

10th Meeting of the Council and 6th Assembly of the GGGI October 2017, Addis Ababa

Investment and Policy Solutions – Observations from two years of the green finance business at GGGI

1. Helping developing countries access finance remains a foremost priority in today's world, especially after the ratification of the Paris Agreement (PA) where countries have committed to implement national economic growth plans together with lower carbon development commitments. The World Economic Forum and the OECD estimate that US\$93 trillion is required for countries to achieve the 2-degree stabilization target in the PA by 2050. There is no shortage of funds per se -- OECD institutional investors alone manage some \$90 trillion in assets – but only a small amount is invested in green infrastructure. There are three primary reasons for this gap. First, projects are often not bankable and do not match the risk and reward appetite of investors. Second, instruments to mobilize green finance do not offer the required scale needed to attract finance. And, third, developing countries routinely lack the institutional capacity to manage funds in line with the needs of investors. These problems are interrelated and manifest themselves in different ways in different sectors.
2. Over the course of 2016 and 2017, GGGI has built a solid team of investment and policy specialists that come with a variety of experience. Investment services comprises skills from public and private sector finance, whilst the smaller policy teams are specialists with deep practical sector/thematic experience. 33% of current staff joined the Division in fourth quarter of 2016 – including all of the key positions such as the Head of Green Investment Services and Thematic Leads. As of September 2017, a few positions are vacant or yet to be occupied but once completed, this marks an almost full skill set with the exception of expertise in fiscal policy that is sometimes required.
3. At this point in time, GGGI has 24 active projects¹. These projects, which vary in terms of size, complexity, geographic spread and impact, amount to a total investment of US\$ 766M ²to be mobilized. The annex presents an overview of these projects, and some examples are provided below for a more qualitative understanding.
 - i. **Island Solutions for Indonesia** – In Nusa Tenggara Timur, GGGI is establishing a US\$ 15M commercially viable business model for power generation in rural island regions of Indonesia with a very poor population of 5 million people. GGGI has carried out detailed technical and financial assessments, project structuring and provided regulatory support for eventual investment by private investors. Current power generation, mostly fired by expensive and dirty diesel fuel transported from the mainland, only caters to 58% of

¹ The term “project” in this note includes bankable projects, financial instruments and national financing vehicles.

² At the meeting of the MPSC in July 2017, the total amount of investment presented was US\$ 900M. The reduced figure is due to 1) cancellation of two projects (Cambodia Kep Solar Project, Jordan Environmental Fund) in August 2017, 2) estimates changing after detailed pre-feasibility studies or feasibility studies, and 3) some programs such as Thailand TAPEE Program (refer to Annex) that are innovative yet complex are managed in a two-phase approach – an “establishment phase” and a “capitalization phase”, where capitalized mobilized is different for each.

- households. Electricity generation cost is consequently very high. The project reduces CO₂ by 626,700 tonnes during its project lifetime.
- ii. **Indonesia Solar PV for Special Economic Zones** in Mandalika: GGGI is taking to bankability – in collaboration with a local bank - the first-in-line solar PV projects in Indonesia by developing a US\$ 12-15M solar power plant together with the Indonesia Tourism Development Corporation at a tourism Special Economic Zone (SEZ). GGGI will support ITDC in supplying green and clean energy to this SEZ by developing a 10 MW solar PV plant which is expected to scale to 100 MW in the area after the first project has paved the way. It will be one of the first commercial utility-scale solar PV projects in Indonesia. GGGI has partnered with a local infrastructure bank³ on a co-development agreement. This will be the first renewables powered SEZ in the country.
 - iii. **India \$120M Access to Energy Fund**: ACE Fund is an offgrid energy financing solution. It offers debt for offgrid energy companies that supply power to households without access to the grid. Consumers are typically below \$2/day in income, have high appetite for buying solar based offgrid power, but energy service companies are unable to service the demand as traditional banks are unwilling to lend due to bad to no credit worthiness of their customer base. This Fund is designed to overcome such barriers, targeting 5 million people and 696,000 tonnes in emission reductions over its life – accounting for 3% of the total NDC target of offgrid electrification. The Fund will be co-financed to the tune of \$60M by the Indian Renewable Energy Development Agency and targets the GCF for a US\$40M loan, US\$17M in credit enhancement and US\$3M for an offgrid hub set up at IREDA. Status: submitted to the GCF.
 - iv. **Mongolia Green Credit Fund** is a projected US\$50M green credit for Mongolian commercial banks to offer a suitable line of financing to incentivize projects that increase efficiency and reduce coal usage and air pollution. This is the first ever green finance fund for Mongolia designed to boost private sector investment in green project development and engage local banks.
 - v. **Vanuatu National Green Energy Fund** (NGEF) consolidates existing capital pools, designed to dedicatedly increase financing for energy access. The Fund targets 30,000 rural consumers and accounts for 60% of the total energy needs. Targeted fundraising will be approximately USD 15 million, with an already-committed seed capital of US\$ 650,000. Financial products to be provided by NGEF includes grant, guarantees, loans, and equity. GGGI has mobilized GCF Readiness funds to finalize the designing of NGCF.
 - vi. **Senegal Renewable Energy and Energy Efficiency Fund**: GGGI is designing and structuring a \$50M (first close) subordinated debt fund to create a suitable mechanism to effect lending for renewable energy in support of the country's NDC targets. The Fund is designed to provide comfort to local banks for lending to renewable energy projects, has levers to alleviate financial and institutional barriers and a dedicated structure to build local capacity. The Fund will be co-financed by the African Development Bank and the country's sovereign investment fund, FONSI⁴. This is the first instance of GGGI working to involve institutional investors in green finance.
 - vii. **Viet Nam Ben Tre City Wastewater Management**: GGGI collaborated with the Asian Development Bank to develop and finance a wastewater management system in Ben Tre City, Viet Nam with a population of 152,000 people. GGGI provided technical options for

³ SMI - <https://www.ptsmi.co.id/>

⁴ <http://www.fonsis.org/en>

- sanitation improvement and wastewater treatment in the City and once incorporated into the larger lending package, this city will become one of seven cities included in the ADB loan. GGGI identified the best options in terms of minimum cost and maximum benefits to society including green technology. The partnership aims to unlock up to US\$35M in financing.
- viii. **Fiji Solar Project on Taveuni Island:** GGGI is supporting the Government of Fiji in achieving 100% share of electricity generation from renewables by 2035 by developing a solar PV project on the island of Taveuni. The project aims to displace the current diesel power plants with solar PV; it also has an added benefit of green tourism development, increased energy security. Currently, the Government of Fiji is considering how to proceed with energy storage systems to accompany this solar PV project. The project, which is the first phase of the Government's effort to reach 100% renewable electricity, will install 1.6 MW of capacity with GGGI supporting to arrange investment up to USD 3 million.
 - ix. **Senegal Biogas Cogeneration** project is a US\$1.5M project where GGGI is working with a local slaughterhouse to establish a biogas cogeneration plant utilizing slaughterhouse waste with the help of loan guarantees from local financial institutions. Through identification and development of untapped biogas waste resources in Senegal, GGGI is supporting the Government in taking a pioneering role and initiating a biogas waste to energy program.

Thematic Diversification

4. The majority of the projects in the current portfolio are energy projects, reflecting countries' economic growth needs and NDC priorities. But with the establishment of deeper technical expertise in other areas, the portfolio is diversifying and new project ideas and concepts for green cities, sustainable landscapes and water are currently under development. A few examples follow below:
 - i. Sustainable landscapes – in Indonesia, together with the National Peatlands Agency and local governments, GGGI is designing business models in rural forested lands for ***preserving peatlands primarily to reduce fire and haze, simultaneously avoiding deforestation*** and reducing carbon emissions. Business models take on a “landscape” approach (rather than a project approach), integrate private companies' involvement and engage the local community with appropriate incentives such that certain areas are protected while in other areas economic activity is maintained through commodities suited to wet conditions. This combined approach prevents deforestation and fires and secures livelihoods and local economic growth. There is no precedence for such business models and the project is a complex and high-risk endeavor. If successful, this can be scaled at national level and would result in a valuable example to be adopted in other countries with peat-landscapes.
 - ii. In Jordan, GGGI is working to design a river basin management system, complete with a governance structure and regulatory environment, supported with the later integration of investment projects in the basin.
 - iii. In Rwanda, GGGI is developing a long-term business model for institutionalizing decentralized sanitation through the consolidation of fecal sludge management systems in collaboration with the Water and Sanitation Corporation of Rwanda⁵.

⁵ <http://www.wasac.rw/>

Observations to date

5. **Organizational capacity is growing but common targets and incentives are needed.** Hiring a suitable talent base has improved since 2016 with the building up of a portfolio and gaining a reputation in the field of green finance. The dependence on recruitment agencies is decreasing. Country representatives with traditional development backgrounds are beginning to understand the nature of this new kind of work at GGGI but to ensure highest success of GGGI and impact, incentives and reward mechanisms must be made common to both Divisions – which is being undertaken as part of a reforming of the work program and budgeting system in the next biennium. GGGI engagement in countries is deepening with the advent of this new business especially since deeper regulatory commitments are being required of Governments.
6. Other observations:
 - i. **The three product offerings originally conceived remain valid,** namely projects, financial instruments and national financing vehicles have proved to be comprehensive, relevant and cover the gamut of country needs.
 - ii. **GGGI remains uniquely positioned to offer financing/structuring skills to Governments.** There is high demand for this offering and GGGI is seen as a neutral advisor and GGGI's own lack of financing/investment capacity means its own incentives are aligned with the needs of the project and GGGI is able to advice on the most suitable financial structure and secure the right type of funds. GGGI can advise in the best interests of the project and its ability to offer such skill makes it unique amongst public organizations.
 - iii. **Not all projects are bankable and there is no single pathway to bankability.** Timelines therefore vary. GGGI is often presented only with “ideas” or “problems” to be made into investable projects. Because of the variety and complexity of projects, including whether they can be made bankable in a given timeframe, a one-size-fits-all approach is not viable. As a result, some projects take longer than others to get financed, while some remain with insurmountable barriers for investment. To avoid such risks, GGGI will on a case by case basis require appropriate letters of commitment from relevant Government agencies and will set timelines of 18-24 months to achieve bankability. Projects will be closely reviewed at an early stage for regulatory and investment risks.
 - iv. **While the current model of being situated inside ministries is helpful, it could be important for GGGI to be situated in the line ministry before embarking on a project in that sector.** Unlike plans and strategies whose implementation and enforcement levels vary by country/ministry, entering into expectations to achieve bankability requires certain commitments that only line ministries are able to give.
 - v. **Early investor interest or commitment is key to managing risk.** Although the current portfolio has a fair share of early indications of interest from investors, it is key to managing financing risk – and expenditure - that GGGI continue to maintain stringency with portfolio development and the emphasis of securing early commitment.
 - vi. **GGGI strives to make projects commercially viable by combining public and private capital.** To attract capital flows from the private sector, it is imperative that GGGI finds ways to

reduce the investment risks for projects and make them commercially viable. In other words, GGGI will endeavor to reduce the risk elements of projects to an acceptable level for private sector capital. The aim is to use the minimum amount of public capital to reduce risk and leverage private capital. While there are no defined levels of leverage, GGGI will increase the share of leveraged instruments in the future. Below is a snapshot of (some of) the types of finance associated with the portfolio.

Name/description of project	Sources of capital	Nature of capital
Access to Energy Fund (\$120M)	Fund manager - US\$60M co-financing commitment GCF (proposal submitted) – 60M through a 40M loan, 17M credit enhancement and 3M grant.	Commercial Concessional, public
Island Solutions – NTT, Indonesia (\$15M)	Fully private engagement behind development of 10MW solar PV power capacity	Private, commercial
Indonesia Solar PV for Special Economic Zones (US\$ 12-15M)	Developer equity contribution – Indonesia Tourism Development Corporation. Debt: SMI – a local, state owned infrastructure bank. Additional equity – private developer.	Combination of public and private sources of capital. All commercial.
Senegal Renewable Energy and Energy Efficiency Fund	First close: Fund manager, FONSIS – US\$5M; AfDB – US\$10M; GCF contemplated US\$10M; other investors US\$15M	Commercial, public Concessional, public (GCF)

- vii. ***Risk reducing financial instruments⁶ offer the highest potential for achieving efficiency and impact at the same time.*** Instruments – as distinct from specific projects – can provide the most suitable solutions to meet the financing challenges faced by investors and developers alike for aggregation of (often small) projects, growth of new markets, attracting new investors, and helping to channel capital into new climate-friendly investment in developing countries. Instruments are sometimes better suited to achieving impact than single standalone projects. The REEF and ACE Fund, for example, have specific risk mitigation measures in their design element that address barriers in their respective sectors, and they cater to projects in the sector broadly rather than individual projects. Going forward, GGGI will strive to increase the share of financial instruments in the portfolio.
- viii. ***GGGI is still exploring its comparative advantage when working with multilaterals.*** Following the request from the Council in 2016 to develop bankable projects for multilateral banks, GGGI entered into a partnership with the Asian Development Bank for the preparation of a \$30M waste water sanitation plant in the city of Ben Tre, Vietnam. This project is part of a larger seven-city urban sanitation program. While GGGI's comparative advantage is its ability to advise the best financing options for the projects, feeding a project into an existing financing product of a multilateral does not allow GGGI to fully utilize its skill base. It is also challenging to integrate fully in the Bank's due diligence and internal processing systems. Therefore, different models of engagement are actively being explored including, but not limited to:
- co-development and co-financing – as with the AfDB in Senegal where the AfDB is both a co-developer together with FONSIS and GGGI and co-financier of the REEF together with FONSIS.

⁶Such as loans, guarantees, bonds, and so on.

- b. co-financing - as being explored with the AfDB for a multi-year program in Rwanda where GGGI is compensated by the Bank for the packaging of a viable sanitation system.
- ix. **GGGI will increase direct engagement with private companies.** While the portfolio has many private sector parties involved and the projects are designed to catalyze private capital by reducing the risks to investment, most such engagement to date addresses private companies indirectly. Working directly with companies sometimes involves the selection of a single company, for which GGGI follows an open and transparent process – as witnessed in Indonesia in the call for interested parties for a solar investment where GGGI has attracted two very credible local investors. GGGI will be increasing its direct engagement with private companies in 2018 and 2019, including through the establishment of the Carbon and Financing Club.⁷
- x. **Because of GGGI's membership base, projects vary in size and impact.** A 3MW renewable energy project in Fiji accounts 15% of the total share of electricity generation in the third largest island, whereas a \$120M offgrid fund in India accounts for a mere 3% of the country's electrification targets, yet accounts for 5MM households. A 15MW solar project in remote islands that replaces diesel and reduces pollution can raise up to only a mere 15 million USD, but its more important impact is demonstrating viability of a business model for remote locations. Rather than focus on absolute size, focus is on sizing the level of impact.

That said, GGGI will continue to emphasize size of projects wherever possible and make efforts to maximize size and impact and the total amount of capital mobilized. Small projects/pilot projects take as much time and funds to prepare as large projects, and, investor appetite for small projects is limited as most investors seek engagements at scale and for the long term.

- xi. **Efficiency and costs of preparation.** Based on early experience with the first projects, the estimated expenditure per project including staff time, travel and outsourcing is between 300-350,000 USD over an 18-month period. The ACE Fund has the highest efficiency with a total fund size of 120M while others measure differently. Going forward, GGGI will estimate and monitor costs for project ideation and project financing to understand the full cost of project preparation.
- xii. **Two projects have thus far been canceled.** The Cambodia Kep Solar project was canceled due to a misalignment with Government priorities; and the Jordan Environment Fund due to extended delays in achieving the necessary governance changes to effect financing.
- xiii. **Due to GGGI's inherent business model, direct ability to monitor the development of projects is challenging.** GGGI's role is to prepare projects and get them financed, that is, to bring them forward to the point at which investor commitment has been proven. But GGGI is not a financier or a developer and has thus no direct control of the project that it has prepared and raised investment for. Once a project is prepared to bankability and even after

⁷ This Club is a mechanism for GGGI to enter into more systematic relationship with investors and showcase its project pipeline in a structured way, have strategic discussions about financing and risk, explore innovative finance including by means of monetizing the carbon asset through carbon credits and contributing to Article 6 of the Paris Agreement.

GGGI effects the signing of a letter of intent to invest, investors are still to agree on terms before executing the investment or shareholder agreements. GGGI has no role at this stage and hence monitoring of operations remains a challenge.

On a case by case basis, GGGI may retain a seat as independent advisor on the Board of funds/projects thus enabling the organization to such monitoring.

However, a further and more detailed study around monitoring methods for bankable projects will be conducted in Q2, 2018 with the benefit of more experience and portfolio maturity.

7. ***A longer portfolio will be developed and joint origination teams are being put in place with increased process management to support integrated origination.*** 2016 and 2017 was about learning and developing a portfolio. Efforts to build the current portfolio took many forms and engagements - including discussions with government institutions (relevant ministries and state utilities), project developers (both public and private sector) and financial institutions (national, local, international). With experience and greater institutional maturity, future origination will be done in closer alignment with the strategic outcomes and Country Planning Frameworks⁸, more focus on achieving higher levels of impact and size and greater leverage possibilities. Project ideation teams will be carried out jointly between country representatives, thematic units and investment services. An internal project selection and review mechanism will be piloted in 2018 in an effort to put the system in place for 2018 and GGGI's step by step progress management stages - of Concept – Design – Financing – will be more strictly defined.
8. ***With the development of thematic units, more policy instruments will be developed.*** Impact is also intrinsically linked with regulatory conditions or changes, such as decrees, tariffs, land acquisition procedures, structure of contracts, and so on. With enhanced policy expertise provided by the sector/thematic leads, GGGI will continue to enable such policy conditions that affect investment and the ultimate implementation of plans and policies.
9. ***By combining policy solutions and 'first' investments, GGGI can contribute significantly to sector developments in developing countries.*** By working closely with governments to remove policy obstacles and/or create policy-based incentives, it will be possible in parallel to pioneer investments into under-invested sectors. By creating an enabling policy environment for investment and mobilize investment in the 'first' deals, it is possible to open up new sectors and markets for investors. Incentive mechanisms, such as temporary subsidies, feed-in-tariffs, etc., can be designed in ways that enable participation by private capital.
10. ***In conclusion, GGGI remains well positioned to develop commercially viable projects, national financing vehicles and financial mechanisms and support green growth plans and strategies in achieving the necessary finance to see the light of day.*** This business remains challenging and time-consuming, but when successful, will be a very important contribution to the economic growth patterns of developing countries.

⁸ 7 CPFs were signed in 2016; 3 in 2017 (up to September) and 14 more in the pipeline.

Annex: Investment and Policy Solutions – Observations from the two years of green finance business at GGGI

The following section contains short descriptions of a selection of projects in the portfolio together with a traffic light system of monitoring progress against reaching investor commitment in 2017. A green circle means that the project is on track against its anticipated timeline; amber means slight delays, and red means there are serious issues with the project. Early stage projects do not have traffic light systems yet.

1. \$120M India ACE Fund

An innovative financial instrument for enhancing financing for off-grid energy



Current Gap

Electrification is national priority. Off-grid sector lacks access to capital; companies/sector unable to grow. Banks unwilling to lend; no suitable product in the market.

Project Overview

- GGGI designed an innovative financial instrument – a \$120 Million debt fund with credit enhancement - to increase off-grid energy access in India.
- Letter of commitment by IREDA of USD 70 million received. GCF being targeted for the rest.

Partners

- Indian Renewable Energy Development Authority (IREDA)
- Ministry of New and Renewable Energy (MNRE)
- National Bank for Agricultural and Rural Development (NABARD)

Project Status & Next Steps

- Apr. 2017: GCF full funding proposal submitted to government and NABARD
- NABARD submitted the proposal to GCF in July 2017

Impact

- National impact: **5 million households** obtains access to electricity. **3% of NDC** and Government of India targets.
- Sectoral impact: **5%** of capital required for the off-grid energy sector (total \$ 7 billion).
- **Fund is catalytic:** encourage domestic FIs to lend to off-grid companies



2. \$50M Mongolia Green Credit Fund

First and only dedicated financial vehicle for climate finance in the country



Impact

Current Gap

No line of credit or facility in Mongolia for green financing; credit is too expensive 18-25% for green projects.

Project Overview

- GGGI designing the Mongolian Green Credit Fund, a national financing vehicle to bring long-term finance to projects/companies
- Immediate priority is to address the air pollution problem
- MGCF to i) provide medium and long term credit, ii) lower credit cost to borrowers, and iii) support project pipeline development.
- Potentially underpinned by Govt. of Mongolia Fx guarantee

Partners

- Mongolian Bankers Association (MBA),
- Ministry of Environment and Tourism (MET)
- Ministry of Finance (MoF)
- GCF readiness funding of US \$ 350K mobilized

Project Status & Next Steps

- Q3: Launching the fund in 14 September 2017 (GGGI, MET, MOF, MBA to sign the Joint Commitment Statement)
- Q4: Development of pipeline work & expanding investors

- Size of impact: 230K tCO₂
- Enabling new green financing in support of National Green Development Policy.
- Capable of blending international climate finance and local capital



3. National Green Energy Fund, Vanuatu

A consolidated fund for fostering rural energy access

Current Gap Vanuatu is highly dependent on imported fossil fuels to power its economy and the cost of energy is very high.

Project Overview

- GGGI is developing National Green Energy Fund to push forward the nation's ambitious target of 100% electricity access to households and improvement of energy efficiency by 2030.
- \$370K readiness proposal has been accepted by GCF for National Green Energy Fund development.

Partners

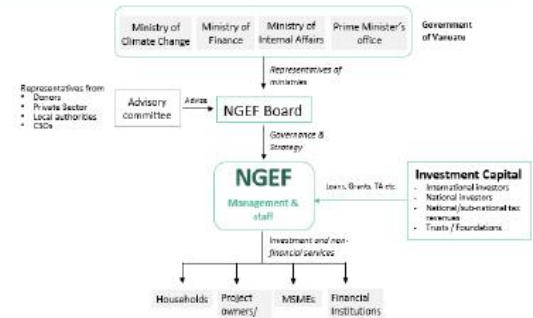
- Ministry of Climate Change (MoCC)
- Ministry of Finance (MoF)
- GCF readiness funding of US \$ 370K mobilized

Project Status & Next Steps

- June 2017: fund unit setup, initial fund transfer
- Q4: NGEF official launch event & investor forum

Impact

- Size of the fund: US \$15,000,000
- Targets **63% of total 35K households** without electricity.
- Will reach **30,000 rural clients**.



4. Viet Nam: Ben Tre City Wastewater Management Project

Current Gap No wastewater treatment plant in the city and wastewater being discharged to river & canal without treatment

Project Overview

- Designed technical options for sanitation improvement and wastewater treatment in Ben Tre City.
- GGGI effort will unlock \$35m in ADB loan and government funding (8:2) to build low-carbon climate resilient urban wastewater management system.

GGGI Value Add

- Recommended low-carbon/low-energy and climate resilient technology option (ex. Use of low carbon materials; materials that withstand salinity and acidification; natural & EE treatment technologies for WWTP, gravity sewerage system, etc.)
- Led local stakeholder consultations; supported local gov't for project preparation and approval

Impact on the Ground

From no wastewater treatment plant in the city and wastewater being discharged to river & canal

68-71% of city population

With Access to Wastewater Treatment System

Contingencies

- ADB process (PPTA)
- Gov't approval process



5. Senegal: Biogas Cogeneration Project



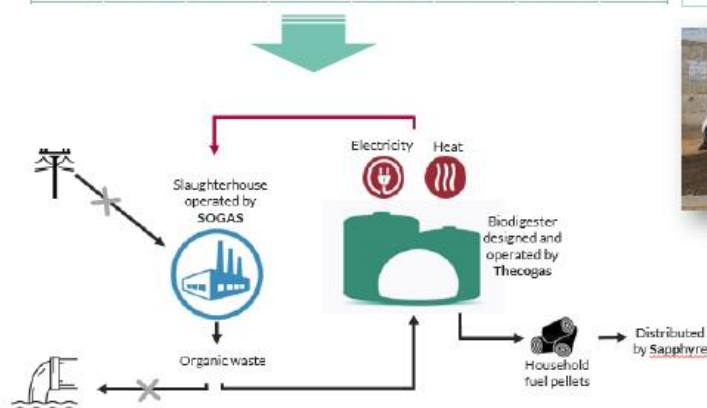
Current Gap Waste residues in Senegal disposed in an unorganized manner.

Project Overview

- GGGI arranged the financial structure to scale up a biogas cogeneration project that utilizes waste residues from slaughterhouse as feedstock.
- Guarantee was provided for the loan in June 2017.
- Investment size: US\$ 1.5 million

Impact

- Demonstrated waste valorization in the agro-industrial sector (biogas)
- Utilizes 52% of the total slaughter house waste in the whole country
- Increased 3 times the capacity of affordable, reliable and renewable electricity and heat that will supply the SOGAS industrial facility, utilizing waste residues that were previously disposed of in an unorganized manner.



6. Fiji Solar Project on Taveuni Island



Current Gap The Green Growth Framework for Fiji aims to reach 99% share of renewable electricity generation by 2030 while the island is highly dependent on diesel for electricity production

Project Overview

- GGGI is working with Fiji's Ministry of Economy and KOICA to develop a 1.6 MW solar PV on Taveuni Island. Investment size is US\$ 3 million and a Letter of Intent from KOICA has been received.
- The project aims to replace diesel-based electricity generation with solar PV, and ultimately help Fiji achieve its goal of 100% electricity generation from renewables.
- GGGI is developing a small-scale solar PV project, which will provide a blueprint for the wider Pacific Islands context.

Impact

Contribute to Fiji's NDC by:

- reducing energy poverty (34% of households lack access to electricity);
- reducing dependence on diesel for electricity generation;
- increasing renewable electricity generation to 65% from 50%.

Project Status & Next Steps

- Q2-4: GGGI technical feasibility
- **Received Letter of Intent from KOICA in September 2017**
- Q4: Feasibility finalized, proposal submitted to KOICA (potential financier)



7. Indonesia Solar PV Project in NTT Province – Island Solution



Current Gap Most of the installed power plants operating in NTT are diesel fueled and hence the cost of electricity is high, power generation is polluting and supply not self-sufficient.

Project Overview

- GGGI is working in 8 locations in NTT to bundle small scale solar PV grid connected projects.
- Implementing the project will help PT PLN meet its solar PV target for the NTT province.
- Investment size: US\$15 million

Impact

- Size of the impact: The PT PLN RUPTL (planning document) targets 15MW of solar PV, this project will help meet at least 15% of that target.
- Nature of the impact: 32% of households in NTT do not have electricity; this solar PV bundle of projects will contribute to PT PLN's RUPTL to provide clean electricity to the NTT population

Project Status & Next Steps

- Pre-feasibility assessment has been completed. The document was shared with the NTT government. Governor approved the assessment.
- Letter of Intent between investor and governor (November 2017).
 - ✓ Engie + Developer
 - ✓ NVV + Private equity



8. Indonesia Solar PV Project in Mandalika



Current Gap Indonesia's fuel mix is dominated by fossil fuels. Deployment of solar PV is still limited, currently only 85 MW and an enormous solar PV potential remains untapped in the country.

Project Overview

- Design and development of a captive consumption solar PV hybrid plant with an aggregate installed capacity of 10 MW.
- Project development is in collaboration with Indonesia Tourism Development Corporation and PT SMI (national bank and potential lender to project).
- GGGI holds a cooperation MOU and a project cooperation agreement with PT SMI signed in Sept 2016.
- Total investment size is USD 12-18 Million.

Impact

- About 5% load served in Lombok island. Contribution to the development of the first green special economic zone (SEZ) in Indonesia
- Contribute to 5 GW solar PV development, NDC target of the country

Project Status & Next Steps

- Technical feasibility completed. Financial assessment ongoing. Interim – Final assessment to come in early Oct.
- ITDC approvals on the financial outcomes
- Support ITDC to design full packaged terms of references: project sponsor engagement
- Letter of Intent with ITDC expected before December 2017



9. Mongolia: Green, inclusive Infrastructure PPP Program

Current Gap

Infrastructure is not climate resilient; maintenance is costly in winters; stretched government resources means GoM cannot fund climate resilient infrastructure.

Project Overview

- GGGI tasked with innovating a (financing) mechanism for infrastructure to be climate resilient
- Implementing performance-based/availability payment type of green/energy efficient PPP model in public buildings and infrastructure, which aims to mobilize private capital and climate financing.
- Program implemented on phased-approach: i) pilot case 10 public buildings, approx. \$10 million ii) scale up phase, up to \$100 million.

GGGI's Added Value

- (i) Design feasible green PPP models and projects for public buildings; (ii) design feasible financing mechanism based on pilot PPP project case; and (iii) enhance capital flows into the program
- Strategic advisory services for GoM - (i) leverage limited public funds to attract additional financing through a feasible PPP scheme, risk-sharing instruments, knowledge/innovation, standard setting and policy recommendations; (ii) mainstream green growth in infrastructure PPP model and enhance quality of public services.

Impact

- **Size of the impact:** 10 building with capacity of 2,510 seats [pilot case]
- **Nature of the impact:** Increased number of education facility (SDG), heat loss and energy efficiency of public building (Mongolia's NDC, National Green Development Plan)

Project Status & Next Steps

- Finalizing business case development with market sound assessment (10 selected project sites)
- Working on a full business case with technical output specifications completion
- Next Step: UB City endorsement and budget allocation in 2018-19.



10. Vietnam Biomass to Energy Project *Potential to leverage up to \$60M in private capital*

Current Gap

There are 41 sugar factories in Vietnam that produce about 7.8 million tons of waste bagasse per year that is not being utilized economically.

Project Overview

- Pre-feasibilities for currently inefficient selected Vietnam sugar mills to retrofit them with efficient biomass utilization for combined heat and power (CHP) generating up to 45MW, partly to feed to the Vietnam grid, to reduce costs and enhanced revenues.
 - Lam Son Sugar Factory
 - Vi Thanh Sugar Factory
- Investment size: US\$ 50-60M

Project Status & Next Steps

- Pre-feasibility for two sugar mills are finalized (Lam Son Sugar Factory & Vi Thanh Sugar Factory)
- Next step: Investor workshop on Pre-feasibility reports (early October)

Impact

- Potentially increasing the number of sugar mills that feed electricity to the grid by 29%, increasing renewable energy within Vietnam, in line with gov't targets for biomass power production.





11. FUNBAM, Costa Rica

A dedicated vehicle for financing sustainable ecosystems

Current Gap Key challenge is to attract capital into the 'ecosystems sector' to allow achievement of national commitments and targets.

Project Overview

- GGGI tasked with redesigning and scaling up FUNBAM, finding new money and making it operational
- Vehicle will become mechanism for implementing NDC
- In early stages; vehicle will be structured only after likely projects are determined
- Targeted fund size is initially US \$ 5 million.

Project Status & Next Steps

- Shortlisting projects and determining viability, size of capital, risk, partnerships, governance, etc.
- Administrative Board of FUNBAM to approve the investment plan for FUNBAM 2.0

Contingencies/Risks

Success of vehicle is dependent on risk profile of projects it can support, overall structure of FUNBAM, its governance and risk to investors.

Projects in Pipeline

- Forest Plantation Usage Program (PPAF) is a credit-financing scheme designed for local agricultural producers in Huetar North region in Costa Rica
- Timber Purchase in Advance Program (TPAP) aims to create a marketplace with a new payment scheme



FUNBAM
Fundación Banco Ambiental



12. FENOGE, Colombia

A dedicated vehicle for financing mitigation

Current Gap No dedicated vehicle in the country to enable energy efficiency and renewable energy.

Project Overview, Value Add

- GGGI developing the Non-Conventional Energies and Energy Efficiency Fund (FENOGE: Fondo de Energías Renovables y Gestión Eficiente de la Energía), a national financing vehicle for grid-connected and off-grid renewable energy and energy efficiency investment.
- GGGI providing the Colombian government with experience in operations (ops) manual/fund structuring, technical capacity on pipeline development and public + private sector expertise.
- GGGI offers the breadth of expertise required and a working relationship with the Ministry of Mines and Energy



Impact

- Size of the fund: USD 20 million (initial size)
- Contribute to 20% GHG reduction by 2030 (NDC)



Project Status & Next Steps

- IDB committed \$10M and government will put \$15M in FENOGE (Colombia).
- Finalizing decree to launch FENOGE (Colombia) in September 2017
- Pipeline development will follow in Q4 2017 – Q1 2018

Contingencies

Gov't approval – several regulatory requirements to be met

13. FONERWA, Rwanda

A dedicated vehicle for financing adaptation and mitigation



Current Gap

Current capital of FONERWA will run out soon; current structure of FONERWA unsuitable for scaling and efficiency.

Project Overview

- Designing of a funding facility for Rwanda's already operational national green fund (FONERWA) and raising \$25 million for this facility.
- GGGI is transforming this vehicle from grant provider to innovative grant/concessional loan facility for higher impact

GGGI's Added Value

- Experience in fund structuring and fund raising, transfer knowledge, network within Rwandan government and with investors
- Prepare business plan, design funding vehicle, identify funding sources, fund raising

Impact

- Size of the impact: 90,000 green jobs to be created
- Nature of the impact: SDG 7 (renewable energy) & 13 (climate change), Rwandan NDC, Rwanda's Green Growth and Climate Resilience Strategy, Vision 2020 and Rwanda's Economic Development and Poverty Reduction Strategy (EDPRS) II.



Project Status & Next Steps

- Market assessment ongoing to assess funding gaps in Rwanda's adaptation and mitigation sectors
- Q3-Q4 2017: Fund raising based on FONERWA law and business plan – key targets include SIDA, NAMA Facility and the Belgian Embassy

14. Indonesia Palm Oil Mill Effluent to Energy Program



Current Gap

Indonesia is the world's largest producer of palm oil, contributing over 50% of global production. Renewable energy from Palm Oil Mill Effluent can be an efficient source of power generation for plantation operations and for neighboring communities as a source of rural electrification, but the business model needs to be proven.

Project Overview

- Design and implement in East and Central Kalimantan the Independent Power Producers business model for power generation from POME
- Conduct independent evaluation process to select suitable project developer to implement the Power Purchase Agreement process with PT PLN (the state utility)
- Investment size is US\$ 2.5 million.

Impact

- Demonstrate viable business model POME waste to energy projects for rural electrification (total potential of 90MW in EK and 190MW* CK; projects to be developed ~2.0 MW each).
- Demonstrate how POME waste to energy can directly contribute in achieving the GoI's aspirational goal of reducing GHG emissions by at least 29% by 2030.

Project Status & Next Steps

- Pre-feasibility assessment for 2 palm oil mills (POMs) have been completed.
 - ✓ PT Sampoerna Agro Tbk (Palm Oil Mill)
 - ✓ PT PP London Sumatra Tbk (Palm Oil Mill)
- Next step is to get a 'go' decision from the POM to set-up financing for the project.



15. Thailand TAPEE Program

An innovative \$30M energy efficiency program to implement national GHG targets



Impact

Current Gap

No mechanism to implement the national GHG roadmap; key hurdle is energy efficiency realization.

Program Overview

Incentivizes energy efficiency in the auto parts sector accounting for 12% of the Thai GDP

2 phases (due to complexity of program):

- Establishment phase: Design energy efficiency investment structure and deliver up to USD 3 million in energy efficiency investment
- Fund raise: Developing a risk-sharing facility, On-Bill Repayment or On-Bill Financing mechanism, and pipeline of bankable projects

- Size of facility: USD 30 million
- Reduce GHG emissions by 20-25% from BAU level by 2030.
- Impact up to 2,000 small-and-medium-sized auto parts manufacturers.

Project Progress/Plan

- Q3-4: Project kick-off, pipeline development
- 2018 Q1: Financial facility and repayment mechanism designing
- 2018 Q2: Repayment mechanism launched

GGGI's Added Value

- Designing a risk-sharing facility for local FIs to provide upfront capital to EE upgrade projects
- Implementing a suitable mechanism to eliminate the high upfront capital requirements
- Developing a pipeline of bankable projects in the sector



16. 200M Senegal Renewable Energy Fund (REEF)

An emerging partnership between AfDB, Senegal wealth fund (FONSIS), GGGI and the Govt of Senegal



Impact

Current Gap

Renewables capacity is very high; however, few projects on the ground. No access to suitable finance to meet the needs of small projects.

Project Overview

GGGI with others designing and structuring a subordinated debt fund with initial capitalization of USD 50 million. The fund will provide junior debt for renewable energy (solar) and become USD 200 million ultimately

Program will add pipeline to the market, capacity to Govt, and market development for the country.

Fund co-financed by the AfDB and FONSIS; GGGI tasked with helping raise international funds

- Size of the impact: 300 MW of installed solar power at lower cost, reduction of spending for oil imports for electricity generation
- 65% of the total market
- Nature of the impact: NDC/SDG/contribution to country target of 20% of RE in energy mix, GHG emissions reduction of 1.5 million tCO₂e/year

Project Progress/Plan

- Q3: Approval of the of Concept Note by the GoS and other stakeholders (including AfDB)
- Q4: Assessment studies (market, legal) and structuring

GGGI's Added Value

- GGGI is working with FONSIS and AfDB in designing and developing the REEF by providing Technical Assistance including: Assessment (policy, market, legal), business plan/model development, fundraising (GCF and other financiers), set-up and support for the operationalization of the REEF.
- GGGI has been appointed to provide its expertise in fund structuring, fundraising and operationalization for the REEF.





17. Philippines Eco-town Project Development

Current Gap	National Climate Change Action Plan and "Demonstration of Ecotown Framework Project (Phase 1)" identified three sectors most vulnerable to climate change (e.g. agriculture, coastal marine and health)
-------------	---

Project Overview

- GGGI supports the Municipality of San Vicente to propose a coastal and marine ecosystems management and rehabilitation project (with focus on coral reef & mangrove rehabilitation) as a priority project for USD 1.5 million funding from a national climate adaptation fund, the People's Survival Fund (PSF).
- Revision of proposal PSF funding proposal submitted to the government in June 2017.

Impact

- Improved coastal and marine ecosystems to enhance support for San Vicente's fishing and tourism industries.
- In particular, the coral reef rehabilitation project aims to increase coral reef cover to 5% and produce about USD 6 million (preliminary estimates) worth of benefits for the fisheries and tourism sectors.

GGGI's Added Value

- Assist the Municipality to translate high-level adaptation measures into a tangible project
- Improve climate change resilience and inclusive green growth of the Municipality by enhancing capacity of the LGU and community to sustain the project implementation and management after GGGI engagement.



18. Rwanda Green City Pilot

Current Gap

Rwanda faces huge urbanization challenges (9% urban growth) - the majority centered around Kigali. In the Economic Development & Poverty Reduction Strategy (EDPRS2: 2013-2018), the Government of Rwanda intends to initiate a pilot Green City to test and promote a new approach to urbanization & sustainable cities for the future.

GGGI's Added Value

- GGGI has funded technical drawings that utilize green aspects including wastewater treatment, building orientation and sustainable building materials; we will now assist in sourcing climate finance for part of the funding.
- GGGI uniquely understands the priorities of gov't and how this is being translated into an implementable project. We are well placed to source appropriate financing for the project.

Project Status and Next Steps

Q3: Identification of funding sources, pitch presentations

Project Overview

- Funding for green housing development (Cactus Park) owned by Horizon Group in Kigali.
- Total investment amount US \$50m, 420 dwellings.

Impact

- Size of the impact: by 2020 industry supporting green city projects is expected to create 400k jobs, a 50% increase in this sector.
- Nature of the impact: SDG 11 and 13; Green City Pilot specified in National EDPRS II plan.
- Sourcing climate finance for green aspects of development to blend with commercial finance.



19. Rwanda Faecal treatment in Green Secondary Cities (Early stage)

Current Gap

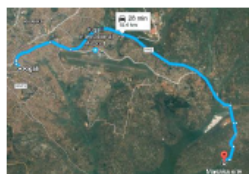
The faecal sludge coming from septic tanks in Kigali is dumped into the Nduba landfill which leads to severe environmental damage (ground and surface water, air, soils). The rapid expansion of the City of Kigali has had a negative impact on water in Kigali and secondary cities nearby. No sanitation systems in place.

Project Overview

- Demonstrate that faecal sludge treatment plants in two Rwandan secondary cities can be financeable
- \$80-100m investment
- Capacity to treat up to 80 m³ / day (all city's available sludge). Option to produce fuel and energy

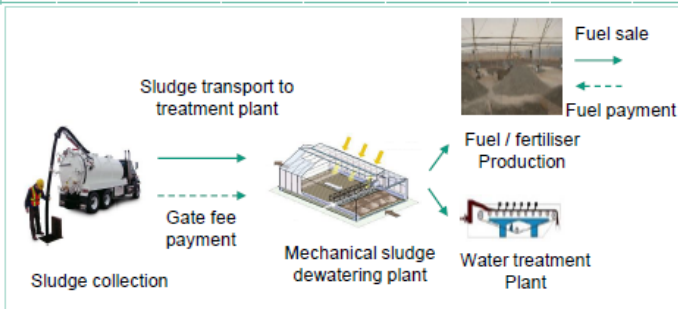
GGGI's Added Value

- Identify projects, make them investable, support competitive bid to select company, fund raising
- Knowledge of the sewage sector, of project financial structuring, network within government and with investors



Project Status & Next Steps

- Mission led by GGGI with preliminary assessment of potential FSTP projects.
- Next step: Agreement of proposal with National Water and Sanitation Corporation (WASAC) for AfDB funding for a GGGI program to support WASAC in the development and management of faecal sludge treatment plants with private sector



20. Jordan Zarqa River Basin Plan (Early stage)

Current Gap

The Zarqa river basin (ZRB) has been severely degraded due to unplanned development. The Ministry of Environment has requested GGGI's support to develop a comprehensive ZRB Master Plan.

Project Overview

- The Project will prepare the Master Plan adopting a systems approach, conduct a comprehensive assessment and set up the governance structure needed for basin management.
- Project pipeline will be integrated in plan that looks at economic regeneration in the region, and boosting private sector investments, local businesses and free zones.

GGGI's Added Value

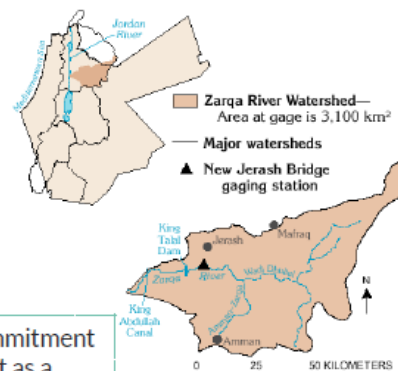
- Coordinate and submit proposal to GCF through the Project Preparation Facility.
- Arrange a DAE and investment commitment for the project.
- Provide credibility of an international organization

Impact

- **Size of impact:** Entire ZRB which includes about 2.72 million people (2004).
- **Nature of impact:** Contribute to poverty reduction in the basin and developing it in line with green growth principles.

Project Plan

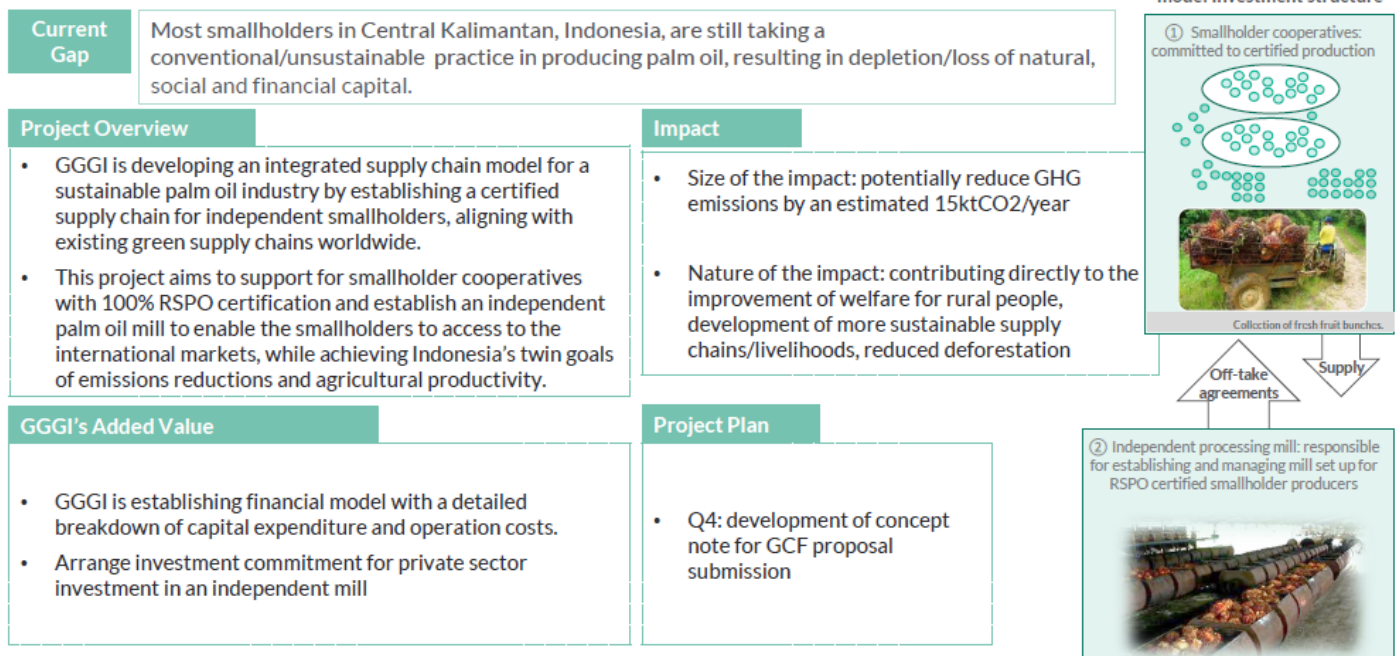
- Q3 & Q4: Securing formal commitment from either EIB or EBRD to act as a Direct Access Entity.



21. Sustainable Landscapes – Public-Private Investment Opportunities: Integrated Peatland Restoration, Indonesia (Ideation Stage)



22. Sustainable Landscapes – Public-Private Investment Opportunities: Sustainable Palm Oil Production, Indonesia (Ideation Stage)



23. Sustainable Landscapes – Public-Private Investment Opportunities: Innovative Tropical Forest Management, Indonesia (Ideation Stage)

Current Gap

There are over 24 million hectares of forest land zones allocated for production purposes across Indonesia, but only 13 million ha has a form of active forest management. And only 2.3 million has carries forest management certification to an international standards.

Project Overview

- GGGI is working with the Provincial Government in East Kalimantan to attract investments for sustainable timber production in active concessions by securing international certification based on best practice principles (FCM).
- This project also includes degraded forest restoration initiatives (replanting) in adjacent concessions, through engagement with private sectors/local communities.

Impact

- Size of the impact: adoption of reduced-impact logging will result in reducing CO2 emissions by 30-50%, with approx. 17% project return rate in the eleventh year of the project.
- Degraded forest restoration initiatives with approx. 16% return rate.
- Nature of the impact: reduction in GHG emissions with environmental benefits



Image sources: Tropical Forest Foundation; Indufor

GGGI's Added Value

- GGGI is developing business model to engage the private sector in forest restoration of inactive concessions.
- Develop an independent certification boosting Government policy commitments and regulations based on international best practice (FSC)

Project Plan

- Q4: development of concept note for GCF proposal submission



Source: Sumatran Orangutan Society. Replanting in degraded forest lands

24. Jordan Environmental Fund



Project Overview

- As per request of the Jordan Government, GGGI was tasked to develop the Jordan Environmental Fund into an operational national financing vehicle having the ability to channel international investments towards green growth projects in Energy, Water, Waste, Transport, Agriculture and Tourism in accordance with the National Green Growth Plan for Jordan.
- However, the project is cancelled in agreement with the government due to below risks.
 - Conflict of interest with NDA: JEF is unable to become a GCF accredited entity. This was confirmed by GCF.
 - JEF legal basis: the JEF bylaws are too restrictive
 - Governance structure that is amenable for investors may clash with Government

Project Progress

- Q1-2: Assessment of existing domestic funds and identification of potential financiers
- June 2017: Project pipeline development, revision of by-laws
- August 2017: GGGI proposed revision of by-laws rejected. Project cancelled.



25. Cambodia Kep Solar Project and Solar Energy Initiation Program



Project Overview

Given that Cambodia has untapped solar power capacity and high potential to displace diesel generation and enable energy access through the participation of private capital, GGGI initiated a solar energy program for Kep Province in early 2017.

However, GGGI decided to stop the project due to lack of commitment from the off taker, the utility. GGGI requested for a commitment in the form of land/site acquisition, permission/license associated with solar PV development, and negotiation and confirmation of headline terms of PPA with utility which could not happen without the utility's endorsement.

Project Progress

- Q1-2: Scoping and option development
- July 2017: Multi stakeholder meeting
- August 2017: Project cancelled.

