ABOUT THE KOREA GREEN GROWTH TRUST FUND AND PARTNERSHIP

The driving force behind the Korea Green Growth program of activities is to eradicate poverty and promote economic prosperity, but in an environmentally responsible and socially inclusive manner.

THE KOREA GREEN GROWTH TRUST FUND (KGGTF) is a single-donor World Bank Group (WBG) program. This 88-million USD program was established in 2011 in partnership with the Republic of Korea (RoK). KGGTF finances and facilitates the sharing of Green Growth technical know-how in an effort to support 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 promote integrated Green Growth concepts into investment decisions.

LEARNING FROM KOREA
Korea has learned valuable lessons applicable to 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. Korea positioned its program of resource management and climate change as an opportunity for socially inclusive economic growth, and implemented innovative technology and institutional approaches in a phased approach.

Importantly, the RoK was not afraid to experiment and integrate findings and innovations into overall policies. The program of action implemented in Korea is already reducing greenhouse gases, and creating broad economic opportunities. Through the KGGTF, RoK is sharing knowledge and lessons from their experiences. Countries around the globe are already benefiting from Korea’s Green Growth macro policy, institutional operational policies, and implementation approaches.

AGGREGATE, FACILITATE, LEVERAGE GREEN GROWTH KNOWLEDGE & LEARNING
Knowledge Promotion
Knowledge Creation and Development
Knowledge Communication and Exchange

TANGIBLE OUTCOME
Changes in Policies of Clients
Changes in Ongoing Projects
Tangible and Meaningful Indicators

MANAGE, COORDINATE, MONITOR TRUST FUND GRANTS
As of March 2016, 80 KGGTF-funded grant activities totaling approximately US$40 million.

WHAT WE DO
1. Fund, manage, coordinate, and monitor KGGTF-funded programs, and
2. Aggregate, facilitate, and leverage Green Growth knowledge and learning, institutionalizing global knowledge sharing to promote sustainable economic development.
GLOBAL SCALE

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INSIDE BACK COVER

Transport and ICT Team
There is thus a need to develop a toolbox of decision-making tools appropriate for different contexts and projects, and to test and validate them. There is also a need for a guidance on how to identify which methodology is most appropriate in a given context. For instance, a classical cost-benefit analysis is perfectly fine in some contexts; sometimes a more complicated methodology is required to take into account additional uncertainty. This WBG KGGTF-funded program aims to provide new decision-making methodologies and guidance and improve the resilience and sustainability of infrastructure projects.

**PROGRAM SCOPE**

The objective of the program is to develop and support the piloting of practical methodologies for decision-making under uncertainty for projects in the urban, water, and transport sectors. This will help to enable better integration of climate-change risks into project design and implementation, and ensure longer-term investment optimization. To this end, this KGGTF grant will support validating the applicability of these new decision-making tools in the context of development interventions.

Pilot studies cover different regions, different income level, and different types of projects (water supply and roads in Peru, urban flooding in Colombo, and hydropower in Nepal). These pilot projects include research to design more simple methodologies for smaller projects, and more comprehensive methodologies for larger infrastructure projects, as well as funding for the additional analysis needed in project design to incorporate uncertainty and create more resilience. The KGGTF chose these projects based on local demand to ensure ownership and participation.

**KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION**

The team works closely with the World Bank-hosted Global Facility for Disaster Reduction and Recovery, which already has a strong partnership and history of collaboration with South Korea’s National Emergency Management Agency. Depending on the cases selected and methodologies developed, other partners include the Korea Research Institute for Human Settlements, Korea Environment Institute, and Korea Water Resources Corporation.

**DESIRED IMPACT**

**a. Improved efficiency:**

The new methods that this program promotes for investing in Green Growth under uncertainty are designed to include many different stakeholders’ perspectives and insights in the decision-making process, and to use multiple criteria to build investment plans. This ensures efficiency in the decision-making process and of projects themselves.

**b. Greater resilience:**

The ultimate goal of these new methodologies for decision-making under uncertainty is to design resilient investments—a key characteristic of Green Growth. The use of these tools, therefore, ensures that the projects implemented are robust, able to withstand whatever future conditions may materialize.

**c. Increased competitiveness:**

Robust planning in transport, water, and hydropower infrastructure is necessary for economic growth. The application of these decision-making tools for screening and managing climate uncertainties and more can attract international concessional financing to the private sector, which may in turn boost economic opportunities.
Solid Waste Management Policies and Technologies

PROGRAM CONTEXT AND ISSUES
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 stratifications “waste pickers” descend on waste sites in poor urban areas with especially poor solid waste management services. But 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 South Korea have used technology to harness their solid waste management since the 1960s. This KGGTF-awarded 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 China and Benin. The program team first assesses 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.

PROGRAM SCOPE
Topics covered by the case studies for this KGGTF program include describing the solid waste value chain, from collection and transport 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.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
This work will build on the WB’s global program for solid waste management and the World Bank Group urban team’s work in partnership with the Global Partnership for Output-Based Aid, which uses results-based financing approaches to the solid waste sector.

DESIRED IMPACT

a. Improved efficiency:
The case studies for this KGGTF program will support policy dialogue and the decision-making process in countries in East Asia and Africa. They will also contribute to improving the efficiency of waste management systems through waste minimization, diversion, collection, and transfer. This will help increase the efficiency of the sector and have a positive impact on air quality, human health, and the environment, including the reduction of greenhouse gas emissions from the solid waste sector.

b. Greater resilience:
Solid waste management plays an important role in urban resilience. In areas where the solid waste system is malfunctioning, solid waste is often disposed of in drainage channels, making cities, especially slums, vulnerable to heavy storms.

c. Increased competitiveness:
Implementing solid waste policies and regulations with a focus on reuse and recycling contributes to city competitiveness. Recyclable material can be used as raw material by industries to make new products at a competitive cost.

Green Smart City Development with Citizen Participation

PROGRAM CONTEXT AND ISSUES
Land availability is a critical element in human settlements, along with basic infrastructure provision for water supply, sewerage, solid-waste facilities, and more. However, without well-established and systematic cadastral (land) systems in many developing countries, sustainable economic growth and environmental protection is nearly impossible. In addition, 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 in mind. Information and communication technology (ICT) plays a fundamental role in Green Growth implementation and citizen participation in urban management.

PROGRAM SCOPE
The objective of the project is to mainstream innovative green, smart-city best practices for sustainable urban development. ICT can open up new opportunities for local governments to make the best use of critical land-use information and big data and to engage directly with citizens, civic society, and the private sector in a more participatory way. This two-step program includes:

- An ICT-based land information management system that will help cities make the best use of land for inclusive Green Growth; and
- A mobile and big data-based civic participation system that will make urban management more participatory and inclusive.

This KGGTF program will foster knowledge sharing on land management between South Korea, Tunisia, and other developing countries. In Mumbai, this KGGTF program will host training workshops that demonstrate best practices for government officials. The program will also pilot a civic participation system for the Mumbai Municipal Corporation, in which citizens will be able to submit information through mobile-phone-based surveys, hotlines, and user-generated maps. Applications will also 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.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
South Korea had a paper-based cadastral system until it went digital in the 1970s. All processes and procedures in relation to land are now performed in a digital environment. Seoul Metropolitan Government is a global leader in e-Governance, with ambitious plans to engage with citizens and enhance quality of life through big data. By working closely with South Korean counterparts, Indian and Tunisian officials will be able to innovate ICT applications for land-information management and urban management, applying innovative approaches and solutions through mobile technology and big data.

DESIRED IMPACT

a. Improved efficiency:
ICT-based, green, smart city innovations can make cities green, inclusive, and sustainable. At the same time, these innovations can make cities more efficient and transparent at relatively lower costs. Mobile- and big data-based civic participation systems can incentivize green behavior and broader citizen participation in identifying and eradicating waste of resources and pollution sources. ICT-based land-information management systems will make the best of land and infrastructure embedded in a city.

b. Greater resilience:
Green and smart city innovations provide policymakers and citizens with practical solutions for climate change and urban resilience.

c. Increased competitiveness:
Making a city greener with bottom-up citizen participation and the systematic use of land information can transform the livability and economic viability of a city, making it more competitive and attractive to private investors.
Training Hub “Transportation for Green Growth”

PROGRAM CONTEXT AND ISSUES
Traditionally, the cost-benefit analysis of transportation system impacts on Green Growth has been limited. And what has been needed is an analytical tool that accounts for the value of greenhouse gas emissions and air pollution reductions, as well as the reduction of road safety risks.

The new evaluation method builds on a consensus of the IFI harmonization group to assess GHG emissions, and will be used to evaluate the Voluntary Commitment of the Multilateral Development Banks to spend $175bn on sustainable transport projects.

PROGRAM SCOPE
This KGGTF program, called a training hub, provides a prime opportunity to mainstream the Green Growth framework of the World Bank. The program develops a new methodology for evaluating transport projects’ contribution to Green Growth—one that is designed to network stakeholders in client countries. Policy makers with other International Financial Institutions and Green Growth—one that is designed to network stakeholders in client countries. Policy makers will also learn how incentives can help in the transition to a green economy.

Green transport also reduces the social costs of transport, with far-reaching benefits to poor households in developing countries, including increased mobility and improved access to jobs, markets, and public health and education. Participants will also learn how incentives can help in the transition to a green economy.

of reduced environmental damage, including reduced greenhouse gas emissions, health costs, and accidents.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
The training will be hosted by the Korea Transport Institute, which will share its experiences with transport policy.

DESIREd IMPACT
The training will lay the basis for a systematic implementation of Green Growth strategic concepts for all ex ante policy making in the countries involved. It will systematically change the net benefit reporting of projects and policies, and will lead to a change in the overall portfolio of projects and policies.

The program creates seven training sessions for stakeholders in client countries. Policy makers will also learn how to use tools to evaluate technology futures, mitigate risk, and quantify the value

Cleaner Production for Companies in the Middle East and North Africa

PROGRAM CONTEXT AND ISSUES
Industry in Pakistan is competing more and more with the country’s agricultural and power sectors for limited water and energy resources. Fifty-eight percent of manufacturing industries are located in Punjab, mostly located in seven industrial clusters: Rawalpindi, Sialkot, Gujranwala, Faisalabad, Sheikhupura, Lahore, and Wazirabad. As economic growth puts pressure on natural resources, industries compete for water use with the agricultural and energy sectors. The country already faces a five-gigawatt shortage and severe load shedding and blackout problems, causing factory closures and unemployment.

PROGRAM SCOPE
The goal of this KGGTF program is to help Pakistan continue its natural resource efficiency efforts and their associated cost savings. In specific, the program covers the following activities:

• Cleaner production assessment, technical and financial feasibility studies, and implementation support for resource-efficient technologies to industrial firms in Punjab Province; and

Dissemination of results from a cleaner production audit analysis study and boiler energy efficiency assessments conducted in 2014.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
This program addresses a large number of companies where efficiency and saving possibilities are highest, and therefore has a significant potential for reducing greenhouse gas emissions. The program is also aligned with green investment in manufacturing, agribusiness, and services, as well as sustainable energy financing for energy efficiency, the use of renewable energy, recycling, water saving, and the use of clean technology solutions across a range of sectors.

DESIREd IMPACT
The next phase of this ongoing program would target, investigate, and plan for cleaner production technologies for the textile, sugar, pulp and paper, and leather industries. 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.

TECHNICAL INTEREST AREA
• Energy efficiency planning and policy at national level (industrial sector in specific)
• Institutional setup for energy efficiency and implementing agencies
• Implementation, monitoring, and evaluation tools for the achievement of national EE targets
• Capacity building programs for officials and energy auditors qualifications and certification scheme
• ESCOs and/or other models for financing
• Focus on EE programs for the industrial sector
PROGRAM CONTEXT AND ISSUES
India implemented its large road infrastructure program in 2000 to modernize its National Highway System and improve all-weather rural access. While the progress of the road building program continues, construction technologies remain very traditional, energy intensive, and responsible for a great deal of greenhouse gas emissions. Road construction materials such as stone aggregates, sand, and gravel also deplete natural resources. Officials have made some attempts to introduce greener technologies and materials, but these efforts are sporadic and limited to small pilot projects. Hence, there is an urgent need for sustainable road construction practice in India.

PROGRAM SCOPE
This WBG KGGTF program aims to explore the introduction of green construction technology and materials through a knowledge-based structured process.
Steps include:
• Developing a database for such technologies that includes the Korean practices;
• Organizing a workshop with the Ministry of Road Transport and Highways, National Highways Authority of India, National Rural Roads Development Authority, and the Public Works Department of Rajasthan to adopt selected technology and innovative materials;
• Piloting this technology and monitoring its performance in the ongoing World Bank Group-funded National Highways, Rural Roads, and Rajasthan Road Sector Modernization Project programs; and
• Integrating these practices into at least 10 percent of the roads being built under these programs.

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, and through the creation of local green jobs building roads and dealing with large quantities of quarry waste and materials such as fly ash and low-cost concrete.

DESIRED IMPACT
a. Greater resilience:
Using greener technologies and construction materials can reduce the rapid depletion of natural resources, emission of air pollutants, and high energy requirements that are standard with conventional equipment and materials in road construction. Also, adopting bio-engineering can help to stabilize fragile slopes that would otherwise be vulnerable to slip during harsh climate conditions.
b. Increased competitiveness:
Using local and low-cost innovative materials for low-traffic rural roads can save cost and time, and create green jobs.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
This program focuses on promoting the use of green construction technology in the transport sector. It supports the capacity of WBG clients to design, plan, and implement Green Growth initiatives, strategies, and investments around transport and climate change.
Using ICT to Increase Green Competitiveness in Guatemala

PROGRAM CONTEXT AND ISSUES
Guatemala is one of the most vulnerable countries in Central America to climate change. In addition, the country’s other development challenges include increasing competitiveness in order to boost investments and job creation. Clean production in Guatemala could be a catch-all solution, helping the country improve competitiveness, use resources more efficiently, decrease environmental impact on local communities, and allow for new and stricter markets. Over the past six years, the government has focused on making the manufacturing sector more competitive through the use of more efficient technologies and management practices. It has set up the National Commission for Clean Production, a public-private entity that seeks to promote and advance the implementation of the National Plan for Clean Production, approved in 2010.

PROGRAM SCOPE
In order to bolster these efforts, this KGGTF program supports the institutional capacity building of different organizations in the country to promote clean production initiatives. It also aims to stimulate the adoption of clean production protocols and technologies among small and medium business enterprises in Guatemala. KGGTF is working with local and international partners to raise awareness about the benefits of and assess opportunities for investment in clean production. The project focuses on three main pillars:

1. Institutional capacity-building, awareness, and dissemination.
   The goal is to strengthen institutional capacity to develop strategies, policies, and programs based on evidence and a participatory approach to stimulate clean production in the country. Another key goal of this pillar is to raise awareness among both public and private actors about the importance and potential impact (both economic and environmental) of clean production initiatives.

2. Promotion of clean production among the productive sector in the country.
   This is being achieved through a Voluntary Agreement on Clean Production between the government and the Association of the Chemical Industry (GREQUIM). An assessment of the main clean production challenges and opportunities in the sector has been done, and the next step is a draft proposal for the agreement, as well as preparing both the private sector and government agencies for negotiation.

3. Generation of information and analysis of opportunities for investments on clean production.
   This is being done through an evaluation by an international firm, and will explore investment opportunities and competitiveness for a sample of economic sectors in Guatemala (tourism, dairy, and garment).

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
The key counterparts in Guatemala are the National Committee for Clean Production and PRONACOM (National Agency for the Promotion of Competitiveness). The team also looks to establish key partnerships with different organizations in South Korea that are responsible for implementing clean production projects, policies, and regulations. This includes partnerships in institutional capacity-building and training with the Korea Energy Agency and in business model implementation of efficient industries and eco-industrial parks with the Korea Industrial Complex Corporation.

DESIRED IMPACT
a. Improved capacity:
   The various training and technical assistance activities the project has supported should help local organizations to be more effective in promoting clean production in Guatemala.

b. Increased competitiveness:
   Adoption of clean production technologies and procedures by Guatemalan firms and clusters can help improve their competitiveness by enabling more efficient resource use, decreasing environmental impact on local communities, and allowing them to enter new and stricter markets.
Innovative and Green Growth for Rural Kosovo:
Investing and Scoping, Kosovo

PROGRAM CONTEXT AND ISSUES
Expanding broadband Internet access in developing countries to levels seen today in developed economies can increase productivity, generating higher GDPs and creating more new jobs. This in turn can help people out of poverty and into shared prosperity. It is also apparent that broadband Internet exerts a positive impact on fighting climate change by fueling innovative software and hardware that increase efficiency.

Kosovo could reap significant economic, environmental, and social benefits from the rollout of broadband connectivity in underserved areas. Forty-three percent of rural households in Kosovo are currently unconnected, and one-third of these households—with an all-inclusive intervention—are unlikely to be connected to the network anytime soon. These households are located in municipalities with a higher concentration of poor people.

The Government of Kosovo recognizes broadband connectivity as one of the enabling infrastructures for Green Growth and the country’s transition to a digital economy. It aims to expand the reach of broadband Internet services in rural areas, where the private sector has no commercial incentives to expand network access. A proposed solution is the implementation of a rural broadband program modeled on a public-private partnership, because neither private nor public sector alone can finance such a costly investment.

PROGRAM SCOPE
The KGGTF’s two-year program with Kosovo aims to increase broadband Internet access by producing guidelines and a pilot program to enable innovation and Green Growth in the country.

Under phase I, the activity delivered feasibility studies to help the Ministry of Economic Development of Kosovo to design an inclusive and high-impact rural broadband program. Under phase II, it designed and implemented an innovative IT training pilot, called Women in Online Work (WtW), to increase help 100 women residing in two rural municipalities of Kosovo engage in green, ICT-enabled jobs offered through a global online work marketplace.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
The WBG KGGTF program team will reach out to technical South Korean public institutions such as the National IT Promotion Agency, and the Korea Communications Commission, as well as international donors operating in Kosovo, including the European Commission, KfW, Helvetas International Cooperation, the Embassy of Norway, GIZ, and others.

DESIRERD IMPACT
Broadband Internet deployment and demand-side activities, such as targeted IT trainings, could increase the interconnectedness of Kosovo and drive wider adoption and use of ICT. After the broadband network is deployed, there will be additional opportunities to capitalize on the newly deployed broadband connectivity by developing smart infrastructure, specifically in the areas of smart energy and water supply. Kosovo can then become more competitive in its economy, improve efficiency of system process by use of broadband, increase resilience of ICT system use, and decrease its environmental footprint.

This proposed activity laid the groundwork for a public investment intervention to finance a rural telecom infrastructure rollout in underserved areas, as well as the groundwork for financing pilot projects that will benefit from newly deployed broadband connectivity. This project was included in the National Economic reform document as a key intervention for the ICT sector. The World Bank and Government of Kosovo have started discussions regarding the future World Bank program in the country.

Affordable and Resilient Housing and Urban Land Use Planning in Vanuatu

PROGRAM CONTEXT AND ISSUES
Vanuatu is a small island nation of 250,000 people in the South Pacific and is rated by the 2014 World Risk Report, as the most vulnerable country in the world to natural disasters, including cyclones, earthquakes, and tsunamis. This is not only the bases of extreme vulnerability, but also a lack of coping capacities within the Pacific small island developing state.

At the urgent request of the Prime Minister and Minister of Finance, the World Bank Group looked at issues and options for a national housing policy in Vanuatu. As a result, a couple of challenges were identified, including the growth of informal settlements in Port Vila, many of which are located on high-risk land that is particularly vulnerable to natural disasters. Most of the people in these informal settlements are living in crowded housing and deplorable conditions without adequate access to basic services, such as water and sanitation. Based on these findings, a preliminary set of recommendations called for a comprehensive national housing policy.

The government sought technical and lending support from the WBG.

PROGRAM SCOPE
This WBG KGGTF program aims to increase the availability of affordable land and housing and reduce the risk of natural hazards and climate change for urban populations. In particular, the program will cover:

- Housing needs and affordability analysis through a household income and expenditure survey for Port Vila and Luganville;
- Identification of potential sites for housing development on both public and private land using hazard-risk probability mapping;
- Legal and institutional analysis of planning standards and zoning for reducing the legal minimum plot size;
- South-South knowledge exchange;
- Development of detailed local plans for subdivisions, land allocation procedures, registration systems, and more; and
- Preparation of a project concept note for a longer-term engagement in policy reform, investment, and urban land and housing needs.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
This KGGTF program would contribute to urban Green Growth practices by focusing on land use and housing construction efficiency and by improving household resilience to climate change and natural disasters.

DESIRED IMPACT
a. Improved efficiency:
The Government of Vanuatu proposes the adoption and application of a Subdivision Policy that would help plan new, fast-growing settlements and decrease travel times for low-income households to work, health, education and more, helping to reduce the country’s carbon footprint.

b. Greater resilience:
This program aims to improve resilience by providing legal land for housing, and incentivizing low-income populations to invest in improved construction and materials for more durable housing.

TECHNICAL INTEREST AREA
- Experiences of successful informal peri-urban settlement upgrading
- Land readjustment
- Role of intermediary public sector agencies in greenfield subdivision
- Affordability and housing needs assessments
- Smart layouts and infrastructure network designs for green housing settlements
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. The Government of Ethiopia’s (GoE) vision for climate resilient green economy envisions Ethiopia’s growing its economy along a carbon-neutral path, and becoming a regional and global leader in low carbon growth. To move forward to that direction, 5 key areas are identified: i) increased availability of clean transport; ii) reduced oil dependence; iii) healthier, cheaper, safer transport; iv) coordinated and rational long-term planning of settlements; and v) healthier towns and cities providing higher quality of life and wellbeing. Despite efforts made by the Ethiopia in urban transport in Addis Ababa, benefits can only be assured if the structural and land-use impacts of its transportation investments are fully evaluated and supported. Because Addis Ababa is headquarters to several African institutions, including the United Nations Economic Commission for Africa and the African Union, successful implementation of GoE’s climate resilient green economy vision will have substantial potential for replication across the continent.

The program would primarily address the green transport for urban growth business line, with secondary focus on increasing resilience of transport system and human settlement to climate risk. The program also envisions three key activities including a core piece of analytic work, framed important stakeholder engagement which is currently very challenging cross institutional coordination and works towards low carbon, resilient, and green outcomes in the Ethiopian political economy context. Thus this program emphasizes this aspect.
**Rwanda Secondary Cities Program**

**PROGRAM CONTEXT AND ISSUES**

Approximately 1 million out of 1.6 million urban dwellers in Rwanda live in Kigali. The rest of the urban population is dispersed across provincial towns in 27 districts. Ten of these towns are now big enough to be considered urban. 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 current and natural endowments, and the connectivity within secondary cities. Program activities include rapid planning assessment for urban planning; support for the preparation of investment that will make secondary cities more resilient when it comes to climate change and natural disasters.

**DESIRED IMPACT**

The development of secondary cities will create more business opportunities for rural products, and increase access and connectivity to critical basic services and employment opportunities. In addition, this program will help with:

- **a. Improved efficiency**
  - This KGGTF program would develop an investment program that would help ensure that secondary create attractive alternatives to Kigali for living and business.

- **b. Greater resilience**
  - This program will support the planning and investment that will make secondary cities more resilient when it comes to climate change and natural disasters.

- **c. Increased competitiveness**
  - Development of secondary cities is a way to shift economic growth away from agricultural and other commodities to value-added products. This program supports creating economic opportunities and growth towards inclusive and sustainable urbanization.

**TECHNICAL INTEREST AREAS**

- Urban upgrading and renewal
- LED initiatives in small towns (50,000–100,000)
- Land use planning and land value capture
- Urban transport and connectivity

**PROGRAM SCOPE**

The goal of this program is to enable Rwanda to develop the Green Growth Economic potential of secondary cities. Program activities include rapid assessment of different economic and natural endowments, and the connectivity within six priority cities; support for the preparation of rapid planning assessment for urban planning; undertaking a rapid assessment of priority investments in the six priority cities; and the development of institutional capacity-building for green urban development policies and strategies.

**KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION**

The key partners of the program are several Rwandan government agencies, GIZ, the European Union, the City of Kigali, Global Green Growth Institute (GGGI), and others.

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**Improving Solid Waste Service Delivery in African Cities**

**PROGRAM CONTEXT AND ISSUES**

Waste management problems in Africa are varied and complex, with infrastructure, political, technical, social, economic, organizational, management, regulatory, and legal challenges. And they are becoming severe due to rapid urbanization and the scarcity of financial resources. The result: damaging impacts to human health, the environment, and local economies. This represents a serious impediment to inclusiveness and Green Growth. While these problems are immense, the opportunities are as well. At the local level, improving municipal solid waste management could generate high economic rates of return through significant environmental and public health benefits. Moreover, it improves overall livability and urban resilience. To respond to this challenge, the World Bank Group is planning to increase its involvement through project financing, capacity-building, and technical assistance for cities and national governments.

**DESIRED IMPACT**

- **a. Improved efficiency**
  - Case studies will support policy dialogue and decision-making in African cities and contribute to improving the efficiency of waste management systems through waste minimization, diversion, collection, and transfer. Such actions will increase the efficiency of the sector and have a positive impact on air quality, human health, and the environment, including the reduction of greenhouse gas emissions.

- **b. Greater resilience:**
  - Solid waste management plays an important role in urban resilience. In areas where a solid waste system is malfunctioning, solid waste tends to be randomly disposed of into drainage channels, making cities (in particular slums) vulnerable to flooding after heavy storms. Improving adaptive policies and technologies that address this will contribute to city resilience.

- **c. Increased competitiveness:**
  - Implementing solid waste policies and regulations that focus on reuse and recycling can contribute to city competitiveness. Recyclable materials can be used as raw material by industries to make new products at a competitive cost, and the overall cleanliness of a city through proper waste management helps to attract private investors and boost tourism.

**TECHNICAL INTEREST AREAS**

- What are the best practices to get multiple jurisdictions to work together towards a regional solid waste disposal solution?
- How to get the host community to accept the waste from other jurisdictions and what could be the incentive?
- What alternative and affordable technologies could be used to treat large quantity of solid waste comprising over 40% of sand and dirt?
- Cost recovery and resource mobilization for solid waste management?
- How to plan ahead and be proactive on solid waste management challenges in the context of rapid urban growth?
Real Time Urban Flood Risk Management and Decision Support Tools for Bamako Greater Area Based on Analysis of Attenuation of Cellular Phone Network Signals

**PROGRAM CONTEXT AND ISSUES**
Urban flood risk is increasing in African cities, often because of inadequate urban planning and building codes, uncontrolled occupation of flood-prone lowlands, and climate variability and change. Flood risk in Bamako, Mali, is a typical example. At the same time, the availability of hydro-meteorological observing stations has dropped dramatically across Africa since the 1970s. The problem is currently worsening in Mali because of security conditions. But innovative public-private partnerships among National Meteorological and Hydrological Services, cell phone operators, civil protection services, and food security institutions can directly increase competitiveness with regards to data information and services, data transmission and archiving, and service delivery. The French Institute for Research and Development and the Laboratory of Materials and Environment at the University of Ouagadougou jointly won a grant from the KGGTF to demonstrate the feasibility of estimating rainfall on a real-time basis based on monitoring the strength of signals between cellphone telecommunication pylons. (Rain Cell Africa offers a dense network of telephone coverage at marginal operating cost, but with high reliability. This company can share of real-time data.)

**PROGRAM SCOPE**
The goal of this grant is to improve real-time monitoring of rainfall and flood risk in Mali’s urban areas, particularly Bamako. 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 will also be used to model urban runoff and flood risk. Eventually, the municipal government, together with civil protection authorities, will be able to improve contingency plans with more predictability and lead-time. This system will also assist in documenting flood pattern and ultimately shifting urban growth patterns away from flood-prone areas. Program steps include:

- **KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION**
  The team works closely with various units of the WB, as well as external partner institutions, including Kyungsik National University, the University of Ouagadougou, Orange-Mali, Mali Civil Protection Authorities, Mali Meteorological Agency, Mali Hydrological Department, and the French Research and Development Institute.

  **DESIRED IMPACT**

  a. **Greater resilience:**
  This program will enable the development of operational tools for more effective emergency response planning and knowledge enhancement about extreme climate events, including rainfall and runoff return periods, with direct applications in urban planning and infrastructure design.

  b. **Increased competitiveness:**
  Innovative public-private partnerships between National Meteorological and Hydrological Services and cell phone operators would be beneficial in data creation, data collection, and efficient service delivery. A new advisory system would benefit farmers, crop insurance programs, water-resource monitoring and management, and the monitoring of rainfall-influenced diseases. Once scientifically demonstrated as valid for national coverage, with applications and tools in place, this new innovative technology could be further developed by local entrepreneurs, providing significant sustainable business opportunities.
Development Policy Loan to Promote Inclusive Green Growth and Sustainable Development in Himachal Pradesh

PROJECT CONTEXT AND ISSUES
The mountain state of Himachal Pradesh, located in Northern India, is rich in natural resources, serving as a critical, species-rich watershed for Northwest India. Dense forests cover more than 27 percent of its land area, helping define the weather in much of Northern India and acting as a carbon sink for greenhouse gases (GHGs). Despite disadvantages of terrain, the state has also managed to ensure that basic services reach almost all its citizens, and has achieved near-universal coverage for sanitation, child immunization, and access to electricity and drinking water. But the state government realizes the fragility of this system and has developed ambitious and innovative sustainable development goals that move away from resource-based sources of income, specifically hydropower, tourism, and horticulture.

PROJECT SCOPE
This USD 200 million WBG KGGT project identified the environmental aspects of growth sectors that need the immediate attention of policymakers; redefined strategies, policies, and operational roles to address resource and environment challenges; defined institutional and policy frameworks, revitalizing capacity and skills and implementable action plans for effective results; ensured maximum public participation in management of natural resources and protection of the environment; and promoted climate resilient development and carbon neutrality. This program supports Himachal Pradesh in the improved management of its natural resources across growth engines of the economy and promotes inclusive Green Growth and sustainable development.

DESIRED IMPACT
The benefits of this program include:

a. Increased competitiveness:
A successful payment for ecological services policy—the first of its kind in the region—will mean more environmentally sustainable industrial development, adoption of cleaner technologies through incentives, and public disclosure of environmental performance. In addition, a sustainable tourism development policy will promote sustainable tourism development based on global and national good practices.

b. Improved efficiency:
The state government has initiated a massive program of community-led watershed conservation. This will increase the agricultural and horticultural productivity of this fragile mountain region.

DETAILED DESIRED IMPACT:
1. Socially responsible and environmentally sustainable hydropower development with a river basin approach and online monitoring (the first in India for hydropower).
2. To benefit local mountain communities. The state government has initiated a massive program of community-led watershed conservation. This will increase the agricultural and horticultural productivity of this fragile mountain region. An amended water policy was also approved, paving the way for involving the private sector in distribution of water and collection of water charges through public-private partnerships and establishing a regulatory mechanism for sustainable water use.
3. Successful payment for ecological services (PES) policy—the first of its kind in the region.
4. A green industrial policy that focuses on environmentally sustainable industrial development, adoption of cleaner technologies through incentives, and public disclosure of environmental performance.
5. A sustainable tourism development policy that promotes sustainable tourism development based on global and national good practices.
6. A state climate change strategy and action plan.
7. A state geo-informatics center to promote use of integrated GIS mapping

Information and Communications Technology (ICT) Applications to Achieve Green Growth in Indian Cities

PROGRAM CONTEXT AND ISSUES
The ICT sector plays a key role in reducing carbon emissions from other sectors of the economy, such as transport or power transmission and distribution. ICT applications also have an extremely large potential to generate environmental benefits by enhancing performance across wider business operations, reducing demand for energy, and providing better and more efficient services through e-government initiatives.

PROGRAM SCOPE
The objective of this KGGT project is to provide a preliminary ICT assessment in the energy sectors of three Indian cities (Ponja, Hubli and Shimla) 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, a detailed diagnosis has 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.

KGGT SUPPORT, PARTNERSHIPS, AND COORDINATION
WBG and Korean experts are working together each step of the way. Participating agencies include the Korean Ministry of Science, ICT and Future Planning of Korea, the Korea Institute of Energy Technology Evaluation Planning, the National Information Society Agency of Korea, Korea Energy Management Corporation, Korea Water Resources corporation, and the Korea Smart Card Corporation. Team members from participating cities will visit Korea to see live deployment of solutions and exchange lessons learned with their Korean counterparts.

DESIRED IMPACT
a. Improved efficiency:
Improvements will happen in government processes, water and energy supply and distribution, lighting systems, and transportation, and Better-informed decision-making will inform how to use of public resources.

b. Greater resilience:
Early disaster warning systems, advanced grid reliability, Intelligent transportation, and utility-management systems will contribute to transport network operation resilience, transport safety, and travel reliability.

c. Increased competitiveness:
More jobs will emerge through upgraded infrastructure and better service provision.

TECHNICAL INTEREST AREA
• GG Smart Cities Project i.e. ICT Solutions for Intelligent Transport Systems, Smart Water & Waste Mgt., Smart Light / Energy Systems, Smart Card Corporation. Team members from participating cities will visit Korea to see live deployment of solutions and exchange lessons learned with their Korean counterparts.

D. Evidence-based decision support.
• Data analytics based urban planning
Technical Assistance to Promote Solid Waste Management and Urban Greenery in Selected Ethiopian Secondary Cities

PROGRAM CONTEXT AND ISSUES
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-II). ULGDP is helping to strengthen the capacity of urban local governments to plan, deliver, operate and maintain priority municipal infrastructure and services including solid waste management.

PROGRAM SCOPE
The objectives of the Ethiopia Solid Waste and Greenery Project are to:

- Undertake assessments on the status of solid waste management and urban greenery in the four secondary cities and provide advice and recommendations aimed at improving solid waste management in these cities.
- Review federal level strategy documents and service delivery standards, and refine the documents to guide implementation.
- Design capacity building plans and activities and conduct training and experience sharing visits for technical staff, officials and key stakeholders.
- Provide focused support for the municipality of Bishoftu including assessing the current status of its solid waste management system and advising effective measures to close the existing dump site and convert it to urban greenery.

KGGTF SUPPORT, PARTNERSHIPS, AND COORDINATION
The key partners of this program is Ministry of Urban Development, Bishoftu City Administration, nine regions and one city administration.

DESIRED IMPACT

a. Improved efficiency:
The proposed activity would ultimately contribute to effective solid waste management, and reduction of carbon emission. The waste generated in the city will be properly disposed and recycled. Since the landfill has a membrane cover the leachate will not percolate to the ground. It is expected to spill to the pond and evaporate. This will avert ground water pollution and irreversible damage on the ground. The management that will be introduced after this project will also help to avoid the foul odor and nuisance on the adjacent neighborhood. Under ULGDP II, a number of cities are expected to construct landfills, and the experience of Bishoftu will be used to develop the others properly.

b. Greater resilience:
The city after closing the existing dumping field will develop greenery on the site. This contributes to the avoidance of health stress on the nearby residents. It will contribute to the reduction of negative impact on the climate through the reduction of carbon emission.

c. Increased competitiveness:
The city has 7 crater lakes, and is aspiring to become a tourist destination in east Africa, and this support will directly contribute in realizing the vision. This is also in line with the country’s urban development policy which emphasizes on creating economically productive, socially inclusive and environmental sustainable cities.

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TECHNICAL INTEREST AREA:
- National level standardization for building climate resilient transport infrastructure. Specifically: what is the underlying philosophy guiding the standardization? What are the cost implications thereof? How are new standards integrated into planning at national, province, and city levels?
- National Strategic development on Climate Resilient Transport Infrastructure
- Climate resilient urban transport systems (mitigation, adaptation measures against flood, landslides, erosion, etc) being addressed incorporated in the investment and development of the rural road network in Korea?
- GHG measurement in transport and plan for GHG reduction
- What alternative and affordable technologies could be used to increase the resilience of transportation systems?
- What data and indicators can be used for monitoring and evaluation of transport resilience?
- Korea is aiming to cut over 30% of its transport-related emissions by 2020 – how is the country accomplishing this? Carbon taxes, programs, policy etc.? Would be great to see concrete takeaways for this come out in the discussions.
- Korea shares its lessons widely with countries to help leapfrog their progress in building efficient transport systems – can we hear about how other countries are replicating some of Korea’s lessons? I realize the agenda is oriented towards transport-related emissions by 2020 and mitigation perspectives, is there room for exploring road safety measures also? In the agenda is oriented towards transport-related emissions by 2020 and mitigation perspectives, is there room for exploring road safety measures also? The city has 7 crater lakes, and is aspiring to become a tourist destination in east Africa, and this support will directly contribute in realizing the vision. This is also in line with the country’s urban development policy which emphasizes on creating economically productive, socially inclusive and environmental sustainable cities.