

Landfill Gas Power Plant in Peru

Policy makers and other relevant stakeholders have tagged energy security and climate change as two of the most important challenges of the 21st century. Further, increasing population with concomitant increase in human activity have made municipal waste management equally challenging to local governments around the world. This situation is somewhat direr in developing countries where poor waste collection practices have made recycling a less attractive option. One of the ingenious ways to contribute to sustainable development and climate change mitigation is Waste-to-Energy technology. A very good example of such project is found in Peru – a 5.74MW Landfill Power Plant built in 2005.

At, a prevailing tariff of US\$0.033/kWh, the project had to be registered as a CDM project at the time of implementation to make it financially viable. A lot has changed between then and now in respect of population growth, human activity due to rapid economic growth, new government policies and increasing demand for energy. This team project essentially is a redesign of this Power plant under current conditions.

The landfill opened in 1994 and is anticipated to remain open until about 2040. Huaycoloro landfill is currently filling at a rate of approximately 3,200 tons per day, and presently has about 17 million tons of waste in place compared to 2,200 tons and 5.5million tons respectively.

Peru is party to the Kyoto protocol and has demonstrated its commitment to emission reductions by instituting a 5% requirement for electricity supply from renewable energy in the National Grid. Further, new government policy on Feed-In-Tariff pays up to US\$0.12/kWh for biofuels including municipal waste. This completely changes the financial dynamics of the Waste-Energy-Energy Power Plant.

Based on these new government policies coupled with the need to sustainably manage the landfill to curtail possible negative social and health effect, the proposed project is a 20MW Power Plant. With a FIT of US\$0.11, the plant has an IRR of 4% and an NPV of over US\$3million. Capital cost, Operation and maintenance Cost as well as Pipe lengths and sizes were all taken from the US Environmental Protection Agency(US EPA) website and adjusted for consistency with Peruvian rates. According to the US EPA, a 20MW Landfill Gas Plant provides

emission reductions of 94,564tons CO₂/yr. equivalent to annual emissions from 165, 649 passenger vehicles. The project implementation period is 20 years.