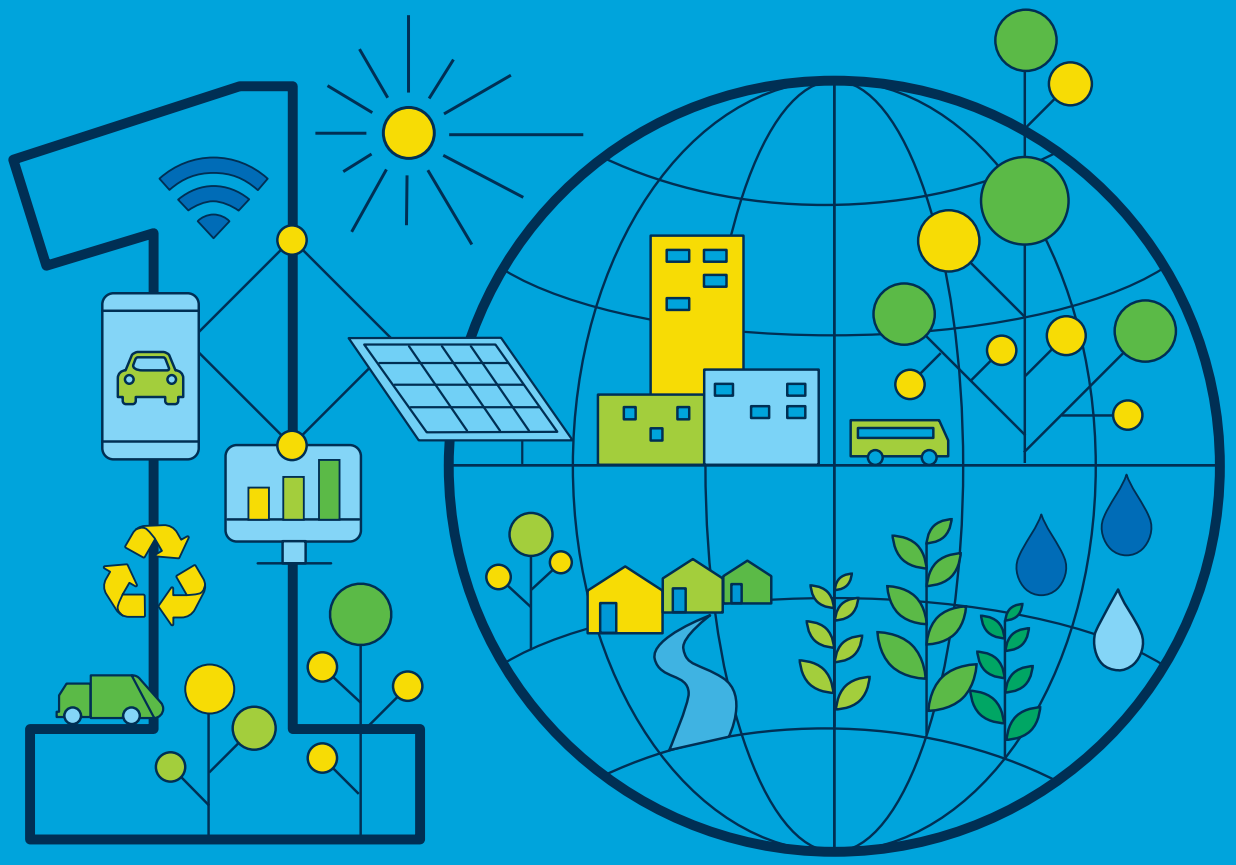
KOREA GREEN GROWTH TRUST FUND

2022 ANNUAL REPORT



10 YEARS OF GREEN GROWTH IN ACTION

WORLD BANK GROUP | KOREA GREEN GROWTH TRUST FUND

2022 Korea Green Growth Trust Fund (KGGTF)

Contact: Hyoung Gun Wang: kggtf@worldbank.org

WORLD BANK GROUP | KOREA GREEN GROWTH TRUST FUND

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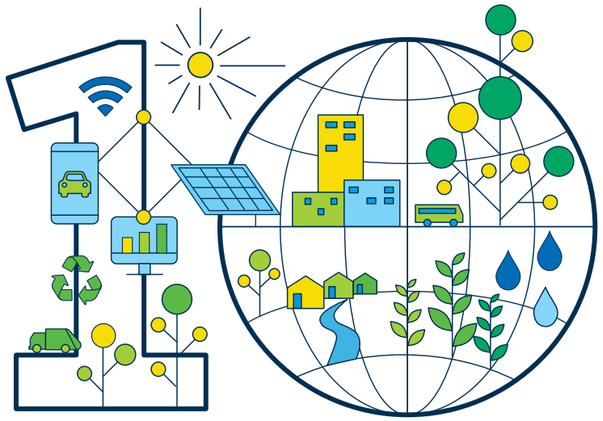

YEARS OF GREEN GROWTH IN ACTION

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10 YEARS OF GREEN GROWTH IN ACTION

ABBREVIATIONS

ACT	African Conservation Tillage Network
ACUMAR	Autoridad de Cuenca Matanza Riachuelo
ADB	Asian Development Bank
ADMS	Agricultural Drought Management System
AFR	Africa
AI	Artificial Intelligence
AMA	Metropolitan Area of Asunción
AMP	Agricultural Management Practice
ANDA	Aquaculture Development
ANEF	Agence Nationale des Eaux et Forêts
ANP	National Agency of Ports the Royal Navy
APR	Annual Progress Report
ARP	Agriculture Restructuring Plan
ASA	Advisory Services and Analytics
BCG	Boston Consulting Group
BE PforR	Blue Economy Program for Results
BESS	Battery Energy Storage Systems
CCTV	Closed Circuit Television
CDIA	Cities Development Initiative for Asia
CES	Compulsory Ethiopian Standard
CGAP	Consultative Group to Assist the Poor
CH	Central Highlands Transition
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CRGE	Climate-Resilient Green Economy
CWA	Consolidate WASH Account
DAT	Disruptive Agricultural Technology
DDD	Département du Développement Durable
DPDPM	Direction des Ports et du Domaine Public Maritime
DEVCO	The Infrastructure Development Collaboration Partnership Fund
DPM	Département de la Pêche Maritime
DT	Digital Technology
EAP	East Asia and Pacific
ECA	Europe and Central Asia
EDCF	Economic Development Co-operation Fund
EEAS	European External Action Service
EIC	Ethiopian Investment Commission
EIP	Eco-Industrial Park
EPIS	Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries
EPR	Extended Producer Responsibility
ESP	Energy Storage Partnership
ESS	Energy Storage System
EU	European Union
EV	Electric Vehicles
EWS	Early Warning System
FA	Forest Agency
FACT	Foundation of Agriculture Technology Commercialization and Transfer
FAO	Food and Agriculture Organization
FIRA	Fideicomisos Instituidos en Relación con la Agricultura
FV	Future Value
GAP	Ganga Action Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GICC	Geographic Information Coordination Council
GIS	Geographic Information System
GIZ	German Society for International Cooperation
GKEDC	Global Knowledge Exchange and Development Center
GOM	Government of Mongolia
GoM	Government of Morocco
GoN	Government of Nepal
GG	Green Growth
GGKP	Green Growth Knowledge Platform
GHG	Greenhouse Gas
GP	Global Practice
GREPOM	Research Group for the Protection of Birds in Morocco
GRID	Green, Resilient, and Inclusive Development

IBRD	International Bank for Reconstruction and Development
ICSD	Interstate Commission on Sustainable Development
ICT	Information and Communication Technology
IDA	International Development Association
IDB	Inter-American Development Bank
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
ILIGS-GER	Integration of Land information and Geospatial Systems for Green Economic Recovery
IoT	Internet of Things
IPP	Individual Power Producer
INRH	National Research Institute of Fisheries
ISO	International Organization for Standardization
ITC	Institute of Technology of Cambodia
ITDP	Integrated Tribal Development Projects
ITS	Intelligent Transport Systems
ITU-T	International Telecommunication Union Telecommunication Standardization Sector
IUU	Illegal Unreported and Unregulated
IWRM	International Water Resource Management
KALRO	Kenya Agriculture and Livestock Research Organization
KCSAP	Kenya Climate Smart Agriculture Project
KE	Knowledge Exchange
KGGTF	Korea Green Growth Trust Fund
KGID	Korea Green Innovation Days
KPI	Key Performance Indicator
KPOK	Korea Program for Operational Knowledge
KWPF	Korea-World Bank Partnership Facility
LAC	Latin America and the Caribbean
LCOE	Levelized Cost of Electricity
LCR	Latin America and the Caribbean
LED	Light Emitting Diode
LAMATA	Lagos Metropolitan Area Transport Authority
LUTP	Leaders in Urban Transport Planning
MAFRA	Ministry of Agriculture, Food and Rural Affairs of Korea
MARD	Ministry of Agriculture and Rural Development of Vietnam
MDB	Multilateral Development Bank
MDDC	Ministry of Digital Development and Communications of Mongolia
M&E	Monitoring and Evaluation
MIF	Micronesian Island Forum
MKD	Mekong Delta
MHEWS	Multi-Hazard Early Warning System
MM	Motorization Management
MNA	Middle East and North Africa
MOA	Ministry of Agriculture of Uzbekistan
MOEF	Ministry of Economy and Finance of Korea
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NARIGP	National Agricultural and Rural Inclusive Growth Project
NBS	Nature-Based Solutions
NDC	National Data Center
NDCs	Nationally Determined Contributions
NFI	National Forestry Inventory
NGO	Non-Governmental Organization
NMT	Non-Motorized Transport
NSDI	National Spatial Data Infrastructure
NUGIP	Nepal Urban Governance and Infrastructure Project
NUOL	National University of Laos
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OLC	Open Learning Campus
OMFP	One Million Digital Farmer Platform
ONHYM	the National Office of Hydrocarbons and Mines
ONP	Office National des Pêches
OPEX	Operational Expenditure
PA	Productive Alliance
PASA	Programmatic Advisory Services and Analytics
PIC	Pacific Island Countries
PPA	Pacific Power Association
PPA	Power Purchase Agreement
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public-Private Partnership
PMFC	Coastal Strip Master Plan
PNG	National Geospatial Plan
PTTI	Public Works and Transport Training Institute
PV	Photovoltaic
R&D	Research and Development
RECP	Resource Efficient and Cleaner Production
RISE	Resilience, Inclusion, Sustainability, and Efficiency
RoK	Republic of Korea
SAM	Sustainable Agricultural Mechanization
SAR	South Asia Region
SD	Sustainable Development
SCD	Systematic Country Diagnostic
SDI	Spatial Data Infrastructure
SME	Small and Medium Enterprise
SSATP	Africa Transport Policy Program
STEP	Smart Technology and Energy Efficient Production
SU	Souphanouvong University
SWOT	Strengths Weaknesses Opportunities and Threats
TF	Trust Fund
TOPIS	Transport Operation and Information Service Seoul
TTL	Task Team Leader
UITP	International Association of Public Transport
UN	United Nations
UNCBD	United Nations Convention on Biological Diversity
UNESCO	United Nations Educational Scientific and Cultural Organization
URL	Urban Resilience and Land Global Practice of the World Bank
WASH	Water Sanitation and Hygiene
WBG	World Bank Group
WFP	World Food Programme
WRCRI	Water Resources and Climate Resilience Institute
WRI	World Resources Institute
WTR	Water Global Practice of the World Bank

World Bank Group Korea Green Growth Trust Fund (KGGTF)

1

AT A GLANCE

WHAT

The KGGTF is a partnership between the World Bank and the Republic of Korea. It was established in 2011 to support the World Bank and its client countries operationalize inclusive green growth initiatives, strategies, and investments. The KGGTF's programs, including analytical and advisory services, are fully integrated within the World Bank's country financing and policy dialogue across seven sectors. By supporting and leveraging World Bank operations the KGGTF accelerates green growth and sustainable development and supports countries towards achieving their Sustainable Development Goals.

As of end of December 2022, **KGGTF has leveraged $19 billion in World Bank** lending and co-financing, **representing an impact of $179 in financing for every $1 invested** in grant programs. In 2022, KGGTF supported 16 new grant activities totaling $8.5 million across 14 countries, and its **portfolio has increased to over $106 million, supporting 196 program activities.**

WHY

From Recipient of World Bank Finance to Donor and Global Leader

The Republic of Korea has made one of the most dramatic economic transformations the world has seen. In just a few decades, the country transitioned from a resource-poor, low-income nation and recipient of World Bank support to an economic and technological powerhouse on the global stage and a prominent World Bank donor. Korea's economic development is an inspiring story for governments around the world.

More recently, the Republic of Korea has become a global leader in green growth strategies, new technologies, innovative governance structures, and green finance. The international community, and in particular developing countries, are finding it highly beneficial to learn from Korea's recent experience. The Republic of Korea was among the first countries to incorporate the concept of green growth into its national development strategy in 2008 and has made significant progress in shifting to sustainable, low-carbon growth. The green growth model focuses on creating jobs and new economic opportunities by encouraging industries to become more efficient and sustainable while boosting the economy to transition towards a low-carbon, green economy. Over the past few decades, Korea has developed innovative and effective policies and governance structures that support sector-integrated development that prioritizes the environment and natural ecosystems while simultaneously pursuing shared economic prosperity.

HOW

- Provides grants and technical support to countries through the World Bank's operational units
- Maintains an active portfolio with an average annual grant disbursement of USD $10 million
- Delivers key global knowledge products deployed for country engagements
- Develops external partnerships with international organizations, research and development institutions, and industry associations
- Funds programs across all World Bank regional units and seven sectors within the Sustainable Development and Infrastructure Practice Groups
- Mobilizes donor resources for bank-executed activities.

Trust Funds at the World Bank
Trust funds regularly co-finance World Bank projects, provide increased flexibility, scale, and reach, and fill knowledge and financing gaps. They help pilot projects get off the ground to test cutting-edge approaches for scale-up, and they provide grant financing when client countries cannot borrow, and private investors are wary of investing.

Annual Letter from the World Bank Group

Over ten years of an enduring partnership formed between the Republic of Korea and the World Bank has demonstrated time and again the contribution of the Korea Green Growth Trust Fund. KGGTF, a product of this partnership, is the only World Bank trust fund devoted to green growth and has become a source of innovative ideas, and sustainable solutions for World Bank and client countries working to achieve sustainable development.

A pioneer in the field of Green Growth, over ten years of operations, KGGTF has spread its message across the world and in doing so has improved the lives of many and the health of the planet. As you read this Annual Report, you will see the concrete progress that KGGTF has made in a variety of initiatives. You will see how its engagement with governments, Korean organizations, and the young generation has evolved and deepened. But what we are most proud of is how KGGTF has continued to be a bridge-builder between Korea and the World Bank where international cooperation is increasingly under pressure.

The World Bank and developing countries value the Government of Korea tremendously as a highly valued leader on green growth and sustainable development. Korea's economic success story is a testament to how development can be achieved using the green growth framework. The innovative policies and technical expertise implemented by Korea provides relevant examples for developing countries as they work towards their economic growth and sustainable development goals.

The KGGTF has helped to transform the World Bank's approach to green growth planning and investments. This is best illustrated by the Green, Resilient, Inclusive Development (GRID) approach that promotes economic growth that goes hand in hand with environmental goals and social inclusion. This new approach is now a priority for all departments and is forming the basis of country engagements across the World Bank.

I would like to thank the Republic of Korea for being a progressive and steadfast partner to the World Bank and for its tremendous contribution to finding long-term solutions to global challenges. The World Bank wishes for a successful replenishment and looks forward to our continued collaboration through Phase Four (2024-2027) of this impactful partnership, and beyond.

Richard Damania
Chief Economist
Sustainable Development Practice Group
The World Bank

Annual Letter from the Donor

We are proud to mark ten years of our solid partnership with the World Bank and are honored to reaffirm our support and commitment to the Korea Green Growth Trust Fund (KGGTF). We want to acknowledge the efforts and outstanding achievements made over the past ten years to establish and build KGGTF into the highly valued trust fund it is today.

It was a tremendous joy to celebrate the Trust Fund's 10th Anniversary in December 2022. Participating alongside client country representatives, World Bank project teams, Korean institutions, and young advocates, hearing first-hand their experiences implementing and promoting green growth solutions was an honor and a pleasure for the government of Korea. The vision and ambition of KGGTF programs – from small-scale batteries as energy solutions, to drones solving agricultural and transport challenges, to novel protein foods being grown and tested as a potential solution to hunger and malnutrition – is both inspiring and reassuring. Witnessing the deployment of green growth technologies and solutions across continents in new and experimental ways is a source of great hope that Korea is proud to support.

Moving forward, we see several areas becoming increasingly important.

We would like to stress the renewed importance of partnerships and global cooperation on green growth. Countries are facing multiple overlapping crises. Given the numerous crises, one might argue that climate resilience or green growth are less urgent than other pressing concerns. However, climate change is not just a challenge but an opportunity to achieve economic growth that will support shared economic prosperity. Economic growth is needed to address other challenges, and we appreciate the World Bank's commitment to green, resilient, and inclusive development.

Looking to Phase Four (2024-2027), we would like the KGGTF to continue its valuable role as a bridge-builder between the World Bank and Korea. Building on our successes thus far, we see a few areas on which we would like the Trust Fund to focus. Firstly, on maximizing green growth investments through co-financing and green ODA. Secondly, on building partnerships and mobilizing the private sector, as these enormous challenges require an all-hands-on-deck approach. Thirdly, we see an opportunity to engage with the next generation. Our youth will increasingly face the challenges, and feel the impacts of climate change, therefore we must engage them in implementing green growth solutions to these challenges from the outset of their careers.

Despite the world's challenges, we look to the future with hope because we have seen first hand what is possible when organizations and countries come together and work hand in hand to find solutions. While economic uncertainties may cloud the future, one thing is clear: we remain steadfast in our commitment to advancing and implementing solutions to support the international community in achieving its sustainable development goals. Over just a few decades, the Republic of Korea undertook a successful economic transformation. It is, therefore, our pleasure to provide this annual report to our developing partners so that they can refer our experiences to their economic growth in a more resource-efficient, green, and resilient way. Thank you.

Sang Kyoo Lee
Director of Development Finance Division
Ministry of Economy and Finance (MOEF)
Republic of Korea

2022 Year in Review

10th Anniversary Celebration

The 10th Anniversary event to celebrate the establishment of the Korea Green Growth Trust Fund (KGGTF) occurred on December 1, 2022 in Seoul, Republic of Korea. The event was co-hosted by Korea's Ministry of Economy and Finance (MOEF) and brought together more than 300 participants from client countries, World Bank project teams, Korean partners, and the next generation of green growth leaders and practitioners.

The event showcased KGGTF's achievements and client country success stories, expressed appreciation to the stakeholders, and strengthened current relationships to build long-lasting partnerships.

Opening Session

More than 300 green growth practitioners and visionaries from around the world, including 80 officials from 19 partner countries, 70 experts from the World Bank Group, 120 decision-makers and leaders from Korea's public and private sectors, and 24 youths from the fields of climate activism, private sector, and academia, gathered to celebrate the KGGTF's impact over the past ten years. The session also shared the future vision, strategy, and direction for the KGGTF's next chapter. The plenary session provided a comprehensive view of the importance of green growth partnerships and carbon neutrality in achieving sustainable economic development.

Director General of MOEF, Kyung Hee Kim, congratulated and welcomed the audience to the 10th Anniversary event and recognized KGGTF's efforts for the past decade of partnership towards achieving green growth.

Hyoung Gun Wang, Program Manager of KGGTF introduced KGGTF's achievements in the last ten years and shared the vision of KGGTF's next ten years. KGGTF's efforts towards achieving green growth were recognized, and the promising future of the KGGTF was remarked upon based on its strong performance to date.

Hyoungna Oh, Professor, Kyoung Hee University moderated the plenary session and introduced Korea's national green growth policies and strategies.

World Bank Group's Vice President Juergen Voegele expressed appreciation to the KGGTF, client countries, and development partners for their valued support to the World Bank.

Kyoung-won Na, Special Presidential Envoy for Climate and Environment, Vice Chairman of the Presidential Committee on Ageing Society and Population Policy, introduced partnership and action for global climate risk and the future and highlighted the importance of KGGTF's role.

Discussion joined by **Richard Damania, Chief Economist for Sustainable Development Practice Group at the World Bank** brought together diverse perspectives from key players, including the Korean government, an international organization, the private sector, a World Bank client country, and an academic institution. The conversation focused on the role of different stakeholders in achieving global action toward green growth, highlighting the vision and mission of KGGTF in the context of 2050 Carbon Neutrality, emphasizing the platform's critical role in green growth partnerships, and reflecting on the past decade of KGGTF's impact in setting the stage for later sessions to provide specific case examples of its partnerships.

Ignite Talks and Impact Stories

Ignite Talks brought stories from programs around the world to discuss their programs, initiatives and results. During the past ten years of operations, KGGTF has provided a platform for fruitful partnerships between World Bank teams, client countries, and Korean organizations. At the Ignite Talks session, these contributing partners were invited to share insights with the audience from their experience of collaborating with KGGTF. Their stories highlighted the significant impact that KGGTF's partnerships have had on achieving sustainable development goals, promoting green growth policies and strategies, and advancing the transition toward a more sustainable and resilient future.

Impact Stories brought World Bank team leaders and Korean Partners together to discuss the experiences and partnerships that resulted from the support of the KGGTF.

Dorte Verner, Lead Agriculture Economist, World Bank Group, introduced insect farming in Zimbabwe, Malawi and Kenya as an alternative to imported soybeans and discussed the potential for food security and job creation.

Marice Rawlins, Senior Environmental Specialist (top) and **Aleix Serrat Capdevila, Senior Water Resources Management Specialist, World Bank Group (left)**, shared the benefits and experiences they gained from the KGGTF during their grant programs for solid waste management in Lao PDR and drought resilience and water security in Angola.

They appreciated knowledge exchanges, partnerships, co-financing with Korean agencies, the flexibility of KGGTF grants, and the opportunities to nurture young talent in client countries.

Beckhee Cho, Director General of Global Business, Korea Land and Housing Corporation, presented knowledge sharing through the KGGTF for Indonesia's green and affordable housing program.

Other panel participants included **Jung-wan Ryu, Director of the MDB Operation Department, Export-Import Bank of Korea (KEXIM), Virasak Chundara, Director General of the Department of Natural Resources and Environment, Lao PDR, Elsa Ramos, The National Water Director, Angola, and Eunhee Roh, Project Advisor, Seoul Urban Solutions Agency (SUSA).**

Yiseul Kim, Rural Development Administration (RDA) of Korea discussed ongoing programs between the World Bank and RDA that were initiated by KGGTF.

Juliet Pumpuni, Senior Energy Specialist, World Bank Group, elaborated on the partnership with the KGGTF for capacity building and technical learning systems workshops on battery energy storage and green transition.

Susan Lim, Senior Transport Specialist, World Bank (left) and Kevin Yunil Kim, Operations Analyst, World Bank Korea Office (right) shared their experiences working with client countries and the collaborations that have occurred because of KGGTF.

Voices from Youth for Green Growth

The event included a new type of session that highlighted the voices of youth for green growth. Young entrepreneurs and youth representatives in green growth shared their experiences and emphasized the importance of active youth engagement in achieving green growth and sustainable development goals.

The 10th Anniversary provided a platform for sharing best practices and lessons learned, celebrating the progress made in green growth, and strengthening partnerships. The event also showcased KGGTF's achievements, shared its future vision, strategy, and direction for the next chapter, and expressed appreciation to stakeholders.

Evan Seungho Jee, Student at Chadwick International School (top)

Yoomin Lee, Junior Professional Officer, Transport GP, World Bank Group (left)

Joonbeom Kim, CEO of MyMove (right)

Watch

Opening Video ▶

Event Highlights ▶

10th Anniversary Interviews ▶

A ceremony was held during the conference to show appreciation for the outstanding contributions of KGGTF's partners. The award ceremony recognized the dedication of partner institutions and their invaluable assistance over the past decade that have helped the KGGTF succeed.

The Technical Knowledge Exchange (KE) Program for KGGTF grant teams allowed participants to gain technical expertise in green growth. The event demonstrated the commitment of the World Bank Group and Korea's Ministry of Economy and Finance (MOEF) towards Green, Resilient, and Inclusive Development (GRID).

MC: John Hosung Lee, KGGTF (left), the KGGTF team (right)

Approved Grant Programs Year 10

On September 23, 2022, Korea's Ministry of Economy and Finance announced the approval of sixteen new grant programs for funding totaling USD $8.5 million.

Focused on mainstreaming the World Bank's **Green, Resilient, and Inclusive Development (GRID)** strategy, these grants span seven key sectors including agriculture, digital development, energy, environment, urban, transport, and water and will be implemented in 14 countries across Africa, East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia. These newly approved grants will support World Bank operations such as building green and climate-resilient infrastructure, developing sustainable and inclusive housing and urban solutions around green buildings, working to integrate smart public transit systems, promoting sustainable coastal management, deploying solutions to build a circular economy for waste management, and improving soil health and advancing agricultural modernization.

Africa | Digital Development | $350,000

Towards Green, Secure, and Climate-Resilient Data Infrastructure

The program aims to expand access to energy-efficient data center facilities in Ethiopia through the development and adoption of innovative ways to develop sustainable, green, secure, and climate-resilient data center infrastructure.

Global | Digital Development | $600,000

Development of Data-Driven Multi-Hazard Early Warning Systems

The program will work with developing countries to maximize the benefits of a multi-hazard early warning system (MHEWS) through a data-driven approach that focuses on utilizing data from various available sources rather than exclusively relying on high-quality but limited data from existing early warning systems. Data-driven MHEWS will enable developing countries to identify disaster risks with varying degrees of accuracy, even in areas with no early warning system base.

Latin America and Caribbean | Agriculture | $600,000

Sparking the Adoption of Agricultural Technologies that Promote Climate Change Resilience Through Productive Alliances

Through a business plan, the Productive Alliance approach (PA) was introduced to connect groups of smallholder producers, their suppliers, food processors, food buyers, and the public sector. The PA will be strengthened in several aspects to fully mainstream Green, Resilient, and Inclusive Development (GRID) to support ongoing loan operations for the agriculture sector.

Africa | Agriculture | $500,000

Go Mechanization! Piloting Digitally Linked Agricultural Mechanization Services in West Africa

Sustainable agricultural mechanization (SAM) has excellent potential to contribute to the growth and modernization of the agricultural sector. The current use of mechanization technologies is low, therefore this grant will support the African Conservation Tillage Network (ACT) pilot an integrated digital technology platform called "Africa Mechanize" in Ghana to expand smallholder farmers' access to SAM technologies, services, and information across Africa.

South Asia | Environment | $403,200

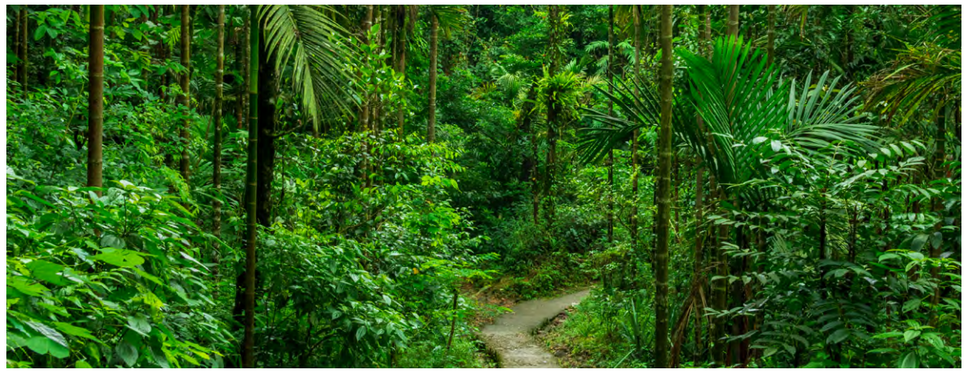
Capacity Strengthening of India's Forest Sector

India's forest and tree cover comprise 25 percent of the total geographical area and are one of the primary sources of rural livelihoods. Despite sound policies and institutions, the sector needs more capacity and the application of modern technology. The outcome of the grant will provide India with a strategic direction in taking a landscape planning and implementation approach for sustainably managing its forest and enhancing carbon stock such that it meets its NDC3 and other global convention targets.

East Asia and Pacific | Environment | $ 600,000

Technical and Capacity Support Towards the Implementation of Plastics Circularity in the Select ASEAN Countries

The East Asia and Pacific region emit the most mismanaged plastic waste globally compared to other areas, making up six of the top ten marine plastic contributors. This grant aims to support Thailand and the Philippines in their progress toward plastic circularity. New approaches toward plastics circularity, such as BCG Model, EPR scheme, eco-design for food packaging, and life-cycle approach, will be prioritized to enhance circularity.



South Asia | Environment | $550,000

Enhancing India's Capacity for Green and Resilient Coastal and Marine Ecosystems Management: Pathway for a Sustainable Blue Economy

This grant aims to improve national and state-level institutional capacity for resource-efficient and resilient growth through building knowledge, facilitating engagement, and fostering innovation in the management of landscapes, coastal resources, and airsheds. This will emphasize marine spatial planning, coastal erosion, and marine litter-related issues and inform future lending operations with the theme of coastal zone management.

Latin America and Caribbean | Environment | $600,000

Circular Economy for Waste Management in the Province of Buenos Aires

The grant aims to finance the government's effort to clean up the most polluted river in the country, the Matanza Riachuelo river. Along with the development of an improved sanitation system for domestic wastewater management and an industrial wastewater treatment facility, the grant will support the basin agency ACUMAR and the city and province of Buenos Aires manage environmental issues while working to identify appropriate sustainable land use and environmental planning solutions.

South Asia | Environment | $600,000

Enhancing Pollution Management in Bangladesh through Green Growth Policies

Bangladesh's development pathways from intensive manufacturing to rapid urbanization have brought negative externalities, significantly impacting the Bangladeshi people's health, economic productivity, and welfare. The objective of the grant is to support the Government of Bangladesh design priority green growth policies to enhance environmental management, and in particular, tackle air pollution, promote cleaner and more efficient energy use, and build citizen-driven demand for good environmental governance and informed decision-making.

Latin America and Caribbean | Energy | $500,000

Distributed Generation and Grid Flexibility for an Efficient Energy Transition in Peru

The Peruvian government is in the process of improving the electricity sector's policy and regulatory framework. However, challenges are faced in achieving a diversified energy matrix emphasizing renewable energy resources and a reduced role of natural gas for an economic and competitive evolution of electricity supply. The proposed program will support the government's power sector reform agenda to accelerate the development of renewable energy resources, grid flexibility, and distributed generation for an efficient energy transition in Peru.

Africa | Transport | $600,00

Developing a Green, Integrated, and Smart Public Transit System in Kumasi

The significant demographic growth and urban expansion without inadequate urban planning in Kumasi contributed to an exponential growth of GHG emissions and Kumasi's vulnerability to climate change. Hence, it is crucial for Kumasi to develop an efficient and integrated public transit network that provides low-emission transport services and resilient and inclusive access to development opportunities. The proposed grant aims to support the development of such a public transport system.

South Asia | Urban | $500,000

Nepal Green Land and Buildings

This grant will support the Government of Nepal (GoN) in the operationalization of the Green, Resilient, and Inclusive Development (GRID) in two critical and interlinked areas: the Green Land Use, and the Green Buildings and Construction. The grant is directly linked to the GRID Advisory Program Maldives, Nepal, and Sri Lanka PASA deliverable N1.4. and Nepal Urban Governance and Infrastructure Project (NUGIP).

Europe & Central Asia | Urban | $500,000

Innovations in Land Valuation, Taxation, and Land Use Planning to Support Land Policy Reforms and Green Growth Transformation of Uzbekistan

This program will contribute to green resilient and inclusive development (GRID) by enabling sustainable economic and social transformations through efficient allocation and use of land resources. It will provide support and capacity building to the public stakeholders of the land sector by promoting environmental, economic, and social sustainability of land for sustainable urban development.

East Asia and Pacific | Urban | $600,000

Accelerating Indonesia Climate-Resilient, Sustainable, and Inclusive Housing

This grant aims to generate knowledge and provide technical support to the Indonesian government to enable inclusive and resilient urban development. It will integrate green design and technology for new home construction, support scaling of a green certification program for the affordable housing sector and strengthen private sector engagements to enable a blended financing platform to support fiscal sustainability.

South Asia | Water | $600,000

Towards Effective Water Governance for Integrated River Basin Level Planning and Management in Nepal

Water underpins Nepal's productive sectors, rural livelihoods, and vital public services foundational for resilience, such as water supply and energy. Hence, proper water management is essential for a greener, more resilient, and more inclusive economy. The proposed grant aims to support the Government of Nepal in adopting the Green, Resilient, and Inclusive Development (GRID) agenda through improved water sector governance at the river basin level.

Africa | Water | $400,000

Resilient Investments for Green, Resilient, and Inclusive Water

This program is linked with the One WASH – Consolidate WASH Account (CWA) Project to incorporate climate and non-climatic resilience in water resources management and water services in hotspots across Ethiopia. The program will promote the decarbonization of the water supply and sanitation services, decreasing emissions at the city level, and ensuring the sustainability of water and services.

Establishing Partnerships Knowledge Exchanges in Korea

RELAUNCHING IN PERSON KNOWLEDGE EXCHANGE (KE) PROGRAMS

Knowledge Exchange (KE) programs are innovative knowledge-sharing experiences to deepen understanding of specific technical issues and foster collaborations and partnerships. The main goal of Knowledge Exchange programs is to connect client countries with green growth professionals and technical experts that provide first-hand knowledge about the Green Growth policy setting and implementation process.

Site visits, technical presentations, and meetings with policy and operational experts create opportunities to learn from and work with Korean partners. Knowledge Exchange programs are also invaluable for World Bank staff and client countries as an introduction to, or immersion into, green growth strategy as a vehicle for sustainable development.

Knowledge Exchanges can be planned to occur in person or virtually. After a few years of virtual knowledge exchanges, we were pleased to resume in-person knowledge exchange programs. The results? Meaningful relationships are established that set the foundation for long-term partnerships.

KNOWLEDGE EXCHANGE AND CAPACITY BUILDING ACTIVITIES

Over the past ten years, **122 Korean organizations** and **3918 individual participants** from **61 client countries** have taken part in **83 Knowledge Exchange programs** in Korea. In addition, **5382 individuals** from **64 client countries** have participated in **44 in-country Capacity Building Activities supported by KGGTF**.

Voices from the Field

Hear what ideas from Korea inspired Lydia Kwamboka, Group Projects Engineer from Davis & Shirtliff Ltd, Kenya, Virasak Ghundara the General Director of the Ministry of Natural Resources and Environment from Lao, PDR and Nathyeli Acuna, Gender Specialist ESMAP, the World Bank and others.

Innovations from Korea

Agriculture

Leveraging technology for Uzbekistan's agricultural modernization (June 17 to 28, 2022)

In partnership with the Rural Development Administration of the Republic of Korea, seven delegations from Uzbekistan participated in the knowledge exchange to study Korean knowledge and experience in using modern innovative methods for soil analysis, creating information systems, developing soil maps, providing scientific and methodological recommendations in the use of fertilizers. Valuable insights and learnings from this program have been incorporated into an online learning course on the WB Open Learning Campus platform.

PARTNERSHIPS & COLLABORATION WITH

- Rural Development Administration (RDA)
- National Institute of Agricultural Sciences
- Daejeon Metropolitan City Agricultural Technology Center
- Gyeonggi-do Agricultural Research and Extension Services
- National Academy of Agricultural Sciences

An Agri-tech Smart Farm Pilot for Greening Growth in Mexico's Post COVID-19 Recovery (June 20 to 24, 2022)

A delegation from the World Bank and a Mexican Agriculture Trust Fund (Fideicomisos Instituidos en Relación con la Agricultura, FIRA) traveled to Korea for a study tour to learn about smart farming technologies and new practices. The knowledge exchange trip established new relationships between the Mexican government and public institutions and private enterprises in the Agri-Tech sector of Korea.

PARTNERSHIPS & COLLABORATION

- Ministry of Agriculture, Food and Rural Affairs, the Republic of Korea
- Rural Development Administration (RDA)
- Korea Agriculture Technology Promotion Agency (KOAT)
- D. Camp (Agri-tech startup)

Energy

Capacity building and technical Learning workshops on Energy storage to Accelerate energy Transition (CLEAN) (December 5 to 8, 2022)

The Energy Storage Partnership (ESP) Stakeholder Forum and the eighth ESP Partners Meeting were held in Korea, consisting of in-person and virtual meetings and site visits to energy storage facilities. Representatives from the private sector and WB client countries shared their experiences in energy storage and learned about the latest technologies.

PARTNERSHIPS & COLLABORATION WITH

- Korea Electric Power Corporation (KEPCO)
- Korean Battery Industry Association (KBIA)
- Korea South-East Power Corporation (KOEN)
- HCT (Battery Certification Test Laboratory)
- Pluglink
- Sungeel Hitech

Environment

Pollution Solutions for Lao PDR's Green Growth Policy and Investment Agenda

Action on Circular Economy for Green Growth in Uzbekistan and Kazakhstan (Nov 28 to Dec 2, 2022)

Two teams in the environment sector, consisting of 16 leaders from Lao PDR, Kazakhstan, Uzbekistan, and Kyrgyzstan, visited Korea in collaboration with Korea Environmental Industry & Technology Institute (KEITI). During their visit, the teams engaged in discussions and site visits with Korean partners and learned how to take action to create a circular economy that supports green growth.

PARTNERSHIPS & COLLABORATION WITH

- Ministry of Environment, the Republic of Korea
- Korea Environemtal Industry & Technology Insititute (KEITI)

Transport

Green Mobility for Luang Prabang and Siem Reap (Lao PDR and Cambodia)
(Nov 14 to 18, 2022)

Twelve officials from the national and local governments of Cambodia and Lao PDR visited Jeju and Seoul to learn about e-bus operations and policies promoting green mobility. During their visit to Korea, the delegation benchmarked Korea's experience and shared their green public transport development plans with Korean partners.

PARTNERSHIPS & COLLABORATION WITH

- Jeju Research Institute (JRI)
- Seoul Metropolitan Government (SMG)
  - Transport Operations & Information Service (TOPIS)
- Korea National Railway (KR)
- Korea Export Import Bank (KEXIM)

WB's Leaders in Urban Transport Planning (LUTP) program in Seoul 2022
(November 30 to December 6, 2022)

- Transforming urban transport to support green and resilient recovery - Leaders in Urban Transport Planning (LUTP)
- Egypt Green Transport Master Plan and Data Management System to Support Digital Transformation of the Transport Sector and Intelligent Transport Systems
- On-Demand Transit Service to Improve the Accessibility of Ulaanbaatar's Vulnerable Population

The LUTP program hosted a workshop in Seoul, South Korea, attended by 31 urban transport practitioners and policymakers from Jordan, Egypt, Mongolia, Pakistan, India, Vanuatu, and Papa New Guinea. Three KGGTF grant teams participated in the workshop hosted by the Korea Transport Institute (KOTI) and the Seoul Metropolitan Government. The Asian Development Bank (ADB) was also a key partner in workshop delivery. The LUTP Seoul workshop focused on smart & sustainable mobility and urban transport planning.

PARTNERSHIPS & COLLABORATION WITH

- Korea Transport Institute (KOTI)
- Seoul Metropolitan Government (SMG)
- Seoul National University
- Hongik University

Innovative Green Smart Urban Mobility for Bishkek, Nur-sultan
(Nov 28 to Dec 2, 2022)

The World Bank team and Seoul Urban Solutions Agency (SUSA) planned and organized a knowledge exchange visit for 12 delegations from Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The visit aimed to enhance the capacities of each city in planning, implementing, and operating smart technologies and frameworks for traffic management. Specifically, the delegations sought to learn about smart city and urban transport-related policies and solutions from Korea.

PARTNERSHIPS & COLLABORATION WITH

- Seoul Urban Solutions Agency (SUSA)
- Seoul Institute (SI)
- Korea Road Traffic Authority (KoROAD)
- Soosung Engineering & Consulting

Urban

Strengthening the Senegalese Spatial Data Infrastructure
(Nov 28 to Dec 2, 2022)

Nine leaders from Senegal participated in the knowledge learning opportunity in Korea with support from Korea Land and Informatrix Corporation (LX) to learn land registration and readjustment policies & frameworks and critical technologies which can strengthen Senegal's Spatial Data Infrastructure (SDI).

PARTNERSHIPS & COLLABORATION

- Korea Land and Informatrix Corporation (LX)
- Korea Research Institute for Human Settlement (KRIHS)
- Hojung Solutions
- WAVUS
- SpaceN

Water

Building Drought Resilience in the South of Angola through the use of geospatial information and nature-based infrastructure

Innovative technology to support Brahmaputra-Jamuna River Economic Corridor Development
(Nov 28 to Dec 2, 2022)

Seven delegations from Angola and Bangladesh participated in a knowledge exchange held in Korea. The visit focused on learning sustainable solutions to water-related challenges such as water resources management, drought risk management, dam safety, and river management with the use of innovative technologies. It provided a unique opportunity for knowledge sharing and cooperation between the participants.

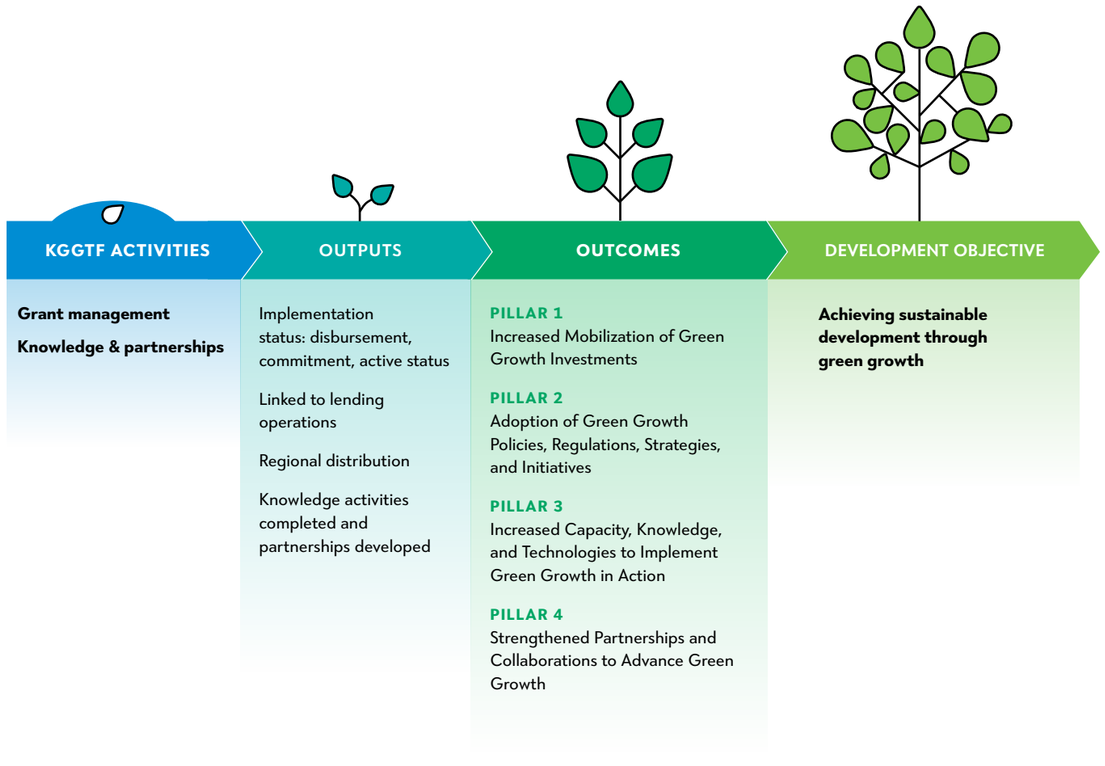
PARTNERSHIPS & COLLABORATION

- K-Water and K-Water Academy
- Korea Rural Community Corporation (KRC)
- Korea Environmental Industry & Technology Institute (KEITI)
- Seoul Metropolitan Government (SMG)
  - Seoul Waterworks Authority (Arisu)

Strengthening Monitoring & Evaluation

STRENGTHENING MONITORING & EVALUATION

Strengthening results-based Monitoring & Evaluation (M&E) was identified as a key workplan priority for the Trust Fund in 2022. An M&E review process found that reporting of grant results and impact would benefit from better alignment with results indicators, and it was decided that Key Performance Indicators (KPIs) developed for the Donor in 2019 should be updated into an overarching Results Framework to quantitatively measure the performance of the KGGTF grant portfolio on an annual basis. As part of this update the Results Framework of KGGTF is aligned with that of the World Bank.



THEORY OF CHANGE

The KGGTF's overarching **Development Objective** is to **Achieve Sustainable Development through Green Growth**. To measure and report on progress, KGGTF will approach its M&E through monitoring outputs, evaluating outcomes and measuring impact. Progress towards the Development Objective will be measured by a Results Framework, updated as needed over time, including 4 Outcome Pillars, each with outcomes and outcome indicators, that describe the results of activities implemented and outputs delivered with KGGTF funding.

KGGTF OUTCOME PILLARS	OUTCOMES
PILLAR 1 Increased Mobilization of Green Growth Investments	**1.1** WB lending influenced by KGGTF funded activities
	1.2 Climate co-benefits of WB lending influenced by KGGTF funded activities
	1.3 Co-financing to WB lending influenced by KGGTF funded activities
PILLAR 2 Adoption of Green Growth Policies, Regulations, Strategies, and Initiatives	**2.1** Client countries' adoption of green growth policies, regulations, strategies and initiatives influenced by KGGTF funded activities
	2.2 WB's adoption of green growth strategies, country engagements and project development influenced by KGGTF funded activities
PILLAR 3 Increased Capacity, Knowledge, and Technologies to Implement Green Growth in Action	**3.1** Knowledge Exchange programs supported by KGGTF funded activities
	3.2 Capacity building activities supported by KGGTF funded activities
	3.3 Creation of knowledge products to transfer green growth technologies and solutions
PILLAR 4 Strengthened Partnerships and Collaborations to Advance Green Growth	**4.1** External organizations engaged with KGGTF grant teams
	4.2 External organizations engaged with the KGGTF Team

Continuous progress tracking and evaluation of performance and impacts were implemented during 2022 through the following activities:

- **Monthly monitoring** of grant disbursement and expenses for timely identification of issues, consideration of grant extension requests, and provision of support to grant teams on a case-by-case basis.
- **Individual onboarding meetings** with all new grant teams covering grant management and reporting, delivery of outputs and outcomes, visibility and communications plans, and proposed partnerships, including support that KGGTF can offer to help grant teams achieve their program goals.
- **Facilitation of introductions and connections with K-Partners** for collaboration and knowledge sharing, including Technical Assistance and Knowledge Exchange programs.
- **Grant progress tracking and reporting** via the KGGTF Online Grant Tracking System (Dashboard) which facilitates the Annual Progress Report (APR) and accurate assessment and analysis of performance at individual grant, portfolio and Trust Fund level.

KGGTF ANNUAL PROGRESS REPORT

The KGGTF Annual Progress Report (APR) is critical for effective monitoring and evaluation of the Trust Fund and assessment of the performance of KGGTF grant programs. All KGGTF grant awardees with a grant active during the reporting period are responsible for the submission of an APR, which is a mandatory requirement from the Donor. For the 2022 APR, the KGGTF team collected individual APRs and an additional Survey Annex from 58 grants active within the calendar year 2022.

The APR and Survey Annex are used by the KGGTF Team to track the progress and performance of active grants over a 12-month reporting period.

The APR is intended to summarize the status of grant activities and track grant awardees' progress towards achieving the expected outputs and outcomes set out in the approved grant proposal. The APR also highlights any current or anticipated issues, delays or changes to the planned activities approved in the grant proposal and provides an opportunity for grant awardees to request KGGTF action or support during grant implementation.

The Survey Annex is intended to collect data for the KGGTF Results Framework/KPI, which quantitatively measures the performance and impact of the KGGTF grant portfolio annually. For a summary of key findings, messages, and guiding lessons from the 2022 Annual Progress Review please consult Annex 2.

"**The grant team seeks advice and assistance from the KGGTF Secretariat** on the report dissemination to enhance the report's impact."

TTL for KGGTF Grant "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"

"After the impact of COVID-19 on initial implementation, **the team has managed to advance greatly during this Financial Year**, catching up with prior delays. No additional action is required from KGGTF as the team expects swift finalization."

TTL for KGGTF Grant "Building Drought Resilience in the South of Angola through the use of geospatial information and nature-based infrastructure"

Comprehensive Stakeholder Review

The KGGTF took the opportunity of the 10th anniversary to reflect on our operations and progress, adapt to the current situation, review successes, and identify areas for improvement. The trust fund undertook a deep dive into our operations, ways of working, strategies, and partnerships, understanding where we had the most significant impact and where we should focus our attention. We aimed to be self-critical and humble, listening to stakeholders' feedback and bringing renewed focus for the next phase of KGGTF operations.

STAKEHOLDER SURVEYS

The team undertook a comprehensive multi-pronged approach and conducted written surveys and held in-person discussions with WBG staff, client countries and knowledge partners. The surveys and discussions examined how green growth had been operationalized and implemented in their program or country and what impacts had occurred through engaging with the KGGTF.

The written surveys were developed with customized questions for each target group. Questions covered various topics, including the role and value of the KGGTF, awareness and importance of green growth, challenges facing each target group, and suggestions on current needs and priorities. The survey received 136 responses, including 35 from World Bank staff, 50 from client countries, and 51 from knowledge partners. The results will be taken under advisement and will inform future priorities.

"**I worked with a new Mexican government to develop a National Housing Program** with the KGGTF grant. The program aimed to include affordable housing and basic infrastructure and implement an integrated urban development plan. The program required overall housing policy and institutional changes in Mexico. These **policy reforms ended up generating a new loan for the Bank, which was a Development Policy Loan for $750 million**. The KGGTF grant extremely helped me engage with the Mexican government to initiate a dialogue for policy and institutional changes at the very beginning of making the housing program and improve legal and institutional capacity in policy development. I think **the benefits of the KGGTF grant were huge in the context of Mexico.**"

Horacio Cristian Terraza, Lead Urban Specialist, The World Bank

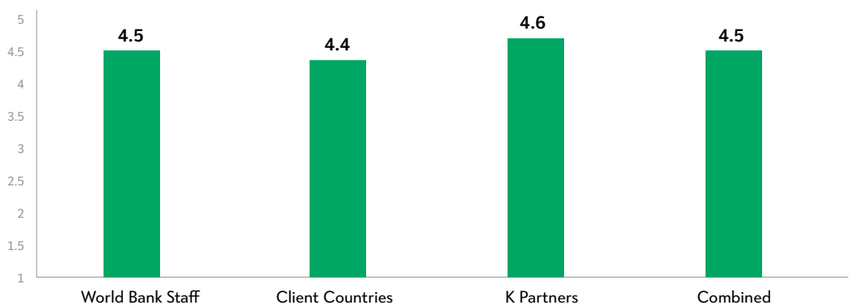
IN-DEPTH INTERVIEWS

The team conducted 30 in-depth interviews between August 23 to October 17, 2022, with World Bank Task Team Leaders (TTLs), knowledge partners, and client countries. The interviews covered topics ranging from the value and content covered by the Knowledge Exchanges, the implementation of client countries in deploying green growth policies and technologies, and the long-term partnerships and achievements that occurred because of the interventions of KGGTF and the financial support of the trust fund. The conversations provided valuable insights into the value and contributions of the KGGTF, the experience of working with knowledge partners, and the experience of client countries in deploying green growth strategies, technologies, and policies.

How important is Green Growth?

Green Growth is highly important for sustainable development in client countries and investment decisions at the World Bank.

KGGTF is highly useful to help green growth programs and contributes to achieving desired goals in client countries.



The two major challenges client countries face in implementing green growth solutions:

1. Limited funding
2. Lack of Institutional capacity

"**The KGGTF grant was very useful and flexible**. We were able to combine both the regulatory view and market assessment and then introduce prototypes and pilots that would really test the waters. **We found there is high demand for drone services, which are quite new.** We could see that there was demand for more and more, the Zanzibar wanted to push it further."

Edward Charles Anderson, Senior Disaster Risk Management Specialist

"The World Bank and Korea relationship is strong. **We can leverage this effort to introduce other topics where Korea has expertise, and we can bring that into the developing world**."

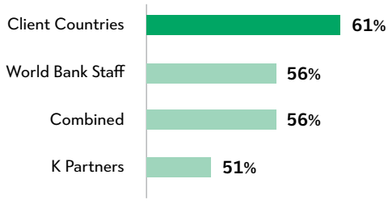
Nathyeli Acuna, Gender Specialist, ESMAP, The World Bank

The role of KGGTF in connecting World Bank programs and Korea

1. More than 50% initiated cooperation with Korea because of KGGTF

2. More than 2/3 said changed their impression of cooperation with Korea positively after engagement through KGGTF.

Was/Is this your **first time** cooperating with Korea through KGGTF?



Has your impression of cooperation with Korea changed **positively** because of your engagement with the KGGTF?

"**The KGGTF grant, identified locations to build sand dams under river basin plans.** We have preliminary designs of these sand dams. When this big lending project goes into effect, we have the locations identified and already designed sand dams for river basin planning. **The project will now be able to finance immediately, build, and scale up this effort started by the KGGTF grant.**"

Aleix Serrat Capdevila, Senior Water Resources Management Specialist

"An area KGGTF may consider is to provide recipient grants that complement implementation. Client countries do not have a lot of resources and having grant resources which the government manages could be useful. It may include innovative practices and capacity building, and so on. The countries will really appreciate it. And **it will be nice to scale up your programs because the money that the KGGTF leverages is enormous**."

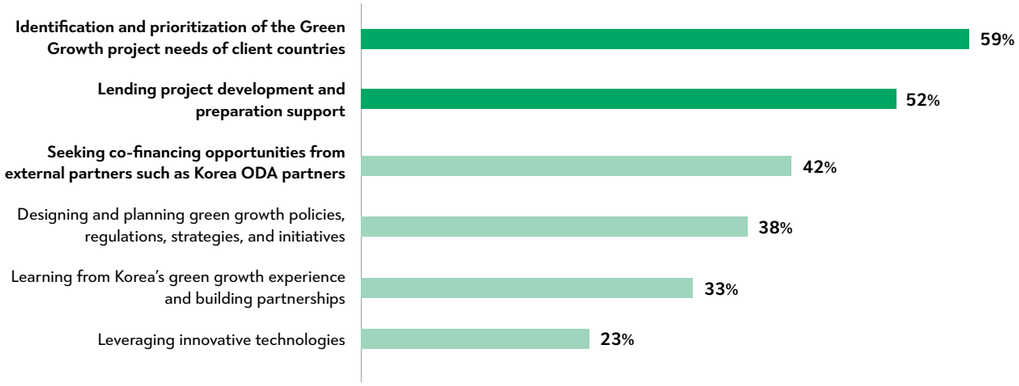
Paola Agostini, Lead Natural Resources Management Specialist

Stakeholders identified three key areas for further focus

1. Help in identifying and prioritizing **green growth project needs** of client countries

2. Support in developing and preparing for **lending projects**

3. Seeking **co-financing opportunities** from external partners such as **Korea ODA partner**



"**The KGGTF grant focused on improving inclusive sanitation and water quality and working with the private sector** to create low-skill green jobs along the sanitation services around Lake Victoria Basin. We prioritized resource recovery and reuse and integrated green and gray technologies for a greener recovery. We wanted to learn how Korea mobilized the investments of small and medium enterprises (SMEs). Specifically, how they improved scientific analysis and public services in local communities. We wanted to have an opportunity to learn from the SMEs and their experiences and scale up. Going forward we would find it helpful if KGGTF focused on the area of mobilizing the private sector to increase the potential for creating low-skill jobs in sanitation which will support a quiet number of families in developing countries."

Shyam KC, Senior Water Resources Management Specialist

3 Portfolio Overview

PORTFOLIO BY GRANT STATUS*

GRAND TOTAL
$106,385,543
196 grants

ACTIVE
$27,119,000
47 grants

NEW
$8,503,200
16 grants

CLOSED
$70,763,343
133 grants

BY SECTOR

URBAN, RESILIENCE AND LAND
$27.02
54 grants
25.40%

TRANSPORT
$21.46
38 grants
20.18%

ENVIRONMENT, NATURAL RESOURCES AND THE BLUE ECONOMY
$17.01
30 grants
15.99%

ENERGY AND EXTRACTIVES
$12.11
25 grants
11.38%

AGRICULTURE AND FOOD
$7.14
11 grants
6.71%

DIGITAL DEVELOPMENT
$6.83
13 grants
6.42%

WATER
$5.89
14 grants
5.54%

IFC
$5.30
9 grants
4.98%

GLOBAL INITIATIVES
$3.63
2 grants
3.41%

BY REGION

GLOBAL
$16.09
21 grants
15.13%

EUROPE AND CENTRAL ASIA
$13.11
27 grants
12.33%

MIDDLE EAST AND NORTH AFRICA
$4.33
10 grants
4.07%

LATIN AMERICA AND CARIBBEAN
$16.07
32 grants
15.11%

AFRICA
$21.10
37 grants
19.83%

SOUTH ASIA
$18.54
35 grants
17.43%

EAST ASIA AND PACIFIC
$17.14
34 grants
16.11%

** As of December 31, 2022*

All grant approved amounts are in $US million.

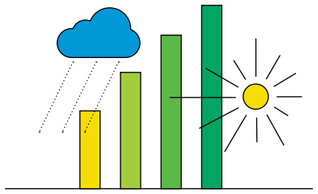
KGGTF Impact Stories

4

KGGTF quantitatively measures the progress and performance of its grant portfolio annually through its Results Framework/KPI. The Results Framework has 4 Outcome Pillars, each with outcomes and outcome indicators describing the results of implemented activities and outputs delivered by KGGTF-funded activities. The progress and performance of each grant featured in this section during the calendar year 2022 are highlighted and relate to the Results Framework below. Please consult Annex 1 for the Annual Progress Review and Annex 2 for the KPI achievements and progress towards targets.

KGGTF OUTCOME PILLARS	OUTCOMES
PILLAR 1 Increased Mobilization of Green Growth Investments	WB lending influenced by KGGTF funded activities
PILLAR 2 Adoption of Green Growth Policies, Regulations, Strategies, and Initiatives	Client countries' adoption of green growth policies, regulations, strategies and initiatives influenced by KGGTF funded activities
	WB's adoption of green growth strategies, country engagements and project development influenced by KGGTF funded activities
PILLAR 3 Increased Capacity, Knowledge, and Technologies to Implement Green Growth in Action	Knowledge Exchange programs supported by KGGTF funded activities
	Capacity building activities supported by KGGTF funded activities
	Creation of knowledge products to transfer green growth technologies and solutions
PILLAR 4 Strengthened Partnerships and Collaborations to Advance Green Growth	External partnerships (Korean & Non-Korean)

Ethiopia's Green Growth Agenda: Addressing Climate Change and Environmental Challenges



Environment, IFC
Africa
Ethiopia

TEAM LEADER
Sinem Demir Duru
Operations Officer IFC

Grant approval: 2017

CONTEXT AND CHALLENGES

Ethiopia's economic transformation and development process are at risk due to environmental challenges, including climate change. However, the World Bank Group's Country Partnership Strategy (CPS) for Ethiopia has recognized the urgency of transitioning to a low-carbon, climate-resilient economy. The CPS supports the Ethiopian government's Climate-Resilient Green Economy (CRGE) initiative and aims to strengthen the systematic and enhanced treatment of climate impacts at the strategic level.

The World Bank Group's CPS for Ethiopia addresses climate change as a cross-cutting issue that could integrate into the development process. The CPS aims to foster competitiveness and employment while enhancing resilience and reducing vulnerabilities, in line with the CRGE. The CPS recognizes that a multifaceted approach is needed to address the challenges posed by climate change via better management of natural resources such as land, forestry, groundwater and promotion of "green technologies."

PROGRAM GOAL

The goal of Ethiopia's Green Growth Agenda is to address climate change and environmental challenges by transitioning to a low-carbon, climate-resilient economy through better management of natural resources and promoting green technologies. The program had a **particular focus on industrial parks as critical agglomerates for manufacturing activities and economic growth in the country.** The World Bank Group's Country Partnership Strategy for Ethiopia supports the Climate-Resilient Green Economy (CRGE) initiative and advocates for smart investments in public goods and private sector clean technology. The CPS recognizes that a multifaceted approach is needed to address the challenges posed by climate change and advocates for the development of improved industrial policies.

"It was critically important for Ethiopia to integrate green transformation as part of its economic development and industrialization strategy. As IFC we are honored to be part of the efforts to address emerging issues, introduce private sector solutions and improve Industrial Park operations to ensure business viability for sustainable growth."

Sinem Demir, Operations Officer, IFC

RESULTS

Improved efficiency

Climate-efficient industrial park design, as well as debottlenecking practices that will physically serve to integrated management in waste, water, energy, and sanitation sectors, will upscale resource efficiency and improve manufacturing efficiency. All these efforts will result in GHG abatement, water efficiency, local pollution reduction, and community health improvement as its spillover impact.

Greater resilience

Although Ethiopia has relatively abundant water resources, it is considered 'water stressed' due to rapid population growth over the last decade. Estimates of annual renewable groundwater per year range from 13.5 to 28 billion m^3, of which only about 2.6 billion m^3 are exploitable. Natural variability in rainfall patterns and distribution, punctuated by extreme climatic events, has thrust many regions into severe water scarcity and degraded water quality. Industry supplies its processed water needs through wells. Ethiopia is moving through an industrialization path ambitiously, and water scarcity appears to be a critical issue for the quality of water-intensive sectors such as textiles. The project will strategize water management to overcome water stress and quality challenges. Integrated water resources management in the industry will increase resilience.

Increased competitiveness

The project will add value to adapting institutional strategies and action plans to promote green competitiveness of forefront sectors and their selected products. From a broader perspective, replication of the green growth strategy at sector and zone levels and leveraged public-private dialogues will increase the attractiveness of adaptation/mitigation projects and zones to new tenants and global buyers, who would benefit from having resilient infrastructural services and green manufacturing operations. This will increase industrial competitiveness broadly across different industries.

KEY RESULTS

The counterparts started implementing the project's critical regulatory and institutional recommendations to create an enabling environment for greening industrial park operations. Ethiopian Investment Commission (EIC) updated the Investment Proclamation No.769/2012, which **now mandates tenants to give due regard to the social and environmental sustainability values,** including environmental protection standards and social inclusion objectives, **in carrying out their investment objectives.**

Ethiopian Standards Agency released CES 329 Sludge Limit-Requirement Standards entirely in line with the identified regulatory gaps and developed regulatory communique and Sludge management Procedure under the project concerning sludge management from industrial wastewater treatment plants, including the limit values landfill application, waste-to-energy plants, and storage and transportation. Sludge management standards and procedures became operational in all industrial parks with industrial wastewater treatment plants, including Hawassa Industrial Park.

In August 2022, EIC released a communique for industrial parks and their tenant companies restricting the import of sodium oxide and mercury vapor lamps and encouraging the adoption of energy-efficient LED lights.

Hawassa Industrial Park Authority has revised the organizational structure and set up an environmental management and protection unit responsible for overseeing Eco-industrial Park Framework.

The project supported the EIC legal team in their efforts to launch an Environmental and Social Directive for Industrial Parks, which will be built on the project's recommendations submitted through a developed regulatory communique and eco-industrial park framework. The new Directive will be launched in the first half of 2023 and fully aligned with the developed EIP Framework under the project.

Project recommendations delivered within business cases on resource efficiency and cleaner production implemented by 12 tenant companies, Hawassa Industrial Park, and IPDC. Implementing the project's recommendations **directly avoided 2,493 metric tons of CO2-equivalent (GHG) annually, generating more than $1.3 million in direct cost savings annually.**

KGGTF OUTCOME SUMMARY

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY

1. Sludge management standards,
2. Green manufacturing strategy,
3. Investment proclamation amendment for sustainability

INFLUENCE ON WB STRATEGY/PROJECT DEV

Policy paper with directions to inform the industrial policy and the industrial park program going forward

PARTNERSHIPS & COLLABORATION

Korean Partnerships:

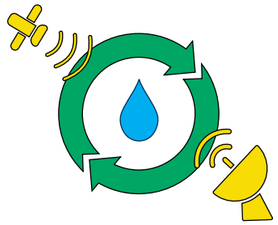
- Korea Energy Agency (KEA)
- Korea Institute of Industrial Technology (KITECH)
- Ulsan Industrial Park (ULSAN EID)

- United States Agency for International Development (USAID)
- United Nations Industrial Development Organization (UNIDO)
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

"Ethiopian Investment Commission (EIC) recognizes the project's achievements as a best practice of cooperation with IFC on the reform of industrialization and Green Industrial Parks agenda. By allying with EIC and other national stakeholders, IFC has delivered the support in high quality. Technical studies and analyses as well as the implementation experience had played a significant role in paving the way for improving the sustainability of Industrial Parks via an adopted and operationalized environmental management mechanism i.e., National Eco-Industrial Park Framework (EIP) and help strengthen the sustainability and competitiveness of Industrial Parks in the country."

Ethiopian Investment Commission

Strengthening Capacity in Climate Resilience for Water Infrastructure Development in Uganda



Water
Africa
Uganda

TEAM LEADER
Fook Chuan Eng,
Lead Water Supply and Sanitation Specialist

Harriet Nattabi, Senior Water Resources Specialist

2017

CONTEXT AND CHALLENGES

As Uganda embarks on poverty reduction and economic development, this should take a green growth path that is environmentally sustainable and provides for wise management of its water and environmental resources. Developing "Climate Resilient, Sustainable Water, Environmental and Civil Infrastructure" requires a well-trained cadre of analysts.

The Government of Uganda has, for over a decade now, undertaken reforms to make Integrated Water Resource Management (IWRM) the foundation for water sector management and development. As part of the reforms, an appropriate policy and institutional framework for IWRM, including regulatory, planning, and development, has been established. While there is a degree of expertise to support this effort, several capacity gaps remain, including the need to address emerging issues such as the increasing climate variability and change leading to higher occurrences of extreme events such as floods and droughts in the country. This calls for integrating climate risks and opportunities into the planning and designing of Uganda's development programs and infrastructure, which requires a specific skill set unavailable in the country.

The Government of Uganda seeks to develop more in-depth training opportunities, including establishing a Water Resources and Climate Resilience Institute (WRCRI) housed in the Ministry of Water and Environment. The building structure has been provided, and what's needed now is the design of applied training modules or curriculum that will be used to build a cadre of skilled champions in crucial infrastructure sectors such as Energy, Urban, Transport, and Water, as well as building strategic partnerships with relevant global institutions to develop the appropriate training modules and programs needed.

PROGRAM GOAL

The KGGTF Program undertook an institutional and training needs assessment of the water, and climate sector and related infrastructure sectors in Uganda designed the institutional framework for the WRCRI to meet the increasing capacity development needs in the sector and developed key training modules for use in the training of government practitioners across key sectors.

The KGGTF Program initiated a process of developing a generation of experts in analyzing and managing Uganda's water and environmental systems with the integration of Climate Resilience with the required analytical tools.

RESULTS

Greater resilience

The required institutions have been established in the country, but these are limited in terms of skilling and the modern technology required to ensure the country is more resilient to the vagaries of the ever-increasing climate variability and change impacts. With the right analytical tools, technology, and skilled experts, the country will be able to better prepare and mitigate against the extreme climatic events that are happening lately. The outcomes of the activity will contribute to this through the tooling of the WRCRI, as well as through the generation of Uganda-specific knowledge and development of trained professionals to go into government and private sector to undertake the task of making Uganda's Infrastructure and economy climate resilient. These outcomes fit with the KGGTF outcomes below:

- Increased Capacity,Knowledge, and Technologies to Implement Green Growth in Action
- Strengthened Partnerships and Collaborations to Advance Green Growth

Increased competitiveness

Establishing strong and efficient institutions underpins a country's competitiveness, given that well-facilitated institutions, in terms of skilled human resources and modern tooling, create the enabling environment for Green Growth. Given the push from the Government of Uganda for infrastructure development to support increased economic growth, this should go hand in hand with the establishment of efficient and effective institutions coupled with reliable information to support resilient planning. This requires the government to have the right expertise and technology in place. This activity and the strategic partnerships aimed to help the government to build the right expertise, analytical tools, and strategic partnerships to ensure that the planning and designing of infrastructure and all government programs, in general, is done most efficiently, including improving coordination and collaboration between different sectors.

"The impact of this activity will only increase with time as more people are trained by the people who benefited from this activity, strengthening the capacity in climate resilience for water infrastructure development in Uganda."

Fook Chuan Eng, Lead Water Supply and Sanitation Specialist

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
$305,000,000

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
Catchment Management Guidelines and Dam Safety Regulations

KNOWLEDGE PRODUCTS PRODUCED
Training Modules for Climate Change Mainstreaming in Water Resources Planning and Dam design

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korean: K-Water

Training Leaders and Building Technical Capacity

Onsite training for 34 leaders of Uganda's water sector occurred in Korea. In addition to onsite training with Korean experts on how to integrate climate resilience into the management of Uganda's water and environmental systems extensive online training modules were created covering different aspects of water resources planning and resilient infrastructure development.

PARTNERSHIPS & COLLABORATION

Korean Water Academy (K-Water)

The Korean Water Academy (K-Water) provided expertise in the development of training modules for government practitioners across key sectors. K-Water has extensive experience in this kind of applied training and created the curriculum based on the needs identified from the training needs assessment.

This activity also supported the initial training of selected and targeted government technocrats from different sectors. Trainees and decision-makers visited Seoul and had onsite training at a range of different facilities including: Sihwa Tidal Power Plant, IWRM Center, Water Hazard Platform Center, Youngcheon Dam site of a flood-control capacity-expansion project, and Hapcheon Dam (site of a water-based solar-power system).

Through this experience, participants could benchmark the application of various cutting-edge technologies in water management to respond to climate change.

The training modules developed in different areas related to climate change and water resources planning and infrastructure development will benefit more people beyond the 34 experts trained in Korea.

NEXT STEPS

The trained trainers are serving as a resource to the Water Resources Institute. They will go on to train other professionals using the knowledge they have acquired and the online training materials that have been developed under the activity. There will not be a loan linked directly to the activity, but the capacity built will strengthen the infrastructure development under a new water supply and irrigation project.

Strengthening the Senegalese Spatial Data Infrastructure

Urban
Africa
Senegal

TEAM LEADER
Andre Teyssier,
Senior Land Administration Specialist

Lucas Bochud,
Land and Geospatial Specialist

2018

CONTEXT AND CHALLENGES

Geospatial information has become an essential tool to support decision-making in various sectors. To improve the collection, use, management, and dissemination of this information, developing a National Spatial Data Infrastructure (NSDI) provides an opportunity to enhance stakeholder coordination, build capacity, and harmonize geospatial-related activities. Although geospatial information is prevalent in Senegal, the low level of coordination, data sharing, and compatibility lead to duplication of investments. It prevents actors from taking advantage of existing information held by other stakeholders.

To remedy this, the Government laid the foundations for an NSDI by creating an NSDI Governing Body (called GICC), developing a geodata catalog, raising awareness among elected officials, and building capacity for geospatial information management. This resulted in the widespread use of the platform, which provided open access to selected datasets with over 30,000 downloads in just two years. Demand for access to additional thematic datasets is growing. To build on this initial success, further work is needed to upgrade the platform, standardize and integrate data from other agencies, and improve stakeholder coordination and capacity at all levels.

To this end, in 2016, the GICC developed an action plan to establish the NSDI, the National Geospatial Plan (or PNG). However, the high cost of implementing this action plan (estimated at over US$10 million) resulted in partial implementation, and the strategy needed to be updated based on a more recent assessment. The Government also expressed the need for capacity building in data standardization to ensure that datasets adhere to the same norms and to raise awareness of the advantages of data sharing and increased coordination, which would increase stakeholders' engagement and reap the benefits of such an infrastructure.

PROGRAM GOAL

This grant supports the Senegal Cadaster and land tenure improvement project, which aims to build the government's capacity to implement a national cadaster and increase the number of registered land rights across all 136 municipalities. To ensure effective and sustainable land data management, the grant will also strengthen the Senegalese Spatial Data Infrastructure through a series of analytical activities, trainings, outreach events, and a knowledge exchange aimed at leveraging Korean expertise to enhance the conditions necessary for such an ecosystem to flourish.

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
$80,000,000

KNOWLEDGE EXCHANGE PROGRAMS HELD
12 participants from Senegal in partnership with LX, SPACE N, KRIHS, Wavus, Hojung Solutions, Korean Territorial Museum

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korean: LX, Non-Korean: University of Leuven (KU Leuven); Université Cheikh Anta Diop

ACTIVITIES IN PROGRESS

- Diagnostic and prospective assessment of the NSDI to inform an updated version of the national strategy for its development.
- Capacity building in geospatial data management with a focus on data standardization, including training future trainers to sustain capacity.
- Raising awareness and communication among the government, elected representatives, territorial authorities, and NGOs on the potential of geoinformation to help them achieve their missions and the benefits of an open data policy.

KEY RESULTS TO DATE

- The initial results and recommendations of the NSDI assessment were presented to national stakeholders and initiated a dialogue on critical issues to be addressed in the upcoming roadmap.
- A knowledge exchange trip was conducted in South Korea with a Senegalese delegation composed of decision-makers and technical staff. Key lessons learned from the Korean experience included the importance of fostering political will by raising awareness of the benefits of investing in an NSDI, establishing a geospatial coordination unit with adequate staff and budget, setting up consultative forums with national stakeholders, joint budgeting, offering continuing GIS training programs for professionals and job seekers, mandating the sharing of critical datasets and establishing an incentive mechanism for data sharing, developing a medium-term strategic plan broken down into annual action plans, setting up institutional coordination mechanisms, and establishing a sustainable business model.

"The study tour allowed Senegalese policymakers to witness the benefits of investing in an NSDI based on South Korea's advanced experience. Exchanges with Korean experts provided an opportunity to discuss how they have solved some of the challenges they have in common and to identify potential quick wins for greater efficiency through data sharing and improved institutional coordination."

Lucas Bochud, Land and Geospatial Specialist

"There is no learning without openness. The Korean institutions that we visited provided us with unlimited options for the effective application of GIS tools in economic and social development policies. Our trip allowed us to discover the journey of the Korean population, which through the ages, has been able to structure a successful development model. What I retain from this trip is not so much what has changed in me as what I must do for the progress of my country."

Cheikh MBOW, General Director of the Center for Ecological Monitoring

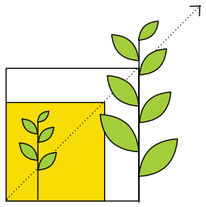
PARTNERSHIPS & COLLABORATION

Korean Partnerships:
- Korea Land and Geospatial InformatiX Corporation (LX)
- Korea Research Institute for Human Settlements (KRIHS)
- SPACE N
- Wavus
- Hojung Solutions

LOOKING AHEAD

Recommendations from the NSDI assessment report and lessons learned from the Korean experience in geospatial information management **will provide Senegalese policy makers with cutting-edge expertise that will help them design an ambitious and effective action plan** for the development of the Senegalese Spatial Data Infrastructure.

Leveraging Digital Technologies for Scaling up Climate Smart Agriculture in Kenya



Agriculture
Africa
Kenya

TEAM LEADER
Vinay Kumar Vutukuru
Senior Agriculture Economist

2020

CONTEXT & CHALLENGE

The World Bank's Kenya Climate Smart Agriculture Project (KCSAP, P154784) is a USD $250 million IDA credit project to build resilience to climate change and variability in the agricultural sector. KCSAP focuses primarily on improving water and soil management in smallholder farming, supporting the generation and dissemination of Climate Smart Technology Innovation Management Practices, and enhancing access to agro-weather and climate advisory services among farmers and herders.

The program supported the Ministry of Agriculture in setting up the Big Data Platform that provides climate information, market, and climate-smart agronomic advisories to farmers in Kenya. In addition, the World Bank invests $200 million through the National Agriculture Inclusive Growth Project (NARIGP) to support specific green value chains. Thus, $450 million is being invested in enhancing the productivity, resilience, and profitability of the million farmers across all 45 rural counties in Kenya.

What is Digital Agriculture?
Digital agriculture, or sometimes 'agtech,' refers to any innovation used across the value chain of agriculture to improve efficiency, profitability, and sustainability. It includes hardware, software, business models, new technologies, or applications.

PROGRAM INVESTMENTS AND RESULTS

This KGGTF-funded program is comprised of four separate but related components.

1 Innovation Challenge on Climate Smart Technologies

The program collaborated with Korean institutions and identified local innovators and startups for a startup challenge. The 21 finalists selected out of 155 Ag Tech applicants from Kenya, Uganda, Nigeria, Ghana, Ethiopia, Tanzania, Rwanda, Korea, and India with the potential to transform agriculture in Africa pitched in front of a grand jury of representatives from the Government of Korea, Kenya, Uganda, the Gates Foundation, FAO, WFP, Plug and Play, CGAP, and the World Bank. The Summit was attended by senior government officials (Ministers of Agriculture, Secretary and others) from Kenya and Uganda. The challenge winners will implement their solutions and be part of the One Million Farmers Platform (OMFP). The winners' solutions include:

- Technologies that provide Climate Smart Advisories.
- Integrated Pest Management Systems.
- Conservation Agriculture.
- Scaling Up Solar Irrigation.
- Promoting Organic Certification & Marketing.

In addition to DAT pitches, the Summit convened policymakers, incubators, accelerators, and investors to discuss how to foster an enabling entrepreneurial environment and increase investment in technologies that benefit smallholders.

Expected outcomes: adoption of new green growth and climate-smart technologies by the county governments, identification of best technologies and solutions will be incorporated into the One Million Farmer Platform, policy change, and increased scale of innovative ideas and know-how by the private sector.

One Million Digital Farmer Platform (OMFP)

The "One Million Farmer Platform" was launched by the Ministry of Agriculture and the World Bank in April 2019 with the objective of ensuring one million farmers can leverage digital technologies to enhance productivity, profitability, and resilience. The initiative aims to create a platform that leverages innovative agricultural technologies to reach one million farmers. The platform is now ready to scale and reach nearly three million farmers by 2026.

Korea-Africa Challenge took place in Nairobi, Kenya, in February 2023. The challenge finalists will join the One Million Digital Farmer Platform (OMFP).

The event was successful, with over 150 participants from Korea and Kenya, and included the participation of nearly 50 Kenyan government stakeholders and over 10 Korean counterparts.

Disruptive Agriculture Technology (DAT) are defined as digital technical innovations that enable farmers and agribusiness entrepreneurs to leapfrog current methods to increase their productivity, efficiency, and competitiveness, thereby facilitating access to markets, improving nutritional outcomes, and enhancing resilience to climate change.

"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

2 Building Bridges Between Korea and Kenya

An extensive Knowledge Event brought over 150 stakeholders together from Korea and Kenya to find solutions to cross-cutting issues. The event provided a platform for stakeholders and experts from the Korean ecosystem to demonstrate the use of green and climate-smart technologies and find ways to collaborate.

The event included institutions like the Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries (EPIS), Korea Rural Community Corporation (KRC), Foundation of Agriculture, Technology, Commercialization, and Transfer (FACT), Plug & Play Tech Center, and other Korean Startups in the Digital Agriculture space.

Topics for discussion included: a global assessment of the impacts of public support for agriculture producers on environmental and nutritional outcomes, the use of Korean research and development (R&D), harnessing digital technologies and other technologies to strengthen the resilience of food and livestock production, and sustainable agriculture in the face of climate change. In addition, the event showcased green policies and programs that will increase public and private sector productivity and job creation.

The knowledge-sharing event included topics such as a global assessment of the impacts of public support for agriculture producers on environmental and nutritional outcomes, the use of Korean research and development (R&D), harnessing digital technologies and other technologies to strengthen the resilience of food and livestock production, and sustainable agriculture in the face of climate change. In addition, the event will showcase green policies and programs that increase public and private sector productivity and job creation.

RESULTS

Dissemination of best practices; strengthened implementation capacity to execute green growth projects; development of knowledge and learning products and use cases.

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
$279,700,000

INFLUENCE ON WB STRATEGY/PROJECT DEV
Influenced the design of the National Agriculture Value Chain Development Project (P176758) benefitting Kenya

KNOWLEDGE EXCHANGE PROGRAMS HELD
150 participants from Kenya and India in partnership with 6 Korean organizations including 3 start-ups: EPIS, FACT, KRC, Greenlabs (start-up), Tridge (start-up), Telefarm (start-up)

IN-COUNTRY CAPACITY BUILDINGS HELD
50 participants from Kenya

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korean: EPIS, Non-Korean: Kenya Agriculture and Livestock Research Organization

3 Partnership with the Ministry of Agriculture Food and Rural Affairs (MAFRA)

The program applies Korea's expertise in Climate Smart Agriculture, Smart Farming, and Greenhouse Technologies by focusing on digital learning advisories, green growth, and organic certification in collaboration with KALRO. KALRO staff have received technical advice on improving and maintaining greenhouses, and as such, the partnership enables the public sector to adopt new technologies and innovative ideas. The pilot is still ongoing and expected to end in May 2023

Results: Exchange of best practices and strengthened implementation capacity; government officials have gained training on implementing and monitoring green growth initiatives.

4 Technical Capacity Building at the National and Country Level

The program provided technical assistance to the Ministry of Agriculture teams (both at the National and County levels) and the Kenya Agriculture and Livestock Research Organization (KALRO) on implementing the Big Data for scaling up Climate Smart Technologies. Additionally, the program demonstrated using digital technologies for service delivery through e-voucher programs. The program is creating change within Ministry of Agriculture officials and other organizations such as KALRO to adopt climate-smart technologies and adapt green growth initiatives.

This grant supports the Kenya Climate Smart Agriculture Project P154784, which focuses on increasing agricultural productivity to build resilience to climate change risks in targeted smallholder farming and pastoral communities in Kenya.

PARTNERSHIPS & COLLABORATION

- Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fish (EPIS)

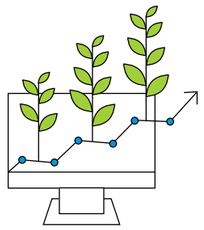
"These technological advancements can support the goal of achieving more resilient productive and sustainable agriculture as well as food systems that better meet consumer needs."

Kenyan Agriculture Secretary Josephat Muhunya

"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 the World Bank Group Lead for Data and Digital Agriculture

Vietnam's Agricultural Sector Transforms towards Green Growth



Agriculture
East Asia Pacific
Vietnam

TEAM LEADERS:
Van Hoang Pham,
Operations Officer

Binh Thang Cao,
Senior Agriculture Specialist

Hardwick Tchale,
Senior Agriculture Economist

2019

CONTEXT AND CHALLENGES

Vietnam's agricultural sector has relied heavily on natural resources, leading to an unsustainable environmental footprint. Additionally, the sector is increasingly impacted by climate change. **Agriculture accounts for over 12% of the country's national GDP**, **35% of employment**, and 14% of exports. The sector provides a source of nutrition for a population exceeding 90 million people and is an increasingly crucial global supplier. In 2022, Vietnam's agricultural **exports reached 185 countries worth more than USD $53 billion**.

One of the practical solutions for farmers affected by climate change is to shift from rice to other crops that are higher value-added, environmentally friendly, and adaptable to climate change. Tropical fruits, such as dragon fruit, pineapple, and passion fruit, are potential replacements for the current, mono-farming of rice. Diversification to tropical fruits, have a higher market value, are environmentally friendly, and are suitable for rural labor conditions. Fruit trees grow fast, have high productivity, long harvesting times (8-10 months per year), much higher market value than rice, and are suitable for rural labor conditions.

Vietnam's Ministry of Agriculture and Rural Development estimated that the **income from fruit crops could be 10-fold higher than rice.** In addition, drought-tolerant fruit trees could be widely grown and provide a source of livelihood for poor farmers, particularly those living in areas blighted by poor nutritious soil due to climate change.

During 2010-2018, fruit tree-growing areas increased on average by more than 5% per year (about 165,000ha) and are expected to increase further. Creating and expanding markets for these products is essential to promote and sustain the agricultural green growth strategy. This includes understanding consumers' preferences, complying with import requirements regarding traceability, quality, and food safety, and simplifying import-export procedures to shorten inspection and clearing times.

PROGRAM GOAL

The program will support Vietnam with the implementation of the Agricultural Restructuring Program working to transform the sector towards economic efficiency and environmental sustainability. The program will further pilot a digital platform using Blockchain and IOT technology to track, trace, and certify produce is also being done to satisfy consumer demand for food safety and traceability.

RESULTS

Applying DT such as Blockchain and IOT in setting up the digital platform will enhance efficiency by reducing transaction costs by simplifying documentation requirements, eliminating non-adding value intermediaries along the value chain, and improving quality and food safety monitoring from farms in Vietnam to tables in Korea. Therefore, it will solidify trust by providing transparent information and, as a result, trigger increased income for farmers by delivering in-demand and qualified products.

Greater resilience: Promote increased resilience.

- Enhancing market access for climate-resilient agricultural products will result in a more resilient agricultural sector. Areas where soil and natural conditions become unsuitable for rice cultivation due to severe climate change impacts, such as drought, salinity, increased temperatures, and pests and diseases, can embrace other crops more adaptable to such extreme conditions. Besides, moving away from highly intensive mono-rice farming to different tropical drought-tolerant, pest and disease-resistant crop varieties such as dragon fruit, pineapple, and passion fruit will reduce consumption of water and other natural resources. Switching to fruit will have an additional benefit in helping to lower GHG emissions as less fertilizer will be required for the mono-crop rice.

Increasing competitiveness

- Use of technology to monitor product quality and strengthen linkages along the value chain will improve the sector's competitiveness by increasing economic efficiency, diversifying crop production toward higher value addition, and simultaneously reducing the environmental footprint in crop production.

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
454,900,000

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
Vietnam's Green Growth Action Plan for the Agriculture Sector

INFLUENCE ON WB STRATEGY/PROJECT DEV
Mekong Delta Climate Resilience and Integrated Transformation Project-P179572

IN-COUNTRY CAPACITY BUILDINGS HELD
340 participants in Vietnam

KNOWLEDGE PRODUCTS PRODUCED
Report on Digital Technology for Traceability in Vietnam's FV Value Chains

VISION FOR
2050

To address these challenges, the World Bank Group has supported Vietnam in implementing the landmark Agricultural Restructuring Program. The program aims to transform the agricultural sector towards economic efficiency and environmental sustainability in line with the Vietnam Green Growth Strategy and Action Plan 2014-2020, with a vision for 2050.

"The VnSAT has been widely acknowledged as a best practice green agricultural transformation project. It has effectively supported the efforts of the Government to implement its ARP as well as successfully demonstrated a model for sustainable agricultural sector transformation in Vietnam through the rollout of effective climate-smart agriculture solutions for growing rice and coffee. It delivered transformative green agricultural results and set the stage for the renewed national green growth agenda. The VnSAT made significant contributions to the development of new Government strategies to transition to low-carbon agriculture."

Van Hoang Pham, Operations Officer

Watch the video to learn more about the project.

PARTNERSHIPS & COLLABORATION

- Korean government authorities, business associations and outside firms and Government.
- IFC also supported MARD in obtaining export permissions for four major fruits including red dragon fruit export to Korea, longan export to Japan, and passion and durian fruit export to China. IFC also supported MARD in completing and submitting for issuing four national standards of dried and frozen passion fruit and dragon fruit. Those results have stimulated investment in F&V from the private sector to take advantage of new export opportunities.
- Professors from Seoul National University were invited to peer review and comment on the report on Digital Technology for Traceability in Vietnam's FV Value Chains. The team also sent invitations to the Embassy of Korea to participate in the project's events and workshops.

LOOKING AHEAD

Following the success of the VnSAT, the Bank is assisting the Government in developing a national one million-hectare high-quality low-carbon rice program with funding from the Transformative Carbon Asset Fund (TCAF). This program will support Vietnam achieve its NDC and methane pledge and access global carbon finance markets.

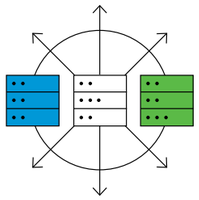
Additionally, the Bank is also working with the Government to prepare the Mekong Delta Climate Resilience and Integrated Transformation Project (P179572, estimated IBRD loans around US$350 million). This project will help enhance climate resilience and improve livelihoods in Vietnam's Mekong Delta, consistent with the Government's green growth strategy.

"The VnSAT project has not only a meaningful effect on economic development such as increasing productivity and quality for the rice and coffee industries but also improves and creates very positive changes for the environment and society. The World Bank regards VnSAT as a model project. Through the VnSAT project, we have also determined that the production of rice and coffee in particular and other agricultural commodities in general must always be towards a sustainable development goal. We should not only increase productivity but also reduce production costs from which there will be an impact to better protect the environment, especially help reduce the use of fertilizers and plant protection drugs."

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

1 Total investment cost of VnSAT was US$376 million, of which US$211.7 million from IDA Credit and the remaining US$164.9 from local private sector contributions. Project implementation was from June 2015 to June 2022.

Green Data Center Strategy in Mongolia



Digital Development
East Asia and Pacific
Mongolia

TEAM LEADERS:
Benqing Jennifer Gui
Senior Digital Development Specialist

2020

CONTEXT AND CHALLENGE

Digitization is becoming more critical than ever, and building sustainable green data centers is vital to ensuring digitization is climate friendly.

Mongolia has room to grow its data center business in both the public and the private sectors. The Government of Mongolia owns and manages only one government data center, and its needs are rapidly increasing. The recent COVID-19 pandemic has increased the demand for data centers to enable remote work and e-learning, but the private sector has built only eight data centers. The result is increasing strain on the current system. Additionally, there is an economic opportunity as in China's Inner Mongolia, which has a climate similar to Mongolia's, the private sector has established many data centers, making a solid case for Mongolia's suitability for investing in data center business hubs.

Mongolia is landlocked and has an extreme continental climate, with winter temperatures consistently below freezing. Its geography and climate are favorable for conditions needed to maintain data centers. Data centers typically consume vast amounts of energy to keep the temperatures cool to prevent equipment from overheating and usually consume 10 to 50 times the energy per floor space of a typical commercial office building. Therefore, a clear strategy to ensure new data centers are green is essential, both economically and environmentally.

This activity seeks to be the first step to support Mongolia's transformation into an international data center hub. For the public sector, it is suggested that the government data center should enhance its capacity while pursuing the further reduction of OPEX with the green and sustainable data center approach.

PROGRAM GOAL

The program will support Mongolia in developing a strategy to transform its economy into an international hub for data centers. It will provide solutions for the public sector and develop an approach and roadmap for the public sector to spur private-sector investment in data centers.

RESULTS

Market Assessment for Private Sector Data Center Operators

A comprehensive market assessment of the feasibility of Mongolia's potential to become an international hub for data centers was conducted. The assessment:

- Assessment of international and local market potential for data centers regarding potential market segments and size and identification of government agencies and private sector businesses as potential anchor tenants.
- Assessment of Mongolia's capabilities and comparative advantage based on a SWOT analysis in terms of policies and regulations, access, energy efficiency realized by the Technical Guidelines, cost and quality of internet connection, human resources, supporting ecosystems, and geopolitical factors, given Mongolia's location.
- An advanced draft of the market assessment study has been shared with the World Bank team. The report will be reviewed and refined over the next month.

Production of Technical Guidelines for Green Data Centers

Technical guidelines were created to establish or convert existing data centers to green data centers. The guidance covers cutting-edge virtualization methodologies, containerized backup data centers, cooling technologies including airflow management of multiple power sources, and reuse of waste heat that can apply to Mongolia's needs. The guidelines are based on practical knowledge and studies customized for use in Mongolia, based on international guidelines related to green data centers. The existing reference guidelines and standards include International Telecommunication Union Telecommunication Standardization Sector (ITU-T) recommendations on best practices for green data centers, energy efficiency metrics, and measurement methods for telecommunication equipment, including International Organization for Standardization (ISO) Series on energy management standards and environmental management standards.

The technical guidelines are under review with the Ministry of Digital Development and Communications (MDDC) and the National Data Center (NDC) officials.

Capacity Building Programs on Energy-efficient Green Data Centers.

The team provided the Government of Mongolia with capacity-building programs on energy-efficient green data centers. Based on the Technical Guidelines, the program will support government agencies in converting existing data centers to green data centers and establishing new green data centers.

Managerial and technical level training was provided to Government of Mongolia officials.

KGGTF OUTCOME SUMMARY

INFLUENCE ON WB STRATEGY/PROJECT DEV
Grant will provide guidance for 'Smart 2 Project in Mongolia' - Upgrading Government of Mongolia's existing datacenter to cloud based computing

KEY RESULTS

Immediate Outputs: Over 40 technical and managerial staff of MDDC, NDC, and 15 other government agencies have received training in Green Data Centers and Cloud computing between January and March 2023. Their capacity, awareness, and knowledge base had increased.

Outcomes: The government representatives expressed their commitment to adopt the assessment findings into GOM's current data center policies and regulations and upgrade the existing and future data centers by setting goals to reduce costs and increase efficiency by becoming eco-friendly green data centers in line with international standards and technological trends.

Following up on the Singapore-Mongolia Data Center Roundtable in July 2022, the Digital Infrastructure unit of the New Recovery Policy Accelerator, under the Prime Minister of Mongolia's Office, is actively promoting investments in green data centers in Mongolia and is particularly interested in the findings on market assessments from the KGGTF grant activity.

PARTNERSHIPS & COLLABORATION

IDD09 Digital Development Global Climate Business Line: The Green Data Center Strategy Report will be included as a case study in the Global Flagship Report.

LOOKING AHEAD

Minister of Finance B. Javkhlan and the World Bank Country Manager, Andrei Mikhnev, signed the Financing Agreement for the Smart Government II Project on January 10, 2023. The project is funded with a $40.7 million credit from the World Bank. The project objectives include:

- Strengthening policies and regulations for digital transformation.
- Upgrading the common infrastructure and data center.
- Enhancing the usability and efficiency of digital public services.

"Thank you for providing relevant training on Green Data Center Strategy. The Ministry of Digital Development and Communications (MDDC) will use the assessment findings for the development of its data center policy. Further development and expansion of the National Data Center will follow the direction of becoming an eco-friendly and economical green data center."

Bilegdemberel Badamdorj, Director General of Digital Development Policy Implementation and Coordination Department, MDDC, Mongolia

The Green Data Center and Cloud Computing training for managerial officials

"This grant activity funded by the Korea Green Growth Trust Fund is crucial in helping the Smart Government II Project support the government's climate change adaptation efforts through establishing green data center standards in Mongolia and helping contribute to Mongolia's targets set out in the National Adaptation Plan (2018-21), Mongolia's Green Development Policy (2014-2030) and Nationally Determined Contributions for 2030."

Jennifer Gui, TTL and Senior Digital Development Specialist, The World Bank

"The National Data Center was established 13 years ago and has been working traditionally. For the outlook, **the training significantly provided us with the necessary information and recommendations to realize our goal of reducing costs and increasing efficiency by becoming an eco-friendly green data center in line with international standards and technological trends.** Based on the knowledge and insights gained from the training, firstly, we will prepare a list of which government information will be located on the critical infrastructure or data center and present it to the relevant organizations for approval."

Battulga Munkhdorj, Director of the National Data Center, Mongolia

Green Mobility for Luang Prabang and Siem Reap

Transport
East Asia and Pacific
Cambodia and Lao PDR

TEAM LEADERS:
Sadig Aliyev,
Senior Transport Specialist

Sombath Southivong,
Senior Infrastructure Specialist

2017

CONTEXT AND CHALLENGES

Luang Prabang in Lao PDR and Siem Reap in Cambodia are among the most renowned UNESCO World Heritages Areas in Southeast Asia. Tourism is both cities' primary lifeblood, which drives economic growth and contributes to 12 percent of Lao PDR's and Cambodia's national GDP, respectively. Both cities, however, are grappling with increasing challenges such as population growth, urban development, and high dependence on two and three-wheeled vehicles such as motorbikes and tuk-tuks. Motorized transport causes congestion, emissions, and road safety issues which threaten the health of residents, active mobility comfort, and the attractiveness of the city.

A critical concern is to manage rapid growth and development and preserve the cities' unique heritage sites. Both cities are increasing their focus on green mobility to address these challenges along with strategic land use and other policy and strategy measures. Green mobility seeks to reduce the impacts of mobility on greenhouse gas (GHG) emissions, air pollution, and noise by encouraging active mobility such as walking and cycling, public transport, and e-mobility infrastructure and services.

Currently, both cities have limited transport options, which results in more motorbikes and private vehicles. The current infrastructure has limited safe access-for-all amenities such as drop ramps and tactile paving and thus needs to be more friendly and safe for pedestrians and cyclists.

Each city also has specific problems caused by land use patterns. Siem Reap expects significant population and tourism growth, translating into higher mobility demand. In Luang Prabang, residents and tourists share the same roads for living, work, and tourism where the expansion of the road infrastructure is constrained in historical sites. Both cities also face increasing air pollution and emissions because of the high numbers of two and three-wheeled vehicles.

PROGRAM GOAL

The program supports implementing the World Bank study on enhancing green mobility in Luang Prabang in Lao PDR and Siem Reap in Cambodia through the development of a Green Mobility Vision and Investment Plan, and knowledge sharing to advance the institutional and regulatory framework for green mobility.

Green Mobility Vision

The World Bank study aims to develop the Green Mobility Vision with four primary goals such as:

1. Creating a people-centric, integrated green mobility system.
2. Reducing emissions and improving air quality by facilitating the transition to green mobility.
3. Preserving and respecting heritage while accentuating heritage and broadening tourism through green mobility.
4. Creating an institutional framework for green mobility.

Inspiration from Korea
As part of the study visit to Korea, the delegations from Cambodia and Lao PDR visited Jeju, where they learned about Jeju Smart Hub and Jeju Smart City Challange Project, funded by Korea Ministry of Land, Infrastructure and Transport and the Jeju Government. The delegations also visited Jeju Research Institute regarding e-bus policies, visited e-bus operators and learned about e-motorbikes, e-bicycles, and mini-cars activities. In Seoul, the delegations learned about railway-oriented transportation system through the Korea National Railway and visited Seoul City Hall Plaza and Seoul Traffic Information Center.

Both cities initiated a transition toward a greener and more sustainable transport system by investing in extensive transport improvements. Siem Reap has implemented recent investments to create bike paths and pedestrian road networks across the city, including a new dedicated Angkor Bike Trail around the world heritage site. Luang Prabang is improving roads and facilities under a Cities Development Initiative for Asia (CDIA) and creating more conducive and attractive walking environments with new streetlights, paving, and the placement of utilities underground in the heritage area.

RESULTS

Green Mobility Investment Plan

Three evidence-based tools and analytical approaches were deployed in the plan's development, such as the city-level index, the street-level index, and the utilization of mobile device data to inform decision-making and prioritization of potential investments. The investment plan now includes the following:

- An integrated multimodal network integrating the public transport system for medium- and long-distance travel.
- Cycling as an alternative mode to motorcycles.
- An extensive and connected walk network.

Other initiatives include traffic and parking improvements, capacity building, and institutional or regulatory elements. The proposed investment plan includes over US$125 million in potential initiatives for Siem Reap and about US$40 million for Luang Prabang in the initial five-year phase.

City-level Index

Benchmarking cities and identifying infrastructure, policy, and institutional elements for enhancement. A city-level index benchmarks green mobility, "friendliness," and supportiveness of the two cities compared to other UNESCO heritage cities worldwide and identifies areas for improvement. The city-level index assessed seven quantitative and qualitative elements:

KGGTF OUTCOME SUMMARY

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
Green Mobility Strategies and Investment Plans for Siem Reap (Cambodia) and Luang Prabang (Lao PDR)

INFLUENCE ON WB STRATEGY/PROJECT DEV
Informed country engagement and policy discussion with Cambodia and Lao PDR

KNOWLEDGE EXCHANGE PROGRAMS HELD
16 participants from Cambodia and Lao PDR in partnership with Jeju Smart City Challenge Joint Office, Jeju Research Institute, KNR, TOPIS (Seoul Traffic Information Center, Seoul E-Bus Operator,) KEXIM

IN-COUNTRY CAPACITY BUILDINGS HELD
100 participants in Cambodia and Lao PDR

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korean: Jeju Smart City Challenge Joint Office; Jeju Research Institute; KNR; TOPIS; Seoul Traffic Information Center; Seoul E-Bus Operator; KEXIM, Non-Korea: GGGI, CDIA

Figure 1: Six-Step Street-Level Assessment

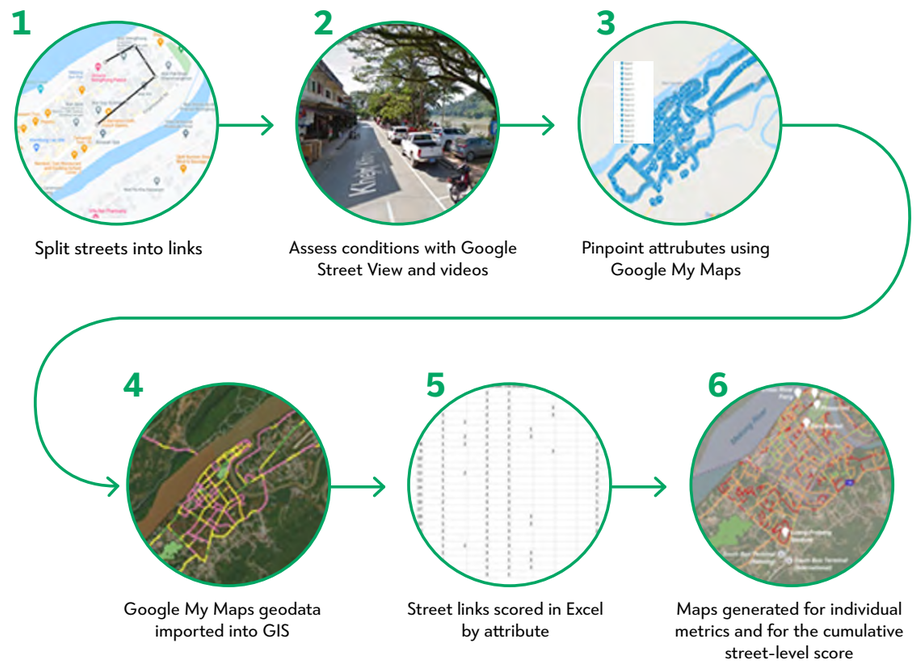
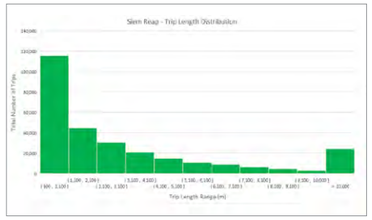
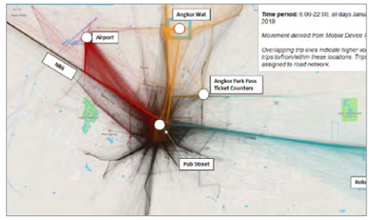


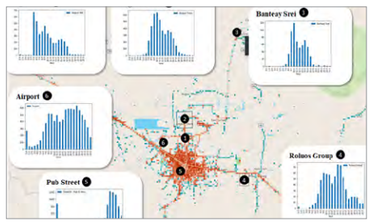
Figure 2. Examples of Mobile Data Analysis in Siem Reap


Trip length distribution



Mobile data used to develop origin-destination and trip chaining, essential for public transport planning

User pings vs. street-level index to assess need for walk improvements, by district



Volume of detections by arrival times at various locations for planning public transport services

1. Accessibility, including street density, public transport network, and average street length.
2. Health and well-being.
3. Green mobility sentiment.
4. Equal access.
5. Safety and security.
6. Resilience.
7. Commitment and coordination among governments, institutional and regulatory structures to adopt green mobility.

Street-level analysis

Delving into details to identify streets or corridors for active mobility enhancements. The street-level index assessed more detailed quantitative analysis to understand specific street conditions based on sidewalk provision and continuity, crossing safety and facility, shading walkways, and wheelchair and disabled facilities. The elements indicate a corridor's relative attractiveness, convenience, and usability from the perspective of active transport users and those of all mobility abilities.

Mobile data: Leveraging anonymous geolocation data to identify trip patterns before COVID-19 and inform bus route planning and active mobility investments

Anonymized mobile device location data provided trip-making data and information before COVID-19. The study team obtained anonymized geolocation data from mobile devices for the period January to April 2019 for the Siem Reap and Luang Prabang areas. Geolocation information per detected device, including time, location, and trajectory of each trip linked with a unique identification number which could be used to identify critical 'Origin-Destination' data for public transport, develop the public transport route network, and provide insights on the operating plan for public transport and pedestrian roads for improvement.

PARTNERSHIPS & COLLABORATION

The World Bank study team conducted workshops, training sessions, and a study visit to improve understanding of green mobility and disseminating new and innovative analytical techniques applicable to the planning and design of green mobility focusing on walking, cycling, non-motorized transport (NMT), and public transport.

1. **Technical workshops for decision-makers:** Technical workshops helped national and subnational agencies to learn the benefits of green mobility to critical stakeholders and discuss institutional gaps, capacity building, and financing while identifying their priorities and needs for the Green Mobility Strategy and investment plans.

"During the implementation of the study, we witnessed very strong interest and demand from counterparts to learn and use this knowledge to advance transport systems in their cities with green and sustainable mobility solutions. It is not only about reducing congestion in rapidly growing secondary cities, but it is about their future economic growth, reducing emissions and improving the well-being of their populations, protecting historical sites, creating more and better-quality jobs, and strengthening their competitiveness in regional tourism market."

Sadig Aliyev, Senior Transport Specialist, Program Leader

2. **Knowledge-sharing workshops for students:** A unique element of this World Bank study was to engage with the trainees, youth, and students in the two cities who could benefit from the transition to green mobility. Seventy participants attended these knowledge-sharing workshops. Civil engineering and transport students attended online courses, including students from Cambodia (from the Techo Sen Institute of Public Works and Transport, a training institute of the Ministry of Public Works and Transport) as well as the Institute of Technology of Cambodia (ITC) and from Lao PDR (from the Ministry of Public Works and Transport, Public Works and Transport Training Institute (PTTI), the National University of Laos (NUOL), and the Souphanouvong University (SU) in Luang Prabang).

3. **Study visit to Korea:** A study visit to Korea was organized for officials from Cambodia and Lao PDR to provide a practical opportunity and learn about Korea's experience in developing a sustainable and green transportation system, including Jeju City, which has similar urban development elements and UNESCO heritage sites.

LOOKING AHEAD

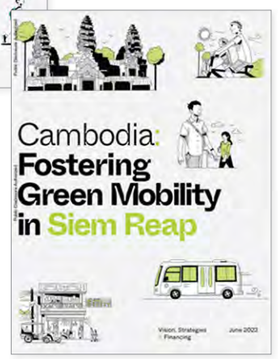
Both Siem Reap and Luang Prabang are working to advance their transport system toward sustainable and green mobility. Siem Reap is now considering an e-bus system through a private-public partnership modality, and a feasibility study for this work is underway.

Additionally, the program has provided an evidence-based and replicable methodology for other UNESCO and heritage cities facing similar challenges of growth, congestion, and emissions to help cities develop their plans to transition toward more sustainable and green mobility.

Enhancing Green Mobility by Leveraging Data and Innovation in UNESCO Heritage Cities of Cambodia and Lao PDR, World Bank. 2023.

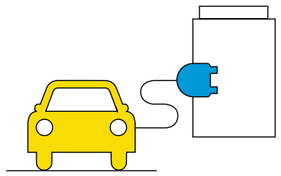
Mobility and Development, Spring 2023: Innovations, Policies, and Practices. Mobility and Development; Spring 2023. © World Bank, Washington DC.

Aliyev, Sadig, Sombath Southivong, Veasna Bun, Yang Chen, Bowen Wang, Hongye Fan, Blanca Maria Domine Chust. 2022. "Lao PDR—Fostering Green Mobility in Luang Prabang: Vision, Strategies, and Financing." Report, World Bank, Washington, DC.



Aliyev, Sadig, Sombath Southivong, Veasna Bun, Yang Chen, Bowen Wang, Hongye Fan, Blanca Maria Domine Chust. 2022. "Cambodia—Fostering Green Mobility in Siem Reap: Vision, Strategies, and Financing." Report, World Bank, Washington, DC.

Regional E-mobility and Battery Storage Programmatic Technical Assistance (TA) for Pacific Island Countries and Territories



Energy
East Asia and Pacific
Pacific Island Countries

TEAM LEADERS:
Alain Ouedraogo,
Senior Energy Specialist

Inchul Hwang,
Senior Energy Specialist

2020

CONTEXT AND CHALLENGES

Pacific Island Countries (PICs) are facing significant challenges in the power sector, including high dependency on costly imported fuels, lack of energy planning and management capacity, and the need for financing battery storage and other facilities to absorb renewable energy. These challenges result in some of the world's highest electricity prices, ranging from 20 to 80+ US cents per kWh.

The Pacific Power Association (PPA), a regional organization assisting Pacific power utilities, drafted a long-term strategy to address the energy sector challenges, including deploying electric vehicles (EV) and battery storage. The World Bank's study indicated that the Levelized Cost of Electricity (LCOE) in PICs could decrease by increasing renewable energy and battery storage to some extent. Still, LCOE can increase if a power system relies only on battery storage to absorb renewable energy above a certain penetration level. The effective usage of EVs as part of demand-side management is expected to contribute to total cost reduction. The programmatic regional approach would be a timely support to build the momentum to develop a broader sector strategy and a robust and bankable pipeline of EVs and ESS investments.

PROGRAM GOAL

Pacific Island Countries must decarbonize their transport and electricity sectors in tandem to realize their ambitious sustainable development goals. The primary objective of this program is to tackle the significant challenges faced by the Pacific Island Countries (PICs) in the power sector when implementing e-mobility and battery storage through a collaborative approach between the PPA and the World Bank, to promote sustainable development and reduce dependence on costly imported fuels.

PROGRAM IN PROCESS

The activity provided strategies for the efficient usage of the resources on battery storage and improving the system's reliability, thereby improving the efficiency of the grid. It will help create a framework to finance battery storage-related projects and expedite lending projects related to system reinforcement. The decision-makers will get more insight and solutions to effectively plan and implement plans and policies to promote optimal and reliable electricity supply at an accessible cost.

During the 25th Micronesian Island Forum (MIF) Annual Meeting (February 15-17, 2023), the Regional Energy Committee noted that new technologies for battery storage could help stabilize the grid and recognize that Individual Power Producers (IPPs) and Power Purchase Agreements (PPAs) could solve many of the obsolescence problems of old systems.

Living Case Study of EV and battery storage deployment

Jeju, the biggest island in Korea is a natural fit for EVs. It is a relatively small, oval-shaped island where drivers can travel along the 180 kilometers of coastal roads. A fully charged electric car can travel between 100 to 150 kilometers. Because most people drive an average of fewer than 100 kilometers daily, the island is the right size for EVs. Jeju Island has spent years building EV infrastructure to encourage residents to make the switch from gas to battery-powered cars. Until 2020, the Jeju government provided subsidies to EV buyers of up to $21,800 per car plus an additional $6,700 and tax incentives. Jeju province has invested $12.5 million to help the small island of Gapa become carbon-free. Along with two 250 kW wind turbines which cost $8.6 million, 174kW solar panels were installed in 49 households in May 2017. The Jeju provincial government subsidized the installation of solar panels on houses, so residents pay only 10% of the total approximate cost of $12,000. Other installations include a battery storage device, a system control center, power conversion equipment and remotely controlled power meters. The electricity produced in this way powers the households on the island, four electric cars and a desalination plant. From the private sector, the area received $88.6 million from Korea Electric Power Corporation (KEPCO), Korea Southern Power Company (KOSPO).

KGGTF OUTCOME SUMMARY

KNOWLEDGE EXCHANGE PROGRAMS HELD
27 participants from 10 countries (including Palau, Marshall Islands, Samoa, Micronesia, Vanuatu, Kiribati, Nauru, Solomon Islands, Tonga, Tuvalu) in partnership with 8 Korean organizations (KEPCO, Starkoff, JRI, KOMIPO, KOEN, GPhilos, Seoguipo Bus, KIER)

Key Results

The Pacific Island Countries' understandings of e-mobility and battery storage has been enhanced because of the virtual Knowledge Exchange on E-mobility and Energy Storage Systems (ESS) held in May 2020.

The in-person learning workshop and Knowledge Exchange on E-mobility and BESS held in November 2022 on Jeju Island provided the team with a comprehensive overview of how to transition both the energy and transport sectors.

Jeju site visits included:
- d-bus fleet charging site
- KEPCO ESS/RE Control Center
- Haengwon PV and wind farm
- Sangmyoun Wind Farm
- Gphilos green hydrogen production facility
- Tamla offshore wind farm

PARTNERSHIPS & COLLABORATION

Korea Electric Power Corporation (KEPCO)
Jeju Research Institute (JRI)
Korea Battery Industry Association K-BIA

- Korean Partnerships include the Coalition for Our Common Future in the publication: Battery Energy Storage System Development in Pacific Island Countries
- Research on Korean Cases, particularly in Jeju, was used in both the training and in the publication.

LOOKING AHEAD

The member states have accepted the recommendations and are considering adoption. Adopting the relevant PPP policies and guidelines will require additional time as these require governmental action and establishing new policies.

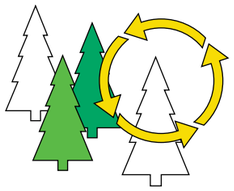
This program has inspired Mongolia to consider a similar approach. Research on e-mobility and BESS will be conducted for the country soon.

Two publications will further support Pacific Island leaders with a plan on how to transition the energy and transport sectors.

Battery Energy Storage Systems identify the best policies, technologies, and financing approaches for Pacific Islands to scale up renewable energy through Battery Energy Storage Systems (BESS).

The Regional e-mobility policy framework sets out the technical guidelines tailored for small island countries.

Promoting Forest Information and Communication Technology in Uzbekistan



Environment
Europe and Central Asia
Uzbekistan

TEAM LEADERS:
Paola Agostini
Lead Natural Resources Management Specialist

Banu Setlur
Senior Environmental Specialist

Hak Joo Song
Junior Professional Officer

2020

CONTEXT AND CHALLENGE

In Uzbekistan, forests support rural communities and maintain essential environmental benefits such as soil protection, water regulation, and carbon sequestration. However, increasing human pressures and unfavorable natural conditions have led to vast forest degradation and loss. Forest ecosystems in Uzbekistan play a leading role in sustaining the well-being of rural communities. However, insufficient data, lack of monitoring systems, inefficient reporting and verification mechanism, unfavorable natural conditions, and increasing human pressures have led to vast forest degradation and loss at a scale the government needs to accurately assess. Current estimates assess the cost of inaction at roughly four percent of Uzbekistan's total GDP. Therefore, helping to improve the sector's performance and making the Forest Agency a state-of-the-art and modern agencies with ICT Systems in place, can also create and sustain jobs from forest development activities, such as agroforestry and ecotourism.

The Government of Uzbekistan has committed to restoring its forests by signing the Astana Resolution supporting the Bonn Challenge and requesting a US$142 million IDA loan to implement the **RESILAND CA+ Landscape Restoration Project** part of the Regional RESILAND Umbrella Program. To further support the restoration efforts, KGGTF introduced a technology component into the US$142 million IDA Project, particularly aiming at technologies developed in Korea and used worldwide, with impressive results. The program will use ICT to address three priority areas identified in the recently published Forest Note for Uzbekistan, including building a solid information data base of the status of forests and woodlands in the country, forest landscape restoration through restoration and afforestation and multiple-use forest management, and economic management of forest landscapes through diversified activities, including ecotourism.

With these initiatives, Uzbekistan's forestry sector can increase the resilience of rural communities, reduce the vulnerability of social systems and ecosystems, and create and sustain jobs from forest development activities. Moreover, transforming the Forest Agency into a data-based (ICT) one will support a modern and efficient forest sector which will increase the resilience of ecosystems and most importantly, the resilience of rural communities.

PROGRAM GOAL

The objective of this program is to design cutting-edge ICT-based forest management systems for managing the forest in Uzbekistan. The program addresses three priority areas for Uzbekistan:

1. Establishment of Forest Management Plan and Monitoring System at the National, Regional, and Forest Management Units Level
2. Establishment of information platform for Forest Ecotourism Services including maps and other tools
3. Establishment of a Forest Geospatial Information System for Forest Landscape Restoration Monitoring

Deploying Innovative Technologies for:

1. Forest Management:
The state-of-the-art National Forest Inventory (NFI) for Uzbekistan will support the development and implementation of forest conservation investments, including afforestation, reforestation, biodiversity conservation, and livelihood support. Importantly, it will provide data on the economic value of forests, facilitating internal government discussions and partnerships with development partners on the further allocation of resources for sustainable forest management. The development, use, and regular updating of the NFI will rely on technologies for collecting information on forests, mapping it, aggregating, layering, and processing them for planning and decision-making.

Deploying new technologies for forest management will allow the development of a sustainable forests strategy which, will mitigate Green House Gas emissions and increase the resilience of the ecosystems to the impacts of climate change. Further, the NFI will inform plans to increase rural communities' resilience to climate change using forest services, such as ground stabilization, flood and erosion control, food security, and alternative livelihoods from timber and non-timber products.

2. Forest Ecotourism:
The Forest Ecotourism Development Plan will guide investments in forest ecotourism of the RESILAND project, the government, and the private sector and create a new business environment that draws service providers and customers. The plan will focus on integrating information and communication technologies in the design and implementation of forest ecotourism for information dissemination and collection. Visitors' behavior will shift to low-impact forest experiences, and communication materials will educate visitors on forests ad their values.

3. Restoration through Agroforestry:
The analysis of disruptive technologies for agroforestry plantations will guide restoration investments by the RESILAND project, the government, and other development partners. Integrating technologies for field surveying, stock raising, planting, and cropping will enhance the efficiency and effectiveness of these actions compared to current practices. A multi-sectoral approach will be taken in the development of the plantations with the engagement of conservation, agriculture, and forest practitioners for maximum green growth impact at the landscape level.

The KGGTF introduced an ICT component in designing the USD $142 million IDA Project, in particular deploying technologies developed in Korea that have been used around the world with impressive results for a forest modern and efficiently managed sector in Uzbekistan. It is co-financed by an USD $8 million PROGREEN trust fund and a USD $3 million Korea World Bank Partnership Facility (KWPF) that will finance the implementation of the ICT component.

"For the World Bank project team, the KGGTF grant was fundamental in establishing the long-term partnership with the Korea Forest Service (KFS), and with helping us in shaping an important pillar of green growth in Uzbekistan."

Paola Agostini, TTL

KEY RESULTS

1. The KGGTF grant resulted in adding a new component to the UZ RESILAND Project for ICT in the Forest Sector.

2. The program identified ICT gaps in the current forest system that needs updating to support forest management, forest ecotourism, and Forest and Landscape Restoration. In particular, the program investigated the status of geospatial information, degree of information construction, and quality of the information service and communication systems of the forestry sector in Uzbekistan.

3. Also, the KGGTF grant program supported the preparation of an implementation plan including 9 major tasks and 20 detailed tasks to build an integrated ICT platform, considering the ICT and forest projects already being conducted by Global Environment Facility (GEF), Food and Agriculture Organization of the United Nations (FAO) and others in Uzbekistan.

In addition, the program completed the following activities and outputs:

1. Analysis of user requirements, including defining the plan and goals for nature-based tourism, etc.

2. Identification and plan for the establishment of the forest ecotourism portal site, mobile app system, and content.

3. Identification and plan for the establishment of a CCTV (Closed Circuit Television) monitoring system for the forest ecotourism management

4. Implementation plan by filling the identified gaps such as proposed software, capacity, hardware, and cost.

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
$156,000,000

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
Uzbekistan Green Growth Strategic Framework, approved by the President of Uzbekistan

INFLUENCE ON WB STRATEGY/PROJECT DEV
Green Growth PASA in Uzbekistan

KNOWLEDGE EXCHANGE PROGRAMS HELD
8 participants from Uzbekistan in partnership with 4 Korean organizations including KFS, National Institute of Forest Science, Hongcheon National Forest Management Office, Forest Inventory Center

IN-COUNTRY CAPACITY BUILDINGS HELD
5 participants in Uzbekistan

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korea Forestry Service, UNDP, AFD, Turkey Forest Services, UNECE, ECCA 30, GGGI

PARTNERSHIPS & COLLABORATION

ECCA 30 Initiative

- PROGREEN Trust Fund
- RESILAND CA+ Program
- Korea Forest Services (KFS)

Forest Ecosystem Restoration Initiative

- UNCBD (United Nations Convention on Biological Diversity)
- State Forestry Committee under Ministry of Agriculture and Water Resources
- GIZ (German Society for International Cooperation) Government of Germany
- ICSD (Interstate Commission on Sustainable Development)
- DEVCO (The Infrastructure Development Collaboration Partnership Fund)
- EEAS (European External Action Service)
- EU
- AFoCO (Asian Forest Cooperation Organization)

NEXT STEPS

The KGGTF final report is completed and will be shared with the government of Uzbekistan. Key components include:

1. The status of forest ICT systems for forest management, forest ecotourism, and Forest and Landscape Restoration. Along with an investigation of the geospatial information, degree of information construction, and status of the information service and communication systems of the forestry sector in Uzbekistan.

2. Establishment and operation of forest-related information systems and databases operated by the Government of Uzbekistan.

3. Identification of the gaps to be filled and the initial National Forest Inventory (NFI) implementation plan to build an integrated ICT platform, considering the ICT and forest projects already being conducted by the Global Environment Facility (GEF), Food and Agriculture Organization of the United Nations (FAO), and others in Uzbekistan.

4. Design of a comprehensive ICT system that incorporates and meets the requirements of the following three elements to be implemented through the Uzbekistan RESILAND project: (i) Forest Management Plan, (ii) Forest Ecotourism, (iii) Forest restoration.

"Uzbekistan and the SCF hope for continuous cooperation with Korea and KFS to improve its technical expertise to lead forest restoration in Central Asia, as Uzbekistan also provides a lot of cooperation and support to neighboring countries for the expansion of green areas. The SCF has a strong will to promote this project and perform the tasks specified in the goal by expanding cooperation with Korea's forest-related organizations."

Abduvokhid Zakhadullaev, Director of International Relations
Forest Agency of Uzbekistan

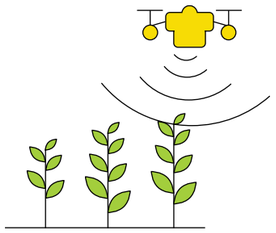
Establishing Relationships that Lead to Partnerships

The program established and strengthened the partnership between the forest-related organizations in Uzbekistan and Korea, including the Forest Agency (FA) of the Republic of Uzbekistan, Forest Design Institute (Urmonloyiha), Korea Forest Service (KFS). During the SCF's visit to Korea from December 18 to 24, 2022, the Deputy Director of the Korean Forest Service discussed Uzbekistan's forest restoration activities and plans together with Uzbekistan delegations, both the FA and KFS promised continued cooperation between the two countries for Uzbekistan's successful reforestation.

Innovative Technologies

Several innovative Forest ICT systems and technologies from KFS were showcased throughout the program including ICT Based National Forest Management Information System, Smart Mobile Forest Field, Forest Fire Situation Control System, Forest Recreation Integrated Platform, Forest Geospatial Information System, and Drone Imagery Management System.

Leveraging Technology of Uzbekistan's Agricultural Modernization



Agriculture
Europe and Central Asia
Uzbekistan

TEAM LEADER:
Sergiy Zorya
Lead Agriculture Economist

2019

CONTEXT AND CHALLENGE

Until recently, soil health and fertility management were neglected due to the state-led model for Uzbek agriculture, which focused on producing cotton and wheat at any cost. Farmers cared less about soil health than achieving the state production targets, and crop yields stagnated. The environmental footprint of such an approach has been tremendous. Over 45 percent of irrigated land is saline, and monoculture (cotton/wheat) production depletes soil fertility. Over extraction of water for irrigation (e.g., 75 percent of water in Uzbekistan is used to produce cotton and wheat) also led to the Aral Sea catastrophe.

The Ministry of Agriculture (MOA) needed more focused technical assistance in setting up the system for more effective soil monitoring, climate-smart soil fertility management, and innovative soil testing approaches and requested the World Bank's assistance. The experience and excellence of Korean agriculture in soil fertility management, soil testing, and digital agriculture is well known so the KGGTF grant was requested and made available for Uzbekistan in late 2019.

Linkage to Lending:
The KGGTF project leverages the investments in soil testing, soil information management, and digital agriculture under AMP (P158372). The AMP financing is USD $500 million.

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
$610,000,000

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
1. Uzbekistan's Ministry of Agriculture's Roadmap for development of the Agricultural Knowledge and Innovation System (AKIS),
2. Government of Uzbekistan 2019-2030 Green Economy Transition Strategy

INFLUENCE ON WB STRATEGY/PROJECT DEV
Inputs into Uzbekistan CPF FY23-26 "High-Level Objective: Improved Livelihoods and Resilience through Greener Growth."

KNOWLEDGE EXCHANGE PROGRAMS HELD
25 participants from Uzbekistan in partnership with RDA

IN-COUNTRY CAPACITY BUILDINGS HELD
25 participants in Uzbekistan

KNOWLEDGE PRODUCTS PRODUCED
Soil spectroscopy training materials: A primer on soil analysis using visible and near-infrared and mid-infrared spectroscopy

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korean: RDA

Strategy for Agriculture Development
In 2019, the Government of Uzbekistan adopted the Strategy for Agriculture Development in 2020-2030 (hereafter Strategy) to replace the state-led and unsustainable agricultural growth model with more market-oriented and greener approaches. The Strategy underlines the importance of investing in agricultural research and development, advisory services, education, environment protection, and climate change adaptation. It also emphasizes digital agriculture.

Global experience shows these public services are critical to accelerating agricultural transformation and underpinning green growth.

The World Bank assisted the Ministry of Agriculture (MOA) prepare the Strategy, and in 2020 the strategy was financed by a USD $500 million IBRD loan and IDA credit. The project seeks to enhance productivity-supporting agricultural services and promote market-led, high-value horticulture value chains. The project supports investments in research, advisory services, improving soil fertility management, digitalization, and will support the building up of public land management institutions.

Knowledge Exchange in Action

The delegation from the Ministry of Agriculture of the Republic of Uzbekistan to the RDA was held from July 17 to July 28, 2022, in Jeonju City, 200 km south of Seoul. The seven working days included presentations by RDA experts, demonstrations of agricultural technologies, field trips, parallel meetings, visits to soil laboratories, and excursions to RDA thematic museums.

Presentation by Rural Development Administration (RDA)
The RDA in Korea has accumulated significant experience in soil fertility management in agriculture through soil information systems, innovative approaches to soil analysis, digitalization of agriculture, and linking agricultural soil testing research with advisory services for farmers and are highly relevant.

Heuk-Toram Soil Information System
This system is based on contour maps of soil types, data from all RDA soil survey programs since the 1960s, and annually updated soil analysis information, including about 600,000 samples per year. There are 162 county agriculture extension services centers with soil laboratories for 1.37 million hectares of agricultural land in Korea. About 6,800 employees are disseminating agricultural knowledge to the RDA in these centers. The staff of the extension centers or the farmers themselves bring samples to the centers to assess soil management practices and receive recommendations on the application of organic, and mineral fertilizers, soil conditioners, and crop placement.

The analysis of basic soil properties and the visit of extensionists are free of charge for the farmer and are conducted at the state's expense. Moreover, if the farmer meets the environmental standards of farming, he can count on the public benefit allowance. In addition to analyses of soil samples from farmers, national monitoring of soil conditions by random and fixed points (500-1000 points every four years) is carried out. The prospect of the Heuk Toram system is to establish a soil spectral library and use proximal soil sensing.

Drought Center and Management System
Between 2000 and 2010, there were six agricultural droughts in Korea, and after 2012, the frequency of agricultural droughts gradually increased every year. Therefore, the Korean Ministry of Agriculture has established an Agricultural Drought Center and a Situation Center for Drought Management to respond promptly. The map creation and publication of the agricultural drought report occurs once a week (twice a week during drought).

Korea's Agricultural Drought Management System (ADMS) provides information openly on the period of possible water shortage, depending on the stage of crop growth, the optimum irrigation time, the amount of water per irrigation, and the irrigation cycle in the city and county level throughout the country.

Ministry of Agriculture of Uzbekistan visited the soil laboratories
Soil laboratories in RDA are used for different purposes. The most advanced ones are scientific and have the most advanced and accurate equipment. In addition, there are soil laboratories in the extension services centers. Usually, the staff at the advisory centers conducts laboratory soil analyses before crops are cultivated.

Early Warning Service for Weather Risk Management
The early warning system for weather risk management in the agricultural sector aims to develop tailored risk management recommendations for individual farms threatened by climate change and its impacts. This service system quantifies weather conditions into a "weather risk index" tailored to the crop and its phenology (growth stage). When the risk reaches a state that could damage the crop, the Early Warning System (EWS) is activated, and warning messages are sent to the farmer's cell phone. Messages are sent with appropriate recommendations that farmers can use to protect their crops from potential damage.

Drone Use in Agriculture
At the request of the delegation of the Ministry of Agriculture RDA provided a demonstration of using drones to monitor the condition of crops and carry out agro-technical measures such as fertilizing and irrigating.

Review of the Institutional Structure and Function, and responsibilities were of particular interest to the participants of the delegation.

National Center for Agricultural Diversity (Genbank) stores about 420,000 genetic resources. Seeds, beneficial microorganisms, algae, and crop spores from around the world are stored there for the short, medium, and long term.

Gyeonggi-do Agricultural Research & Extension Services Center, the results of the research conducted in the field of agriculture, the organization of a "smart" greenhouse, information on the direct application of new technologies on the wide use of robotics

Online Course in Development
Agricultural Soil Fertility Management in the Era of Climate Change: Experience from Korea will raise awareness of the need to invest in agricultural soil fertility management and disseminate Korean experience in developing and implementing specific programs to serve farmers and the public.

Explore more about how the Knowledge Exchange seminar evolved into cooperation activities for Agriculture Modernization Project.

PARTNERSHIPS & COLLABORATIONS

The partnership with Korea's Rural Development Agency (RDA) started with a virtual Knowledge Exchange in July 2021 and grew after the visit of the RDA team to Uzbekistan in November 2021. The RDA experts shared their knowledge of the Korean soil information system, research and advisory services, soil testing, and critical engagement with farmers. The multi-day knowledge exchange and study tour of the MOA team to Korea took place in August 2022. It deepened their understanding of the RDA activities and built their capacity for soil testing and digital agriculture, in which Korean agriculture excels.

LOOKING AHEAD

The KGGTF investments will transform Uzbek agriculture. Public institutions are becoming better equipped to provide farmers with land and soil management-related services and information, while farmers are becoming better positioned to optimize fertilizer use, reduce production costs, and reduce their environmental footprint. Enhanced soil health will result in greater productivity and support better planet health.

Uzbekistan's neighbors, such as the Kyrgyz Republic and Tajikistan, closely watch agricultural modernization and are learning and willing to replicate successful Uzbek programs. Knowledge and investments leveraged by the KGGTF project will be felt beyond Uzbek borders.

Actions taken

This project aims to pilot smart-farming techniques for soil tests and fertility management and promote climate-smart agriculture for horticulture farmers under AMP.

The main grant activities include the following:

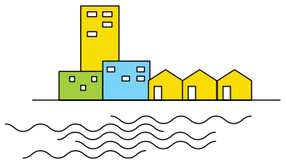
- Assessment of Uzbek soil testing technologies and institutional setup for soil testing and soil fertility management.
- Knowledge sharing, including online seminars and study tours.
- Facilitation of partnerships with Korean agricultural institutions.
- Facilitation of partnerships with private sector providers of innovative soil testing equipment and approaches.
- Capacity building of Uzbek soil testing and soil land management experts.
- Support preparing plans for the AMP investments in soil testing and soil land management systems.
- Evaluation of the KGGTF activities.

E-learning on soil information management and soil testing:

English ▶

Russian ▶

Building Coastal Resilience in Asuncion through Climate Smart Solutions Across Urban, Resilience and Land



Urban
Latin America and Caribbean
Paraguay

TEAM LEADER:
Santiago Ezequiel Arias,
Senior Urban Specialist

2020

CONTEXT AND CHALLENGES

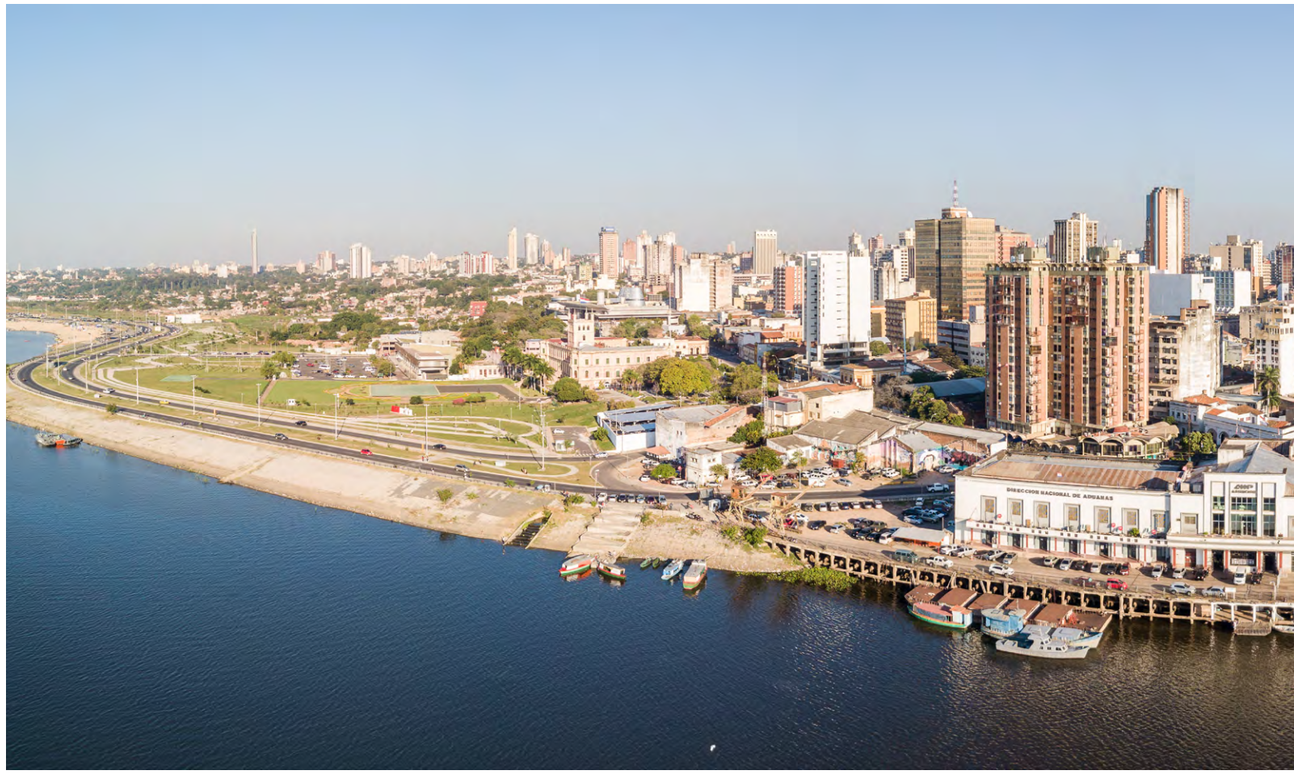
As in other Latin-American cities, urbanization in Asuncion has happened chiefly in an unplanned manner. Even though Paraguay has one of the lowest urbanization rates in the Southern Cone (61.6% compared to an average of 84.6%), almost two-thirds of Paraguayans live in cities, and 47% of the total population lives in the Metropolitan Area of Asunción (AMA). The AMA's rapid growth in its population has multiplied by a factor of five over the last forty years. It has been unmatched by a corresponding capacity to plan and provide services to an increasingly complex and vulnerable urban landscape. The AMA is a microcosm of the natural and anthropogenic risks that Paraguay faces today: riverine flooding (exacerbated by climate change), lack of economic opportunity, poor housing conditions, and poor coverage of public services, making them not only more vulnerable to floods and other natural hazards but also to health-related events such as pandemics or epidemics due to overcrowding.

The city has experienced carbon-intensive, low-density urban sprawl and an increase in informal settlements in high-risk areas, particularly along the floodplain of the Paraguay River, which runs along the city's northern and western borders. Thousands of families live in flood-prone areas, like the wetlands known as Bañados de Asunción, home to the poorest income percentile in the city. Despite the increasing risk of flooding and extreme weather events due to climate change, the population living in Bañados has grown steadily over time, swelling from around 45,000 inhabitants in 1992 to more than 100,000 today.

In April 2019, the Bank received a formal request from the Ministry of Finance to support implementing a sustainable and long-lasting solution to address flooding in Los Bañados. Previous attempts by the government have resulted in the development of a Coastal Strip Master Plan (PMFC), which is only partially implemented. As a response, the Urban, Water, and Social GPs have mobilized resources for technical assistance (US$ 400,000), through which the Bank is 1) providing recommendations on the necessary studies for the comprehensive implementation of the PMFC; 2) supporting government counterparts in project prioritization activities along the Coastal Strip, including technical advice to consider the social, environmental, technical, economic, and financial criteria; and 3) reviewing and recommending good practices that will allow the government to design a management unit to implement future interventions in the coastal strip.

"The KGGTF has provided the Bank team with the resources to successfully integrate green growth principles including nature-based solutions infrastructure to reduce flood risks in the Project design providing vulnerable communities with a definitive solution to long-standing problems that otherwise wouldn't have been possible."

Santiago Arias, Senior Urban Development Specialist



"Implementing this project will take a different approach to sustainable urban planning that includes nature-based solutions and green infrastructure. This is crucial for our capital, considering that climate change exacerbates the challenges associated with the impact of the river on Asunción residents. It is estimated that by 2040, the number of extreme weather events will double, making these measures critical for mitigating risks and adapting Asunción to future climate events."

Carlos Alberto Pereira, Minister of Urban Planning, Housing, and Habitat.

Aerial view of the Chacarita neighborhood, in the Coastal Strip of Asunción (Paraguay)

Thanks to the KGGTF support, in November 2022, the World Bank Board of Directors approved a US$105 million loan to develop the Asunción riverfront, promoting the city's sustainable transformation. The project's comprehensive approach includes:

1. Environmental resilience in the event of flooding and other impacts produced by climate change.
2. Physical resilience through the creation of green and safe housing and infrastructure.
3. Social and economic resilience through job creation, strengthening of local economic development, and the promotion of community integration programs, with a focus on the vulnerable population in selected areas of the Bañados de Asunción.

PROGRAM GOAL

The KGGTF program aims to support the scale-up of the Bank engagement to ensure that Green Growth principles are embedded into the analytical tools and the new project scope. Specifically, the proposed program will support 1) the preparation of a holistic multisectoral urban operation, combining the preservation of strategic natural reservoirs, the construction of public space and social housing, and the preservation of cultural heritage; and 2) the scoping of private capital participation opportunities in a strategic area in Los Bañados that could help the government cross-subsidize investments and increase own source revenues. These activities align with the Urban, Social, and Water GPs strategies for green growth operationalization to build more resilient, climate-smart cities. This holds in a post-COVID-19 context, where issues such as density, living conditions, and limited access to services and infrastructure will be vital in managing the pandemic risks in the urban poor.

RESULTS

Improved efficiency

Using drone technology and machine learning and compiling a comprehensive census of the social conditions of the neighborhood, the KGGTF Program supported a program to collect data for use in the decision-making process that will shift the way decisions are made when planning and designing interventions along the coastal area.

Institutions can embed vital social, environmental, and economic criteria aligned with Green Growth principles into local planning instruments.

KGGTF OUTCOME SUMMARY	
	LINK TO WB LENDING & CO-FINANCING $105,000,000
	INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY Urban Green Growth Strategies including adopting IFC's EDGE certification **INFLUENCE ON WB STRATEGY/PROJECT DEV** Asuncion Riverfront Urban Resilience Project (P175320)
	IN-COUNTRY CAPACITY BUILDINGS HELD 150 participants in Paraguay

Climate-efficient public space design and debottlenecking practices will integrate management in the waste, water, energy, and sanitation sectors. They will upscale resource efficiency and improve efficiency in responding to climate change. All these efforts, including the smart climate design of infrastructure, will result in GHG abatement, water efficiency, local pollution reduction, and community health improvement as spillover impacts.

Greater resilience

The KGGTF Program supports the preparation and implementation of an investment project aiming to increase the resilience of Asuncion. This project includes a robust and resilient housing and slum upgrading component that aims to improve the conditions of the urban poor living in Los Bañados. Upgrading the project to include nature-based solutions and green infrastructure will address coastal flooding recurrent in the area, provide greater access to essential services, and mitigate the exposure of targeted communities to natural disasters and health-related risks.

Increased competitiveness

The project developed by the KGGTF Program is framed within the government's post-COVID-19 economic recovery plan. The government will have precise estimates of direct and indirect job generation through investments in infrastructure in Los Bañados, anchored in WB financing and potentially private sector participation.

The KGGTF program supported the design of the $105 million Asunción Riverfront Urban Resilience (P175320) project, approved in November 2022. The design of the Asuncion Riverfront Urban Resilience Project included green-growth concepts, including climate-smart resettlement housing with IFC's EDGE certification, green infrastructure for flood risk management, and stormwater drainage, etc. Design proposals and good practices regarding nature-based solutions and flooding management for Parque Caballero, San Miguel, and Eco Bahia were delivered in 2022, in addition to a report on integrating the Digital District into the project.

Next Steps

In 2023, through the Participatory Low-Carbon and Climate Resilient consultancy, the team will conduct workshops and develop a report documenting the experience of the four subprojects, including information on the urban design process outcomes from stakeholder dialogues, recommendations on critical elements and best practices for the design of public spaces.

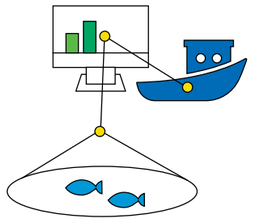
PARTNERSHIPS & COLLABORATION

- Korea International Cooperation Agency (KOICA)
- Inter-American Development Bank (IDB)

LOOKING AHEAD

To support the implementation of the loan, through the KGGTF, a participatory design process will recommend conceptual low-carbon climate-resilient designs for the resettlement housing and public spaces to be financed as part of the project. This process will involve all stakeholders, including the National Government, Subnational Government, Civil Society, the community, and all identified actors that are key to the implementation of the project.

Boosting the Blue Economy Potential in Morocco



Environment
Middle East and North Africa
Morocco

TEAM LEADER:
Sandrine Jauffret
Senior Natural Resources Management Specialist

Marcelo Acerbi
Senior Environmental Specialist

2023

CONTEXT & CHALLENGE

Morocco has a wealth of marine resources underpinned by a high biodiversity with over 600 identified fish species. Morocco's coastal areas contribute 59 percent of its GDP and 52 percent of its jobs. The fisheries sector alone contributes 1.5 percent of the GDP and provides 700,000 direct and indirect jobs. There is an even more significant untapped potential in existing and emerging blue sectors such as aquaculture, seaweed farming, and marine renewable energy. Morocco has the opportunity to develop coastal clusters that attract investment and create jobs while ensuring sustainability.

The degradation of marine and coastal ecosystems threatens Morocco's Blue Economy. This degradation costs US$260 million per year, equivalent to 0.27 percent of Morocco's GDP,[1]. Morocco's coastal ecosystems are vulnerable to climate change impacts that could worsen both the conditions and costs of deterioration.[2] At the same time, both the Mediterranean Sea and the Atlantic Ocean are facing increasing overexploitation of fishery resources.[3] In the Mediterranean, 75 percent of fish stocks are subject to overfishing. However, recently there have been signs of recovery.[4] In addition, illegal, unreported, and unregulated (IUU) fishing puts pressure on already vulnerable fish stocks.

In response to this context, a collaborative approach started in April 2021 to initiate a marine spatial planning (MSP) process to support the creation of a marine protected area (MPA) in the Agadir pilot site in Morocco's Souss Massa region. As part of this process, the World Bank has provided technical guidance based on international best practices to Morocco's Department of Maritime Fisheries (Département de la Pêche Maritime, DPM). This work also contributes to the preparation and current implementation of the Blue Economy Program for Results (BE PforR) by adopting a consultative and participatory approach with all relevant stakeholders, allowing the DPM to learn from the pilot and scale up the MSP approach to create new MPAs as part of their activities supported by the BE PforR.

[1] World Bank. 2021. Technical Note: Building Forward Blue in Morocco.

[2] World Bank. 2021. Morocco Climate Risk Profile; GoM. 2021. Nationally Determined Contributions.

[3] FAO. n.d. General Situation of World Fish Stocks. https://www.fao.org/documents/card/en/c/cb2429en

[4] FAO. 2020. The State of Mediterranean and Black Sea Fisheries.

"This program will provide key solutions to protect marine resources and endangered species through the creation of three marine protected areas in Agadir, Larache, and Cape Three Forks as well as the development of income-generating activities for the benefit of Moroccan fishers"

Mrs. Zakia DRIOUICH, Secretary General of the Department of Maritime Fisherie, October 2022

Program for Results PforR
In today's world, development is about results and institutional strengthening. Everyone—government officials, parliamentarians, civil society, and the private sector—is demanding programs that help deliver sustainable results and build institutions. To address this growing demand, the World Bank developed the Program-for-Results (PforR) financing instrument.

Focus on results PforR's unique features include using a country's own institutions and processes and linking disbursement of funds directly to the achievement of specific program results.

PROGRAM GOAL

As part of this government program, and with dual objectives of nature conservation and support for artisanal fisheries, DPM requested to learn from MSP tools to preserve fishery resources that optimize the creation of future MPAs for fisheries management purposes based on best international planning practices.

This grant supported technical assistance and knowledge exchange from international experts to help identify relevant best practices and incorporate MSP approaches in developing future marine protected areas (MPAs). Additionally, the program identified innovative financing mechanisms to facilitate the needed investment to support the plan. The Bank team provided technical assistance for pre-identifying innovative blue finance instruments in Morocco, taking the Souss-Massa region as a pilot.

IMPACT

Multiple events, knowledge exchange, and engagement with Korean Maritime Institute (KMI) brought international best practices to the Government of Morocco, building the capacity of the Moroccan counterparts, notably the DPM, the National Research Institute on Fisheries (INRH), and the National Agency for Aquaculture Development (ANDA). Along with the WB team, they participated in the KORAFF forum 2021 to showcase the technical assistance provided to Morocco to develop a Marine Spatial Planning (MSP) process to support the creation of Marine Protected Areas for fisheries in the Agadir pilot site in Morocco. As a following step and due to Covid-19 restrictions (which didn't permit a study tour in Korea), a Virtual Knowledge Exchange was organized with KMI in May 2022 to benefit from their experience and lessons learned to reinforce the capacity of DPM on MSP and related topics. In parallel, additional training on MSP (April 2022) and GIS (September 2022) have been delivered to the DPM and critical stakeholders to reinforce their capacity to run an MSP process on their own to duplicate the methodology (based on the methodological guide, developed throughout the technical assistance).

The exchange of ideas and increased awareness of applying new methodologies and tools to boost the economy while preserving the blue economy provided a solid basis to scale up what was learned for implementing the BE PforR activities. The program expects to increase the knowledge of critical government agencies to plan and manage the blue space more sustainably and identify new mechanisms for funding.

Finally, it is worth mentioning that the leadership of DPM has been instrumental in advancing the MSP learning process and will be vital in developing this further to coordinate a wide range of national, regional, and local authorities involved. The growing participatory MSP process is straightforward: demonstrating their enthusiasm in the process, stakeholders already recommended exploring the creation of other MPAs in the Agadir area.

KEY RESULTS

The program successfully implemented a Marine Spatial Planning Approach with the Government of Morocco to create Marine Protected Areas for fisheries management in a pilot site. An MSP diagnostic was conducted in the Agadir Bay based on the spatial analysis of available biophysical and socio-economic data and the analyses of conflicts and compatibilities between various uses (e.g., fisheries, transport tourism, energy). This has been conducted to identify the best location to create an MPA.

- Developed a robust multistakeholder approach successfully involving diverse voices through a series of consultations, virtual meetings, and workshops at all process stages.
- The program defined an operational roadmap for DPM to continue strengthening the MSP process by applying recommendations. These recommendations allow DPM to deepen the diagnostic to create the MPA (decree) based on a finalized zoning, develop and implement the management plan, and deploy a monitoring and evaluation system for adaptive management.
- Provided vital recommendations stemming from this knowledge-building exercise to develop programs and management plans, recommendations to promote and regulate fisheries activity, recommendations for other sectoral activities, recommendations for the zoning of the Marine Protected Areas for Fisheries management, recommendations for monitoring and evaluation activities, and recommendations to develop an open-source web-based GIS system that is useful and accessible to authorities as well as stakeholders and the public.
- Analyzed the available data and information to fill the gap to improve the MSP. During the data and information collection exercise, an analysis of the information gaps was conducted. This enabled a gap analysis of data limitations to the MSP process in determining the ideal area for creating the MPA.
- Developed a tool to scale up the MSP approach and lessons learned. A specific methodological guide was created, bringing all lessons learned and making available all acquired knowledge from the pilot experience in Agadir to stakeholders.
- Analyzed the current blue economy financing mechanism and identified relevant gaps that can support increased cooperation and partnership between private and public financing institutions.
- Identified several potential blue finance instruments tailored to the financing needs of different categories of enterprises and infrastructure projects in the blue economy sectors, including startups and young innovative SMEs, established SMEs, large enterprises, infrastructure PPP projects, and public investment projects at the national, regional, and city levels.


Le Maroc et la Banque Mondiale scellent un nouveau partenariat en faveur du développement de l'économie bleue

DPM | 19 OCTOBRE 2022

See detailed article in French.
Click here or scan the QR code.

KGGTF OUTCOME SUMMARY

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
Grant is informing the creation of a marine Protected Area (MPA) in Agadir to be created by decree as part of the Blue Economy PforR (P172926)

INFLUENCE ON WB STRATEGY/PROJECT DEV
Grant supported marine spatial planning, a planning tool that is the basis for the Blue Economy PforR (P172926) as well as for a PROBLUE RETF about "Accelerating Blue Economy Development in the Kingdom of Morocco" (P179612)

KNOWLEDGE EXCHANGE PROGRAMS HELD
42 participants in partnership with 11 Korean organizations: KMI; KOFA; KOEM; NIFS; NFQS; KMA; FMC; FIPA; Suhyup; and Hallim Suhyp; Pukyong National University (PNU)

IN-COUNTRY CAPACITY BUILDINGS HELD
42 participants in Morocco

KNOWLEDGE PRODUCTS PRODUCED
6 reports prepared with significant participation of the Government of Morocco for official use. Press release and stakeholders workshop video published on YouTube

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
DPM, INRH, ANDA, MOEF

Korea Expertise
The Republic of Korea has extensive experience in the blue economy due to the approval of the Marine and Spatial Planning (MSP) and Management Act (2018). This program leveraged the expertise of Korean institutions, including, but not limited to, the Korea Maritime Institute (KMI) and the Ministry of Ocean and Fisheries. The Korean experience in designing the MSP system and its governance, operationalizing, and financing strategies is relevant to Morocco's sustainable blue economy growth efforts.

Video of the final workshop held in Agadir on October 24, 2022 (in Arabic) available at: **https://youtu.be/ROog5deAP4o**

PARTNERSHIPS & COLLABORATION

International level, a partnership has been developed with the Korean Maritime Institute (KMI).

National and regional and local levels, close collaboration was established with a wide range of stakeholders, including:

- Département de la Pêche Maritime (DPM, Department of Maritime Fisheries)
- Artisanal fishers
- Institut National des Recherches Halieutiques (INRH, National Institute for Fisheries Research)
- Agence Nationale pour le Dévelopment de l´Aquaculture (ANDA, the National Agency for the Development of Aquaculture)
- Office National des Pêches (ONP, the National Office of Fisheries)
- Agence Nationale des Eaux et Forêts (ANEF, the National Agency of Water and Forests)
- Département du Développement Durable (DDD, the Department of Sustainable Development)
- Direction des Ports et du Domaine Public Maritime (DPDPM, the Authority of Ports and the Public Maritime Domain)
- Representatives from the tourism, maritime transport, and cultural professions
- Office National des Hydrocarbures et des Mines (ONHYM, the National Office of Hydrocarbons and Mines)
- Agence Nationale des Ports (ANP, the National Agency of Ports)
- the Royal Navy
- the Royal Gendarmerie
- Ibn Zohr University

Regional planning/urban planning;
- the Department of Agriculture

Local authorities
- Ministry of the Interior

Non-Governmental Organizations:
- the Mohammed VI Foundation for Environmental Protection
- Association de Gestion Intégrée des Ressources (Integrated Resource Management Association)
- Groupe de Recherche pour la Protection des Oiseaux au Maroc (GREPOM, Research Group for the Protection of Birds in Morocco)

LOOKING AHEAD

The program supported the preparation of the Morocco Blue Economy Program for Results PforR.

Based on the key findings and lessons learned from this knowledge-building process, there is no doubt that the MSP represents an opportunity for Morocco for better and sustainable planning of its marine and coastal areas, particularly to balance the need to develop sustainable artisanal fisheries in synergy with other sectors and to conserve fishery resources.

Based on the key findings and lessons learned from this knowledge-building process, there is no doubt that the MSP represents an opportunity for Morocco for better and sustainable planning of its marine and coastal areas, particularly to balance the need to develop sustainable artisanal fisheries in synergy with other sectors and to conserve fishery resources.

The key findings and lessons learned from this knowledge-building process will support the application of MSP approaches to the establishment of MPAs in three selected sites and the development of climate-smart MPA management plans for three selected sites as part of the implementation of the BE PforR the activities.

Finally, the financing approach has been endorsed by the Ministry of Economy and Finance in Morocco who additional requested technical assistance support from the Bank to develop business plans for the implementation of selected blue finance instruments, as an integral part of the preparation of the Blue Economy development Strategy to be led by the Interministerial Blue Economy Development Commission under the leadership of the Prime Minister both supported by the PforR.

Participatory mapping workshop in Agadir, March 17, 2022

Three possible locations identified for the creation of a new MPA for fisheries management identified during the diagnostic phase (WB, 2022a)

"Creating a marine protected areas through marine spatial planning versus traditional marine protected areas brings innovation, reconciling conservation and development objectives. It allows among others to incorporating larger marine and coastal territorial context, reducing conflicts between competitive uses through MSP's multi-sectorial and collaborative approach as well as a strong stakeholder engagement and consultation. MSP-based MPAs can also unleash the job creation potential in a range of sectors, including tourism, energy, aquaculture, transport, commerce, fishing sector, and marine science."

Sandrine Jauffret, Senior Natural Resources Management Specialist at the World Bank

Catalyzing Green Investment in Pakistan

Environment
South Asia
Pakistan

TEAM LEADER:
Christopher James Warner,
Senior Environmental Specialist

Ahmad Imran Aslam,
Senior Environmental Specialist

2018

CONTEXT AND CHALLENGES

Pakistan's pollution impact on human health, the economy and ecosystems is extreme. Pakistan's pollution burden results in equivalent of 170, 000 deaths annually which costs the economy in the order of $25 billion per annum or close to 9% of GDP. This is slightly below the levels found in India but similar to Bangladesh and China in 2019[1]. Globally it is high. **Air pollution imposes the biggest pollution costs on human health and the economy** (5.5% of GDP) and is worst in the Punjab Province. The key sources of air pollution in Punjab include household combustion for cooking and heating, transport, small industry, waste and waste burning of crop residues.

According to a recently completed World Bank Study, In a business-as-usual economic development scenario in 2030, in Pakistan, it is estimated that the yearly premature death toll from air pollution will increase to about **231,000.** The World Bank's Cost of Air Pollution estimated in 2016 that the However, the economic costs of pollution and waste are significant and extend beyond poor air quality. **Rivers and groundwater which is used for drinking water are heavily polluted** due to lack of sanitation facilities, disposal of solid waste into water channels, untreated industrial effluents, and pesticides residue run-off from farms. In Punjab Province, the key polluting industries have been identified which include tanneries, brick kilns, small scale steel furnaces, re-rolling units, rice husk, stone crushing, and sugar mills. Solid and liquid wastes are generally disposed of without treatment and emissions to air are poorly contained.

It is therefore clear that Pakistan's current growth model which has assumed the continued availability of abundant cheap resource inputs (air, water, fertilizer, land, energy etc), with little need to contain pollution or improve occupational health and safety standards is unsustainable. It also has a direct impact on Pakistan's exports which have to compete for market share against those firms which comply with international. In addition forward leaning firms increasingly recognize that they need to go one step further and adopt Resource Efficient and Cleaner Production (RECP) because it improves bottom-line profit by reducing resource inputs and turning waste into re-usable inputs.

Table 1. Combined impact of pollution and poor occupational health and safety standards on Pakistan's GDP

ISSUE	COST TO ECONOMY IN $ BILLION	% OF GDP 2016
PM 2.4 outdoor air pollution	5.54	3
PM 2.5 indoor air pollution	7.02	2.5
Inadequate access to clean drinking water, sanitation, associated hygiene (WASH)	7.5	2.65
Arsenic in drinking water	3.1	1.1
Occupational health and safety impacts	1.9	0.7
Toxic waste and soil contamination	0.0355	0.012
Total	25.1	9.92

KGGTF OUTCOME SUMMARY

LINK TO WB LENDING & CO-FINANCING
$273,000,000

INFLUENCE ON CLIENT COUNTRY POLICY/STRATEGY
1. Clean Air Action Plan, 2. Amendments to vehicle legislation to include private motor vehicles; 3. Plastics Management strategy and Green Financing Strategy

INFLUENCE ON WB STRATEGY/PROJECT DEV
Pakistan draft Country partnership framework and Country Climate and Development Report

IN-COUNTRY CAPACITY BUILDINGS HELD
300 participants in Pakistan

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
UK FCDO

Both the Federal Government and the Government of Punjab recognize that there is a need to decouple Pakistan's economic growth from Pakistan's pollution burden. On air pollution, the Federal Government has recently approved a Clean Air Plan which recognizes the linkages between air pollution, climate change, and health. At the provincial level, Punjab has adopted a Policy to Combat Air Pollution and Smog (2017), which is in the process of being updated to the Punjab Clean Air Policy and Action Plan. Since July 2022, the Punjab government has undertaken several important actions to address air pollution, including air quality monitoring and data, policy and legal reforms, and promoting the use of RECP.

In the RECP space under the KGGTF, the Bank has supported several important initiatives. The report titled Sustainable Industrial Development identifies the key features of Punjab's industrial sector, the opportunities for RECP in key sectors how the Government could support such development including through industrial policy and industrial parks. The report also provides examples of how China, Vietnam, Malaysia and Egypt are approaching greening and promoting RECP. The KGGTF has also supported a study tour to Korea with Government and industrial representatives from Punjab to learn about the Korean RECP experience. A bi-annual conference has taken place in Lahore to showcase firms practicing RECP technologies. The $200 million Punjab Green Development Program is following up by strengthening environmental governance including the strengthening of the Environment Protection Department, stronger environmental monitoring and enforcement, provision of public information. Importantly, it is establishing the USD $50 million environment endowment fund which will provide finance to support the adoption of RECP technology and results based financing to green five industrial sectors and small-medium micro-enterprises. A green financing strategy will be prepared and adopted to guide Punjab Government in its efforts to green the economy and promote RECP technologies.

1 World Bank (2019) Pakistan CEA, based on data from the 2019 Global Burden of Disease (GBD) which suggest that the overall health burden attributable to environmental/occupational risks in Pakistan is about 152 deaths per 100,000 population. This is about 32% less than in India, about the same as in Bangladesh and China, but 41% higher than Indonesia and more than twice as high as Mexico and Turkey. Cost of pollution derived using WHO methodology, World Bank 2021.

Transforming Urban Transport to Support Green and Resilient Recovery—Leaders in Urban Transport Planning (LUTP)

Transport Global

TEAM LEADER:
Arturo Ardila Gomez,
Lead Transport Economist

Georges Darido,
Lead Urban Transport Specialist

2020

TRANSPORT CHALLENGES

Cities worldwide are grappling with the challenge of providing more inclusive access to employment, education, and health care while reducing travel costs, crashes, climate change impacts, air and water pollution, and the consumption of scarce resources like land and fuel. Urban congestion, rising emissions, and harmful air quality are fundamental targets for improving quality of life with green growth recovery. Particularly in the aftermath of the COVID-19 pandemic, a green recovery via implementing and maintaining sustainable, resilient, efficient, safe, and inclusive urban transport systems is critical for the client cities of the World Bank. Even with growing motorization in many of these cities, the majority and most underprivileged depend on walking and public transport for day-to-day life.

Addressing transport challenges in the broader context of demographic shifts, economic growth, pandemic recovery, and climate action requires holistic approaches to urban transport planning, governance, management, and operations implemented by strong, competent, cooperative institutions.

PROGRAM GOAL

Empowering mid- to senior-level policy-makers and practitioners with the skills to diagnose urban mobility challenges and craft effective strategies for creating more livable and sustainable cities.

The Approach
The Leaders in Urban Transport Planning (LUTP) program convenes mid-to-senior level managers and policymakers who occupy leadership positions in urban transport planning, governance, management, and operations in developing countries **and provides online and in-person training** workshops. Attendees join interactive training and workshops **to gain the skills to identify, prepare, and implement holistic solutions to complex urban transport issues**. Rather than just disseminating best practices, the program helps professionals assess the travel needs and challenges facing their developing cities, balance different perspectives, **and create a solution that is the 'best fit' for local circumstances**.

The LUTP program is based on the following principles

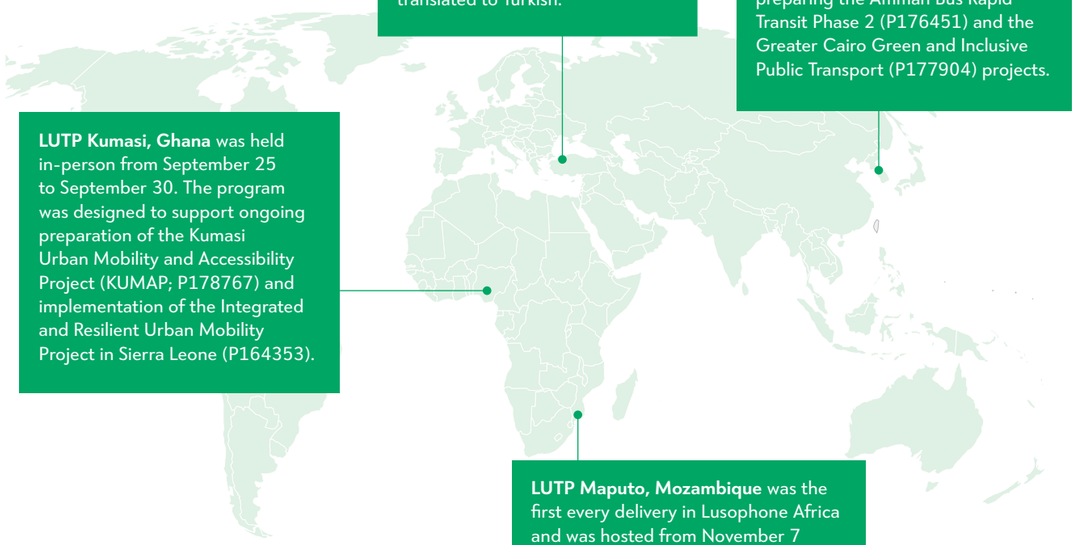
- The development of local capacity should focus on the actual demands and challenges faced by developing cities
- While every city is unique, cities often face common challenges
- No one specific solution fits all cities because local circumstances vary among cities
- A good understanding of institutions, governance, political economy, and cultural barriers to changing behavior is needed to develop sustainable solutions
- Adults learn best by participatory problem-solving and hands-on learning
- Collaborative learning and sharing knowledge among cities in the spirit of peer-city learning is important

2022 Workshops

2022 marked the full relaunch of the LUTP program following a 2-year hiatus due to the COVID-19 pandemic. From May to December 2022 the LUTP program hosted four workshops training 143 participants from twelve countries, including counterparts involved in seven World Bank projects.

LUTP Turkey was held from May 24 to May 26. It was the first offering since the start of the pandemic, the first-ever LUTP workshop hosted virtually with simultaneous interpretation, and the first-ever program tailored for five Türkiye municipalities. The workshop supported the ongoing implementation of advisory services and analytics (ASA) on Sustainable Urban Mobility Plans (SUMPs) led by the World Bank and funded by the European Union (P175806). A brand new group exercise on the SUMP in Malaga, Spain was drafted for this session and existing study content was translated to Turkish.

LUTP Seoul, Korea was the 9th session hosted in Korea since the inception of the LUTP program in 2011. The 2022 workshop hosted from November 30 to December 6, was organized in collaboration with historic partners the Korea Transport Institute (KOTI) and the Seoul Metropolitan Government (SMG). The workshop agenda was tailored to the learning needs of participants and featured brand new curriculum materials and Seoul site visits related to "smart" and "green" urban transport system planning and management developed over the past year by the LUTP team and its Korean partners. All materials from the Seoul workshop are hosted publicly by the World Bank's Open Learning Campus. Attendees joined from Jordan, Egypt, Mongolia, Pakistan, Papua New Guinea, Vanuatu, and India. Participants included counterparts implementing the Ulaanbaatar Sustainable Urban Transport Project (P174007) and preparing the Amman Bus Rapid Transit Phase 2 (P176451) and the Greater Cairo Green and Inclusive Public Transport (P177904) projects.



LUTP Kumasi, Ghana was held in-person from September 25 to September 30. The program was designed to support ongoing preparation of the Kumasi Urban Mobility and Accessibility Project (KUMAP; P178767) and implementation of the Integrated and Resilient Urban Mobility Project in Sierra Leone (P164353).

LUTP Maputo, Mozambique was the first every delivery in Lusophone Africa and was hosted from November 7 to November 10. The workshop as a major component of capacity-building under the Maputo Metropolitan Area Urban Mobility Project (P175322) and explored topics such as urban transport system governance and complex relationships between formal and informal public transport operations. A delegation from Luanda, Angola also joined the program.

RESULTS

Since the inception of the program, LUTP has been offered 69 times worldwide and has trained a total of 2,294 practitioners from 99 countries. For participants, LUTP provides:

- Enhanced skills and capacity among program participants
- Improved learning approaches for use by local practitioners and decision-makers
- Increased capacity in local universities and training institutes
- Improved knowledge base through the development of new materials
- Enhanced connectivity and opportunities for learning and sharing
- Stronger relationships and partnerships through the exchange of operational knowledge
- Creation of a community of leaders and decision makers working on urban transport planning across cities in developing countries
- Momentum for initiating sustainable urban transport projects in participants' home cities

The LUTP program is recognized by the World Bank's Independent Evaluation Group **as one of the best examples of global engagement** providing client capacity building on urban transport.

The LUTP workshops offered in 2022 received extremely positive feedback from participants, who especially value its unique focus on participatory, peer-to-peer learning. Participants in the post-workshop survey felt that the workshop helped them learn something new (99% agreed or strongly agreed), improved their confidence to work with a multi-disciplinary team in charge of urban transport planning (98% agreed or strongly agreed), and motivated them to act to improve urban transport in their community, city, or country (95% agreed or strongly agreed).

Participants of the four workshops were also asked how likely they are to recommend attending a LUTP workshop to a colleague on a scale from 1 (not likely at all) to 10 (very likely). Out of 91 respondents, more than half (52 percent) marked 10 and the average answer was 9.15.

"I changed my perception that mobility was only infrastructure and vehicles. Now I realize that it is an extensive system."

LUTP Maputo participant

KGGTF OUTCOME SUMMARY

INFLUENCE ON WB STRATEGY/PROJECT DEV
LUTP workshops supported preparation or implementation of 7 WB lending projects benefitting Egypt, Mongolia, Jordan, Mozambique, Ghana, Sierra Leone, and Turkey

KNOWLEDGE EXCHANGE PROGRAMS HELD
50 participants from Egypt, Jordan, Mongolia, India, Pakistan, Vanuatu, and Papua New Guinea

IN-COUNTRY CAPACITY BUILDINGS HELD
120 participants from Turkey, Ghana, Sierra Leone, Mozambique, and Angola

KNOWLEDGE PRODUCTS PRODUCED
1. Public and Active Transport Planning for Resilience and Health: The Case of Seoul, South Korea;
2. Smart Cities and Intelligent, Sustainable Transportation Systems: The Case of Seoul, South Korea; and
3. Group Exercise: Sustainable Urban Mobility Planning in Málaga, Spain

EXTERNAL PARTNERSHIPS (KOREAN & NON-KOREAN)
Korean: KOTI; SMG; Hongik University, and Seoul National University of Science and Technology
Non Korean: Africa Transport Policy Programme (SSATP) and ADB

UPDATED CURRICULUM

KGGTF supported the development of new curriculum and training materials that speak to new challenges and trends in urban transport planning, including resilience to epidemiological and climate shocks, mitigation of harmful greenhouse gas and local air pollutant emissions, and information and communication technology-enabled planning, operations, and management. The new curriculum strengthens the program's focus on green, resilient, and inclusive economic development to align with the World Bank's global themes and the United Nations' sustainable development goals.

Inclusive and Green Growth. The recently developed case studies, group exercises, and updated program stress the importance of stakeholder engagement and techniques for including all stakeholders (including transport riders) in the planning and project development process. Of particular interest to developing cities are the concrete tools on how to promote behavioral change and policy implementation ideas that support green growth and accessibility.

Technology The advance of technology and shared mobility can positively address traffic management, improve public transport, efficiency, safety, and affordability, and reduce GHG emissions. To initiate a behavior change, LUTP exposes policymakers, urban transport planners, and transport stakeholders to how technology can make cities function better and more efficiently.

The program allows developing cities to leapfrog to green growth by drawing experience from high-income cities like Seoul as well as experiences of peer cities in low- and middle-income countries around the world.

The LUTP curriculum was recently enhanced with new study materials, updates to existing materials, and translations of materials into additional languages. Study material is publicly available on the LUTP website "Curriculum" page.

The LUTP program added two new case studies on the experience of Seoul and Korea's technology- and data-enabled smart urban transport planning and management and public transport system response during and after the Covid-19 pandemic with input from two Korean counterparts: The Korea Transport Institute (KOTI) and the Seoul Metropolitan Government (SMG). English and Spanish language versions are available for the public on the new LUTP website.

Newly developed study materials

- Public and active transport planning for resilience and health: The case of Seoul, South Korea (Case studyon Seoul's Transport Operation & Information Service, TOPIS).
- Smart cities and intelligent, sustainable transportation systems: The case of Seoul, South Korea (Case study)
- Maputo informal public transit reform (Case study)
- Sustainable Urban Mobility Planning in Malaga, Spain (Group exercise)
- Mobility as a Service (Self-reading module on the use of technological platforms for multimodal integration)
- The response of urban transport systems to COVID-19 (Self-reading module)

Updated study materials:

- Dakar Bus Renewal Scheme, Senegal (Case study)
- Maseru Urban Transport Problems, Lesotho (Case study)

Translations of study materials:

- Spanish: The two new case studies on Seoul, South Korea Portuguese; Three case studies on the Lagos Metropolitan Area Transport Authority (LAMATA); the Dakar Bus Renewal Scheme, Senegal; and Maseru Transport Problems, Lesotho.Turkish: One case study on Jakarta's Transportation Problems; one group exercise on Sustainable Urban Mobility Planning in Malaga, Spain; and nine self-reading/background materials on various topics related to urban transport planning and green growth.

"With KGGTF support, we have improved the relevance of our materials to dynamic challenges around urban transport and its connections to economic development and resilience, social inclusion, climate change, public health, digitalization, and much more."

Arturo Ardila Gomez, Lead Transport Economist

PARTNERSHIPS & COLLABORATION

The LUTP workshops in Kumasi, Ghana, and Maputo, Mozambique was offered in collaboration with the Africa Transport Policy Program (SSATP) with financial co-support of the World Bank Sustainable Development Goal Partnership Fund and the Public-Private Infrastructure Advisory Facility (PPIAF). These partners are continuing to work with the LUTP program in organizing upcoming sessions in Francophone Africa. These workshops also featured guest presentations and site visits facilitated by other local development partners including WRI Africa, UN Habitat, and ITDP.

- Korea Transport Institute (KOTI)
- Seoul Metropolitan Government (SMG)
- Hongik University
- Seoul National University of Science and Technology
- Asian Development Bank (ADB)

UP NEXT

The LUTP program has two workshops upcoming in Spring 2023. In May, participants from Kigali, Rwanda; Kampala, Uganda; Nairobi, Kenya; and Dar es Salaam, Tanzania will convene in Kigali for discussion-based, peer-to-peer learning on how to diagnose and prioritize urban transport challenges and empower institutions to plan and manage urban transport systems. This workshop is a collaboration with another KGGTF grant team implementing the ASA entitled "Unlocking Urban Mobility in East African Cities" (P176110) and is supporting the preparation of the Rwanda Urban Mobility Project (P176885). In June, participants from Haiti, Djibouti, and Cameroon will convene in Douala for a French language workshop focused on the planning and implementation of bus-based public transport systems and the importance of resilience to climate change in urban transport planning. The Douala workshop will directly support the ongoing implementation of the Douala Urban Mobility Project (P167795) and the Resilient Connectivity and Urban Transport Accessibility Project (P177210) in Haiti.

Discussions are ongoing with additional partners around the world to host or attend workshops for later in the calendar year. Promising areas of engagement include: follow-up workshops for secondary cities in Kenya and Tanzania supporting preparation for the Kenya Urban Mobility Improvement Project (P176725) and the Dodoma Integrated and Sustainable Transport Project (P176623); a workshop for participants from Western Balkans countries; a workshop for Spanish-speaking cities hosted in Quito, Ecuador to commemorate the opening of the Quito metro; and potentially the next annual workshop in Seoul for participants from Indonesia, the Philippines, and other countries.

Innovative Transport Solutions from Seoul
The grant supported the addition of two new case studies on Seoul, South Korea to the LUTP curriculum, highlighting the critical role of transformative technology and resilience for urban transport systems.

Communications and Dissemination

5

Communication and dissemination are critical for grant success. Over the past year, KGGTF has continued capturing and disseminating results from its grant programs. The focus remains on green growth as a multi-sectoral approach that applies to every country and sector. We continue integrating digital tools and new techniques to communicate program results through new formats, including short videos, infographics, Knowledge Notes, webinars, and Story Maps, and utilizing social media platforms and channels for dissemination. We strive to provide content for various stakeholders, including policy and technical teams, external media, and the public, on the value and impact of the green growth approach.

IN THE NEWS

In 2022, KGGTF and its grant programs were featured in the international press. Additional media articles can be found on our website.

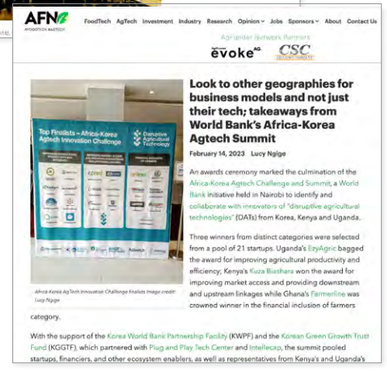
Arirang News
S. Korea, World Bank Group's collaboration of Korea Green Growth Trust Fund marks 10th anniversary


Published on Nasikiliga
Could food, feed and fertilizer production by farming insects be a way for refugees and host communities to move from surviving to thriving?


Africa-Korea Agtech Innovation Challenge and Summit 2023 for African Innovators.
By OFA - novembre 30, 2022


버스전용차로·따릉이 해외 진출한다
Knowledge Exchange and Study Visit


How battery storage PPPs are powering up the global energy transition

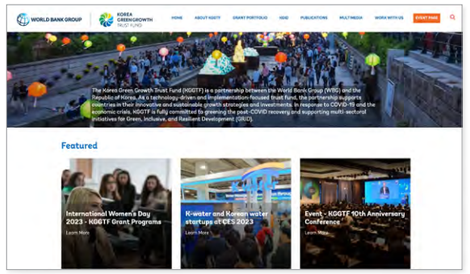

AFN
FoodTech AgTech Investment Industry Research Opinion Jobs Sponsors About Contact Us
Agrilinker Network Partners
evoke
CSC
Look to other geographies for business models and not just their tech; takeaways from World Bank's Africa-Korea Agtech Summit
February 14, 2023 Lucy Ngige
An awards ceremony marked the culmination of the Africa-Korea Agtech Challenge and Summit, a World Bank initiative held in Nairobi to identify and collaborate with innovators of "disruptive agricultural technologies" (DATs) from Korea, Kenya and Uganda.
Three winners from distinct categories were selected from a pool of 21 startups. Uganda's EzyAgric bagged the award for improving agricultural productivity and efficiency; Kenya's Kuza Biashara won the award for improving market access and providing downstream and upstream linkages while Ghana's Farmerline was crowned winner in the financial inclusion of farmers category.
With the support of the Korea World Bank Partnership Facility (KWPF) and the Korean Green Growth Trust Fund (KGGTF), which partnered with Plug and Play Tech Center and Intellecap, the summit pooled startups, financiers, and other ecosystem enablers, as well as representatives from Kenya's and Uganda's

WEBSITE

The website www.wbgkggtf.org was recently refreshed and continues to provide visitors with access to impact stories, results, publications, news features, videos and more. Visit to find out about upcoming events or watch recordings of recent programs.

MONTHLY NEWSLETTER

The monthly newsletter continues to grow. Each newsletter features activity updates, success and impact stories, recent research and reports, invitations to upcoming events and recordings on past events.


Featured
International Women's Day 2023 - KGGTF Grant Programs
K-water and Korean water startups at CES 2023
Event - KGGTF 10th Anniversary Conference


KGGTF NEWSLETTER
August 2022
FEATURE STORY
Water Security and Drought Resilience in the South of Angola


KGGTF NEWSLETTER
September 2022
FEATURE STORY
The 77th Session of the UN General Assembly - A Watershed Moment; Transformative Solutions to Intertocking Challenges
"Korea will scale up its green ODA, help developing nations transition to a low-carbon future, and widely share its digital technology." H.E. Yoon Suk-yeol, President of the Republic of Korea addressed at the 77th Session of the United Nations General Assembly and pledged the strong commitment of Korea to global agendas for climate action, decarbonization, and inclusive economic development.
President Yoon emphasized a critical role of green technology and digital innovation in supporting socially vulnerable groups in Korea and abroad for sustainable prosperity. Countries with leading green technologies must work to share new and renewable energy technologies for a low-carbon economy. Innovative technologies will support digital education, technology transfer and e-government for narrowing the digital divide. With an increased budget for official development assistance (ODA) and international organizations including the World Bank, Korea will help to fight against infectious diseases such as COVID-19, AIDS, and tuberculosis to build a more robust global community.
Watch the full speech of President Yoon Suk-yeol.
H.E. Joseph R. Biden, President of the United States, highlighted a stronger commitment of the US toward climate crises and called for more concerted global actions to tackle growing challenges such as food insecurity, record heat, floods and droughts, inflation, and conflicts. The US will invest tens of billions in offshore wind and solar energy, zero emission vehicles, and clean manufacturing. The US will contribute $11 billion to international climate finance to help lower-income and vulnerable countries implement climate goals, ensure a just energy transition,

SHORT VIDEOS

Many events and activities are supported by short digital films and shared widely across social media.

Transport in Korea
This film explores how greening the transport sector can create jobs, reduce emissions, and enhance the quality of life by providing everyone with efficient and low-cost transport options.

Energy in Korea
This film reviews the innovative policies, technologies and governance models that Korea's energy sector is pursuing to support the country reach its sustainable development goals.

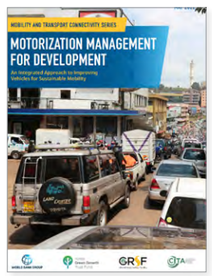
PROGRAM OUTPUTS

Fostering Green Mobility in Siem Reap
Fostering Green Mobility in Luang Prabang

These guides were created to help transport decision-makers identify the most appropriate intermodal transport options for their unique cities. Both cities are experiencing strained transport systems and must consider historic preservation, tourism, and dense populations. The guides provide a clear vision, concrete strategies and appropriate financing methods to achieve a well-functioning transport sector.

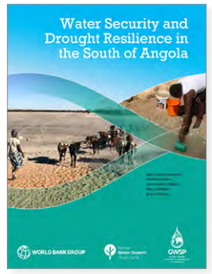
Motorization Management for Development An Integrated Approach to Improving Vehicles for Sustainable Mobility

Motorization Management (MM) is a deliberate, diligent, and coordinated process to shape, through public policies and programs, the profile, quality, and to some degree, quantity and intensity of use of the motor vehicle stock as it progresses through a country's motorization process. MM seeks to shape the way motor vehicles are managed throughout their effective in-use life in a given country, in order to improve safety, environmental, and fuel consumption outcomes



Water Security and Drought Resilience in the South of Angola

The World Bank's first report on drought in Angola aims to provide a practical approach and actionable measures to support the government of Angola in its paradigm shift toward drought and climate resilience



Get Clean and Green – Solid and Plastic Waste Management in Lao PDR

This report and action plan provide solutions for how the country can address solid and plastic waste and ensure that future growth drives a greener economy that benefits both the people and the environment.

Watch more

Get CLEAN and GREEN - Solid and Plastic Waste Management in Lao PDR

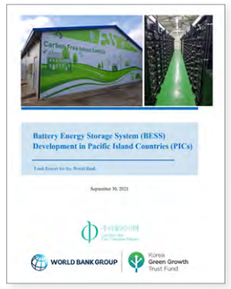
The report provides an assessment of the current solid waste management process in Lao PDR. Along with a complete summary of findings and a diagnostic analysis of plastic pollution in six cities, a roadmap to guide the development of the National Plastic Action Plan to adopt suitable plastic policies and identifies investment opportunities and priority actions needed to improve the management of plastic and solid waste.

Regional e-mobility Policy Framework and Technical Guidelines in the Pacific Island Countries

The report establishes a framework and technical guidelines for small island countries on how best to implement electric vehicles.

Battery Energy Storage System Development in Pacific Island Countries

This report identifies the best policies, technologies, and financing approaches for Pacific Island Countries to scale up renewable energy through Battery Energy Storage Systems (BESS).



Blue Skies, Blue Seas

This book shows how virtually all forms of natural capital, but particularly "blue" natural capital – skies and seas – has been degrading in the Middle East and North Africa (MENA) region over the last three decades, and focuses on the three challenges of air pollution, marine plastics, and coastal erosion. The book provides policy recommendations and solutions on how to transform the economy and restore the skies and seas.

Greening Digital in Korea

Digital technologies are making a significant impact on societies, economies, and the physical world, presenting both opportunities and challenges for the green agenda. Applications of these technologies in sectors such as energy, urban, transport, and agriculture are creating new possibilities for climate change mitigation strategies. However, the rapid expansion of digital technologies increases energy usage too and is therefore also increasing greenhouse gas (GHG) emissions. Korea was selected for the case study due to its experience in both the digital and green sectors, and its status as a globally recognized ICT powerhouse.

IN PERSON AND VIRTUAL EVENTS

January 19

Insect and Hydroponic Farming in Africa
People have eaten insects and hydroponic crops for centuries. But farming them is new, with massive potential for human food and animal feed all year round with very few resources. Farmed insects can be fed organic waste, quickly becoming protein-rich foods for humans and animals. Waste from insects can then return to the soil as biofertilizers, creating a circular economy.
Watch this event in English or French

January 20

Disruptive Agricultural Technology (DAT): Korea-Kenya Discussion
This webinar explored how digital technologies can strengthen the resilience of food and livestock production, increase sustainable agriculture and support the adoption of green policies that will increase agricultural productivity.

Disruptive Agricultural Technology
Innovation Knowledge & Challenge Conference

February 7

Blue Skies and Blue Seas in Middle East and North Africa
While economic and social indicators in many countries in the Middle East and North Africa (MENA) have improved, the region's blue natural assets — clean air, healthy seas, and coastlines — have degraded nearly everywhere. The human and economic price of this deterioration of blue assets is immense, costing more than 3% of GDP annually. As MENA countries recover from COVID-19, there is an opportunity to shift to a greener, more resilient, and inclusive development pathway that reverses natural resource degradation and environmental pollution – plus builds resilience to climate change.

Listen to leading policymakers and the private sector about their vision for a healthier future.
Watch the event

March 2-11

Korea Green Growth Innovation Days (KGID) Spring
KGID is an opportunity for World Bank teams and Korean partners to meet and discuss current and future programs. It is a chance to build relationships, find ways of collaborating and identify ways to integrate new green growth technologies and policies into programs.

March 15

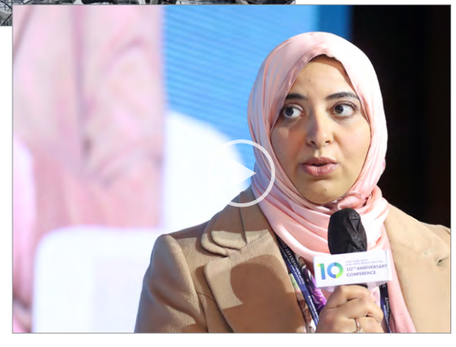
Supporting a Vibrant Digital Agricultural Ecosystem in Africa
Co-hosted by KWPF the Disruptive Agricultural Technologies (DAT) program in Africa discussed the evolution of the program and the range of innovations it spawned and supported. The DAT team discussed Bank's engagement in building the DAT ecosystem in Uganda and Kenya and lessons on scaling this approach in Africa. The webinar showcased the experience and impacts of a local startup supported by the TFs and the Korean development partner's role in sharing relevant knowledge and expertise. The webinar also discussed future knowledge-sharing and partnership opportunities. **Watch the discussion here.**

October 11

Korea's Economic Development Co-operation
Co-hosted with KWPG, this discussion showcased Korea's Economic Development Co-operation Fund (EDCF). EDCF is the Korean government's public fund for ODA and concessional loan. The EDCF is implemented by the Korea Export-Import Bank (KEXIM).

December 1

The 10th Anniversary Conference, Green Growth in Action: Reflections and Vision Forward
This celebration was held with great success. More than 300 green growth practitioners and visionaries from around the world, including 80 officials from 19 countries, 70 experts from the World Bank, 120 decision-makers and leaders from Korea's public and private sectors, and 24 youths from the fields of climate activism, private industry, and academia gathered together to celebrate the KGGTF's significate achievements.
Watch client leaders discuss how KGGTF is helping them find and implement green growth solutions.



Financial Review

6

TF071951 - KGGTF TRUST FUND CALENDAR YEAR 2022

	01/01/2022 - 12/31-2022
INFLOWS	
Beginning balance 01/01/22	$29,017,511
Receipt	
Cash contributions	$10,440,000
Other receipts	$45,102
Total Receipts	$10,485,102
OUTFLOWS	
Project disbursements	$10,455,167
Non-project disbursement	$45,243
Total Disbursement	$10,500,410

FUND BALANCE

End of period balance 12/31/22	$29,002,203
Undisbursed commitments (as of 12/31/2022)	$13,212,572
Investments income to other TFs (as of 12/31/2022)	$2,024,331

Annexes

7

Annex 1: APR Summary

2022 Annual Progress Report (APR)

The KGGTF Annual Progress Report (APR) is critical for effective monitoring and evaluation of the Trust Fund and assessment of the performance of KGGTF grant programs. All KGGTF grant awardees with a grant active during the reporting period must submit an APR as required by the Donor. For the 2022 APR, the KGGTF team collected individual APRs and an additional Survey Annex from 58 grants active within the calendar year (CY) 2022.

The APR is intended to summarize the status of grant activities and track grant awardees' progress towards achieving the expected outputs and outcomes set out in the approved grant proposal. It provides an opportunity for grant awardees to highlight issues, delays, or changes to planned activities, and to request KGGTF support during grant implementation. The Survey Annex is intended to collect data for the KGGTF Results Framework/KPI, which quantitatively measures the performance and impact of the KGGTF grant portfolio annually. A summary of key findings, messages, and guiding lessons from the APR 2022 are as follows:

Outcome Pillar 1: Increased Mobilization of Green Growth Investments

- 53% of the 2022 grant portfolio increased mobilization of green growth investments
- Over 50% of KGGTF grants active in 2022 influenced external (public & private) investments
- $2.95 billion in World Bank lending and co-financing was leveraged additionally by 10 KGGTF grants in 2022
- 59% of World Bank lending leveraged by KGGTF grants in 2022 had climate co-benefits totaling $875.5 million

Outcome Pillar 2: Adoption of Green Growth Policies, Regulations, Strategies, and Initiatives

- Over 50% of active grants influenced client countries' adoption of green growth policies
- Over 50% of active grants influenced World Bank green growth strategies, country engagements or project development
- 40 final outputs from KGGTF grants that were delivered to WB Management or CMU contributed to the Bank's adoption of green growth strategies, country engagements or project development that benefited 79 client countries

Outcome Pillar 3: Increased Capacity, Knowledge, and Technologies to Implement Green Growth in Action

- 69% of the 2022 grant portfolio increased capacity, knowledge and technologies to implement green growth in action
- 43% of grants active in 2022 held Knowledge Exchange programs in partnerships with Korean organizations
- 2,546 World Bank staff, government officials and technical representatives of client countries participated in Knowledge Exchange programs held during 2022
- 103 Korean organizations participated in Knowledge Exchange programs held during 2022
- 63% of grants held In-Country Capacity Building activities in 2022 with a total of 5307 participants

Outcome Pillar 4: Strengthened Partnerships and Collaborations to Advance Green Growth

- 69% of the 2022 grant portfolio strengthened partnerships and collaborations towards green growth
- During 2022, 72% of active grants engaged in partnerships with a total of 136 external organizations.
- 55% of external partnerships were with Korean organizations

Key Messages and Guiding Lessons for Ongoing Grant Management

1. A strong post-COVID return of knowledge and partnership activity has had a positive impact on the overall grant performance

Progress made by grants in 2022 under Pillar 3 and Pillar 4 can be seen to have returned to healthy and productive levels after being severely affected by the COVID-19 pandemic in 2021 and 2020. A key finding from the 2022 APR was that external partnerships reported between grant teams and Korean and other organizations that support knowledge sharing and capacity building were shown to have a positive impact on grant implementation, to benefit the outputs and outcomes of the grant program, and to increase Donor and KGGTF visibility. Analysis of the 2022 APR data shows that the engagement rate for external partnerships was dramatically higher in 2022 than in 2021. During 2022, 72% of active grants engaged in partnerships or collaborations with a total of 136 external organizations. In 2021 the engagement rate was 29%. The KGGTF team must continue to proactively facilitate knowledge sharing activities and early initiation of partnerships between grant teams and proposed organizations in Korea. Potential partnerships should be discussed during the grant onboarding process to identify relevant organizations and to make connections and introductions to key contacts.

2. Grants sized below $600k reported significantly stronger results than grants sized above $600k

Analysis of the 2022 APR data found that in relation to grant size, smaller sized grants below $600k reported consistently stronger results across all 4 Outcome Pillars. When looking at results achieved per grant dollar spent, grants sized below $600k reported a higher rate of return across all categories.

3. The Donor and GP management to be informed of the comparative APR results to improve the performance of future grants

Analysis of the 2022 APR identified that certain groups of grants performed better overall compared to other groups or demonstrated notably good performance under some Outcome Pillars. These results should inform the Call for Proposals process and evaluation. Sharing valuable feedback from the APR results with the Donor and GP Management will improve the design, quality, and performance of future grants.

Performance by Grant Size

Grant size ($)	Pillar 1	Pillar 2	Pillar 3	Pillar 4	Weighted average	Rank
	Total lending & co-financing leveraged per grant $	Policy/strategy influenced per grant $	Knowledge & capacity increased per grant $	Partnerships strengthened per grant $	Pillars 1-4	(1 = best)
<400k	**250.3**	**5.7**	**237.1**	**4.0**	1.38	2
400k-499k	211.0	**4.6**	128.3	0.8	0.77	4
500k-599k	**254.3**	**5.6**	**530.0**	**3.9**	**1.70**	**1**
600-699k	140.1	3.1	35.0	1.9	0.62	6
700k-799k	127.1	1.1	71.1	2.3	0.63	5
>=800k	**238.7**	2.0	73.5	2.5	0.89	3
Average	205.6	3.7	180.3	2.5	1.0	

Strongest performance
Weakest performance

Annex 2:
KPI Achievements and Progress Towards Target

Strengthening results-based Monitoring & Evaluation (M&E) was identified as a key workplan priority for the Trust Fund in 2022, and an M&E review process found that reporting of grant results and impact would benefit from better alignment with results indicators. A previous KPI was updated and developed into an overarching **Results Framework / KPI** with 4 Outcome Pillars to quantitatively measure the performance of the KGGTF grant portfolio on an annual basis.

In the table below, **Baseline** shows accumulative numbers to the end of calendar year 2020 (end of Phase 2 operations) based on the historical data available. **Progress to Date** shows accumulative numbers to the end of calendar year 2022, and **Target** numbers are our accumulative goals for the end of calendar year 2024 (end of Phase 3 operations). **Progress Towards Target** shows the average progress towards the end of calendar year 2024 target across all indicators under the KGGTF Outcome Pillars 1 to 4.

Outcome Pillar 1:
Increased mobilization of Green Growth Investments

OUTCOME INDICATORS	BASELINE - ACCUMULATIVE TO END 2020	PROGRESS TO DATE - ACCUMULATIVE TO END 2022	TARGET - ACCUMULATIVE TO END 2024	PROGRESS TOWARDS TARGET (%)
1.1 WB lending influenced by KGGTF funded activities				
1.1.1. Total number of WB lending projects linked to KGGTF funded activities	58	78	100	48%
1.1.2. Total value of WB lending projects linked to KGGTF funded activities	$12,250,918,000	$15,716,518,000	$17,391,518,000	67%
1.2 Climate co-benefits of WB lending influenced by KGGTF funded activities				
1.2.1. Climate Co-Benefits of WB lending linked to KGGTF funded activities from CY 2020 (%, 1.2.1/1.2.4)	$932,770,000 (28%)	$2,446,810,000 (43%)	$3,521,290,000 (44%)	58%
1.2.2. Adaptation Co-Benefits of WB lending linked to KGGTF funded activities from CY 2020	$401,135,000	$1,266,105,000	$1,800,006,886	62%
1.2.3. Mitigation Co-Benefits of WB lending linked to KGGTF funded activities from CY 2020	$532,310,000	$1,171,810,000	$1,712,449,476	54%
1.2.4. Total value of WB lending projects linked to KGGTF funded activities that have climate co-benefits from CY 2020	$3,283,290,000	$5,658,290,000	$8,000,000,000	50%
1.3 Co-financing to WB lending influenced by KGGTF funded activities				
1.3.1. Total number of co-financings to WB lending projects linked to KGGTF funded activities including counterpart funding and other sources (e.g., ADB, AIIB, EDCF, GCF and GEF)	35	41	48	46%
1.3.2. Total value of co-financing to WB lending projects linked to KGGTF funded activities including counterpart funding and other sources (e.g., ADB, AIIB, EDCF, GCF and GEF)	$2,564,640,000	$3,283,390,000	$4,160,200,000	45%

Outcome Pillar 2:
Adoption of Green Growth Policies, Regulations, Strategies and Initiatives

OUTCOME INDICATORS	BASELINE - ACCUMULATIVE TO END 2020	PROGRESS TO DATE - ACCUMULATIVE TO END 2022	TARGET - ACCUMULATIVE TO END 2024	PROGRESS TOWARDS TARGET (%)
2.1 Client countries' adoption of green growth policies, regulations, strategies and initiatives influenced by KGGTF funded activities				
2.1.1. Number of green growth policies, regulations, strategies and initiatives adopted by client countries that were influenced by KGGTF funded activities and outputs	25	86	145	51%
2.1.2. Number of client countries adopting green growth policies, regulations, strategies and initiatives that were influenced by KGGTF funded activities and outputs	17	85	140	55%
2.2 WB's adoption of green growth strategies, country engagements and project development influenced by KGGTF funded activities				
2.2.1. Number of KGGTF funded outputs delivered to WB Management and CMUs which influenced WB strategies, country engagements and project development	16	63	90	64%
2.2.2. Number of client countries for which CMU used KGGTF funded outputs to influence country engagements and project development	13	109	190	54%

Outcome Pillar 3:
Increased Capacity, Knowledge, and Technologies to Implement Green Growth in Action

OUTCOME INDICATORS	BASELINE - ACCUMULATIVE TO END 2020	PROGRESS TO DATE - ACCUMULATIVE TO END 2022	TARGET - ACCUMULATIVE TO END 2024	PROGRESS TOWARDS TARGET (%)
3.1 Knowledge Exchange programs supported by KGGTF funded activities				
3.1.1. Number of Knowledge Exchange programs supported by KGGTF funded activities **Virtual KEs must be more than half day.*	58	83	110	48%
3.1.2. Number of WB staff, government officials & technical representatives of client countries that participated in Knowledge Exchange programs supported by KGGTF funded activities	1,345	3,918	3,800	105%
3.1.3. Number of client countries that participated in Knowledge Exchange programs supported by KGGTF funded activities	26	99	170	51%
3.1.4. Number of Korean organizations that participated in Knowledge Exchange programs supported by KGGTF funded activities	11	122	230	51%
3.2 Capacity building activities supported by KGGTF funded activities				
3.2.1. Number of in-country capacity-building activities* supported by KGGTF funded activities **including workshops for dissemination of outputs/ findings*	5	44	85	49%
3.2.2. Number of participants in in-country capacity-building activities supported by KGGTF funded activities **including workshops for dissemination of outputs/findings*	75	5,382	5,700	94%
3.2.3. Number of client countries that participated in in-country capacity building activities* supported by KGGTF funded activities **including workshops for dissemination of outputs/ findings*	3	64	125	50%
3.2.4. Number of Korean organizations represented in in-country capacity-building activities supported by KGGTF funded activities **including workshops for dissemination of outputs/ findings*	0	6	15	40%
3.3 Creation of knowledge products to transfer green growth technologies and solutions				
3.3.1. Number of knowledge products to transfer green growth technologies and solutions, created by KGGTF grants	21	86	150	50%
3.3.2. Number of knowledge products to transfer green growth technologies and solutions, disseminated by KGGTF team	49	78	110	48%

Outcome Pillar 4:
Strengthened Partnerships and Collaborations to Advance Green Growth

OUTCOME INDICATORS	BASELINE - ACCUMULATIVE TO END 2020	PROGRESS TO DATE - ACCUMULATIVE TO END 2022	TARGET - ACCUMULATIVE TO END 2024	PROGRESS TOWARDS TARGET (%)
4.1 External organizations engaged with KGGTF grant teams				
4.1.1. Number of partnerships and/or collaborations between KGGTF grant teams and all external organizations (Korean & Non-Korean)	68	327	590	50%
4.1.2. Number of partnerships and/or collaborations between KGGTF grant teams and Korean organizations	40	146	185	73%
4.2 External organizations engaged with the KGGTF Team				
4.2.1. Number of collaborations with external organizations (Korean & Non-Korean) including joint initiatives and active participation at knowledge sharing events organized by the KGGTF Team	110	196	290	48%
4.2.2. Number of collaborations with Korean organizations including joint initiatives and active participation at knowledge sharing events organized by the KGGTF Team	110	188	270	49%

Annex 3 Portfolio

COUNTRY	SECTOR	PROGRAM TITLE	APPROVAL YEAR	STATUS	DONOR APPROVED AMOUNT
AFRICA					
African Cities	Urban, Rural & Land	Improving Solid Waste Service Delivery in African Cities.	2015	Closed	$600,000
Burundi; Kenya; Rwanda; Tanzania; Uganda	Water	Supporting Lake Wide Inclusive Sanitation for Improving Water Quality in Lake Victoria Basin	2021	Active	$650,000
Regional	Urban, Rural & Land	Improving Solid Waste Management in African Cities	2017	Closed	$500,000
Sub-Saharan Africa	IFC	Greener Cement Industries in Africa	2015	Closed	$700,000
Sub-Saharan Africa	IFC	Green Cities and Low Carbon Industries Initiative	2014	Closed	$600,000
Sub-Saharan Africa	Digital Development	Negawatt Challenge for Energy Efficiency	2014	Closed	$500,000
Sub-Saharan Africa	Transport	Africa Sustainable Transport Forum	2014	Closed	$1,000,000
Sub-Saharan Africa	Transport	Streets as Drivers of Green Growth and Urban Prosperity in Africa	2014	Closed	$600,000
EASTERN & SOUTHERN AFRICA					
Angola	Water	Building Drought Resilience in the South of Angola Through the Use of Geospatial Information and Nature-based Infrastructure	2019	Active	$500,000
Ethiopia	Digital Development	Towards Green, Secure and Climate-Resilient Data Infrastructure	2022	Active	$350,000
Ethiopia	Water	Resilient Investments for Green, Resilient and Inclusive Water	2022	Active	$400,000
Ethiopia	Energy & Extractives	Grid Integration of Variable Renewable Energy in Ethiopia	2020	Active	$300,000
Ethiopia	IFC	Ethiopia Green Industrialization support program	2017	Active	$550,000
Ethiopia	Transport	Resilience of the Ethiopian Roads Network	2016	Active	$700,000
Ethiopia	Urban, Rural & Land	TA to promote sold waste management and urban greenery in selected Ethiopian secondary cities	2015	Closed	$400,000
Ethiopia	Transport	TA to promote integrated urban planning in Addis Ababa to foster green growth	2013	Closed	$1,100,000
Kenya	Agriculture	Leveraging Digital Technologies for Scaling up Climate Smart Agriculture in Kenya	2020	Active	$400,000
Kenya	Water	Turning Kenya's Water Utilities Green	2017	Closed	$400,000
Kenya; Malawi; Zimbabwe	Agriculture	Novel Protein: Insect Farming for Food and Feed for a Circular Green Growth Economy (IF4FF)	2020	Active	$800,000
Kenya; Rwanda; Tanzania; Uganda	Transport	Preparing East Africa 4 future megacities for moving 50 million people by 2050	2020	Active	$450,000
Malawi	Transport	Digital Skies in East Africa	2020	Active	$450,000
Rwanda	Urban, Rural & Land	Secondary Cities program	2014	Closed	$650,000
Tanzania	Digital Development	Smart Tanzania - Strengthening Data Services and Planning	2016	Closed	$600,000
Uganda	Agriculture	Building a Green Agri-Food Ecosystem in Uganda	2020	Active	$535,000
Uganda	Water	Strengthening capacity in climate resilience for water infrastructure development in Uganda	2017	Active	$600,000
Uganda	Transport	Green Logistics Policy and Strategy for Uganda	2016	Closed	$500,000
Uganda +	Transport	Developing skills to support transport and logistics	2014	Closed	$400,000
Uganda, Tanzania, SA	Urban, Rural & Land	Enhancing Green Urban Development in Sub-Saharan Africa	2013	Closed	$1,000,000

COUNTRY	SECTOR	PROGRAM TITLE	APPROVAL YEAR	STATUS	DONOR APPROVED AMOUNT
WESTERN & CENTRAL AFRICA					
Benin, Burkina Faso, Cote d'Ivoire, Gambia, The Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo	Energy & Extractives	Strengthening Utility Capabilities by Capacity Building and South-South KE (SUCCESS-KE)	2017	Closed	$600,000
Benin	Urban, Rural & Land	Leveraging Korea's Experience in the Solid Waste	2014	Closed	$225,000
Ecowas member countries (Benin, Cote d'Ivoire, Burkina Faso, Ghana, Gambia, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo)	Energy & Extractives	Energy Storage application studies and knowledge exchange framework for Sustainable Green Growth in WAPP	2016	Closed	$765,000
Mali	Urban, Rural & Land	Real Time Urban Flood Risk Management and Decision Support Tool for Bamako Greater Area	2015	Closed	$495,000
Mali	Urban, Rural & Land	Greening Urban Development in Bamako (Mali)	2019	Active	$500,000
Senegal	Urban, Rural & Land	Strengthening the Senegalese Spatial Data Infrastructure	2020	Active	$500,000
Ghana	Agriculture	Go mechanization! Piloting digitally-linked agricultural mechanization services in West Africa	2022	Active	$500,000
Ghana	Transport	Developing a Green, Integrated and Smart Public Transit System in Kumasi	2022	Active	$600,000
West Africa	Environment & Natural Resources	West Africa Fishery Partnership for Competitiveness and Sustainability	2015	Closed	$670,000
EAST ASIA & PACIFIC					
China; Indonesia; Mongolia; Philippines; Vietnam	Energy & Extractives	Programmatic Technical Assistance (TA) on Energy Transition in the East Asia and Pacific (EAP) region	2021	Active	$600,000
Cambodia; Lao PDR; Myanmar; Thailand; Vietnam	Environment & Natural Resources	Supporting Identification of Riverine and Coastal Plastics Waste Management Solutions in Mekong countries: Technology, Innovation, Impacts	2020	Active	$400,000
Indonesia	Urban, Rural & Land	Accelerating Indonesia Climate-Resilient, Sustainable and Inclusive Housing	2022	Active	$600,000
Indonesia	Transport	Greening the Maritime Sector in Eastern Indonesia	2020	Active	$550,000
Indonesia	Water	Support to Development of National Program for Citywide Inclusive Sanitation	2020	Active	$400,000
Indonesia	Urban, Rural & Land	City Planning Labs and Spatial Planning	2017	Closed	$200,000
Indonesia	Urban, Rural & Land	Sustainable Urban Growth Analytics and Planning Systems	2013	Closed	$375,000
Indonesia	Urban, Rural & Land	Inclusive Green Growth for East Asia Pacific Cities	2013	Closed	$150,000
Indonesia, Philippines	Transport	Improving Urban Mobility Using Big Data Analytics	2015	Closed	$500,000
Lao PDR	Environment & Natural Resources	Pollution Solutions for Lao PDR's Green Growth Policy and Investment Agenda	2019	Closed	$700,000
Lao PDR	Environment & Natural Resources	Green Growth Platform for Lao PDR	2016	Closed	$900,000

COUNTRY	SECTOR	PROGRAM TITLE	APPROVAL YEAR	STATUS	DONOR APPROVED AMOUNT
Lao PDR, Cambodia	Transport	Green Mobility for Luang Prabang and Siem Reap	2019	Active	$600,000
Mongolia	Agriculture	Mongolia Smart Agrifood Systems Technical Assistance	2021	Active	$800,000
Mongolia	Transport	On-Demand Transit Service to Improve the Accessibility of Ulaanbaatar's Vulnerable Population	2021	Active	$400,000
Mongolia	Water	Mongolia: Utilization of treated water from over melting ice in the "ger" district area for the heating system in eastern part of Ulaanbaatar city	2020	Active	$489,000
Mongolia	Digital Development	Green Data Center Strategy in Mongolia	2020	Active	$350,000
Mongolia	Digital Development	SMART Gov - Civic Innov. Solving Old Problems in New Ways	2014	Closed	$430,000
Myanmar, Cambodia, Philippines	Environment & Natural Resources	Myanmar, Cambodia, Sustainable Solid Waste & Plastic Management	2018	Closed	$700,000
Myanmar, Lao PDR, Cambodia	Agriculture	Harnessing digital agriculture technologies for smallholder farmers	2020	Active	$750,000
Pacific Island Countries and Territories	Energy & Extractives	Regional E-mobility and Battery Storage Programmatic Technical Assistance (TA) for Pacific Island Countries and Territories	2019	Active	$300,000
Philippines	Urban, Rural & Land	Metro Manila Citywide Slum Upgrading Project	2014	Closed	$350,000
Philippines	Transport	East Asia & Pacific Green Transport ICT	2013	Closed	$400,000
Vanuatu	Urban, Rural & Land	Vanuatu Affordable and Resilient Housing	2015	Closed	$675,000
Vietnam	Urban, Rural & Land	Integration of Land Information and Geospatial Systems for Green Economic Recovery (ILIGS-GER)	2021	Active	$400,000
Vietnam	Agriculture	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	2019	Active	$800,000
Vietnam	Energy & Extractives	KGGTF - Improving readiness for energy efficiency investment in Vietnam's industries	2018	Closed	$350,000
Vietnam	Transport	Public Transport Development Strategy for Sustainable Urban Mobility in Hanoi	2017	Closed	$550,000
Vietnam	Energy & Extractives	Scaling-Up Rooftop Solar in Vietnam	2016	Closed	$350,000
Vietnam	Energy & Extractives	Scaling-Up Rooftop Solar in Vietnam II	2015	Closed	$91,379
Vietnam	Environment & Natural Resources	Scaling up Implementation of Vietnam's Green Growth Priorities	2015	Closed	$780,100
Vietnam	IFC	Promoting Green Growth in Industrial Zones	2014	Closed	$750,000
Vietnam, Indonesia	Urban, Rural & Land	Inclusive Green Growth for EAP Cities	2015	Closed	$150,000
Thailand, Philippines	Environment & Natural Resources	Technical and Capacity Support towards the implementation of plastics circularity in the select ASEAN countries	2022	Active	$600,000
EUROPE AND CENTRAL ASIA					
Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine	Transport	Greener Transport Connectivity for the Six Eastern Partnership Countries	2017	Closed	$960,000
Azerbaijan	Environment & Natural Resources	Towards green growth of Baku: enhancing people's quality of life through sustainable cleanup of polluted lakes	2017	Closed	$600,000
Georgia	Transport	Georgia Green Freight Transport and Logistics	2013	Closed	$250,000
Georgia; Kazakhstan; Kyrgyz Republic	Transport	INNOVATIVE GREEN SMART URBAN MOBILITY FOR BISHKEK, NUR-SULTAN AND TBILISI	2021	Active	$1,000,000
Kazakhstan	Agriculture	Support to the preparation of the Sustainable Livestock Development Project in Kazakhstan	2019	Closed	$500,000
Kazakhstan	Transport	Kazakhstan Green Growth In Road Sector Through E-tolling	2016	Closed	$700,000
Kazakhstan	Environment & Natural Resources	Developing Integrated and Green Solutions for Municipal Solid Waste Management in Kazakhstan	2015	Closed	$200,000
Kazakhstan; Uzbekistan	Transport	A Tale of Two Smart and Green Cities: Innovative Solutions for Urban Mobility in Almaty and Tashkent	2020	Active	$600,000
Kosovo	Digital Development	Innovative and Green Growth for Rural Areas: Investing & Scoping	2014	Closed	$485,000
Kyrgyzstan	Environment & Natural Resources	Reducing Health Risks through Improvement of Air Quality in Bishkek City of the Kyrgyz Republic	2020	Active	$350,000
Kyrgyzstan	Urban, Rural & Land	Moving Towards Green Urban Development of Kyrgyz Cities	2015	Closed	$300,000
Moldova	Energy & Extractives	Energy Efficiency Transformation in DH	2015	Closed	$530,000
Poland	Transport	Piloting Sustainable and Green Urban Transport Solutions for Sub National Governments	2013	Closed	$625,000
Regional	Water	Central Asia Water Resources Management (CA-WARM) Phase-I Project	2015	Closed	$370,000
Turkey	Energy & Extractives	Scaling Up Rooftop Solar PV	2018	Closed	$300,000
Turkey	IFC	Greener Manufacturing in Turkey	2017	Closed	$450,000
Turkey	Urban, Rural & Land	Developing Green Growth Strategies for Metropolitan Municipalities	2014	Closed	$500,000
Ukraine	Energy & Extractives	Ukraine energy storage and ancillary services market development support	2021	Active	$500,000
Ukraine	Transport	Towards Greener and More Efficient Logistics in the Ukraine: An Integrative Approach	2016	Closed	$700,000
Ukraine	Transport	Sustainable Urban Transport for the City of Kyiv	2013	Closed	$350,000
Uzbekistan	Urban, Rural & Land	Innovations in land valuation, taxation and land use planning to support land policy reforms and green growth transformation	2022	Active	$500,000
Uzbekistan	Environment & Natural Resources	Promoting Forest Information and Communication Technology in Uzbekistan	2020	Active	$350,000
Uzbekistan	Water	Capacity Building and Water Academy-Uzbekistan	2021	Active	$285,000
Uzbekistan	Agriculture	Leveraging technology for Uzbekistan's agricultural modernization	2019	Active	$500,000
Uzbekistan	Urban, Rural & Land	Leveraging green growth for balanced spatial development in Uzbekistan	2017	Closed	$300,000
Uzbekistan	Energy & Extractives	Support the Development of a National Industrial Energy Management Program in Uzbekistan	2015	Closed	$400,000
Uzbekistan and Kazakhstan	Environment & Natural Resources	Action on Circular Economy for Green Growth in Uzbekistan and Kazakhstan	2019	Active	$500,000
LATIN AMERICA AND THE CARIBBEAN					
Argentina	Environment & Natural Resources	Circular Economy for Waste Management in Province of Buenos Aires	2022	Active	$600,000
Argentina	Urban, Rural & Land	Greening Urban Growth in Metropolitan Buenos Aires	2017	Closed	$300,000

COUNTRY	SECTOR	PROGRAM TITLE	APPROVAL YEAR	STATUS	DONOR APPROVED AMOUNT
Argentina	Urban, Rural & Land	Implementing Green Solution for Waste Management	2014	Closed	$400,000
Argentina, Province of Santa Fe	IFC	Non-Revenue Water (NRW) project for Santa Fe Province – Argentina	2018	Closed	$400,000
Bolivia, Mexico	Environment & Natural Resources	Promoting equitable access to sustainable development in Bolivia and Mexico	2016	Closed	$700,000
Brazil	Agriculture	Sparking adoption of Agricultural Technologies that promote climate change resilience through productive alliances	2022	Active	$600,000
Brazil	Urban, Rural & Land	Rio de Janeiro Low Carbon City Development Program	2013	Closed	$625,000
Brazil	Urban, Rural & Land	A Sustainable Vision for the Rio de Janeiro Metropolitan Region	2013	Closed	$320,000
Central America: Guatemala, Honduras, Nicaragua, El Salvador, Costa Rica and Panama	Energy & Extractives	Sustainable Green Growth in Central America	2016	Closed	$700,000
Colombia	Transport	Piloting Electromobility in the Integrated Transport System of the Aburra Valley (Medellin, Colombia)	2018	Closed	$870,000
Colombia	Transport	Improving Public Transit & Sustainable Territorial Dev in Bogota	2017	Closed	$650,000
Colombia	Environment & Natural Resources	Support to the Colombia Green Growth Policy	2016	Closed	$500,000
Colombia	Water	Water Initiatives to Support Green Growth and Sustainable Cities in Colombia	2016	Closed	$300,000
Colombia	Water	Greening Cities through a Water-Centric Urban Planning Approach	2015	Closed	$200,000
Ecuador	Energy & Extractives	Supporting Ecuador's Energy Transition through an Energy Storage Program	2021	Active	$600,000
Ecuador, Colombia	Digital Development	Smart-city digital approaches for sustainable urban mobility in Latin-American cities	2019	Active	$600,000
Guatemala	Digital Development	Using ICT to Increase Green Competitiveness in Guatemala	2014	Closed	$605,000
Haiti	Environment & Natural Resources	Green jobs in Haiti through enhanced resource efficiency, renewable energy and waste management in industrial parks	2021	Active	$700,000
Haiti	Energy & Extractives	Haiti Green Growth Through Renewable Energy Integration	2015	Closed	$250,000
Honduras	Energy & Extractives	Tackling Power Sector Barriers for Green Growth in Honduras	2015	Closed	$450,000
Mexico	Agriculture	An agri-tech smart farm pilot for greening growth in Mexico's post COVID-19 recovery	2021	Active	$950,000
Mexico	Urban, Rural & Land	Supporting green and resilient urban development as part of the COVID-19 recovery in Mexico	2021	Active	$800,000
Mexico	Urban, Rural & Land	Strengthening Mexico's Capacity for Integrated Solid Waste Management	2015	Closed	$400,000
Mexico	Urban, Rural & Land	Strengthening urban management in Mexican cities	2015	Closed	$400,000
Mexico	Urban, Rural & Land	Mexico Instruments for Urban Redevelopment	2013	Closed	$150,000
Mexico	Urban, Rural & Land	Green Growth Strategies for Mexican Cities	2013	Closed	$250,000
Panama	Urban, Rural & Land	Supporting Green Growth Urban Dev. Strategy in Ecuador	2013	Closed	$300,000
Paraguay	Urban, Rural & Land	Building Coastal Resilience in Asuncion through Climate Smart Solutions	2020	Active	$500,000
Peru	Energy & Extractives	Distributed generation and grid flexibility for an efficient energy transition in Peru	2022	Active	$500,000
Peru	Energy & Extractives	Greening Peru's Energy System: promoting clean energy for a resilient power system	2016	Closed	$600,000
Peru	Environment & Natural Resources	Investments in Environmental Management and Green Growth	2015	Closed	$430,000
Regional	Urban, Rural & Land	Regional Resource Recovery and Recycling	2013	Closed	$150,000
MIDDLE EAST AND NORTH AFRICA					
Egypt	Transport	Egypt Green Transport Master Plan and Data Management System to Support Digital Transformation of the Transport Sector and Intelligent Transport Systems	2019	Active	$600,000
Egypt	IFC	Smart Technology and Energy Efficient Production (STEP Phases 1 & 2)	2015	Closed	$700,000
Egypt	Environment & Natural Resources	Air and Water Pollution Management Program	2015	Closed	$450,000
Egypt	Urban, Rural & Land	Cairo Smart Service Delivery Project	2015	Closed	$575,000
Jordan	Urban, Rural & Land	Greening growth for the displaced in Jordan	2016	Closed	$600,000
Lebanon	Transport	Implementing congestion reduction measures in Beirut	2013	Closed	$200,000
Morocco	Environment & Natural Resources	Boosting the Blue Economy Potential in Morocco	2020	Active	$400,000
Morocco	Transport	Climate Change Adaptation in the Road Sector	2013	Closed	$200,000
Morocco	Water	Quantifying Tradeoffs of the Water- Energy Nexus	2013	Closed	$300,000
Tunisia	Environment & Natural Resources	Blue Economy	2018	Closed	$300,000
SOUTH ASIA					
Bangladesh	Environment & Natural Resources	Enhancing Pollution Management in Bangladesh through Green Growth Policies	2022	Active	$600,000
Bangladesh	Water	Innovative technology to support Brahmaputra-Jamuna River Economic Corridor Development	2020	Active	$400,000
Bangladesh	Energy & Extractives	An efficient, resilient, and green grid for the Bangladesh power system	2015	Closed	$500,000
Bangladesh; Nepal	Environment & Natural Resources	Strategic Green Growth Transitions in Bangladesh and Nepal: Toward a post-COVID recovery	2021	Active	$850,000
Bhutan	Transport	Green Transport Initiative	2014	Closed	$300,000
Bhutan, Nepal, Pakistan	Environment & Natural Resources	Integrated Catchment Management for Sustainable Hydropower in Bhutan, Nepal and Pakistan	2016	Closed	$750,000
India	Environment & Natural Resources	Capacity Strengthening of India's Forest Sector	2022	Active	$403,200
India	Environment & Natural Resources	Enhancing India's capacity for Green and Resilient Coastal Management	2022	Active	$550,000
India	Transport	Decarbonizing freight for a new era of resilient and efficient logistics in India	2021	Active	$1,000,000

COUNTRY	SECTOR	PROGRAM TITLE	APPROVAL YEAR	STATUS	DONOR APPROVED AMOUNT
India	Urban, Rural & Land	Metropolitan Kolkata Urban Transport and Spatial Planning	2020	Active	$400,000
India	Transport	Kolkata Metropolitan Transport Efficiency Improvement	2015	Closed	$400,000
India	Transport	Intelligent Transport Systems and PPP in City Bus Systems for Indian Cities	2015	Closed	$350,000
India	Urban, Rural & Land	Green Regional Development Plan for Growth Centers in India	2015	Closed	$350,000
India	Digital Development	ICT Applications to Achieve Green Growth in an Indian City	2014	Closed	$700,000
India	Energy & Extractives	Towards Green Growth in DVC through use of ICT and Investment in Clean Energy Generation	2014	Closed	$600,000
India	Transport	Promoting the use of Green Construction Technology in Road Sector	2014	Closed	$500,000
India	IFC	E-Waste Advisory Project KGGTF funds	2014	Closed	$840,000
India	Digital Development	ICT Applications to achieve Green Growth in Indian Cities (Phase II)	2014	Closed	$700,000
India	Urban, Rural & Land	Design and Preparation of Tamil Nadu Sustainable Urban Development	2014	Closed	$600,000
India	Urban, Rural & Land	Regional Economic and Infrastructure Investment Strategy	2014	Closed	$400,000
India	Urban, Rural & Land	Options Study for Development Along the Eastern Dedicated Freight Corridor	2013	Closed	$400,000
India, Bangladesh	Transport	Smartcard Integration for Better Connected Public Transport System	2015	Closed	$400,000
India, Nepal, Pakistan	Environment & Natural Resources	Solid Waste in Mountainous Regions of India, Pakistan and Nepal	2017	Closed	$500,000
Nepal	Urban, Rural & Land	Nepal Green Land and Buildings	2022	Active	$500,000
Nepal	Water	Towards Effective Water Governance for Integrated River Basin Level Planning and Management in Nepal	2022	Active	$600,000
Nepal	Urban, Rural & Land	Supporting Green Growth Urban Development and Planning Processes in Nepal	2017	Closed	$400,000
Pakistan	Environment & Natural Resources	Catalyzing Green Investments in Pakistan	2018	Closed	$400,000
Pakistan	Energy & Extractives	Renewable Energy Scale-Up to Support Green Growth in Pakistan	2017	Closed	$747,021
Pakistan	Urban, Rural & Land	Green Karachi through improved service delivery system	2016	Closed	$500,000
Pakistan	Urban, Rural & Land	Initial Assessment of Karachi Economy and Role as a Growth Center	2013	Closed	$400,000
Pakistan, India and Bangladesh	Environment & Natural Resources	Resource Efficient Cleaner Production in South Asia	2016	Closed	$600,000
Sri Lanka	Energy & Extractives	KGGTF Sri Lanka Energy	2017	Closed	$400,000
Sri Lanka	Energy & Extractives	Sri Lanka Renewable Energy Integration	2016	Closed	$400,000

COUNTRY	SECTOR	PROGRAM TITLE	APPROVAL YEAR	STATUS	DONOR APPROVED AMOUNT
Sri Lanka	Urban, Rural & Land	Sri Lanka Strategic Cities	2014	Closed	$500,000
Sri Lanka, Bangladesh, and India	Urban, Rural & Land	Transforming Cities through Public Space	2015	Closed	$600,000
GLOBAL					
Global	Digital Development	Greening Digital: Implementing Green Digital Infrastructure Development	2021	Active	$610,000
Global	Digital Development	Development of Data-driven Multi-Hazard Early Warning Systems	2022	Active	$600,000
Global	Transport	Transforming urban transport to support green and resilient recovery - Leaders in Urban Transport Planning (LUTP)	2020	Active	$500,000
Cambodia, Mongolia, Philippines, Vietnam	Urban, Rural & Land	Geospatial Information Management for Green Growth Operationalization (GIMGGO)	2019	Active	$700,000
Global	Energy & Extractives	Capacity building and technical Learning workshops on Energy storage to Accelerate energy Transition (CLEAN)	2019	Closed	$700,000
Global	Energy & Extractives	Hydropower climate change resilience guidelines development	2018	Closed	$300,000
Myanmar, Pakistan, Kosovo	Urban, Rural & Land	Fostering Green Growth in Fragile States	2018	Closed	$800,000
Global	Environment & Natural Resources	Learning from Korea's Green Growth Experience to Tackle Environmental Health Challenges	2017	Active	$875,000
Global	Environment & Natural Resources	Green Growth via Green Infrastructure Construction	2017	Active	$650,000
Honduras, El Savlador, Paraguay, Pakistan, Uganda, Burkina Faso	Urban, Rural & Land	Land Records and Geo-Spatial Information Systems Linked to Green Growth (LRGIGG)	2017	Closed	$600,000
Global	Global Initiatives	Investing in green growth under uncertainty	2016	Closed	$2,475,000
Global	Transport	Mainstreaming GHG Mitigation in Rail Freight and Developing Strategies for Sustainable Transport Infrastructure	2016	Closed	$500,000
Egypt	IFC	MENA Cleaner production for Companies	2015	Closed	$304,000
Global	Digital Development	Unlocking Data Innovations for Smarter Urban Transport	2015	Closed	$300,000
Global	Urban, Rural & Land	An Integrated Approach to Urban Sustainability Planning	2015	Closed	$1,560,000
Global	Transport	Training Hub "Transportation for Green Growth"	2014	Closed	$500,000
Global	Urban, Rural & Land	Low Carbon City Development	2014	Closed	$1,370,000
India, Tunisia	Urban, Rural & Land	Green Smart City Development with Citizen Participation	2014	Closed	$800,000
Global	Global Initiatives	Decision Making Under Uncertainty	2013	Closed	$1,150,000
Global	Urban, Rural & Land	Capacity Building for Green Urban Growth	2013	Closed	$500,000
Global	Urban, Rural & Land	City Creditworthiness Program	2013	Closed	$500,000
Global	Transport	Capacity Building for Leaders in Energy Efficient Urban Transport Planning	2013	Closed	$500,000

K-Partners

K-Partners bring innovative technologies, research, new governance structures and methods of green growth that are valuable to World Bank staff and client countries. K-Partners are an important part of KGGTF by engaging with grant teams and providing site visits, living case-studies and real-world examples. But the collaboration of K-Partners is not just limited to sharing their experience, knowledge and, cutting-edge technology. They work with KGGTF and grant teams on exploring how to translate know-how and expertise into different local environments. A wide range of K-Partners contributes to diverse forms of partnerships to adapt knowledge and best practices to local context and bring a bigger impact to client countries.

APEC Climate Center (APCC)
APCC is leading the climate prediction technology development to increase the accuracy and reliability of climate prediction information by using state-of-the-art technologies while conducting research and development on the analysis and prediction technology for global climate change.

Asian Forest Cooperation Organization (AFoCO)
AFoCO is an intergovernmental organization in Asia aiming to strengthen forest cooperation by transforming proven technology and policies into concrete actions in the context of sustainable forest management to address the impact of climate change.

Electronics and Telecommunications Research Institute (ETRI)
ETRI is a national AI research institute that contributes to the nation's economic and social development through research, development and distribution of industrial core technologies in the fields of Information, Communications, Electronics, Broadcasting and Convergence technologies.

Ewha Womans University
Ewha Womans University is a private women's university in Seoul founded in 1886. Ewha is one of the world's largest female educational institutes and one of the most prestigious universities in South Korea.

Export-Import Bank of Korea (KEXIM)
KEXIM is an official export credit agency. The bank provides export credit and guarantee programs to support Korean enterprises in conducting overseas business and offers products and services including trade finance, overseas investment credit, natural resources development credit, import credit and information services.

Global Green Growth Institute (GGGI)
GGGI is a treaty-based international, inter-governmental organization dedicated to supporting and promoting strong, inclusive and sustainable economic growth in developing countries and emerging economies.

Global Knowledge Exchange & Development Center (GKEDC)
The GKEDC is an open space for learning and exchanging knowledge on Korea's socio-economic development experience. GKEDC offers exhibition of artifacts, documents and interactive learning programs on economic development, industrial development, human story, and future innovation.

Institute for Information & Communications Technology Promotion (IITP)
IITP promotes information and telecommunication technologies and industries by supporting research and development in the ICT sector. Work includes R&D policy research, information survey, analysis and service. Along with agreement, assessments and support of ICT technology into development projects.

Intelligent Transport Society of Korea (ITS Korea)
ITS Korea promotes cooperation among the public and private sectors for efficient implementation of ITS and contribute to the development of ITS field through various research, policy consultation, technology promotion, and business activities related to ITS.

International Contractors Association (ICAK)
ICAK was established in 1976 as the nation's only promotion agency for the overseas construction industry. The main function of the ICAK is to facilitate Korean contractors' overseas business and to develop the industry as a whole.

Jeju Research Institute (JRI)
JRI is a policy research think tank that develops issue-oriented policies and conducts practical research to promote a happy life and brighter future for Jeju people. JRI enhances a knowledge ecosystem by enforcing global research collaboration and networking and strengthening communication with policy recipients.

Korea Advanced Institute of Science and Technology (KAIST)
KAIST is the first research-oriented science and engineering institution in Korea and is leading the field in developing new technologies to tackle world problems such as energy consumption and congestion in cities.

Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries (EPIS)
EPIS was established in 2012 in an aim to strengthen competitiveness of Korean agriculture and promote the growth of rural area by nurturing capacity of agricultural population, providing reliable information and promoting informatization of agricultural system of the country.

Korea Battery Industry Association (K-BIA)
KBIA is the most influential battery industry association in Kore. KBIA established more stringent standards for battery with reference to Korean national industrial standards and international IEC/ISO standards.

Korea Data Center Council (KDCC)
KDCC is the representative association of Korea's data center industries. It was established in 2017. KDCC's goal is to strengthen the basis of Korea's data center and data center related industries. To that end, KDCC is working to develop government policies as well as data center industry standards.

Korea Development Institute (KDI)
KDI, since its establishment in 1971, has been recognized as a leading think tank of Korea significantly contributing to the economic and social development of Korea. For over three decades, KDI has consistently provided policy recommendations and guidance based on in-depth analyses of international and domestic economic conditions and projections while conducting preemptive and empirical studies.

Korea Electric Power Corporation (KEPCO)
KEPCO is the largest electric utility in South Korea and responsible for the transmission and distribution of electricity and the development of electric power projects including those in nuclear power, new & renewable energy, and coal.

Korea Energy Agency (KEA)
KEA is a governmental agency that carries out national energy policies for energy efficiency improvement, new and renewable energy dissemination and climate change mitigation for smart and efficient demand side management based on Energy Use Rationalization Act.

Korea Energy Technology Evaluation and Planning (KETEP)
KETEP is a government-affiliated research organization in South Korea that focuses on energy and environment issues through research, policy development, and technology evaluations. It collaborates with other organizations to promote energy efficiency and reduce greenhouse gas emissions, with the goal of contributing to the sustainable development of the Korean economy and enhancing quality of life.

Korea Environmental Corporation (KECO)
KECO contributes to ecofriendly national development through resource recycling and waste-to-energy facilities. KECO focuses on international conventions on climate change, policy research on pollution and carbon emissions, the operation of water facilities and sustainable urban development.

Korea Environmental Industry & Technology Institute (KEITI)
KEITI is committed to achieving both environmental protection and economic growth inside and outside of Korea. KEITI financially supports the creation of environmental technologies, nurturing environmental industries and promoting an eco-friendly lifestyle.

Korea Expressway Corporation (KEC)
KEC constructs and manages expressways throughout Korea. The corporation uses IT technologies to develop truly "intelligent highways" and promotes "smart highways" that will seamlessly integrate people, automobiles, and roads.

Korea Fisheries Infrastructure Public Agency (FIPA)
FiPA works to develop and manage fishing villages and ports, efficiently preserve and use fisheries, advance related technology, and promote tourism. The organization aims to create added values from oceans and fisheries and contribute to balanced economic development and a better quality of life.

Korea Fisheries Resources Agency (FiRA)
FIRA aims to ameliorate the marine environment through fostering marine forestation. The organization focuses on building an abundant marine ecosystem, including the establishment of spawning nursery grounds, the release of marine seeds and the implementation of Total Allowable Catch for the systematic management of fisheries production.

Korea Forest Service (KFS)
KFS is responsible for the establishment and implementation of forest policies and laws. KFS implements forest policies that support the public with improving quality of life by offering recreation forests, forest restoration and support, mountaineering services, and the expansion of urban green spaces.

Korea Hydrographic and Oceanographic Agency (KHOA)
KHOA provides observations data about the ocean. The data includes oceanographic observation data such as tidal observation, water temperature and salinity observation, tidal benchmark surveys, and sea parting surveys as well as hydrographic survey data such as types and methods, current hydrographic surveys and plans, coastline survey and coastal waters survey.

Korea Institute for Advancement of Technology (KIAT)
KIAT implements grant-based ODA programs related to industrial technology and energy. KIAT's Industrial Technology & Energy ODA utilizes modern industrial technologies to tackle a variety of challenges faced by developing countries, aiming to contribute to improving the quality of life by supporting industrial development.

Korea Institute for Animal Products Quality Evaluation (KAPE)
KAPE is a public institution that certifies livestock products that have been produced by farms and conducts scientific grade-based assessments of livestock products to provide new value, maintaining the livestock products traceability system to increase trust and contribute to the healthy and happy lives of the people.

Korea Institute of Aviation Safety Technology (KIAST)
The Korea Institute of Aviation Safety Technology (KIAST) is a specialized aviation safety institute dedicated to fostering experts in aviation safety technologies. Particularly, Advanced Aviation Research Division is leading Korea UAS & UAM field with government.

Korea Institute of Civil Engineering and Building Technology (KICT)
KICT contributes to the development of the Korean construction industry, improves quality of life standards, furthers national economic growth, and improves social welfare. It promotes original technology in the fields of land, infrastructure, and construction.

Korea Institute of Industrial Technology (KITECH)
KITECH was founded in 1989 to support industry sector especially SMEs as an application-oriented research institute and has been trying to take the lead in this flow. KITECH focuses on 3 key research areas: advanced manufacturing technology, industrial technology convergence, and sustainable manufacturing system technology.

Korea Institute of Ocean Science and Technology (KIOST)
KIOST strives to develop cutting-edge scientific technology and acquire new knowledge to discover advanced life, minerals, and energy resources in the ocean and establish future-oriented port city infrastructure and coastal landscapes.

Korea Land and Geospatial InformatiX Corporation (LX)
LX is a semi-governmental agency under Korea's Ministry of Land, Infrastructure and Transport (MOLIT), which can contribute to the provision of technical assistance to ICT platforms for land and geospatial information, geospatial dataset management and training/capacity building.

Korea Local Information Research & Development Institute (KLID)
KLID was established for promoting the quality of life of community residents through developing local informatization, which will lead to balanced regional development and enhance the productivity of local governing bodies.

Korea Meteorological Administration (KMA)
KMA is the national meteorological agency of South Korea, responsible for providing weather forecasts, warnings, and other meteorological services to the public and various industries. The KMA operates a network of observation stations across the country and employs advanced technologies to monitor and analyze weather patterns.

Korea Marine Environment Management Corporation (KOEM)
KOEM works to preserve and protect our ocean, implementing various projects such as disposing marine litter, restoring the marine ecosystem, designating and managing Marine Protected Areas (MPAs), responding to oil spills, and operating the Marine Environment Research and Training Institute.

Korea Maritime Institute (KMI)
KMI is a policymaking think tank for Korea's maritime and fisheries industry. The institution conducts systematic and comprehensive research on current issues related to the marine, fisheries, shipping, and ports industries, as well as national policy.

Korea Meteorological Institute (KMITI)
KMITI is a public institution, established to promote the meteorological industry and support the utilization of weather information. The institute is leading innovative growth of the industry by supporting R&D, technology commercialization, and entry to global market. It also contributes to the climate change response by developing and implementing meteorological modernization projects in developing countries.

Korea National Railway (KNR)
Korea National Railway is a state-owned organization set up in January 2004 to manage national rail infrastructures on behalf of the government. Our aims are to build a well-structured national rail network and to see to efficient management of rail infrastructures and assets.

Korea Overseas Infrastructure & Urban Development Corporation (KIND)
KIND is an organization established in June 2018 by the government of the Republic of Korea to support global Public-Private Partnership (PPP) business. KIND supports Korean companies for project planning, feasibility studies, project information and project bankability. Through the activities KIND is aiming to contribute to life quality improvement and sustainable growth in the partner countries.

Korea Photovoltaic Industry Association (KOPIA)
KOPIA is the only government approved national PV association dedicated to the photovoltaic industry with 90 members representing all facets of the photovoltaic value chain in Korea.

Korea Power Exchange (KPX)
KPX is the quasi-government agency under the Ministry of Trade, Industry and Energy responsible for fair and transparent operation of the electricity market and efficient operation of the electric power system and grid in Korea.

Korea Real Estate Board (REB)
REB, a state-owned enterprise, formerly known as Korea Appraisal Board (KAB), is responsible for real estate assessment, price statistics, market management, appraisal review, expropriation and compensation services, urban renewal consulting, green building certification, and R&D.

Korea Research Institute for Human Settlements (KRIHS)
KRIHS conducts research on the efficient use, development, and conservation of territorial resources and contributes to sustainable territorial development, balancing development and conservation, and housing and infrastructure provision.

Korea Rural Community Corporation (KRC)
KRC is responsible for rural development and maintenance of agricultural infrastructure such as reservoirs, dams, and irrigation facilities, operation of Farmland Bank to secure efficient use of farmland, reclamation, and rural community development.

Korea Rural Economic Institute (KREI)
KREI has been a cornerstone for the progress of agricultural, rural and food industries in Korea since its foundation in 1978, by shaping agricultural policy directions through a wide range of agricultural research. KREI will undertake empirical research down the road to fulfill its role as a think tank for rural areas and work hard to lead rural development and innovation with sustainability.

Korea Smart Grid Institute (KSGI)
KSGI implements Korea's Smart Grid Initiative aimed at modernizing electric power systems and managing the government's Smart Grid Roadmap and develops technology that converges electric power and IT to build a nationwide Smart Grid and achieve low carbon green society.

Korea Transport Institute (KOTI)
KOTI is a leading national think tank in Korea's transport and logistics sector. KOTI provides recommendations for the nation's transport policy and human centered highly convenient transport systems and creates an efficient transport system through technical innovations.

Korean Transport Safety Authority (KOTSA)
KOTSA carries out transportation projects under the Ministry of Land, Infrastructure and Transport. Encompassing road, rail, and air transportation, KOSTA promotes various traffic-safety programs for a safe and happy society with no traffic accident.

K-water (Korea Water Resources Corporation)
K-water has played a key role in enhancing people's welfare by developing and managing water resources for more than half a century. Recently they have been utilizing the know-how to protect the world from water disaster caused by severe climate change. Quantity-quality-ecology nexus of water management with ICT technologies and the futuristic eco-friendly city are typical issues they focus on.

K-water Academy
K-water Academy is a hub for global water capacity building. Water management experts provide professional training courses for government officials, water companies and international participants. The Academy offers high quality educational content based on cutting-edge technology and its 50-year know-how.

LH (Korea Land and Housing Corporation)
LH was established to improve the quality of life of the people and advance the national economy. LH's responsibilities include housing welfare, ICT-based smart city development, urban regeneration for smarter and more sustainable cities, and regional development through urban development and housing, and solid industrial infrastructure foundations.

Ministry of Agriculture, Food and Rural Affairs (MAFRA) of Korea
MAFRA is responsible for developing policies related to agriculture, food, and rural areas. MAFRA aims to enhance the competitiveness of the agricultural sector, promote sustainable rural development, and ensure food safety for the public. Its mission is to contribute to the nation's economic growth and social stability by ensuring a stable food supply and promoting sustainable rural development.

Ministry of Economy and Finance (MOEF) of Korea
MOEF is committed to developing a strong economy and building growth engines through the concerted efforts of its offices and bureaus. The Ministry works to ensure macroeconomic and financial stability, effective policy coordination, efficient allocation of national resources, fiscal soundness, rational tax policies, and robust international cooperation.

Ministry of Environment (MOE) of Korea
MOE oversees environmental protection in Korea by enforcing laws and regulations, sponsoring ecological research, planning mid to long term comprehensive measures for environmental conservation, providing administrative and financial support for environmental management to local government and promoting international cooperation on climate change and carbon neutrality.

Ministry of Land, Infrastructure and Transport (MOLIT) of Korea
MOLIT is responsible for establishing and coordinating national territory policy and basic laws related to national territory, preserving and developing national territory and water resources, construction of urban, road and housing, construction of coastal, river, and land reclamation, and land reclamation.

Ministry of Oceans and Fisheries (MOF) of Korea
MOF is responsible for maritime and fisheries sectors including the promotion of maritime safety and security, the protection of the marine environment, the development of port and fishing ports, the research and development on polar issues to the management and sustainable use of fishery resources and the promotion of marine leisure activities.

Ministry of Science and ICT (MIST) of Korea
MSIT focuses on accelerating innovation across society through building an environment that promotes autonomous and audacious research, securing source technologies and growth engines and converging science and technology with ICT in Korea.

Ministry of Trade, Industry and Energy (MOTIE) of Korea
MOTIE regulates economic policies related to the industrial and energy sectors and encourages foreign investment in the areas of commerce, investment, industry and energy in Korea. MOTIE helps to reinforce traditional industrial strengths while developing new growth engines.

National Federation of Fisheries Cooperation (Suhyup)
Suhyup develops fishing villages through a democratic, cooperative organization to enhance the social and economic status of fishermen, and to increase the incomes of fishing households and their capacity to produce fishery products.

National Fishery Products Quality Management Service (NFQS)
NFQS is responsible for quarantine and inspection of exporting and importing fish and fishery products. NFQS quarantines aquatic organisms for transplantation and serves as a guide for information-oriented administration and scientific development to provide safe and quality fish and fisheries products.

National Geographic Information Institute (NGII)
NGII promotes spatial information and technology for managing geodetic VLBI center, setting up 3- dimensional aerial information, modifying national base map in real time and establishing human geographical DB. The institute conducts research and development on spatial information, provides geographic training services and strengthens international cooperation.

National Information Society Agency (NIA)
NIA is a national think-tank for information and digital transformation. NIA provides optimal methodologies, strategies, and solutions. Priority sectors include ICT Policy, ICT Convergence (Healthcare and welfare, Education and culture, Land and transport, Environment, etc.), Digital culture, Big Data, Open data and Innovation, E-Governance, ICT Platforms and Services (AI, Cloud, Network, etc.)

National Institute of Green Technology KOREA (NIGT)
NIGT is a government-funded think tank that coordinates and supports national green technology R&D policies in collaboration with Korea's ministries and agencies. NIGT serves as Korea's gateway for global green technology cooperation as it connects developed and developing countries for growth and diffusion of green technology and strategies.

National IT Industry Promotion Agency (NIPA)
NIPA is a government-affiliated agency that supports the growth of the IT industry through technology development, commercialization support, and global market expansion assistance. NIPA's mission is to foster a collaborative environment among industry, academia, and government to create a thriving IT ecosystem and contribute to the nation's social and economic development.

Rural Development Administration (RDA)
RDA is a national R&D institution in the agriculture sector in Korea which promotes innovation in agricultural technology. RDA conducts agricultural R&D in parallel with deploying customized extension services to disseminate technologies that reduce costs and produce high-quality products covering Agricultural Sciences, Crop Science, Horticultural and Herbal Science, and Animal Science.

Seoul Energy Corporation (SEC)
Seoul Energy Corporation implements "One Less Nuclear Power Plant" program of Seoul Metropolitan Government to encourage energy independence in Seoul. Key projects include decentralized energy supply, alternative transport vehicles and energy efficiency, energy sharing, and interregional cooperation.

Seoul Metropolitan Government (SMG)
SMG is a local government of South Korea, dealing with and responsible for the administrative affairs for the capital city of South Korea. SMG shares its knowledge and best practices with partner cities, international organizations and MDBs and provides policy consulting on urban development projects.

Seoul National University (SNU)
Seoul National University is considered the most prestigious university in South Korea as a Community of Knowledge which leads the future. The university envisions fostering global convergence talent, building an innovative knowledge ecosystem, creating knowledge-based social values, and establishing a foundation for sustainable university development.

Seoul Transport Operation and Information Service (TOPIS)
Seoul TOPIS is the Intelligent Transportation System (ITS) brand of Seoul Metropolitan Government. TOPIS is a smart metropolitan city management hub that manages transportation, disasters, and other security- related events in an integrated manner. TOPIS allows immediate decision-making and responses in times of emergency and prevents transportation problems through big data analysis.

Seoul Urban Solutions Agency (SUSA)
SUSA is a dedicated entity to share and provide integrated urban solutions to cities needing Seoul's experience to grow into a smart, livable, environmentally, and economically sustainable urban domain. It was established in 2015 by Seoul Metropolitan Government (SMG) under the umbrella of Seoul Housing and Communities Corporation (SH). From cultivating project opportunities to providing technical consultation, project implementation, and evaluation, SUSA brings public/private expertise and resources together. Creating partnerships that leverage each other's competencies focuses on bringing integrated urban solutions, including transferring policy knowledge and operational expertise to ensure sustainability.

Shinhan Card
Shinhan Card, a wholly owned subsidiary of the Shinhan Financial Group (SFG), is Korea's No. 1 credit card company. Shinhan Card focuses on credit sales services, generating added value through short- and long-term card loans, installment loans, and brokerage of various goods and services. Shinhan Card is working hard to grow into a Life & Finance platform business with the growth of digital finance.

Sudokwon Landfill Site Management Corporation (SLC)
SLC is a government-affiliated organization in South Korea that manages and operates the largest landfill site in the country. Its mission is to provide safe and efficient waste management, reduce environmental pollution, and promote sustainable development practices. In addition, SLC applies amassed waste collection techniques and utilizes landfill methane as fuel to drive power generators to minimize environmental impacts.

The Korea Environment Institute (KEI)
KEI is the national leading think tank on environmental policies and environmental impact assessment established in 1993. KEI engages actively in the research and development of environmental policies and technology in the areas of air pollution, water quality, waste management, ecosystem protection and sustainable development. Furthermore, KEI is mandated to review the statement of environmental impact assessment on the major development projects.

The SK Center for Social Value Enhancement Studies (CSES)
CSES is a research institution in South Korea focused on promoting social value creation and sustainable development. Affiliated with the SK Group, CSES conducts research, educational programs, and conferences to foster partnerships between academia, industry, and government to address societal challenges.

University of Seoul (UOS)
UOS is a public university funded and supported by the Seoul Metropolitan Government. UOS has a 100-year history of learning and sharing that promotes innovative and future-oriented research, cultivates competitive human resources, and leads to social change through public outreach.

Yonsei University
Considered one of the most prestigious universities in South Korea, Yonsei University has been at the forefront of higher education and research.

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PAGE 20
GKEDC

PAGES 21–25
KGGTF

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PAGE 44
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PAGES 45–47
KGGTF

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PAGE 52
The Standard

PAGES 54–57
World Bank / VnSAT

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World Bank

PAGE 63
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PAGES 65–70
World Bank

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PAGE 74
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World Bank

PAGE 80
World Bank

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Maritime News

PAGE 89
AlbahrTV

PAGE 91
World Bank

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PAGE 98
LUTP

PAGE 99
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PAGE 102, FROM TOP TO BOTTOM
Arirang News
World Bank (3 Images at Bottom Left)
The Naeil News
AFN

PAGES 103
KGGTF

PAGES 104–105
World Bank

PAGES 106, FROM TOP TO BOTTOM
World Bank (2 Images on Top)
DAT

PAGES 107, FROM TOP TO BOTTOM
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World Bank

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