



GREEN GROWTH = CLIMATE RESILIENCE

ABBREVIATIONS

AFR	Africa	LAC	Latin America and Caribbean
BBL	Brown bag lunch	LCC	Low-carbon cities
CO₂	Carbon dioxide	LEDS	Low emission development strategies
CoP	Communities of Practice	LH	Korea Land and Housing Corporation
CPS	Civil participation system	LX	Korea Land and Geospatial Informatix Corporation
DPL	Development policy loan	MAFRA	Ministry of Agriculture, Food, and Rural Affairs (South Korea)
DRM	Disaster risk management	MNA	Middle East and North Africa
EAP	East Asia and Pacific	ME	Ministry of Environment (South Korea)
ECA	Europe and Central Asia	MoLIT	Ministry of Land, Infrastructure, and Transport (South Korea)
EIP	Eco-industrial park	MoSF	Ministry of Strategy and Finance (South Korea)
EMS	Energy management systems	MW	Megawatt
ESW	Economic and sector work	NREC	New and Renewable Energy Center
GDP	Gross domestic product	ODA	Official development assistance
GG	Green growth	RR	Rapid response
GGGI	Global Green Growth Institute	RDM	Robust decision-making
GHG	Greenhouse gas	Rio+20	United Nations Conference on Sustainable Development (2012)
ICT	Information and communication technology	RoK	Republic of Korea
IFC	International Finance Corporation	SAR	South Asia Region
IWRM	Integrated water resources management	SDN	Sustainable development network
ITS	Information technology systems	SI	Seoul Institute
KE	Knowledge exchange	SLC	Sudokwon Landfill Site Management Corporation
KECO	Korea Environment Corporation	SME	Small- and medium-sized enterprises
KEI	Korea Environment Institute	SMG	Seoul Metropolitan Government
KEA	Korea Energy Agency (previously Korea Energy Management Agency, or KEMCO)	SV	Study visit
KEXIM	Export-Import Bank of Korea	SWM	Solid waste management
KL	Knowledge and Learning	TAL	Technical assistance loan
KGGP	Korea Green Growth Partnership	TTL	Task team leader
KGGTF	Korea Green Growth Trust Fund	UNDP	United Nations Development Programme
KGID	Korea Green Innovation Days	UNEP	United Nations Environment Programme
KICOX	Korea Industrial Complex Corporation	UNFCCC	United Nations Framework Convention on Climate Change
KOTI	Korea Transport Institute	WBG	World Bank Group
KRIHS	Korea Research Institute for Human Settlements		
K-WATER	Korea Water Resources Corporation		

KOREA GREEN GROWTH TRUST FUND ANNUAL REPORT 2014-15



The Korea Green Growth Trust Fund (KGGTF) strengthens cooperation between the Republic of Korea and the World Bank Group to support inclusive sustainable development. The Trust Fund oversees management of all programs and projects, including Korea Green Growth Partnership (KGGP) knowledge programs and exchanges with the World Bank Group and its client countries.

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Learn more at www.kgreengrowthpartnership.org.

Questions and comments regarding this report may be e-mailed to kggp@worldbank.org.

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WHO WE ARE AND WHAT WE DO

The Korea Green Growth Trust Fund

(KGGTF) is a partnership between the World Bank Group (WBG) and the Republic of Korea (RoK). Our ultimate goal is to support countries in their efforts to design, plan, and implement Green Growth strategies and investments. Our unique approach provides countries with access to the experiences of policy makers and Green Growth technical practitioners. These experts, from countries such as RoK, share know-how for developing healthy economies without sacrificing environmental protection and climate-change resilience. The KGGTF seeks to strengthen and expand the World Bank's green, climate change investment portfolio by sharing evidence-based and practical knowledge with WBG staff, WBG client countries, and other partners.



KOREA GREEN GROWTH TRUST FUND ANNUAL REPORT 2014-15



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84

FY15 KOREA GREEN
GROWTH PARTNERS

100



KGGTF PARTNERS

100

KGGTF LIST OF
PROGRAMS

106

ACKNOWLEDGMENTS

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KGGTF
OVERVIEW

GREEN GROWTH = ECONOMIC GROWTH



KGGTF
OPERATIONS
BY THE NUMBERS



80 PROGRAMS

As of 2015, the KGGTF has 80 Green Growth implementation programs worldwide.

48 COUNTRIES

The KGGTF provides financial and technical assistance to 80 programs in 48 countries.

42.5 BILLION

Did you know the World Bank approved US\$42.5 billion in fiscal year 2015?

41 MILLION

The KGGTF allocated US\$41 million for Green Growth implementation programs from 2011 to 2016.

25 MILLION

And disbursed US\$25 million from 2011-2016.

5.4 BILLION

It also supported WBG lending operations linked to US\$5.4 billion from 2011-2016.

120%

The Ministry of Strategy and Finance in South Korea increased the KGGTF by 120 percent over the next four years (2017-2021).

88 MILLION

The Ministry of Strategy and Finance increased the KGGTF to a total of US\$88 million through 2021.

EXECUTIVE SUMMARY

**GREEN GROWTH
INVESTMENT—
FROM IDEAS TO
IMPLEMENTATION**

The Korea Green Growth Trust Fund (KGGTF) is a partnership between the Republic of Korea (RoK) and the World Bank Group (WBG) to support countries interested in designing, planning, and implementing Green Growth strategies and investments. The KGGTF seeks to strengthen and expand the World Bank's green, climate change investment portfolio by sharing evidence-based and practical knowledge with WBG staff, WBG client countries, and other interested parties. In doing so, the Trust Fund is setting an example around the world for how cities and regions can benefit economically, socially, and environmentally from green investment and create sustainable futures through Green Growth.

Our collaboration emphasizes the importance of on-the-ground action and the critical role that knowledge exchange plays in supporting the evolution of Green Growth programs—from ideas to implementation. Since its inception in 2011, the KGGTF has provided financial and technical assistance for 80 programs in 48 countries.

Beyond supporting brick and mortar projects, the KGGTF goes deeper, creating a global network of Green Growth experts who share ideas and experiences, and are making implementation more viable and effective. For example, we've hosted or

participated in more than 82 knowledge and learning activities, and reached approximately 3,200 people. This means we've created critical practitioner networks across 30 countries.

The WBG and RoK share a common vision: Economic growth, while vital, is not all that matters for people's well-being. Ultimately, inclusive Green Growth is about improving lives. Along with its traditional role of providing development

The WBG and RoK share a common vision: Economic growth, while vital, is not all that matters for people's well-being. Ultimately, inclusive Green Growth is about improving lives.

financing to its client countries, the World Bank Group is becoming a solutions bank for development know-how, not only creating knowledge but also connecting countries that have knowledge and experience with those seeking it. Through its partnership with the RoK, the WBG hopes to promote Green Growth throughout its lending programs and operations, including developing a

knowledge base and building WBG staff capacity to promote and implement Green Growth investments.

There is momentum behind Green Growth around the world. How do we know this? We've seen a demand for more Green Growth technical engagement as well as increased lending and investment. Based on this and our successes over the last two years, at the end of 2015, the Ministry of Strategy and Finance of South Korea increased the KGGTF by 120 percent over the next four years to a total of US\$88 million for Green Growth programs through 2021 in the urban, transport, ICT, energy, environment, water, and climate sectors. With this replenishment, we look forward to scaling up and meeting increased demands for environmentally sustainable, socially inclusive, and economically beneficial Green Growth.





DONOR MESSAGE

REPUBLIC OF KOREA, BUILDING ON THE SUCCESS OF ITS GREEN GROWTH PARTNERSHIPS

In 2008 the Republic of Korea (RoK) committed to an environmentally sustainable national economic growth strategy. The RoK's Green Growth approach promotes broad prosperity while making it more resilient to economic shocks and natural disasters. South Korea's approach reduces carbon footprints and preserves environmental resources for future generations. But the key to the RoK's Green Growth success is that it is about people first and foremost, about passion, and about partnerships.

South Korea's Green Growth program was, in part, a response to the 2008 financial crisis. It aimed to improve the RoK's resilience to economic fluctuations and to address the country's long-standing dependence on energy imports. South Korean policy makers could also see that in the long term, the management of natural resources, especially in the face of climate change, would be critical to the well-being of the RoK's economy, as well as its people.

Since 2008 South Korean Green Growth initiatives in urban and housing development, transport, water and sanitation, and waste management have created hundreds of thousands of jobs cleaning up toxic rivers and landfill sites, reducing municipal waste and greenhouse gas emissions, restructuring public transit systems, and even building new towns powered by renewable energy. The application of advanced information and communication technologies has been critical to enabling many of these achievements.

Many countries face similar challenges, and South Korea's commitment to partnering with other countries to achieve Green Growth results continues to be strong. This is why the RoK, in partnership with the World Bank Group (WBG), created the Korea Green Growth Trust Fund (KGGTF) in 2011 to support WBG client countries in delivering Green Growth initiatives, particularly by leveraging and focusing on sharing

technical Green Growth implementation experiences. The WBG-managed KGGTF has worked with other organizations and agencies to host 82 knowledge-sharing and capacity-building programs for more than 30 countries. Based on strong performance, as well as increasing demand for on-the-ground collaborative development programs, the South Korean government decided to replenish the KGGTF at the end of 2015. Our partnership now offers a total of US\$88

million through 2021 for Green Growth programs in the urban, transport, ICT, energy, environment, water, and climate sectors.

The partnership connects countries with South Korean and WBG Green Growth experts. Client countries of course need to tailor strategies to their national circumstances, but these exchanges allow WBG clients to learn about successes from a country that, until recently, was among the poorest in the world.

For example, partnerships with the KGGTF in FY15 supported the Lebanese government as it analyzed Beirut's enormous congestion problem and chose a mass transport solution. In Mexico, the KGGTF worked with city planners to develop a scenario analysis tool for urban planning, and to adopt innovative financial incentives to spur urban housing programs.

“Being in Korea and meeting with transportation officials was good exposure. We’ll examine how far we can go with adopting Korea’s strategy. If it is possible here, it can be possible anywhere.”

BHISHMADEB DASGUPTA, MANAGING DIRECTOR,
CALCUTTA STATE TRANSPORT CORPORATION

In Sub-Saharan Africa, KGGTF partners worked with city authorities to analyze the environmental impact of rapid urbanization, improve the safety of streets, and train solid waste managers to make better decisions.

In a number of countries, knowledge exchanges initiated by the KGGTF will move into action in 2016, with policy makers and sector specialists implementing solutions learned through the KGGTF. These include ICT and smart-city initiatives in India, transport sector improvements in Georgia and Poland, and improved urban planning in Turkey.

The Ministry of Strategy and Finance in South Korea looks forward to the next phase of the KGGTF's activities and to nurturing existing Green Growth partnerships.

We are pleased to see that the KGGTF is also helping to embed a Green Growth agenda into the World Bank Group's operational model—as demonstrated by new, large lending initiatives with Lebanon and Mexico. In Lebanon, the knowledge partnership with the KGGTF led to a US\$200 million WBG lending project to finance a bus rapid transit system. In Mexico, following a KGGTF knowledge exchange, the World Bank approved another US\$200 million in financing for affordable housing renovation programs in inner cities. Together, the South Korean Government and the World Bank Group can influence Green Growth thinking in many of the countries the KGGTF has reached, and beyond.

“One of the early findings from KGGTF involvement is that a small seed fund can go far in creating major project shifts.”

ZIAD NAKAT, SENIOR TRANSPORT
SPECIALIST, WORLD BANK'S TRANSPORT
AND ICT GLOBAL PRACTICE

A FORMULA THAT WORKS

The Korea Green Growth Trust Fund was created in 2011 in partnership between the Republic of Korea and the World Bank Group to support client countries as they shift to a green development path. Both partners share a common goal to

reduce poverty and promote shared economic prosperity in an environmentally responsible and socially inclusive way.

The Trust Fund finances on-the-ground programs as well as knowledge exchange activities.

To date the WBG-managed KGGTF has approved 80 programs totaling approximately US\$41 million in the urban, transport, information and communication technology, energy, environment, water, and climate sectors. The KGGTF has a formula that works. By utilizing South Korea's experiences, expertise, and investments, the KGGTF finances and facilitates the sharing of Green Growth technical know-how in an effort to support the WBG, International Finance Corporation (IFC), and client country project design and investment.

KGGTF's emphasis is on implementing economic pathways and solutions that integrate multi-sector needs, technological innovation, social inclusion, and Green Growth approaches. KGGTF leverages the real-world experience of policy makers and Green Growth technical practitioners to integrate Green Growth concepts into investment decisions.

“We learned a great deal here and are really impressed by what Korea has done with Green Growth. It is inspirational. The Korea Green Growth Trust Fund is a unique partnership; I haven't experienced anything like it within the World Bank or with other donors outside of the Bank.”

FARID TADROS, TASK TEAM LEADER,
WORLD BANK

In fact, 24 out of the 80 grant activities mentioned before have supported WBG lending operations linked to US\$5.4 billion, pairing Green Growth principles with sustainable development. Based on strong performance, as well as increasing demand for collaborative development implementation programs, our fund was replenished at the end of 2015 and has grown to a US\$88 million World Bank Group program through 2021.

What We Do:

1.

Fund, manage, coordinate, and monitor KGGTF-funded programs.

2.

Aggregate, facilitate, and leverage Green Growth knowledge and learning, and institutionalize global knowledge sharing to promote sustainable economic development.

PROGRAM MAP

Global

Capacity Building for Leaders in Energy Efficient Urban Transport Planning

Low-Carbon Green City Planning

Infrastructure Resilience and Robust Decision-making

Capacity Building for Green Urban Growth

Training Hub—Transportation for Green Growth

City Credit Worthiness Academy and City Climate Planner Certification Program

Unlocking Data Innovations for Smarter Urban Transport and Greener Growth

An Integrated Approach to Urban Sustainable Planning in the World Bank Learning Program

Green Smart City Development With Citizen Participation (India, Tunisia)

Solid Waste Management Policies and Technologies (Benin)

Quantifying Tradeoffs between Water and Energy Investments (Morocco)

Civic Innovations: Solving Old Problems in New Ways (Green Growth Hackathon) (Mongolia)

Africa

REGIONAL

Africa Sustainable Transport Forum (Sub-Saharan Africa)

Streets as Drivers of Green Growth and Urban Prosperity (Sub-Saharan Africa)

Developing Skills to Support Transport and Logistics in Sub-Saharan Africa (Uganda)

Green Cities and Low-Carbon Industries Initiative (Sub-Saharan Africa)

Negawatt Challenge for Energy Efficiency (Sub-Saharan Africa)

West Africa Fishery Partnership for Competitiveness and Sustainability (West Africa)

Greener Cement Industries (Sub-Saharan Africa)

NATIONAL

Secondary Cities Program (Rwanda)

Enhancing Green Urban Development (Uganda, Tanzania, and South Africa)

MUNICIPAL

TA to Promote Integrated Green Urban Planning in Addis Ababa (Ethiopia)

Improving Solid Waste Service Delivery in African Cities

TA to Promote Solid Waste Management and Urban Greenery (Ethiopia)

Real-Time Urban Flood Risk Management and Decision-Support Tool for Bamako Greater Area (Mali)

Middle East and North Africa

GLOBAL

Cleaner Production for Companies (Pakistan, Egypt)

NATIONAL

Promoting Climate Resilience for Roads (Morocco)

Smart Technology and Energy-Efficient Production (Egypt)

Air and Water Pollution Management Program (Egypt)

MUNICIPAL

Greater Beirut Urban Transport Project (Lebanon)

Enhancing Green Growth in Cairo (Egypt)

Europe and Central Asia

REGIONAL

Central Asia Water Resources Management (Tajikistan, Kyrgyz Republic, Uzbekistan, Kazakhstan, and Turkmenistan)

NATIONAL

Greening Freight Transport and Logistics (Georgia)

Innovative and Green Growth for Rural Kosovo: Innovation and Scoping

Moving Toward Green Urban Development of Cities in Kyrgyz Republic

Development of a National Industrial Energy Management Program (Uzbekistan)

Piloting Green Transport Solutions for Sub National Governments (Poland)

MUNICIPAL

Sustainable Urban Transport for the City of Kyiv (Ukraine)

Developing Green Growth Strategies for Emerging Metropolitan Municipalities (Turkey)

Developing Integrated, Green Solutions for Municipal Solid Waste Management (Kazakhstan)

Energy Efficiency Transformation of Urban Heating in Chisinau (Moldova)

South Asia

REGIONAL

Smart Card Integration for Better-Connected Public Transport Systems (India)

Urban Public Spaces as a Transformative Instrument for Inclusive Green Growth in South Asian Cities

NATIONAL

Studying Options for Developing the Eastern Freight Corridor (India)

Promoting the Use of Green Construction Technology in the Road Sector (India)

Spatial Transformation Strategy (Sri Lanka)

Regional Economic and Infrastructure Investment Strategy for Urttar Pradesh (India)

E-Waste Advisory Project (India)

Toward Green Growth through the use of ICT and Investment in Clean Energy Generation (India)

An Efficient, Resilient, and Green Grid for Power System (Bangladesh)

MUNICIPAL

Green Transport Initiative (Bhutan)

Mainstreaming Green Growth into Karachi's Business Plans (Pakistan)

TA for Design and Preparation of Tamil Nadu Sustainable Urban Development (India)

ICT Applications to Achieve Green Growth in an Indian City

Intelligent Transport Systems and PPP in City Bus Systems for Indian Cities

Kolkata Metropolitan Transport Efficiency Improvement (India)

Sustainable and Green Regional Development Planning for Urban Growth Centers (India)

East Asia and Pacific

REGIONAL

Improving Urban Mobility Using Big Data Analytics (Philippines and Indonesia)

Energizing Green Cities: Planning, Enabling, and Managing the Transition to a Low-Carbon Future (Vietnam, Indonesia)

NATIONAL

Promoting Green Growth in Industrial Zones (Vietnam)

Scaling up Implementation of Green Growth Priorities (Vietnam)

Affordable and Resilient Housing and Urban Land Use Planning (Vanuatu)

MUNICIPAL

Achieving Green Growth Through Green Transport ICT (Philippines)

Sustainable Urban Growth Analytics and Planning Systems: Technical Advisory Services (Indonesia)

Inclusive Green Growth for cities in the East Asia and Pacific Region

Metro Manila Citywide Slum Upgrading Project (Philippines)

Latin America and Caribbean

REGIONAL

Regional Resource Recovery and Recycling

Implementing Green Solutions for Waste Management in LAC Region (Argentina)

Greening Cities Through a Water-Centric Urban Planning Approach (Panama, Uruguay)

NATIONAL

Urban and Housing Programmatic Approach (Mexico)

Instruments for Urban Redevelopment (Mexico)

Using ICT to Increase Green Competitiveness (Guatemala)

Strengthening Capacity for Integrated Solid Waste Management (Mexico)

Inner City Affordable Housing Program (Mexico)

Investments in Environmental Management and Green Growth (Peru)

Variable Renewable Energy Integration to Support Green Growth (Haiti)

Tackling Power Sector Barriers for Green Growth (Honduras)

MUNICIPAL

Green Vision for the Rio de Janeiro Metropolitan Region (Brazil)

6C Central America Urbanization Review (Panama)

Rio Low-Carbon City Development Program (Brazil)



-  GLOBAL PROGRAM
-  REGIONAL PROGRAM
-  NATIONAL PROGRAM
-  MUNICIPAL PROGRAM

SOUTH KOREA AND THE WORLD BANK GROUP

A PARTNERSHIP IN SHARING DEVELOPMENT KNOW-HOW

The World Bank Group (WBG) offers state-of-the-art development knowledge from around the globe to its clients. And the Republic of Korea (RoK) is eager to share what it has learned from its successful Green Growth strategies, which combine development goals with the benefits of a green economy in transportation, urban planning, water and sanitation, and other sectors.

South Korea learned valuable lessons in sustainable economic development through its journey from a low-income country in the 1960s to one of the most dynamic emerging economies in the world. When former South Korean president Lee Myung-bak took office in 2008, he proclaimed “Low Carbon, Green Growth” as the Republic of Korea’s new national vision. The most important driver of this vision was recognition that high levels of carbon-dependent economic growth were not sustainable—that the country had to shift from quantity-oriented, fossil fuel-dependent growth to quality-oriented growth, with an emphasis on energy independence and sustainability through the use of new and renewable energy resources.

Recognizing their common vision, the WBG and the RoK partnered to create the KGGTF in 2013 to foster the implementation of Green Growth programs around the world. The KGGTF is funded by the Ministry of Strategy and Finance of South Korea and managed by the WBG.

Through this innovative partnership, RoK contributes to the World Bank Group’s Green Growth investment programs. The objective is to increase and share technical and operational Green Growth knowledge and lessons learned. The end result: The RoK and WBG are inspiring behavioral change and building the capacity of policy makers and institutions. Our successes, combined with an increased global demand for Green Growth technical engagement, lending, and investment, prompted the Ministry of Strategy and Finance at the end of 2015 to increase the KGGTF by 120 percent over the next four years to a total of US\$88 million through 2021 for Green Growth programs in urban, transport, information and communication technology, energy, environment, water, and climate sectors. With this replenishment, we look forward to scaling up; meeting increased demands for environmentally sustainable; socially inclusive, and economically beneficial Green Growth; and helping to create a sustainable future.

SUCCESS STORY

In Sub-Saharan Africa, where rapid urbanization is propelling a rapid increase in waste generation, The Korea Green Growth Trust Fund (KGGTF) and local waste officials are partnering to strengthen the skills of solid waste managers who want to combine solid waste management (SWM) practices and Green Growth goals. The KGGTF is funding key knowledge and capacity-building initiatives, including the creation of SWM policy papers, capacity-building workshops, and study tours for technical SWM personnel from around the globe.



SUCCESS STORY

Korea Green Growth Trust Fund (KGGTF) programs are well poised to help meet new COP21 goals for climate change mitigation and adaptation. For example, in Honduras, the government has set a renewable energy target at 80 percent by 2022. One of the poorest countries in the Latin America and Caribbean region, Honduras hopes to boost its economy, increase global competitiveness, and smooth out dramatic income inequalities, in part, by increasing energy capacity and bringing down the cost of energy. A US\$450,000 World Bank Group KGGTF-funded Green Growth program there aims to identify the primary barriers to economic growth in the power sector, design environmentally friendly solutions for overcoming those barriers, and shift the current development pattern. Research, along with capacity building and knowledge sharing from the Republic of Korea and other countries, will inform which tools and technologies to include in Honduras' Green Growth strategy. This creates a successful model to emulate as developed countries around the world prepare to support renewable energy programs after COP21.

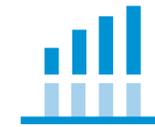


PROGRAM CRITERIA

The Korea Green Growth Trust Fund (KGGTF) supports results-driven programs that combine development goals with environmental and socio-economic sustainability. We call this Green Growth in action. And we have collaborated with the donor, the Ministry of Strategy and Finance in the Republic of Korea, to create clear governance that guides the selection of criteria in a transparent manner. If you are with a World Bank Group (WBG) or International Finance Corporation office interested in applying, you can find more detailed information on our website.

BELOW IS A SNAPSHOT OF WHAT WE ARE LOOKING FOR.

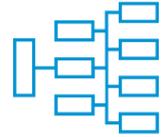
The KGGTF prioritizes programs that:



Focus on low- and lower-middle- income economies



Operationalize Green Growth holistically across multiple sectors



Outline green policies and programs that increase national and/or private sector productivity and job creation



Provide clear and specific technical concepts and activity planning



Have the potential to become large-scale follow-up projects led by the WBG or client countries



Relate to one or more of the KGGTF thematic areas outlined below

All proposals must include at least one of these thematic donor-specified areas:



Energy



Environment



Water and Sanitation



Urban

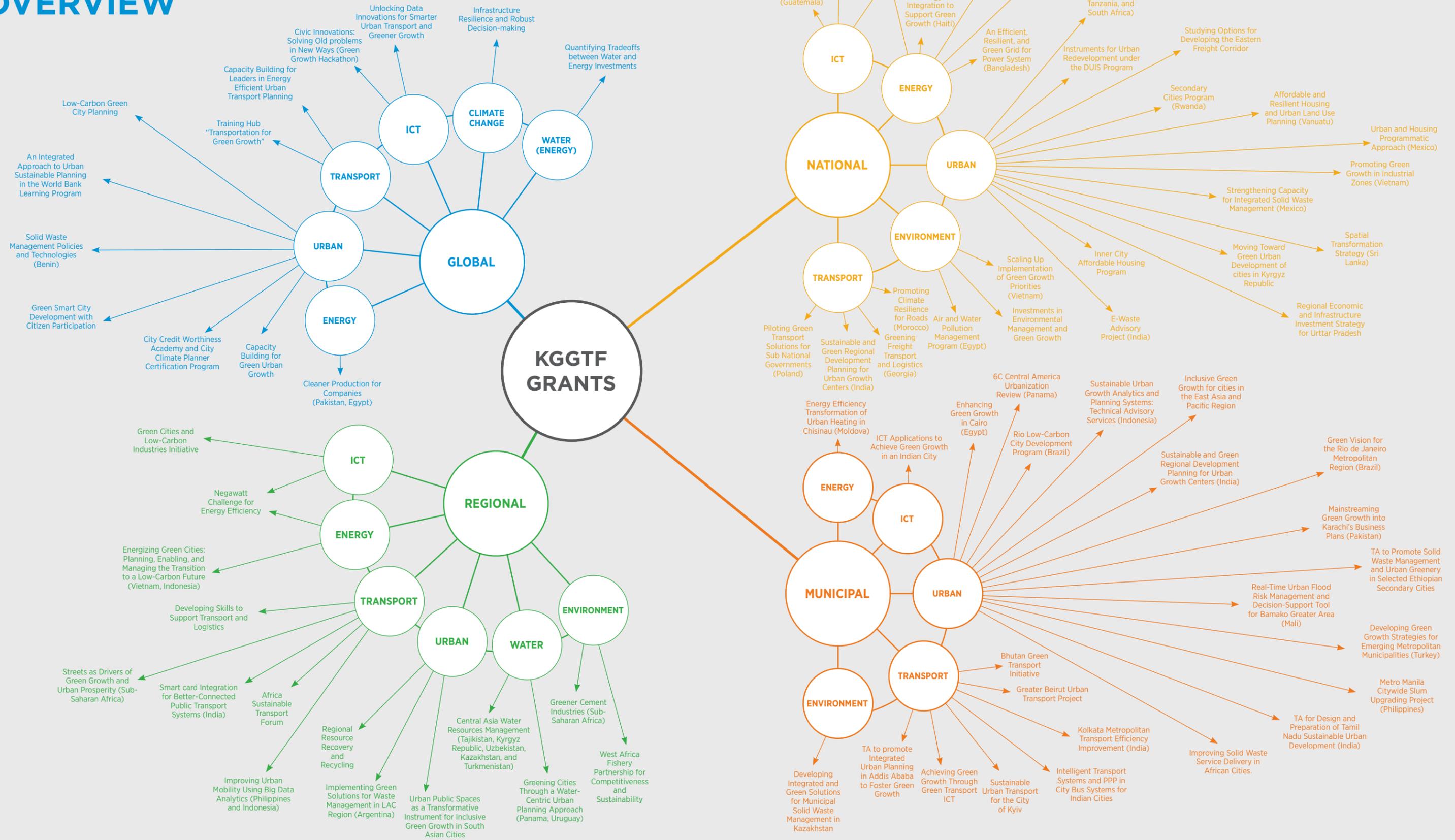


Transport



Information and Communication Technology

OPERATIONAL OVERVIEW



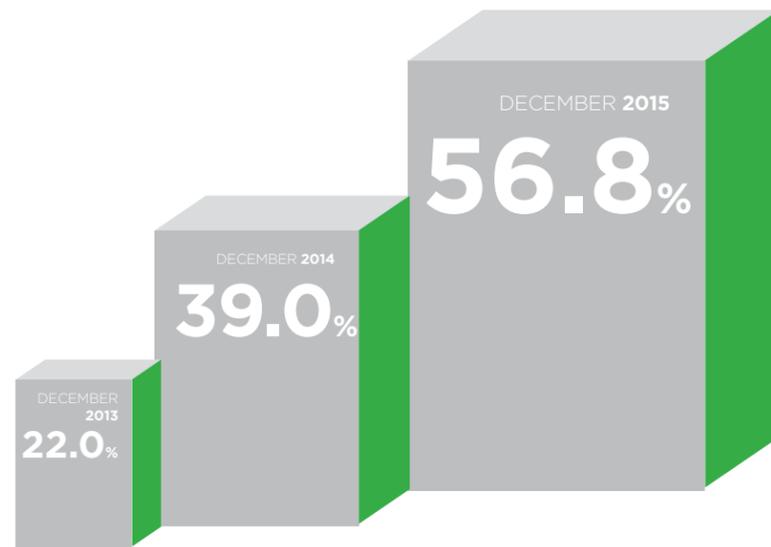
FINANCIAL ANALYSIS

Implementation Rate

Implementation rate (disbursement + commitments / allocation) in 2015 increased to 57%, which is higher than the usual 20–30%.

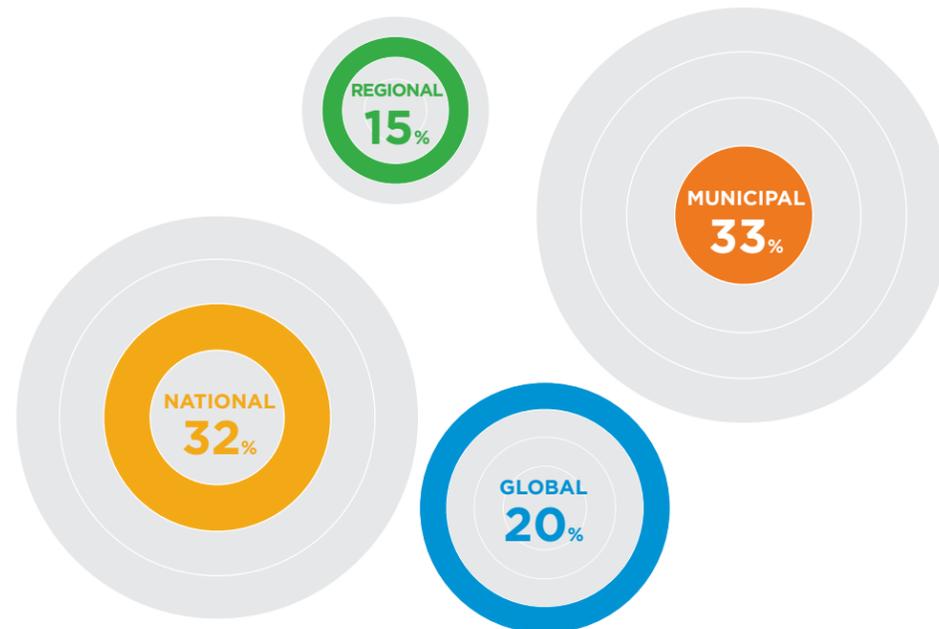
In addition, the increase in implementation rate from 2014 to 2015 (18%) is larger than it was previous year (17%) even though the number of programs grew.

Client's uptake of genre growth concept gradually reflects on the program implementation.



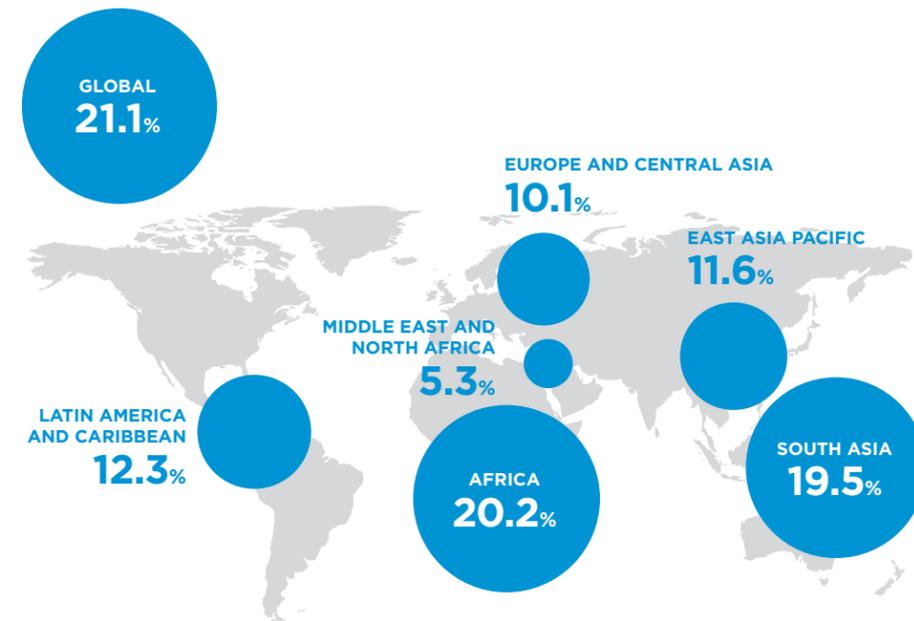
Distribution by Scales

In terms of scale, the largest category of programs was municipal, at 33%, followed by national, at 32%.



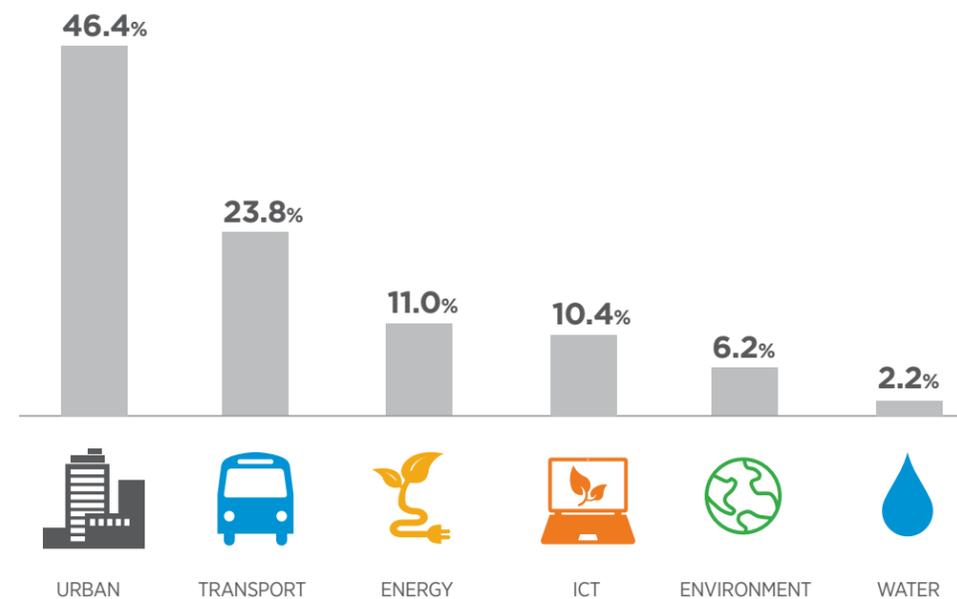
Distribution by Regions

The two most active regions for KGGTF programs are South Asia Region (SAR) and Africa to date. Note that global programs also play a major role.



Distribution by Sectors

In terms of sector, the largest category of programs was urban, at 46%. Transport and energy accounted for 24% and 11% respectively.



KOREA GREEN GROWTH PARTNERSHIP KNOWLEDGE AND LEARNING PROGRAM

We've found that knowledge sharing and network building are an integral part of Green Growth implementation, and part of what makes the Korea Green Growth Partnership and Trust Fund unique.

World Bank Group (WBG) clients interested in Green Growth development and green infrastructure investment weren't getting adequate opportunities to connect and engage with leading technical and policy experts. This inhibited their ability to learn from the successes and failures of other countries.

Seeing this as an opportunity, the Korea Green Growth Trust Fund (KGGTF) of the WBG now works and engages with client countries to define and identify Green Growth opportunities, and in the process fosters communication among a network of development experts who are interested in a sustainable future and green investment. Through knowledge and learning activities such as workshops, study visits, rapid responses, and conferences, these Green Growth experts focus on building capacity for design, planning, and implementation of Green Growth concepts.

“It has been a pleasure for me to come to Seoul and start exploiting the enormous potential of knowledge, experience and other resources.”

MATHEWOS ASFAW, GENERAL MANAGER AND CHIEF ARCHITECT PLANNER,
ADDIS ABABA CITY PLANNING PROJECT OFFICE

KGGTF KNOWLEDGE AND LEARNING BY THE NUMBERS



82

ACTIVITIES

The KGGP has hosted or participated in 82 knowledge and learning activities.

30

COUNTRIES

Our Korea Green Innovation Days and Knowledge Exchange events have created critical technical and operational knowledge networks from 30 countries.

40%

More than 40% of study visits led to immediate action items, including developing partnerships, gaining technical support, reviewing legal frameworks, revising development action plans, and producing reports.

500

WBG STAFF MEMBERS
AND KGGTF CLIENTS

Korea Green Innovation Days has created critical technical and operational knowledge networks for more than 500 WBG staff members and KGGTF clients.

3,209

PEOPLE

To date, the KGGP has been able to host, participate in, or publish 82 activities, reaching a total of 3,209 people.

**COUNTRIES INVOLVED
IN KGGP KNOWLEDGE
EXCHANGE ACTIVITIES**

- Argentina
- Bangladesh
- Benin
- Bhutan
- Brazil
- Cote d'Ivoire
- Egypt
- Georgia
- Ghana
- Guatemala
- Haiti
- Honduras
- India
- Indonesia
- Kazakhstan
- Kenya
- Kyrgyzstan
- Lao PDR
- Liberia
- Mauritania
- Mexico
- Mongolia
- Pakistan
- Philippines
- Poland
- Tanzania
- Thailand
- Turkey
- Uganda
- Vietnam

KGGP knowledge activities are organized around the following three pillars:

1. KNOWLEDGE PRODUCTS
2. KNOWLEDGE PROMOTION AND FACILITATION
3. TECHNICAL AND OPERATIONAL SUPPORT

For example, in the technical and operational support category, the KGGP brought together clients in Sub-Saharan Africa looking into cleaner, more efficient solid waste management and South Korean officials and businesses that have made huge strides with similar programs.

To see how we do this step-by-step, see Guatemala's eco-industrial park study visit story on page 34. Without these knowledge exchange activities, program outreach and implementation would be harder to achieve.

KGGP KNOWLEDGE ACTIVITY PILLARS

1.

KNOWLEDGE PRODUCTS

GOAL

To share Green Growth implementation lessons from model countries and KGGTF clients with clients and World Bank Group staff

EXAMPLES

Annual progress reports, knowledge notes, and case study videos produced by KGGP and technical experts

2.

KNOWLEDGE PROMOTION AND FACILITATION

GOAL

To orchestrate networking among Green Growth professionals, helping them to explore potential collaborations. And to promote a Green Growth paradigm, within and outside of the WBG, by sharing information on key Green Growth issues and challenges

EXAMPLES

Korea Green Innovation Days—the KGGP's annual flagship event, which brings together donors, the WBG, and clients to showcase program progress and lessons learned; brown bag lunches; and the KGGP Community of Practice—a group of people interested in Green Growth who utilize network technologies to increase communication, collaboration, and technical and operational support

3.

TECHNICAL AND OPERATIONAL SUPPORT

GOAL

To support the WBG staff (the task manager of a program and the team leader) and their clients by providing just-in-time advice and rapid response study visits

EXAMPLES

Rapid response consultations and knowledge exchange study visits—both are innovative knowledge-sharing experiences scheduled on-demand to foster partnerships and the understanding of specific issues in depth

GUATEMALA'S ECO-INDUSTRIAL PARK KNOWLEDGE EXCHANGE



2

KGGTF
FEATURE
STORIES

GREEN GROWTH = QUALITY OF LIFE

An aerial photograph of Rio de Janeiro, Brazil, showing the city built on a hillside overlooking the ocean. The city is densely packed with buildings, and the ocean is visible on the left. In the background, there are prominent mountains, including the iconic Christ the Redeemer mountain. The sky is clear and blue, and the overall scene is bathed in the warm light of a sunset or sunrise.



GLOBAL SCALE

SOLID WASTE MANAGEMENT POLICIES AND TECHNOLOGIES

SECTOR
URBAN

COUNTRIES
BENIN



1.

CONTEXT

Sub-Saharan Africa has the lowest rate of waste collection in the world.

Cities consume vast quantities of energy and resources, and generate huge quantity of solid waste. Of Sub-Saharan Africa's (SSA) nearly 940 million inhabitants, only 37 percent live in urban areas—very low compared to developed countries—but SSA has one of the fastest urban growth rates at over 4 percent annually. Similarly, while Africa generated only 5 percent of the world's total solid waste in 2012, this rate will grow to around 7.2 percent of the world's total by 2025—about 440,000 tons of solid waste per day—as Africa's economies grow. Cities in SSA face major challenges in collecting and treating this waste, and there has been very little focus on green solutions to these problems.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Africa has lacked the knowledge and financial resources to solve waste management challenges, but now African countries have access to global best-practice knowledge to improve waste

management and resource mobilization at a time of fast urbanization.

Infrastructure, policies, and practices in the solid waste sector in Africa are not prepared to meet an urgent Green Growth agenda. Rapid urbanization in Sub-Saharan Africa contributes significantly to solid waste management (SWM) challenges. Financial resources for waste management and land for new landfills are scarce. Municipalities commonly spend between 20 to 50 percent of their budgets solely on SWM, but these funds provide services to less than 50 percent of citizens. With nearly 47 percent of the SSA population living on less than US\$1.25 per day, collecting revenue to support waste collection and treatment is difficult. Cost recovery on waste management is low due to a low willingness to pay and inefficient revenue collection.

Africa's rate of waste treatment and recycling is drastically lower than in developed countries, and waste is often disposed of in drainage channels or unsanitary dumpsites. Open burning of waste is also common. Weak institutional and financial capacity has led to the collapse of contracts with international private firms, causing waste transfer points in a number of cities to become dumpsites themselves. In coastal cities such as Saint Louis in Senegal, a large portion of trash ends up in the ocean.



“Through the KGGTF program, we visited waste management systems in Morocco and attended presentations on waste management in Korea. We were very inspired by how they manage their waste and are planning to use these models to address our growing solid waste management challenges.”

MATY MINT HAMMADY, PRESIDENT OF THE URBAN COMMUNITY OF NOUAKCHOTT, MAURITANIA

3.

SOLUTION

The World Bank Group and the KGGTF understand the need to complement waste management infrastructure and equipment development with awareness and capacity building in African cities.

Improving waste management for African cities requires an approach that attacks the challenges from all angles, including appropriate infrastructure and equipment; leveraging private investment to integrate the informal sector; and reducing, recycling, and reusing more waste. This requires raising awareness about SWM issues with policy makers, as well as with the public. Most importantly, it requires building the capacity to make good SWM policies and strategies and to build SWM technical knowledge.

enhancing climate and environmental resilience. This will free up energy and natural and fiscal resources for other areas of urban development.

The program analyzes material flows, reviews and consolidates resource-use audits, and identifies information and communication technology measures to improve SWM efficiency, and helps coordinate public and private Green Growth investments. The KGGTF is funding key knowledge and capacity building initiatives, including the creation of SWM policy papers, capacity building workshops, and study tours for technical SWM personnel.

Through the KGGTF, African cities are learning about Korea's progress toward a “zero-waste” economy, and about the critical step Korea took in the 1990s to reduce waste and increase recycling by introducing a volume-based fee system.

4.

KGGTF IN ACTION

The World Bank Group is leveraging KGGTF funding and technical assistance to support the capacity of African cities to manage solid waste.

The KGGTF is helping African cities increase SWM capacity and efficiency through a two-year US\$225,000 program to improve industrial efficiency while



GLOBAL SCALE

GREEN SMART CITY DEVELOPMENT WITH CITIZEN PARTICIPATION

SECTOR URBAN

COUNTRIES INDIA AND TUNISIA



1.

CONTEXT

The world's urban areas are developing at unprecedented rates, often without Green Growth principles that would address challenges with a holistic and sustainable approach.

Most urban areas in developing countries are growing at speeds that don't allow for thoughtful land-use planning and urban management. The result: poor public services, unemployment, violence, crime, poor health, and pollution.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

In most developing countries, the inadequacy of land information and basic urban services pose serious constraints on what can be done, but Green Growth implementation with information and communication technology (ICT) as an enabler can help.

Land availability is a critical element in human settlements, along with basic infrastructure provisions such as water supply, sewerage, and solid waste facilities. However, without well-established and systematic cadastral (land) systems in many developing countries, sustainable economic growth and environmental protection are nearly impossible. Without citizen participation and feedback in service

delivery, and urban management in general, development cannot take place peacefully and comprehensively, and with long-term inclusivity, resiliency, and Green Growth goals. ICT has proven to play a fundamental role in Green Growth implementation and citizen participation in urban management.

3.

SOLUTIONS

ICT innovations can make the best use of critical land use information, and big data can help policy makers engage directly with citizens, civic society, and the private sector.

In this KGGTF program, major Indian and Tunisian population centers will adopt smart city ICT and big data policy innovations that Korea has successfully used to mainstream sustainable and inclusive urban development. Pilot programs in India and Tunisia will open up new opportunities for local governments to make the best use of critical land use information, ICT innovations, and big data to engage directly with citizens, civic society, and the private sector. In Tunisia, government officials will create a master plan that includes middle- and long-term road maps for establishing a digital land management system based on Korea's experience and policy recommendations. And in Mumbai, India, the Municipal Corporation of Greater Mumbai (MCGM) will establish an ICT citizen participation system (CPS). This CPS will enable the MCGM to receive citizens' concerns

"If well integrated with our basic online services, the Mumbai CPS will be a practical platform for our citizens to directly engage with city officials, making those officials more responsive to citizen demands and voices."

DR. SANJAY MUKHERJEE, ADDITIONAL COMMISSIONER, MUNICIPAL CORPORATION OF GREATER MUMBAI, INDIA

about water and wastewater services through multiple channels and send real-time feedback. The CPS will also enable dashboard big data analysis to help local policymakers and practitioners gain in-depth and timely insights on the quality of service, as well as hotspots for immediate actions.

4.

KGGTF IN ACTION

Korea also experienced a paper-based cadastral system, until it went digital in the 1970s. All processes and procedures related to land management are now performed in a digital environment. The Seoul Metropolitan Government

is a global leader in e-governance, with ambitious plans to use big data to effectively engage with citizens and enhance quality of life in the city. By working closely with Korean counterparts, Indian and Tunisian officials will be able to improve the use of ICT innovations in land information management and urban management, applying innovative approaches and solutions through mobile technology and big data. A series of training programs for respective government officials will disseminate program outputs and related smart city best practices from Korea, creating a model for growing urban centers around the world.

"Citizen participation systems bring about participatory democracy through a simple, inexpensive, and innovative ICT solution for urban service providers and their customers. By enabling citizens to directly report and monitor the progress of their problems, the CPS supports municipal governments' efforts to make service delivery more efficient, inclusive, and transparent, thereby increasing their accountability toward citizens."

HYOUNG GUN WANG, SENIOR ECONOMIST, SOUTH ASIA URBAN UNIT, WBG





GLOBAL SCALE

CIVIC INNOVATIONS: SOLVING OLD PROBLEMS IN NEW WAYS

SECTOR
ICT

COUNTRIES
MONGOLIA



1.

CONTEXT

It is estimated that 1,600 people die prematurely in Ulaanbaatar every year due to air pollution.

Rapid urbanization over the last 20 years in Mongolia has left citizens, particularly in Ulaanbaatar, with inadequate public services. Furthermore, economic growth in these areas is impacted by limited infrastructure. With nearly 68 percent of the country's citizens flooding to urban areas, transportation, energy, housing, and water systems are suffering, along with air quality—from vehicle emissions, new industrial operations, and winter coal burning. As a result, Ulaanbaatar is one of the most polluted cities in the world, according to 2014 World Health Organization data.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Key to supporting behavior change in this region is transparency and awareness from the ground up.

This KGGTF-funded project will build on existing World Bank Group (WBG) operations focusing on a wider set of challenges, including water shortages, sewage treatment, over crowding, informal land development, lack of infrastructure and insufficient public services across the multiple WBG programs in urban, transport, energy, and information and communications technologies sectors. By engaging local developers, academics, and information technology entrepreneurs in hackathon events, Mongolian officials are creating grassroots awareness of both the country's environmental challenges, but also of the economic benefits of Green Growth solutions. In addition, these events and meetings are instrumental in capacity building efforts. International

experts have trained participants in building design-thinking skills, including how to start a makers community and ignite a grassroots movement to support open data initiatives. The program has fostered cross-sectorial and inter-agency collaboration to address Green Growth challenges in Mongolia, but the process and results can be transferred to other regions, or scaled up.

3.

SOLUTIONS

Publicly-sourced, bottom-up solutions —“hacks” and prototypes—will play a key role in this project by showing governments and companies what is possible when diverse people come together to innovate.

An important component of this program is an Open Innovation Lab at the Mongolian University of Science and Technology. The Open Innovation Lab has created a space where new ideas and solutions can be tested in a fail-safe environment. The lab serves as an anchor of open innovation for city stakeholders, led by the university and local startup ecosystem leader NGOs. It hosts rapid prototyping processes, through a co-working space. Teams partner with experts from leading urban and living labs from around the world to tailor the lab design to the local urban environment and help create a local community of innovation for the benefit of the city's ecosystem. Within this lab, the KGGTF grant activity supports an innovative and holistic approach in addressing key environmental challenges facing Ulaanbaatar. The overall idea being that digital technologies, open data, and on-demand information can improve public and private services that will reduce our impact on the planet and save money at the same time. Using mobile technologies, gamification, and self-reporting, urban citizens can live and function in a more sustainable manner. Coming out of the first hackathon, seven

“Without the KGGTF’s trust and belief, programs like this couldn’t be done in Mongolia. When someone thinks about Mongolia, they first think of vast deserted lands with pastures and yurts, but this program shows the potential of local start-ups to tackle Green Growth challenges as something that can be monetized through a collaborative process. Green terminology was previously used mainly in high-level meetings, but Code4Green UB made it fun and relevant to citizens.

Since the successful implementation of Code4GreenUB, various Mongolian government and private agencies have recognized the program as a success story for the implementation of Green Growth.”

ENKHBOLOR GANTULGA, ICT CONSULTANT, WORLD BANK

teams were chosen for a mentoring program on how to create and monetize their Green Growth ideas.

4.

KGGTF IN ACTION

This project is a collaboration between the World Bank Group's urban, transport, energy, and ICT teams and the Government of Mongolia. The WBG has supported cutting edge solutions from similar initiatives over the years, including the Sanitation Hackathon and App Challenge, Code for Pakistan, and

Code for Change Myanmar. WBG-backed hackathons have led to innovations including a mobile-phone game that teaches children good sanitation and hygiene practices and an application that tracks the flow of development contracting funds into or out of a country. In Mongolia, three of the seven final teams traveled to Korea to pitch their ideas to foundations, tech centers, and start-ups. One team signed an agreement to work on a small-scale, environmentally friendly technology for efficient home heating. These and other products from winning teams are making a difference in Mongolia.



Image: http://code4greenub.com/



REGIONAL
SCALE

WEST AFRICA FISHERY PARTNERSHIP FOR COMPETITIVENESS AND SUSTAINABILITY

SECTOR
ENVIRONMENT

COUNTRIES
CABO VERDE, LIBERIA,
SENEGAL, SIERRA
LEONE, GUINEA,
GUINEA-BISSAU, GHANA,
AND MAURITANIA



1.

CONTEXT

Weak governance arrangements, inadequate management capacity, and the inability to curtail rampant illegal, unreported, and unregulated fishing in West Africa has constrained the capacity of many countries to realize the economic value of their fishery resources.

Captured fisheries have major economic growth and food security significance for West Africa riparian countries. With a wholesale value of more than US\$3 billion a year, West African marine fisheries provide direct and indirect employment to more than three million people. They contribute 10 percent of GDP in Guinea-Bissau and Sierra Leone, and more than 30 percent of the export revenues in Mauritania and Senegal. Fish also provides up to 50 percent of the total animal protein intake for a number of countries in the region.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Illegal catch reduction, based on improved fishery governance and strengthened monitoring, surveillance, and enforcement, is essential for enhancing West African marine economies and the livelihoods they provide.

With illegal catch estimated at 35 percent of the reported catch in Sierra Leone and 40 percent in Guinea-Bissau, curtailing these losses is paramount to both the sustainability and the economic growth potential of West African countries. Starting practically from scratch in countries like Sierra Leone and Liberia, the West Africa Regional Fisheries Program and West African Sub-Regional Fisheries Commission have initiated steps toward solutions, but further efforts are needed—efforts that use technology innovations to overcome the prohibitive costs of conventional surveillance and enforcement.



3.

SOLUTIONS

KGTF will provide dedicated assistance for West African countries to learn from the Korean experience with advanced technology application for fisheries management.

This KGTF-funded Green Growth program will develop an integrated sub-regional monitoring, surveillance, and control information and communication technology (ICT) strategy and implementation plan using new technologies and best practices. It will also strengthen the countries' joint vessel traffic monitoring and information systems and interoperability capabilities for identifying and managing infraction vessels. KGTF will provide dedicated assistance for West African countries to learn from the Korean experience with advanced technology application for fisheries management. At the regional level, it will support stakeholder consultations and knowledge dissemination. Knowledge exchange will be further supported with South American and South East Asian counterparts.

4.

KGTF IN ACTION

Korea has established cutting-edge know-how in related fishery services, maritime surveillance, and ICT.

Client countries will partner with leading Korean research and policy institutions in these fields. Equally important, in light of Korea's major fishing presence in the region, clients will expand on earlier successful collaborations between Korea and the World Bank Group on piloting innovative ICT systems for marine environmental safety and resource protection under the East Asia Marine Electronic Highway project.



REGIONAL
SCALE

THE NEGAWATT CHALLENGE FOR ENERGY EFFICIENCY IN AFRICA

SECTOR
ENERGY

COUNTRIES
GHANA AND KENYA



1.

CONTEXT

African economies lose 2.1 percent of their GDP as a result of power shortages annually.

With their metropolitan areas becoming some of the fastest growing urban hubs in Africa, Ghana and Kenya are facing a critical energy challenge. Rapid urbanization strains existing infrastructure and natural resources, while also putting increasing pressure on municipalities to deliver public services and support economic growth and competitiveness. In the Ghanaian capital of Accra, for example, air quality is deteriorating at the same pace that traffic congestion is increasing, and energy black outs are increasingly common.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Green Growth offers competitive advantages and opportunities for economic growth and employment.

Green Growth strategies can help economies become more resilient as they work to meet demand for food production, transport, housing, energy, and water. Energy efficiency is one of the building blocks of Green Growth. It is widely recognized as one of the most effective ways to combat climate change while meeting rising energy demand. Green Growth holds particularly great promise for rapidly growing urban

“It’s a very interesting and educational program in the sense that it brings together a number of stakeholders—private sector, public sector, and academia—to share ideas and see that responsibility for energy efficiency is not one person’s job.”

LYDIA E. A. SACKEY-ADDY, DIRECTOR OF BUDGET AND RATING OF THE ACCRA METROPOLITAN ASSEMBLY AND LEAD GOVERNMENT COUNTERPART FOR NEGAWATT CHALLENGE IN GHANA.

centers. Countries such as Ghana and Kenya seek to reduce urban energy use through the use of innovative information and communication technology (ICT) that can improve energy efficiency by monitoring consumer behavior and prompting its positive change.

3.

SOLUTIONS

The Negawatt Challenge builds engagement and collaboration between technology and energy communities in Ghana and Kenya through a design-thinking workshop, a series of meet-ups, an ideathon competition, a boot camp, and a business acceleration program.

This KGGTF-funded Green Growth program developed a design-thinking methodology and hosted a well-structured challenge competition to engage various stakeholders in the identification of local challenges and build capacity of high-potential entrepreneurs to adapt lean business models and develop innovative products, leveraging technology to respond to these challenges.

The methodology and the competition revolve around six iterative stages. First, stakeholders are invited to a workshop to deliberate on their city’s most pressing energy challenges. Energy sector stakeholders from the public and private sectors—including local government and citizen-led organizations—get together, identify major sources of energy inefficiencies, and establish the

necessary datasets to aid participants in the innovation challenge. In parallel, creative and tech communities gather in a series of specialized community meetups to improve their knowledge of energy efficiency, Green Growth, and various applications of ICT technologies. To help source valuable datasets and publish them as open data, a public sector group or local organization is encouraged to carry out an open energy data readiness assessment, thus building the foundations for the emergence of data-driven solutions to the challenges.

The fourth stage in the process is the Negawatt Weekend, an “ideathon” event that engages early startups to work on their selected challenge. Upon evaluation of the startups’ live pitches, judges select teams to proceed to a boot camp, dedicated to business, design, technical and marketing aspects of product development. As an open innovation challenge, the Negawatt taps into a vast pool of innovators, many who may not otherwise have traditionally engaged in developing technical energy solutions, particularly to address the development bottlenecks of their communities. These innovators are business school students, computer science specialists, mechanical engineers, and social entrepreneurship fellows, among others.

In Ghana and Kenya, the majority of the Negawatt Weekend participants were university students. For many of them, this was their first opportunity to publicly participate in the development of potential solutions to their respective capital cities’ pressing energy challenges.

After an intensive boot camp, two teams are awarded a chance to enter a several-months-long business acceleration program to develop their business pitch decks and further refine their solutions’ prototypes. Finally, the Demo Day event determines the ultimate winner of the competition, who is then encouraged to launch their solution to market (or test it in prototype mode).

“The Negawatt is all about empowering entrepreneurs to contribute to achieving Sustainable Development Goals through energy efficiency measures. Rapidly urbanizing cities in developing countries have vibrant technology hubs that are home to incredible local talent. We want to channel this creativity toward innovation at the intersection of energy and ICT.”

ANNA LERNER, WORLD BANK ICT AND ENERGY SPECIALIST AND CO-TASK TEAM LEADER OF THE NEGAWATT CHALLENGE

In Accra and Nairobi, the Negawatt engaged over 150 participants during the Negawatt Weekend, sourcing around 30 original ideas. It supported eight startup teams through a boot camp and accelerated five startups over the summer of 2015. Software and hardware solutions emerged that leverage energy data analytics, cloud computing, and mobile platforms. The virtual track to the competition, occurring simultaneously, generated 23 proposals from 11 countries.

4.

KGGTF IN ACTION

In 2013 President Park Geun-hye of South Korea put forth her signature vision to promote Green Growth through a

creative economy that calls for innovative business opportunities and more jobs through the fusion of information technology, culture, and industry. This KGGTF-funded program aims to leverage South Korean and international expertise to support a nascent startup ecosystem in developing countries, with an objective of raising awareness and understanding of the concept of Green Growth. The Negawatt Challenge is a good example how this Green Growth vision could be effectively mainstreamed to senior policymakers, organizations, and entrepreneurs in an engaging, user-centric approach. It is also a vehicle to establish mutually beneficial linkages between the RoK’s public and private sectors and their peers in developing countries.



Images: <http://www.negawattchallenge.com/media/>



REGIONAL
SCALE

STREETS AS DRIVERS OF GREEN GROWTH AND URBAN PROSPERITY IN AFRICA

SECTOR
TRANSPORT

COUNTRIES
CAMEROON, TANZANIA, UGANDA, BOTSWANA, AND IVORY COAST



1.

CONTEXT

The majority of African commuters travel by foot.

In many developing countries, people take between 40 to 60 percent of all trips by walking, yet urban planning often neglects the pedestrian environment. Pedestrian space is often not separate from the road, and walkers compete with street vendors, shops, parked cars, motorcycles, and bicycles for space. Lack of sidewalks and safe crossing is common. In Africa in particular, sidewalks are missing from around 65 percent of the road network, resulting in pedestrians and motorized vehicles sharing the same space.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

City leaders around the world are increasingly aware that the unsafe pedestrian environment negatively affects mobility patterns of city residents.

Poorly organized road systems, combined with a large number of people traveling to cities daily, leads to heavy traffic congestion. Heavy traffic and use of lead-containing fuels creates urban street air pollution and poor air quality. More than half of the fatalities on the road are pedestrians, and cars are the leading cause of pedestrian collisions. Pedestrian unfriendly cities tend to affect the economically and socially excluded

most negatively—these are the people least likely to have access to efficient motorized transport.

Leaders and urban planners from both developed and developing countries increasingly recognize that to promote sustainable urban prosperity and Green Growth they need to improve traffic congestion and encourage safe walking environments.

3.

SOLUTION

Develop a framework to help African urban planners assess and improve pedestrian space.

In Africa pressing urbanization challenges are increasing the need to consider options to improve urban mobility. Africa has experienced the highest urban growth during the last two decades at 3.5 percent a year, and this rate of growth is likely to continue until 2050. Projections also indicate that between 2010 and 2025, some African cities will account for up to 85 percent of the population in some African countries.

African city leaders are beginning to recognize that sustaining non-motorized transportation options will be necessary to reduce commuter travel time, traffic congestion, and pollution, while also increasing pedestrian and driver safety, improving access to socio-economic services, and promoting economic growth. City planners need a methodology to study city patterns and to allocate resources to specific solutions in specific areas.

4.

KGTF IN ACTION

With support from the KGTF, the World Bank Group's Transport Global Practice is evaluating urban walkability and pedestrian space challenges in Yaoundé, Cameroon; Dar es Salaam, Tanzania; Kampala, Uganda; Gaborone, Botswana, and Abidjan, Ivory Coast. This includes development of a framework for improving the design and planning of these environments in relation to transport systems, congestion, and road safety. The research will determine walkability factors and rate the ease of

walking as a primary mode of transport from area to area. Walkability factors include design issues and the perceived level of service by users, such as comfort, convenience, safety, security, and attractiveness. The study will make recommendations to improve pedestrian usage and connectivity, including improved walkways, construction of missing walk route links and pedestrian crossings, separation between the road shoulder and carriageways, and ways to reduce vehicle speed, via features such as speed humps and pedestrian crossing islands.



Images Source: Smart Moving Kampala

"With support from the Korea Green Growth Trust Fund, we seek to develop a structure to evaluate pedestrian issues that can contribute to sustainable urban and transport mobility."

JULIE BABINARD, SENIOR TRANSPORTATION SPECIALIST, WORLD BANK



NATIONAL SCALE

ENHANCING GREEN URBAN DEVELOPMENT

SECTOR
URBAN

COUNTRIES
UGANDA, TANZANIA,
AND SOUTH AFRICA



1.

CONTEXT

Africa's rapid urbanization is causing stress to the environment.

Africa is the least urbanized region in the world, but the most rapidly urbanizing. Informal settlements with little pollution-control infrastructure are growing quickly. While urbanization offers many benefits for economic growth, commercial development, and improved human capacity, it is critical that African cities, still relatively early in their growth, manage this process to reduce stress on environmental assets. Because Africa is in a relatively early stage of urbanization, cities have the opportunity to preserve existing ecosystems in urban areas.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Greener development is key to dealing with the growth of informal settlements.

African urbanization and the growth of informal settlements pose a number of complex environmental challenges, including water-quality degradation, loss of environmental land assets, and air-quality concerns. One common problem is that the spread of informal settlements results in waste or sewage discharge directly into waterways. Currently, the capacity of African institutions is

not strong enough to deal with these urbanization challenges.

Since African cities are relatively early in their development, they have real opportunities to implement greener approaches. African cities can take advantage of development approaches that minimize impacts on, or enhance the value of, the natural environment. Africa also has the opportunity to draw from the development experience of other countries, such as Korea, in specific areas like water treatment.

3.

SOLUTION

African cities need to evaluate the value of combining greener approaches with traditional (grey) investments.

Green development requires studying natural ecosystems, planning for semi-natural urban open space, and building appropriate ecological systems for better water management, improved energy efficiency, and pollution control. African planners need to think in terms of new green infrastructure—projects that can better manage settlements, reduce storm water overflows, and green industrial development—in addition to building more traditional water, energy, and pollution infrastructure. Investments in river system health can have a large benefit, and natural bio-systems can provide multiple ecosystem benefits.

4.

KGGTF IN ACTION

This KGGTF program supports a study to look at the impact of urbanization on the environment in African cities. The program uses local and international consultants to look at patterns of development and the use of natural resources in three cities: Dar es Salaam, Tanzania; Kampala, Uganda; and Durban, South Africa. The team has developed some key analytical tools, including a rapid environment assessment profile methodology to look at the context of development in each city, the environmental assets at risk, and the drivers of environmental and ecosystem vulnerability. The team has also used innovative ecosystems service valuation methodologies in an urban context to understand the economic value of natural assets and ecosystems in the three cities. The methodology assesses

the costs and benefits of various development interventions.

This work enhances the ability of national and local governments to make informed strategic, planning, land use, budgetary, and investment decisions. In addition, this KGGTF program provides governments with a portfolio of tools to mitigate the negative environmental externalities of urbanization and promote green urban development.

The World Bank Group's Urban Practice hopes that developing countries around the globe may eventually make use of the approaches pioneered under the study. With respect to Africa, this study also examines the possibility of linking one or more African academic institutions with Korean institutions to promote the dissemination of lessons and models on green urban development and design.

"One of the main themes that has emerged is that among the negative externalities associated with urbanization is a very strong negative impact on water quality. Urbanization in Africa doesn't get a lot of funding. Without the KGGTF, we would not be able to do this kind of analysis for African cities."

ROLAND WHITE, LEAD URBAN SPECIALIST WORLD BANK'S URBAN GLOBAL PRACTICE





NATIONAL SCALE

TACKLING POWER SECTOR BARRIERS FOR GREEN GROWTH

SECTOR ENERGY

COUNTRIES HONDURAS



1.

CONTEXT

In Honduras, the government has set a renewable energy target at 80 percent by 2022.

One of the poorest countries in the Latin America and Caribbean region, Honduras hopes to boost its economy, increase global competitiveness, and smooth out dramatic income inequalities, in part, by increasing energy capacity and bringing down the cost of energy.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

One of the main barriers already identified is the weakness of the national grid to integrate recently installed renewable energy (RE) (wind and solar PV).

Identifying the primary barriers to economic growth in Honduras' power sector and designing environmentally friendly solutions for overcoming those barriers, along with capacity building and knowledge sharing from other countries, will inform which tools and technologies to include in Honduras' Green Growth strategy, making the country more resilient, reliable, and economically secure.

"I would like to thank the Government of Korea and the World Bank for promoting these types of missions and meetings. They are really necessary for system operators in countries like Honduras, where there is little technological development, but great interest in developing better operations and solving problems with our electrical systems."

DENNIS ALBERTO RIVERA LOPEZ, HEAD OF PLANNING AND GRID STABILITY, EMPRESA NACIONAL DE ENERGIA ELECTRICA, HONDURAS

3.

SOLUTIONS

The management of variable RE requires sophisticated information technologies.

This KGGTF-funded Green Growth program is supporting studies and technical exchanges with Korea to inform energy authorities in Honduras on how to reinforce the grid to better cope with these RE plants and allow further investments. The management of variable RE requires sophisticated information technologies to reduce the uncertainty inherent to the variable weather conditions, and thus improve the integration of variable renewables and reduce system costs.

4.

KGGTF IN ACTION

Korea is well positioned to offer help in many sectors, particularly the energy sector.

Korea is sharing its technical expertise and experience by inviting client countries to witness firsthand successful renewable energy projects. Knowledge exchange is enhanced as KGGTF managers introduce delegates to experts in both the public and private sectors that can help them build technical and institutional capacity, as well as public awareness, in their own countries. On the cutting edge of smart grid technology, the country is experimenting with fully

"The KGGP knowledge exchange in Korea was an important experience for our professional lives. The following were very positive aspects of the mission:

the opportunity to learn about other countries' experiences in electric systems;

the usefulness of meeting key organizations and authorities in the energy sector, especially those that shared the Korean experience in deploying renewable energies, smart grids, demand control, and energy storage;

meetings held with leading companies in the industry, where we had the chance to take a look at current state-of-the-art technology, including an energy storage system in operation;

and the relevance of the topics presented in the technological conference Energy Plus 2015."

JOSE RENE BARRIENTOS SOTO, HEAD OF THE DISPATCH CENTRE, EMPRESA NACIONAL DE ENERGIA ELECTRICA, HONDURAS

integrated systems that maximize the efficiency of renewable sources and can help the country respond to global climate change. What started as a smart grid pilot project in 2009 on Korea's Jeju Island, has turned into a commitment for nation-wide smart grid installation by 2030. The heart and soul of Korea's energy integration plan is a modern energy storage system (ESS)—conceived of and managed by the country's singular energy system administrator, the Ministry of Trade, Industry, and Energy. Housed

in just two shipping container-sized trailers, an ESS system employs battery storage and a central processing unit that together can deal effectively with variable load problems and real-time demand response. Each system can route 3,000 MW of renewable energy into the country's centralized grid. This two-way communication and supply system will let individual smart homes and offices with solar panels on their roofs, for example, become renewable energy suppliers when they have surplus energy.





NATIONAL
SCALE

MEXICO URBAN AND HOUSING PROGRAMMATIC APPROACH

SECTOR
URBAN

COUNTRIES
MEXICO



1.

CONTEXT

Urbanization, critical for Mexican development, has grown out of control.

Mexico, the second largest economy in Latin America, is a highly urbanized country with more than 70 percent of its population concentrated in a system of cities. These already very large cities continue to grow. While vital to Mexican economic growth, urban growth has also led to urban sprawl—the result of building large, single-use affordable housing developments.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Mexico can manage urbanization to promote social inclusion and access to jobs.

Mexican cities are engines of growth and prosperity: 80 percent of Mexican economic gross value added derives from cities with over 100,000 inhabitants. However, the low-density spatial urban growth in Mexican cities has distanced residential areas from economic activities, which in turn promotes social exclusion and limits the potential of citizens to benefit from agglomeration economies—when firms are located near each other. Most new urban areas lack adequate transport to city centers and employment areas, resulting in low connectivity. Typically, these new developments are mostly for low-income families who must spend additional time and money on transport to conduct their main activities. At the same time, dwindling downtown communities are experiencing increased crime and violence and underinvestment in infrastructure as city governments prioritize investments in costly infrastructure to connect new, distant settlements.

Realizing this growing problem, the Mexican government initiated reforms to develop alternative approaches for cities to foster green, efficient, socially inclusive, innovative solutions for urban growth and these pressing urban challenges.

3.

SOLUTIONS

A push for better housing and urban development that uses new planning tools.

In 2013 Mexico initiated urban and housing sector policy reforms to promote compact, green, more equitable cities, with a focus on consolidating existing urban areas and controlling spatial expansion. The Mexican government created a new Secretariat of Rural, Territorial, and Urban Development to consolidate institutions dealing with housing administration, and to align federal housing programs with the new policy priorities.

The Mexican government also invited World Bank Group (WBG) support for sustainable urban development under the programmatic approach for urban and housing programs, with the twin objectives of increasing the sustainability and inclusiveness of the urban sector and improving the affordability and diversification of housing markets. The program also included organization of World Bank Group-facilitated knowledge exchanges.

4.

KGGTF IN ACTION

KGGTF support has allowed the WBG to provide technical assistance and convening services targeted at key Mexican national policy makers and stakeholders in the urban and housing sectors. KGGTF is primarily supporting Mexico's urban and housing planning in two areas: First, KGGTF is supporting

“The Mexicans could really relate to the experience in Korea. They were impressed by two things they saw in Korea: the set-up and organization of [the Korean PPP] LH Corporation that supports land and infrastructure development and the successful stories of urban renewal or regeneration.”

ANGELICA NUNEZ, SR. URBAN SPECIALIST, WORLD BANK

the development of an innovative spatial planning tool in close collaboration with the Mario Molina Center, a leading Mexican research institute and policy think tank on climate change and Green Growth. The web-based tool allows visualization and easy comparison of key indicators for the country's main 59 metropolitan areas. The tool will allow national and local governments, as well as the wider public, to understand the socio-economic implications of different urban spatial growth scenarios. They will be able to compare and benchmark the effects of different urban spatial growth scenarios on environmental, social, and economic variables, such as the cost of infrastructure and maintenance, carbon dioxide emissions, and energy consumption.

Secondly, through a program for instruments for urban redevelopment, the WBG team provides technical assistance

and advice to the Mexican National Housing Commission and the local Government of Mexico City to strengthen their capacity to promote green and compact urban growth through urban redevelopment. KGGTF supported the design of a basket of regulatory and financial incentives to catalyze mixed-use, high-density urban renovation projects that include some percentage of affordable housing.

The WBG program team has also developed a model for public-private partnerships (PPPs) to promote inner-city renovation and to finance urban regeneration. The focus of the effort is to pilot innovative PPP models. As part of the support, the program team exposed Mexican officials to experiences and best practices related to inner-city redevelopment projects in Korea and other countries.





MUNICIPAL SCALE

DEVELOPING INTEGRATED, GREEN SOLUTIONS FOR MUNICIPAL SOLID WASTE MANAGEMENT

SECTOR ENVIRONMENT

COUNTRY KAZAKHSTAN



1.

CONTEXT

Despite its fast economic growth over the last decade, Kazakhstan still faces significant environmental challenges, particularly in the solid waste management (SWM) sector.

According to the country's environmental authorities, Kazakhstan has accumulated 100 million tons of municipal solid waste, and the amount is increasing at an alarming rate of 5 to 6 million tons each year. Most of the municipal waste generated ends up in dumps and landfills that do not meet environmental and sanitary standards. In addition, the country recycles only 3 to 5 percent of all municipal solid waste, with little effort made at the source to sort, and hundreds of thousands of tons of recyclable materials ending up on the streets as litter or in dumpsites. In terms of waste transportation, the vehicles assigned for waste collection are old and inadequate, which makes the collection process manually labor intensive and inefficient.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Key to supporting behavior change in this region is transparency and awareness from the ground up, which can set the foundation for future Green Growth.

Improved sanitation services and solid waste management in Kazakhstan will

contribute to greater efficiency and resilience, and reduced air pollution and greenhouse gas (GHG) emissions. The introduction of technologies such as anaerobic digestion would allow for the production of clean energy and the reuse of soil nutrients, which would otherwise end up in the landfill. While more recycling would promote the reincorporation of secondary raw materials into the value chain, and support the creation of a new market for recyclables. In this sense, the reuse of valuable resources could promote greener development of the sector, fostering green jobs and Green Growth, and boosting the competitiveness of the sector.

3.

SOLUTIONS

This KGGTF program will help identify opportunities for recycling interventions, waste treatment, and energy production.

In 2013 Kazakhstan adopted a green economy concept policy. The concept created space for Kazakhstan to tackle complex environmental issues surrounding greenhouse gas emissions, air pollution, waste management, water consumption, and preservation of the ecosystem. The improvement of Kazakhstan's waste management system is one of the key pillars under this green economy program. With the help of World Bank Group (WBG)-administered KGGTF funding, Kazakh officials now aim to strengthen the government's

"We have visited a lot of countries regarding solid waste management, but they did not provide this kind of program. We are impressed with the Korea Green Growth Trust Fund program. And we are impressed by the awareness of Korean citizens. This needs to be a part of our master plan regarding landfill and e-waste treatment in Kazakhstan."

ASSEM ZHAISANGBAY, HEAD, NEW TECHNOLOGIES DEVELOPMENT DIVISION WASTE MANAGEMENT DEPARTMENT, MINISTRY OF ENERGY OF THE REPUBLIC OF KAZAKHSTAN

"We need strong institutional arrangements, like in Korea. We will take the Korean experience and make a presentation back in Kazakhstan. Then we hope we can implement the Korean experience in Kazakhstan, with the help of the KGGTF and the World Bank."

NAKPAYEV SALIMZHAN ZHUMASHULY, VICE GOVERNOR, GOVERNMENT OF ATYRAU REGION

institutional capacity and improve SWM technology. The program will help identify opportunities for recycling interventions, waste treatment, and energy production. And a cost recovery study will identify opportunities and strategies to foster private sector participation.

4.

KGGTF IN ACTION

Kazakhstan and the WBG have a long history of partnership and cooperation. KGGTF funding will allow for Korean technical assistance and advice on best practices for household waste segregation, such as pay-as-you-throw and radio frequency identification systems, which are widely used in

Korea. These systems facilitate source segregation, and provide more efficient collection and treatment service, as well as foster waste reduction. Organics disposed of in sanitary landfills or open dumps generate large amounts of methane gas (a GHG that is estimated to have between 21 to 72 times the global warming effect of CO₂); therefore, all organic waste diversion and treatment strategies, such as anaerobic digestion and composting, have a significant impact on the reduction of GHGs. These waste diversion strategies will promote a reduction in solid waste generation, a change in user behavior, and a reduction in GHG emissions in Kazakhstan, as they have in Korea.





MUNICIPAL SCALE

GREATER BEIRUT URBAN TRANSPORT PROJECT

SECTOR
TRANSPORTATION

COUNTRY
LEBANON



1.

CONTEXT

Geographically constrained, Lebanon suffers from terrible traffic congestion.

Lebanon is a densely populated country with about 500 people per kilometer. About three quarters of the population lives close to a narrow coastal strip, and about 2 million people live in the greater Beirut area. Traffic congestion has been a major problem as the city's infrastructure struggles to accommodate 200,000 to 300,000 vehicles per day on some of its corridors. About half of the country's 1.2 million vehicles operate in the greater Beirut area, where most citizens travel with private cars. Traffic congestion has increased quickly along with income and population. Excessive car dependence, lack of reliable public transport, poor road infrastructure, and limited cost-effective solutions exacerbate the traffic situation.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

Along with space, Lebanon's knowledge capacity in public transport is constrained.

A number of issues have stood in the way of improved public transport in Lebanon, including difficulty shaping a common vision among leaders and getting an accurate estimate of the demand for public transport. Most importantly, Lebanon's narrow strip, occupied by mountains and bordered by the sea, creates physical challenges. Public transport solutions, which require land for depots and amenities like park and ride facilities, take space away from cars. With no public transport projects completed in more than 50 years, Lebanon also suffers from a lack of institutional planning and implementation capacity, made even more difficult in a politically uncertain environment. However, broad understanding among Lebanon's leaders

for a need to improve mass transit led them to seek World Bank Group (WBG) assistance to identify an innovative solution.

3.

SOLUTION

Build consensus for new investment in a high-quality, inter-city bus rapid transit (BRT) system.

Lebanon wants a public transport solution that integrates changing transit behavior with quality and reliable services. With KGGTF funding, Lebanon planned a new investment project in a privately operated public transport program. The heart of the program will consist of three open BRT trunk lines between Beirut and its suburbs, and within Beirut. The plan also includes a network of about 20 lines of regular feeder buses. The plan calls for a high-quality BRT system with pedestrian bridges and escalators, seated buses, and park and ride facilities.

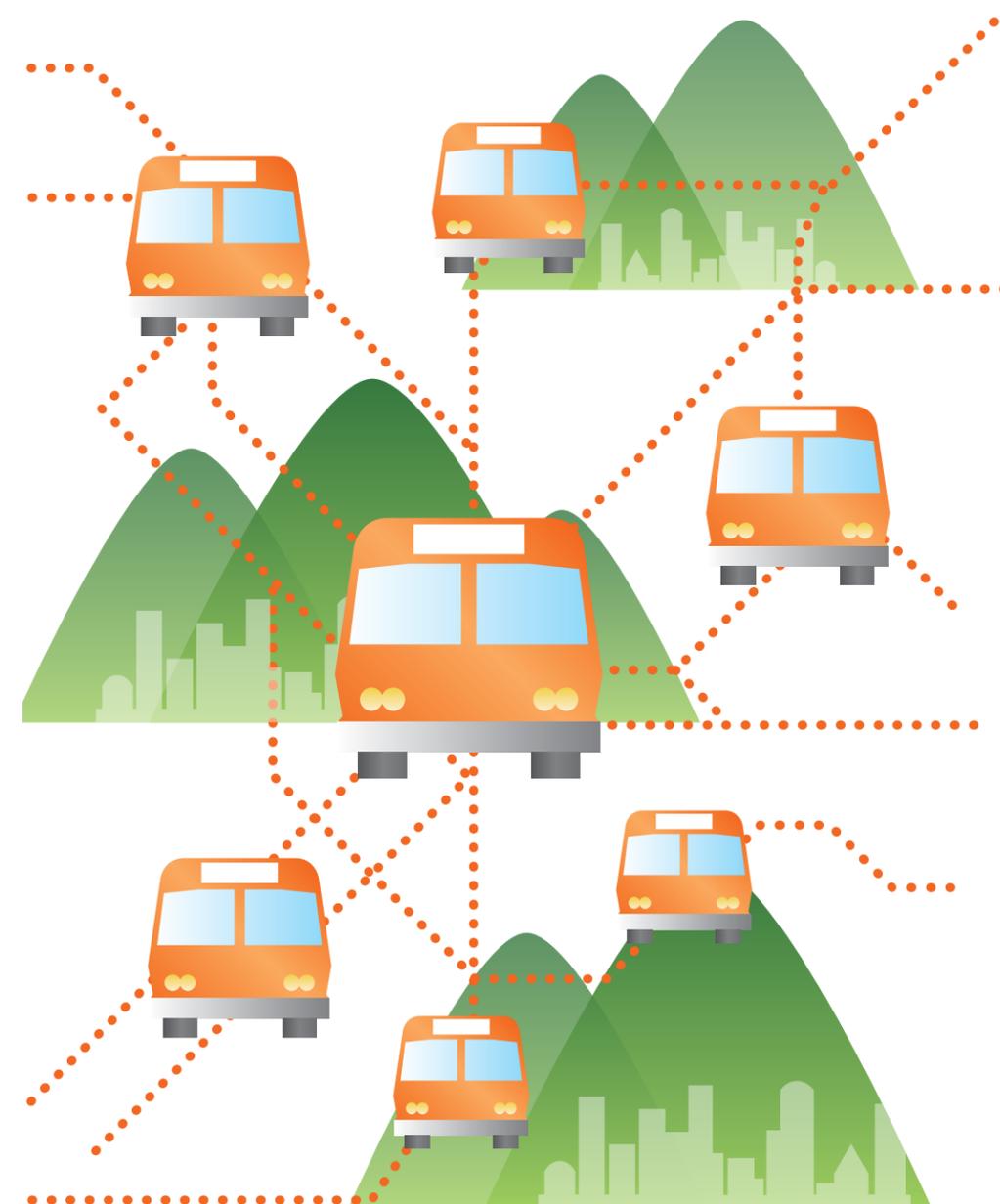
4.

KGGTF IN ACTION

This KGGTF Green Growth program funded detailed studies of Beirut's most congested corridors, looking at how to improve traffic conditions and energy efficiency, rationalize transport demand, and reduce greenhouse gas emissions. The program funded senior government officials on a study visit to Istanbul to see and experience that country's various modes of public transport systems. The program also reviewed transport pricing, including gasoline, taxi fares, and tariffs for planned transit systems, as well as the social implications of the project, especially for the poor. These studies helped inform the authorities of the need for a solution, and helped create consensus among leaders and urban and transport planners for investment in a new BRT mass transit project.

"One of the early findings from KGGTF involvement is that a small seed fund can go far in creating major ownership for projects and policy shifts. We need to enhance knowledge exchange and have more visits with Korea, the government, the private sector, and academia."

ZIAD NAKAT, SENIOR TRANSPORT SPECIALIST, THE WORLD BANK'S TRANSPORT AND ICT GLOBAL PRACTICE





MUNICIPAL
SCALE

SUSTAINABLE URBAN GROWTH ANALYTICS AND PLANNING SYSTEMS

SECTOR
URBAN

COUNTRY
INDONESIA



1.

CONTEXT

Indonesia has yet to achieve the economic returns from urbanization that other countries have. For every additional 1 percent that the country urbanizes, it achieves just 2 percent of additional GDP growth, whereas other countries in the region achieve 6 to 10 percent GDP growth.

Indonesia is one of the most urbanized countries in the world, with more than 50 percent of its population living in cities, and more moving there every day. By some estimates, more than 68 percent of the population will live in urban areas by 2025. While this growth often translates to poverty reduction and access to basic infrastructure and services, Indonesian cities are having a difficult time maintaining inclusive, sustainable growth that equates to an improved GDP.

2.

CHALLENGES AND OPPORTUNITIES FOR GREEN ECONOMIC GROWTH

The ability of Indonesian cities to effectively manage this urban transition over the next decade will be key to Indonesia's development success.

The spatial form that Indonesian cities take during this current phase of rapid urbanization and expansion will have consequences for urban sustainability and efficiency for several decades to come. Understanding these spatial growth patterns and their drivers is

crucial in order to bring about desirable spatial outcomes, efficient land markets, and agglomeration economies. Technical assistance that links sustainable growth analytics to improved spatial and investment planning will help Indonesia keep tabs on, and manage, urban growth.

3.

SOLUTIONS

The focus of this KGGTF program will be to build technical and institutional capacity in cities and metropolitan authorities through deep analytics and ongoing technical engagement.

This KGGTF Green Growth implementation project is supporting the Government of Indonesia in promoting urban Green Growth through improved spatial planning and integrated database use in three large cities—Semarang, Denpasar, and Bandung. Technical solutions include spatial growth analysis that can help determine the underlying causes and common patterns of growth and where to invest in infrastructure, open space, and transportation in order to promote urban environmental sustainability. The project has provided selected local government officials with hands-on spatial planning training, and also will host a national workshop to discuss policy implications stemming from the study results. A part of the solution is also monitoring land and real-estate sales and availability, in an effort to determine the impact of investments and regulations on land value, and help urban citizens without access to land.

"First hand knowledge exchange in Seoul supported by the KGGTF was very useful for me, as I could witness the experience from Korean counterparts and how they successfully develop smart cities and green cities while maintaining the existence of their cultural heritage. Semarang also has many cultural heritage areas and I would like to learn more from Korea's experience."

NOVIYANTI WAHYUNI, HEAD OF PLANNING AND EVALUATION DIVISION, REGIONAL PLANNING AND DEVELOPMENT, SEMARANG CITY, INDONESIA

4.

KGGTF IN ACTION

The Indonesian program team will work with and learn from the Korea Research Institute for Human Settlements (KRIHS), a nonprofit research organization established to formulate long-term national and regional development plans, carry out studies to promote the efficient use and preservation of land resources, conduct policy research

focused on critical human settlement issues such as infrastructure, and provide training programs for human settlement management and planning professionals. Indonesian officials have already met with Seoul Metropolitan Government representatives. And the KGGTF has supported the idea of Indonesian cities hosting an international workshop that would invite experts and government counterparts from Korea to Indonesia to share information on new town development.

"Semarang Municipality will be able to learn from the planning and operation of Korea's integrated transportation system. There are issues to be resolved in Semarang, such as long waiting times to use the transport system. By 2017 Semarang will produce a master plan on transport that will include an integrated transport system."

SAFRINAL SOFANIADI, STAFF OF REGIONAL PLANNING AND EVALUATION DIVISION, REGIONAL PLANNING AND DEVELOPMENT, SEMARANG CITY, INDONESIA





3

KGTF
PROGRAM
DESCRIPTIONS

GREEN GROWTH = LASTING IMPACT

YEAR

1

23 PROGRAMS

GLOBAL LEVEL

1. Infrastructure Resilience and Robust Decision-Making

COUNTRY N/A
REGION Global
SCALE Global
SECTOR Climate Change
TECHNICAL AREAS Climate resilience planning, policy decision-making
GRANT AMOUNT US\$1,150,000
PROGRAM GOAL *To investigate new decision-making methodologies addressing climate change risks and uncertainties, and apply these methods in pilot projects*

Robust decision-making (RDM) is a state-of-the-art method for making sound investment and planning decisions in the face of uncertainties, such as climate, economic conditions, population, technology, and regulations. Used extensively in many countries—for instance, in making water and energy investment decisions—RDM uses new analytical tools to help stakeholders understand investment options and evaluate future scenarios. Pilot programs will test and validate the decision-making tools for possible use in appropriate KGGTF-supported investment programs.

2. Low-Carbon Green City Planning

COUNTRY N/A
REGION Global
SCALE Global
SECTOR Urban
TECHNICAL AREAS City climate planner certification
GRANT AMOUNT US\$500,000
PARTNERS UEA, Gwangju City (Korea), UNEP, UNFCCC, KRIHS, KEI, University of Seoul
PROGRAM GOAL *To integrate low-carbon development into urban planning frameworks and opening carbon finance opportunities for local governments*

Developing and applying low-carbon green planning systems will help cities move toward sustainable economic growth. Reducing greenhouse gas (GHG) emissions is critical for such comprehensive urban development, with financial incentives playing a key role. A global joint effort of the World Bank Group, UEA, Gwangju City (Korea), UNEP, UNFCCC, KRIHS, KEI, and University of Seoul, the Low-Carbon Green City Planning program aims to increase financial opportunities using a new approach that builds on best practices in GHG inventories and climate mitigation strategies, and on successful experiences of carbon finance, including those in Amman, Jordan, and Rio de Janeiro, Brazil.



3. Capacity Building for Green Urban Growth

COUNTRY N/A
REGION Global
SCALE Global
SECTOR Urban
TECHNICAL AREAS Land readjustment, land value capture, transit-oriented development, flood-risk management
GRANT AMOUNT US\$500,000
PARTNERS SMG, Seoul Housing Corporation, KRIHS

PROGRAM GOAL *To build and strengthen Green Growth strategic, practical, and technical know-how to improve urban land use planning, and contribute to resilient, participatory, and environmentally and socially inclusive urban growth*

Urban populations are expected to double in developing countries within a generation. Tools for green land management, including land readjustment, land-market assessment, and land-based financing can help create sustainable, inclusive Green Growth, but are often costly and inaccessible.

Many developing countries are eager to implement new approaches, markets, technologies, and values for green

economic growth. These new approaches can build and strengthen Green Growth strategic, practical, and technical know-how to improve urban land use planning. They can also contribute to resilient, participatory, and environmentally and socially inclusive urban growth.

This KGGTF program, through the Capacity Building for Urban Green Growth Initiative, has developed a series of e-learning programs that encourage city leaders and practitioners to operationalize innovative approaches. These programs provide specific entry points and practical tools for facilitating Green Growth, inclusiveness, and resilience, and are designed to be “living courses,” in which participants bring their own problem statements and then jointly create solutions. The Initiative also facilitates peer-to-peer learning through knowledge exchange workshops and virtual practitioner networks, and has developed customized learning programs in China, Mexico, and India. The initiative also makes technical assistance available to Vietnam, so that the country can pilot land readjustment approaches to redeveloping poor neighborhoods.

4. Capacity Building for Leaders in Energy-efficient Urban Transport Planning

COUNTRY N/A
REGION Global
SCALE Global
SECTOR Transport
TECHNICAL AREAS Integrated land use and transport
GRANT AMOUNT US\$500,000
PARTNERS KOTI

PROGRAM GOAL *To help connect, share, and develop technical capacity among leaders, including senior decision makers who influence urban transport policies, as well as to apply green transport principles and methods to promote economic growth*

Cities are important engines of economic growth, but rapid urbanization also can cause severe congestion, poor air quality, increased road accidents, and rapid increases in energy consumption. Transportation is a critical issue that affects people’s health, economic prospects, and well-being—and the sustainability of cities.

5. Quantifying Tradeoffs between Water and Energy Investments

COUNTRY Morocco
REGION MNA
SCALE National
SECTORS Water, energy
TECHNICAL AREAS Water-energy nexus, climate-resilient Green Growth
GRANT AMOUNT US\$400,000

PROGRAM GOAL *To promote global knowledge through the Green Growth knowledge platform, providing a water-energy nexus toolkit to help integrate water and energy resource planning*

This program is facilitating knowledge exchanges between the water and the energy sectors, and advocating for optimizing energy-water interdependency, regionally and globally. Drawing from international experience in China, Korea, and South Africa, this program will develop models, a series of technical tools, and policy materials and guidance that will assist planners, energy specialists, and the private sector in integrating energy-water planning into Green Growth plans. The program will assess economic and social trade-offs in Morocco resulting from water, energy, and power expansion, and will demonstrate the importance of integrating energy, food, and water investments.

REGIONAL LEVEL

1. Regional Resource Recovery and Recycling

COUNTRY N/A
REGION LAC
SCALE Regional
SECTOR Urban
TECHNICAL AREAS Solid Waste Management (SWM), waste recovery, recycling
GRANT AMOUNT US\$150,000

PROGRAM GOAL *To develop knowledge products that foster innovation and highlight best practices for policies, technologies, and practices that support and apply green and inclusive growth strategies in the LAC region’s solid waste and green city initiatives*

Many countries are moving away from disposal-focused approaches to solid waste management by reducing the volume of solid waste through reuse and recycling. Applying tools that support and apply green and inclusive growth strategies in pilot countries will help foster the greening of waste management, benefiting more than 40 projects in a variety of sectors.

NATIONAL LEVEL

1. Instruments for Urban Redevelopment under the Program

COUNTRY Mexico
REGION LAC
SCALE National
SECTOR Urban
TECHNICAL AREAS Urban regeneration, affordable housing
GRANT AMOUNT US\$150,000
PARTNERS KRIHS, SMG

PROGRAM GOAL *To strengthen intra-urban redevelopment programs through a framework and package of incentives, including funding, subsidies, guarantees, access to equity funding, and technical advice*

In Mexico, the urban population in 10 metropolitan areas and 50 cities doubled over the last 30 years. Most new urban areas are developed with low-density housing development that results in a patchwork urban development pattern that forces low-income families to live far from urban centers. Such urban growth patterns can result in social instability and decaying infrastructure. To help address unsustainable urban expansion, the Mexican government initiated the Integrated Sustainable Urban Development Program, whose methodology and incentive package are geared toward smart-growth and sustainable principles. Complementing the program by offering cities alternatives to urban expansion are programs at the Federal Mortgage Corporation and National Housing Commission.

2. Urban and Housing Programmatic Approach

COUNTRY Mexico
REGION LAC
SCALE National
SECTOR Urban
TECHNICAL AREAS Urban regeneration, affordable housing
GRANT AMOUNT US\$250,000
PARTNER LH

PROGRAM GOAL *To support the Government of Mexico to increase the sustainability and inclusiveness of its urban sectors and improve affordability and diversification of the housing markets in them*

Mexico’s 383 cities, home to 78 percent of the country’s population, are engines of economic growth and prosperity, but rapid urbanization through a large spatial expansion, decades-old low-density urban growth, and decaying infrastructure have led Mexican officials to pursue Green Growth strategies. The urban growth pattern for the last 30 years has been large spatial expansion that led to a low-density development and inefficient resource use. New urban sustainability and greening efforts will inform policy reform, design and implement instruments for sustainable and inclusive cities, and foster learning and knowledge sharing.

3.

Studying Options for Developing the Eastern Freight Corridor

COUNTRY India
REGION SAR
SCALE National
SECTOR Urban
TECHNICAL AREAS Eco-industrial park, urban development
GRANT AMOUNT US\$400,000
PARTNERS KRIHS

PROGRAM GOAL *To analyze economic and physical development opportunities associated with connectivity improvements through a nearly 2,000-kilometer industrial corridor*

This multi-year program for Indian officials, including the Ministry of Urban Development, focuses on low-carbon strategies and identifies options for maximizing those opportunities, including good policies and programs. The team is also summarizing the socio-economic and demographic profile of the six states lining the corridor, and has identified the most promising three sub-regions in the state of Uttar Pradesh for potential industrial and logistic hubs for continued in-depth studies.

4.

Greening Freight Transport and Logistics

COUNTRY Georgia
REGION ECA
SCALE National
SECTOR Transport
TECHNICAL AREAS Low-carbon freight, transport and logistics, integrated transport systems
GRANT AMOUNT US\$250,000
PARTNERS KOTI

PROGRAM GOAL *To help Georgia develop a national strategy for freight transport and logistics using green logistics for road-to-railway and multimodal freight corridors*

Georgia remains heavily reliant on imported energy to meet its transportation needs, and road transport is a significant contributor to the country's air pollution. Georgia's post-conflict strategy includes using Green Growth strategies to improve transport connectivity and increase private sector efficiency and trade. The program includes exploring policy and investment options to green freight transportation by increasing the use of cleaner, lower-carbon transportation modes, such as fuel-efficient and low-emission trucks. The program supports the client in developing an investment program for freight corridors, strengthening fiscal and pricing measures, and improving collaboration with key trade partners. Expected results include creating an implementation timeframe, evaluating technology and trans-shipment options, strengthening technical institutions, developing logistics centers, and expanding container terminals and other cargo-handling capacity. The Korean Transport Institute is sharing its national sustainable transport strategy and cutting-edge research experience in green freight and railway transport and logistics.

5.

Promoting Climate Resilience for MNA Roads

COUNTRY Morocco
REGION MNA
SCALE National
SECTOR Transport
TECHNICAL AREAS Road material, construction tech
GRANT AMOUNT US\$200,000

PROGRAM GOAL *To support the Moroccan Ministry of Transport to analyze green transport technologies and assess critical road sections, while providing examples of green transport options*

Climatic events can create major disturbances to the economy. This KGGTF program will produce technical recommendations for climate-resilience measures to sustain national transport systems. Technical audits and assessments examine vulnerability to climate variables, including intense precipitation, flooding, and landslides, as well as the stability of structure and substructure, hydraulic works, and geotechnical characteristics. The assessment will propose detailed, cost-effective solutions for rehabilitation and maintenance work, which could include the use of different materials, and the use of slope stabilization techniques, including vegetation.

6.

Piloting Green Transport Solutions for City Transit Authorities

COUNTRY Poland
REGION ECA
SCALE National
SECTOR Transport
TECHNICAL AREAS Smart card, public transport ridership, integrated transport system
GRANT AMOUNT US\$625,000
PARTNERS KOTI, KRIHS

PROGRAM GOAL *To improve public transport management in cities where newly established transit authorities want to improve inter-municipal coordination, increase the use of public transportation, and encourage city-level CO₂-emission accounting*

Energy-efficient measures and integrated transport networks support sustainable development in cleaner and greener cities and regions. This KGGTF-funded program will help Poland adopt and adapt Korea's successful experience with reducing transport carbon dioxide (CO₂) emissions, in an effort to align with European Union energy and climate guidelines for sustainable urban mobility.

7.

Enhancing Green Urban Development

COUNTRY Uganda, Tanzania, and South Africa
REGION AFR
SCALE National
SECTOR Urban
TECHNICAL AREAS Urban ecosystems valuation, green urban growth strategies
GRANT AMOUNT US\$1,000,000
PROGRAM GOAL *To assist cities that want to use Green Growth principles and innovations*

Rapid urbanization is a welcomed continent-wide trend in Africa. This program will help new, rapidly growing cities to avoid inefficiencies, pollution, and other potentially negative urban growth factors by employing early interventions to enhance economic and spatial growth. Assisting national and local governments in cities in Uganda, Tanzania, and South Africa, this program is helping to identify and diagnose key bottlenecks and constraints to sustainable, green development. It is also promoting and strengthening the integration of sustainable management, environmental and green development initiatives, and activities in future development strategies.



MUNICIPAL LEVEL

1.

Rio Low-Carbon City Development Program

COUNTRY Brazil
REGION LAC
SCALE Municipal
SECTOR Urban
TECHNICAL AREAS Low-carbon city development
GRANT AMOUNT US\$625,000
PARTNERS Gwangju City, UNEP, KEI

PROGRAM GOAL *To support sustainable economic growth and implementation of Rio de Janeiro's ISO-certified, low-carbon city program*

Spatially constrained and environmentally fragile, the Rio metropolitan area is susceptible to environmental disaster. Two innovative programs are helping Brazil's second largest metropolitan area to improve social services and decrease environmental degradation. The first of its kind, the low-carbon city development program in Rio is providing tools to quantify and track GHG emissions, helping the city to promote resource efficiency while creating green jobs. This new harmonized approach leverages financial and technical tools to help structure and implement future municipal low-carbon investments.

2.

Green Vision for the Rio de Janeiro Metropolitan Region

COUNTRY Brazil
REGION LAC
SCALE Municipal
SECTOR Urban
TECHNICAL AREAS Integrated urban development, metropolitan governance, GHG Emissions
GRANT AMOUNT US\$320,000
PARTNERS SMG

PROGRAM GOAL *To build a foundation for long-term sustainable planning and governance*

The green vision for the Rio de Janeiro metropolitan region program aims to build a foundation for long-term sustainable planning and governance. This KGGTF-funded program provides technical assistance to build urban planning capacity, and develops and disseminates urban green growth knowledge products and lessons learned in partnership with the Seoul Metropolitan Government.

3.

6C Central America Urbanization Review

COUNTRY Panama
REGION LAC
SCALE Municipal
SECTOR Urban
TECHNICAL AREAS Urbanization review
GRANT AMOUNT US\$300,000
PARTNERS KRIHS, MOLIT, GGGI, SMG, KOTI

PROGRAM GOAL *To develop an analytical framework and policy guidelines for sustainable urban growth built on principles of high density, mixed land-use, smart growth, transit-oriented development, and environmental protection*

To help Panama cope with uncoordinated urban sprawl fueled by population growth, this program enhances government capacity to manage green urban planning. Korean experts are sharing lessons and experiences in urban and transit development, and financing instruments for mixed land-use.

4.

Technical Assistance to Promote Integrated Green Urban Planning in Addis Ababa

COUNTRY Ethiopia
REGION AFR
SCALE Municipal
SECTOR Transport
TECHNICAL AREAS Integrated land use and transport
GRANT AMOUNT US\$1,100,000
PARTNERS KRIHS, KOTI

PROGRAM GOAL *To help Addis Ababa Urban Planning Institute revise and implement the city's master transportation plan*

With a population of 3 million, and growing 4 percent a year, Addis Ababa faces rapid urbanization that strains its infrastructure and services and poses serious challenges to the city's development and its decade-old master plan. This program is providing technical assistance to the city's Urban Planning Institute (UPI) to help revise and implement the master plan. The program supports an international conference that builds planners' capacity by highlighting the experiences of similar cities, and paying for local and international consultants to work on master plan revisions. Bringing together Addis Ababa and Seoul municipal administrations and the UPI and the Korean Research Institute for Human Settlements, this program also facilitates Korean Transport Institute training programs on public bus systems. Trainings are on transport strategies, and related issues for stakeholders, including the Addis Ababa Transport Branch, Roads Authority, Oromiya Roads Authority, and the Federal Ministry of Transport. The program links to the World Bank Group transport-sector support program and the urban local-government development program.



5.

Sustainable and Inclusive Urban Green Growth

COUNTRY Indonesia
REGION EAP
SCALE Municipal
SECTOR Urban
TECHNICAL AREAS GHG emissions, integrated land use and transport, SWM, climate finance
GRANT AMOUNT US\$150,000
PARTNERS KRIHS

PROGRAM GOAL *To help city leaders choose energy-efficient solutions for infrastructure and develop a sustainable urban energy and emissions plan*

The inclusive Green Growth for East Asia-Pacific cities program is helping to address rapid urbanization in the city of Surabaya by helping the government learn good practices in Green Growth planning. Incorporating methodologies developed from Korea's inclusive Green Growth experience, the program will help Surabaya leadership promote Surabaya's low-carbon city development agenda, leading to improved capacity for policy-making and urban energy and green investment management. These efforts should, in turn, attract private-sector investments to improve the local economy. This approach can be used in other cities in other countries facing similar challenges.

6.

Sustainable Urban Growth Analytics and Planning Systems: Technical Advisory Services to Three Large Indonesian Cities

COUNTRY Indonesia

REGION EAP

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS Spatial urban planning, GIS

GRANT AMOUNT US\$375,000

PARTNERS KRIHS, SMG

PROGRAM GOAL *To identify trends in cities' spatial expansion and assist local governments in improving urban spatial planning*

Indonesia is one of the most urbanized countries in Asia, with an urban population share of 54 percent in 2010. The World Bank Group, through support from KGGTF, is supporting the Government of Indonesia in promoting urban Green Growth through improved spatial planning and integrated databases. A sustainable urban growth analytics and planning systems program team is identifying trends in cities' spatial expansion in order to strengthen capacity in sustainable urban spatial growth analytics. The team is also linking sustainable growth analytics to improved spatial and investment planning. The program analyzes the determinants of spatial growth patterns and implications for green urban growth, and outlines sustainable infrastructure investments in three cities. It has provided selected local government officials with hands-on spatial planning training and will also host a national workshop with governments to discuss policy implications stemming from study results. Participants will include urban stakeholders in the central government, selected local governments, and partners from KGGTF and the Seoul Metropolitan Government.

7.

Mainstreaming Green Growth into Karachi's Business Plan

COUNTRY Pakistan

REGION SAR

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS Green urban growth strategies, transport planning, drainage, SWM

GRANT AMOUNT US\$400,000

PARTNER KRIHS

PROGRAM GOAL *To support analytical work and knowledge exchange on master infrastructure investment planning to move the KSDP along from simply a vision to a true operational business plan*

With a metropolitan population of 17 million (expected to rise to 28 million by 2030), Karachi contributes 20 percent of Pakistan's the GDP and nearly 45 percent of the national economic value-added, despite many challenges to competitiveness and livability. The Karachi Strategic Development Plan (KSDP) 2020 lays a foundation for future policy and investment planning. The plan is guided by principles safeguarding the quality of life, promoting inclusivity, and fostering sustainability, and it includes green initiatives in transport, drainage, solid waste management, and other sectors.

8.

Greater Beirut Urban Transport Project

COUNTRY Lebanon

REGION MNA

SCALE Municipal

SECTOR Transport

TECHNICAL AREAS BRT, public transport pricing, smart card, ITS

GRANT AMOUNT US\$200,000

PROGRAM GOAL *To improve traffic conditions, improve energy efficiency, rationalize transport demand, and reduce GHG emissions in Beirut's most congested corridor*

About half of the country's 1.2 million vehicles operate in the Greater Beirut Area, where most citizens travel with private cars. Over half of country's energy consumption stems from urban transport. The program is conducting a detailed study of Beirut's most congested corridor to improve traffic conditions, improve energy efficiency, rationalize transport demand, and reduce GHG emissions. Recommended improvements for the corridor will inform authorities' plans for a new mass transit project, and guide the implementation and scaling of practical solutions to alleviate congestion. The program will also review transport pricing—including gasoline, taxi fares, and tariffs for the planned transit system—as well as review social implications, especially for the poor.

9.

Achieving Green Growth through Green Transport ICT

COUNTRY Philippines

REGION EAP

SCALE Municipal

SECTOR Transport

TECHNICAL AREAS Road safety data, apps, open source data, ITS

GRANT AMOUNT US\$400,000

PROGRAM GOAL *To strengthen sustainable and inclusive city growth by helping to develop an open-source platform and building university-level technical capacity*

With safer and more efficient transportation networks, people living in large cities benefit from reduced travel times, accidents, and emissions. Linked to a road safety data-collection-and-analysis platform, this program promotes innovative approaches to building the capacity of transport agencies to improve transport planning and management.

10.

Sustainable Urban Transport for the City of Kyiv

COUNTRY Ukraine

REGION ECA

SCALE Municipal

SECTOR Transport

TECHNICAL AREAS Smart card, public transport ridership, ITS, fare integration, parking policy

GRANT AMOUNT US\$350,000

PARTNERS Kyiv City Administration, City Planning Institute

PROGRAM GOAL *To support Kyiv's city strategy to identify transport as a top priority, enhancing traffic management and improving urban mobility as keys to strengthen the city's economic competitiveness*

Kyiv, the capital of the Ukraine and the eighth largest city in Europe, faces a number of urban transport challenges. Public transport systems—including metro, municipal and private buses, trams, and trolley buses—operate often near capacity on poorly maintained, Soviet-era legacy systems. The city's transportation infrastructure has deteriorated due to a lack of investment and weak system integration. Furthermore, city plans do not reflect spatial expansion of the city, the growing use of motorized vehicles, and changing passenger mobility patterns. Traffic congestion has increased travel time and costs and traffic accidents, while contributing to deteriorating air quality and declining productivity. To support Kyiv's city strategy, the program assesses and benchmarks the city transport systems, recommends improvements in public transport, strengthens city administration transport planning capability, and develops an integrated city traffic management scheme.

YEAR

2

25 PROGRAMS

GLOBAL LEVEL

1.

Civic Innovations: Solving Old Problems in New Ways (Green Growth Hackathon)

COUNTRY Mongolia

REGION EAP

SCALE Global

SECTOR Information and communication technology

TECHNICAL AREAS ICT, energy efficiency, innovation, and job creation

GRANT AMOUNT US\$430,000

PARTNERS SUNY University, South Korea

PROGRAM GOAL *To engage the country's technical community through a hackathon to identify innovative solutions to problems and challenges*

With two-thirds of the country living in urban areas, demand for services in Mongolia outpaces supply. KGGTF's two-year program supports the government's efforts to find green options. This program will increase the use of digital technologies, open data, and on-demand information to improve public and private services and to save time and money. Self-reporting, real-time data, and embedded sensors can enable an information infrastructure that alleviates traffic congestion. Such measures can save citizens time and reduce gas costs by an estimated US\$115 billion a year. Those data strategies can also increase our understanding of the effects of transportation on city sustainability. Phase one will focus on the city of Ulaanbaatar, and phase two will turn to other urban areas across the country.

2.

Training Hub—Transportation for Green Growth

COUNTRY N/A

REGION Global

SCALE Global

SECTOR Transport

TECHNICAL AREAS Evaluation for growth and reduction of external costs

GRANT AMOUNT US\$500,000

PARTNERS KOTI, other Multilateral Development Banks, technical staff of national transport agencies

PROGRAM GOAL *Integration of Green Growth objectives into project evaluation*

The program will use a new methodology to count the value of reduced GHG emissions, reduced health costs of local air pollution and the reduction of road safety risks.

It will go beyond classical (partial equilibrium) cost benefit analysis in accounting for trade and agglomeration economies and the mechanisms through which transport contributes to macroeconomic development. A training will focus on multipliers in international organizations and national agencies to implement transport projects that serve Green Growth.

3.

City Creditworthiness Academy and City Climate Planner Certification Program

COUNTRY N/A

REGION Global

SCALE Global

SECTOR Urban

TECHNICAL AREAS City climate planner certification, city climate financing

GRANT AMOUNT US\$1,370,000

PARTNER Gwangju City, South Korea

PROGRAM GOAL *To share knowledge of challenges and GHG emissions expertise to build sustainable cities*

Goals to improve efficiency, resilience, and competitiveness are driving the building of greener cities. Sustainability need not come at the expense of growth, but the building of sustainable cities requires knowledge of challenges and GHG emissions expertise. This three-year, US\$1.37 million program, which will reach 150 cities by mid-2015 and completed a strategy paper and roadmap for developing a City Climate Planner Certification

program. The program team has finalized an emissions inventory training program, and the program certified its first group of professionals in the summer of 2015. The program is also helping build cities' capacity to access private capital to finance low-carbon, climate-resilient infrastructure. The Low-Carbon Livable Cities Initiative's City Creditworthiness Academy held five-day workshops in Colombia, Tanzania, and Korea in 2014 for municipal finance officers from several dozen regional cities. The program is held its final regional event in Senegal in 2015. Program staff are summarizing outcomes from participating cities.

4.

Green Smart City Development with Citizen Participation

COUNTRIES India, Tunisia

REGION Global

SCALE Global

SECTOR Urban

TECHNICAL AREAS e-government, cadastre, geographical information system

GRANT AMOUNT US\$800,000

PARTNERS KRIHS, LH

PROGRAM GOAL *To develop a national master plan to enable Tunisian and Mumbai authorities to access digital land information to address urban challenges*

Cities face a number of challenges to green urban development, including poor land cadastre systems (a comprehensive land ownership register), poor public services and living environments, and high unemployment and poverty-related violence. These challenges call for innovative and tested urban management solutions that promote shared prosperity and reach the poorest 40 percent of citizens in the world. Following on the heels of the World Bank's e-government program on ICT for urban management, this KGGTF program tackles city challenges. Among its goals, the two-year program will pilot ICT innovations to help authorities address urban challenges in Mumbai, India's capital, and a city of 19 million people.

This World Bank Group KGGTF-funded program provides examples for cities on how to overcome economic growth obstacles. Using South Korean experiences from Seoul, a global leader in e-government, the KGGTF will create a case study to help Tunisia acquire data for its cadastre system. The program will also share knowledge on South Korean land management with Tunisia and other developing countries. For Mumbai, KGGTF program training workshops will demonstrate best practices to government officials. The program will also study establishment of a civil participation system (CPS) for Mumbai, including piloting CPS applications for the Mumbai Municipal Corporation, whereby citizens will be able to submit information through mobile-phone-based surveys, hotlines, and user-generated maps. Applications will include community mapping for urban disaster risk management. This Green Smart City program is part of a larger effort in partnership with the 72-member World e-Government Organization of Cities and Local Governments, Seoul Metropolitan Government, and the Korea Ministry of Land, Infrastructure, and Transport.

5.

Solid Waste Management Policies and Technologies

COUNTRY Benin

REGION Global

SCALE Global

SECTOR Urban

TECHNICAL AREAS solid waste management, waste policy

GRANT AMOUNT US\$225,000

PARTNER SLC

PROGRAM GOAL *To share knowledge about how governments can manage waste and promote economic growth and prosperity*

Dealing with solid waste is an enormous challenge for many countries facing rapid urbanization and economic growth. In many countries, solid waste management contributes significantly to social stratification: waste pickers descend on waste sites in poor urban areas with especially poor solid waste management services. But it can be more equitable; governments can harness waste to generate profits, lower greenhouse gas emissions, and contribute to shared prosperity, while reducing poverty and improving quality of life. Green waste management can also save billions of dollars for citizens, cities, and nations. Countries such as the Republic of Korea have used technology to harness solid waste management to tackle similar challenges since the 1960s.

Peer-to-peer learning is one way this KGGTF program is sharing knowledge about how governments can manage waste and promote economic growth and prosperity. Korea will pay forward lessons from its experience for the benefit of Benin. The program team will first assess the needs of participating cities before producing case studies outlining lessons learned and best practices, translated into multiple languages and delivered over an online platform. Topics covered by the case studies will include the solid waste value chain—from collection and transport, through to disposal, diversion, and energy recovery. The program team is also organizing knowledge events, webinars, workshops, and learning visits for authorities facing acute solid waste management challenges. The case studies combined with technical knowledge will help city authorities put plans into action. As this cross-sector collaboration strengthens knowledge related to common challenges, the program will support on-going World Bank Group initiatives, including municipal and global solid waste management programs, a regional and city improvement program, the Benin Emergency Urban Environment Program, and the Benin Cities Support Program.

REGIONAL LEVEL

1.

Green Cities and Low-Carbon Industries Initiative

COUNTRIES Sub-Saharan Africa

REGION AFR

SCALE Regional

SECTOR ICT

TECHNICAL AREAS Eco-industrial parks, manufacturing

GRANT AMOUNT US\$600,000

PARTNERS KEA, KICOX

PROGRAM GOAL *To improve efficiency in industrial processes in African cities, while enhancing climate and environmental resilience*

Cities and their industries drive economic growth, but industrial cities also consume vast quantities of energy and resources, and generate huge amounts of waste. This two-year program builds on South Korea's experience and expertise, learning from country's ability to save money by increasing efficiency. This strategy frees energy, natural, and fiscal resources for other areas of urban development. The program analyzes material flows, reviews and consolidates resource-use audits, and identifies ICT measures to improve efficiencies in target cities. The program will also sequence and coordinate public and private initiatives and investments on green measures for urban industries.

2.

Negawatt Challenge for Energy Efficiency

COUNTRIES Ghana, Kenya

REGION AFR

SCALE Regional

SECTORS ICT, Energy

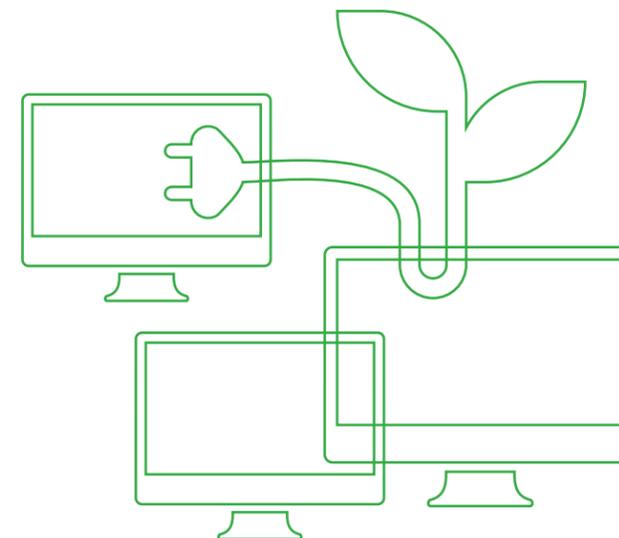
TECHNICAL AREAS ICT, Energy Efficiency, innovation, job creation

GRANT AMOUNT US\$500,000

PARTNERS Accra and Nairobi city authorities; utilities and energy regulators in both countries; private sector, academia and research institutions, tech innovation communities in both cities.

PROGRAM GOAL *To pioneer an open innovation model for private and public sector engagement in the process of identification of ICT-enabled energy efficiency solutions for Green Growth*

With rapid urbanization in Africa, public sector ability to deliver high-quality services becomes increasingly constrained. While a number of initiatives aim to expand access to energy, a significant emphasis should be placed on the efficient use of existing resources. KGGTF's two-year Negawatt Challenge initiative aims to highlight how digital technology solutions can improve energy efficiency for fast-growing cities in Ghana and Kenya. It does so through a competition and a design-thinking methodology, which provide a platform to engage local, national, and global problem-solvers in the identification of local energy challenges and build capacity of high-potential entrepreneurs to adapt lean business models and develop innovative software and hardware to respond to these challenges. Another objective is to marry indigenous knowledge with international know-how, as is exhibited by South Korean technology companies and the public sector. After the successful kickoff of the initiative, the Negawatt Challenge was successfully scaled up in Tanzania and Brazil.



3. Africa Sustainable Transport Forum

COUNTRIES Sub-Saharan Africa

REGION AFR

SCALE Regional

SECTOR Transport

TECHNICAL AREAS Green transport strategy and policy

GRANT AMOUNT US\$1,000,000

PARTNERS UNEP, KOTI, Volvo Research Foundation, African Development Bank, African Transport Policy Program

PROGRAM GOAL *To share knowledge and tools to help Africans create and implement policies, programs, and demonstration pilots for regional, national, and city strategies*

Poor intra- and inter-regional connectivity severely constrains Africa's development. Traditional transport programs rely on major infrastructure investments, but Africa needs sustainable transport systems that address connectivity while promoting inclusive, shared prosperity. The KGGTF's three-year Africa Sustainable Transport Forum (ASTF) program aims to provide African cities with tools to foster resilient and sustainable

Green Growth transport policies—policies that encourage environmentally sound, low-carbon, inclusive, transport solutions. The KGGTF is providing technical assistance and Korean experience consistent with World Bank Group's initiatives as well as with Rio+20 commitments to provide US\$175 billion for sustainable transport projects globally over 10 years. Program tools include African public continental data and statistics: a non-motorized transport training and policy toolkit pilot in Uganda; and an investment cost-benefit analysis tool that considers environment, road safety, and accessibility. The program will also support the development of policies to reduce particulate emissions from heavy-duty diesel vehicles, and help facilitate access to funding. The program presented South Korean examples of successful transport initiatives at workshops in 2015, and at the 2016 High-level Conference for the Action Plan for Sustainable Transport in Africa. Partners in the development and implementation of the ASTF include UNEP and the African Transport Policy Program.

4. Streets as Drivers of Green Growth and Urban Prosperity

COUNTRY Sub-Saharan Africa

REGION AFR

SCALE Regional

SECTOR Transport

TECHNICAL AREAS Walkable cities, pedestrian planning

GRANT AMOUNT US\$600,000

PARTNERS KOTI, SMG, SI, LX

PROGRAM GOAL *To increase safety, reduce travel time, and improve access to socio-economic services*

In many cities in developing countries, people take 40 to 60 percent of all trips by walking to public transport. Pedestrian space is often not separate from the road, and walkers compete with street vendors, shops, parked cars, motorcycles, and bicycles. Government statistics rarely measure the pedestrian environment, which causes leaders to neglect it in plans and policies. Pedestrian-unfriendly cities tend to affect the economically and socially excluded most negatively—the people least likely to have access to efficient motorized transport. To promote sustainable urban prosperity and Green Growth, this program aims to assess and improve pedestrian access and connectivity in three African cities: Dar es Salaam, Tanzania; Kampala, Uganda; and Abidjan, Ivory Coast.

5. Developing Skills to Support Transport and Logistics

COUNTRY Uganda

REGION AFR

SCALE Regional

SECTOR Transport

TECHNICAL AREAS Green transport sector skill development

GRANT AMOUNT US\$400,000

PARTNERS KOTI, MoLIT, Korea Integrated Logistics Association

PROGRAM GOAL *To assess Ugandan skills needs in transport and warehousing, including jobs emerging from implementation of green technologies*

Increasing the competitiveness of logistics sectors for transporting vast oil, gas, and mineral resources is a critical factor in shaping Green Growth strategies in many countries. Working with the Ugandan Government, KGGTF's program is providing technical assistance to improve African competitiveness. This program is developing a regional methodological framework for assessing skills needs and skills supply as countries increasingly incorporate green methods, such as retrofitting and maintaining hybrid vehicles for urban transport, into transport and logistics.

6. Implementing Green Solution for Waste Management

COUNTRY Argentina

REGION LAC

SCALE Regional

SECTOR Urban

TECHNICAL AREAS SWM, food waste

GRANT AMOUNT US\$400,000

PROGRAM GOAL *To produce options to help authorities make strategic decisions, policies, and investments*

To support LAC regional initiatives, which have already reduced open dumps by an estimated 20 percent in the last decade, this KGGTF's two-year program is partnering with local experts to review global case studies and select best practices in greening solid waste management. Working with Colombia and Argentina, the program team will also help countries put lessons learned into practice. This includes improving data resources for solid waste management, creating national green solid waste management investment programs, modeling management packages, creating source segregation and collection systems, and providing training for food waste management.

NATIONAL LEVEL

1. Using ICT to Increase Green Competitiveness

COUNTRY Guatemala

REGION LAC

SCALE National

SECTOR ICT

TECHNICAL AREAS EIPs, EE

GRANT AMOUNT US\$605,000

PARTNERS National Committee for Clean Production, PRONACOM (National Agency for the Promotion of Competitiveness), KEA, KICOX

PROGRAM GOAL *To stimulate small- and medium-sized enterprises (SMEs) to adopt clean production protocols and technologies, while improving SME competitiveness*

Supporting national programs to promote efficient industries, KGGTF's two-year program in Guatemala is providing technical assistance to implement the country's energy policy. Program activities include institutional capacity-building to develop strategies, policies and programs to stimulate Clean Production; promotion of clean production among productive sectors that is being achieved through the support of a voluntary agreement on clean production between the government and the Association of the Chemical Industry (GREQUIM); and Information generation and opportunity analysis for investments on clean production.

2. Innovation and Green Growth for Rural Kosovo: Investing and Scoping

COUNTRY Kosovo

REGION ECA

SCALE National

SECTOR ICT

TECHNICAL AREAS ICT, broadband, innovation, job creation

GRANT AMOUNT US\$485,000

PARTNERS National IT Industry Promotion Agency of Korea, European Commission

PROGRAM GOAL *To serve as a model for programming the rollout of broadband infrastructure in rural areas and its utilization for green jobs and digital businesses*

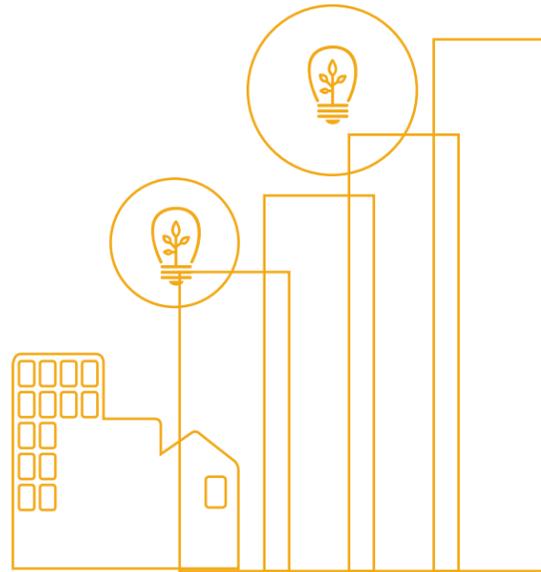
The government of Kosovo recognizes that broadband connectivity enables Green Growth. KGGTF's two-year program aims to provide technical assistance to help Kosovo design a rural broadband program to give access to broadband internet for everyone in selected underserved areas. Moreover, its objective is to identify pilot opportunities to save costs and increase revenue by applying green ICT in rural areas in both the public and private sectors.

3.

Enhancing Green Economic Development in Secondary Cities

COUNTRY Rwanda
REGION AFR
SCALE National
SECTOR Urban
TECHNICAL AREAS Urban development, local economic development, ICT
GRANT AMOUNT US\$650,000

PROGRAM GOAL To enable Rwanda to develop the Green Growth economic potential of secondary cities



The Rwandan government's 2013 Economic Development and Poverty Reduction Strategy envisions urbanization as a driver of growth. Kigali—Rwanda's national business, service, industrial, and administrative hub—already plays a pivotal role in developing the national economy. However, environmental degradation has become a serious concern. Given that, the Government of Rwanda is pursuing a more balanced urban-development policy for maintaining Kigali's current economic status, while developing economic growth in some of these secondary urban areas.

The activities under this KGGTF program have been critical in shaping the lending project components and creating the basis for implementation, particularly on:

- (i) creating an inclusive upgrading plan and apply lessons learned in other secondary cities;
- (ii) developing options for sustainable local economic development programs in Rwanda's six secondary cities;
- (iii) utilizing ICT tools in planning;
- (iv) supporting the integration of resilience and sustainability principles in the selection and implementation of infrastructure projects to be supported under the lending operation; and
- (v) supporting the design of a performance-based grant for secondary cities.

The program is closely integrated with the Rwanda Urban Development Project (US\$95 million). The project was delivered to the World Bank in 2016 and the TF support from Korea GG TF was instrumental in financing technical inputs.

4.

Spatial Transformation Strategy

COUNTRY Sri Lanka
REGION SAR
SCALE National
SECTOR Urban
TECHNICAL AREA Spatial transformation
GRANT AMOUNT US\$500,000

PROGRAM GOAL To create a spatially differentiated development strategy that encompasses Green Growth principles

As Sri Lanka moves ahead with its Strategic Cities Program to catalyze growth and reduce poverty, KGGTF's two-year program there is working with the government to develop a strategy that will include policy recommendations and targeted investments to create a system of well-planned and sustainable cities by 2020. The program complements World Bank Group efforts in support of the Sri Lankan government's urban vision.

5.

Promoting Green Growth in Industrial Zones

COUNTRY Vietnam
REGION EAP
SCALE National
SECTOR Urban
TECHNICAL AREAS EIPs
GRANT AMOUNT US\$750,000
PARTNER KICOX

PROGRAM GOAL To create a scalable model for Vietnam's industrial zones

Vietnam's consumption of electricity has increased by 400 percent over the last decade, in part due to low-efficiency, obsolete industrial technologies. Government studies show that the cement, textile, steel, and food processing sectors would use at least 20 percent less energy if they use managed efficiently.

Using examples from Korea and International Finance Corporation experiences in Bangladesh and China, this KGGTF's two-year program will demonstrate clean, efficient energy usage in multiple neighboring factories to show local authorities, the private sector, zone management companies, and government entities how to create low-carbon industrial parks. Through workshops with these stakeholders, the program will share case studies and raise awareness about innovative technologies for greening industrial parks. Interventions planned for pilot cities will reduce carbon dioxide emissions by 100,000 metric tons while decreasing freshwater use by 500,000 cubic meters annually.

6.

Promoting the Use of Green Construction Technology in the Road Sector

COUNTRY India
REGION SAR
SCALE National
SECTOR Transport
TECHNICAL AREAS Road material, construction technology
GRANT AMOUNT US\$500,000
PARTNER KICT

PROGRAM GOAL To share knowledge about options and innovative materials based on successful examples from Korea and other countries

India has been implementing a large road infrastructure program since 2000. This KGGTF program promotes the use of green construction technology in the road sector and addresses an urgent need for sustainable construction practices. Traditional low-productivity construction technologies use a great deal of energy and emit a great deal of greenhouse gases. This program directly contributes to a road modernization project in Rajasthan that aims to bolster the local rural economy by improving transit connectivity in remote rural areas. Mineral-rich Rajasthan state will save money and create local green jobs by building roads using its large quantities of quarry waste, along with materials such as fly ash and low-cost concrete. The program is organizing a workshop for officials from the Ministry of Road Transport and Highways, India's National Highway Authorities, National Rural Roads Development Authority, and Rajasthan's Public Works Department. The program will then pilot a selection of green options for at least 10 percent of roads that India's national program will build.



7.

Regional Economic and Infrastructure Investment Strategy

COUNTRY India
REGION SAR
SCALE National
SECTOR Urban
TECHNICAL AREAS EIPs, urban development
GRANT AMOUNT US\$400,000

PROGRAM GOAL *To help government partners to develop an implementation strategy to bolster accessibility and productivity in selected economic clusters, and reach many of Uttar Pradesh's 200 million citizens*

Continuing support for building the Amritsar-Kolkata freight corridor (previously known as the Eastern Dedicated Freight Corridor), KGGTF's regional economic and infrastructure investment strategy program integrates economic development, urban planning, and transportation. The program aims to improve efficiency, promote resilience to extreme weather, reduce urban congestion, and increase regional competitiveness. Following up on demographic and economic studies and development options produced in the first year of this project, KGGTF's Year 2 program assesses selected sub-regions of poverty-stricken Uttar Pradesh, India's most populous state. The program examines economic structure and patterns of industrial clustering, infrastructure, and logistics. The program, funded by the Australia Agency for International Development, also supports related World Bank Group initiatives under the umbrella of the SAR Urbanization Flagship.

8.

E-Waste Advisory Project

COUNTRY India
REGION SAR
SCALE National
SECTOR Urban
TECHNICAL AREAS E-waste, recycling, SWM
GRANT AMOUNT US\$840,000
PARTNER SLC

PROGRAM GOAL *To create the first-of-its kind e-waste take-back program in India*

As its economy grows, India faces burgeoning volumes of waste from electronics (e-waste). When harnessed, e-waste can be a resource, creating jobs and raising incomes for informal and formal sector workers, while preventing toxic materials from harming citizens and the environment. Operationalizing the concept of Green Growth, KGGTF's three-year e-waste advisory program is creating the first-of-its kind e-waste take-back program in India. Through successful pilot operations in three cities, the program team has established a sustainable business model that India and other countries can replicate in cities facing similar challenges. In an effort to scale up this successful model by collaborating with leading producers of electronic items and recyclers of e-waste, the team is developing a sustainable, industry-led solution to the e-waste challenges in India. A producer responsibility organization will serve as a cost-effective, long-term, countrywide solution to India's e-waste challenges.



9.

Toward Green Growth Through Use of ICT and Investment in Clean Energy Generation

COUNTRY India
REGION SAR
SCALE National
SECTORS ICT, Energy
TECHNICAL AREAS Smart grid, solar
GRANT AMOUNT US\$600,000
PARTNER Jeju Island government, Korea

PROGRAM GOAL *To encourage solar investments and upgrade Damodar Valley Corporation transmission and distribution network to a smart grid*

India recognizes the importance of smart Green Growth. As part of their forward-looking national and state programs, India is combining smart grids with solar energy. Through the use of ICT and renewable energy generation, this KGGTF program represents a Green Growth investment opportunity. GoI plans to build 25 new solar parks of 25 MW each. The World Bank is supporting four states assigned by GoI to green the project design. The program complements World Bank Group investment lending for the external transmission connectivity to these solar parks. KGGTF's two-year program includes an assessment of smart-grid initiatives and policies as part of its inclusive Green Growth support. The program team will study options for renewable energy generation, and conduct workshops and knowledge-sharing visits to other countries as well.

MUNICIPAL LEVEL

1.

Green Transport Initiative

COUNTRY Bhutan
REGION SAR
SCALE Municipal
SECTOR Transport
TECHNICAL AREAS Electric vehicles (EV), EV charging stations
GRANT AMOUNT US\$300,000
PARTNERS KOTI, the Asian Development Bank, UNDP, Korea Grid/Power Utility Company

PROGRAM GOAL *To help improve urban transport in Thimphu, Bhutan's capital and largest city*

Bhutan is a low-income country with a US\$2,400 per capita GDP, but greenhouse gas emissions are increasing along with vehicle ownership. Fossil fuel, food, and other imports consume much of the nation's foreign exchange earnings. The Government of Bhutan aims to make the country self-reliant, inclusive, and green, and improve its balance of payments. Along with plans to expand hydropower generation, Bhutan will benefit from better energy-use efficiency, and by decreasing the use of non-renewable fuels. KGGTF's two-year program will provide Green Growth case study examples of transport systems that can lower emissions for the city's 100,000 citizens.

Cost benefit analysis and technical assistance will help operationalize green transport, including introducing low-emission buses citywide. The program will also present a roadmap for electric vehicle implementation, including short- and medium-term investment in vehicle charging stations. Improved public transportation and travel efficiency, including enabling walking and cycling, will benefit the poor, while creating a new model for national economic growth, enhancing national competitiveness, and promoting tourism in Thimphu. The Korean Transport Institute's experience with similar challenges will help inform Thimphu's plan, which in turn will provide examples for other emerging markets. The program is also working with a number of other partners, including Korea Grid/Power Utility Company, the Asian Development Bank, and the UNDP.

2.

Metro Manila Citywide Slum Upgrading

COUNTRY Philippines

REGION EAP

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS Slum upgrading, affordable housing

GRANT AMOUNT US\$350,000

PROGRAM GOAL *To contribute to citywide development under the National Informal Settlement Upgrading Strategy in Manila*

Metro Manila is home to 12 million people, accounting for one-third of the population of the Philippines, and half of the country's economic output. Regular flooding affects 2.4 million people in Manila, creating an urgent need for safe shelters for the city's 100,000 informal settler families. To promote inclusive growth and bolster flood resilience, this KGGTF program will pilot in three of seven cities in Metro Manila, reaching 400,000 citizens living in vulnerable slums. A citywide shelter plan will guide new construction and create jobs. Participatory, community-led planning, mapping, and surveying approaches also will empower residents. Once tested, authorities can replicate the program in other cities. Partners already supporting the KGGTF program include the Asian Coalition for Housing Rights.

3.

Developing Green Growth Strategies for Emerging Metropolitan Municipalities

COUNTRY Turkey

REGION ECA

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS EIPs, urban regeneration, urban transport

GRANT AMOUNT US\$500,000

PARTNERS KICOX, MoLIT, Green Technology Center of Korea, Seoul National University, KEXIM, KRIHS

PROGRAM GOAL *To create a Green Growth information platform that includes Green Growth indicators and collects baseline data to analyze key urban planning variables, including land, housing, transport, energy efficiency, and infrastructure*

As Turkey embarks on a national effort to promote sustainable cities, KGGTF's two-year program is providing technical assistance to create a Green Growth information platform. The program team will prepare sustainable city action plans using a framework informed by the platform. The program will also prepare a report for Turkey modeled on the work of the Korean Industrial Complex Corporation, presenting options for the government to transform industrial zones into eco-friendly areas.

4.

Technical Assistance for Design and Preparation of Sustainable Urban Development

COUNTRY India

REGION SAR

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS Green urban interventions, urban management and infrastructure/services

GRANT AMOUNT US\$600,000

PROGRAM GOAL *To support the Indian State Government of Tamil Nadu to design and prepare the Tamil Nadu Sustainable Urban Development Project (TNSUDP) to increase competitiveness of the state's cities*

This KGGTF technical assistance program is linked to a World Bank Group US\$400 million loan to co-finance the US\$600 million TNSUDP. KGGTF technical assistance will cover a number of green urban interventions to improve urban management and infrastructure, and promote municipal financial sustainability for urban local bodies participating in TNSUDP. Along with improvements to sewerage and solid waste management, the program will foster greater autonomy and accountability in city management, while integrating urban planning and improving financing instruments. These improvements will in turn help cities deliver better urban services to citizens and businesses.

5.

ICT Applications to Achieve Green Growth

COUNTRY India

REGION SAR

SCALE Municipal

SECTOR ICT

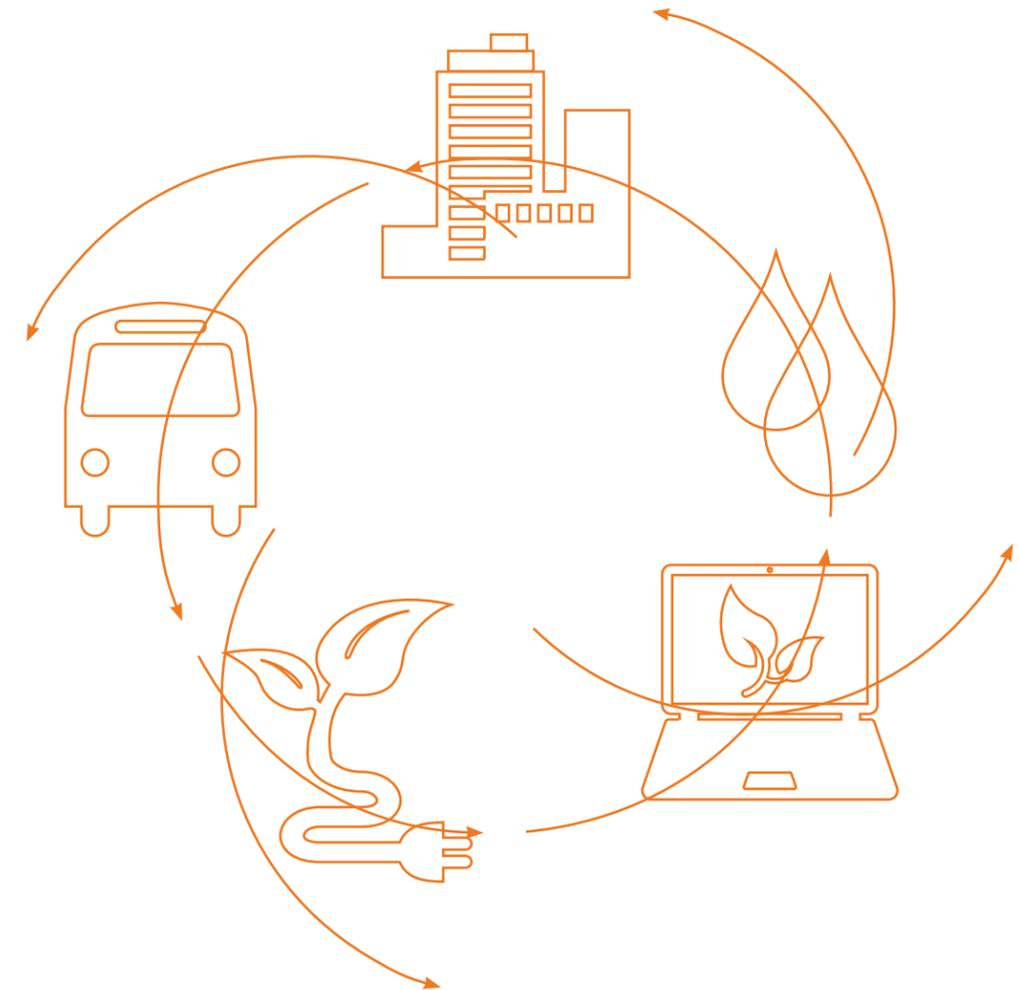
TECHNICAL AREA Smart city diagnostic toolkit

GRANT AMOUNT US\$1,700,000

PARTNERS Ministry of Science, ICT and Future Planning of Korea, Korea Institute of Energy Technology Evaluation Planning, National Information Society Agency of Korea, KEA, K-Water, Korea Smart Card Corporation

PROGRAM GOAL *To share knowledge for greening cities, improving quality of life, and reaching the poorest people, while optimizing energy use, reducing GHG emissions, and helping cities apply cost-saving innovations.*

The ICT sector has proven to be a key in reducing carbon emissions from other sectors of the economy, such as transport or power transmission and distribution. The objective of this project is to provide a preliminary ICT assessment in the energy sectors of three Indian cities in order to facilitate the formation of smart communities and the introduction of smart technology. Project partners, including Korean technical experts, will recommend the best ICT solutions for implementing a green-growth transformation toward smart city implementation. For each city, detailed diagnosis have been conducted across five predefined sectors—energy, water, urban, transport, and ICT. Detailed project reports help city authorities understand their current readiness and the key steps required to transform.



YEAR

3

32 PROGRAMS

GLOBAL LEVEL

1. Unlocking Data Innovations for Smarter Urban Transport and Greener Growth

COUNTRY N/A
REGION N/A
SCALE Global
SECTOR ICT
TECH AREAS ITS, big data, open data
GRANT AMOUNT US\$300,000
PARTNERS Open Knowledge Foundation, Open Data Institute

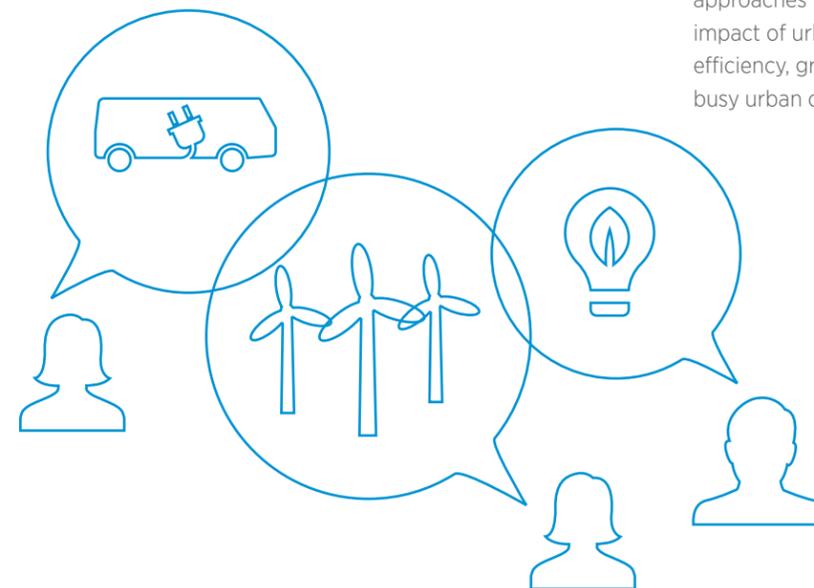
PROGRAM GOAL *Using open and big data best practices to help prevent urban traffic congestion, reduce environmental damage, and improve lives*

Transport data is increasingly available from various sources, including transport operators, municipal systems, crowdsourcing, citizen reporting, in-road and in-vehicle sensors, and engineering data gathered from cell phone towers. This World Bank KGGTF-funded Green Growth implementation program would leverage data availability to help prevent urban traffic congestion, reduce environmental damage, and improve lives. For starters, the program will develop a methodology for evaluating the potential in and the obstacles around using open data sources and make action-oriented recommendations. Piloted in several cities, the methodology will build on the World Bank Group's Open Data Readiness Assessment tool. Such smart transport solutions can help ensure energy efficiency, aid Green Growth, and increase productivity and competitiveness, especially in urban environments.

2. An Integrated Approach to Urban Sustainability Planning in World Bank Group Lending Program

COUNTRY N/A
REGION Global
SCALE Global
SECTOR Urban
TECHNICAL AREAS Land use and spatial planning
GRANT AMOUNT: US\$1,500,000
PARTNER KRIHS
PROGRAM GOAL *To help urban centers around the world learn from the experience of other cities' Green Growth strategies*

Rapid urbanization makes it difficult for cities to develop in a safe, sustainable way. It should come as no surprise that knowledge from city leaders around the globe is one of the best ways to ensure that urban centers can overcome the fiscal and capacity constraints that hinder Green Growth. This KGGTF-funded program supports the Global Programs unit of the World Bank Group—a division that connects World Bank Group (WBG) operational teams with relevant knowledge from both within and outside of the WBG. The Global Programs unit develops new knowledge when needed and brings cutting edge approaches to improve operational activities and enhance the impact of urban projects. The end goal: to support improved efficiency, greater resilience, and increased competitiveness in busy urban centers worldwide.



3. Cleaner Production for Companies

COUNTRY Pakistan, Egypt

REGION MNA

SCALE Regional

SECTOR Energy

TECH AREAS Emergency infrastructure program, energy efficiency

GRANT AMOUNT: US\$304,000

PARTNERS National Productivity Organization, Cleaner Production Institute

PROGRAM GOAL *To help Pakistan and Egypt continue their natural resource efficiency efforts and their associated cost savings*

Industry in Pakistan is competing more and more with the country's agricultural and power sectors for limited water and energy resources. The country already faces a 5-gigawatt shortage and severe load shedding and blackout. This KGGTF-funded Green Growth implementation program would help Pakistan continue its natural resource efficiency efforts and their associated cost savings. The next phase of this ongoing program would target, investigate, and plan for cleaner production technologies for textiles, sugar, pulp and paper, and leather. If resource-efficient technologies can be put into play, manufacturers can become more resilient and better protect themselves and their employees from closures, in addition to preparing for resource shifts expected with climate change.

REGIONAL

1. Improving Urban Mobility Using Big Data Analytics

COUNTRIES The Philippines, Indonesia, and Vietnam

REGION EAP

SCALE Regional

SECTOR Transportation

TECHNICAL AREAS ITS, big data

GRANT AMOUNT: US\$500,000

PARTNERS KOTI, Korea National Information Agency (Big Data Planning Department), Department of Transportation and Communications, DKI Jakarta Transport Agency, Manila Metro Development Authority, Cebu Integrated Transportation Operations Management

PROGRAM GOAL *To improve traffic congestion, and therefore the environment and economic growth in four East Asian Pacific cities*

Traffic congestion plagues many East Asian Pacific cities, degrading the environment and quality of life and limiting economic opportunities for the urban poor, who are more reliant on public transportation. In many developing countries, traffic management agencies do not have the necessary tools to mitigate that congestion. This Green Growth implementation program will help cities use crowd-sourced, web-based data from a mobile taxi application to generate real-time traffic flow information and support more efficient traffic monitoring and planning. The expected result—more effective fixed and adaptive traffic signal timing and lower cost traffic management—has the potential to boost economic growth while reducing greenhouse gas emissions. After initial trials in Cebu City in the Philippines, similar data analysis will be applied to Manila and, pending budget availability, Jakarta and Ho Chi Minh City.

2. Technical Assistance for Smart Card Integration for Better-Connected Public Transport Systems

COUNTRIES India, Bangladesh, Bhutan

REGION SAR

SCALE Regional

SECTOR ICT

TECH AREAS ITS, smart card, fare integration

GRANT AMOUNT: US\$400,000

PARTNERS Mumbai Vikas Railway Corporation, Mumbai Metropolitan Region Development Authority, Asian Development Bank, Japan International Cooperation Agency, Chittagong Development Authority, Global Partnership on Output Based Aid

PROGRAM GOAL *To showcase the benefits on integrated smart card systems*

As cities start to operate new modes of public transportation, it is common for each transit system to have incompatible fare collection smart cards. This World Bank Group KGGTF-funded Green Growth implementation program would assist cities in India, Bangladesh, and Bhutan install an integrated and efficient smart card system. Research will investigate the status of transport ticketing in several South Asian countries and the status of available smart card technology. In the end, new standards will be tested in three pilot programs in an effort to set examples of higher-quality transportation service that is more efficient and more integrated with land use, urban development, and Green Growth.

3. Urban Public Spaces as a Transformative Instrument for Inclusive Green Growth

COUNTRIES N/A

REGION SAR

SCALE Regional

SECTOR Urban

TECHNICAL AREAS Land use and spatial planning, urban design, public spaces

GRANT AMOUNT: US\$600,000

PARTNERS UN-HABITAT, the Commission for Architecture and the Built Environment in the UK, Centre for Livable Cities in Singapore, Non-profit organization Project for Public Spaces, Architecture and Urban Research Institute, LH, KRIHS, SMG, SI

PROGRAM GOAL *To leverage well-planned urban public spaces for economic growth and environmental stewardship*

Public spaces, including parks, waterfronts, squares, and buildings, can play an important role in addressing urban challenges by encouraging economic growth, social inclusion, and urban greening. Despite their importance, public spaces are poorly integrated or are often neglected in the process of planning and developing cities in the region. They are particularly critical in less-fortunate neighborhood, as access to public spaces is much more essential for poor people. Funding for this program will assist the World Bank Group, development partners, and client countries and cities to identify and design policies and programs on public spaces as a transformative instrument for promoting inclusive Green Growth in South Asia's cities.

4. Greening Cities Through a Water-Centric Urban Planning Approach

COUNTRIES Uruguay, Panama

REGION LAC

SCALE Regional

SECTOR Water

TECHNICAL AREAS IWRM, DRM

GRANT AMOUNT: US\$200,000

PARTNERS IADB, JICA, CAF, UNESCO, UNDP, the Department of Montevideo, Panama's Ministry of Health and Ministry of Housing and Land Management, Uruguay and Panama's water utilities, National Directorate of Water from MVOTMA in Uruguay, and the Ministry of Health in Panama

PROGRAM GOAL *To bring adequate water and sanitation services and flood control to urban areas in Panama and Uruguay*

Montevideo, Uruguay, faces environmental degradation and vulnerability to floods. While nearby Panama City, Panama, is challenged by to improve water supply and sanitation service delivery, especially in low-income areas. This Green Growth implementation program aims to integrate the elements of the urban water cycle (water supply, sanitation, storm water management, and waste management) with both urban development and river basin management to maximize economic, social, and environmental benefits in Panama City and Montevideo. As a result, this program partnership will develop a roadmap for sustainable urban water-resource management, including an agreed upon evaluation process to identify priorities and a detailed cost benefit analysis, for other LAC countries.

5. Central Asia Water Resources Management

COUNTRIES Tajikistan, Kyrgyz Republic, Uzbekistan, Kazakhstan, Turkmenistan

REGION ECA

SCALE Regional

SECTOR Water

TECHNICAL AREAS IWMR, open data

GRANT AMOUNT: US\$370,000

PARTNERS K-Water Academy, Ewha Womens University, GIOS

PROGRAM GOAL *To secure Green Growth in Central Asia through better water-resource management*

Two of Central Asia's major rivers—the Amu Darya and Syr Darya—provide over 90 percent of energy supply in Tajikistan and the Kyrgyz Republic through hydropower. They also support irrigation farther downstream, helping the Uzbekistan, Kazakhstan, and Turkmenistan economies stay afloat. However, up to 90 percent of agricultural land in these countries face salinization and a destitute and dry Aral Sea. Funding for this program will be used to investigate effective management and rational use of the waters of the Syr and Amu Darya rivers, fundamental to Green Growth for some 70 million people. Through analysis, institutional strengthening, and investment identification in the water and energy sectors in Central Asia, the focus of this program is to transform the information, institutions, and investments for better water management in the region, increasing accessibility and reliability of water resources.

6.

Energizing Green Cities: Planning, Enabling, and Managing the Transition to a Low-Carbon Future

COUNTRIES Vietnam, Indonesia

REGION EAP

SCALE Regional

SECTOR Energy

TECHNICAL AREAS Urban energy efficiency, variable renewable energy

GRANT AMOUNT: US\$750,000

PARTNERS Green Climate Fund, Singapore Govt. (through WBG/Urban Hub in Singapore), C40 Cities Climate Leadership Group, ICLEI, ADB, JICA

PROGRAM GOAL *To increase energy efficiency and job opportunities and decrease greenhouse gas emissions*

Choosing energy-efficient solutions for urban infrastructure challenges can help cities become global engines of Green Growth. This World Bank Group KGGTF-funded Green Growth implementation program aims to incorporate energy efficiency and emissions targets in green business strategies in Da Nang and Surabaya. The proposed partnership program would identify possible public- and private-sector investors, attempt to reform national and local financing policies and incentives, monitor and evaluate pilot programs, share lessons learned from the Republic of Korea, and organize capacity-building workshops on how to scale-up sustainable urban growth. The result: plans for low-carbon futures that strengthen governance and economic growth, and improve quality of life and environmental protection.

7.

Greener Cement Industries

COUNTRIES Sub-Saharan Africa

REGION AFR

SCALE Regional

SECTOR Environment

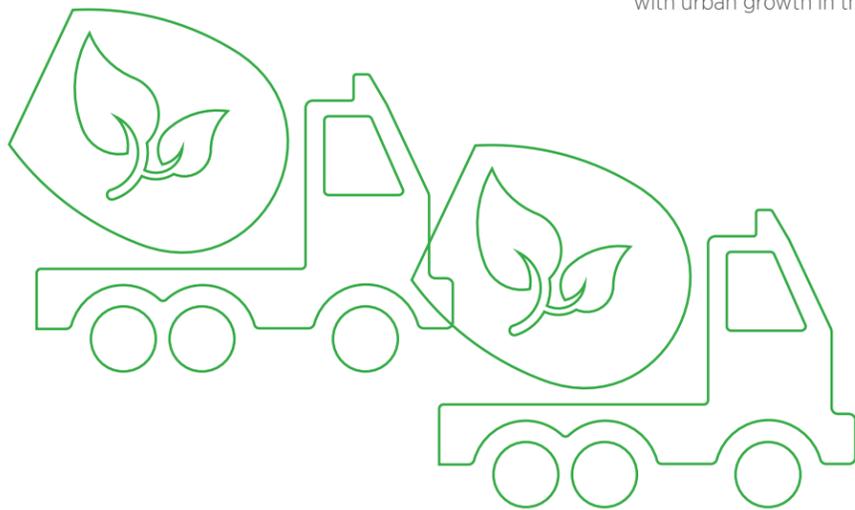
TECH AREAS GHG emissions, symbiosis between public and private sectors, fuel and waste management

GRANT AMOUNT: US\$700,000

PARTNERS Clean Production Centers established by the United National Industrial Development Organization, local cement industry associations, Cement Sustainable Initiative of the World Business Council for Sustainable Development

PROGRAM GOAL *To make cement production more energy efficient and competitive, while better managing urban waste streams*

Rapidly urbanizing countries in Sub-Saharan Africa, which is expected to be home to 90 percent of the total African population by 2050, rely heavily on cement to build houses and infrastructure. But cement production is generally energy intensive, resulting in increased greenhouse gas emissions and air pollution. At the same time, urban waste generation is expected to increase by more than 440,000 tons per day by 2025. By leveraging the increased waste from cities and turning it into fuel, this World Bank Group KGGTF-funded Green Growth implementation program aims to support Green Growth by reducing the amount of fossil-fuel consumption associated with making cement. The program will find alternative fuel sources, including non-hazardous industrial waste and domestic trash, for the more than 70 cement facilities in the region. The change in energy source could reduce production costs and environmental and health impacts currently associated with urban growth in the region.



8.

West Africa Fishery Partnership for Competitiveness and Sustainability

COUNTRIES West Africa

REGION AFR

SCALE Regional

SECTOR Environment

TECH AREAS Fisheries, GIS, crowdsourcing

GRANT AMOUNT: US\$670,000

PARTNERS Food and Agriculture Organization of the United Nations, Nordic Development Fund, Environmental Justice Foundation

PROGRAM GOAL *To stem the tide of illegal fisheries catches in West Africa*

Fisheries are a US\$3-billion-a-year business in West Africa, employing more than 3 million people and providing up to 50 percent of the total animal protein intake for a number of countries in the region. But with dramatic illegal catches, estimated at up to 45 percent of the legal catch, or US\$1.3 billion annually, fish stocks and food security remain at risk.

This KGGTF-funded Green Growth implementation program will create efficient and effective, regionally connected monitoring and surveillance systems that will help coastal communities grow green economies and improve the health of fish stocks. The program will test an affordable and effective surveillance strategy, upgrade marine vessel monitoring and information systems, and include knowledge sharing with South Korean partners and South American and South East Asian counterparts. By consolidating and promoting sustainable and productive uses of renewable marine resources, in addition to building on improved fisheries governance, the region will not only prepare for projected climate change impacts, it will also unlock growth that benefits poor and vulnerable populations and helps restore West African economies.

NATIONAL LEVEL

1.

Inner City Affordable Housing Program

COUNTRY Mexico

REGION LAC

SCALE National

SECTOR Urban

TECHNICAL AREAS Affordable housing, slum upgrade, urban regeneration

GRANT AMOUNT: US\$400,000

PARTNERS KRIHS, LH

PROGRAM GOAL *To limit urban sprawl in Mexico in order to protect the environment and poor populations*

With nearly 84 percent of GDP produced in urban areas, maintaining sustainable cities is key to Mexico's environmental and economic health. Rapid urbanization threatens to increase pollution and alienate the poor. This Green Growth implementation program will support Mexico's Inner-City Affordable Housing Program as it tries to reform national housing subsidies to align with smart urban development. The program will provide technical assistance for a framework for urban renovation programs in inner-city areas that prioritize affordable housing in mixed-use and transit-oriented areas. The end result: the ability to raise capital for implementing urban renovation in Mexico.

2.

Investments in Environmental Management and Green Growth

COUNTRY Peru

REGION LAC

SCALE National

SECTOR Environment

TECH AREAS Green Growth policy, identification of environment-related investment needs, fisheries, fishery monitoring

GRANT AMOUNT: US\$430,000

PARTNERS N/A

PROGRAM GOAL *To support Peruvian policies related to environmental sustainability and aquaculture management*

Peru suffers from by poor air quality in urban areas, indoor air pollution, water and sanitation problems, deforestation, and overfishing, but hopes to strengthen its natural resources management policies in an effort to boost environmental stability, poverty alleviation, and economic growth. This KGGTF-funded program would support two Peruvian policies related to environmental sustainability and aquaculture management. The program will improve the country's analytical capacity and environmental regulatory framework, in addition to investigate how best to modernize fisheries. Armed with better information, the national Ministries of Environment and Production will be better able to support local governments in their efforts to manage environmental health.

3. Air and Water Pollution Management Program

COUNTRY Egypt
REGION MNA
SCALE National
SECTOR Environment
TECH AREAS Air, water, soil, policy reform, capacity for planning
GRANT AMOUNT: US\$450,000
PARTNERS Pollution Management and Environmental Health Trust Funds (set up as a Multi-donor Trust Fund with five donors expected to contribute, including Korea, and Norway)
PROGRAM GOAL To curb air and water pollution and grow a green economy

Burning of agricultural and municipal waste, and transportation sources create dramatic air pollution in Egypt. Water pollution is also a growing concern for economic growth and health, with most of it coming from industrial effluent; agricultural fertilizers, pesticides, and organic materials; and untreated sewage. Only 12 percent of rural villages are served by sewage networks connected to treatment plants. This KGGTF program aims to curb air and water pollution by improving access to sanitation and sewage treatment and limiting agricultural run-off and the burning of waste. An economic inquiry would assess the cost of environmental degradation in Egypt. And a subsequent environmental analysis would identify pollution sources, helping the government prioritize work on key policy reforms and investments to reduce air, water, and land pollution. Options include the introduction of new composting technologies, biomass production, and economical solutions for sewage treatment. The end result: enhanced rural agricultural incomes, improved health, and a country ready to face impending water shortages.

4. Scaling up Implementation of Green Growth Priorities

COUNTRY Vietnam
REGION EAP
SCALE National
SECTOR Environment
TECH AREAS Green Growth resource mobilization, national Green Growth implementation
GRANT AMOUNT: US\$750,000
PARTNERS Japan International Cooperation Agency, the French Development Agency, the United Nations Development Program, Australian Department of Foreign Affairs and Trade
PROGRAM GOAL To streamline Vietnam's efforts to promote Green Growth and respond to climate change

Because of rapid population and production increases, Vietnam is now locked into coal-powered, energy-intensive economic growth. The associated environmental damage threatens long-term productivity and resilience and limits the country's growth potential. The Vietnamese government is pursuing a policy agenda that aims to promote a low-carbon, Green Growth development path while also addressing increasing climate vulnerability. Building on recently proposed climate change and Green Growth strategies, this World Bank Group KGGTF-funded Green Growth implementation program would support analysis, technical expertise, and consensus building around multi-sector greenhouse gas emissions reductions, energy efficiency, energy subsidy reform, Green Growth, and climate change financing, as well as solid waste, water resource, and air quality management. An annual report charts recommendations for improvements in the development and execution of policy actions, climate change and Green Growth expenditures, and summarize capacity and knowledge generated. These Green Growth strategies will help reconcile and dovetail policy goals related to poverty reduction, environmental protection, and economic growth.

5. Development of a National Industrial Energy Management Program

COUNTRY Uzbekistan
REGION ECA
SCALE National
SECTOR Energy
TECHNICAL AREAS Effective institutions platform, energy efficiency, smart grid
GRANT AMOUNT: US\$400,000
PARTNERS EU-funded Central Asian Sustainable Energy Project, the State Oil and Gas Inspection, the Power Sector Inspection, and other Uzbekistan ministries
PROGRAM GOAL To increase the energy efficiency and competitiveness of industrial infrastructure

Uzbekistan has the largest population among central Asian countries and remains one of the most energy-intensive countries in the world. As its economy continues to grow, Uzbekistan is turning to policy changes that increase energy-efficiency measures in the industrial sector—an area that has the greatest short- to medium-term energy-savings potential. This KGGTF program will develop institutional capacity and supporting policy reforms, as well as demonstrate innovative and scalable financing and delivery mechanisms for industrial energy efficiency in Uzbekistan. Initial tasks include introducing a framework for mandatory or voluntary energy-savings agreements, developing performance benchmarking requirements, and designing implementation plans. The government would also like to start a pilot industrial energy-management system and foster knowledge exchange, in particular with Korea and China.

6. Tackling Power Sector Barriers for Green Growth

COUNTRY Honduras
REGION LAC
SCALE National
SECTOR Energy
TECHNICAL AREAS Finance scheme, institutional reform
GRANT AMOUNT US\$450,000
PARTNER Ministry of Energy and the Power Utility of Honduras
PROGRAM GOAL To help Honduras achieve its goal of generating 80 percent renewable energy by 2022

One of the poorest countries in the Latin America and Caribbean region, Honduras hopes to boost its economy, increase global competitiveness, and smooth out dramatic income inequalities, in part, by increasing energy capacity and bringing down the cost of energy. This World Bank Group KGGTF-funded Green Growth implementation program aims to identify the primary barriers to economic growth in Honduras' power sector and design environmentally friendly solutions for overcoming those barriers. The first step is conducting a renewable-energy grid-integration study and a country-level energy-efficiency exploratory assessment that can help bring attention to aging, inefficient, polluting, and expensive power plants, particularly hydrothermal facilities. This research, along with capacity building and knowledge sharing from the Republic of Korea and other countries, will inform which tools and technologies to include in Honduras' Green Growth strategy.



7.

Variable Renewable Energy Integration to Support Green Growth

COUNTRY Haiti

REGION LAC

SCALE National

SECTOR Energy

Technical area: Renewable energy

GRANT AMOUNT: US\$250,000

PARTNERS EDH (L'Électricité d'Haïti), Ecole Des Mines de Paris (and its Research Group on Energy Systems Optimization), Haiti Public Utilities, Haiti State University and Quisqueya University, and the International Renewable Energy Agency

PROGRAM GOAL To boost green economic growth in Haiti by supporting the government's efforts to reach 25 percent renewable energy use by 2020

Access to electricity in Haiti is estimated at 30 percent overall and at only 5 percent in rural areas, leaving more than 7 million Haitians without basic services and the competitive edge that allows for economic development opportunities. By evaluating the viability of tapping into regional hydroelectric, wind, and solar potential in Haiti, this implementation program aims to support the Haitian government as it synchs up efforts to expand energy access and reach its goal of using 25 percent renewable energy by 2020. An economic analysis will gauge the possibility of integrating more low-carbon renewables into Haiti's somewhat unreliable main power system, and explore the technical and financial feasibility of connecting with the Dominican Republican grid in an effort to provide more efficient, clean, and reliable electricity, allowing Haiti to leverage Green Growth and climate change mitigation strategies for economic development. The economic study will also address the potential Green Growth impacts of renewable energy on job creation, markets, innovation, and development countrywide.

8.

An Efficient, Resilient, and Green Grid for Bangladesh Power Systems

COUNTRY Bangladesh

REGION SAR

SCALE National

SECTOR Energy

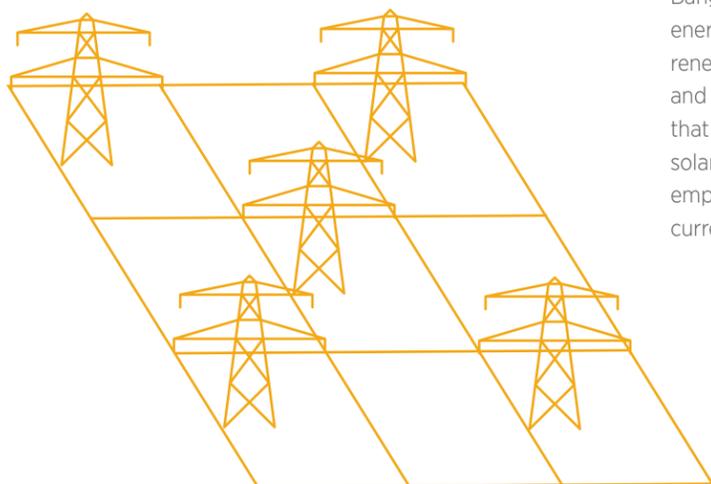
TECHNICAL AREAS Smart grid, power generation

GRANT AMOUNT: US\$500,000

PARTNERS VIT Energy, National Renewable Energy Laboratory, Energy Sector Management Assistance Program

PROGRAM GOAL To increase energy resilience and economic development in Bangladesh by implementing a smart grid that facilitates renewable energy integration

Smart grids are more than just a way to improve energy efficiency and resilience—they can also be powerful Green Growth tools for addressing economic, environmental, and social inequities. This World Bank Group KGGTF-funded implementation program will investigate and plan smart grid solutions for reducing Bangladesh's dependence on expensive oil and dwindling gas supplies, making electricity cheaper and more accessible, and improving energy reliability. The program will identify ways of creating and integrating solar and hybrid mini-grids into larger-scale energy generation and transmission plans. Relying on the expertise of Korea Power Exchange, Bangladeshi officials will plan for the automated dispatch of energy, the introduction of smart-grid technologies, and more renewable sources, reducing operational and system failures and boosting energy access. The end result: a fuel economy that is less polluting, more secure, the generator of successful solar-powered irrigation in rural areas, and the catalyst for empowering the nearly 40 percent of the population that currently lives without electricity.



9.

Smart Technology and Energy Efficient Production

COUNTRY Egypt

REGION MNA

SCALE National

SECTOR Energy

TECH AREAS Clean technology

GRANT AMOUNT: US\$700,000

PARTNERS United Nations Industrial Development Organization, Egyptian National Competitiveness Council, Industrial Council for Technology and Innovation

PROGRAM GOAL Increasing the use of and investment in clean technologies in Egypt

A growing population and rising fuel demand, coupled with a finite supply of fuel, creates a security risk for Egypt. In 2013, Egypt became a net energy importer—a situation that poses serious challenges to industrial and economic growth. At the same time, high energy subsidies discourage energy-efficient practices. This program aims to encourage growth in clean technology manufacturing and services. First, new regulatory tools need to drive investment in new systems. These clean technologies, which will be identified through a market gap analysis and minimize fuel use and greenhouse gas emissions, will be leveraged to create cost savings and increased competitiveness in a new green economy.

10.

Strengthening Capacity for Integrated Solid Waste Management

COUNTRY Mexico

REGION LAC

SCALE National

SECTOR Urban

TECHNICAL AREAS SWM, landfill closure and remediation

GRANT AMOUNT: US\$400,000

PARTNERS ME, the Environment and Resources Corporation, the Environmental Management Corporation, SLC, Mexico's Secretariat of Environment, the National Infrastructure Bank, Argentina's Secretariat of Environment, Argentina's Coordinación Ecológica Area Metropolitana Sociedad del Estado, the Ministry of Environment of Morocco, the Ministry of Environment in Colombia, and the Brazilian Business Commitment for Recycling

PROGRAM GOAL To better manage solid and toxic waste in Mexico as one of the primary underpinnings of sustainable growth

Comprehensive and integrated solid waste management is one of the major challenges in Mexico, affecting overall sustainable development and Green Growth potential. According to the National Basic Analysis for Integrated Waste Management, approximately 37.5 million tons of municipal solid waste is generated every year in Mexico. Another challenge is the adequate treatment and disposal of waste requiring special handling and 1.9 million tons of hazardous waste. Unfortunately, the burden of pollution and public health risks associated with inefficient solid waste management falls on the extreme poor. In this Green Growth implementation program, the World Bank Group will support the Mexican government with technical and financial support to develop a national integrated solid waste management plan.

11.

Moving Toward Greener Urban Development

COUNTRY Kyrgyz Republic

REGION ECA

SCALE National

SECTOR Urban

TECHNICAL AREAS Land use and spatial planning

GRANT AMOUNT: US\$300,000

PARTNERS ADB, EBRD, JICA, UNDP

PROGRAM GOAL To halt urban sprawl in Kyrgyz and build a roadmap to Green Growth

Population shifts in the Kyrgyz Republic have brought 42 percent of residents to urban areas, but cities have not grown to accommodate them. Many find their way into semi-informal settlements on the periphery of cities. These sprawling settlements come at a high environmental, energy, and economic cost. Poor populations that live on the periphery are often disconnected from health care and education opportunities in the city center. This KGGTF Green Growth implementation program will help create awareness around this damaging urban growth pattern and assist the government in identifying policies and a roadmap for urban densification. In the end, greening urban areas will be a source of economic growth and climate change resilience.

12.

Affordable and Resilient Housing and Urban Land Use Planning

COUNTRY Vanuatu

REGION EAP

SCALE National

SECTOR Urban

TECHNICAL AREAS Affordable housing, land use planning, DRM

GRANT AMOUNT: US\$675,000

PROGRAM GOAL *To establish the basis for increasing the availability of affordable serviced land and housing, particularly for the poor, and reducing the risk of urban populations to natural hazards and climate change*

Vanuatu is a small island nation of 250,000 in the South Pacific and is rated as the most vulnerable country in the world to natural disasters including, cyclones, earthquakes, and tsunamis. The Government of Vanuatu sought support in both WBG technical assistance and lending for urban land management and housing, particularly for the poor living in informal settlements who are particularly vulnerable to climate change impacts such as landslides and flooding. This program aims to establish the basis for increasing the availability of affordable serviced land and housing, particularly for the poor, and reducing the risk of urban populations to natural hazards and climate change.

MUNICIPAL LEVEL

1.

Improving Solid Waste Service Delivery

COUNTRY N/A

REGION AFR

SCALE Municipal

SECTOR Urban

TECHNICAL AREA SWM

GRANT AMOUNT: US\$600,000

PROGRAM GOAL *To improve solid waste management in four Sub-Saharan African cities*

There are several obstacles to managing municipal solid waste in Sub-Saharan Africa, including a lack of infrastructure, regulatory and legal challenges, rapid urbanization, and a scarcity of financial resources. Uncollected and untreated waste in many of the region's cities impacts human health, especially for the poor

the environment, and local economies, and it represents a serious impediment to inclusiveness and Green Growth. By improving municipal solid waste collection, cities can create opportunity and cultivate resilience: Solid waste management can help keep drainage channels open, thus reducing their vulnerability to the anticipated frequent and intense rainfall and sea level rise that accompanies climate change. This KGGTF implementation program will foster Green Growth by identifying the solid waste investment needs of four Sub-Saharan African cities and assuring that policy makers have direct access to implementable policy recommendations, as well as support to improve solid waste management in their cities.

2.

Sustainable and Green Regional Development Planning for Urban Growth Centers

COUNTRY India

REGION SAR

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS Land use and spatial planning, green urban linkage

GRANT AMOUNT: US\$350,000

PARTNERS KRIHS

PROGRAM GOAL *To better plan for the growth of peri-urban areas around India's largest cities*

Another 250 million people are expected to move into India's already-crowded cities by 2030. This rapid urbanization, coupled with straightjacketed urban land policies, has forced the evolution of peri-urban areas as new townships along existing transport and communication corridors. Such sprawl threatens

urban containment, and therefore environmental sustainability. This World Bank Group KGGTF Green Growth implementation program would answer urban planners' call for improved planning and economic decision-making. The key areas of focus are Bhopal and Indore in Madhya Pradesh, and the sprawl that is happening in between these two urban centers, as well as the Thane-Pune area outside of Mumbai. The program will prepare a comprehensive, green, and smart regional development strategy and plan that will promote sustainable economic development and job creation, include integrated approaches for effective urban-rural linkages, and protect valuable agricultural land.

3.

Technical Assistance to Promote Solid Waste Management and Urban Greenery

COUNTRY Ethiopia

REGION AFR

SCALE Municipal

SECTOR Urban

TECHNICAL AREAS SWM, landfill operation

GRANT AMOUNT: \$400,000

PARTNERS Ministry of Urban Development of Ethiopia, Bishoftu City Administration

PROGRAM GOAL *To ensure a recently completed landfill operational in Bishoftu, Ethiopia, helps the city remain resilient, competitive, and clean*

The Government of Ethiopia (GoE) has identified the management of solid waste as a national priority and is developing strategies and guidelines on integrated solid waste management systems and urban greenery. This GoE initiative is being supported by the World Bank through the Urban Local Government Development Project (ULGDP). ULGDP is helping to strengthen the capacity of urban governments to plan, deliver, operate, and maintain priority municipal infrastructure and services, including solid waste management. This program is to support assessments on the status of solid waste management and urban greenery in four secondary cities; review federal-level strategy and service standards; conduct capacity building activities to improve SWM.

4.

Real-Time Urban Flood Risk Management and Decision-Support Tool for Bamako Greater Area

COUNTRY Mali

REGION AFR

SCALE Municipal

SECTOR Urban

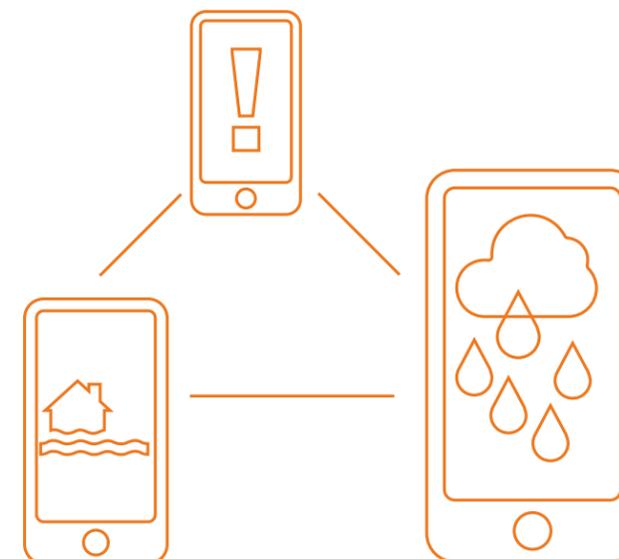
TECHNICAL AREAS Big data, mobile technology, open source data, GIS

GRANT AMOUNT: \$495,000

PARTNERS Kyungpook National University, University of Ouagadougou, University of Bamako, Orange-Mali, Mali-Météo, DNH, DGPC, INSS/CNRST Burkina Faso, Urban Local Government Support Program, Sahel Disaster Resilience Program, Sahel Drought Response TA, Mainstreaming Disaster Reduction in Mali

PROGRAM GOAL *To reduce flood risk in Mali's urban areas, particularly Bamako*

Urban flood risk is increasing in African cities, often because of outdated urban planning and building codes, uncontrolled occupation of flood-prone lowlands, and climate variability and change. At the same time, the availability of hydro-meteorological observing stations has dropped dramatically all over Africa since the 1970s. The problem is currently worsening in Mali because of security conditions. Developing innovative public-private partnerships between National Meteorological and Hydrological Services, cell phone operators, civil protection services, and food security institutions will increase competitiveness with regards to (i) generation of data, information and services; (ii) data transmission and archiving; and (iii) service delivery to end users. Funding for this Green Growth implementation program will be used to create real-time, high-resolution rain maps based on cellular network signal attenuation. Such data can be used to model rainfall runoff and flood risk. Eventually, authorities will be able to issue response plans with more lead-time and shift habitation patterns away from flood-prone areas.



5. Energy Efficiency Transformation of Urban Heating

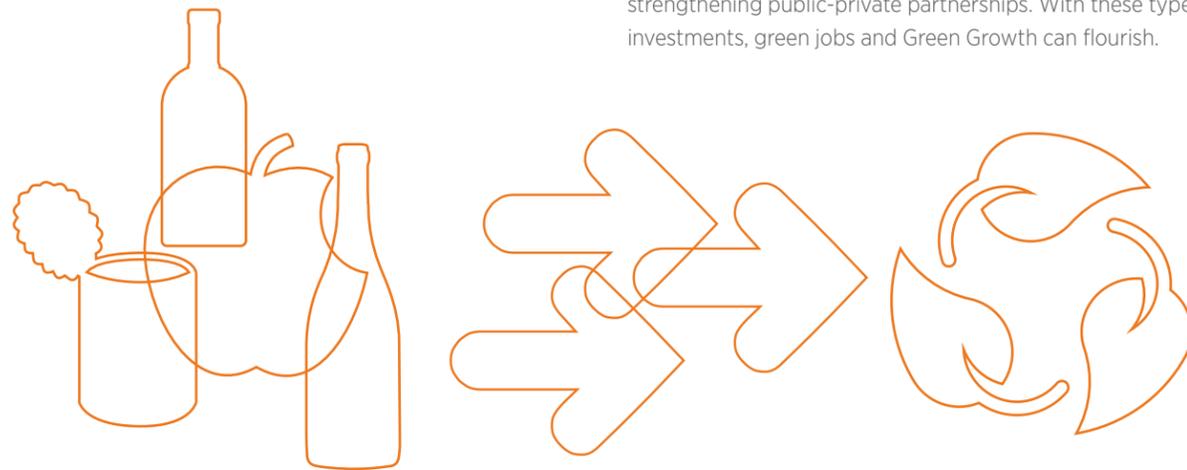
COUNTRY Moldova
REGION ECA
SCALE Municipal
SECTOR Energy
TECHNICAL AREAS District heating, metering, energy efficiency
GRANT AMOUNT: US\$530,000
PARTNERS Moldova Ministry of Economy, Termoelectrica, National Energy Regulatory Agency of Moldova
PROGRAM GOAL To reduce dependency on gas imports with the use of district heating

Urban heating systems in Moldova's capitol, Chisinau, are outdated, resulting in significant energy loss. This World Bank Group KGGTF-funded Green Growth implementation program supports transforming these systems from supply-driven setups to efficient consumer-demand-based models using district heating. KGGTF funding will help to develop a pilot program and the financial planning and analysis for individual heat substations, which eventually will allow for customized monitoring and heating of individual buildings, and a billing system that rewards energy-savings. District heating in Chisinau has the potential to reduce gas consumption by 20 percent, as well as tap renewable resources, such as biofuel, improve the resiliency of urban infrastructure, and pave the way for other regions that strive to couple economic growth with energy efficiency and environmental sustainability.

6. Developing Integrated, Green Solutions for Municipal Solid Waste Management

COUNTRY Kazakhstan
REGION ECA
SCALE Municipal
SECTOR Environment
TECH AREAS Solid waste management
GRANT AMOUNT: US\$200,000
PARTNER The European Bank for Reconstruction and Development
PROGRAM GOAL To cover 100 percent of the population with adequate solid waste service by 2030 and recycle 50 percent of the waste stream by 2050

Kazakhstan's solid waste management system has not been able to keep up with the country's rapid growth. It is estimated that 97 percent of the municipal waste generated there ends up in uncontrolled dumps and landfills that do not meet environmental and sanitary standards. And only 3-5 percent ends up being recycled. Plus, waste transportation vehicles are generally old and inadequate, which makes the collection process manually labor intensive and inefficient. This World Bank Group KGGTF-funded Green Growth implementation program aims build an integrated and efficient national solid waste management aims to build system in Kazakhstan as part of the country's national green strategy. Policy recommendations will include suggestions for tariff and fee structures, possible subsidies, innovative solutions for recycling, including food-waste digesters, and strengthening public-private partnerships. With these types of investments, green jobs and Green Growth can flourish.



7. Metropolitan Transport Efficiency Improvement

COUNTRY India
REGION SAR
SCALE Municipal
SECTOR Transport
TECHNICAL AREAS Smart city, ITS, smart card, bus operations, BRT
GRANT AMOUNT: US\$400,000
PARTNERS World Resource Institute (WRI)
PROGRAM GOAL To integrate multiple transport systems and reduce congestion in Kolkata Metropolitan Area (KMA)

The population in the KMA has exploded since India won its independence. In 1947 there were just 0.6 million residents, compared to a projected 21 million by 2025, and the city continues to struggle to recover from and manage this growth. KMA, unlike other mega cities in India, has a large number of

public transport modes, from rickshaws and buses to trams and ferries. It is the integration of these systems and decongestion of the KMA that is the focal point of this Green Growth implementation program. Funding will go toward researching low-carbon solutions through a combination of smart urban planning, technology use, bus reform, pricing policies, and open space and land use planning. Once these factors come together, service will improve and the city will become more livable, able to grow in a sustainable way. It will also allow for the transfer of knowledge on what works and what doesn't with respect to design, phasing, and implementation of green development initiatives, including policy reforms, investments, and private sector engagement.

8. Intelligent Transport Systems and PPP in City Bus Systems

COUNTRY India
REGION SAR
SCALE Municipal
SECTOR Transport
 Technical Area: ITS, BRT, NMT, public transport PPP
GRANT AMOUNT: US\$350,000
PARTNERS KTI, MoLIT, SMG, CENTIOS, Smart-city operators of Integrated Operations and Control Center (IOCC), MoUD
PROGRAM GOAL To bring efficient, resilient, reliable, and affordable transportation to nine Indian cities

This Green Growth implementation program will help to modernize bus service in nine Indian cities, making public transportation more reliable, affordable, safe, and environmentally friendly. Funding will support smart urban planning through Intelligent Transport Systems and private-public partnerships. It will also help with developing competitive pricing policies and social marketing, as well as foster knowledge sharing with the Republic of Korea and China. A more efficient transport system will help increase capacity, and prepare cities for natural disasters and the longer-term effects of climate change, all while helping Indian cities grow—economically, technologically, and socially.

9. Enhancing Green Growth

COUNTRY Egypt
REGION MNA
SCALE Municipal
SECTOR Urban
 Technical Area: SWM, ICT
GRANT AMOUNT: US\$575,000
PARTNERS UN Habitat, KRIHS
PROGRAM GOAL To equip the governorates of Cairo with the skills, knowledge and framework to enable greener and more efficient service delivery

Greater Cairo, a city of about 20 million inhabitants, has substantial unrealized potential for more efficient and inclusive Green Growth. There have been attempts to enhance Green Growth in Cairo in the past but they have been largely unsuccessful. Coupled with international and domestic trends

such as Egypt's 2030 Sustainable Development Strategy and the signing of Paris Agreement at the COP21, Cairo sees a great opportunity in advancing its Green Growth. This proposed Technical Assistance will equip the governorates of Cairo with the skills, knowledge and framework to enable greener and more efficient service delivery. Key issues inhibiting more efficient, green and inclusive service delivery and growth include inter alia: the absence of a metropolitan governance structure; limited capacity within the governorates and districts within the Greater Cairo Area; and limited availability of data to enable evidence based decision-making.

FY15 KOREA GREEN GROWTH PARTNERS



KOREA ENVIRONMENT CORPORATION (KECO)

KECO is an affiliate of the Ministry of Environment of South Korea. It was established with the mission of contributing to eco-friendly national development through the improvement of the environment, promoting resource recycling, and responding to climate change. KECO acts as a leading environmental service provider in Korea through its core offices—Climate and Air, Water and Soil, Resource Recirculation, Environmental Infrastructure, and Environmental Health.

COLLABORATION

- Korea Green Growth Partnership (KGGP) Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Green Urban Development Study Visit for African Cities (April 2015)
- Korea Green Innovation Day (June 2015)



KOREA ENERGY AGENCY (KEA, FORMALLY CALLED KEMCO)

KEY WBG PARTNER: ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAM (ESMAP) WITHIN THE ENERGY AND EXTRACTIVES GLOBAL PRACTICE

KEA is the government agency responsible for designing and implementing policies for energy efficiency, new and renewable energy, and climate change response. Its primary function is to manage nationwide energy use through technical and financial support, administrative services, and more while keeping environmental and socio-economic sustainability in mind.

KEA NEW AND RENEWABLE ENERGY CENTER (NREC)

The New and Renewable Energy Center (NREC) was established as the affiliate of KEA tasked with supporting and promoting new and renewable energy. Its major activities are: technological demand surveys, subsidy programs to promote deployment, certification schemes for new and renewable energy (NRE) systems, renewable portfolio agreements, mandatory NRE use for public buildings, and renewable standard portfolios.

COLLABORATION

- KGGP Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- New and Renewable Energy Knowledge Exchange (May 2015)
- Korea Green Innovation Day (June 2015)



KOREA INDUSTRIAL COMPLEX CORPORATION (KICOX)

KICOX is a professional corporate support agency developed to boost the national economy and enhance corporate competitiveness. It is an industrial complex management and supervision agency that promotes a variety of projects, including restructuring industrial complexes, improving the competitiveness of industrial clusters, and establishing eco-industrial parks.

COLLABORATION

- Trade and Competiveness Knowledge Exchange Visit to Korea for Guatemala (September 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Korea Green Innovation Day (June 2015)



KOREA LAND AND GEOSPATIAL INFORMATIX CORPORATION (LX)

LX is a semi-public organization under the Ministry of Land, Infrastructure, and Transport in South Korea. The organization has expertise in cadastral survey services, spatial information service, GIS-based systems and services development, education and training for capacity building, and more. LX has a training institute open year-round for LX staff, Korean government officials, and experts from overseas, and has collaborated with more than 30 countries. These business lines contribute to policy decisions, the advancement of spatial information for industrial development, and disaster risk prevention.

COLLABORATION

- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Knowledge Exchange and Learning Week (November 2014)
- Indonesia Green Infrastructure Summit (April 2015)
- Korea Green Innovation Day (June 2015)



KOREA LAND AND HOUSING CORPORATION (LH)

A government-owned corporation, LH was established to spearhead quality of life improvement and economic growth through the development of stable housing for the country's citizens and the efficient use of national land. It aims to foster Green Growth in both Korea and worldwide, and promotes public welfare through the systemic development of new towns. So far, it has created large-scale housing sites around 16 metropolitan areas.

COLLABORATION

- KGGP Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- Green Urban and Housing Policy Knowledge Exchange for Mexico (October 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Brown Bag Lunch on Korea's Example of Urban Regeneration (February 2015)
- Green Urban Development Study Visit for African Cities (April 2015)
- Korea Green Innovation Day (June 2015)



KOREA TRANSPORT INSTITUTE (KOTI)

KEY WBG PARTNER: TRANSPORT AND ICT GLOBAL PRACTICE

KOTI is a research institute in Korea that provides policies, strategies, and technical innovation to maximize the efficiency of transport systems. It covers all transport areas, including road, railway, aviation, logistics, urban transport, and management of a national transport database. KOTI is one of the world's leading transport institutes, cooperating with a number of global transport agencies.

COLLABORATION

- KGGP Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- Leaders in Urban Transport Planning Capacity Building Seoul Program (September 2014)
- KGGP Green Transport Knowledge Exchange visit for Georgia (September 2014)
- KGGTF Knowledge Exchange for Poland (October 2014)
- Panel on Transforming Transport (2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Developing a New Capacity Building Program on Sustainable Transport and Financing, (ongoing research, 2014-2015)
- World Bank Transport and ICT Practice Conference on ICT Application in Developing Countries (January 2015)
- Leveraging ICT in Transport for Greener Growth and Smarter Development (April 2015)
- KGGTF Knowledge Exchange for Bhutan (May 2015)
- Korea Green Innovation Day (June 2015)
- World Bank and Seoul City Meeting on Big Data (June 2015)



KOREA RESEARCH INSTITUTE FOR HUMAN SETTLEMENTS (KRIHS)

A national think tank, KRIHS comprehensively undertakes research activities concerned with the efficient use, development, and conservation of territorial resources, including housing and infrastructure. KRIHS is committed to improving quality of life and explores and formulates strategies on leading Green Growth-oriented territorial development.

COLLABORATION

- Green Urban and Housing Policy Knowledge Exchange for Mexico (October 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Korea Green Innovation Day (June 2015)



KOREA WATER RESOURCES CORPORATION (K-WATER)

K-Water is the South Korean government agency responsible for comprehensive public and private water resource development. K-Water implements national water-resource management policies regarding dams and regional water supply systems and is pursuing innovation and change in order to become the "Best Water Partner" in the world. With basin management integration, specialization, and automation, K-Water is making efforts to provide safe and clean water.

COLLABORATION

- KGGP Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Korea Green Innovation Day (June 2015)



SEOUL METROPOLITAN GOVERNMENT (SMG) AND SEOUL INSTITUTE (SI)

SMG is the administrative organization of Seoul. Its efforts in making Seoul livable and sustainable include the Cheonggyecheon river restoration project, a city-wide rainwater circulation and landslide prevention system, restructuring the bus system, expanding neighborhood parks, and reducing energy consumption. SMG and its research arm, SI, are closely working with the KGGP on urban land-use planning, transport planning, and consultative practices.

COLLABORATION

- KGGP Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- Green Urban and Housing Policy Knowledge Exchange for Mexico (October 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Green Urban Development Study Visit for African Cities (April 2015)
- Korea Green Innovation Day (June 2015)



SUDOKWON LANDFILL SITE MANAGEMENT CORPORATION (SLC)

An affiliate corporation of the Ministry of Environment in South Korea, SLC works on waste treatment from metropolitan regions, converting those waste streams into useful resources. SLC has also created the largest ecological park in Korea, called the Dreampark, on its landfill sites in Incheon by leveraging waste treatment technology, including the use of landfill methane as fuel to drive power generation and rainwater and leachate drainage technology to minimize environmental issues and generate socio-economic co-benefits.

COLLABORATION

- KGGP Multi-Project Green Growth Technical Knowledge Exchange (August 2014)
- Korea Climate Action Partnership Knowledge Exchange and Learning Week (November 2014)
- Green Urban Development Study Visit for African Cities (April 2015)

4

ANNEX

GREEN GROWTH = VISIBLE CHANGES

KGTF PARTNERS

GOVERNMENT (NATIONAL AND CITY)

Prime Minister's Office
Ministry of Environment (ME)
Ministry of Land, Infrastructure, and Transport (MOLIT)
Ministry of Oceans and Fisheries (MOF)
Ministry of Science, ICT, and Future Planning (MSIP)
Ministry of Strategy and Finance (MOSF)
Ministry of Trade, Industry and Energy (MOTIE)
Busan Metropolitan City
Seoul Metropolitan Government (SMG)
Songpa District office
Gwangju Metropolitan City
Incheon Free Economic Zone Authority

PLANNING AND IMPLEMENTING PUBLIC AGENCY

Incheon Port Authority (IPA)
Korea Electric Power Corporation (KEPCO)
Korea Energy Agency (KEA)
KEA New and Renewable Energy Center (NREC)
Korea Environment Corporation (KECO)
Korea Engineering Consultants Corp. (KECC)
Export-Import Bank of Korea (KEXIM)
Korea Fisheries Resources Agency (FIRA)
Korea Forest Service (KFS)
Korea Industrial Complex Corporation (KICOX)

Korea Institute of Marine Science and Technology Promotion (KIMST)
Korea Internet Security Agency (KISA)
Korea Land and Geospatial Information Corporation (LX)
Korea Land and Housing Corporation (LH)
Korea Marine Environment Management Corporation (KOEM)
Korea National Maritime Museum (KNMM)
Korea Railroad Corporation (KRC)
Korea Rural Community Corporation (KRC)
Korea Trade-Investment Promotion Agency (KOTRA)
Korea Water Resources Corporation (K-Water)
National Assembly Forum on Climate Change (NAFCC)
National Informational Society Agency (NIA)
National IT Promotion Agency (NIPA)
Seoul Metropolitan Facilities Management Corporation (SFMC)
Seoul Metropolitan Rapid Transit Corporation (SMRT)
Seoul Housing Corporation (SH)
Sudokwon Landfill Site Management Corporation (SLC)
Swon Food waste facility

RESEARCH INSTITUTES

Korea Development Institute (KDI)
Korea Environment Institute (KEI)
Korea Environmental Industry and Technology Institute (KEITI)

Korea Forest Research Institute (KFRI)
Korea Institute of Civil Engineering and Building Technology (KICT)
Korea Institute of Energy Research (KIER)
Korea Institute of Energy Technology Evaluation and Planning (KETEP)
Korea Institute of Ocean Science and Technology (KIOST)
Korea Institute of S&T Evaluation and Planning (KISTEP)
Seoul Institute (SI)
Korea Maritime Institute (KMI)
Korea Rural Economic Institute (KREI)
Korea Railway Research Institute (KRRI)
Korea Research Institute for Human Settlements (KRIHS)
Korea Smart Grid Institute (KSGI)
Korea Transport Institute (KOTI)
Land & Housing Institute (LHI)

UNIVERSITY

KAIST - Graduate School of Green Growth
Korea Development Institute School (KDI School)
Korea University
Seoul National University (SNU)
University of Seoul (UoS)
Yonsei University

PRIVATE COMPANY

CENTIOS
POSCO E&C
Kokam Co. Ltd
Korea District Heating Corporation (KDHC)
Korea Engineering Consultants Corporation (KECC)
Korea Photovoltaic Industry Association (KOPIA)
Korea Smart Card Corporation LTD (KSCC)
LG Chem
LG CNS
LS IS Co., Ltd.
S-Energy CO., LTD.
WOOJIN Industrial Systems Co LTD

INTERNATIONAL ORGANIZATIONS

Asia LEDS Partnership
Centre for LivableCities Singapore
Global Green Growth Institute (GGGI)
Green Growth Knowledge Platform (GGKP)
Green Technology Center-Korea (GTC-K)
Urban Environmental Accords Secretariat (UEA)

KGTF LIST OF PROGRAMS

➤ Ongoing ✓ Completed

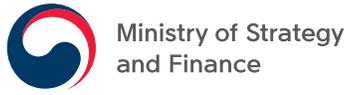
YEAR	SECTOR	REGION	COUNTRY	SCALE	PROGRAM TITLE	COMPLETED PROJECT	SINGLE/MULTI YEAR	KGTF (TOTAL) (US\$)
1	Climate Change	Global	-	Global	Infrastructure Resilience and Robust Decision-Making	➤	3 year	1,150,000
1	Transport	Global	-	Global	Capacity Building for Leaders in Energy Efficient Urban Transport Planning	➤	3 year	500,000
1	Urban	Global	-	Global	Capacity Building for Green Urban Growth	➤	2 year	500,000
1	Urban	Global	-	Global	Low-Carbon Green City Planning	➤	single	500,000
1	Water (Energy)	Global	-	Global	Quantifying Tradeoffs between the Water-Energy Nexus	➤	single	300,000
1	Urban	LAC	Regional	Regional	Regional Resource Recovery and Recycling	✓	single	150,000
1	Transport	ECA	Poland	National & Municipal	Piloting Green Transport Solutions for Sub National Governments	➤	single	625,000
1	Transport	ECA	Georgia	National	Greening Freight Transport and Logistics	➤	single	250,000
1	Transport	MNA	Morocco	National	Promoting Climate Resilience for MNA Roads—Piloting in Morocco	✓	single	200,000
1	Urban	AFR	Uganda, Tanzania, SA	National	Enhancing Green Urban Development in Africa	➤	2 year	1,000,000
1	Urban	LAC	Mexico	National	Instruments for Urban Redevelopment under the DUIS Program	➤	single	150,000
1	Urban	LAC	Mexico	National	Mexico Urban and Housing Programmatic Approach	➤	single	250,000
1	Urban	SAR	India	National	Green Urban Development along India's Eastern Dedicated Freight Corridor	✓	single	400,000
1	Transport	AFR	Ethiopia	Municipal	TA to promote Integrated Urban Planning in Addis Ababa to Foster Green Growth	➤	2 year	1,100,000
1	Transport	EAP	Philippines	Municipal	Achieving Green Growth Through Green Transport ICT	➤	single	400,000
1	Transport	ECA	Ukraine	Municipal	Sustainable Urban Transport for the City of Kyiv	➤	2 year	350,000
1	Transport	MNA	Lebanon	Municipal	Greater Beirut Urban Transport Project	✓	single	200,000
1	Urban	EAP	Indonesia	Municipal	Inclusive Green Growth for EAP for Cities in the East Asia and Pacific Region	➤	single	150,000
1	Urban	EAP	Indonesia	Municipal	Sustainable Urban Growth Analytics and Planning Systems: Technical Advisory Services	➤	2 year	375,000
1	Urban	LAC	Panama	Municipal	6C Central America Urbanization Review	➤	2 year	300,000
1	Urban	LAC	Brazil	Municipal	Green Vision for the Rio de Janeiro Metropolitan Region	➤	2 year	320,000
1	Urban	LAC	Brazil	Municipal	Rio Low-Carbon City Development Program	➤	2 year	625,000
1	Urban	SAR	Pakistan	Municipal	Mainstreaming Green Growth into Karachi's Business Plans	➤	single	400,000

YEAR	SECTOR	REGION	COUNTRY	SCALE	PROGRAM TITLE	COMPLETED PROJECT	SINGLE/MULTI YEAR	KGTF (TOTAL) (US\$)
2	Transport	Global	-	Global	Training Hub—Transportation for Green Growth	➤	2 year	500,000
2	ICT	EAP	Mongolia	Global	Civic Innovations: Solving Old Problems in New Ways (Green Growth Hackathon)	➤	2 year	430,000
2	Urban	Global	Cities	Global	City Credit Worthiness Academy and City Climate Planner Certification Program	➤	3 year	1,370,000
2	Urban	Global	India, Tunisia	Global	Green Smart City Development with Citizen Participation	➤	2 year	800,000
2	Urban	Global	Benin	Global	Solid Waste Management Policies and Technologies	➤	single	225,000
2	Transport	AFR	SSA	Regional	Streets as Drivers of Green Growth and Urban Prosperity	➤	2 year	600,000
2	Transport	AFR	Uganda	Regional	Developing Skills to Support Transport and Logistics in Sub-Saharan Africa	➤	single	400,000
2	Transport	AFR	SSA	Regional	Africa Sustainable Transport Forum	➤	3 year	1,000,000
2	ICT (Energy)	AFR	SSA	Regional	Negawatt Challenge for Energy Efficiency	➤	2 year	500,000
2	ICT	AFR	SSA	Regional	Green Cities and Low-Carbon Industries Initiative	➤	2 year	600,000
2	Urban	LAC	Argentina	Regional	Implementing Green Solution for Waste Management in LAC Region	➤	2 year	400,000
2	Transport	SAR	India	National	Promoting the use of Green Construction Technology in the Road Sector	➤	2 year	500,000
2	ICT	ECA	Kosovo	National	Innovative and Green Growth for Rural Kosovo: Investing and Scoping	➤	2 year	485,000
2	ICT	LAC	Guatemala	National	Using ICT to Increase Green Competitiveness in Guatemala	➤	2 year	605,000
2	ICT (Energy)	SAR	India	National	Toward Green Growth in Damodar Valley Corporation (DVC) Through Use of ICT and Investment in Clean Energy Generation	➤	2 year	600,000
2	Urban	AFR	Rwanda	National	Secondary Cities Program	➤	3 year	650,000
2	Urban	EAP	Vietnam	National	Promoting Green Growth in Industrial Zones	➤	2 year	750,000
2	Urban	SAR	India	National	E-Waste Advisory Project	➤	3 year	840,000
2	Urban	SAR	India	National	Regional Economic and Infrastructure Investment Strategy for Uttar Pradesh	➤	single	400,000
2	Urban	SAR	Sri Lanka	National	Spatial Transformation Strategy For Sri Lanka	➤	2 year	500,000
2	Urban	EAP	Philippines	Municipal	Metro Manila Citywide Slum Upgrading Project	➤	single	350,000
2	Urban	ECA	Turkey	Municipal	Developing Green Growth Strategies for Emerging Metropolitan Municipalities	➤	2 year	500,000
2	Transport	SAR	Bhutan	Municipal	Green Transport Initiative	➤	2 year	300,000
2	Urban	SAR	India	Municipal	TA for Design and Preparation of Tamil Nadu Sustainable Urban Development	➤	2 year	600,000
2	ICT	SAR	India	Municipal	ICT Applications to Achieve Green Growth in an Indian City	➤	3 year	1,700,000

YEAR	SECTOR	REGION	COUNTRY	SCALE	PROGRAM TITLE	COMPLETED PROJECT	SINGLE/MULTI YEAR	KGTF (TOTAL) (US\$)
3	Energy	MNA	Pakistan, Egypt	Global	MNA Cleaner Production for Companies	➤	2 year	304,000
3	ICT	Global	-	Global	Unlocking Data Innovations for Smarter Urban Transport and Greener Growth	➤	2 year	300,000
3	Urban	Global	-	Global	An Integrated Approach to Urban Sustainable Planning in the World Bank Learning Program	➤	2 year	1,500,000
3	Energy	EAP	Vietnam and Indonesia	Regional	Energizing Green Cities: Planning, Enabling, and Managing the Transition to a Low-Carbon Future	➤	2 year	300,000
3	Environment	AFR	Sub-Saharan Africa	Regional	Greener Cement Industries in Africa	➤	2 year	700,000
3	Environment	AFR	West Africa	Regional	West Africa Fishery Partnership for Competitiveness and Sustainability	➤	2 year	670,000
3	Transport	EAP	Indonesia, Philippines	Regional	Improving Urban Mobility Using Big Data Analytics	➤	2 year	500,000
3	Transport	SAR	India, Bangladesh, Bhutan	Regional	Smart Card Integration for Better-Connected Public Transport System	➤	2 year	400,000
3	Urban	SAR	Regional	Regional	Urban Public Spaces as a Transformative Instrument for Inclusive Green Growth in South Asian Cities	➤	2 year	600,000
3	Water	LAC	Panama, Uruguay	Regional	Greening Cities Through a Water-Centric Urban Planning Approach	➤	2 year	200,000
3	Water	ECA	Regional	Regional	Central Asia Water Resources Management (CA-WARM) Phase-I Project	➤	2 year	370,000
3	Energy	MNA	Egypt	National	Smart Technology and Energy-Efficient Production	➤	2 year	700,000
3	Energy	SAR	Bangladesh	National	An Efficient, Resilient, and Green Grid for the Bangladesh Power Systems	➤	2 year	500,000
3	Energy	ECA	Uzbekistan	National	Development of a National Industrial Energy Management Program in Uzbekistan	➤	2 year	400,000
3	Energy	LAC	Haiti	National	Variable Renewable Energy (VRE) Integration to Support Green Growth	➤	single	250,000
3	Environment	EAP	Vietnam	National	Scaling up Implementation of Green Growth Priorities	➤	2 year	750,000
3	Environment	LAC	Peru	National	Investments in Environmental Management and Green Growth	➤	2 year	430,000
3	Environment	MNA	Egypt	National	Air and Water Pollution Management Program	➤	2 year	450,000
3	Urban	EAP	Vanuatu	National	Affordable and Resilient Housing and Urban Land Use Planning	➤	2 year	675,000
3	Urban	ECA	Kyrgyzstan	National	Moving Toward Green Urban Development of Cities in Kyrgyz Republic	➤	2 year	300,000

YEAR	SECTOR	REGION	COUNTRY	SCALE	PROGRAM TITLE	COMPLETED PROJECT	SINGLE/MULTI YEAR	KGTF (TOTAL) (US\$)
3	Urban	LAC	Mexico	National	Inner City Affordable Housing Program	➤	2 year	400,000
3	Urban	LAC	Mexico	National	Strengthening Mexico's Capacity for Integrated Solid Waste Management	➤	2 year	400,000
3	Energy	ECA	Moldova	Municipal	Energy Efficiency Transformation of Urban Heating in Chisinau, Moldova	➤	2 year	530,000
3	Energy	LAC	Honduras	National	Tackling Power Sector Barriers for Green Growth	➤	2 year	450,000
3	Environment	ECA	Kazakhstan	Municipal	Developing Integrated and Green Solutions for Municipal Solid Waste Management	➤	2 year	200,000
3	Transport	SAR	India	Municipal	Intelligent Transport Systems and PPP in City Bus Systems for Indian Cities	➤	2 year	350,000
3	Transport	SAR	India	Municipal	Kolkata Metropolitan Transport Efficiency Improvement	➤	2 year	400,000
3	Urban	AFR	African Cities	Municipal	Improving Solid Waste Service Delivery in African Cities	➤	single	600,000
3	Urban	AFR	Mali	Municipal	Real-Time Urban Flood Risk Management and Decision-Support Tool for Bamako Greater Area	➤	2 year	495,000
3	Urban	AFR	Ethiopia	Municipal	TA to Promote Solid Waste Management and Urban Greenery in Selected Ethiopian Secondary Cities	➤	single	400,000
3	Urban	MNA	Egypt	Municipal	Enhancing Green Growth in Cairo	➤	single	575,000
3	Urban	SAR	India	Municipal	Sustainable and Green Regional Development Plan for Urban Growth Centers in India.	➤	2 year	350,000
Total								41,249,000

The Korea Green Growth Trust Fund (KGGTF) strengthens cooperation between the Republic of Korea and the World Bank Group to support inclusive sustainable development. The Trust Fund oversees management of all programs and projects, including Korea Green Growth Partnership (KGGP) knowledge programs and exchanges with the World Bank Group and its client countries. Learn more at www.kgreengrowthpartnership.org.



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