WORLD BANK GROUP

KOREA GREEN GROWTH TRUST FUND

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YOUTH INTERNSHIP PROGRAM SECTOR BOOKS



Agriculture

The original draft of this sectoral portfolio book was authored by the second internship cohort (**Junho Jeong, Sohyeon Park, Heeje Hwang**) and later revised and updated by the third (**Seungil Yoo, Woojeong Yang**) cohort.

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Korea Green Growth Trust Fund (KGGTF)

Agriculture Sectoral Book

Introduction

The agriculture sector is a cornerstone of global development, driving food security, economic growth, and rural livelihoods. It provides millions of on-farm jobs and has the potential to generate millions more across value chains, from processing and logistics to retail and services. Growth in agriculture remains two to three times more effective at reducing poverty than growth in other sectors, making it one of the most powerful levers to end extreme poverty and accelerate inclusive growth.

The World Bank Group supports countries to strengthen food systems, create jobs, and reduce poverty, and foster sustainable growth through data, knowledge, financing, and partnerships. Over the last five years, it has financed $22.3 billion in food and agriculture, of which $3.6 billion focused on resilience measures. As of June 2024, the Bank's active portfolio has improved food and nutrition security for 201 million people and aims to reach 327 million people by 2030.

Challenges and Priorities

Despite its importance, agriculture faces mounting challenges. Climate change, land degradation, water scarcity, biodiversity loss, and persistent food insecurity are eroding productivity and resilience. Agriculture plays a critical role in both driving and adapting to climate change, yet it remains highly vulnerable to floods, droughts, and shifting growing seasons. Shocks from conflicts, fragility, extreme weather events, and volatile markets further strain efforts to feed 10 billion people by 2050, while more than 2 billion people already experience moderate or severe food insecurity.

Addressing these challenges requires coordinated action and investment. Priorities include scaling up climate-smart agriculture (CSA) practices, modernizing land and water management, and advancing digital and data-driven solutions at scale. Repurposing farming support toward sustainability, mobilizing private capital, and crowding in investment for markets and agribusinesses will be critical to resilient and inclusive growth. Equally important are expanding rural jobs, agricultural employment and entrepreneurship opportunities for women and youth, improved nutrition, greater resilience, and integrated One Health approaches that connect human, animal, and environmental well-being.

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KGGTF's Role

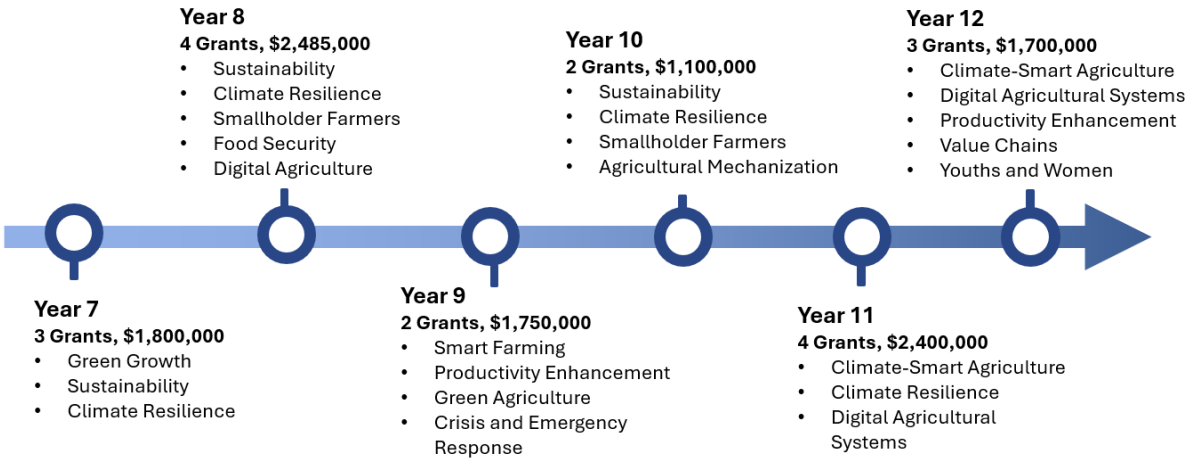
The Korea Green Growth Trust Fund (KGGTF) plays a catalytic role in this transition by connecting global demand for sustainable agriculture with Korea's expertise in innovation, green technology, and policy reform. Through strategic grants, technical assistance, and capacity building, the Trust Fund supports World Bank teams and client countries to design, test, and scale integrated green growth solutions. Its support ensures agriculture remains a viable pathway to prosperity, one that is more productive, resource-efficient, climate-smart, and job-rich.

Why Korea?

Korea's transformation from an aid recipient to a leader in innovation and sustainable development, demonstrates the power of vision, science and policy. In just a few decades, Korea achieved food security, reduced poverty, and modernized its economy through investments in technology, education, and green growth. Today, through the KGGTF, Korea shares these lessons and tools-helping countries to navigate their own paths toward sustainable, inclusive agricultural development.

KGGTF Agricultural Strategic Priorities

KGGTF's agriculture portfolio has evolved significantly. Early grants addressed urgent food security concerns by supporting productivity, irrigation, and traditional farming infrastructure. Today, the focus has shifted toward climate resilience, sustainability, and digital innovation to transform agriculture into a driver of green growth.



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Strategic Priorities

Climate-Smart Agriculture (CSA)
Increase productivity while contributing to climate change adaptation and mitigation by reducing greenhouse gas emissions, and enhancing resilience. Priorities include low-carbon farming practices, efficient water use, and sustainable land management.

Data-Driven Digital Agriculture
Data-driven digital agriculture leverages data, connectivity, and precision technologies to enhance productivity, resilience, and sustainability. Beyond tools, it empowers farmers with access to markets and finance, strengthens transparency across value chains, and helps deliver healthier food while reducing waste and environmental impact.

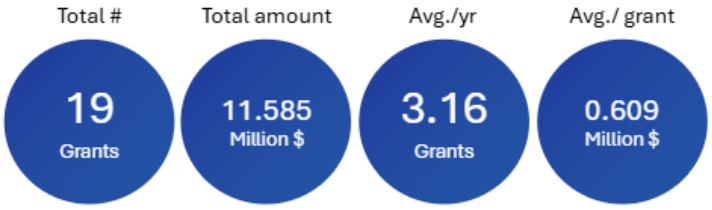
Green Growth and Resource Efficiency
Promote sustainable intensification and production systems that minimize environmental impacts, strengthen circular economy approaches, and improve long-term agricultural viability.

Value Chain Development and Market Access
Support farmers in meeting quality standards, securing certifications, and expanding access to high-value domestic and international markets, while mobilizing private investment and creating jobs along agribusiness value chains.

Together, these themes represent a comprehensive pathway that links productivity and innovation with sustainability and inclusion—unlocking new jobs, stronger markets, and a more resilient agricultural future.

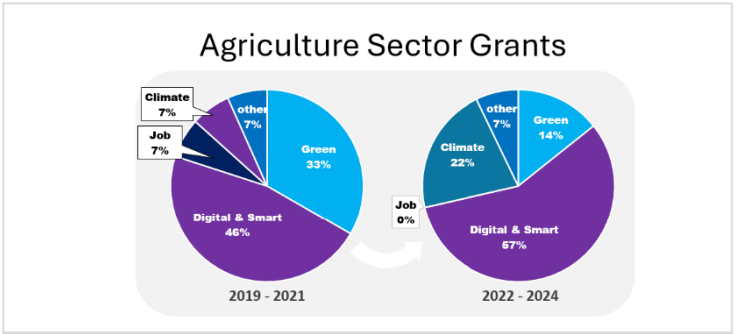
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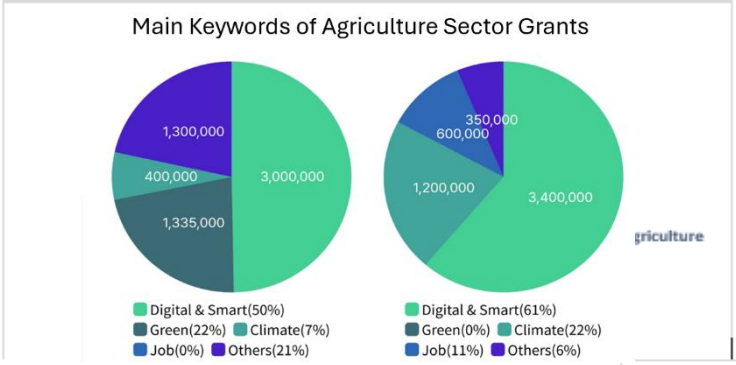
KGGTF Agricultural Portfolio Snapshot

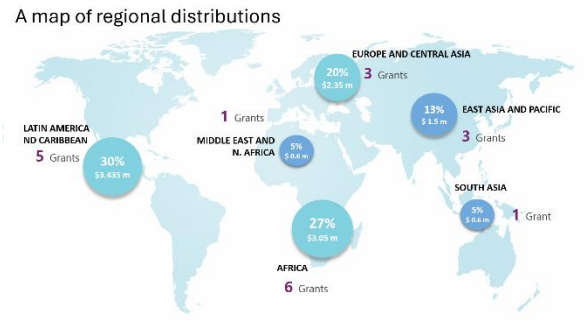


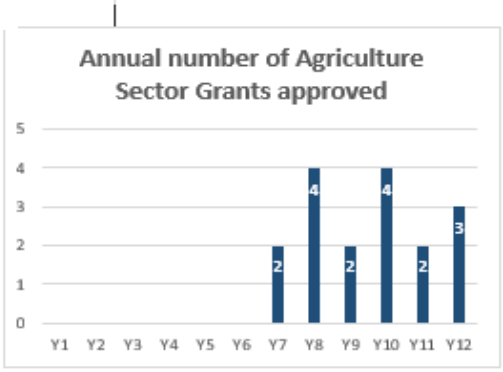
List of Client Countries / Region

Brazil
Cambodia
Egypt
Ghana
Honduras
India
Jamaica
Kazakhstan
Kenya
Kyrgyz Republic
Lao PDR
Liberia
Malawi
Mexico
Mongolia
Myanmar
Sierra Leone









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How KGGTF Supports World Bank Teams

KGGTF's agriculture grants drive sectoral reform and innovation by supporting:

1. **Policy Development**
   Helping countries design green growth–oriented agricultural policies and regulatory frameworks that embed low-carbon, climate-resilient development into national strategies.

Case Study: Building a Green Agri-Food Ecosystem in Uganda (AR 2023)

Agriculture contributes 27% of Uganda's GDP and employs 73% of its workforce, yet it accounts for nearly half of national greenhouse gas emissions. Climate impacts—such as droughts and crop failures—have intensified poverty and food insecurity, highlighting the urgent need to accelerate the adoption of sustainable land management (SLM) and climate-smart agriculture (CSA) practices to strengthen resilience and food security. However, CSA adoption remains limited, estimated at around 30%, due to excessive costs, weak policies, limited access to technology, and inadequate advisory services.

With support from the Korea Green Growth Trust Fund (KGGTF), Uganda is building a resilient, market-oriented agri-food ecosystem that leverages digital technologies and policy innovation to accelerate CSA adoption. The program strengthens agricultural resilience, improves market access, and embeds CSA practices into national development strategies—addressing both post-COVID recovery needs and long-term climate challenges.

Key Activities

- **Weather Station Analysis**: Evaluated the national weather stations to identify gaps and improve early warning systems, with findings published in a national report.
- **Deployment of Sensors**: Installed 75 high-quality weather sensors across five regions to generate localized climate data for irrigation, fertilization, and disaster preparedness.
- **Ecosystem Pilots**: Partnered with Sherpa Space (Korea) to integrate pest detection, optimized irrigation, and automation that increase yields while reducing environmental impact.

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- **Policy and Implementation Support**: Developed the Project Implementation Manual for the Uganda Climate Smart Agricultural Transformation Project (UCSATP), providing a framework for scaling CSA nationwide.
- **Capacity Building & Partnerships**: Facilitated knowledge exchanges with partners including Sherpa Space (Korea), Jabba Engineering (Uganda), and Arable Labs (US) to build institutional capacity and expand farmer access to CSA solutions.

Outcomes & Impact

The US$535,000 KGGTF grant was catalytic—funding research and pilots that directly shaped the **US$350 million UCSATP**, achieving a leverage effect of **US$654 for every US$1 in grant support**.

The project is designed to reach **over 48 million people** through improved early warning systems and expanded access to food security measures. By embedding CSA practices into Uganda's agricultural agenda, it is helping ensure farming becomes more productive, climate-resilient, and inclusive—especially for vulnerable communities.

Quotes

"It has been difficult to determine when to irrigate and how much water to use whenever we do irrigation. Due to the high cost of labour, we were always tempted to flood a lot of water in the trenches so that we irrigate fewer times. With this technology, we can now plan when to irrigate in advance and very soon we shall know how much water takes us for how long before the next irrigation" **Hajji Lumisa Yunus, Pineapple farmer in Kangulumira, Kayunga district.**

"This technology made me to combine my theoretical knowledge about the pests and diseases with practical observations in the garden. By monitoring the pest/disease risk index on the App, I can track the various stages of impact of different pests and diseases. I can now effectively choose which control measure to apply depending on the stage of pest infestation on the garden" **Peter Wandera, Agricultural Extension Officer for Kangulumira subcounty, Kayunga district.**

"It is amazing how a period of 4 weeks can affect coffee productivity. Relying on visual signs of water stress on the coffee plant to begin irrigation caused abortion of the coffee flowers and the quality of bean size on the control side has been significantly lower than the treatment side where we used soil moisture levels to begin irrigation" **Philemon Natugumya, Jabba Agronomist in charge of Pilot coffee garden Mubende district.**

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"The pest/disease risk index has enabled us to ask our local agroinput dealers to stock the corresponding pesticides and inform the farmers to look out for early signs of pests and diseases. We are now trusted by the farmers because we now give preventive measures rather than "postmortem advice" like we did in the past" **Sebugwawo George, District Agricultural Officer, Mubende district.**



2. **Policy Development**
   Helping countries design green growth–oriented agricultural policies and regulatory frameworks that embed low-carbon, climate-resilient development into national strategies.

3. **Technical Assistance and Digital Transformation**
   KGGTF supports the adoption of digital agriculture, smart farming systems, and climate-resilient technologies that boost productivity while reducing resource use and waste.

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Case Study: Transforming Agriculture – Smart Farming for a Greener Mexico (AR 2024)

Mexico's agricultural sector faces mounting challenges in resilience and sustainability, with small and medium-scale farmers struggling to modernize in the wake of COVID-19. Agriculture employs nearly 13% of the workforce, but outdated practices continue to threaten food security and rural livelihoods.

To address these challenges, the World Bank, **Fideicomisos Instituidos en Relación con la Agricultura (FIRA)**, South Korea's **Rural Development Administration (RDA)**, and **Nare Trends INC**, with support from the **Korea Green Growth Trust Fund (KGGTF)**, are working to modernize farming systems using smart technologies.

The initiative, **Transforming Agriculture: Smart Farming for a Greener Mexico**, focuses on expanding financial access for rural producers, piloting smart farming technologies, and embedding climate resilience into national agricultural strategies. By combining Korean expertise with Mexico's innovation hubs, the project advances sustainable growth and rural inclusion.

Key Activities

- **Smart Farming Pilots**: Equipped three FIRA Technological Development Centers (Salvador Lira López, Tezoyuca, and Villadiego) with smart farm systems and eight interconnected greenhouses to boost productivity.
- **Specialized Programs**: Introduced tailored solutions—protected agriculture for high-value crops in Michoacán, micropropagation for high-quality plants in Morelos, and sustainable grain production in Guanajuato.
- **Cross-Border Knowledge Exchange**: Enabled Mexican experts to study Korean smart farming models, while Korean partners provided feasibility analyses for scalable adoption.
- **Capacity Building**: Trained FIRA technicians in protected agriculture and digital farming methods to strengthen local farmer resilience.
- **Scaling Roadmap**: Developed a national business plan outlining hardware, software, and training needs to expand smart farming nationwide.

Outcomes & Impact

- Piloted smart farming systems in three CDTs and established eight greenhouses.
- Strengthened local technical capacity and influenced Mexico's agricultural strategies through RDA-led policy dialogues.

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- Mobilized **US$250 million in World Bank lending** and **US$129 million in co-financing**, leveraging **US$263 for every US$1 of KGGTF funding**.
- Empowered **over 12 million people** across Michoacán, Morelos, and Guanajuato with access to modern agricultural practices, financial tools, and market opportunities.

Looking Forward

The initiative positions smart farming as an inclusive strategy for rural development. Future plans include expanding pilots to additional CDTs, embedding digital agriculture into national policy, and deepening cooperation with Korean partners to ensure a sustainable transformation of Mexico's agri-food sector.

Quote

"Providing digital technology access to small-scale producers is one of the best investments we can make to boost their productivity and market integration, both domestically and internationally. By doing this, we can accelerate the transformation of rural areas and generate more and better employment opportunities in rural communities."
— Tomas Ricardo Rosada Villamar, Practice Manager for Agriculture and Food Security, South Asia Region, World Bank



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Case Study: Enhancing Agricultural Green Growth in Vietnam by Applying Disruptive Technology to Facilitate Export of Quality, Safety and Climate-Resilient Agricultural Products from Vietnam to Korea (AR 2022)

Vietnam's agricultural sector is a cornerstone of the economy, accounting for over 12 percent of GDP, 35 percent of employment, and exports worth more than US$53 billion annually. However, long-standing reliance on intensive land, water, and chemical inputs has increased environmental stress and exposure to climate change, particularly in rice-dominated production systems.

Rising drought, salinity intrusion, pests, and soil degradation have accelerated the need for the restruction of agriculture. In response, the Government of Vietnam has promoted diversification from mono-rice farming toward higher-value, climate-resilient tropical fruits which offer higher incomes, lower environmental footprints, and stronger alignment with market demand.

With support from the KGGTF and the World Bank, Vietnam is piloting digital solutions including Blockchain and IoT to strengthen traceability, food safety, and value-chain integration, supporting a more competitive, resilient, and sustainable agricultural sector.

Key Activities

- **Digital Traceability Platform**: Piloted a digital platform using Blockchain and IoT technologies to track, trace, and certify agricultural products from farms in Vietnam to end markets, responding to consumer demand for food safety, quality assurance, and transparency.
- **Crop Diversification and Green Growth**: Supported the transition from mono-rice cultivation toward higher-value, climate-resilient tropical fruits, reducing pressure on water resources, fertilizer use, and greenhouse gas emissions while improving farm incomes.
- **Policy Alignment and Strategy Support**: Informed Vietnam's Green Growth Action Plan for the Agriculture Sector, ensuring that digital agriculture and value-chain modernization were embedded into national policy frameworks.
- **Market Access and Trade Facilitation**: Strengthened compliance with international import requirements on traceability, quality, and food safety, helping shorten inspection and clearance times and expand export opportunities.
- **Capacity Building and Knowledge Products**: Delivered in-country capacity-building activities for more than 340 participants and produced a flagship knowledge product, *Report on Digital Technology for Traceability in Vietnam's*

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Fruit and Vegetable Value Chains, with peer review support from Seoul National University experts.

Outcomes & Impact

- Reduced transaction costs by simplifying documentation, eliminating non-value-adding intermediaries, and improving quality and food safety monitoring across value chains.
- Enhanced farmer incomes by connecting producers to higher-value, demand-driven markets through trusted digital traceability systems.
- Strengthened sector resilience by promoting climate-resilient crops suitable for drought- and salinity-affected areas, reducing water use and fertilizer dependency.
- Influenced US$454.9 million in World Bank lending and co-financing, including the Mekong Delta Climate Resilience and Integrated Transformation Project (P179572).
- Reinforced Vietnam's competitiveness by diversifying production, lowering environmental footprints, and improving market integration.

Looking Forward

Building on the success of the Vietnam Sustainable Agriculture Transformation (VnSAT), the World Bank is supporting Vietnam in advancing a national one-million-hectare high-quality, low-carbon rice program through financing from the Transformative Carbon Asset Fund. In parallel, preparation of the **Mekong Delta Climate Resilience and Integrated Transformation Project (P179572)** will further strengthen climate resilience and livelihoods in line with Vietnam's green growth and low-carbon transition goals.

Quotes

"The VnSAT has been widely acknowledged as a best practice green agricultural transformation project. It effectively supported the Government's Agricultural Restructuring Program and demonstrated a model for sustainable, climate-smart transformation in Vietnam."
*— **Van Hoang Pham**, Operations Officer, World Bank*

"The VnSAT project has delivered meaningful economic, environmental, and social impacts. It showed that agricultural production must increase productivity while reducing costs and environmental pressure, especially fertilizer and pesticide use."

*— **Dr. Le Quoc Doanh**, Deputy Minister of Agriculture and Rural Development*

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Case Study: Mainstreaming Smart Farming to Strengthen Climate-Resilient Agriculture in the Caribbean (Jamaica & Dominica) (K199)

Caribbean Small Island Developing States, including Jamaica and Dominica, face rising climate risks alongside constraints on agricultural productivity and market access. For farmers, costs, limited access to services and technology, and increasing climate uncertainty make it harder to sustain yields and livelihoods. In this context, smart farming is gaining attention as a practical pathway to optimize inputs, improve productivity, and strengthen resilience.

With support from the Korea Green Growth Trust Fund (KGGTF), the World Bank supported an initiative in Jamaica to connect smart farming technologies with policy and practical implementation. The grant aimed to move smart farming beyond isolated demonstrations by combining policy guidance, capacity building, and hands-on application to create a foundation for wider adoption. It also leveraged Korea's experience and partnerships to strengthen local relevance and replication potential.

The work engaged a broad set of stakeholders across government, public agencies, the private sector, and knowledge partners. It focused on clarifying the enabling conditions and support systems needed for adoption, while strengthening policy alignment and implementation of readiness. Through knowledge exchange, field learning, and a small-scale pilot orientation, the initiative generated practical lessons on what can work and how to support uptake in the Caribbean context.

Key Activities

- Policy guideline development: Developed a Jamaica-tailored guideline covering the definition of smart farming, expected benefits, fit for small-scale farmers, benefit considerations, policy alignment, required institutional support, public–private roles, and legal considerations.
- Capacity building and knowledge exchange: Delivered workshops and structured exchanges to strengthen public and private stakeholders' understanding of smart farming and its implications for policy design and implementation.
- Korea-linked learning: Enabled learning from Korea's smart farming ecosystem through exposure to operational models, private sector participation, data-enabled farm management, and approaches that can be adapted to local needs.

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- Operational pilot support: Supported the application of compact smart farming equipment aligned with local needs to test feasibility, identify constraints, and feed lessons into synthesis outputs.

Outcomes & Impact

The initiative helped translate smart farming from a technology concept into a set of policy-relevant and implementable options. It strengthened stakeholder alignment and capacity through a Jamaica-focused guideline and knowledge exchange, and clarified practical requirements for adoption through hands-on application. With engagement and visibility extending to Dominica, the effort also helped build momentum for mainstreaming smart farming across Caribbean SIDS.

Looking Forward

This support provides a practical starting point for moving smart farming from pilots toward a wider scale. The guideline and operational lessons can inform future public investment and policy design, helping accelerate climate-resilient agricultural transformation across the Caribbean.

Quotes

"Dominica is benefiting from Korean expertise in smart technologies to improve productivity in the agricultural sector." — Keian Alexander Stephenson, Director of Agriculture, Ministry of Agriculture, Fisheries Blue and Green Economy, Commonwealth of Dominica



4. **Capacity Building and Knowledge Exchange**
   KGGTF builds local capacity through farmer training, knowledge-sharing events, and technical exchanges with Korean institutions—equipping communities to scale sustainable agricultural practices.

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Case Study: Leveraging Technology to Modernize the Agricultural Sector in Uzbekistan (AR 2021)

Uzbekistan's agricultural sector has long been shaped by state-led cotton and wheat monocultures, driving unsustainable practices that caused widespread soil salinization (affecting 45% of irrigated land), declining fertility, and water over-extraction that fueled the Aral Sea crisis. Years of underinvestment also left soil research, testing, and advisory services weak. To address these challenges, the government adopted the Agriculture Development Strategy 2020–2030, prioritizing green growth, digital agriculture, and climate-smart farming.

With support from the Korea Green Growth Trust Fund (KGGTF), the World Bank's Agriculture Modernization Project (AMP, $500M) piloted smart farming techniques for soil testing, fertility management, and digital agriculture. The grant focused on strengthening institutional capacity, advancing research and advisory systems, and modernizing soil information management to shift Uzbekistan toward a more sustainable and market-driven agricultural model.

Key Activities

- Soil Systems Assessment: Conducted a nationwide evaluation of soil testing technologies and institutional capacity, identifying modernization priorities.
- Knowledge Sharing: Delivered online seminars and workshops on soil information systems, fertilizer use, and advisory services, with materials translated into Russian for regional reach.
- Policy Integration: Informed the Agricultural Knowledge and Innovation System (AKIS), embedding soil health and fertility into national strategies, and contributed to the World Bank's Systematic Country Diagnostic and Country Partnership Framework.
- Partnership with Korea's RDA: Initiated virtual exchanges (2020) and expert missions (2021) to share best practices on soil testing, digital data systems, and farmer engagement.
- Catalytic Investments: Leveraged a $500,000 KGGTF grant into $5M of soil testing investments within AMP and influenced the design of the broader $500M loan.

Outcomes & Impact

The program transformed the Ministry of Agriculture's approach to soil management, introducing farmer-centered, science-based systems inspired by Korean models. It catalyzed both internal and external financing, strengthened advisory services, and

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laid the groundwork for replication in the Kyrgyz Republic and Tajikistan. By improving soil health and optimizing fertilizer use, the initiative is expected to increase productivity, reduce costs, and mitigate environmental degradation across Uzbekistan.

Quotes

“The KGGTF project has transformed the Ministry of Agriculture’s approach on soil testing, soil data management, and engagement with farmers. It showed examples of Korean farmer-oriented and science-based systems with digital solutions that will support the country in its agricultural development.” — *Sergiy Zorya, Lead Agriculture Economist, World Bank*



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Case Study: Building a Circular Protein Economy through Insect Farming in Kenya (IF4FF) (K148)

Kenya, like many countries in Sub-Saharan Africa, faces a convergence of challenges including food and nutrition insecurity, weak management of organic waste, and rising climate risks. Demand is also growing for better livelihood opportunities, especially for youth and women. In this context, insect farming is gaining attention as a scalable solution that can convert organic resources into protein and fertilizer, reduce environmental pressure, and create income opportunities.

With support from the Korea Green Growth Trust Fund (KGGTF), the World Bank supported the project Novel Protein: Insect Farming for Food and Feed for a Circular Green Growth Economy (IF4FF) in Kenya. The grant aimed to pilot and validate climate-smart models for insect protein production, processing, and commercialization, while building practical implementation capacity and a knowledge base for scale. The project also leveraged Korea's experience and expertise, especially through the Rural Development Administration (RDA), to strengthen local applicability and replication potential.

The project worked with a broad set of stakeholders including government, research institutions, the private sector, and international partners. It combined capacity building with on-the-ground application. Core workstreams included training systems, producer organization, support for production and processing models, and documentation and dissemination of lessons.

Key Activities

- Capacity and training systems: Developed training packages, manuals, and guidelines for beneficiaries and partners
- Operational pilots: Supported insect farming infrastructure, producer organization, and practical production and processing models
- Partnership-based knowledge exchange: Connected RDA and other Korean partners, academia, and private sector expertise with local needs
- Documentation and dissemination: Produced knowledge outputs and carried out dissemination activities to support replication and scale-up

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Outcomes & Impact

The project moved beyond demonstration activities by translating learning into concrete outputs for scale. It produced three training manuals and guidelines, developed an investment framework aligned with green growth principles, and prepared three pilot action plans that identify entry points for future investment. The project also set out a pathway to deliver circular economy co-benefits by reducing organic waste and greenhouse gas emissions, encouraging private sector participation, and supporting jobs and livelihoods, while expanding adoption through knowledge products and outreach.

Looking Forward

IF4FF helps move the sector from pilots to scale by strengthening implementation capacity and clarifying where future public and private investment can deliver the highest circular economy impact.

Quotes

"My dream is for Africa to become a leader in insect farming." — *Dorte Verner, Lead/Senior Agriculture Economist, World Bank*



5. **Market Access and Value Chain Development**
   KGGTF supports small farmers in securing better prices by strengthening value chains—improving how products are grown, processed, and delivered to markets with higher quality and efficiency.

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Case Study: Leveraging Digital Technologies for Scaling up Climate Smart Agriculture in Kenya (AR 2022)

Kenya's agricultural sector faces mounting climate variability and resource challenges that threaten smallholder productivity and food security. To respond, the World Bank launched the **Kenya Climate Smart Agriculture Project (KCSAP, $250M)** and the **National Agriculture Inclusive Growth Project (NARIGP, $200M)**—a combined $450M investment. With support from the Korea Green Growth Trust Fund (KGGTF), Kenya is scaling digital platforms and disruptive technologies to transform farming into a more climate-resilient, data-driven sector.

The program advances national strategies while aligning with global innovation by building the **One Million Farmer Platform (OMFP)**, embedding digital agriculture into policy frameworks, and fostering cross-border collaboration.

Key Activities

Innovation Challenge: Identified 21 finalists out of 155 applicants across Africa and Asia, with winning solutions in pest management, solar irrigation, organic certification, and digital advisories integrated into OMFP.

One Million Farmer Platform (OMFP): Launched in 2019, OMFP connects farmers to digital technologies, targeting one million initially and scaling to three million by 2026.

Korea–Africa Knowledge Exchange: Brought together 150+ stakeholders from Kenya and Korea (EPIS, KRC, FACT, Greenlabs, Tridge, Telefarm) to share smart farming innovations and green growth solutions.

Partnership with KALRO and MAFRA (Korea): Piloted greenhouse technologies, organic certification, and digital farming methods, with training for officials and researchers on adoption and monitoring.

Capacity Building: Provided technical assistance on big data, digital agriculture, and e-voucher systems to Kenya's Ministry of Agriculture and county governments, strengthening CSA scaling and service delivery.

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Outcomes & Impact

- Directly shaped **$279.7M in World Bank lending**, including the National Agriculture Value Chain Development Project (P176758).
- Institutionalized digital and data-driven approaches as core components of future agricultural projects.
- Fostered entrepreneurship and stronger public–private collaboration through partnerships with Korean institutions and global innovators.
- Positioned Kenya to scale CSA solutions nationwide, reaching **smallholders across all 45 counties**.

Looking Forward

By embedding data and digital tools into national systems, Kenya is building a resilient, competitive agricultural sector that equips smallholder farmers to adapt to climate challenges while improving productivity and market integration.

Quotes

"We will not design any new projects now without a data and digital component in it. It is important that data and digital have to be an integral part ... We have climate change happening in a big way, and if we use outdated data we will get outdated results in agriculture." — *Parmesh Shah, World Bank Group Lead for Data and Digital Agriculture*

"These technological advancements can support the goal of achieving more resilient productive and sustainable agriculture as well as food systems that better meet consumer needs." — *Josephat Muhunya, Agriculture Secretary, Kenya*

"The One Million Farmer Platform has enabled the Government and the Ag tech Sector to come together and work towards the green transformation of the Agriculture Sector by leveraging digital technologies." — *Vinay Kumar Vutukuru, TTL*

Together, these contributions have strengthened national agricultural systems—improving resilience, market access, and policy coherence across multiple regions.

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Notable Innovations and Delivery Methods

To address the complex and evolving challenges in agriculture, KGGTF has introduced a range of cutting-edge technologies and flexible delivery approaches designed to maximize impact and adaptability across diverse country contexts.

Technological Innovations

- **Digital agriculture platforms** for real-time data collection, analysis, and farm-level decision-making
- **Internet of Things (IoT) and smart sensors** enabling precision agriculture, efficient resource use, and improved crop management
- **E-extension systems** that deliver timely, customized advisory services directly to farmers via digital channels
- **AI and big data tools** for climate forecasting, risk assessment, and optimized input planning

Delivery Approaches

- **Knowledge Exchange (KE):** Study tours, peer learning workshops, and hands-on exposure to Korea's green innovation
- **Technical Assistance (TA):** On-the-ground expert guidance for project design, implementation, and scaling
- **Pilot Projects:** Targeted, proof-of-concept models that test innovations before broader rollout
- **Regional Forums:** Multi-country platforms for collaboration, learning, and replication of successful solutions

Together, these innovations and delivery methods enable KGGTF to deliver highly scalable, and context-specific solutions—empowering countries to leapfrog toward more sustainable, resilient, and technology-driven agricultural systems.

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Case Study: Pioneering Sustainable Livestock in Kazakhstan

Kazakhstan, with its vast grasslands and proud livestock tradition is at a crossroads. Its cattle industry, central to rural livelihoods, faces growing pressures from climate change, resource inefficiency, and outdated support systems. Recognizing both the risks and the opportunities, Kazakhstan set out to transform its beef sector into a modern, sustainable, and climate-resilient engine for rural growth.

With support from KGGTF, the country launched the Sustainable Livestock Development Project, placing green growth principles at the heart of its agricultural vision. The goal: enhance the sustainability, productivity, and competitiveness of the beef industry while aligning national policies with global climate goals.

The project mobilized a broad coalition—government ministries, research institutions, international experts and local producers. Through policy workshops, technical advisory sessions, and knowledge exchange events, stakeholders came together to reimagine the future of livestock in Kazakhstan.

Key contributions included:

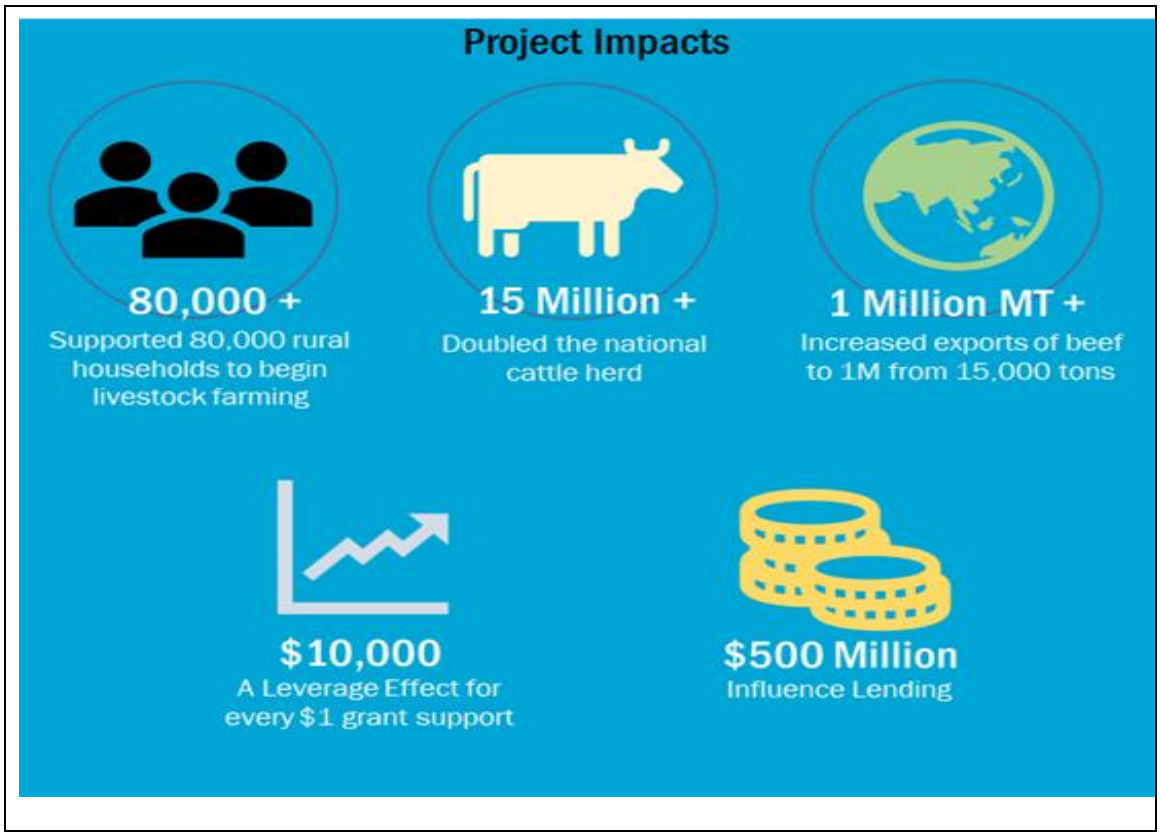
- Establishing a comprehensive national framework for sustainable livestock production
- Recommending reforms to align subsidies and agricultural support with environmental priorities
- Conducting cost-benefit analyses to guide investments in low-emission livestock systems
- Designing a national GHG monitoring system tailored to the livestock sector

This collaborative effort went beyond strategy. It laid the foundation for a $500 million World Bank lending operation, embedding climate-smart agriculture into Kazakhstan's Agro-Industrial Complex Development Program.

Kazakhstan's experience demonstrates how KGGTF bridges global green growth ambitions with local priorities, enabling countries to turn climate commitments into concrete, investable action. Already, the project is inspiring similar efforts in other regions, offering a scalable model for sustainable livestock transformation.

This project showcases KGGTF's role in turning country commitments into investable climate-smart strategies.

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Collaboration with Knowledge Partners (K-Partners)

Key Institutions and Roles

KGGTF agriculture grants draw on Korea's proven experience in transforming its rural sector through innovation and smart farming. Korean partners contribute tailored technical expertise, co-develop pilot initiatives, and adapt digital tools to fit local contexts.

Over time, KGGTF has built enduring relationships with Korea's leading agricultural institutions serving as a bridge that helps World Bank teams to connect, collaborate and navigate partnerships with ease. These institutions contribute a broad range of expertise—from policy and research to technology deployment and on-the-ground implementation—making them indispensable allies in advancing sustainable agriculture.

- **Rural Development Administration (RDA):** Korea's lead agency for agricultural research, innovation, and technology development. RDA provides deep expertise in climate-smart agriculture (CSA), digital agriculture, and smart farming systems. Its cutting-edge research, pilot models, and technical support help partner countries modernize agricultural practices while enhancing sustainability and productivity.

- **Korea Program on International Agriculture (KOPIA):** Operated by RDA, KOPIA manages field-level research and technology transfer. With dozens of global offices staffed by agricultural experts, KOPIA provides hands-on support and collaboration—adapting Korean innovations to local contexts and working directly with farmers and institutions to implement solutions.

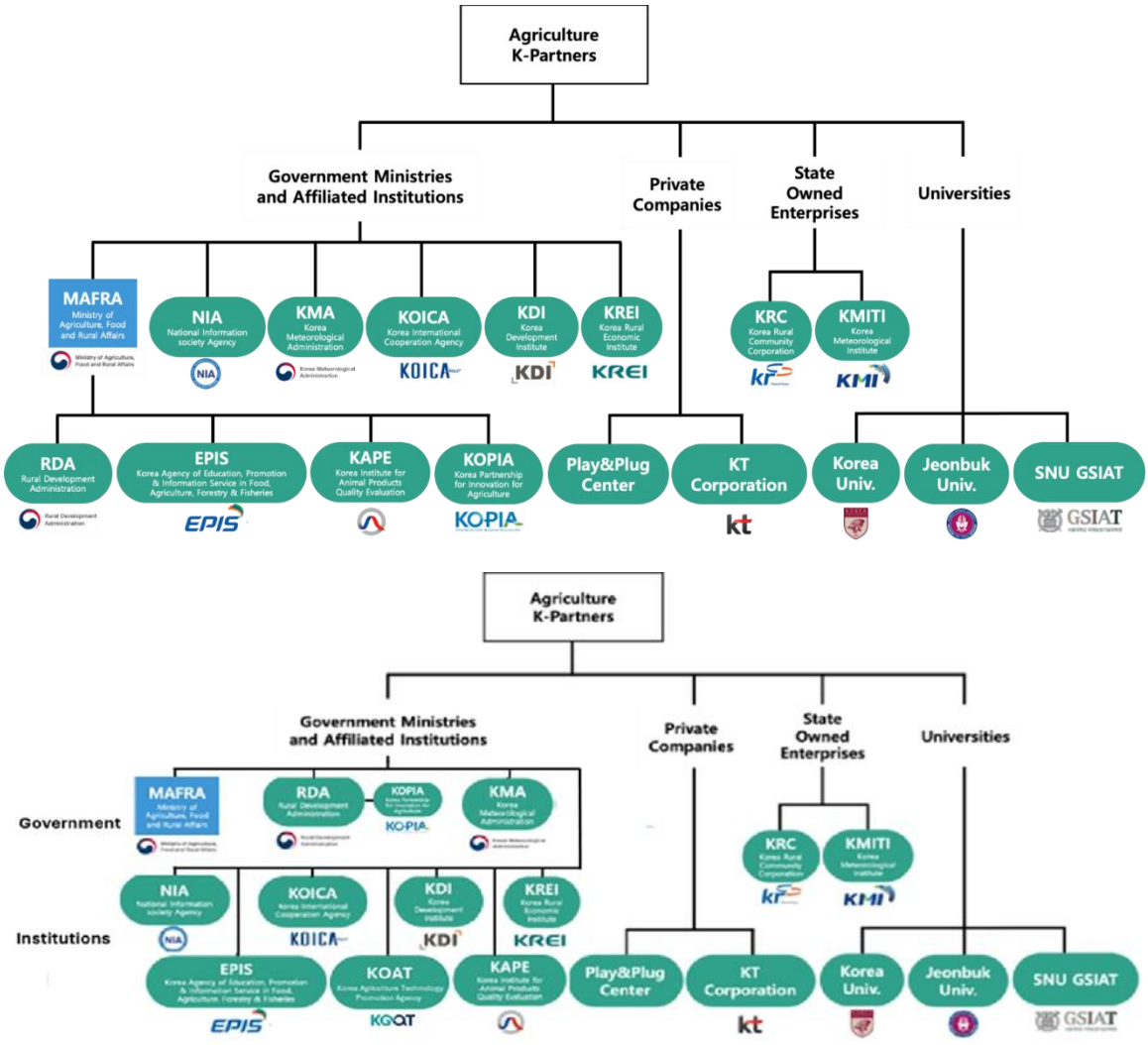
- **Korea Rural Economic Institute (KREI):** A national think tank specializing in agricultural and rural policy research. KREI provides economic analysis, impact assessments, and evidence-based policy recommendations to support inclusive rural development, food system planning, and sustainable market strategies. Its insights help align project design with national priorities and long-term economic goals.

- **Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries (EPIS):** EPIS strengthens human capital through training, education, and knowledge-sharing in agriculture. It develops digital learning platforms, hosts technical workshops, and equips extension agents and practitioners with the skills needed to adopt and scale innovative farming technologies.

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- **Korea Rural Community Corporation (KRC):** KRC undertakes a wide range of rural development initiatives, encompassing irrigation, agricultural water management, land improvement, disaster response, digital agriculture, carbon reduction in rural areas, renewable energy, and community revitalization. Based on these experiences, KRC provides practical solutions to the diverse agricultural challenges faced by developing countries.
- **Ministry of Agriculture, Food and Rural Affairs (MAFRA):** Korea's central ministry for agriculture, food security, and rural development. MAFRA shapes national green growth strategies and international cooperation, driving initiatives in smart farming, sustainable rural livelihoods, and global agricultural innovation partnerships.

By adapting Korea's agricultural innovations to local realities, these institutions provide practical, scalable solutions for countries seeking to advance agriculture.



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Case Study: Harnessing Digital Agriculture Technologies for Smallholder Farmers in Lao PDR (K-147)

In Lao PDR, smallholder farmers face persistent barriers to accessing quality inputs, extension services, and reliable markets. To overcome these challenges, the government is turning to digital innovation—with support from the **Korea Green Growth Trust Fund (KGGTF)**—to modernize service delivery, strengthen climate resilience, and enhance competitiveness across the agriculture sector.

The **Harnessing Digital Agriculture Technologies for Smallholder Farmers Project** was designed to show how digital tools can transform public support programs, making them more efficient and transparent while promoting sustainable farming practices. Beyond improving access to inputs and advice, the initiative sought to reimagine agricultural development through scalable, farmer-focused innovations.

Key activities included:

- **Innovation Forums and Challenge Events** to identify AgTech entrepreneurs from Lao PDR, Cambodia, and Myanmar, connecting them with scalable, climate-smart solutions.
- **A digital input support pilot** introducing voucher mechanisms that improved the efficiency and transparency of government input programs, while incentivizing farmers to adopt green practices.
- **E-extension content and platform development** to deliver tailored digital advisory services, helping smallholders boost productivity and manage climate risks.
- **A smart farm technology roadmap** to guide future investments in climate-resilient crops and high-value, market-oriented production systems.

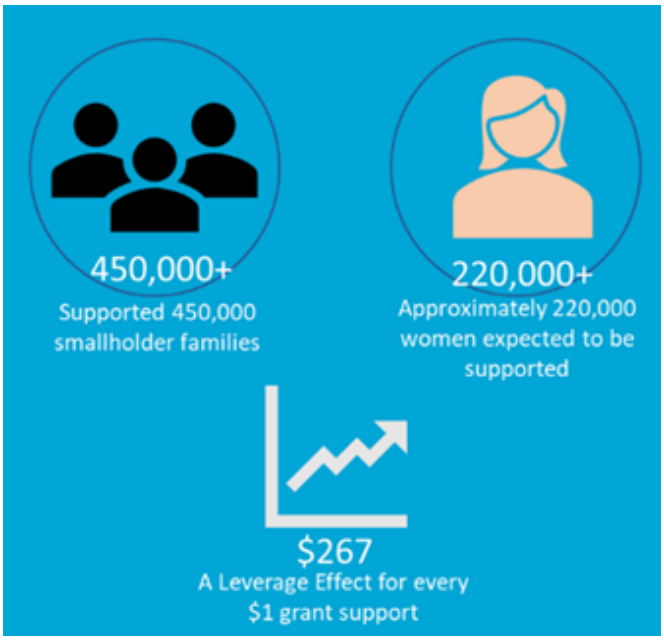
One of the project's most transformative outcomes was the design of **digital service delivery models** that make government programs more efficient while enabling farmers to transition toward climate-smart practices. By linking local AgTech entrepreneurs with Korean innovators, the project also fostered new ecosystems for collaboration and accelerated cross-border technology transfer.

Korean partners played a pivotal role. The **National Information Society Agency (NIA)** assessed the regional digital ecosystem and AgTech enterprise landscape, while the **Korea International Cooperation Agency (KOICA)** co-developed e-extension content in line with its broader extension service program. Their contributions ensured the integration of global best practices with local priorities, creating a solid foundation for scaling digital agriculture.

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At its heart, this grant was about **smallholder farmers**. By equipping them with digital tools for better inputs, extension, and market opportunities, the project opened pathways to greater resilience, sustainability, and competitiveness. Farmers were not only introduced to climate-smart practices but also positioned to participate in emerging digital value chains that can drive long-term growth.

The KGGTF grant also shaped larger reform. It directly informed the design of the **$25 million World Bank-financed National Food and Agriculture System Project**, embedding digital voucher systems, e-extension platforms, and smart farming strategies into lending operations. In doing so, the grant ensured financing was aligned with systemic reforms to make Lao agriculture more efficient, inclusive, and sustainable.



Conclusion

If you are interested in applying for KGGTF grant funding or would like support in connecting with Korean expertise for your program, please reach out to the KGGTF team. We are ready to help co-design impactful solutions that deliver tangible results on the ground.

For more details on past and ongoing grants—including project descriptions, funding amounts, sectors, and regional focus—visit the KGGTF Grant Portfolio at **www.wbgkggtf.org**.

This interactive resource allows you to filter by sector, region, or keyword, making it easy to explore relevant projects and success stories.

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Annex 1. Total Grant List

Approval Year	K#	Grant Name	Country	Amount Approved by Donor	K-partner	TF No.	Linked P-Code
Year 13	donor approval pending	Remote Sensing and AI pilot for improving crop monitoring and yield estimation in Honduras	Honduras	1,500,000	Korea Meteorological Institute (KMITI)	TF0D1050	P174328
13	250	Green Growth Acceleration: Digital Platforms and Soil Intelligence for Resilient Farming	Kenya	700,000	RDA,	TF0D1205	P176758
13	239	Leveraging Soil Information System for Fertilizer Subsidy Reforms in Sub-Saharan Africa	Kenya, Malawi, Tanzania and Zambia	700,000		TF0D0765	P512500
Year 12	225	Leveraging seaweed to lower emissions and increase competitiveness of agri-food systems in the Andes	Chile, Equador, Peru	$ 350,000	KMI, Seaweed Research Institute, NIFS, Korean Embassy and KOTRA in Chile	TF0C6786	P504284
Year 12	221	Leveraging technology and capacity for smart farming solutions in dairy and horticulture agrifood clusters in the Kyrgyz Republic	Kyrgyz Republic	$ 500,000	KDI, NIA, KRC	TF0C7755	P178120
Year 12	220	Digital Technologies for an Inclusive, Sustainable, and Resilient Agriculture System in Liberia	Liberia	$ 600,000	RDA, KRC, MAFRA	TF0C6800	P175263
Year 12	219	Youths and Women Climate-Smart Agri-preneurship (YaWoCA) Project	Sierra Leone	$ 600,000	KOPIA, RDA	TF0C6628	P153437
Year 11	201	Egypt Climate Smart Agriculture Innovation and Tech-based Entrepreneurship (EgCITE)	Egypt	$ 600,000	KODI, SNU-GBST, NIA, KMA, MAFRA, Plug & Play Tech Centre, Seoul Center for Finance and Innovation	TF0C4906	P180480
Year 11	200	Policy Support to Establish a Digital Agricultural Information System for Climate-Resilient Food Security in Honduras	Honduras	$ 600,000	RDA, KMITI, EPIS	TF0C4080	P174328
Year 11	199	Smart Farming for Agricultural Development in Jamaica and Dominica	Jamaica, Dominica	$ 600,000	KoFARM, RDA, EPIS	TF0C4251, TF0C4250	P166279, P166328

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Year 11	198	Uttarakhand Climate-Resilient, Low Carbon Agriculture Initiative	India	$ 600,000	RDA	TF0C4039	P179357
Year 10	185	Go mechanization! Piloting digitally-linked agricultural mechanization services in West Africa	Ghana	$ 500,000	TBD	TF0C0682	P178132
Year 10	184	Sparking adoption of Agricultural Technologies that promote climate change resilience through productive alliances	Brazil	$ 600,000	RDA, KREI, KRC	TF0C0820	P179206
Year 9	168	Mongolia Smart Agrifood Systems Technical Assistance	Mongolia	$ 800,000	NIA, KAPE	TF0B8058, TF0C4640	P178640
Year 9	167	An agri-tech smart farm pilot for greening growth in Mexico's post COVID-19 recovery	Mexico	$950,000	MAFRA, EPIS	TF0B7680, TF0C1188	P175940
Year 8	149	Building a Green Agri-Food Ecosystem in Uganda	Uganda	$ 535,000	KOPIA, KT	TF0B5387	P173296
Year 8	148	Novel Protein: Insect Farming for Food and Feed for a Circular Green Growth Economy (IF4FF)	Kenya, Malawi, Zimbabwe	$ 800,000	RDA, KOPIA, Korea University, Jeonbuk National University, Korea Insect Farming Companies	TF0B5354	P176248
Year 8	147	Harnessing digital agriculture technologies for smallholder farmers	Myanmar, Lao PDR, Cambodia	$ 750,000	NIA, KOICA, KRC,	TF0B4910, TF0B5729, TF0B5728	P164448, P161473, P171331
Year 8	146	Leveraging Digital Technologies for Scaling up Climate Smart Agriculture in Kenya	Kenya	$ 400,000	EPIS, NIA, MAFRA, KT, Plug & Play Tech Centre	TF0B4895	P154784
Year 7	144	Enhancing agricultural green growth in Vietnam by applying disruptive technology to facilitate export of quality, safety and climate resilient agricultural products from Vietnam to Korea	Vietnam	$ 800,000	Korean government authorities	F0B2477, TF0B2573, TF0B6522, TF0B9625	IFC-00603468, P171187, P145055, P175763
Year 7	134	Leveraging technology for Uzbekistan's agricultural modernization	Uzbekistan	$ 500,000	KOICA, MAFRA, KREI	TF0B1368	P158372
Year 7	133	Support to the preparation of the Sustainable Livestock Development Project in Kazakhstan	Kazakhstan	$ 500,000	KREI	TF0B1345	P170365

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Annex 2. Grant Summary

K. Remote Sensing and AI pilot for improving crop monitoring and yield estimation in Honduras

Grant Title	Remote Sensing and AI pilot for improving crop monitoring and yield estimation in Honduras
Region	Latin America and Caribbean (LAC)
Countries	Honduras
Sector	Agriculture
Program Year	Year 13
Amount	$1,500,000
Status	Active / Approved in 2025 (donor approval pending)
Program Goal	The requested grant aims to strengthen Honduras' institutional capacity to generate, manage, and utilize strategic agricultural information through the development and implementation of digital agricultural tools within Honduras' national agriculture information system, the SISAGRO platform. The grant will support the integration of advanced data sources, including satellite imagery, drone-based multispectral data, ground-based sensors, and field-level measurements, into SISAGRO. This integration aims to improve on-farm decision-making, supply chain planning, and public programs against increasing climate risk in rainfed maize and bean areas.
Key Result	The program supported the design and operationalization of the overarching SISAGRO platform, with a specific focus on the crop yield projection module. It generated consolidated technical guides for estimating the area under corn and bean cultivation and for projecting yields using satellite data, drones, and artificial intelligence models. Furthermore, it strengthened institutional sustainability and capacity by training government officers and stakeholders through in-country technical consultations and international knowledge exchange visits to effectively apply crop monitoring technologies.

K250. Green Growth Acceleration: Digital Platforms and Soil Intelligence for Resilient Farming

Grant Title	Green Growth Acceleration: Digital Platforms and Soil Intelligence for Resilient Farming
Region	Africa
Countries	Kenya
Sector	Agriculture
Program Year	Year 13
Amount	$700,000
Status	Active / Approved in 2025
Program Goal	The grant supports NAVCDP's objective to increase market participation and value addition by providing farmers with site-specific soil intelligence

	and decision tools. Digital soil mapping enables precise input selection, rates, and timing, reducing costs and increasing yields while generating marketable surplus. In addition, by identifying high-potential crop zones and embedding recommendations in a dashboard, the project enables targeted fertilizer and advisory support, accelerating the shift to commercially viable, climate-resilient production.
Key Result	- KALRO formally adopts and integrates the AI-Enhanced Digital Soil Mapping (DSM) workflow into its National Soil Information System, resulting in the completion of high-resolution map - Adaptive Policy Integration: Site specific fertilizer and crop recommendations are disseminated among key stakeholders of Kenya's two on-going lending projects: FSRP (P177816) and NAVCDP (P176758). This work directly supports NAVCDP's Component 1 (Building Producer Capacity for Climate-Resilient Stronger Value Chains) and FSRP's Subcomponent 1.2 (Climate-Smart Agriculture Technologies and Services). Furthermore, our approach aligns with the Kenyan government's strategic direction to develop DSM through KARLO. -Data-Driven Policy Implication: At least 50% of the participants accessed the dashboard after the workshop. -The Ministry of Agriculture uses the dashboard to inform the annual design of the national fertilizer subsidy program. -Increased knowledge: Informing ongoing Word Bank Group investments (P176758) in soil health. Increased capacity of KALRO in terms of soil health analyses

K239. Leveraging Soil Information System for Fertilizer Subsidy Reforms in Sub-Saharan Africa

Grant Title	Leveraging Soil Information System for Fertilizer Subsidy Reforms in Sub-Saharan Africa
Region	Africa
Countries	Kenya, Malawi, Tanzania and Zambia
Sector	Agriculture
Program Year	Year 13
Amount	$700,000
Status	Active / Approved in 2025
Program Goal	The project development objective is to facilitate knowledge exchanges among and with the participating countries on strategic and innovative use of Soil Information System (SIS) in order to help repurpose their fertilizer subsidies for improving soil health, as part of the operationalization of the WBG Green, Resilient, and Inclusive Development (GRID) strategy through the Knowledge Academy-Impact Program on Repurposing of Agricultural Support for Soil Health.
Key Result	Direct contribution to the WB-financed projects (Kenya (P177816), Malawi (P177816), Tanzania (P179818), and Zambia (P178372)); Clients'

	investments; and Clients' national strategies and action plans (such as the Fertilizer and Soil Health Investment Action Plans).

K221. Leveraging technology and capacity for smart farming solutions in dairy and horticulture agrifood clusters in the Kyrgyz Republic

Grant Title	Leveraging technology and capacity for smart farming solutions in dairy and horticulture agrifood clusters in the Kyrgyz Republic
Region	ECA
Countries	Kyrgyz Republic
Sector	Agriculture
Program Year	Year 12
Amount	$500,000
Status	Active / Approved in 2024
Program Goal	The program supports climate-smart agriculture in the Kyrgyz Republic by establishing pilot smart farms for dairy and horticulture, showcasing CSA technologies and digital tools. It promotes applied knowledge, data collection, training, and policy repurposing to enhance resilience, manage landscapes, and improve livelihoods of rural populations affected by natural disasters.
Key Result	The program advanced climate-smart agriculture in the Kyrgyz Republic by piloting smart farms, developing a framework and investment plan, and establishing a prototype MRV system for GHG monitoring. It strengthened institutional capacity through workshops, digital tools, and knowledge exchanges, enabling scalable models and co-financing opportunities for future agriculture projects.

K220.Digital Technologies for an Inclusive, Sustainable, and Resilient Agriculture System in Liberia

Grant Title	Digital Technologies for an Inclusive, Sustainable, and Resilient Agriculture System in Liberia
Region	West Africa
Countries	Liberia
Sector	Agriculture
Program Year	Year 12
Amount	$600,000
Status	Active
Program Goal	The program fosters digital innovation in Liberia's agriculture sector to enhance productivity, resilience, and reduce environmental impact. It brings together stakeholders—including the private sector, citizens, academia, and World Bank partners like International Finance Corporation—to develop innovative, sustainable solutions addressing key agricultural challenges.
Key Result	The program advanced digital and sustainable agriculture in Liberia through needs assessments, a centralized agricultural database, and a multi-stakeholder partnership framework. It conducted innovation hackathons to

	design digital solutions, trained local stakeholders, organized a Korea study tour, and strengthened institutional capacity to foster long-term partnerships for sustainable agricultural transformation.

K225. Leveraging seaweed to lower emissions and increase competitiveness of agri-food systems in the Andes

Grant Title	Leveraging Seaweed to lower emissions and increase competitiveness of agri-food systems in the Andes
Region	LAC
Countries	Chile
Sector	Agriculture
Program Year	Year 12
Amount	$350,000
Status	Active / Approved in 2024
Program Goal	The goal of this program is to identify and promote effective strategies for developing a sustainable and inclusive seaweed sector in Chile, Ecuador, and Peru. By leveraging synergies with IBRD's regional initiatives on the Blue Economy and Inclusive, Resilient Agrifood Systems, the program aims to strengthen regional dialogue, support innovation, and enhance the contribution of seaweed-based products to climate action, biodiversity conservation, and agrifood system transformation.
Key Result	The program generated evidence-based research to identify policy, governance, and market strategies for scaling a sustainable seaweed sector in Chile, Ecuador, and Peru. It strengthened regional dialogue and stakeholder coordination by leveraging IBRD initiatives on the Blue Economy and Inclusive, Resilient Agrifood Systems, supporting the development of seaweed-based value chains that enhance climate resilience, biodiversity conservation, and inclusive coastal livelihoods.

K219. Youths and Women Climate-Smart Agri-preneurship (YaWoCA) Project

Grant Title	Youths and Women Climate-Smart Agri-preneurship (YaWoCA) Project
Region	AFR
Countries	Sierra Leone
Sector	Agriculture
Program Year	Year 12
Amount	$600,000
Status	Active / Approved in 2024
Program Goal	The program aligns with Sierra Leone's Medium-Term National Development Plan (2024-2030) and its cornerstone initiative, Feed Salone, focusing on the economic empowerment of women and youth. Building on prior project success, it addresses access to climate-smart technologies, irrigation, finance, technical skills, and market linkages to enhance productivity, income, and resilience in targeted value chains for women and youth agri-preneurs.

Key Result	The program enhanced climate-resilient agriculture in Sierra Leone by introducing greenhouses, solar energy, and drip irrigation, and promoting improved rice and maize seeds. It strengthened youth and women agri-preneurs through CSA training, business management, and climate risk awareness, while establishing monitoring systems and facilitating knowledge sharing for sustainable practices.

K201. Egypt Climate Smart Agriculture Innovation and Tech-based Entrepreneurship (EgCITE)

Grant Title	Egypt Climate Smart Agriculture Innovation and Tech-based Entrepreneurship (EgCITE)
Region	MNA
Countries	Egypt
Sector	Agriculture
Program Year	Year 11
Amount	$600,000
Status	Active / Approved in 2023
Program Goal	The Egypt Climate Smart Innovation and Tech-based Entrepreneurship (EgCITE) adopts the climate-water-energy-food nexus approach, aligning with Egypt Country Partnership Framework 2023–2027 and Egypt Country Climate and Development Report (CCDR) recommendations. Through the EgCITE Platform, it promotes Climate Smart Agriculture (CSA), data-driven innovation, and stakeholder knowledge sharing, while fostering technology adoption and strengthening agriculture information systems and early warning services nationwide.
Key Result	The program established the EgCITE platform to accelerate climate-smart agriculture by curating CSA knowledge products, developing training packages, and expanding agri-tech programs. It strengthened partnerships with MAFRA, NIA, KMA, Plug and Play, FAO, and GIZ, delivering i-Challenge EgCITE and CSI Academy to foster scalable technologies and institutional capacity.

K200. Policy Support to Establish a Digital Agricultural Information System for Climate-Resilient Food Security in Honduras

Grant Title	Policy Support to Establish a Digital Agricultural Information System for Climate-Resilient Food Security in Honduras
Region	LAC
Countries	Honduras
Sector	Agriculture
Program Year	Year 11
Amount	$600,000
Status	Active / Approved in 2023
Program Goal	The program supports the Government of Honduras in developing a Digital Agricultural Information System by integrating geospatial and agricultural data. It aims to enhance extension services, food security, and climate resilience, while enabling smart farming adoption. The system will optimize

	resource utilization and strengthen agricultural productivity through INFOAGRO.
Key Result	The program developed a policy roadmap and platform design in Honduras, integrating geospatial databases and soil sensing technologies to support digital agriculture and climate-resilient food security. It strengthened institutional capacity through training and workshops, leveraging RDA Korea, KMITI, and EPIS partnerships to promote low-carbon agriculture and sustainable agribusiness.

K199. Smart Farming for Agricultural Development in Jamaica and Dominica

Grant Title	Smart Farming for Agricultural Development in Jamaica and Dominica
Region	Latin America & Caribbean
Countries	Jamaica
Sector	Agriculture
Program Year	Year 11
Amount	$600,000
Status	Active / Approved in 2023
Program Goal	The program aims to increase adoption of smart farming technologies in Jamaica and Dominica to enhance food security and build climate resilience. It aligns with national development priorities of both countries, including emphasizing agribusiness, high-value crops, agricultural infrastructure, and sustainable practices outlined in Dominica's 2017-2027 National Agriculture Policy and Action Plan and Jamaica's Vision 2030 National Development Plan.
Key Result	The program supported smart farming adoption in the Caribbean by organizing international workshops with model farm visits to enhance policymakers' understanding of advanced technologies. It developed a synthesis report with strategic policy guidelines and identified funding sources to scale initiatives, fostering sustainable agriculture and improved climate resilience across the region.

K198. Uttarakhand Climate-Resilient, Low Carbon Agriculture Initiative

Grant Title	Uttarakhand Climate-Resilient, Low Carbon Agriculture Initiative
Region	SAR
Countries	India
Sector	Agriculture
Program Year	Year 11
Amount	$600,000
Status	Active / Approved in 2023
Program Goal	The program supports Uttarakhand's climate-focused agricultural growth by promoting digital technologies and sustainable practices. It prioritizes productivity, resilience, and reduced emissions through protection of natural resources and adoption of IoT, GPS, and machine learning. The initiative positions Uttarakhand as a model for rainfed agriculture and green growth in India.

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Key Result	The program developed digital soil mapping and precision nutrient management systems in Uttarakhand to enhance low-carbon agriculture. It introduced renewable energy-based irrigation and monitoring tools, partnered with RDA Korea and Indian institutions to create decarbonization strategies and an MRV system, strengthening access to carbon markets and promoting sustainable agriculture practices.

K185. Go mechanization! Piloting digitally-linked agricultural mechanization services in West Africa

Grant Title	Go mechanization! Piloting digitally-linked agricultural mechanization services in West Africa
Region	Africa
Countries	Ghana
Sector	Agriculture
Program Year	Year 10
Amount	$500,000
Status	Active / Approved in 2022
Program Goal	The objective of this program is to work through the African Conservation Tillage Network (ACT) to pilot an integrated digital technology platform called "AfricaMechanize" in Ghana, aimed at expanding smallholder farmers' access to sustainable agricultural mechanization (SAM) technologies, services, and information.
Key Result	The program advanced sustainable agricultural mechanization (SAM) in Africa by developing the AfricaMechanize digital platform to manage SAM knowledge and services. Delivered capacity-building workshops for 250 mechanization service providers in Ghana and trained farmers and stakeholders on SAM partnership strategies. Produced technical reports assessing SAM services and scaling potential, facilitating knowledge exchanges and enabling broader adoption of climate-smart mechanization solutions.

K184. Sparking Adoption of Agricultural Technologies that Promote Climate Change Resilience through Productive Alliances

Grant Title	Sparking Adoption of Agricultural Technologies that Promote Climate Change Resilience through Productive Alliances
Region	LAC
Countries	Brazil
Sector	Agriculture
Program Year	Year 10
Amount	$600,000
Status	Active / Approved in 2022
Program Goal	The program conducts a comprehensive review of Brazil's agricultural support systems to identify strategies for environmental and economic goals. It characterizes climate-smart technologies for small-scale farmers, supports the Ministry of Agrarian Development (MDA) in policy development under the Productive Alliance framework, and informs

	national programs for a greener, resilient, inclusive, and competitive agriculture sector.
Key Result	The program strengthened climate-smart agriculture in Brazil by collaborating with Korean institutions to scale up Productive Alliances for smallholder farmers. It produced technical reports and policy guidelines to mainstream GRID, facilitated workshops and knowledge exchanges, drove technology adoption, secured project funding, and enhanced access to technical assistance and markets.

K168. Mongolia Smart Agrifood Systems Technical Assistance

Grant Title	Mongolia Smart Agrifood Systems Technical Assistance
Region	EAP
Countries	Mongolia
Sector	Agriculture
Program Year	Year 9
Amount	$800,000
Status	Closed / Approved in 2021
Program Goal	The program supports Mongolia's climate agenda by developing green and competitive agriculture value chains. It promotes climate-smart livestock and pastureland management, improved water management for arable farming, and digital innovations for services delivery. Aligned with NDC targets, it aims to reduce emissions, diversify the economy, and strengthen sustainable agricultural systems.
Key Result	The program advanced smart agri-food systems in Mongolia by developing a data governance policy, assessing green finance, and identifying smart farm solutions. Through collaboration with Korean institutions, it integrated digital platforms into agricultural governance, drove technology adoption, mobilized private capital, and supported sustainable agriculture and low-carbon livestock production.

K167. An agri-tech smart farm pilot for greening growth in Mexico's post COVID-19 recovery

Grant Title	An agri-tech smart farm pilot for greening growth in Mexico's post COVID-19 recovery
Region	Latin America & Caribbean
Countries	Mexico
Sector	Agriculture
Program Year	Year 9
Amount	$400,000
Status	Closed / Approved in 2021
Program Goal	The program pilots a smart farm system using South Korea's experience to increase farm-level productivity and climate resilience in Mexico. The investment promotes sustainable recovery after COVID-19 by facilitating

	climate-smart agriculture initiatives and green clean technologies that strengthen agri-food system resilience and support green growth.
Key Result	The program established five pilot smart farms in Mexico's CDTs, demonstrating operations to over 1,000 farmers, researchers, and extension officers. It dispatched Korean experts for technical training, co-developed an online course with MAFRA and EPIS, and organized workshops and exchanges to strengthen climate-smart agriculture capacity and scale technologies nationwide.

K149. Building a Green Agri-Food Ecosystem in Uganda

Grant Title	Building a Green Agri-Food Ecosystem in Uganda
Region	Africa
Countries	Uganda
Sector	Agriculture
Program Year	Year 8
Amount	$535,000
Status	Active / Approved in 2020
Program Goal	The program introduces digitally enabled climate-smart agriculture production, processing technologies, and management practices into Uganda's agri-food system. It aims to build capacity within Uganda's agri-tech ecosystem while fostering innovative partnerships with Korean technology partners to support sustainable agricultural transformation.
Key Result	The program introduced digital climate-smart agriculture (CSA) solutions in Uganda by collaborating with KT to integrate AI and big data. It conducted a knowledge exchange workshop, organized the Green Innovation Challenge Day, developed digital tools, recruited green tech innovators, and produced a Lessons Learnt Paper to strengthen climate resilience and transformation.

K148. Novel Protein: Insect Farming for Food and Feed for a Circular Green Growth Economy (IF4FF)

Grant Title	Novel Protein: Insect Farming for Food and Feed for a Circular Green Growth Economy (IF4FF)
Region	Africa
Countries	Kenya, Malawi, Zimbabwe
Sector	Agriculture
Program Year	Year 8
Amount	$800,000
Status	Active / Approved in 2020
Program Goal	The program enhances food security and drives sustainable economic growth in Sub-Saharan Africa (SSA) through insect farming. Utilizing organic waste as insect feed, it produces insect-based protein and organic fertilizer, implementing a Green Circular Economy model that addresses climate change

	with resource-efficient methods and creates sustainable jobs and livelihoods in the region.
Key Result	The program conducted a technical knowledge exchange on insect farming for food and feed, leveraging Korea's expertise to develop training materials. It designed an investment framework and pilot action plan, engaging partners to promote organic waste reduction, support GHG mitigation, and create jobs by scaling insect-based solutions across participating countries.

K147. Harnessing digital agriculture technologies for smallholder farmers

Grant Title	Harnessing digital agriculture technologies for smallholder farmers
Region	East Asia & Pacific
Countries	Lao PDR, Cambodia, Myanmar
Sector	Agriculture
Program Year	Year 8
Amount	$750,000
Status	Active / Approved in 2020
Program Goal	The program enhances smallholder farmers' access to quality inputs and extension services in Lao PDR, Cambodia, and Myanmar by leveraging digital technologies, organizing farmer groups, and expanding training to marginalized and vulnerable populations, fostering human capital, community, and improved market access.
Key Result	The program advanced digital agriculture in Myanmar through collaboration with NIA and KOICA, engaging stakeholders via innovation forums, challenge events, and field visits to Korea. It implemented a digital input support pilot, developed e-extension content and a platform for extension services, and created a smart farm technology roadmap to enhance input access and scale sustainable agri-tech solutions.

K146. Leveraging Digital Technologies for Scaling up Climate Smart Agriculture in Kenya

Grant Title	Leveraging Digital Technologies for Scaling up Climate Smart Agriculture in Kenya
Region	AFR
Countries	Kenya
Sector	Agriculture
Program Year	Year 8
Amount	$400,000
Status	Closed / Approved in 2020
Program Goal	The program aims to increase agricultural productivity and build resilience to climate change risks in targeted smallholder farming and pastoral communities in Kenya. Addressing volatility from extreme weather and rain-fed vulnerability, it promotes climate-smart agriculture and provides immediate, effective response in the event of an Eligible Crisis or Emergency.

Key Result	The program organized a knowledge exchange event with Korean partners to promote climate-smart agriculture and digital innovation in Kenya. It launched an innovation challenge, expanded farmer participation through the one million farmer platform, and delivered capacity-building and technical assistance, supporting policy adoption and scaling of green digital initiatives for resilience.

K144. Enhancing agricultural green growth in Vietnam by applying disruptive technology to facilitate export of quality, safety and climate resilient agricultural products from Vietnam to Korea

Grant Title	Enhancing agricultural green growth in Vietnam by applying disruptive technology to facilitate export of quality, safety and climate resilient agricultural products from Vietnam to Korea
Region	EAP
Countries	Vietnam
Sector	Agriculture
Program Year	Year 7
Amount	$800,000
Status	Closed / Approved in 2019
Program Goal	The program supports Vietnam's green growth strategy in agriculture by promoting climate-resilient agricultural products, shifting to tropical fruit production, and piloting a digital transaction platform using Blockchain and IoT to enhance traceability, value chain efficiency, and high-value exports, strengthening bilateral trade and sustainability in the agricultural sector.
Key Result	The piloted a digital platform integrating blockchain and IoT to improve transparency, traceability, and efficiency in tropical fruit value chains. Facilitated bilateral trade between Vietnam and Korea by expanding export opportunities for climate-resilient, high-quality produce. Strengthened farmer and institutional capacity to adopt green production practices and advanced technologies. Enabled the transition toward more sustainable and profitable crops, reducing environmental impacts while supporting Vietnam's long-term green growth and export diversification goals.

K.134 Leveraging Technology for Uzbekistan's Agricultural Modernization

Grant Title	Leveraging Technology for Uzbekistan's Agricultural Modernization
Region	Europe and Central Asia
Countries	Uzbekistan
Sector	Agriculture
Program Year	Year 7
Amount	$500,000
Status	Closed / Approved in 2019
Program Goal	The Agriculture Modernization and Competitiveness Project (AMCP) aims to modernize Uzbekistan's agriculture by introducing smart farming and climate-smart practices for horticulture, strengthening service delivery,

	and promoting innovative technologies. It supports productivity, resilience, and sustainability through improved soil management, farmer education, and public services, fostering a competitive and environmentally sustainable agricultural sector.
Key Results	The program conducted assessments of technology options and national capacity, followed by study tours and knowledge exchanges. Designed and implemented pilot projects applying smart farming and climate-smart practices to horticulture. Evaluated pilot results and produced roadmaps for scaling up successful models. Disseminated knowledge products to inform public programs and investment planning. Enhanced soil fertility, land and water efficiency, and competitiveness of horticulture and smallholder farms, aligning agriculture with a green growth trajectory.

K133. Support to the preparation of the Sustainable Livestock Development Project in Kazakhstan

Grant Title	Support to the preparation of the Sustainable Livestock Development Project in Kazakhstan
Region	ECA
Countries	Kazakhstan
Sector	Agriculture
Program Year	Year 7
Amount	$500,000
Status	Closed / Approved in 2019
Program Goal	The program aims to mainstream Green Growth (GG) principles in Kazakhstan's Sustainable Livestock Development Program by designing the Program for Result (P4R) operation, enhancing competitiveness of the meat sector, supporting green investments, and developing national sustainability standards to improve policy efficiency, climate resilience, and rural economic growth.
Key Results	The program improved efficiency by promoting smart investments, policy instruments, and behavior-changing measures that support sustainable urban, transport, and livestock systems, including green growth–aligned support mechanisms for producers. It enhanced resilience through the adoption of climate-adapted infrastructure, integrated resource management, and good practice guidelines for manure management, animal husbandry, GHG monitoring, and grassland planning, while increasing competitiveness by enabling safe, sustainable, and export-oriented livestock production.

This publication is a result of the efforts of the KGGTF Youth Interns participating in the KGGTF Youth Internship program.
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