

Research and Development Plan for New Climate Technology Cooperation Project in 2023

# Strengthening Waste Management Policymaking in Uganda in Response to Climate Change

[ Introduction of GHG Reduction Technology ]

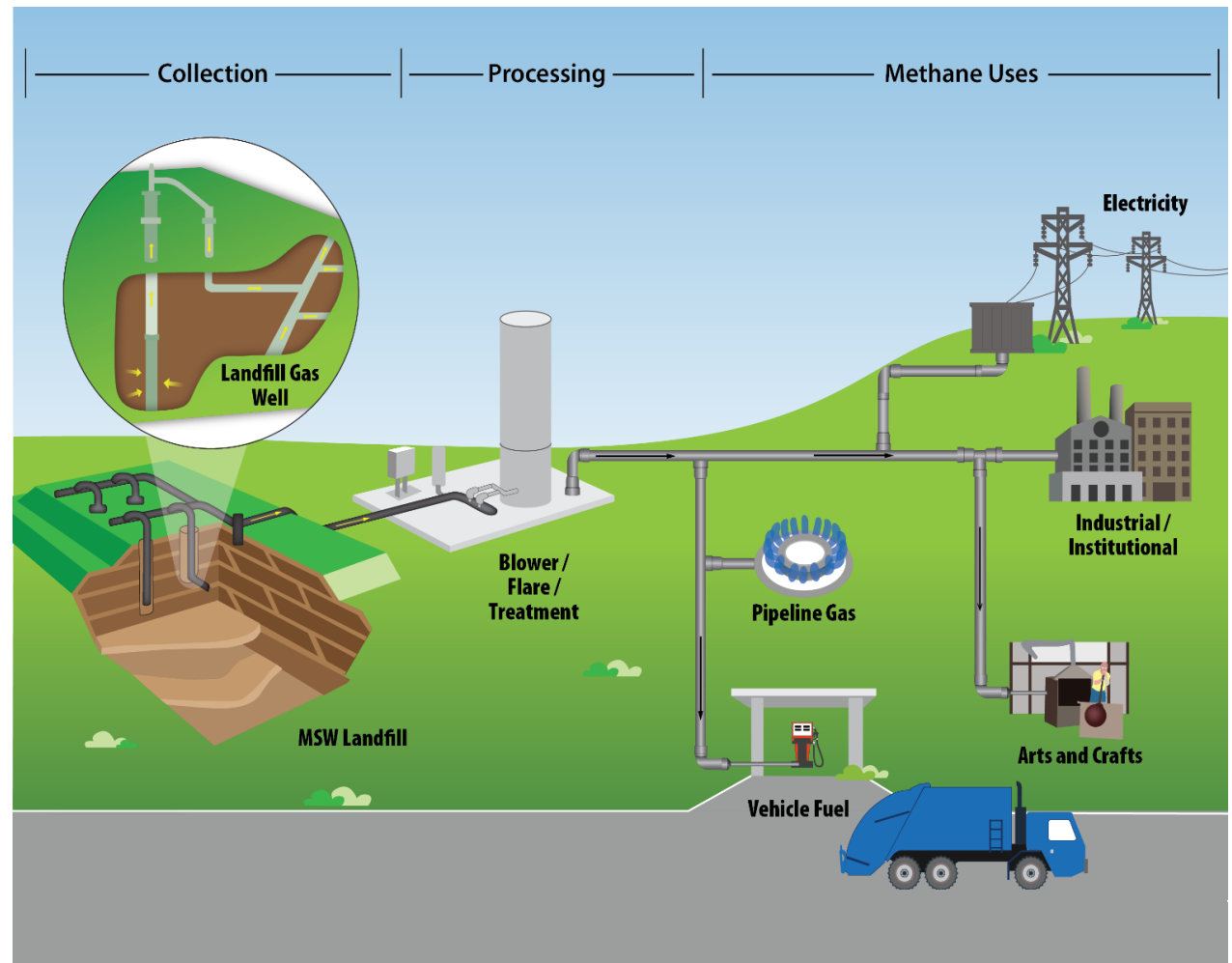
Oct. 2024



# 01 Identification of Issues

## Instruction

- Instead of escaping into the air, LFG can be captured, converted, and used as a renewable energy resource. Using LFG helps to reduce odors and other hazards associated with LFG emissions, and prevents methane from migrating into the atmosphere and contributing to local smog and global climate change. In addition, LFG energy projects generate revenue and create jobs in the community and beyond.



Reference) <https://www.epa.gov/lmop/basic-information-about-landfill-gas>

# 01 Identification of Issues

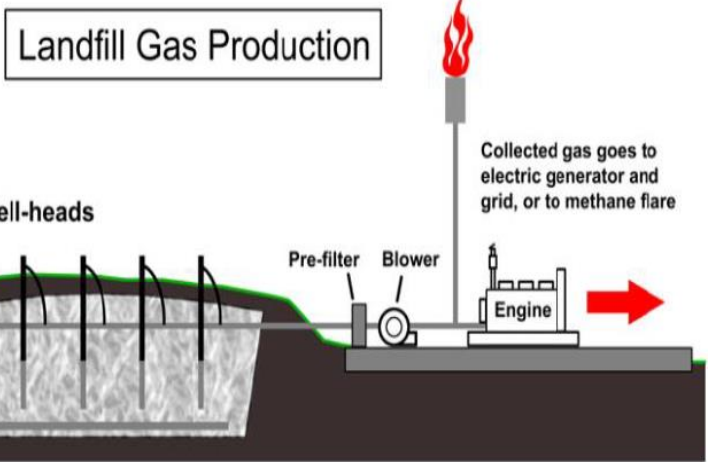
## Concept of Collecting and Treating Landfill Gas (LFG)

Open landfill



Open landfill site is eventually capped. Methane production continues via collection system and well-heads for 20-40 years.

Rehabilitation / Closure



LFG Collection facility



Flaring System



LFG Generator

# 02 Instruction of GHG Reduction Technology



## Technologies for LFG Processing & Power Generation

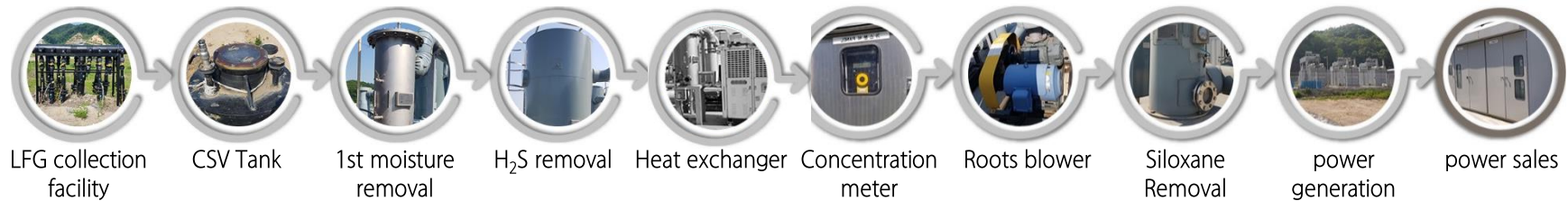


# 02 Instruction of GHG Reduction Technology

## Technologies for LFG Processing & Power Generation

### Overview

- **Securing greenhouse gas emissions rights** by **capturing and refining landfill gas and using it as power generation fuel**
- Facilities are divided into processes **that collect landfill gas** and **cogeneration facilities** that utilize purified landfill gas.
- Landfill gas is stored in a CSV tank through a collection facility, and moisture and hydrogen sulfide are removed through a purification facility.
- Refined gas is fed into a combined heat and power (CHP) plant as fuel, and the final **byproducts are waste heat and electricity**.
- Waste heat can be supplied to nearby demand sources, and the remainder of electricity can be sold after being utilized.

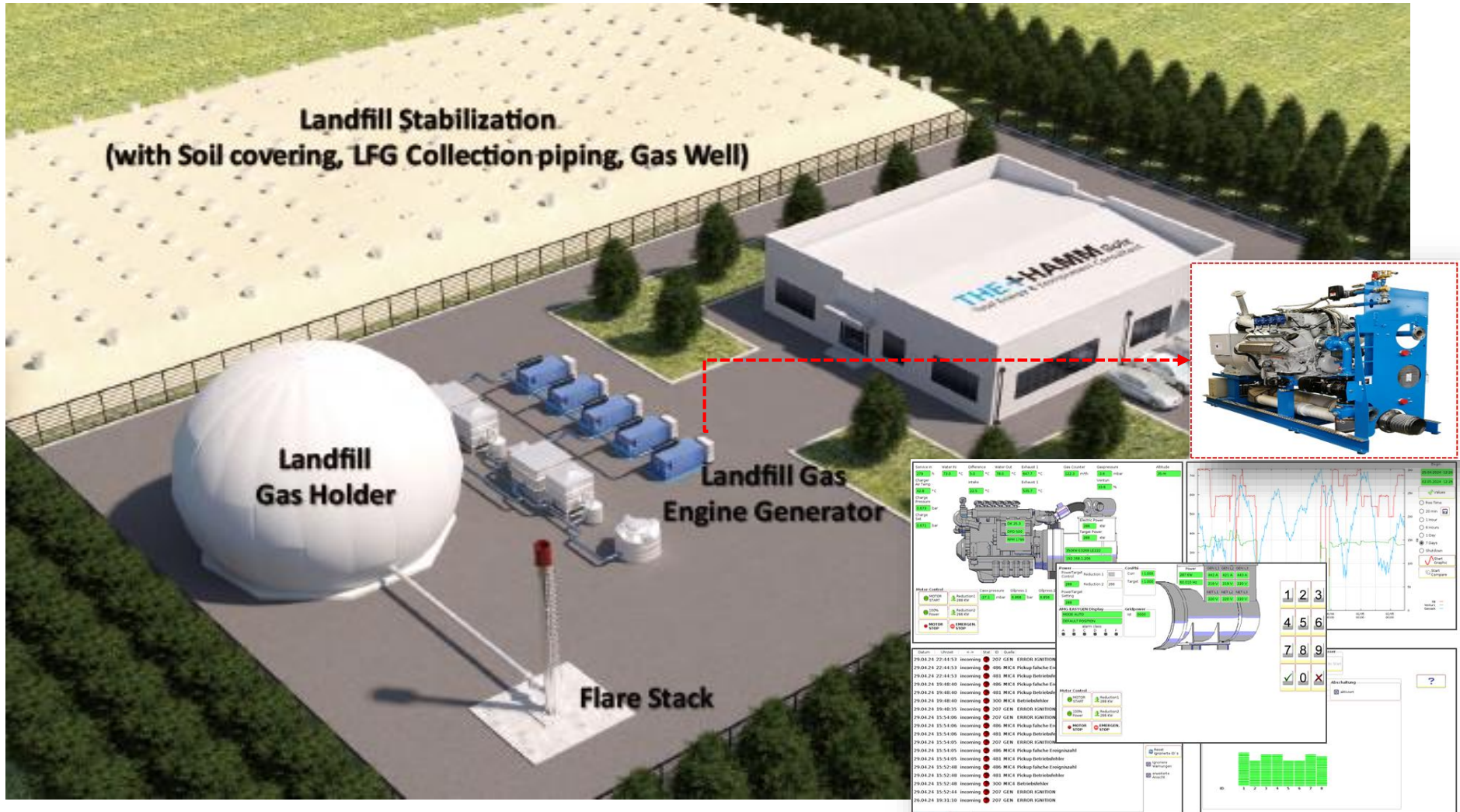


### Applicability

- Technology acquisition through a **technology agreement with Korean JV** that possesses relevant technologies and construction experience.
- As an environmental pollution prevention technology, **air pollutants can be filtered** and discharged into the atmosphere to **improve air quality in Uganda**.
- The acquisition of **personnel who participated in the construction of the landfill gas power generation project at the Wonju City waste landfill in 2016** has secured the momentum for landfill projects.
- **Developed a greenhouse gas reduction project targeting landfill sites in Myanmar** and completed registration as a CDM project with the UNFCCC, Securing human resources with **experience in promoting landfill gas power generation and greenhouse gas reduction projects** at two landfill sites located in Mandalay City.

# 02 Instruction of GHG Reduction Technology

## Layout Plan (example) and O&M



Remote Control Screen

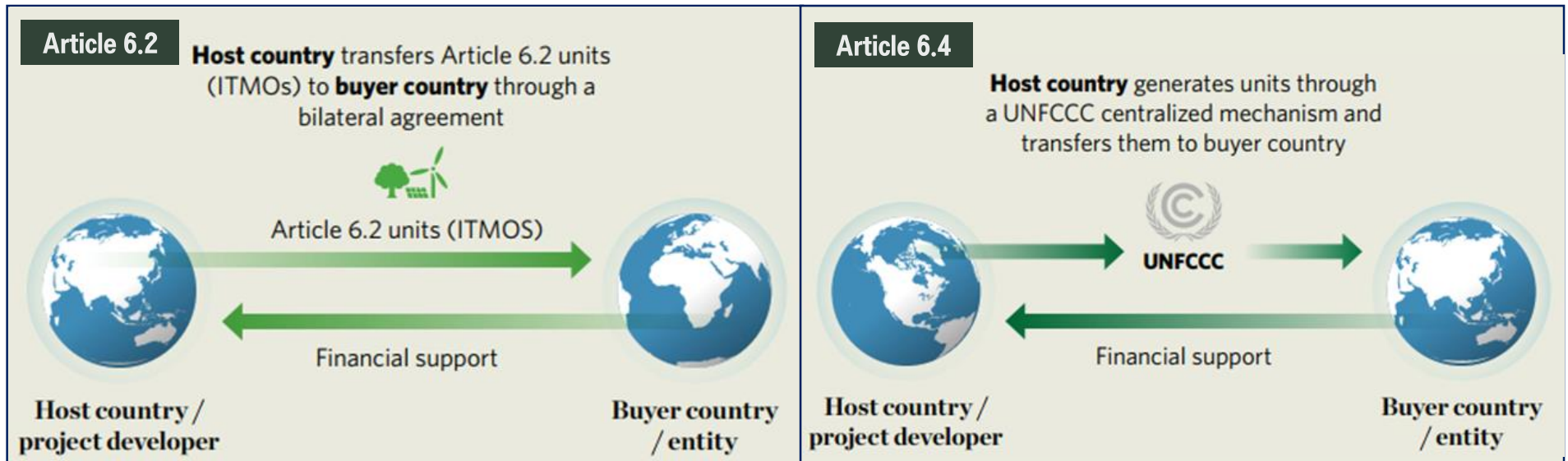
# 02 Instruction of GHG Reduction Technology

## Greenhouse Gas (GHG) Reduction

### ► Methodology

Category	Business scale	Methodology name	Note
<b>AMS-III.G.</b>	<b>Small</b>	<b>Reduction up to 60,000 tons</b>	<ul style="list-style-type: none"> <li>Assessing the validity of expected GHG reductions in renewable energy projects of similar scale in developing countries.</li> <li>Proposal of project promotion type PA (single project) or PoA (program project) considering the potential demand of landfill sites, reduction effect size, and project operation period</li> </ul>
ACM 0001	Big	Reduction exceed to 60,000 tons	
<b>AMS-I.D.</b>	<b>Small</b>	<b>Power generation up to 15MW</b>	
		Landfill methane recovery, Version 10.0	
		Flaring or use of landfill gas, Version 19.0	
		Grid connected renewable electricity generation, Version 18.0	

### ► Article 6 of the Paris Agreement



# 03 Effectiveness

## Case study of landfill rehabilitation in Korea

### ■ Before (Nanjido dumping site)

- Unsanitary landfilling and illegal dumping
- Odor, dust, fire etc.
- Groundwater contamination by leachate
- Waste pickers



### ■ After (Sky park)

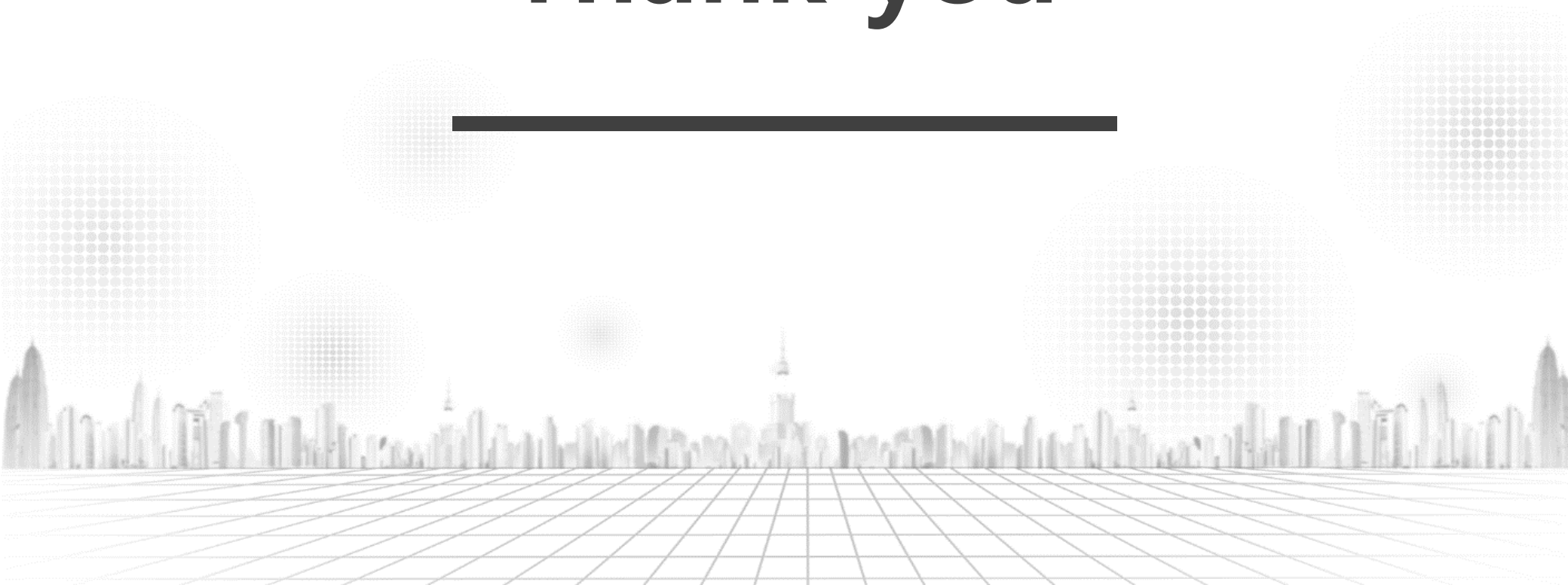
- Rehabilitating landfill and turning it into a park
- Control and reduction of odor, dust etc. and covering soil
- Leachate treatment and barrier installation
- Installation of recycling center and employment of employees





**Thank you**

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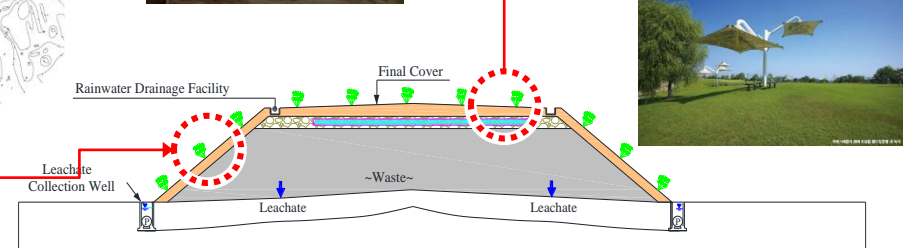
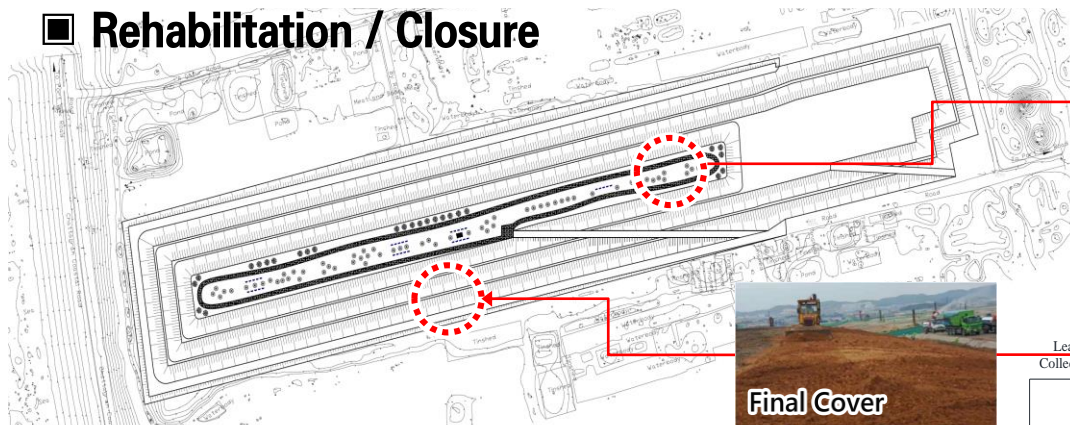


# #1 Others in Overseas \_ Bangladesh

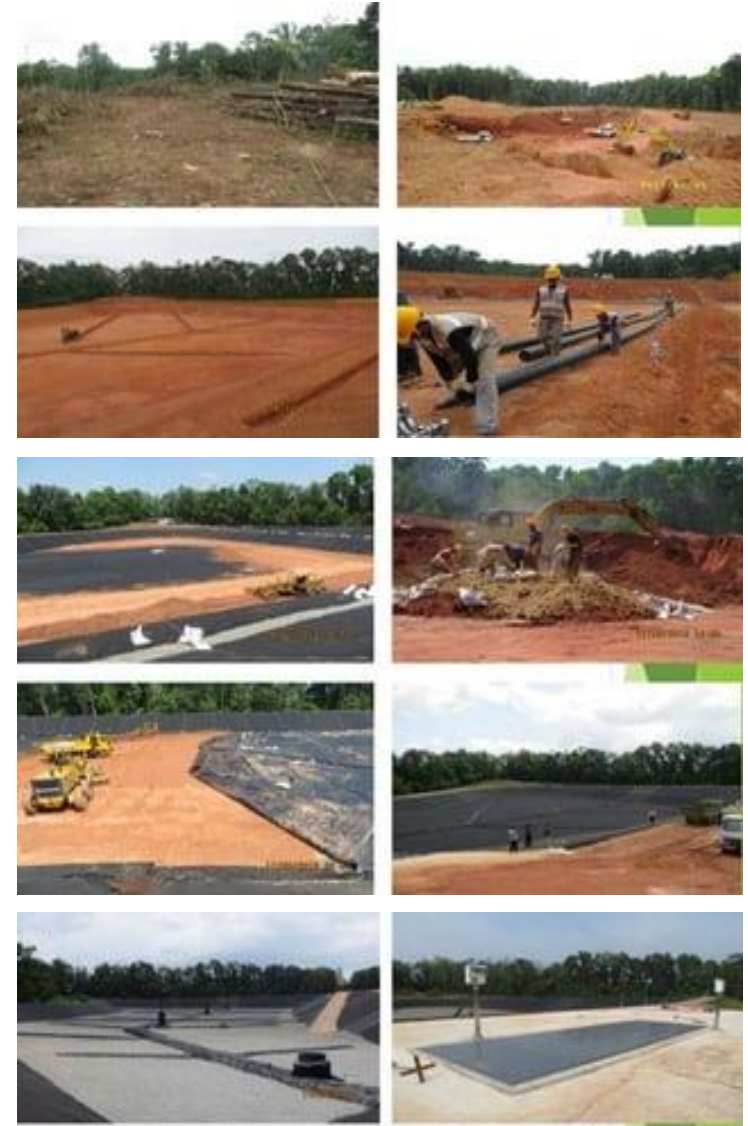
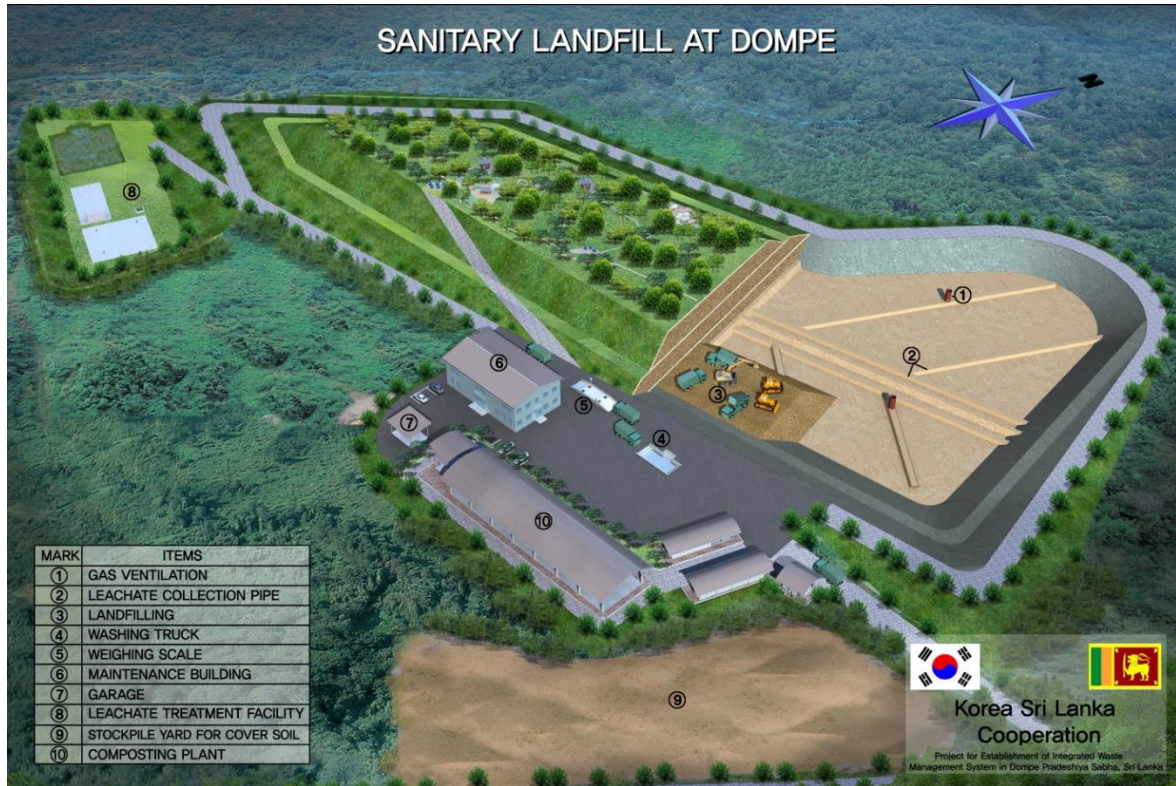
## ■ Dumpsite



## ■ Rehabilitation / Closure

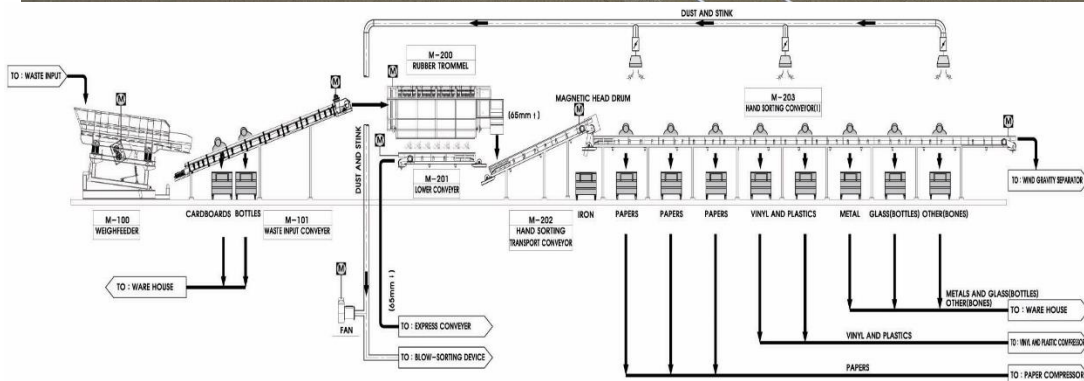


# #2 Others in Overseas \_ Sri Lanka



# #3 Others in Overseas \_ Mongolia

## CONSTRUCTION OF MUNICIPAL SOLID WASTE RECYCLING FACILITY FOR ULAANBAATAR CITY



# #4 Others in Overseas \_ Madilves

## ■ Waste to Energy by Incineration

- Waste input : 2 tons/hour (combustible waste target)
- Power generation : 1.5MW



### Status of site and construction progress



Foundation



Anchor bolt installation



Incinerator installation



Stack installation



Frame installation



Boiler installation



Installation of environmental pollution prevention facilities



Completion of mechanical facilities