Cities are the driving force behind national and global economies, and have a critical role to play in supporting global sustainability and climate change ambitions, as well as the realization of green growth pathways. Urban areas are increasingly seen as engines of national and global wealth but face an urgent need to address their own sustainability challenges and various adverse external impacts they have on natural resources, ecosystems, and the planet. Cities have a key role to play in the realization of Agenda 2030 as well as the climate change agenda, including the Paris Agreement, and linking renewed green city planning to climate finance provides a significant opportunity for change. In this Chapter, GGGI will focus on sharing the success stories of our work in green cities.
Recognizing the importance of cities to the global sustainability agenda and green growth transitions, GGGI has committed to working with its Members and partners to deliver inclusive, integrated urban planning, infrastructure, and mobility solutions. In 2019, GGGI achieved 115 results related to green cities, including green growth plans and policies, green investments and capacity building activities and knowledge products, across 29 projects in 13 countries. This in turn strengthened cities’ efforts to grow using more renewable energy, better manage urban waste through circular economy approaches, support sustainable transportation solutions, and create new green jobs.

GGGI worked with line ministries and municipal governments to develop green city plans and frameworks in Nepal, Senegal, Rwanda, and Cambodia, as well as delivered training materials and project origination linked to climate finance and bilateral assistance in a host of other countries. In Mongolia, GGGI supported its government partner to secure Nationally Appropriate Mitigation Action (NAMA) funds to increase energy efficiency within older, energy intensive residential buildings. In Peru and Lao PDR, GGGI supported municipal governments to develop and roll out pilot projects that tackle the growing challenge of urban waste, while at the same time creating jobs and new sources of income.

Further, during the Climate Summit at the 74th United Nations General Assembly, GGGI joined partners through the Coalition of Urban Transition to contribute to efforts under way to integrate smart, innovative, and green approaches into urban sustainability agendas to support more efficient, affordable, and effective services for all.  

The following stories highlight a number of the impactful green city successes that GGGI’s Members and partners achieved over the course of the year in collaboration with GGGI and its committed partners.

SUCCESS STORIES

ACCESSING CLIMATE FINANCING IS HELPING CITIES IN UGANDA, MYANMAR, AND CAMBODIA TO CUT GREENHOUSE GAS EMISSIONS AND BUILD RESILIENCE

Municipalities in Myanmar, Uganda, and Cambodia are benefiting from funds from the Green Climate Fund (GCF) to build capacities at the subnational and national level, including strengthening policies and designing projects in areas such as waste management and sustainable transport.

The funding secured in 2019, which totals more than USD 2 million between the three countries, will be vital in helping major urban areas to reduce emissions and become greener, healthier and more socially inclusive places to live.

These funds have been secured with help from GGGI, which is also partnering in the delivery of GCF projects in each country.

Uganda

In Uganda, Dagmar Zwebe, GGGI’s Country Representative in Uganda, explains how the group is working with Kampala city authorities to attract financing from GCF with a view to implementing the Kampala Climate Change Action Strategy.

“We aim to mainstream climate change response in all city services to put the city on a low carbon development path. (...) In its initial phase, the GCF readiness funds are being used toward developing concept notes, such as one for the Disposal and Treatment Component of Kampala’s integrated solid Waste Management project within the framework of updating the GCF Country Programme and building of a pipeline of bankable projects,” Zwebe says.

Myanmar

GGGI is doing similar work in Myanmar, developing projects in four secondary cities across the country and working directly with local and national governments, private sector actors, development partners, and community groups.

Aaron Russell, GGGI’s Country Representative in Myanmar, explains: “GCF Readiness funds are being used to assess sectoral capacities, to build political commitment, and to mobilize the necessary expertise in green urban infrastructure development
to build a pipeline of tangible climate finance projects that have the potential to transform urbanization across Myanmar’s regional capitals and growing commercial secondary cities. (...) Readiness funding will identify projects to be financed in line with the national priorities outlined in the Myanmar Sustainable Development Plan. This work will mainstream public and private sector stakeholder awareness-raising activities through training of government officials, and the nomination of a Direct Access Entity. These measures will ensure that the institutional infrastructure is in place for long-term green investment in cities.”

Cambodia

In Cambodia, GGGI is helping authorities to make the transportation sector greener by identifying policy and financial incentives to shift from gasoline motorcycles, which currently dominate Cambodia’s national vehicle market, to electric motorcycles.

The country has seen rapid economic growth and urbanization in recent years. Cambodia’s urban population is growing at a rate of 4.4% per year, according to the World Bank. By 2030, government estimates 44% of the Cambodian population will live in cities. Accordingly, the number of vehicles and GHG emissions from the transport sector has been rising rapidly.

In 2000, the transport sector accounted for less than 3% of national GHG emissions. By 2016 emissions from the sector had increased more than six-fold.

Transitioning away from fossil fuel-powered to electric vehicles is expected to contribute to reducing GHG emissions in congested urban areas, together with significant co-benefits such as improvement in air quality, reduction of noise, and positive impacts on public health.

It should also assist the local economy, creating new jobs and cutting costs for owners. The total cost of ownership of electric motorcycles, including lifetime operating costs, is often lower than that of gasoline motorcycles.

Challenges facing Least Developing Countries

GGGI is involved in all the projects and, its country representatives say, they all offer good examples of how impactful the work of the organization, and others like it, can be in helping cities become greener.

Donovan Storey, Deputy Director and Urban Lead – Green Cities, in GGGI’s Investment and Policy Solutions Division, explains that cities in less developed parts of the world can face a number of challenges in trying to access funding and implement policies and projects to make their municipalities greener.

“One of the challenges is that you have to make the case for policymakers to support a more rapid transition toward greener and more sustainable cities. This is often the hardest part of our work, but also the most rewarding. As an organization, we have to convince policymakers of the financial case – and the benefits of shifting toward greener pathways,” he says.

However, once policymakers have been convinced, there are other hurdles to overcome, including addressing problems with legal environments and policy gaps, which could stop any development in its tracks.

“No country or city has ever developed solely through implementing projects. There needs to be a regulatory framework to support broader change,” says Storey.

He explained that sometimes a project gets underway, only to be hastily scrapped because of missing or contrary legislation.

“The stage of helping policymakers to improve the regulatory environment or filling a policy gap is absolutely critical,” emphasizes Storey.

Another challenge is attracting financing. The relatively small size of some secondary cities – only around 50,000 inhabitants in some cases – can put some finance out of reach.

“Some cities simply cannot get funding because they are not seen as bankable - they are not large enough for investors. An additional challenge is that cities need to get their finances ‘in order’ to be bankable, which is difficult. Smaller cities often miss having a financial framework in place, e.g. they don’t have great financial records, and rarely have their own source of revenue to do any co-financing. This makes it difficult to get investment,” says Storey.

This is where the work of GGGI is key.

“The project in Cambodia is a good example of how we always look to the co-benefits of any project. By doing things a bit differently you can gain multiple benefits – for example making motorbikes, a vehicle that is popular among lower income groups, both cleaner and cheaper, has a positive social impact - but also it has an effect on air quality, and more efficient use of energy.”

While the three projects are at relatively similar stages, each is unique, and GGGI customizes its approach to its work in different countries and cities in helping facilitate financing from the likes of GCF and others.

“In the three countries, there are different political and economic contexts, and they work at different speeds. We need to align ourselves to these differences,” Storey says.

“We are lucky to have teams in countries day-in, day-out who have the understanding and experience of the local political and economic environment and how to work accordingly. As such, they are able to support change longer-term, and have a vested interest in seeing successful outcomes,” Storey says.
The foundations of this movement go back two years when seven secondary cities set out to draft a ‘Sustainable City Strategic Plan’ under the leadership of the National Council for Sustainable Development and the Ministry of Interior. This enabled these municipalities to identify their main environmental issues and opportunities and develop a list of priority actions. Solid waste and wastewater management came as high priorities for most of the cities including Battambang and Kep, which triggered action on the ground. “The development of sustainable cities in the Kingdom of Cambodia is a key policy priority,” explains Minister of Environment, Say Samal. “Cities are the center of economic activities and propel job creation and GDP growth. Cities are also the center of resource consumption, whereby energy, water and other natural resources are utilized by industries and consumers to drive economic development. The Kingdom of Cambodia has an opportunity to accelerate its growth potential further through green city development.”

In 2019, a number of cities in Cambodia began delivering new waste management and sanitation projects that will benefit hundreds of thousands of inhabitants by improving health conditions and creating new, green jobs. Battambang, a city of 160,000 inhabitants, is currently working on improving solid waste management with a focus on plastic and organic waste recycling. As with most cities in Cambodia, waste management is a key challenge for Battambang. Strewn waste clogs up water drains and attracts vermin, while the burning of waste releases toxic gases into the air.

These sub-standard management practices are causing negative impacts on public health and the environment. They also reduce the overall livability, resilience and competitiveness of Battambang and its appeal to domestic and international tourists. The city government recognized the need to take action. Battambang started with a plastic recycling campaign in five public secondary schools, representing close to 10,000 students and teachers. With financial support from Coca-Cola, large collection containers with educational signage have
been installed to collect a range of plastic wastes (bottles, cups, straws, and bags). The municipality will then organize collection by the private sector, with payment to the schools for the recyclable material, resulting in a win-win situation for all parties involved. The project will be of particular benefit to the schools that have no waste collection services available to them.

Battambang is also taking steps to ensure the sustainability of the project by providing formal training and more educational material with support from the private sector. The training will focus on source separation and recycling of waste, and more importantly on waste avoidance so that young people better understand the need to reduce the amount of waste generated. The school campaign will be an ongoing process, with the municipality monitoring and improving the project throughout 2020.

The municipality is now turning its attention to Battambang’s markets, planning plastic source separation activities at two markets and source separation of organic waste for composting at the wholesale fruit and vegetable market.

“For a more efficient waste management system, source separation of wet and dry waste is critical. This will enable more organic waste to be processed and more recyclables to be separated from the dry waste,” stated Municipal Governor, Pheng Sithy, in November, 2019. “These initiatives will not only improve the environment, public health, and beauty of our city but will also create economic opportunities and jobs. Increasing the quantity and quality of compost would also enable our farmers to conduct more sustainable practices by using less artificial fertilizers.”

The municipality is also planning larger scale educational campaigns on waste avoidance, recycling and on the importance of following existing regulations on the management of solid waste. Finally, the municipality will work closely with other government agencies and with the private sector for more efficient and better planned waste collection, so it does not pile up in the streets.

Battambang’s push to deliver green cities solutions followed a detailed GGGI analysis of the city’s waste value chain, including generation, storage, collection, transport, recycling and disposal. Based on the findings, GGGI developed a set of recommendations to improve waste separation and collection, develop innovative opportunities to scale-up the local waste recycling business and create better jobs for waste pickers.

GGGI is working with local waste recycling businesses and start-ups to take advantage of these opportunities, offering the entrepreneurs coaching on business readiness, financial planning and sales’ strategies so they can be in a good position to process the increased volume of recyclable material. Over time, the city’s aim is to involve all schools, markets, shops, restaurants and eventually households, leading to a cleaner city and more business expansion.

“Battambang demonstrates a range of manageable and affordable public-private solutions to the waste management challenge faced by Cambodian cities,” says Karolien Casaer-Diez, GGGI’s Country Representative in Cambodia. “We hope to see other municipalities follow Battambang’s example and stand ready to support them in addressing the current waste crisis.”

The City of Kep, on the other hand, identified improving wastewater and sanitation on the island of Koh Thonsay as a top priority. Kep is a small coastal town along the Gulf of Thailand with a population of around 21,000 people. In recent years, Kep has made improvements to address sanitation problems, in particular along the shoreline.

However, issues remain in areas such as Koh Thonsay, an island just off the coast and a popular tourist destination attracting local and international visitors. The island’s only available accommodation are bungalows concentrated on one beach at the north west side of the island. Sanitation at the bungalow area is poor, with no established wastewater or fecal sludge management system.

Kep Municipal Governor Tith Sokha expresses her concern: “As the number of visitors increases, sanitation conditions are degrading, causing risks to the environment and human health, as well as making the island less appealing for tourists.”

To address the situation, the municipality developed a costed proposal to connect all bungalows to a decentralized wastewater treatment system (DEWATS) and included the proposal in the formal City Investment Plan which will enable it to seek government funding for implementation.

For the development of the proposal, the city partnered with GGGI to develop options for raising revenue to cover operation and maintenance costs, leveraging contributions from both the public sector and the hospitality businesses. GGGI partnered with the “Bremen Overseas Research and Development Association” (BORDA) for its specialized engineering skills to design an affordable technical solution for the island. When implemented, the project will benefit an estimated 80,000 visitors per year.

“This project could serve as a model for other coastal areas and be replicated in many other locations,” says Kep Municipal Governor, Tith Sokha.

Green city solutions being rolled out in Battambang and Kep demonstrate Cambodia’s commitment to take concrete action to improve environmental conditions and green economic opportunities in the country’s secondary cities. It is hoped that their successes will inspire and guide other cities to follow suit.
SUCCESS STORIES

FIJI SETS AMBITIOUS TRANSPORT TARGETS

As Fiji seeks to meet ambitious targets on lowering emissions, the South Pacific island nation is working to electrify its greenhouse gas (GHG) intensive transport industry.

Data from the country’s Ministry of Economy shows that transport accounts for 65% of carbon emissions in Fiji. Under its Low Emissions Development Strategy (LEDS) Fiji has committed to the electrification of its largely fossil-fuel driven land transport sector by 2030.

The Fijian Government is in the process of incorporating this vision into its revised National Energy Policy (NEP) for 2020 to ensure it encapsulates necessary emission reduction transitions needed for Fiji’s transport sector.

However, the transition to electrification in the sector is in its infancy. With very few electric vehicles on the country’s roads today, there are no commercial charging stations and only a few pilot charging points for carts at universities.

Government endorses GGGI study

Recognizing the need to push forward with the electrification of the sector as it aims to meet its LEDS targets and Paris Agreement commitments, the government has endorsed two
studies produced by GGGI, which look at possible transport electrification on Viti Levu island home to over 80% of Fiji’s population.

The studies examined the effects on the electricity grid under various scenarios for the electrification of the transport sector and increased use of electric vehicles, including infrastructure needs, impact on government revenues, electricity generation and the national grid, as well as technology.

Once adopted, the recommendations within the studies will pave the way for concrete e-mobility actions.

GGGI forecasts that electrification of the sector can progress quickly and points to the recent success of government measures to try and promote the use of hybrid vehicles, which were exempted from import duties in 2015.

“Since then, there has been a big rise in the use of hybrid vehicles in Fiji. The way Fiji adopted hybrid vehicles is the way we envisage electric vehicles being adopted here as well, given there is an enabling environment,” explains Ulaiasi Butukoro, GGGI’s Program Officer in Fiji.

GGGI’s studies have identified locations where charging stations could be most effectively set up to help develop infrastructure, including in wealthier suburbs where GGGI expects electric vehicles to be adopted quickly. Households could also have charging points installed with just a minimum of change to their homes.

Replacing older buses with greener ones

The government is hopeful that any electrification will extend beyond light vehicles which make up the majority of vehicles in Fiji – to larger vehicles. Government research shows that public transport has a central role to play in Suva, Fiji’s capital and home to roughly a third of the country’s population. Buses are the most popular form of public transport in Suva. However, many of these buses are old and emit high levels of GHGs. This has prompted the government to adopt a national policy to replace older public transport buses with greener, more efficient vehicles.

But as Butukoro points out, while targeting the land transport sector is a way of potentially reducing Fiji’s GHG emissions, the increased demand for power as the number of electric vehicles rises could present problems.

"Part of the studies involved looking at the way the extra electricity for electric vehicles would be generated. Reducing fossil fuel use in the transport sector would not necessarily result in a net reduction of emissions if less renewables are considered in the power generation mix moving forward,” says Butukoro.

"The energy mix for power production in Fiji is around 50% renewable sources and 50% fossil fuel in the form of diesel. The share of renewables used to be higher, but hydro is not available as much now as it used to be, because of changing weather patterns due to climate change," he says.
SUCCESS STORIES

HOW A SUSTAINABLE SOLID WASTE MANAGEMENT PROJECT IS CHANGING THE CAPITAL CITY OF LAO PDR

The country’s government is pursuing long-term goals to ensure sustainable and green infrastructure development and has adopted national strategies to transition to green growth.

This comes as Lao PDR has seen rapid economic growth and urbanization in recent years, accompanied by growing consumption and generation of waste.

Solid waste disposal and treatment is underdeveloped with only a handful of landfill sites in the country, including one in Vientiane. There is no formal recycling system and a lack of access to proper waste treatment and disposal facilities, which mean many people simply burn, bury or dump rubbish wherever they can.

To try and combat this, in 2019, the ‘Wastewater and Solid Waste Treatment Capacity Building Project for City Environment Improvement in Laos’ project in Vientiane was officially launched. The project aims to tackle some of these problems by increasing waste collection rates while promoting waste-to-resource opportunities and using organic waste as a source for bio fertilizers, among others.

“As much as 70% of households are not using the waste collection services in Vientiane. This project will help to increase the waste collection rate and reduce open dumping and burning of rubbish. We can collect more waste and convert it into a resource. It will also improve the environment as organic waste will be diverted from landfill sites,” says Director General of the Vientiane City Office for Management and Services (VCOMS), Bouchananh Keosithamma.

A series of pilot projects is helping authorities in Vientiane, Lao PDR resolve some of the city’s chronic problems with waste management.
GGGI, which has been working with local authorities on green city policies and projects, helped secure funding of USD 6.5 million for green city development projects – of which waste management is one – from the Korean government through the Korea International Cooperation Agency (KOICA).

As Shomi Kim, GGGI’s Senior Green Cities Analyst in Lao PDR, explains, the project is two-fold – giving policy advice and working with city authorities to help improve and introduce legislation on waste, and also run pilot projects implementing concrete measures to try and help with waste collection, source separation and waste recovery.

“Waste recycling is a big challenge in the city. There is no municipality-led system nor collection mechanisms in place to encourage waste separation, so people often just put everything into one bag and all waste is mixed, both at businesses and homes. (...) Another big problem is the waste collection services. There are very low collection rates – around just 30% - because the collection fee is high and the service cannot reach houses in peri-urban areas of the city, people choose not to use collection services. So, this leads to illegal dumping and burning of waste,” says Kim.

With GGGI support, the Lao government has rolled out three pilot projects to help provide access to collection services for people.

GGGI is using its funding to deploy push carts and small trucks in Vientiane to collect waste, which will be able to go to areas in the city where people do not usually have any real access to collection while ensuring the separated collection of dry and wet waste.

Another project is focused on introducing organic waste recovery from businesses, such as restaurants, hotels and vegetable markets. The VCOMS service provider - will collect organic waste separately using bio-degradable bags from these businesses and then sell it on to a local bio-fertilizer firm.

The third project is aimed at increasing recycling in Vientiane. While an informal recycling sector exists where some people go door to door to collect recyclable materials, currently they do not collect glass bottles because the bottles have low financial value.

However, GGGI managed to find a firm which buys glass bottles for recycling and is planning to set up multiple glass collection points, for example in schools.

The group will also supply any extra facilities needed for the projects, such as special bins for food waste, collection containers for glass, and supply training to local influencers in collaboration with other development partners such as GIZ.

The pilot projects, which will operate in the Sikhottabong district of Vientiane, will run over the next four years. During the initial stages of the roll out, the projects will be monitored, and then in the third year, an upscaling of the most successful of those projects will be initiated. The decentralized waste collection service with a focus on source separation is expected to shift the traditional approach of “collect-and-dump” to a model of “Circular Economy” in Vientiane as it will create more opportunities for resource recovery once it’s scaled up at the city level.

Kim believes that GGGI’s work, while it may require time and persistent efforts, will help make the city’s waste management system more sustainable.

“What we are definitely hoping will happen is that our involvement on policy based on the lessons learned from the pilot initiatives will help solve the problem with low collection rates at scale. (...) We are one of few countries that work on the upstream side of the waste value chain to ensure the sustainable management of waste. We hope that the pilot projects will provide a good example on source separation and resource recovery to the authorities that they can adopt it for the rest of the city, and also as an example of financially sustainable schemes. (...) Our goal is also to empower the local government to independently develop and continuously implement these financially sustainable waste management systems once GGGI is no longer involved,” she says.

The city’s government is very encouraged by the project, pointing out that it will help not just the local environment, but the economy as well.

“This will not just help solve serious issues with waste in the city, but it will also help create jobs. We don’t know yet exactly how many jobs this will help create, but in my opinion, it will be a lot,” says Mr. Keosithamma.

Keosithamma adds: “It could also serve as an excellent example of its kind. I think the project will be a role model and repeated in many cities across Laos.”

GGGI says that the project, which is due to run until 2024, will see around 20,000 people gain new access to adequate waste collection services while 30 TPD of organic waste generated in the city will be recovered. It also expects to create new jobs and improved employment opportunities for informal waste pickers.
In 2019, Mongolia made significant progress to secure EUR 18 million for an ambitious project designed to help dramatically increase energy efficiency in residential buildings in the capital Ulaanbaatar.

Many residential buildings in Ulaanbaatar, the coldest capital city in the world, are old and made of pre-cast panels. As a result, insulation is poor and heating – almost entirely coal produced - is often turned up high to keep room temperatures warm.

Below-cost tariff levels with bills based on square-meters of space for heating means people lack an incentive to adopt better heat-conservation practices.

Residential buildings account for 40% of energy consumption in the country, more than industry and the transport sectors combined.

Moreover, a rising population and migration from the countryside to the capital mean that demand for heating is rapidly increasing, while Ulaanbaatar has some of the worst air pollution of any city in the world. This makes clean, reliable heating services even more important.

Municipal authorities recognized residential renovation will not only save heat and improve thermal comfort and safety for residents, but also achieve reduction in greenhouse gas (GHG). General Manager of Ulaanbaatar, Mr. Gantumur Togmid, highlights “Thermo-technical retrofitting of pre-cast buildings will reduce the energy consumption by more than 30% and additional over 9,400 households can be connected to heating supply without building a new plant.”

In 2013, local authorities began seeking investments to help retrofit residential tower blocks. Having found little initial success, they are now hoping to move forward with their plans with assistance from the GGGI.
Realizing green growth goals

Batzaya Bayasgalan, GGGI’s Green Investment Officer based in Mongolia, explains how the organization has been helping the city’s authorities realize their green growth goals.

"It has been challenging for the government to progress the project and raise funding as investors saw this project as non-bankable due to low, space-based tariff," says Bayasgalan. "So, we stepped in to support."

In 2017, GGGI began working with the Municipality of Ulaanbaatar using its experience and expertise to help attract financing.

GGGI carried out energy audits for three residential, multi-family buildings to determine the level and areas of heat loss and designed a project that took into account feedback to alter the financing mechanism, the involvement of energy companies and issues with household contributions.

In 2019, it won initial funding of EUR 380,000 for project preparation from the Nationally Appropriate Mitigation Action (NAMA) Facility, which focuses on financing projects designed to reduce GHGs.

The Municipality of Ulaanbaatar in cooperation with GGGI is aiming to mobilize an EUR 18 million EUR grant to retrofit 375 residential building blocks. Once funds are officially in place in 2021, retrofitting should get under way fully with physical implementation likely as soon as 2022.

Transforming lives

The retrofitting is expected to transform the lives of over 136,000 residents living in these 375 residential buildings. Despite plentiful, cheap access to heating, temperatures drop down to -40 Celsius during winter in Ulaanbaatar and apartments are typically 4-6 Celsius colder than recommended room temperatures.

"In most of these buildings, it gets very cold and residents wear layers of clothing to stay warm. Some residents retrofit the external walls of their own apartments only, but partial retrofitting is of little real effect and the work has sometimes not always been done that well and there have been reported cases of problems, including fires," says Bayasgalan.

She adds that while the retrofitting will not reduce any household bills because at present heating costs are not based on consumption and heavily subsidized by the state – around USD 9 per month for a two-room apartment – "it would mean that people would have a warmer apartment and their property value would also increase considerably."

It may also ensure that residents in these old buildings have a more secure future living there.

"Retrofitting extends the lifespan of the buildings," explains Bayasgalan. "Some of these buildings date back to the 1960s and are rundown and have had minimal or no renovations. Renovating the buildings and improving their structure extends their lifespan by over 30 to 50 years."

Crucially, the project will also have an estimated direct cumulative GHG mitigation potential of 96,891 tCO₂e, as well as helping to create potentially over 1,000 new jobs through the engagement of local construction companies and manufacturers.

In 2016, Mongolia ratified its Intended Nationally Determined Contributions (INDCs) to the Paris Agreement on Climate Change and is committed to a reduction of 14% of GHG by 2030.

One of the main drivers to achieve this goal is to improve energy efficiency in production, distribution, transmission and usage and, with this in mind, the government has set a target of reducing building heat loss by 30% by 2025, and 40% by 2030.

According to findings conducted by GGGI’s Impact & Evaluation Unit, GGGI is well placed to potentially contribute to GHG reductions equivalent to 20% of the annual emission reductions that Mongolia aims to achieve in 2030 under its NDC.

"GGGI’s inaugural Impact Pathway Review (IPR) for its Mongolia country program found that the organization is on a clear pathway to make an impact in Mongolia, particularly due to policy and investment work in energy efficiency between 2015 and 2019," says Warin Nitipaisalkul, IEU Manager.

Bayasgalan hopes that treating energy saving as energy generation will drive utility companies to take an alternative perspective to their operation and open the way for wider discussions about investment deferral into coal fired heat generation versus into energy efficiency.

She explains that part of the project involves introducing metering of heating use in buildings, which will demonstrate a significant impact on energy loss reduction. GGGI hopes the project will have catalytic effect on the energy market and lead to tariff reform to encourage residents to regulate their heat use. "Metering will provide a picture of the heating supply and consumption at the building level," she says.

This will incentivize residents as well as authorities with policy decisions going forward. "It’s a project with lots of positives, which is why we here at GGGI are so passionate about it," says Bayasgalan.
SUCCESS STORIES

GGGI SUPPORTS THE MUNICIPALITY OF LIMA TO INNOVATE WITH CIRCULAR ECONOMY FOR WASTE MANAGEMENT

In January 2019, the new municipal administration of Lima was faced with a key challenge: what to do with the problem of increasing solid waste in the ‘Cercado de Lima’, the urban core comprised of the historical area and a mixture of the city’s oldest neighborhoods.

As with most developing countries, much of the municipal solid waste produced in Peru is organic. Leftovers, food scraps and discarded fruits and vegetables exceed 19,000 tons per day throughout the country. In the Cercado, around 60% of the solid waste managed by the municipality is organic, much of which comes from households and commercial activities from its 47 markets.

Waste management in the Cercado area was based on a conventional waste collection system with poor segregation practices that relied on aging infrastructure. More critically, the city’s main landfills were quickly running out of space to accommodate the waste of an increasing population demanding sustainable services. Implementing a circular economy solution was paramount in the eyes of the new administration of the city, led by the new mayor Jorge Muñoz.

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2 Peru’s Solid Waste NAMA, 2015
3 Solid Waste Characterization Study for Cercado de Lima, 2019
Early 2019, GGGI and the Municipality of Lima decided to partner to tackle this problem and reduce organic waste in the city center by promoting waste management sustainable practices that directly benefit citizens. GGGI’s expertise and international experience, through its Green Cities thematic strategy, was the perfect fit.

It was the first time for GGGI to work directly with a municipality in Peru, which proved exciting: “working with a local government allows us to see our project’s results in the short-term,” says Paola Córdova, GGGI senior officer, who is overseeing the project from Peru’s office.

The plan was to help the municipality explore options to increase the organic waste that is diverted from the waste management system through household composting, and create valuable products from the organic waste ready for disposal, such as through waste-to-energy solutions.

There are several ways to deal more effectively—and sustainably—with organic waste than dumping it in landfills. It can be converted to compost through small, simple household efforts or through city-wide collection of the organic waste that is then sent to large-scale composting facilities adjacent to landfills. Compost can then be used to fertilize house plants or public parks, or sold to provide extra income to households or revenue for the municipal solid waste system, lowering the total cost of operations to residents. Also, organic municipal solid waste can be sold to other types of composting facilities, such as the ones used by agribusiness companies that need organic raw material to elaborate the amounts of fertilizer they demand. But organic waste also has the potential to be converted to energy through different methods. One is bio digestion.

“Biodigesters are devices that capture methane using a process much like the digestion that occurs in animals’ (and peoples’) stomachs,” notes Córdova. Methane can then be burned for heating or cooking, or used in power generators for electricity.

The first step to explore the best options for valorization of organic waste was to review available data from past studies, as well as to understand people’s attitudes towards options like waste segregation and composting, through interviews with different actors. Some respondents that are part of the Municipality’s Recycling Program, but only recycle inorganics are willing to do home composting. So is as a small percentage of residents that are not in the municipal program yet. This group of current non-participants has not been addressed previously by the municipality and could be engaged for future participation. These respondents indicated they were interested in participating and that technical support was key.

GGGI then set out to test the biodigester option in partnership with Tereo, a specialized local company that installed a small pilot in the municipal plant nursery in the Barrios Altos neighborhood. The location was selected for its strategic position nearby two markets that could provide their discarded fruits and vegetables.

“To put a municipal biodigester, even a pilot one for testing, was a very innovative idea, the first experience of its kind in Peru,” says Córdova.

The plan is for this to also be an educational experience for residents of Barrios Altos who can learn about the circular economy in practice by reusing waste from their local markets. The pilot biodigester will provide key information to decide on the feasibility of scaling up these systems in the future.

Pamela Bravo, Deputy Director of Environmental Management at the Municipality of Lima, notes that GGGI has been a critical player in the project, and not only because of the organization’s technical expertise.

“There were trust issues in the beginning with residents and other stakeholders being apprehensive, but GGGI’s professionalism allowed all parties to understand the safety of the pilot and its benefits,” says Bravo.

Building local technical capacities was also a key part of the project. GGGI and the municipality organized a workshop in early December 2019 for the different departments that have a key role in the waste management chain. GGGI presented relevant experiences from different countries and discussed the opportunities for applying some of their lessons for Lima Cercado with the municipal technical staff.

Among the most important recommendations, GGGI pointed at strengthening the home composting program with more funds, looking for synergies with the private sector and exploring climate funding options to finance investment. GGGI’s study suggests important constraints to consider, however, like the need to insert the organic waste valorization within municipal strategies and plans, the importance of creating synergies with other public institutions to increase organic waste recovery and the recognition of technologies and innovative practices of organic waste recovery.

“This is why the work of GGGI is key,” explains Bravo. “We need to understand all of these green options to know what works best for the city to make informed decisions sooner.”

Deputy Director Bravo concedes that this is a long-term work but stresses that GGGI is helping them build the conditions to green their waste management system. “This work will ensure that our population has a service that takes full advantage of the opportunities that the circular economy has to offer for city’s residents,” she concludes.
The project aims to promote an agenda of “green city development” among urbanizing municipalities by transitioning away from the traditional fossil-fuel-based tricycles as the ubiquitous mode of transportation in the province. Officials see the project as a means of making transport more environmentally friendly as well as a way to create jobs and set a wider example for green growth.

“The e-trike units will benefit us by generating employment and improving the mobility of its residents, without the pollution and noise. It is a symbol for green growth,” says James Paul S. Inawasan, the former Municipal Administrator of San Vicente, Palawan.

SUCCESS STORIES

ELECTRIC TRICYCLES DEMONSTRATE THE FUTURE OF TRANSPORTATION IN THE PHILIPPINES

One hundred E-Trikes worth USD 910,000 were granted to the municipalities of San Vicente and Brooke’s Point in Palawan Province in 2019 as part of the Department of Energy’s ‘Market Transformation through the Introduction of Energy Efficient Vehicles Project’, or simply the ‘E-Trike Project’. The funding was provided by the Asian Development Bank (ADB).

Transforming the transport sector

Over the last decade, the Government of the Philippines has begun transforming its transport sector and promoting the use of electric vehicles over fossil fuel-powered transport to curb GHG emissions and lower the country’s carbon footprint. Studies have shown that fossil fuel-powered tricycles account for more than two-thirds of the pollution generated by the country’s entire transport sector. The Philippines’ Department of Energy has said replacing these tricycles with...
electric-powered ones would minimize annual carbon dioxide emissions by up to 260,000 tons.

Adopting e-trikes also has benefits for the local economy by reducing the annual demand and consumption of petroleum imports, reducing fuel costs for e-trike drivers and increasing job creation through the establishment of manufacturing companies and associated after-sales services.

An initial pilot study in 2015 with 20 locally assembled e-trikes operating in Mandaluyong, Metro Manila, also showed that drivers were able to carry more passengers and increase daily income when using e-trikes.

The E-Trike Project was made possible through a grant deal between the Department of Energy and the Asian Development Bank. This part of the deal was facilitated by GGGI, which helps the Province of Palawan realize the Palawan Climate Resilient and Green Growth policy aimed at reducing the region’s dependence on fossil fuels.

To structure the deal, GGGI developed an institutional relationship with both the grant applicants, San Vicente and Brooke’s Point municipalities, and the grant donors, the Department of Energy and the ADB.

Each municipality was given 50 e-trikes as a seed investment that will further drive the transport transformation envisioned by the Provincial Government of Palawan.

Juhern Kim, GGGI’s Country Representative in the Philippines, says that while the introduction of a relatively small number of trikes will have a limited environmental impact, it has a much greater long-term significance.

“GGGI views that the transition to sustainable transportation requires a phased approach since transforming the sector needs a processing time while also developing enabling policy conditions, coordinating technology transfers, and dealing with stakeholders that could be adversely affected such as operators and drivers of fossil-fuel-powered tricycles. (…) Albeit small in number, introducing the trikes serves as a ‘demonstration case’ to test out this new technology, as one of the low-carbon options. In other words, a first step is taken,” explained Kim.

“The e-trikes project could be a catalyst for other similar changes elsewhere, particularly in popular tourist spots where the transportation demand is obvious. The scheme is one which helps local trike drivers at an income level and creates more green jobs in the future, and is built on a sustainable financing model,” says Kim.

He is also keen to point out how it will help locals and the municipalities’ economies.

Creating green jobs

The municipalities have provided an in-kind contribution, including charging stations, which are rented to users based on a fee arrangement, which will enable local governments to provide maintenance service of the electric trikes and buy more of them, creating a revolving grant arrangement.

Meanwhile, to encourage and scale-up electric transportation, the San Vicente Municipality now implements an ordinance granting public transportation franchises only to electric tricycles.

Aside from creating green jobs for the e-tricycle drivers, this initiative has also provided a more sustainable livelihood for drivers as, under a special financing arrangement, they can pay a daily fee over a period of four or five years and eventually own the vehicles.

“The drivers were selected according to their financial status – the poorest were given priority. The scheme will also give the municipal authorities an income, and they can reinvest that into charging points and related infrastructure. This helps create a revolving grant system and a sustainable financing model,” Kim says.

With the trikes already on the streets of both municipalities, local authorities and GGGI representatives have praised the initiative.

“This achievement, made possible through our partnership with GGGI, is a key milestone as we pursue the implementation of the Provincial-level Climate Resilient Green Growth Framework in Palawan. I think it is just a start,” says Ninfa B. Rubio, Provincial Planning and Development Coordinator of Palawan.

Kim says all stakeholders should be congratulated on playing their part in making the plans a reality.

“GGGI would like to support action. There are many studies on bookshelves and several talking festivals on green growth, but we all know that what’s more important is to walk the talk,” he says.

He adds that GGGI’s previous work in the Philippines, such as the Palawan Climate Resilient and Green Growth Development Program (CRGGDP), had been responsible for the project getting off the ground.

Kim says: “The project is just one small part of the work we’re doing in the Philippines, since we are looking at other green growth sectors, such as renewable energy (i.e. solar PV) potentials seriously. We helped to get funding for it because as embedded intermediaries we were able to structure the deal between financiers and government stakeholders in this area.”
SUCCESS STORIES

GREEN BUILDINGS IN RWANDA; POSITIVELY IMPACTING THE ENVIRONMENT AND HUMAN HEALTH

In addition to reducing GHG emissions from buildings, sustainability impacts from the implementation of the GBMCS include 20-30% energy cost savings, 30-40% potable water savings, improved biodiversity and reduced heat island effect as well as promoting occupant productivity, wellbeing and accessibility when compared with a conventional building.

The GBMCS provides a baseline for mainstreaming green buildings in Rwanda and the system has helped raise awareness on the benefits of green buildings and construction practices in Rwanda and across the continent.

The built environment has a vital role to play in providing solutions to the global climate challenge. Green city development is uniquely positioned to address numerous sustainability issues, ranging from greener buildings to electrifying public transport. Globally, the building and construction sector accounted for 36% of final energy use and 39% of energy and process-related carbon dioxide (CO₂) emissions in 2018. In Africa, the building sector accounted for 61% of final energy use and 32% of energy-related carbon dioxide (CO₂) emissions in 2018.

The Government of Rwanda, with support from GGGI and other partners, took proactive action in 2019 and approved the Ministerial Order that outlines the Green Building Minimum Compliance System (GBMCS) along with the revised Rwanda Building Code 2019.
Recent estimates indicate Rwanda’s building sector, though small in terms of emissions at present at just under 1 MtCO₂e in 2012 is set to grow to over 6 MtCO₂e by 2050 under a Business As Usual (BAU) scenario. This rise will be the result of an increase in the number of building and associated energy consumption in the form of lighting, air conditioning and electronic appliances. Rwanda has set an urbanization target of 35% by 2024, up from 18.4% in 2016. Substantial numbers of buildings and other infrastructure will be needed to support this rapid urbanization and it will be necessary to implement a long-term plan for urban areas to ensure that they are inclusive, low-carbon, and resource efficient.

Action is being taken at every level of society to deliver climate resilient and sustainable green urban growth. One of these actions is taking place at the micro level inside the four walls of what are known as “green buildings”. Recognizing the importance of regulating building, Rwanda embarked on the development of GBMCS. This initiative was led by the Rwanda Housing Authority (RHA) with the support from its partners, including GGGI, the Building Construction Authority (BCA) Singapore and the Rwanda Green Building Organization (RwGBO).

The RHA Director General, Eng. Eric Serubibi, says “Rwanda Green Building Minimum Compliance System, as an Annex to the revised Rwanda Building Code 2019, provides a direction for new large-scale public buildings and major refurbishments to design, construct and operate based on green building principles and green technologies to promote resource-efficient practices in Rwanda’s building sector that aims to preserve the environment. (...) The green building minimum compliance system aligns with Rwanda’s Vision 2050; international sustainable development commitments, and national strategies to make Rwanda a developed low-carbon green economy by 2050. As Rwanda Housing Authority (RHA) we believe that the green building minimum compliance system is a step in the right direction and together with partners and stakeholders we are working towards raising awareness and building capacity for a smooth implementation,” he adds.

The GBMCS will support Rwanda’s ambition to reduce GHG emissions from the building and construction sector, starting with new large-scale public buildings and major refurbishments. Rwanda is the first country in Africa to mandate the GBMCS through its revised building codes and is expected to trigger decarbonization and resource efficiency throughout the building construction value chain.

GGGI supported the RHA and partners in formulating and drafting the GBMCS, by conducting stakeholder consultations, and providing technical support for the awareness and capacity building programs. This flagship policy will form the cornerstone to Rwanda’s response to decreasing emissions in public buildings – and obtaining some of the estimated 3 MtCO₂e potential reductions within the building sector by 2050. Similarly, GGGI supported the RHA in the elaboration of the revised ministerial orders for urban planning and building construction which provided a legal framework to enforce the GBMCS.

In addition, GGGI developed an excel-based GBMCS implementation tool to support building professionals in complying with the requirements of the System and support the building permitting process and inspection officers to assess the level of compliance of the building project with the GBMCS.

Inhee Chung, GGGI’s Country Representative in Rwanda, says, “GGGI in Rwanda is excited to be supporting the Government of Rwanda in rolling out the GBMCS to all stakeholders across the country. Although we are starting with greening new public buildings, we expect it will be a matter of time before green construction practices will become the new norm in Rwanda. (...) We are also pleased to work with forward-looking developers that see the value in applying the GBMCS in their real estate projects, especially in Kigali. GGGI plans to support the greening of the existing building stock which has a huge GHG reduction potential,” she added.

The GBMCS would be applicable for new, large-scale commercial buildings, public buildings, assembly buildings, health facilities and educational buildings. New large-scale commercial and public buildings shall achieve 60 points out of the 190 points available to comply with the requirement of the GBMCS.

Green buildings have become increasingly popular and important as more occupants look for spaces that are good for both people and the environment. Going forward, the RHA, with the support from stakeholders, will conduct public awareness campaigns, training programs for architects, engineers, building inspectors, developers, contractors, students and other stakeholders to ensure that the GBMCS is successfully disseminated and implemented.