemented by job-matching for women, youth, and refugees.

This operationalizes repurposing by redirecting scarce public resources to high-return, less distortive uses that lower water intensity and improve market access.

Experiences and Expected Results

- Rainwater harvesting and climate resilience: A national rainwater harvesting plan was developed and capacity increased to about 2.2 million cubic meters strengthening rainfed systems central to livelihoods (including for refugees and vulnerable host communities).
- Repurposed support toward efficiency and resilience: ARDI has steered public spending into reimbursable grants for water-saving technologies, strengthened veterinary systems and extension, and rolled out climate-smart training (more than 2,000 farmers trained to date, including refugees). These actions reorient support from recurrent input subsidies to investments and conditional incentives that cut water use per unit of output and improve productivity.
- Export enabling environment: Through ARDI, Jordan has been aligning post-harvest and cold-chain standards and building SPS, traceability and market intelligence capacities—complementary measures that make repurposed investments pay off through higher-value market access.
- Policy reforms in motion: The subsidies/support assessment and strategy to rationalize incentives toward water-efficient crops formalize the repurposing pathway within government policy processes, anchored in the JAP and supported by performance-linked disbursements.

What is expected to be delivered?

- [Resource efficiency and climate gains](#): More efficient irrigation and rainwater harvesting, better input use, and climate-smart practices will reduce pressure on groundwater, cut emissions intensity, and strengthen drought resilience.

- Competitiveness and jobs: Improved quality infrastructure (SPS, traceability, market intelligence), logistics standards, and targeted value-chain services will increase export readiness, while skills matching will expand employment opportunities, including for women and refugees.
- Better fiscal targeting: Shifting from broad input subsidies toward targeted transfers, reimbursable grants for water-saving technologies, and public goods raises value-for-money and lowers distortions. The assessment-to-strategy sequence helps lock in this fiscal rebalancing.

Lessons Learned

- Start with the numbers, then sequence reforms: A credible mapping of all agricultural support—including embedded water/energy subsidies—creates a shared evidence base. Sequencing matters: pair early “no-regrets” investments (e.g., extension, rainwater harvesting, SPS, traceability) with time-bound policy steps (e.g. regional subsidy optimization) to build momentum and manage transition risks.
- Link repurposing to market access: Shifting support to water efficiency and climate-smart practices delivers bigger payoffs when coupled with export-enabling measures (post-harvest standards, traceability, market intelligence) that translate farm-gate changes into higher returns.
- Invest in delivery systems, not just policies: Digitalized extension, early warning, veterinary capacity, and transparent grant schemes were essential to move from policy intent to adoption at farm level—especially where previous support had been delivered as untargeted subsidies.
- Build coalitions and protect livelihoods: Political economy analysis and inclusive dialogue help identify feasible options (e.g., regional crop-water optimization, conditional support for water-saving technologies) and create space to compensate or support vulnerable groups through targeted transfers and jobs programs during the transition.
- Leverage results-based and concessional finance: The combination of PforR disbursement-linked results and Global Concessional Financing Facility (GCFF)/partners’ concessional help unlocked scale for climate-resilient investments and skills programs aligned with repurposing goals.

Morocco: Repurposing Irrigation Subsidies to Address Water Scarcity and Boost Market Integration

Summary

Morocco faced a fundamental economic imperative to transition from a heavily subsidized and protected agri-food support system to a more efficient and market-oriented model while addressing accelerating water scarcity. Repurposing existing support has helped raise productivity and incomes, modernized markets, and improved resource efficiency, especially in water.

Context

[Morocco's agricultural sector serves as a cornerstone of the national economy](#), contributing 16 percent of GDP and employing 36 percent of the workforce in 2023. The sector faces substantial challenges from climate vulnerability, particularly accelerating water scarcity, which could reduce GDP by up to 6.5 percent by 2050 and result in out-migration of up to 1.9 million Moroccans by 2050. Transitioning public expenditure patterns to enhance climate resilience and food security outcomes is a priority.

In response, Morocco adopted several strategic reforms through [the Plan Maroc Vert \(PMV; Green Morocco Plan\)](#) from 2008 to 2020 and the Generation Green Strategy (GGS) 2020–2030, which aim to modernize agriculture into an engine of growth, promote climate resilience, and engage youth. Beginning with the PMV, the government reframed public support to focus less on distortive transfers and more on public goods, value chain integration, and crowding-in private investment.

Facing accelerating water scarcity, the government repurposed financial support toward public goods and incentives for efficient irrigation and higher value crops, including localized irrigation (drip/micro-sprinkler) subsidized up to 80 percent in targeted cases.

Morocco introduced new policy actions to repurpose incentives: (a) removing subsidies for modern irrigation equipment on high water-use crops like citrus, avocado, and watermelon to curb agricultural water withdrawals, and (b) expanding subsidy eligibility to supplementary irrigation for cereals, aiming to boost domestic cereal production and reduce reliance on imports.

Approach

Morocco's strategy for repurposing agricultural support involved shifting subsidy instruments towards public goods and green technology under the PMV and GGS. Support was redirected to subsidize climate-smart agriculture (CSA, e.g., improved seeds, equipment for no-tillage, extension services, insurance etc.), value-chain investments aligned with commercial high-value agriculture, aggregation models, food safety, as well as youth and smallholder inclusion. This approach linked budgetary support to CSA technology and organizational change with greater market integration.

Key technical reforms were reinforced through policy and institutional changes backed by a two World Bank operation development policy loans (DPL) series, including modernizing wholesale markets, adopting risk-based food safety standards, and building a pluralistic agricultural advisory system through the creation of the National Office for Agricultural Counseling's (ONCA). This repurposed public support from direct subsidies toward regulatory upgrading, public-private management models, and contestable service delivery.

Building on this foundation, the [Large Scale Irrigation Modernization Project](#) (2015) and the [Strengthening Agricultural Value Chains Payment for Results](#) (PforR) (2018) were significant initiatives that contributed to doubling agricultural GDP, mobilizing private sector financing, and improving water productivity. These projects also built the capacity of key agencies including the National Office for Food Security (ONSSA) and strengthening interprofessional organizations. [The Green Generation PforR](#) deepened market and service reforms focused on enabling infrastructure, regulatory frameworks, and services.

World Bank analysis through the [Country Climate and Development Report \(CCDR\)](#) and [Maghreb PASA \(Programmatic Advisory Services and Analytics\) Synthesis Policy Note](#) provided critical analysis and policy recommendations to support Morocco to accelerate adaptation to climate change and establish food security, while addressing high levels of food waste and losses. These have helped inform policy incentive reconfiguration and subsidy design.

From these, the [Resilient and Sustainable Water in Agriculture Project](#) (2022) advanced infrastructure modernization with advisory services for climate adaptation. The recent [Transforming Agri-food Systems in Morocco PforR](#) (2024) furthers climate resilience and food safety through conservation agriculture, agricultural insurance reform, and improved food safety standards.

Experiences

- Technology and resource use shift was catalyzed by re-purposed agricultural support incentives. Since 2008, drip irrigation has expanded rapidly, covering more than 585,000 hectares in 2018. Field trials showed a doubling of agricultural water productivity, though large-scale perimeters faced challenges due to upfront network investments (World Bank 2015).
- Market and service reforms brought institutional changes. The DPL series helped launch new management models for wholesale markets (e.g., Berkane), updated sanitary regulations, competitive financing of agricultural research, and served as the legal basis for pluralistic advisory services. These steps improved food safety practices and market efficiency.
- The GGS continued to deepen market and service reforms, though progress varied. Youth support systems expanded, but access to finance remained a bottleneck. Wholesale market redevelopment progressed but required accelerated works to meet timelines.
- In September 2022, new incentives were introduced for young farmers and agricultural entrepreneurs (18 to 40 years old) in the form of: (a) subsidies to cover costs for rental of land for a period of 3 to 5 years (between 60 percent and 70 percent of rental charges); (b) flat-rate subsidies for the installation of young farmers on collective lands; and (c) higher level of subsidies (“bonus”) on already existing subsidies (positive discrimination in favor of young rural people on collective land, usually a 10 to 15 percent “bonus”).

Achieved and Expected Results

- Agricultural GDP roughly doubled in real terms between 2008 and 2021, with a 45 percent production increase, 77,000 new permanent jobs, and sustained export diversification in fruits and vegetables, driven by shifts toward irrigated, high-value horticulture.
- Modernizing agricultural support incentives attracted private sector investment in downstream segments of the food value chain. Through [the Strengthening Agricultural Value Chains PforR](#), Morocco attracted over \$250 million—a 1:5 private capital leverage ratio.

- Ongoing market modernization under the GGS aims to lower marketing costs, improve price transmission, and raise farmer income via better linkages to domestic and export buyers.
- Shifting resources to competitive research funding and to ONCA/private advisory networks is expected to raise the adoption of good practices (including climate-smart agronomy and resource efficiency) and improve the return on public spending.
- Coupling on-farm efficiency incentives with basin-level instruments aims to convert technical efficiency into allocative efficiency, leading to actual water savings and resilience, and mitigate over-abstraction risks while preserving high-value irrigated production
- Repurposing support toward youth entrepreneurship services and access to incentives/funding targets for greater inclusion and job creation in rural areas.

Lessons Learned

- Coherent policy package: Morocco's experience shows that reorienting budget support toward green technology and public goods delivers stronger outcomes when combined with market governance reforms, pluralistic advisory systems, and supportive water policies. Without basin-level allocation and enforcement, efficiency gains can lead to higher net water consumption, so agricultural repurposing must be synchronized with water pricing, allocation, and reuse to lock in savings.
- Institutions and implementation sequencing: Where prior network investments were needed (e.g., large perimeters) or multiagency urban assets were involved (wholesale markets), results required longer lead times and clear governance/management models. Early legal and institutional groundwork, plus dedicated execution support, help translate policy shifts into services and infrastructure that farmers experience on the ground.
- Adaptive repurposing: With deepening water stress and climate extremes, Morocco's midterm review of the GGS was used to adjust objectives and instruments, for example, the increased prioritization of the rainfed sector and adjustment of support rates for irrigation to reflect growing water scarcity. Continuous evidence-based adjustment sustains the credibility and effectiveness of repurposing over time.
- Finance and inclusion: Youth entrepreneurship programs need parallel solutions for access to finance (risk-sharing, tailored financial products) to convert advisory and incubation support into enterprise creation at scale. Identifying such bottlenecks early and mobilizing financial sector instruments can amplify the inclusion dividend of repurposed support.

Pakistan: Phasing Out Wheat Procurement to Enable Market-Led Agricultural Transformation

Summary

Pakistan, with support from the World Bank, is committed to phasing out existing distortive subsidies and repurpose them towards investments that improve access to transformative, climate-smart, on-farm investment and value-chain improvement.

Context

Agriculture remains a cornerstone of Pakistan's economy, contributing 23 percent to gross domestic product (GDP) and a quarter of export earnings. Over 61 percent of the rural population depends on the sector. Wheat grown on at least 9 million hectares—40 percent of cultivated land—provides 40 percent of the nation's dietary energy and protein intake.

Wheat self-sufficiency has been a key policy objective in Pakistan and has motivated a range of public support programs, including a costly public procurement program offering guaranteed prices. While the government shifted away from a monopoly on wheat procurement in 1959, it remains an important player. In 2023, the federal and provincial governments bought 20 percent of total wheat produced, half of all marketed wheat. While the policy has evolved over the years, its objectives remain the same: (a) achieve self-sufficiency, (b) enhance poor farmers' income, (c) ensure availability of affordable wheat flour to urban consumers; and (d) maintain price stability.

Pakistan's wheat market interventions have drawn significant attention due to their large fiscal cost and persistently large fiscal deficits. For instance, the World Bank's [2017 Pakistan Development Update](#) highlighted that the Government of Punjab operates the largest wheat procurement system in Pakistan, which has substantial direct and indirect costs. Pakistan's [Country Climate and Development Report](#) (2022) showed that cumulative outstanding debt from wheat commodity operations is at nearly US\$4.5 billion and that the system continues to incur substantial losses through poor storage, which costs Punjab an estimated \$1.6 billion annually.

While this policy has contributed to increasing production, [agricultural growth has progressively declined from 4.5 percent to 2.5 percent annually over the past 50 years](#). Growth has been largely driven by input intensification rather than technical change or productivity growth. Pakistan led the subcontinent in total factor productivity (TFP) growth during the 1980s, but TFP growth has become an increasingly small fraction of output growth. The sector is currently marred by poor crop mix, resource use inefficiency, and degradation of natural resources.

Lackluster growth reflects many challenges, including poor choice of public policies and support instruments. The wheat procurement system has proven financially unsustainable, crowding out key investments in infrastructure and research that are crucial for boosting productivity. For example, the provincial governments of Punjab and Sindh together spent over \$1.7 billion between 2020 and 2024 for the procurement of wheat at subsidized rates. This amount was on average twice the public investment by these provincial governments in the overall agriculture sector.

In addition to crowding out public investments that can improve agricultural productivity, the wheat procurement regime distorted incentives for farmers, discouraging diversification into more nutritious crops, and encouraging overuse of inputs leading to technical inefficiency. The program also failed to achieve its objectives of supporting poor farmers and urban consumers due to poor targeting ([Ejaz and Ahmad 2017](#)).

Approach

The World Bank has been providing technical assistance to modernize the wheat value chain in Pakistan. The policy dialogue in Punjab, the largest wheat producing province, was underpinned by a series of World Bank technical notes on the fiscal cost and commodity debt, inefficiencies and distortions, and inequities of the existing wheat procurement system.

This dialogue led to the formulation of the [Punjab Strengthening Markets for Agriculture and Rural Transformation Program for Results](#) (SMART; 2017-2023) that included policy measures for phasing out public wheat procurement, reducing strategic wheat reserves, and removing distortions to output markets. Effective implementation was, however, stopped due to policy reversal following a change in the provincial government.

Meanwhile, in Sindh, another major wheat-producing province, [the Sindh Water and Agriculture Transformation](#) (SWAT) project (2022) is supporting the development of a wheat market monitoring system to increase transparency and allow more flexibility for market forces to determine the price of wheat. The aim is to reduce the wheat procurement subsidies and allow for resources to be redirected towards more productive, “smart” agricultural subsidies that promote high-value, water-efficient crops.

Experiences and Emerging Results

- In FY2024-2025, Pakistan’s federal and provincial governments abolished the wheat procurement policy to address unsustainable public debt and move towards agricultural sector deregulation.
- The 2025-2026, a policy shift delegated wheat procurement and supply chain management responsibilities to provincial governments, increasing opportunities for private sector participation. Large farmer groups voiced criticism, and public concerns were raised about the risk of decreased production and rising prices, with fears of potential policy reversals, especially among private entities.
- The World Bank remains actively involved in policy dialogue to support Pakistan’s transition to a deregulated wheat market. Collaboration with the Federal Ministry of National Food Security and Research is underway to develop a wheat sector modernization roadmap focused on
 - Sustainably boosting productivity by redirecting public investment towards agricultural research and development.
 - Ensuring market stability through public-private partnerships for grain storage (in collaboration with IFC) and transparent market information systems.
 - Managing residual food security risks for structurally wheat-deficient provinces via limited strategic grain reserves.

The ongoing dialogue leverages a [2025 World Bank global report](#) outlining principles for designing and managing strategic grain reserves, emphasizing their use during severe supply shocks and complementing broader food security strategies such as trade, private sector growth, and safety net programs.

A new investment operation is being prepared to support the implementation of the wheat modernization roadmap, particularly within Punjab Province.

Lessons Learned

The following lessons emerged from the ongoing Pakistan experience:

- Policy reform is a gradual process and often requires the alignment of multiple factors, particularly when there are significant political economy implications. It is essential to maintain ongoing engagement with government and to conduct due diligence in advance. This approach ensures that technical tools and support are readily available when the government demonstrates readiness for reform.
- Analytical pieces and policy notes are critical for engaging and guiding policy makers, but should be accompanied by broader stakeholder engagement, including farmer groups, private sector representatives, and media.
- Performance analysis with peer country comparisons is critical to help convince decision makers that the existing system is under-performing.
- Recognizing and mitigating the risks associated with reforms, and developing a post-reform agenda, helps convince decision makers. The policy dialogue with government officials and public institutions should be explicit about the importance of phasing out government's market interventions and, equally, the need to redirect public spending towards delivering strategic investments and core public goods while ensuring transparent and fair regulations.

South Asia

Bangladesh: Identifying Repurposing Options for Fertilizer Subsidies to Promote Diversification and Climate Resilience

Summary

Bangladesh has made remarkable progress in agricultural growth and food security since the 1980s. However, recently agricultural growth has slowed, with agricultural support creating a significant fiscal burden, contributing to environmental degradation, and heavily focused on rice.

Bangladesh's policy actions are an example of a strategic, gradual reform approach to repurposing agricultural support. Reforms that are informed by analysis and supported by pilot interventions are critical in supporting policy change, managing any political economy risks, and repurposing inefficient subsidies for a more efficient, modern, and sustainable agrifood system.

Context

Bangladesh has achieved significant agricultural growth and food security since the mid-1990s, with an average annual growth rate of 4 percent from 1996 to 2022. Domestic food production has almost doubled over the last two decades, helping to achieve rice self-sufficiency and ensuring food security for 170 million people—two paramount objectives of past agriculture strategies. Notably, this agricultural progress significantly contributed to the reduction of rural poverty.

Much of the success in agriculture can be attributed to deliberate policy reforms initiated since the 1980s, coupled with strategic investments in research and infrastructure. However, current agricultural policies focus on cereals and are insufficient to meet the sector priorities of increasing productivity, crop diversification, improving nutrition, and sustainability.

Fertilizer subsidies are a key policy instrument in Bangladesh, with the government spending over \$2.3 billion in 2024–2025—over two-thirds of the Agriculture Ministry's budget—mainly benefitting rice farmers. The subsidies are driving excessive fertilizer use, raising environmental, health and productivity risks, and contributing to soil degradation, increased greenhouse gas emissions, and declining ground water levels. The Ministry of Food also supports rice producers with price guarantees.

The country is now focusing on repurposing agricultural support to promote sustainability, diversification, and climate resilience through gradual reforms supported by analytical studies and pilot programs.

Approach

Bangladesh's agricultural policy reforms are underpinned by analytical work of the World Bank and other development partners, such as the 2016 [Dynamics of Rural Growth in Bangladesh: Sustaining Poverty Reduction](#) and the 2019 [the Climate-Smart Agriculture Investment Plan](#) for Bangladesh. These helped inform the strategic priorities, concrete investment opportunities and policy actions to unleash resilient and sustainable growth in the agriculture sector.

In 2021, the World Bank produced a comprehensive sector review, in partnership with Bangladesh's Ministry of Agriculture, [Promoting Agrifood Sector Transformation in](#)

[Bangladesh: Policy and Investment Priorities](#), and a review of the rural economy [Bangladesh Rural Income Diagnostic](#). These reports outlined the policy and investment priorities in the agriculture sector for resilient and inclusive food system transformation.

In 2023, the World Bank approved the \$500 million [Program on Agricultural and Rural Transformation for Nutrition, Entrepreneurship, and Resilience \(PARTNER\)](#), which supports the sector to shift from rice and fertilizer subsidies to policies and investments that promote diversification, food safety, nutrition, value chain development, entrepreneurship, and climate resilience.

A pivotal component of PARTNER is the introduction of an e-voucher pilot as an alternative to general subsidies that aims to inform the gradual repurposing of the fertilizer subsidy program. By offering multiple direct support options for farmers, the pilot is intended to generate valuable insights into diversification, productivity, efficiency, resilience, and farmers' profitability under various subsidy alternatives.

To complement this initiative, the World Bank [2030 Food System Multi-Donor Trust Fund](#) (FS2030) is supporting an agriculture public expenditure review, which is currently being finalized, including a deep dive into the country's fertilizer program. Early results have been used to design the [Technical Assistance for Repurposing of Agricultural Public Support Towards a Sustainable Food System Transformation in Bangladesh](#) to identify pathways for incentivizing farmers to optimize input usage, generate evidence, and inform future strategies for repurposing input subsidies that build climate-smart agriculture in Bangladesh.

Experiences and Emerging Results

The ultimate outcomes of the recent policy shifts and investments are yet to be realized. However, some specific emerging and expected results include:

- An anticipated increase of 50 percent in public investments for agricultural research and development over the next 5 years.
- Increased investment in diversification leading to more stable agricultural growth bolstered by a diverse range of subsectors, versus dependence on the rice subsector.
- Increased adoption of climate-smart practices, such as precision agriculture, Good Agricultural Practices (GAPs), and improved and efficient irrigation technologies.
- Creation of a digital farm registry for farmers in pilot areas and a digital service delivery platform for implementing the e-voucher program.
- Targeted input subsidies, crop diversification support, training in GAP, and improved and efficient irrigation technologies for 500,000 farmers, 200,000 of whom are female, through PARTNER's e-voucher pilot.
- Enhanced evidence-based policymaking by the Ministry of Agriculture, utilizing better information and digital tools to monitor spending and redirect public support toward key sector priorities.

The e-voucher pilot evaluation will assess outcomes such as input efficiency, diversification, productivity, resilience, and farmer profitability across pilot interventions. The findings will help redirect the country's \$2.3 billion input subsidy program toward a more efficient and sustainable public support system for the agrifood sector.

Lessons Learned

- A gradual reform approach should be considered when pursuing repurposing of agricultural support programs due to significant political economy factors.
- Bangladeshi policymakers are more open to reform advice from local technical experts, making consensus-building among these experts on desired policy outcomes essential. This process relies on continuous dialogue and the implementation of pilot programs to test and refine proposed reforms.
- Aligning policy reform with donor investment can raise public awareness of reform benefits. Strong technical assistance is essential for effective design, implementation, and evaluation of these changes.

Sub-Saharan Africa

Ghana: Digitizing Input Delivery to Enable Market-Driven and Climate-Smart Agriculture

Summary

Ghana's policy reforms demonstrate that effective repurposing requires integrated policy packages, well-sequenced institutional changes, adaptive management to address evolving constraints, and complementary financial instruments to enhance inclusion and sustainability. More targeted, market-driven, and climate-smart investments can improve fiscal efficiency and deliver greater value for money, ultimately driving gains in productivity, resilience, and environmental outcomes.

Context

Ghana's agricultural sector remains pivotal to the country's economic development, accounting for 21 percent of gross domestic product (GDP) and employing 41 percent of the workforce. Despite robust growth averaging 4.5 percent annually from 2012 to 2021, the sector faces productivity challenges stemming from various constraints including limited modern input use, weak extension services, climate vulnerability, and inadequate rural infrastructure for irrigation, transport and storage.¹⁸

Ghana's agricultural budget has increasingly been absorbed by current expenditures—particularly input subsidies—with relatively little allocated to critical capital investments and public goods needed for sustainable transformation. This has undermined modernization of the sector as well as long-term productivity and essential investments in infrastructure, research, and extension.

To help boost sector performance, Ghana has implemented several strategic agricultural policy shifts. In 2017, the government launched [Planting for Food and Jobs \(PFJ\)](#) using subsidies to catalyze food security and job creation. This transitioned to [PFJ 2.0](#) in 2023, with the intention of shifting from subsidies to an input credit system. In 2025, the new government launched the [Feed Ghana Program](#) to address the country's \$2 billion annual food import bill.

A central policy instrument is the [Ghana Agriculture and Agribusiness Platform \(GhAAP\)](#), an innovative digital solution that streamlines the distribution of free and subsidized agriculture inputs, ensuring faster and more effective delivery, even during emergencies. It also integrates climate services, extension, pest management, and finance linkages to reduce costs, improve targeting and traceability of inputs and public funds, and deliver site-specific advisory for low-emission, climate-smart practices. Initial modules were deployed in 2024.

Approach

The Government of Ghana is transitioning from generalized subsidies to market-oriented input credit systems, enhanced advisory services, value chain support, and digital platforms to improve targeting and efficiency.

Ghana's repurposing pathway is grounded in World Bank analytics, such as [Agriculture Public Expenditure Reviews \(AgPER\)](#), [Ghana Public Finance Review](#), [Country Climate and](#)

¹⁸Average yields achieved only 54 percent of their potential across major crops. Some crops, like cashew and sweet potato, reached only 16 percent of potential yields.

[Development Reports \(CCDRs\)](#). Recommendations include raising capital expenditures, digitizing administration and farmer registries, and sequencing reforms with short-term protective measures for vulnerable groups.

The technical analysis concluded that the most efficient way to support the repurposing agenda is to finance the enabling environment—particularly digitization—so that the government can sustain GhAAP using budgetary savings from the policy shift. As Feed Ghana (then PFJ 2.0) leverages GhAAP, reduced public spending on subsidies and improved targeting and traceability are anticipated, helping redirect resources to capital and public goods while maintaining food security.

A World Bank supported grant through the [West Africa Food System Resilience Program](#) is helping reorient public support toward private sector-driven, platform-based input support to increase farmer choice, crowd in private investment, and improve expenditure efficiency.

Experiences and Expected Results

- [A game-changer for input distribution in Ghana](#): Ghana's recent experience shows how e-vouchers and digital registries can improve targeting and transparency in fertilizer and seed delivery while crowding in private agro-dealer networks. This aligns with global evidence that digital tools lower search, monitoring, and logistics costs and can raise farm productivity when paired with inclusive design and strong data governance.
- Implementation to date: Feed Ghana (then PFJ 2.0) rollout is underway, with GhAAP modules for climate, extension, and pest/disease services designed to tailor information and improve decision-making for farmers, and to inform area-based planning by policymakers. The platform is expected to create efficiency gains by reducing coordination costs across government systems, ensuring timely, quality inputs and services, and enabling traceability of products and financial flows. These are critical capabilities to support the transition from subsidies to input-credits and to reallocate fiscal space toward public goods.
- Productivity, resilience, and diversification: By coupling farmer registries with climate and advisory services, the reforms aim to raise input-use efficiency, support production diversification beyond staples (for example, strategic focus on tomatoes), and scale adoption of CSA practices. This is consistent with Ghana's climate and nutrition objectives and with regional resilience goals under the Food Systems Resilience Program.
- Broader transformation: Country diagnostics project that repurpose large subsidy outlays toward capital investment, research and development (R&D), extension, irrigation, and digital public goods would improve productivity and resilience and strengthen the value-for-money of each Ghana cedi spent. Feed Ghana is an opportunity to operationalize that shift, provided reforms are sequenced and paired with temporary protections for the most vulnerable.

Lessons Learned

- Repurposing is more than removal, it is redesign: Successful reform sequences replace broad, distortive transfers with targeted, market-compatible instruments and public goods that raise long-term returns. Digital registries and platforms are foundational to better targeting, conditionality, and monitoring.

- Move gradually and protect the vulnerable: Phasing out subsidies should be gradual and accompanied by interim measures (for example, targeted support or input credits) to avoid shocks to poor farmers and consumers while new systems take root.
- Align with CSA and value-chain needs: Repurposed funds should prioritize CSA practices, R&D, extension, infrastructure, and market services that unlock productivity and resilience across value chains, rather than narrow input provision. Ghana's analytics and CCDD work highlight strong returns from such rebalancing and the risks of subsidy crowd-out.
- Manage political economy with evidence and transparency: Diagnostics that quantify who benefits from current support and the gains from alternatives, coupled with traceability of funds through digital systems, help build credibility and sustain reform coalitions.
- Invest in the enabling environment: The Ghana experience underscores that the most durable efficiency gains come from systems—farmer registries, integrated data and advisory platforms, and institutional capacity—that allow governments to steer support dynamically toward high-return public goods.

Malawi: Piloting Soil Health-Based Input Support to Improve Productivity and Targeting

Summary

Achieving sustained agricultural growth and rural transformation in Malawi requires a systemic shift in the way the agriculture and food system are supported. Policy actions suggest that an alternate model which is targeted, tailored to the needs of farmers, and based on their soil characteristics are more efficient and can deliver better value for money.

Context

Agriculture plays a crucial role in Malawi's economy, contributing 23 percent of GDP, 76 percent of employment, and over 60 percent of export earnings. The sector is also critical for food and nutrition security. However, the sector faces challenges from low productivity, monocropping of maize, land degradation, climate vulnerability, and low levels of commercialization.

Malawi's declining macroeconomic situation has further compounded these issues. Increasing debt levels and a shrinking fiscal space are putting pressure on budget allocations for agriculture. To address these challenges, Malawi needs to provide the correct incentives and improve provision of public goods and services—to improve productivity, diversify crops, and promote sustainable land management practices.

Malawi's agricultural spending is heavily skewed towards input subsidies. The government's core program is the Agricultural Input Program (AIP), which provides subsidized maize seeds and fertilizers. It accounts for majority of the country's agricultural expenditure, crowding out spending on essential public goods and services such as research and extension, and skills and infrastructure development.

AIP has had a limited impact on productivity growth, evidenced by stagnant and low maize yields. It also incentivizes farmers to remain engaged in subsistence maize farming, which negatively impacts agricultural diversification and the commercialization, resilience, and

productivity of the sector. Evaluations have shown that the subsidy instrument is inefficient and a poor use of scarce public resources, with a benefit-cost ratio below one.

The World Bank's review of [Malawi's public policies and support programs](#) showed a lack of coherence in objectives and policies, and identified three reform priorities:

1. Improve AIP targeting using digital farm registries to help downsize the program and address issues of crowding out the private sector. Additional design improvements include diversifying fertilizer types based on soil heterogeneity, allowing flexible so farmers can choose their own input bundles, and enhancing access to complementary inputs such as seeds and extension to improve the efficacy of fertilizer use and improve soil health management.
2. Use freed-up AIP resources to invest in high-return public goods and services, such as infrastructure, research, climate risk management (e.g. a national early warning system) and the promotion of climate-smart technologies and practices.
3. Strengthen monitoring and evaluation (M&E) of agricultural support: Build capacity for M&E to ensure evidence-based use of public resources, more systematically carry out rigorous assessments of agrifood support programs, and to anchor uses of public resources in the evidence they generate.

Approach

The Ministry of Agriculture (MoA) has embraced reforming AIP by reducing its size and changing the nature of the subsidy. The government has changed strategies, targeting only those farmers who can productively use the inputs and reducing the level of subsidy received per household. The poorest beneficiaries were transitioned to cash transfer and public works programs. The program is also shifting towards private sector-led procurement and distribution.

These reforms are supported by the World Bank through a series of programs including the Malawi Agricultural Support and Fiscal Management Development Policy Operations (DPO), [Malawi Agricultural Commercialization Project](#), and, most recently, [Malawi First Growth and Resilience](#). Using the National Agriculture Management Information System, targeting was improved, reducing the number of AIP beneficiaries from 3.7 million in 2021-2022, to 1.5 million in 2023-2024, to 1.0 million in the 2024-2025 growing season.

The government, with World Bank support, is making investments to strengthen and scale digital infrastructure, research, and irrigation under the [Food System Resilience Program](#). A pilot funded by the [Food Systems 2030 Multi-Donor Trust Fund](#) (FS2030) is being carried out to further improve the impact and design of AIP, including testing alternative AIP models and soil amendment packages to assess their impact on soil health, productivity, and livelihoods.

The Food Systems Resilience Program includes two e-voucher schemes allowing flexible input choices, with expanded subsidies to include legumes seeds, lime, and organo-mineral fertilizers. Input subsidies have been bundled with extension and advisory services that include soil test-based fertilizer recommendations and application of soil and water conservation practices. Farmers must adopt at least one soil and water conservation practice.

Progress and Emerging Results

The first round of the soil health pilot was implemented in 2024–2025 season, covering six of the eight agricultural development districts. Key results were:

- 23,976 farmers (43 percent women) were supported with farm inputs and soil and water improvement practices, representing 99 percent of the targeted 24,000.
- 144 extension workers (89 men, 55 women) and 23,853 farmers, of which 12,595 were women (52.8 percent), were trained in soil health management.
- Soil samples were collected from 3,000 farmers to provide more tailored recommendations on fertilizer use and soil management practices.
- 98 percent of farmers utilized the input they received under the two new schemes.
- More than 80 percent of beneficiaries applied soil and water conservation practices.
- Farmers experienced increased maize yields.

The second round of the pilot will be implemented in the 2025–2026 season, building on the experience and lessons learned from the first round of implementation.

Lessons Learned

- It is important to pilot and utilize a phased scale-up approach for new programs to ensure early management of any implementation challenges and apply new learning. For instance, there were technological challenges associated with implementing an e-voucher system and the team had to revert to physical lists.
- Training of farmers, agro-dealers, and extension officers is critical for the program to work as designed.
- Implementing flexible e-vouchers comes with its own set of challenges and requires more up-front planning to determine the demand for various inputs to ensure their availability. This led to some mismatches in the demand-supply of certain inputs.
- Households move in and out of farming. As such, mechanisms to validate and update data based on existing farm registries is needed. While the farm registries significantly improved targeting, there were cases where the individuals were not farming during that season.
- Soil testing is important and needs to be scaled up for correct fertilizer recommendations. Results from soil samples showed that the issue of soil acidity was not as prevalent as anticipated and fertilizer recommendations had to be adjusted.

Sierra Leone: Bundling Inputs and Advisory Services to Boost Productivity and Market Linkages

Summary

Achieving sustained agricultural growth and rural transformation in Sierra Leone requires a systemic shift in the way agriculture and the food system are supported. Policy actions that shift the focus to repurpose agriculture support from broad subsidies to targeted,

productivity-enhancing public goods and private sector engagement better support food security, economic growth, and resilience.

Context

Sierra Leone's agricultural sector serves as the backbone of its economy, contributing 59 percent to gross domestic product (GDP) and employing 62 percent of the workforce (International Fund for Agricultural Development [IFAD] 2024). There is vast agricultural potential, with large areas of fertile land remaining uncultivated¹⁹ and one of the world's richest fishing grounds. The sector faces challenges from low productivity, high levels of poverty and food insecurity, climate vulnerability, and limited use of technology. Despite its potential, [80 percent of food is imported](#), and many farmers lack access to financial services and modern inputs.

Historically, agricultural spending has been low, volatile, and skewed towards current expenditures. Spending has had limited impact on productivity, and large, loosely targeted input subsidies and ad hoc transfers crowd out public goods such as research, extension, irrigation, and market infrastructure ([World Bank 2021](#)). Analyses underscored the subsidy-heavy approach was costly and inefficient, recommending boosting productivity, resilience, market access, and private participation as a better route to improved food security and incomes ([World Bank 2023, 2024](#)).

To address these challenges, Sierra Leone has implemented several strategic frameworks including the [National Sustainable Agricultural Development Plan](#), and the Ministry of Agriculture, Forestry, and Food Security's "[MAF Policy Shift](#)," which aim to boost productivity, reduce import dependence, engage the private sector, and promote inclusive and resilient growth. A key policy imperative is to raise rice self-sufficiency, the main staple food crop.

Key policy actions include private management of mechanization services, an e-voucher scheme for targeted input subsidies, training for farm input dealers and farmers, digital advisory services, and agricultural finance initiatives. These efforts are reinforced by new seed and fertilizer regulatory agencies, establishing a framework for improved input quality and distribution.

In 2023, the government launched [Feed Salone](#), its flagship agricultural transformation program. The program aims to boost food production, reduce import dependence, increase exports, create jobs, alleviate hunger and build climate resilience. These policy objectives are delivered through six pillars: (1) mechanization and irrigation; (2) seeds and inputs systems; (3) aggregation, processing and market linkages; (4) agricultural finance; (5) ag-tech and climate-smart agriculture; and (6) empowering women and youth.

Approach

Guided by World Bank [Agriculture Public Expenditure Review](#), Sierra Leone's policy actions have moved away from untargeted input support toward research and extension, irrigation, data systems, and local infrastructure. The country has also adopted digital delivery mechanisms, such as e-vouchers and farm/beneficiary registries, and bundled inputs with advisory services to raise efficiency and reduce leakage.

¹⁹75 percent of an estimated 5.4 million hectares of fertile arable land remains uncultivated, with suitable conditions for rice, cassava, maize, millet, cashew, rubber, ginger, vegetables, fruits, sugarcane, cocoa, coffee, and oil palm cultivation.

In 2022, Sierra Leone received funding through the World Bank's [West Africa Food Systems Resilience Program \(FSRP\)](#) to shift resources toward productivity-enhancing, resilience-building public goods. This included scaling targeted access to climate-resilient seeds and fertilizers via e-vouchers, expanding climate-smart advisory through e-extension, and investing in rehabilitation of inland valley swamps and small-scale irrigation.

Complementary efforts focused on crowding in the private sector and markets by emphasizing value-chain linkages such as off-taker contracts, aggregation, processing, and trade facilitation to convert on-farm gains into income and jobs, aligning with the government's policy shift to enable private inputs, mechanization services, and market infrastructure rather than direct public provisioning (World Bank 2023, 2024).

Experiences and Expected Results

- Early productivity signals: From 2021 to 2024, yields of rice and maize increased by about 150 percent and 136 percent respectively in targeted programs; onion yields rose by 5.5 times, and hen-day egg production increased by over 75 percent. Producer organizations completed 85 market contracts with off-takers—evidence that pairing technology/advisory with market linkage works (World Bank 2024).
- Scaled, targeted support with climate gains: The FSRP additional financing is expected to increase crop yields and areas under improved, resilient production while lowering losses and emissions intensity, consistent with modeled benefits of repurposing toward green technologies.
- Value chain and market efficiency: Complementary investments in connectivity and market infrastructure are designed to reduce post-harvest losses (estimated at 30–40 percent), lower logistics costs, and improve price realization, converting agronomic gains into income.
- Institutional strengthening and delivery systems: The shift is reinforcing the Ministry of Agriculture, Forestry, and Food Security's extension capacity, performance management, and use of data systems, improving the likelihood that public spending translates into outcomes, a key weakness flagged in earlier public expenditure reviews.

Lessons Learned

- Repurposing is a process, not a one-off switch: Moving from subsidies to public goods, targeted transfers, and incentives require sustained policy dialogue, stakeholder engagement, and careful sequencing to protect vulnerable groups while unlocking productivity and environmental gains, as the World Bank toolkit emphasizes.
- Balance political salience and economic efficiency: Rice self-sufficiency remains politically salient; success depends on productivity-led competitiveness in domestic rice alongside openness to imports for stability, as well as diversification into export and nutrient-rich value chains (World Bank 2023).
- Targeting and bundling matter: Digital targeting (e-vouchers/registries) and bundling inputs with advisory, irrigation, and market linkages outperform siloed subsidies. These modalities both improve value-for-money and build resilience to climate shocks.
- Execution and coherence are as important as budget size: Predictable funding, stronger budget execution, and shifting resources from administration to technical

directorates and frontline services are critical to sustain results from repurposed spending (Kiendrebeogo and Mansaray 2021).

- Crowd-in the private sector: Durable efficiency gains come when the government focuses on rules, data, and public goods, enabling private input systems, mechanization, processing, and trade, consistent with the MAF Policy Shift and Feed Salone pillars.

Tanzania: Improving Soil Health Through Targeted Fertilizer Reform and Digital Extension

Summary

The Tanzania government is demonstrating considerable interest in exploring ways to design and improve public investments and incentive mechanisms, and to build the capacity to improve soil health, resilience to weather shocks, and improve performance of its public policies and support programs.

Context

[Agriculture is the backbone of Tanzania's economy and could become its growth engine](#), accounting for 27 percent of gross domestic product (GDP), 30 percent of exports, 65 percent of employment, and 65 percent of inputs to the industrial sector. Agriculture also plays a crucial role in ensuring the country's food and nutrition security. However, the sector faces challenges from stagnant productivity growth, climate change impacts, and natural resource depletion (soil, water).

Improvements in soil health are key to boosting Tanzania's agricultural productivity and resilience. Land degradation and low soil fertility account for an estimated "hidden" cost of 13.7 percent of the country's GDP. Land degradation has been ranked as the top environmental problem for Tanzania for more than 60 years, with soil erosion affecting about 61 percent of the land area. The annual cost of land degradation due to land use and land cover change from 2001 to 2009 was estimated at \$2.3 billion.

Improving soil fertility requires a holistic approach to soil health management, which includes appropriate use of fertilizers complemented by investments in innovation, knowledge dissemination, and climate-smart agriculture (CSA) technologies. Tanzania reintroduced universal fertilizer subsidies in 2022 during the global fertilizer price shock to improve productivity.

However, experiences in Tanzania and neighboring countries show that blanket subsidies are distortive, come at a high fiscal cost, often do not increase in productivity, can decrease soil fertility, and are low value for money. There is a need to improve the design of fertilizer support programs through targeting, involvement of the private sector, and reallocation of resources towards research, extension, and soil information systems focused on sustainable use of fertilizer to achieve productivity growth and improve soil health.

An assessment of [Tanzania's agricultural public policies and support programs](#) was carried out in 2021 to estimate the level and nature of support provided to the sector. The analysis played an important role in informing the World Bank's lending operation in Tanzania. Three reform priorities were identified:

1. Boost the effectiveness and alignment of agricultural expenditures and policies by focusing on programs that promote sustainable use of natural resources (soil, water), encourage good agricultural practices, and are aligned with the climate change adaptation and mitigation policies of the country.
2. Scale up public goods and services to support agricultural productivity growth and resilience by investing in innovation, agricultural research and extension, water-efficient irrigation, and CSA.
3. Refrain from reinstating distortive support programs such as universal fertilizer subsidies to ensure mid- and long-term productivity gains and resilience to shocks.

Approach

The Ministry of Agriculture (MoA), with support from the World Bank, is implementing Tanzania's first [Program-for-Results \(PforR\) project](#) to improve food system resilience by taking a comprehensive approach to addressing critical bottlenecks that hinder the transformation of the agrifood system. The PforR has seven disbursement linked indicators (DLIs) related to three main areas: agricultural service delivery, climate-resilient infrastructure, and fiscal performance in the agricultural sector.

To expand access to extension services, the MoA has prioritized linking the farmer registry with a mobile extension services platform, M-Kilimo. The platform will rollout new service functions such as weather forecasting, rapid identification and monitoring of pests and diseases, and delivery of early warning messages.

To improve the quality of advisory services, the government is launching a soil mapping exercise to develop a national digital soil map. The aim is to use this information to establish a robust, evidence-based approach to soil health management and improve cost-effectiveness of public support programs, particularly related to fertilizers, by providing tailored advice to farmers.

In 2024, Tanzania received additional financing from the [Food Systems 2030 Multi-Donor Trust Fund](#) (FS2030) to support scaling up of the component on soil health. The grant will finance integration of the soil health services into the digital extension platform and pilot options to repurpose the fertilizer subsidy program to improve efficacy of fertilizers and address the challenge of soil acidity.

As part of this pilot, a subsidy will be provided for soil amendment products based on soil tests. For example, farmers with acidic soils will receive subsidy on lime and other fertilizer blends that reduce soil acidity and add organic matter to soils.

Experiences and Expected Results

Soil mapping and farmer outreach are underway, along with efforts to integrate the digital platforms. Over three years from 2024–2025 to 2027–2028, the soil health pilot will test different fertiliser and soil amendment packages, assessing their effectiveness in improving soil health, yields, and cost efficiency. Six districts in three regions have been earmarked for implementation, covering over 20,000 farmers.

Results from the pilot will help the MoA reform the fertilizer subsidy program, strengthen soil health management, boost productivity, and improve the efficiency of public agricultural

spending. The initiative will also guide the government in refining the integrated soil health program before scaling it nationwide.

Lessons Learned

- When considering options for repurposing, it is essential to tailor them to the local country context, development challenges, and national priorities. These options should be developed through a participatory process that engages all stakeholders, including the private sector and farmers' representative, to ensure ownership.
- It is important to provide targeted technical assistance to strengthen institutional capacity and ensure that alternative strategies, as well as their corresponding impact evaluations, are grounded in robust and methodologically sound approaches.

Zambia: Transforming Input Subsidies Through E-Vouchers and Private Sector Engagement

Summary

Zambia's policy reforms illustrate a strategic, phased approach to maximizing the impact of public spending. Analytical studies identified opportunities to repurpose expenditures, guiding the government to align agricultural policies with more sustainable, climate-resilient, private sector driven growth.

Context

Agriculture plays a vital role in Zambia's economy, yet growth has lagged: Agricultural output declined by 1.4 percent annually from 2000 to 2024, well below Sub-Saharan Africa's 4.1 percent average. Smallholder farmers, who produce 85 percent of food crops, contend with small plot sizes, limited crop diversity (mainly maize), poor irrigation, and restricted access to credit, extension services, and infrastructure. These challenges are intensified by climate change.

Agricultural growth has been further hindered by policy distortions and biases in agricultural public expenditures. Zambia implemented two main agricultural policies, [the National Agricultural Policy 2004-2015 \(NAP 2004-2015\)](#) and [the National Agricultural Policy 2012-2030 \(NAP 2012-2030\)](#). However, both failed to achieve significant growth due to market interventions on maize prices, inconsistent trade policies marked by ad hoc trade bans on commodities like maize and soya, unfavorable tax policies, and currency appreciation that reduced export competitiveness.

A large share of agricultural public expenditure (79 percent in 2021) was allocated to fertilizer subsidies through the Farmer Input Support Program (FISP) and the Food Reserve Agency (FRA). This limited investment in critical areas such as research, advisory services, and rural infrastructure, which are essential to unlock agriculture's potential for rural job creation and growth.

Approach

Recent reforms in Zambia's agricultural sector were underpinned by analytical work of the World Bank and other development partners, which emphasized the urgency of repurposing in the agriculture sector to increase efficiency, resilience, inclusivity, and sustainability.

In 2021, the World Bank produced [Zambia's Farmer Input Subsidy Support Program and Recommendations for Re-designing the Program](#) that provided evidence-based recommendations to restructure FISP. The World Bank also produced [the Role of Strategic Grain Reserves in Enhancing Food Security in Zambia and Zimbabwe](#), which outlines recommendations for enhancing emergency food responses and fiscal cost reduction in FRA's management, improving the delivery of emergency assistance, and crowding in the private sector.

These analytical reports informed funding through Development Policy Financing (DPF), Program for Results (PforR) and investment projects (IPF) for agricultural reforms and modernization in Zambia. In 2022, the World Bank approved the \$175 million [Zambia Macroeconomic Stability, Growth and Competitiveness DPF](#), including an agricultural pillar aiming to transform input subsidies.

In 2022, the World Bank also approved a \$300 million [Zambia Growth Opportunities \(ZAMGRO\) PforR](#) that supported the reduction in the FISP subsidy budget, improved targeting of agricultural support, removing agricultural export restrictions, and private sector participation in the management of public food stocks under FRA.

In 2023, a \$125 million [Second Macroeconomic Stability, Growth and Competitiveness DPF](#) was approved with the aim of removing input market distortions by supporting the full migration of FISP to an electronic-based, e-voucher agricultural input support system. The electronic system establishes principles and criteria that promote transparency in beneficiary selection and private sector participation.

In 2023, the World Bank also approved the \$170 million [Agribusiness and Trade Project-II](#), with the objectives of increasing access to markets and finance and promoting firm growth in Zambia's agribusiness sector. Key project interventions included supporting productivity-enhancing investments through credit lines and strengthening regulatory institutions to create an environment conducive to agribusiness and trade.

Experience and Emerging Results

The main result of the reform process has been the successful shift of the FISP from direct support to e-vouchers, which were rolled-out in 74 of 116 districts for the 2024-2025 farming season. The rollout to 100 percent of the districts has been launched for the 2025-2026 farming season.

The final outcomes of recent policy shifts and investments are yet to be realized. Some emerging and expected results are as follows:

- In the 2024-2025 season, the e-voucher system reached 739,22 of 1,024,434 registered farmers, enabling timely input delivery, increased private sector participation, and improved efficiency and effectiveness of subsidy delivery.
- A survey of the 2024-2025 FISP e-voucher program revealed high satisfaction among farmers and agro-dealers, with most participants valuing the flexibility to select inputs and dealers, timely input redemption, and improved crop yields. The majority found the system straightforward to use, reported access to quality inputs, and received clear guidance throughout the process. Additionally, the program contributed to job creation, as many agro-dealers hired new staff to meet increased demand.

- Giving farmers flexibility in input and crop choices and facilitating private agro-dealer involvement aims to promote agricultural diversification, sustainability, and job creation in the agrifood sector.

Lessons Learned

- Timely and relevant analytical work and contextual literature reviews are essential to providing evidence-based and impactful advice to policy makers and getting their buy-in.
- Conducting agricultural public expenditure reviews alongside cross-country comparisons is crucial for garnering support for reforms and strengthening reform proposals.
- Strong technical assistance is crucial for designing, implementing, monitoring, and evaluating policy changes effectively.

Bibliography

- Abdul-Hamid, H., M. Ahmedov, N. Dalvit, M. Ito, De Paiva Dias, I. V. Izvorski, N. Manuilova, M. Melecky, V. Nagaraj, M. Novikova, M. Safarov, E. Trushin, A. Vatan, & S. Zorya. 2021. *Assessing Uzbekistan's Transition: Country Economic Memorandum: Full Report (English)*. World Bank Group: Washington, DC.
<http://documents.worldbank.org/curated/en/862261637233938240>
- Balié, J., N. Minot, H. G. A. Valera. 2021. "Distributional impacts of the rice tariffication policy in the Philippines." *Economic Analysis and Policy*, 69: 289-306.
<https://doi.org/10.1016/j.eap.2020.12.005>
- Department of Climate Change, Energy, The Environment, and Water. 2025. *National Greenhouse Gas Inventory Quarterly Update: March 2025*. The Australian Government.
<https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-gas-inventory-quarterly-update-march-2025>
- Ejaz, N. and M. Ahmad. 2017. *Distortions to Agricultural Incentives in Light of Trade Policy: A Study on Pakistan*. World Bank: Washington, DC.
- Kiendrebeogo, Y, K. Mansaray. 2021. *Sierra Leone Public Expenditure Review 2021: Fiscal Policy for a Sustainable Recovery (English)*. World Bank Group: Washington, DC.
<http://documents.worldbank.org/curated/en/445731623905884390>
- Organization for Economic Co-operation and Development. 2024. *Agricultural Policy Monitoring and Evaluation 2024: Innovation for Sustainable Productivity Growth*. OECD Publishing: Paris, France. <https://doi.org/10.1787/74da57ed-en>
- Paviot, M., H. Peña, M. del Grossi, E. Mora López, M. F. Tejeda, V. Traverso, B. M. Garcia Ferreira, L. Leite. 2025. *Enhancing Brazil's Agriculture Support: Policies for a Competitive, Green, and Inclusive Agrifood Sector*. World Bank: Washington, DC.
<https://hdl.handle.net/10986/43067>
- World Bank. 2015. *Morocco–Large Scale Irrigation Modernization Project*. World Bank Group: Washington, DC. <http://documents.worldbank.org/curated/en/38256146799967905s>
- World Bank. 2022. *Spearheading Vietnam's Green Agricultural Transformation: Moving to Low-Carbon Rice*. World Bank: Washington, DC. <http://hdl.handle.net/10986/3807> (VIET NAM PROFILE)
- World Bank. 2023. *Sierra Leone Economic Update 2023: Enhancing Value Chains to Boost Food Security*. World Bank: Washington, DC. <http://hdl.handle.net/10986/40586>
- World Bank. 2024. *Sierra Leone–Connectivity and Agricultural Market Infrastructure Project (English)*. World Bank Group: Washington, DC.
<http://documents.worldbank.org/curated/en/099050924094535381>
- World Bank Group. 2007. *Philippines: Agriculture public expenditure review (English)*. World Bank: Washington, DC. <http://documents.worldbank.org/curated/en/508941468298444655>
- World Bank Group. 2021. *Köppen-Geiger Climate Classification: Costa Rica: 1991–2020*. Climate Change Knowledge Portal.
<https://climateknowledgeportal.worldbank.org/country/costa-rica>

World Bank Group. 2023. *Brazil Country Climate and Development Report*. CCDR Series. World Bank: Washington, DC. <http://hdl.handle.net/10986/39782>

Zorya, S., M. Gautam, T. Tesfaye, S. Babaev, P. Nazarov. 2021. *Uzbekistan: Second Agricultural Public Expenditure Review*. World Bank: Washington, DC. <https://hdl.handle.net/10986/36561>