# Private sector engagement and opportunities on energy efficiency markets in Mongolia

**Romain Brillie, Country Representative to Mongolia, Global Green Growth Institute**

Second bilateral business matchmaking event for the JCM, October 3 2019

# GGGI at a Glance

Headquartered in Seoul, Republic of Korea, GGGI has ***35 Members*** with ***operations in 33 countries***


## Member Countries

Australia, Burkina Faso, Cambodia, Costa Rica, Denmark, Ethiopia, Fiji, Guyana, Hungary, Indonesia, Jordan, Kiribati, Republic of Korea, Lao PDR, Mexico, Mongolia, Norway, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Rwanda, Senegal, Sri Lanka, Thailand, Tonga, United Arab Emirates, United Kingdom, Uganda, Uzbekistan, Vanuatu, Viet Nam

## Operations

Burkina Faso, Cambodia, China, Colombia, Costa Rica, Ethiopia, Fiji, Guyana, Hungary, India, Indonesia, Jordan, Kiribati, Lao PDR, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Nepal, Caribbean, Papua New Guinea, Peru, Philippines, Qatar, Rwanda, Senegal, Thailand, Tonga, Uganda, United Arab Emirates, Vanuatu, Viet Nam

# GGGI's Services Value Chain

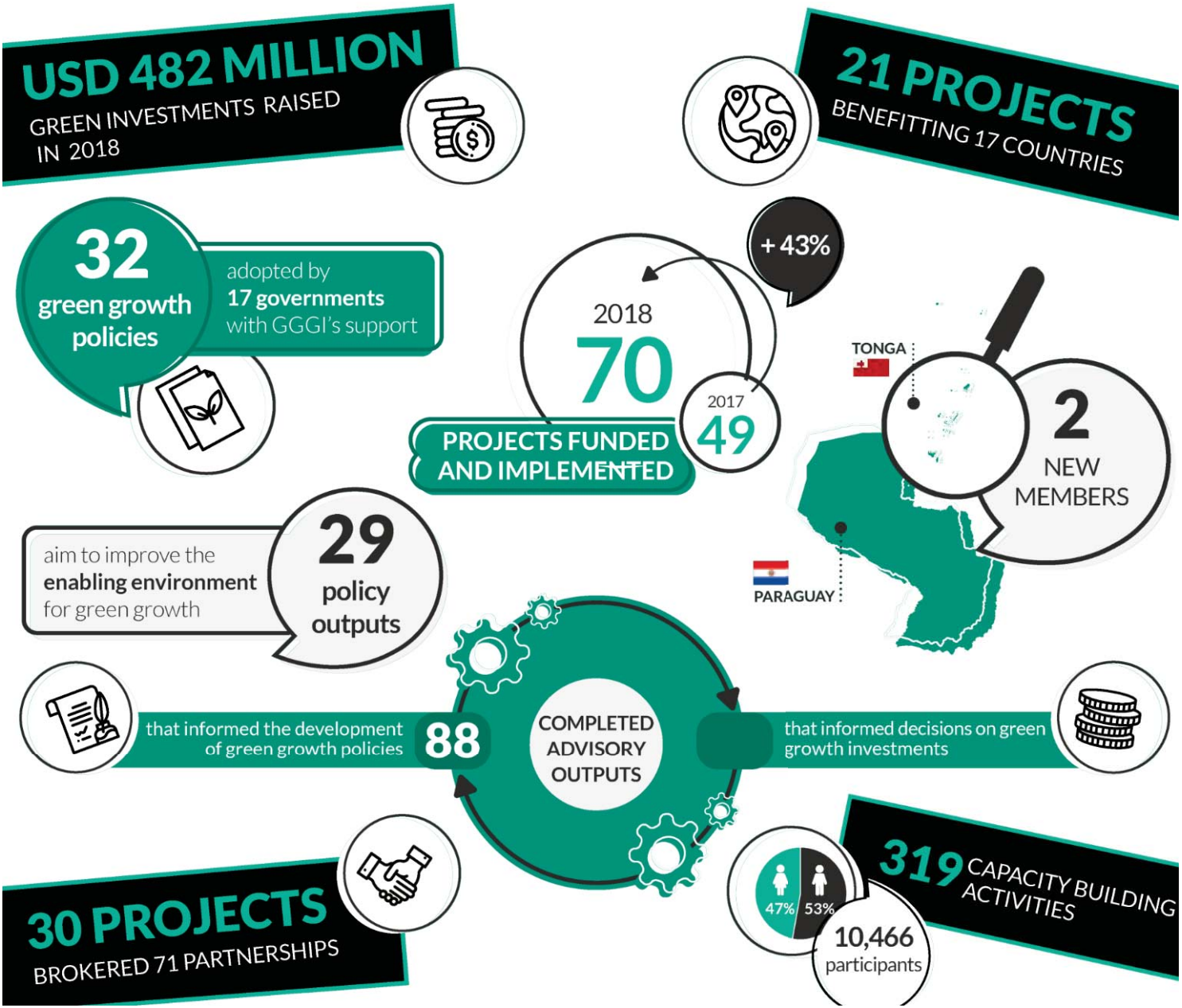
**Sustainable Energy**

**Water & Sanitation**

**Sustainable Landscapes**

**Green Cities**


**GGGI Value Chain**

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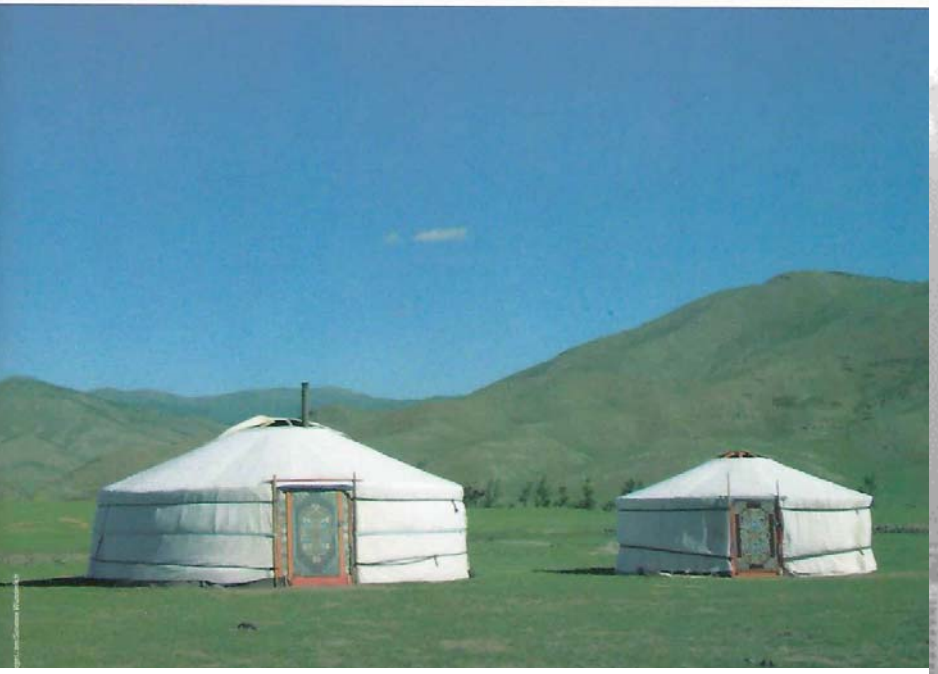
# > 2018 Results at a Glance

**482M USD** raised for green investment projects

**32 policies** adopted

GGGI

Mongolia Country Planning Framework 2016-2020



БАЙГАЛЬ ОРЧИН,
АЯЛАЛ ЖУУЛЧЛАЛЫН ЯАМ

# Supporting Mongolia's Sustainable Development Vision 2030, INDC and National Green Development Policy implementation

Sustainable Energy

> Mongolia transitions **from brown to green energy** and improves **energy efficiency.**

Green Cities

> Mongolia accelerates urban **green infrastructure development.**

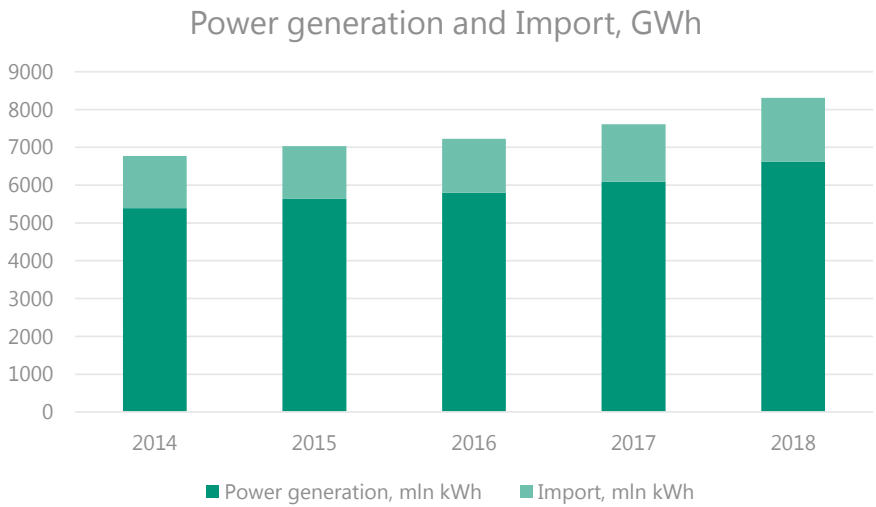
Water & Sanitation

> Mongolia **strengthens water management** to improve supply-demand alignment and mitigate climate change risks.

# Mongolia's growing demand for Energy

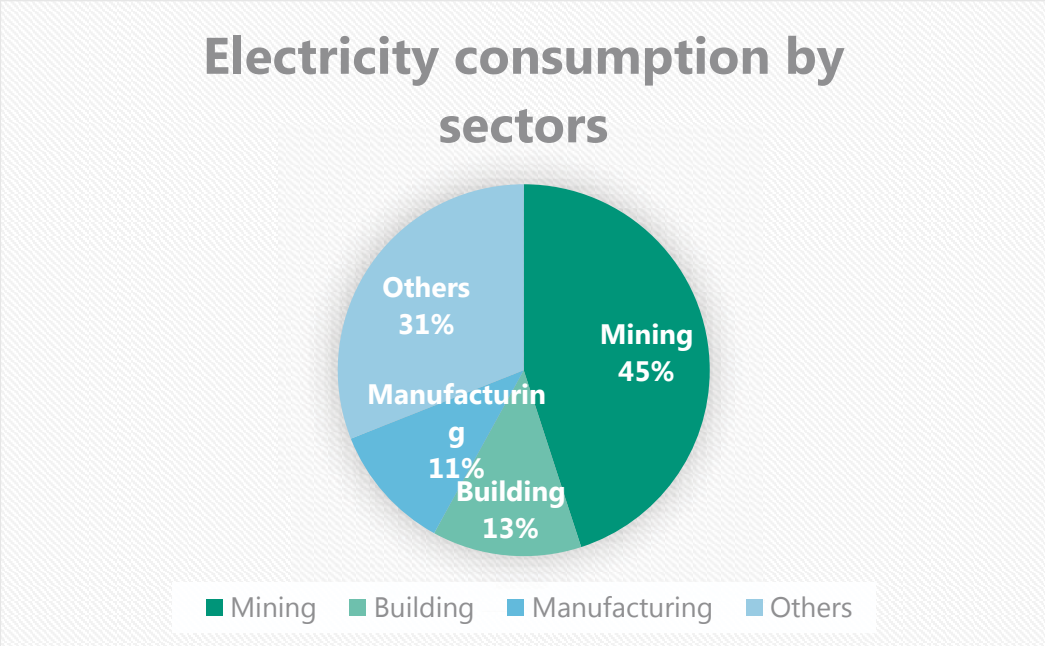
- **Growth in demand** for electricity and heating is increasing +5.1% in recent years.
- Significant **power imports** from Russia ~20% annual average.
- Energy sector is the largest contributor of **GHG emission**, accounting for **over 50%** of the total 26,277 Gg CO2-eq as of 2018.
- High inefficiency – energy intensity **7 times the world's average**
- Expansion of generation capacity requires substantial financing and considerably long time to reach commercial operation.
- Energy efficiency: shorter implementation period/ lower investment cost, **an effective solution to the increasing energy supply demand gap.**

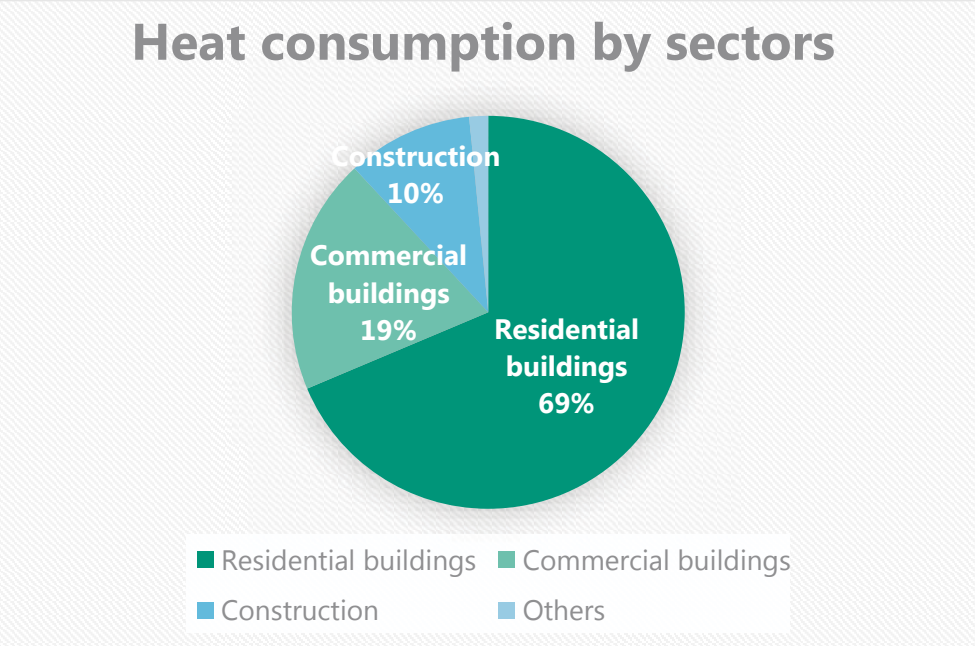
**Electricity Generation and Import, GWh,**




Source: Energy Regulatory Commission, 2019

# Energy Intensive Sectors




Source: Energy Regulatory Commission, 2018

- Priority sub-sectors in Mongolia based on their electricity and heat energy consumptions are: **mining; building and construction; manufacturing (food & beverage); and utility**.
- These energy intensive sub-sectors are mostly in the **industrial sector** which account for more than 30% of the country's GDP.

# Energy efficiency main policy framework

## INDC of Mongolia to the Paris Agreement

**Heat and Power**

- Reduce power transmission losses from 13.7% in 2014 to 10.8% in 2020 and 7.8% in 2030
- Reduce building heat loss by 20% by 2020, 40% by 2030
- Reduce internal energy use from CHPs from 14.4 % in 2014 to 11.2% by 2020 and 9.14% by 2030

**Transport**

- Increase % of private hybrid vehicles from 6.5% ( 2014) to 13% (2030)

**Industry**

- Reduce cement manufacturing emissions by swit ching to dry processing

## Energy Conservation Law

**Designated entities:**

1. Public buildings and services consuming 2,000 MWh/year +

2. Industrial entities consuming 3,000 MWh/ year +

3. Mining firms consuming 5,000 MWh/year +

# Power and heat efficiency potential

| Existing | Technology recommendation | Expected energy savings | Potential marker size | Market assessment available |
|---|---|---|---|---|
| Distribution transformers | - High efficiency distribution transformers | 0.5%-2% | USD 32 mln | Yes |
| Food & beverage | - High efficiency motors, pumps compressors<br>- Variable speed drive for pumps and fans<br>- Insulation | 20% | TBD | No |
| Mining | - High efficiency motors, pumps compressors<br>- Variable speed drive for pumps and fans | 20-30% | USD 100 mln | No |
| Incandescent lights | - LED lightning | Up to 70% | TBD | No |
| Heat only boilers (HOBs) | - High efficiency HOBs<br>- Retrofitting of existing HOBs<br>- Fuel substitution (gas, biomass)<br>- Heat pumps | 25% | USD 28 mln | No |
| Residential and commercial buildings | - Thermo-technical retrofitting | Up to 50% | USD 88 mln | Yes |
| Coal burning stoves | - Electric/LPG cooking stoves<br>- Electric heaters<br>- Low emission stoves | Up to 30% | TBD | Yes |

# Main investment barriers for private sector in EE Sector

Global Green Growth Institute

- High upfront cost of technologies
- Insufficient returns – low heat and power tariffs, heat tariff structure and absence of metering
- Information and capacity barrier – limited bankable FS available
- Affordability/appropriateness of financial instruments – high IR, short tenors
- Foreign exchange availability
- Political and regulatory uncertainty - dependence on public policy
- Default risk
- Immature market – high unit costs

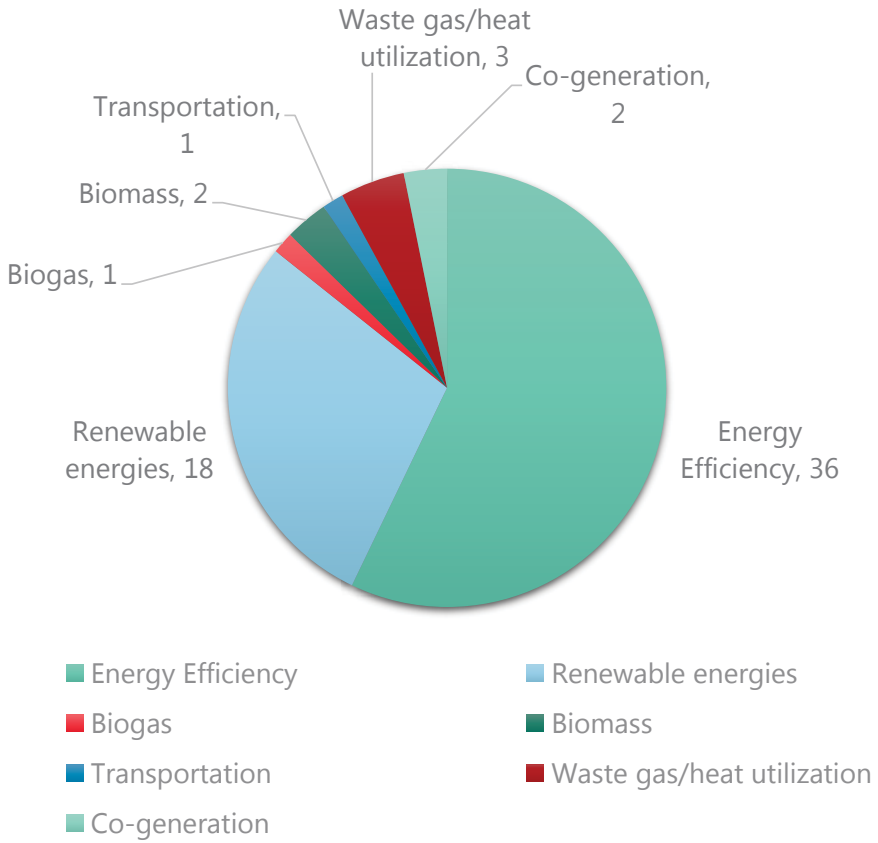
*Need **technical assistance** to project owners, use **innovative financing and de-risking instruments.***

# Existing financing options

| | |
|---|---|
| **JCM** | • **51%** of all JCM financed projects (as of 2018) are EE related.<br>• Up to 50% upfront investment cost investment grant. |
| **EE loans** | • XacBank Business Loans for GHG reduction<br>• MONSEFF, MONGEFF (Xacbank, Khan Bank) |
| **ESCO /EPC** | • Energy Performance Contracting (EPC) is a form of 'creative financing'. Under an EPC arrangement an energy service company (ESCO) implements a project to deliver energy efficiency and uses the stream of income from the cost savings to repay the costs of the project, including the costs of the investment. |
| **Combined finance (bundling)** | • Bundling small scale projects within a sector or through financial intermediation<br>• Bundling different types of finance within a project/program to make it attractive for investors<br>• Reduced transaction cost, gather a larger package of resources to address the same issue |

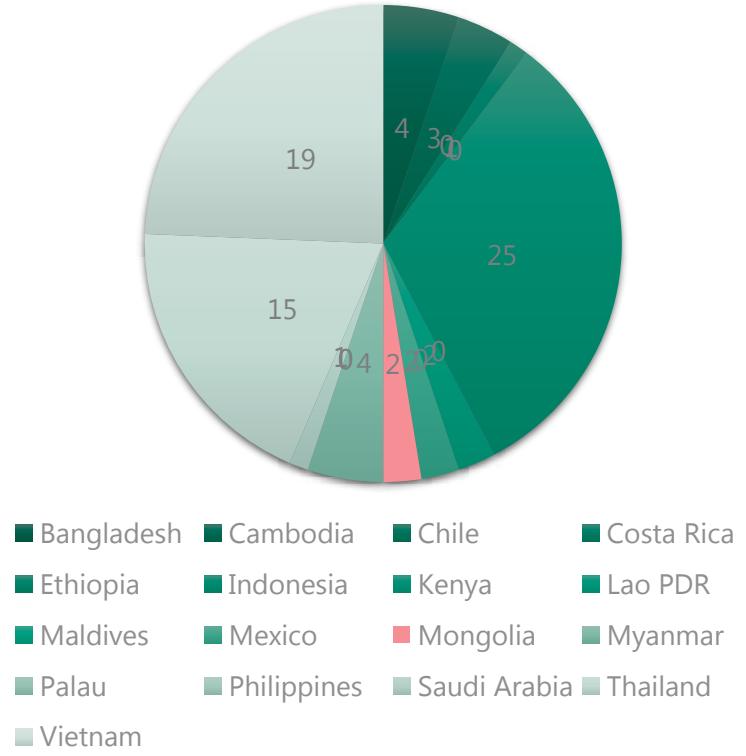
# Focus on JCM EE projects

## Type of project covered by AM




Source: JCM project database, 2019

## Number of active EE JCM financed project by Country

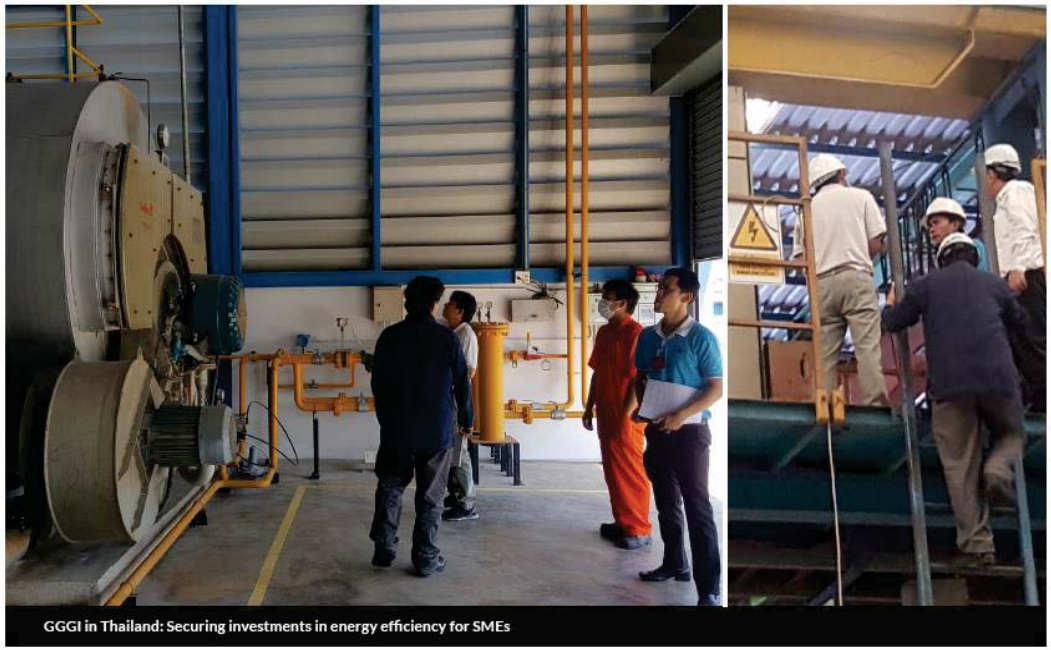


| Risk instruments | Descriptions | Examples |
|---|---|---|
| **Bilateral contracts** | Risk mitigation instruments addressing project risks not related to credit. They are usually provided by private entities to cover **technical risks** related to the operation phases of projects, or to cover output price risks. | EPC (Engineering, procurement, and construction) |
| **Credit Enhancement Instruments** | Usually developed by specialized public and private entities to cover **commercial and market risks** by guaranteeing (either partially or in full) the liabilities of a project toward its lenders. Credit Enhancement Instruments improve the quality of loans and bonds issued by the projects by mitigating the borrower's credit risk and enhancing coverage of debt service obligations. | Guarantee |
| **Risk management instruments** | A well-established risk mitigation instrument, typically provided by private companies. This is in exchange for a premium and upon verification of the liability of the claim. Insurance risk mitigation instruments are very common in mitigating **physical, market and political risks**. | Insurances and contract-based instruments |
| **Revenue Support Policies** | Revenue Support Policies are the public sector's main tool for promoting low-carbon projects by reducing output price risks and offering resources that reduce **financing risks**, for example tax credit or equity. One drawback is that, as technology deployment increases, revenue support policies become heavier for public budgets, creating incentives for governments to renegotiate them. For investors, this creates the perception of policy risks. | Feed-in tariff, tax incentives and clean energy subsidies |
| **Direct Concessional Investments** | Direct Concessional Investments are risk mitigation instruments from public entities (such as governments' budgets, bilateral and multilateral development banks), dedicated private-equity facilities, and international climate funds. They help mitigate **financing risks** by providing loans or equity funding that enhances the financial viability of low carbon projects. | Concessional loans |
| **Indirect Political and Institutional Support** | Indirect Political and Institutional Support refers to public, non-financial, interventions that usually target multiple risks, including **political, policy and regulatory risks, as well as technical and physical risks**. | Technical assistance (for climate policies and capacity building activities) |
| **Grants** | Cash transfers or provision of in-kind support which mitigate **financing risks.** | Cash transfer, investment grants |

# GGGI's support to EE investment projects

## Thailand SME Energy Efficiency program

- In 2018, Thailand's Provincial Electricity Authority (PEA), a state-owned electricity utility, secured **USD 20 million in investments** to improve the energy efficiency of the country's small and medium enterprises (SMEs).
- **220 Thai SMEs** were assessed by the Global Green Growth Institute (GGGI) for potential energy efficiency improvement investment.
- With a total market size for energy efficiency measures in SMEs estimated at **approximately USD 380 million**, this initial inflow of investment demonstrates the potential of climate action in Thailand.



GGGI in Thailand: Securing investments in energy efficiency for SMEs

# GGGI Mongolia energy efficiency assistance

## EE POLICY

- National EE Action Program
- Energy standards & labelling regulation
- EE Incentives (Standard offer programme)

## PROJECT PREPARATION

- Thermo-technical retrofitting of residential buildings
- Energy audits in 15 Designated Entities

## EE PROJECTS FINANCING

- Mongolia Green Finance Corporation
- Energy Performance Contracting / ESCO

> Policy design and implementation support to enhance risk-return profile of EE investments

> Market assessments, investment project technical and financial structuring (feasibility studies), capacity building

> Designing of risk reduction and financing instruments, linkage to investors

# Thank You

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