The Gold Standard®
Premium quality carbon credits

Project GS 440

Trash into Cash: GS440 – Mamak Landfill Waste Management Project – Turkey

The "Mamak Landfill Waste Management Project" in Turkey turns trash into cash. Open landfills create air pollution, strong odours, and cause major health risks to those who live nearby. In chemical terms, landfills emit methane, a greenhouse gas that is twenty one times more potent than carbon dioxide in terms of contributing to the greenhouse effect. In this project, methane is captured and converted into clean electric power – resulting in one half million tonnes of avoided carbon dioxide equivalent per year. Furthermore, Mamak creates skilled jobs, while improving the local air and water quality. In May 2006, Invest Trading & Consulting (ITC), together with OneCarbon International B.V., pioneered the project as one of the first landfill-gas utilisation projects in Turkey. Following the project's success, similar projects are popping up throughout the country.

How does the technology work?

ITC's approach to managing the landfill waste is two-fold. The project processes new incoming waste and previously existing waste differently. Landfill Gas (LFG) will be extracted from existing waste and the methane will be refined from the gas, which will be eventually converted to power for the electric grid. For newly incoming waste, the biodigester and gasifier will process the garbage directly, and in so doing extract the methane from the start. During implementation, a sorting facility and recycling centre will also be constructed. The landfill will be covered with a "green" area with services such as an educational café.

Photo of Mamak landfill site prior to project development implementation (Source: ITC)

Photo of covered Mamak landfill site after rubble is arranged into dams (Source: ITC)

Sustainable Development at the Landfill

The Landfill project creates jobs. In many developing countries, scavengers rummage through landfill sites in search of things that they can sell or recycle. Scavengers are exposed to dangers such as being buried under waste piles, poisoning, or harmed by explosions in the landfill site, yet they are indigent enough to accept such risks. The Mamak Project is sensitive to the scavenger's dependence on open trash piles and has hired over thirty of them to help implement the project. All workers at Mamak receive a regular salary with social security benefits. In addition, over 180 new formalised jobs, ranging from LFG collection teams to environment and PR managers, have been created as a result of this project activity.

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Alternative energy and excess heat is utilized for greenhouses where tomato clusters (above) and other vegetables are grown. (ITC Presentation 2009)

Organic waste, such as vegetable, fruit and garden waste, comprise 50% of the domestic waste at the site. The Mamak project sorts the organic waste and transfers it to anaerobic digesters where methane gas and high quality compost are produced in accelerated digestion processes. The heat created by the gas is used to grow high quality tomatoes that are distributed to the Turkish population.

In 2009, **orbeo** purchased OneCarbon International B.V., an Econcern Group subsidiary. **orbeo**, the joint venture between Rhodia and Société Générale, combines industrial, environmental and financial expertise in the realm of carbon. From project to market, **orbeo** covers the whole carbon value chain and is among the leading buyers and sellers of CO_2 products.

More information about **orbeo** at www.orbeo.com

Anaerobic Digestion System. (ITC Presentation 2009)

The Voluntary Emission Reduction (VER) project combines two CDM methodologies to design the project:

- Approved consolidated baseline methodology ACM0001 "Consolidate methodology for landfill gas project activities" Version 8.1, EB39;
- Approved baseline and monitoring methodology AM0025 "Avoided emissions from organic waste through alternative waste treatment process" Version 10

Why did Mamak go for Gold Standard?

Mamak is an exemplary Gold Standard project because it works on a large scale while bringing real, tangible benefits to local groups. The Gold Standard's mission is to distinguish excellence in carbon markets – and translate that distinction into economic benefits for the project developer while rewarding buyers with improved reputations and a quality product. Carbon project developers from OneCarbon Carbon International B.V. chose to pursue the Gold Standard because they wanted to highlight their pursuit of local sustainable development to buyers.

Employee at the Mamak Packaging Waste Sorting Plant. (ITC Presentation 2009)

Notes from the field. Interview with Stefan Leclaire (OneCarbon Project Developer) on his experience with the Gold Standard.

Gold Standard (GS): Were there any specific barriers that had to be overcome in order to ascertain if this project was eligible for GS? If so, how were the barriers overcome?

Stefan Leclaire (SL): The project was among the first landfill management projects in GS and suffered from combining several technologies, which required more than one methodology and approach to be combined. This complexity of the project and the Project Design Document (PDD) faced several barriers. Although these were time consuming to overcome, "problems" were solved during the process during the communication between the DOE and GS.

GS: How did you accomplish a successful stakeholder consultation?

SL: If we didn't do GS, the local stakeholder consultation would only be performed as a requirement of regulators or in response to a request from authorities. However, given our Gold Standard ambition, the project developer volunteered to do a local consultation. The stakeholders were a bit confused as to why they were being consulted – it's uncommon for them to be included in development planning if there is no formal complaint or negative reasoning to hold a consultation meeting. Yet once they understood that the consultation was for the positive reason of including all voices in the project plan, the consultation really added to the positive perception of the developers in the region.

GS: How did you design your Gold Standard Project Design Document?

SL: The project developer ITC had a vision, they wanted to develop a "zero waste" landfill, and so from the start it was an ambitious project. Several technologies have been implemented within a single project such as LFG [landfill gas] extraction and utilisation, bio digester and gasifier systems. This multi-technical characteristic of the project forced us to combine several methodologies and tools into one PDD. Also, The Gold Standard would not count the emission reductions from the gasifier, so there was another challenge. In the end we excluded the gasifier from the calculations of emission reduction (and subsequently, from the "carbon credit" earning aspect of the project), but the gasifier was kept as part of the project design. In this way, we also know that the calculations are quite conservative.

GS: What benefits do the scavengers who have been recruited as salaried employees receive?

SL: From the beginning, the ITC's recruitment strategy is to give priority to individuals who live in the vicinity of the landfill. The Mamak landfill is located within the boundaries of Mamak municipality, which has the highest rate of squatter housing in the Ankara region compared to the other 7 metropol municipalities (Yenimahalle, Cankaya, Altindag, Kecioren, Etimesgut, Sincan, Golbasi). Migration from the rural areas to the urban areas has accelerated in the last 4 decades in Turkey. People who live around the Mamak landfill mostly migrated from rural areas and work in the informal sector without social security. They often have flexible work hours and conditions while also maintaining strong attachments to their home villages.

In order to survive, these individuals seek short-term job opportunities to maximize their profits. The Mamak project supplies a number of benefits to those who are recruited to work such as health services, "green cards", and other sources of unemployment benefits even after their work is completed. In Turkey, as part of the struggle against poverty some measures have been taken since 1990s. Among these policies "green card" is the most important one so the poor have access to health services.

GS: Do you feel confident that the local community and technical team are really able to monitor the sustainable development criteria?

SL: Yes. In terms of the Gold Standard sustainable development matrix, 7 out of 12 sustainable indicators will be monitored for this project – this is voluntarily ambitious. The monitoring of these indicators depends on a combination of documented evidence and interviews with local stakeholders on the more qualitative indicators of success, like improved livelihoods.