



## Clean energy from landfill gas, South Korea

This pre-CDM project captures landfill gas produced during the decay of organic matter in an existing landfill and uses it for clean electricity generation.

### Location



The project is located 30 km west of the capital city of Seoul at the Sudokwon landfill site, the largest landfill in South Korea. It collected waste from the Seoul metropolitan area with its population of 22 million people since 1992

### Project



This pioneering project addresses one of the major problems of the world's growing cities, struggling with disposal and energy supply. Municipal solid waste landfills are a large source of greenhouse gas (GHG) emissions in the form of landfill gas, created as solid waste decomposes anaerobically. It is typically made up of about 50 percent methane (the primary component of natural gas) and 50 percent carbon dioxide. At the same time, as rich potential sources of alternative energy, they represent an opportunity to recover and utilize landfill gas to cover the cities' growing power demand.

This project encompasses four landfill sites at Sudokwon that manage the waste of millions of inhabitants from the nearby cities of Seoul, Incheon and Gyeonggi-do. It generates 50MW of clean energy in an incineration facility constructed on reclaimed land, making it the world's largest landfill gas fired power plant and an exemplary case of sustainable waste treatment for similar sites around the world.



But it is not only about energy. The project is also concerned with turning the former landfill into a local recreation area, with parks, sports grounds, and a museum. Soon, the landfill will be turned into an ecological tourist attraction: the Gyungin Ara Waterway is set to be completed in 2011. Some of the events at the 2014 Incheon Asian Games – golf, swimming and equestrian – will be held at the Sudokwon park. Stadiums for these events are already under construction.

## Project achievements



### Socio-economic impact:

- The project activity lead to the generation of 200 jobs on site, with specific qualifications due to the pioneering character of the technologies used.
- 50,000 students and children visit the landfill site per year to learn about sustainable waste management and climate change.
- A waste museum has been established on site, presenting e.g. waste buried long ago, how buried waste has transformed over time, and what potential it offers.
- The eco-tourism site is developed as a focal point for the dissemination of information on sustainable development, climate change and global warming topics.
- In conducting several tournaments of the 2014 Incheon Asian Games on site, the project proves concept and presents a persuasive clean solution to the world.
- The innovative waste management system has become a study tour destination of various nationwide and international training programs of related fields.
- Through the active waste management, residents of the region are relieved from odour nuisance and respiratory problems.

### Environmental impact:

- The areas near the landfill site have in the past suffered chronic flooding. The project owner has constructed a 44.6-square-kilometer reservoir on site which is capable of storing 7.22 million tons of water. The reservoir will also serve as a recreation area for citizens and as a resting place for migratory birds.
- The project involves a desalination facility for 5,00 tons of leachate released daily from the landfill. The recycled and desalted water can now be used for irrigation and other purposes. The project owner has applied for an international patent for this newly developed technology.
- An estimated 700,000 trees have been planted so far on the recreated landfill site. In a 10-year campaign, a forest of 10 million trees is planned to even further reduce carbon and support regional air quality.
- Regular monitoring of residual emissions such as ammonia and hydrogen sulfide with three automatic detectors ensures the avoidance of odour nuisance.
- The project and its pioneering holistic approach serve as a model for clean development throughout Asia and the world, with regular visits by interested parties.
- Generally, the project improves local air, water and soil conditions significantly.

## Checklist Projekt 300 415



✓ Additionality and permanence:	according to the rules of the VCS
✓ 3 <sup>rd</sup> party verified::	by Bureau Veritas
✓ Transparency:	provided by Markit Environmental Registry
✓ Annual CO <sub>2</sub> reduction:	100,000 tCO <sub>2</sub> e
✓ Social and environmental benefits:	as documented in our database
✓ Marketing material:	high resolution pictures available

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