

GOLD STANDARD PASSPORT

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SECTION A. Project Title

Gaziantep Landfill Gas to Energy Project, Turkey

SECTION B. Project description

The Gaziantep Landfill Gas to Energy Project, Turkey is developed by “CEV Enerji Üretim Sanayi ve Tic. Ltd. Sti.”, the regional office of the South Korea-based company CEV Clean Energy & Vehicle. The proposed activity involves the collection and utilisation of landfill gas with an electricity component with a maximum installed capacity reaching 6 MW_e, depending on the actual landfill gas collection. The location of the proposed activity is the Gaziantep landfill site, Turkey.

The Gaziantep landfill site is the main landfill collection point of Gaziantep city, the 6th largest city in Turkey with 1.2 million inhabitants. It started operations in 1996 and currently holds in excess of 3.2 million tonnes of waste. In 2008, the disposed waste amount reached 354,620 tonnes, corresponding to an average 1000 tonnes per day on average. The site is a managed landfill with no active LFG venting.

In 2008, the Gaziantep Metropolitan Municipality opened a tender for managing solid waste at the landfill. The Project owner has acquired the right to commercially operate the landfill for 29 years and the Project is expected to be operated until 2038¹. In exchange the Project owner will manage all activities on the landfill site in the name of the Gaziantep Municipality free of charge. The Project activity does not only aim to utilise the already existing waste but will also make use of new waste dumped until 2018². The business model of the proposed Project is site management and LFG utilisation.

The Project is located within the existing landfill site and a building has been leased from the Municipality. The operational activities as well as the leachate management are currently carried out by the Project owner too, although this responsibility could be taken over by the Municipality in future.

The Project will have multiple phases; in the initial phase the capacity will be 1.1 MW. In the coming phases, the capacity will be expanded up to 6 MW depending on the landfill gas performance on site.

The preparation of the landfill site for the Project started on 13.03.2009. This work consisted of covering the waste at the landfill with cover material and drilling vertical pipes. The Project started operation on 01.02.2010.

¹ Source: Feasibility Study, section 4.2.2.

² Source: Feasibility Study (p.21)

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SECTION C. Proof of project eligibility

C.1. Scale of the Project

Project Type	Large	Small
	☐	☐
	☐	☐
	☐	☐
	☒	☐
	☐	☐
		☐

C.2. Host Country

The host country is Turkey.

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C.3. Project Type

Project type	Yes	No
Does your project activity classify as a Renewable Energy project?	☒	☐
Does your project activity classify as an End-use Energy Efficiency Improvement project?	☐	☒

Please justify the eligibility of your project activity:

The Project has two components: landfill gas destruction and electricity generation. The electricity generation component (up to 6 MW) is under the UNFCCC small scale limit of 15 MW. However, the methane destruction component exceeds the 60,000 tCO₂ limit for small scale project activities. Therefore, the Project is defined as large scale.

Turkey has officially ratified the Kyoto Protocol as of 26.08.2009 and has no GHG emission reduction targets or commitments under the Kyoto Protocol.

The Gold Standard Toolkit 1.2.3 includes landfill gas to energy projects in the Renewable Energy category.

The Gold Standard Toolkit Annex C requires electricity to be generated from landfill gas at a minimum of 65% of the total LFG collected. The Project aims at reaching this threshold and is thus eligible under the Gold Standard.

Pre Announcement	Yes	No
Was your project previously announced?	☐	☒
The Project was not announced to be going ahead without the revenues from carbon credits.		

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C.4. Greenhouse gas

Greenhouse Gas	
Carbon dioxide	☒
Methane	☒
Nitrous oxide	☐

C.5. Project Registration Type

Project Registration Type	
Regular	☐

Pre-feasibility assessment	Retroactive projects (T.2.5.1)	Preliminary evaluation (eg: Large Hydro or palm oil-related project) (T.2.5.2)	Rejected by UNFCCC (T2.5.3)
	☒	☐	☐

If Retroactive, please indicate Start Date of Construction dd/mm/yyyy:

Project mobilisation on site started on 13.03.2009. This date is before the application date to the Gold Standard, therefore the Project has been subject to the Gold Standard Pre-feasibility Assessment. The Project owner considered carbon revenues prior to the project starting date.

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SECTION D. Unique project identification

D.1. GPS-coordinates of project location

	Coordinates
Latitude	36° 59' 12" N (36.986667)
Longitude	37° 24' 11" E (37.403056)



Explain given coordinates

The Project is located at the Gaziantep landfill site, in Gaziantep province, Turkey. It is approximately 9 km south of the Gaziantep city centre, close to Akbulut town, Baglarbasi neighbourhood.

D.2. Map



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SECTION E. Outcome stakeholder consultation process

E.1. Assessment of stakeholder comments

The Project was acquired by the Project owner with a tender, which was organised by the Gaziantep Greater Municipality. The Project and its conditions are clearly set out with a mutual agreement and the Municipality is satisfied with the Project.

A meeting organised by the Project owner on 26.12.2008 hosted several stakeholders and the opinions declared during that meeting were very positive and encouraging. Although this meeting was not organised according to the Gold Standard rules and approach, it was useful in outlining the Project to a large audience and to allow them to express their ideas about it. The stakeholders who participated in the meeting included a parliament member representing Gaziantep, the city governor, Korean Ambassador to Turkey, the mayor of Gaziantep, veterans of the Korean war³, students, villagers, the president of the city chamber for industry and other attendees. There have been no negative comments from any stakeholder about the Project.

E.2. Stakeholder Feedback Round

The invited stakeholders are identified based on the Table 2.8 of the Toolkit. In total, 29 stakeholders are identified from 6 GS categories:

GS Category Code	Nr. of Identified Stakeholders
A	5
B	9
C	1
D	6
E	1
F	7

The identified stakeholders have been chosen on the basis of relevance to the Project in terms of location (Gaziantep province, villages and neighborhoods in the vicinity), subject (environment, waste management, forestry, health, agriculture, industry etc.) and Gold Standard requirements (local GS expert, local offices of GS supporting

³ Turkey's significant military support as part of the UN to the Korean War (1950) has established a sound friendship between the two countries.

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NGOs, DNA etc.). The local NGOs are identified with the support of other local stakeholders and online search.

Regarding the neighborhoods (category A), the headmen (mukhtars) are invited, as they are elected representatives of these local communities. The host country, Turkey, has ratified the Kyoto Protocol in February 2009, but has no emission reduction commitments. There is no DNA in Turkey; therefore the UNFCCC national focal point (the Ministry of Environment and Forest) is invited.

None of the identified stakeholders have been filtered out for any reason. No discrimination (e.g. gender, age or ethnicity) is applied in the selection of stakeholders. Several invitation methods are used to enable all stakeholders to be informed about the meeting. One or more stakeholders are identified for every GS category code, covering a wide range of relevant parties. The non-technical PDD summary, as well as the summary of the GS Passport, have been integral parts of the invitation.

In case of invitations sent via post, the following documents are sent in local language:

- Formal invitation letter
- Non-technical PDD summary
- Summary of the GS Passport

In case of invitations sent via fax, these documents are sent along with a basic fax cover page.

In case of e-mail invitations, these documents are sent as attachment with an e-mail text.

The PDD and the Passport are only sent to the stakeholders of the category F, because of its size (page number / file size) and language (only in English). Those stakeholders that do not have a valid e-mail address are called by phone either before (to inform in advance), or after the invitation (to obtain a confirmation). For some invitations that were sent by e-mail, no read-receipt confirmation is received. For such cases, these stakeholders are called by phone to ask whether they have received the e-mail, and in case of non-delivery the invitation is resent by fax or other appropriate means.

Some of the invited stakeholders did not attend the meeting and some of them have given a reason for their non-attendance (e.g. limited human resources). These reasons for non-attendance do not indicate any issues with the consultation organization (date, location, hour etc.).

During the meeting, carbon consultants offered help to any stakeholder who is not able to write his/her comments due to any reason (illiteracy, internet access, age etc.), no such request is received.

The invitation letter invited stakeholders to send their comments, even if they cannot attend the meeting. In addition, during the physical meeting, the participants are told that they can send their comments in any format (fax, E-mail, post etc.) to the carbon consultants until 17.04.2011 (8 weeks following the meeting date). During this period, *no* comments were received.

The meeting was carried out such that participants could freely suggest their own ideas

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about the Project. The meeting is conducted with a satisfactory organization and the free-speech atmosphere of the meeting was not disturbed by any participant.

Stakeholders are interested in the Project and its design. In general, participants believe that the Project will contribute in many ways such as the environment, energy generation, odour and health improvement, municipality budget and local development. After the consultation process, there is no outstanding issue left and the stakeholders are satisfied with the answers they received and the Project itself.

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SECTION F. Outcome Sustainability assessment

F.1. 'Do no harm' Assessment

Safeguarding principles	Description of relevance to my project	Assessment of my project risks breaching it (low/medium/high)	Mitigation measure
1. Human rights abuses or negative impacts on dignity, cultural property or indigenous people	There are no indigenous people inhabiting the project area ⁴ .	low	N/A
2. Involuntary settlement	No relocation of people is necessary ⁵ .	low	N/A
3. Alteration, damage or removal of critical cultural heritage	There is no cultural heritage on the site ⁶ .	low	N/A
4. Employee's freedom of association	Employees have the freedom of association. The Turkish Government has ratified the ILO conventions 87 (freedom of association) and 98 (right to collective bargaining.)	low	N/A
5. Forced labour	The Turkish Government has ratified the ILO conventions 29 and 105 on elimination of forced and compulsory labour.	low	N/A

⁴ The Project is located within the landfill site, where there is no inhabitation (i.e. no abuse or cultural property etc.)

⁵ The Project is located within the landfill site, where there is no inhabitation (i.e. no relocation). According to the landfill regulation (Official Gazette publication date is 26/03/2010) (<http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.13887&MevzuatIliski=0&sourceXmlSearch=ATIKLARIN%20D%C3%9CZENL%C4%B0%20DEPOLANMASINA%20DA%C4%B0R%20Y%C3%96NETMEL%C4%B0K>) Article 15, landfills are required to have a certain distance from surrounding settlements.

⁶ According to the landfill regulation, Article 15, a site's natural and cultural heritage is considered in the selection of appropriate landfill areas.

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6. Child labour	The Turkish Government has ratified the ILO conventions 138 (minimum age) and 182 (worst form of child labour).	low	N/A
7. Discrimination	The Turkish Government has ratified the ILO conventions 100 (equal remuneration) and 111 (discrimination in employment/occupation).	low	N/A
8. Safe and healthy work environment for workers	Workers can get injured	low	All relevant environment, health and safety regulations will be applied as required and all necessary precautions will be taken ⁷ .
9. Precautionary approach for environmental challenges	Earthquake is a risk. * Water contamination is a possibility. * Flare unit might not be operated.	low	Gaziantep is located on a 3rd level earthquake risk⁸ geography, which has low probability of earthquakes. * As opposed to the baseline practice, contamination of rainwater will be minimised by effectively covering the waste with impermeable materials. Even if some water leaches into the depths (which is necessary for methane generation), the impermeable landfill bottom will not allow leachate to escape and contaminate ground or underground waters. Leachate recovery is already being carried out⁹. * Emission reductions from flaring above 35% of the collected LFG

⁷ Compliance to the “Regulation on Labourer Health and Labour Safety” will be maintained. The Project activity will be under the monitoring responsibility of local authorities (e.g. Provincial Directorate of Environment and Forestry, Municipal Environmental Protection Department). However the PP is not required for any periodic reporting.

⁸ Source: <http://www.deprem.gov.tr/Sarbis/depbolge/antep.gif>

⁹ Compliance to the “Regulation on the Assessment and Management of Environmental Noise” will be maintained.

(<http://www.mevzuat.gov.tr/Metin.Aspix?MevzuatKod=7.5.14012&MevzuatIliski=0&sourceXmlSearch=%C3%A7evresel%20q%C3%BCr%C3%BCIt%C3%BC>) and “Regulation on the Control of Solid Wastes”

(<http://www.mevzuat.gov.tr/Metin.Aspix?MevzuatKod=7.5.8132&MevzuatIliski=0&sourceXmlSearch=k at%C4%B1%20at%C4%B1k>).

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			are not accepted under the Gold Standard. In case of an unexpected generator failure or overproduction of LFG, the Project owner will flare all remaining LFG in order to minimize health and safety risks as a precautionary approach. Flaring of the residual gas exceeding 35%, which could not be combusted, is not eligible for VERs.
10. Degradation of natural habitats	There is no natural habitat on the site ¹⁰ . The surrounding of the landfill is a desolate topography with little trees and a lot of exposed rocks.	low	The Project will be constructed in an environmentally less sensitive area at the landfill site. Therefore the Project has minimum involvement with its surroundings.
11. Anti-corruption	The Project is not related to any kind of corruption. The tender for the Project site was subject to the State Procurement Law ¹¹ .	low	The Project owner does not have any negative track record related to corruption or any such activity whatsoever. The Project was acquired by the Project owner through an open tender, which was announced publicly in 2008 October by the Gaziantep Municipality. The tender was organised in October 2008 in accordance with the State Procurement Law¹² regulated by the Public Procurement Authority.

F.2. Sustainable Development matrix

In order to assess the sustainable development aspects, UNDP human development indicators are analyzed. The human development index is a UNDP-created parameter looking beyond GDP to a broader definition of well-being. The rankings (rank of 1 being the best) of Turkey are as following:

¹⁰ According to the landfill regulation, Article 15, a site's natural and cultural heritage is considered in the selection of appropriate landfill areas.

¹¹ "Kamu İhale Kanunu", Nr. 2886-35(a)

(<http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=1.5.4734&MevzuatIliski=0&sourceXmlSearch=kamu%20ihale>)

¹² "Kamu İhale Kanunu", Nr. 2886-35(a)

(<http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=1.5.4734&MevzuatIliski=0&sourceXmlSearch=kamu%20ihale>)

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Table 1. Human Development Performance of Turkey

Indicator	Turkey's Rank (2010)	Out of ...	Explanation of Indicator
Human Development Index (HDI) ¹³	83	169 countries	Composite measure of three dimensions of human development: life expectancy as years, being educated and having a decent standard of living. Turkey is among the last 3 countries of "high human development" category countries
Multidimensional Poverty Index (MPI) ¹⁴	38	118 developing countries	The index identifies deprivations across the same three dimensions as the HDI and shows the number of people who are poor (suffering a given number of deprivations) and the number of deprivations with which poor households typically contend. Among "high human development" countries, Turkey is ranked as the last.
Gender Inequality Index (GII) ¹⁵	77	138 countries	Built on the same framework of Human Development Index, Gender Inequality Index concludes maternal mortality, adolescence fertility rates and differences between men and women in terms of political participation, labour force participation and educational attainments.

Turkey is ranked in the last 3 countries of "High Human Development" category of Human Development Index. These rankings and index values suggest that Turkey is not very well developed in terms of gender equality, human development and well being, despite being categorized as a high human development country.

Again according to the UNDP, Turkey faces challenges at 4 out of the 8 MDGs¹⁶;

Relevant UNDP Millennium Development Goal	Nr	Targets	Project's Overall Impact
Eradication of Poverty and Hunger	Goal 1	Target 1a: Reduce by half the proportion of people living on less than a dollar a day	Medium
		Target 1b: Achieve full and productive employment and decent work for all, including women and young people	Medium
		Target 1c: Reduce by half the proportion of people who suffer from hunger	Low
Gender Equality	Goal 3	Target 3a: Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015	Low
Child Mortality	Goal 4	Target 4a: Reduce by two thirds the mortality rate among children under five	Low
Maternal Mortality	Goal 5	Target 5a: Reduce by three quarters the maternal mortality ratio	Low
		Target 5b: Achieve, by 2015, universal access to	Low

¹³ Source: UNDP (http://hdr.undp.org/en/media/HDR_2010_EN_Table1_reprint.pdf)

¹⁴ Source: UNDP (http://hdr.undp.org/en/media/HDR_2010_EN_Table5_reprint.pdf)

¹⁵ Source: UNDP (http://hdr.undp.org/en/media/HDR_2010_EN_Table4_reprint.pdf)

¹⁶ Source: UNDP Turkey-MDG (<http://www.undp.org.tr/Gozlem2.aspx?WebSayfaNo=1123>)

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		reproductive health	
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Among these 4 MDGs, the project activity is expected to achieve positive results towards MDG 1 “Eradication of Poverty and Hunger”. This is described below in more detail.

Indicator	Mitigation measure	Relevance to achieving MDG	Chosen parameter and explanation	Preliminary score
Gold Standard indicators of sustainable development.	If relevant copy mitigation measure from "do no harm" –table, or include mitigation measure used to neutralise a score of ‘-’	Check www.undp.org/mdg and www.mdgmonitor.org Describe how your indicator is related to local MDG goals	Defined by project developer	Negative impact: score ‘-’ in case negative impact is not fully mitigated score 0 in case impact is planned to be fully mitigated No change in impact: score 0 Positive impact: score ‘+’
Air quality*	N/A	MDG 7a: Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources MDG 7b-2: CO2 emissions, total, per capita and per \$1 GDP (PPP)	Sulphur oxide and nitrogen oxide emissions: VOC, H ₂ S, SO ₂ and NO _x emissions will be reduced. Odor: reduction of bad odor.	+
Water quality and quantity*	N/A	MDG 7.10: Proportion of the population using improved drinking water sources	Cooling water discharge: The power generated by the Project will result in reduction of cooling water discharged by thermal power plants. Leachate management: The Project will try to ensure that leachate generated on site will be collected, stored and transported to prevent leakage into underground	+

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			water.	
Soil condition*	N/A	MDG 7b-6: Proportion of terrestrial and marine areas protected	Hazardous waste processing: The Project will not function as a hazardous waste disposal or processing facility.	+
Other pollutants	N/A	MDG 7b-6: Proportion of terrestrial and marine areas protected		0
Biodiversity	N/A	MDG 7b-4 Proportion of fish stocks within safe biological limits MDG 7b-7 Proportion of species threatened with extinction		0
Quality of employment*	N/A	MDG 1b-4 Growth rate of GDP per person employed MDG 1b-6 Proportion of employed people living below \$1 (PPP) per day	Employment conditions: Proper work environment, social security, health and safety precautions.	+
Livelihood of the poor		MDG 7b-6 Proportion of terrestrial and marine areas protected	Bad odour in the vicinity: Reduction of odorous H ₂ S emissions.	0
Access to affordable and clean energy services*	N/A	MDG 1a-1 Proportion of population below \$1 (PPP) per day	Electricity generated: Amount of avoided fossil fuel consumption.	+
Human and institutional capacity	N/A	MDG 2a-3 Literacy rate of 15-24 year-olds, women and men	Capacity Building and awareness raising: Personnel training and familiarity of stakeholders with LFG technologies	0

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Quantitative employment and income generation*		MDG 1b-4 Growth rate of GDP per person employed MDG 1b-5 Employment-to-population ratio MDG 1b-6 Proportion of employed people living below \$1 (PPP) per day	Income generation: Number of people employed by the Project owner and its subcontractors	+
Balance of payments and investment*		MDG 8d Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	Electricity generated: Economical value of avoided natural gas consumption	+
Technology transfer and technological self-reliance		MDG 8f In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	Technology and know how transfer: Introduction of a new technology	0
Justification choices, data source and provision of references				
Air quality*	Air quality will be improved as compared to the baseline emission levels of VOCs, odour (H₂S), SO₂ and NO_x by the combustion of landfill gas. VOC, H₂S, SO₂ and NO_x* related to the energy generation from fossil fuels will be reduced by replacing electricity from fossil fuel combustion and related fuel consumption. The reductions of SO₂ and NO_x emissions will be calculated by multiplying net electricity generation of the Project activity with the SO₂ and NO_x intensities. The reduction of H₂S will be monitored by odour reduction, as hydrogen sulfide has a characteristic foul odour¹⁷. "When NO_x and volatile organic compounds (VOCs) react in the presence of sunlight, they form photochemical smog, a significant form of air pollution, especially in the summer. Children, people with lung diseases such as asthma, and people who work or exercise outside are particularly susceptible to the adverse effects of smog which include damage to lung tissue and reduction in lung function"¹⁸. Thermal treatment of VOCs and methane through flaring or combustion greatly reduces the emission of these compounds¹⁹. The Project will effectively collect and destroy LFG, thus reducing VOCs and related health risks. The reductions of other hazardous gases in the landfill gas during combustion are not monitored because of its complexity to quantify them accurately. This is conservative.			

17 Source: http://en.wikipedia.org/wiki/Hydrogen_sulfide

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	Reduction of odor: As a result of effective reduction in H₂S and VOCs, the foul odor that was being emitted from the landfill site is expected to be reduced. The site has approximately 0.8 km distance to the nearest settlement, Akbulut neighborhood. Source*: SO₂ and NO_x emissions from power generation are included in the National Greenhouse Gas Inventory Report of Turkey¹⁸ Source**: Wikipedia (http://en.wikipedia.org/wiki/NOx) Source***: US Environmental Protection Agency, Landfill Methane Outreach Program (http://www.epa.gov/lmop/fag/landfill-gas.html)
Water quality and quantity*	Water quantity: Through substitution of electricity generated by fossil fuels, the amount of cooling water consumption in the baseline scenario is expected to drop*. Water quality: A leachate pumping and storage system is already in operation on the site. Leachate management is officially not a responsibility of the Project**, however in practice it has assumed some of the leachate related tasks until a leachate treatment system becomes operational on site. The Project owner has no control over the leachate related actions the Municipality takes, but it will try to ensure that leachate is collected, stored and transported safely, as much as it can. Source*: Turkish Statistical Institute (http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=6171) Source**: Tender document of the Municipality.
Soil condition*	As compared to the baseline scenario, the Project does not generate any hazardous waste or chemical, which would infiltrate into soil and decrease the soil condition in quality and quantity. The landfill site is operated by the Gaziantep Municipality as a household waste landfill (industrial waste is not accepted). There also exists a recycling company active at the landfill site that collects and sells recyclable materials, thereby contributing to sustainability of the landfill site. <u>Hazardous waste processing:</u> The Project will <i>not</i> function as a hazardous waste disposal or processing facility*. Due to the stakeholder comments, it will be ensured that the Project does not act as a hazardous waste gasification – or incineration facility. Source*: Project owner (feasibility study).
Other pollutants	There is no nearby village that could potentially be disturbed from noise emissions of the combustion engine by the Project activity.
Biodiversity	Landfill operations can cause, inter alia, harbouring of disease vectors such as rats and flies and injuries to wildlife*. Landfills can facilitate the multiplication and dissemination of the pathogenic agents and their accompanying breed (insects, rats, crows, stray dogs), which may harm some mammals, birds, insects deserting the area, or other beings that feed on refuse (e.g. rats, crows)**.

¹⁸ Available at:
http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/tur-2010-crf-15april.zip

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	Source*: Wikipedia, http://en.wikipedia.org/wiki/Landfill Source**: The environmental impact of industrial and urban waste landfills, http://enrin.grida.no/htmls/romania/soe2000/eng/cap7/impact.htm
Quality of employment*	The Project owner is also liable for landfill site management for municipal waste. It will therefore employ some staff for the landfill operations. These staffs were personnel working on the site before for another company. Their working and living conditions were extremely poor. The Project owner has renovated a building as the social facility for workers (living quarters, clothing room, kitchen etc.) and has started providing significantly better living conditions to its employees. Employees are happy about these developments*. Source: Photographs of living conditions before and after the Project
Livelihood of the poor	Landfill operations can cause, inter alia, simple nuisance problems such as dust, odour, vermin, or noise pollution*. The Project will reduce visual, odour and vermin problems by covering the waste with impermeable materials and collecting LFG, thereby minimising the risks for vermin propagation. Moreover, landfills can create a safety risks¹⁹. Source*: Wikipedia, http://en.wikipedia.org/wiki/Landfill#Land_reclamation
Access to affordable and clean energy services*	Local communities already have electricity supply and no improvement is expected in additional access to energy services. The Project will contribute to energy security and the generated clean electricity will be supplied to the grid, thereby improving the overall electricity supply. Turkey imports a great amount of fossil fuels* and the Project will also reduce the dependency on foreign import of fossil fuels. Source*: International Energy Agency, Turkey Statistics²⁰
Human and institutional capacity	The Project activity is a new technology in the host country and is one of the first examples in Turkey. In this regard, the Project will contribute to human and institutional capacity.
Quantitative employment and income generation*	The Project is expected to temporarily employ, through its subcontractors, several people during construction and set-up phases of the Project. Although the Project activity is the LFG collection and utilization, the Project Owner is also responsible for the site management of the landfill, which is a labour-intensive operation. During the operation, local people will be preferred as much as available. The Project will result in employment of security guards, drivers, switchboard technicians, engineers etc., the number of which will be clarified in later stages. Local people will be prioritized for employment. This will result in an inflow of income to local communities and vitalisation of the local economy. Source*: Project Owner
Balance of payments and investment*	Initially, importing the equipment for the Project will have a negative impact on the balance of payments. In coming years, this impact will be reversed. Electricity generation will substitute the electricity generated from fossil fuels and thus decreases fossil fuel consumption overall. PMUM (TEİAŞ Market

¹⁹ On 28th April 1993 a garbage mass of some 350,000 tons at the Umraniye area (Istanbul, Turkey) had slit over a neighbourhood, overrunning homes and killing 32 people. (Source: Istanbul Municipality, <http://www.ibb.gov.tr/en-US/Organization/Companies/Pages/ISTACAS.aspx>)

²⁰ Available at: http://www.iea.org/stats/balancetable.asp?COUNTRY_CODE=TR

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	Financial Clearing Centre) is responsible for actively balancing the electricity supply among the generation companies; therefore the Project will indirectly result in reduced imports of fossil fuels. This will improve the balance of payments of the host country*. Source*: Please see the justification of the indicator <i>Access to Affordable and Clean Energy Services</i>.
Technology transfer and technological self-reliance	The Project owner is a South Korea based company, which will facilitate know how transfer to the host country. Transfer of knowhow is most common for equipment and knowledge, for agriculture, biogas, N₂O and landfill gas projects*. The Project will directly and indirectly allow Project personnel, equipment and service suppliers to gain experience in landfill gas extraction and utilisation. It will further stimulate technological self-reliance by technology transfer. The Project owner will ensure that the landfill site is properly managed for the LFG collection and utilisation with the support of international experts, sharing their know how with the local team. Moreover, there are several neighbour cities where there is not any similar project. Therefore the Project might also attract attention of other municipalities and contribute to technology transfer to other cities in the region. Project personnel will be trained and the Project is expected to set a good example in terms of sustainable energy practices and to the improvement of human and institutional capacity. The Project will contribute to effective reduction of GHG emissions and odour, revenue stream to the municipality, sustainable development, explosion and fire risk mitigation*. Source*: p.10 and 13, "Analysis of Technology Transfer in CDM Projects"²¹, Stephen Seres, Dec. 2008.

²¹ Available at: <http://cdm.unfccc.int/Reference/Reports/TTreport/TTrep08.pdf>

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SECTION G. Sustainability Monitoring Plan

[See Toolkit 2.4.3 and Toolkit Annex I]

Copy Table for each indicator

No		01
Indicator		Air Quality
Mitigation measure		N/A
Repeat for each parameter		
Chosen parameter		SO₂ : The air quality is related to pollutants such as SO _x which are being emitted in the baseline scenario. As a representative indicator of air pollution, SO ₂ is selected as further oxidation of sulphur dioxide may lead to acid rains and as it is a precursor to particulates in the atmosphere, both of which are environmental concerns ²² .
Current situation of parameter		Total host county emissions are 1007.78 ²³ tons in 2008. Net system electricity generation in 2008 is 189,762 ²⁴ MWh, corresponding to 5.31 kg/MWh SO ₂ intensity.
Estimation of baseline situation of parameter		The Project is expected to generate 25,655 MWh in the first full year of operation in its initial phase, therefore the Project will substitute a baseline SO ₂ emissions of: 25,655 MWh * 5.31 kg/MWh = 136.2 tons SO ₂
Future target for parameter		As the Project capacity will be expanded in later years, the net electricity generation is estimated to increase further and the avoided SO ₂ emissions will increase in parallel.
Way of monitoring	How	Indirectly; by measuring net electricity generation and multiplication with the baseline SO ₂ intensity of the Turkish grid.
	When	Continuously.
	By who	Project owner.
Repeat for each parameter		
Chosen parameter		NO_x : The air quality is related to pollutants such as NO _x which are being emitted in the baseline scenario. As a representative indicator of air pollution, nitrogen oxide is selected because mono-nitrogen oxides eventually form nitric acid when dissolved in atmospheric moisture, forming a component of acid rain ²⁵ .
Current situation of parameter		Total host county emissions are 313.24 ²³ tons in 2008. Net system electricity generation in 2008 is 189,762 ²⁴ MWh, corresponding to 1.65 kg/MWh NO _x intensity.

²² Source: Wikipedia (http://en.wikipedia.org/wiki/Sulfur_dioxide)

²³ Source: National GHG inventory of Turkey, 1990-2008, http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/tur-2010-crf-15april.zip, Workbook TUR-2010-2008-v1.2, Worksheet: Table1s1

²⁴ Source: TEIAS, [http://www.teias.gov.tr/istatistik2008/32\(75-08\).xls](http://www.teias.gov.tr/istatistik2008/32(75-08).xls)

²⁵ Source: Wikipedia (<http://en.wikipedia.org/wiki/NOx>)

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Estimation of baseline situation of parameter		The Project is expected to generate 25,655 MWh in the first year of operation, therefore the Project will substitute a baseline NO _x emissions of: $25,655 \text{ MWh} * 1.65 \text{ kg/MWh} = 42.3 \text{ tons NO}_x$
Future target for parameter		As the Project capacity is expanded in later years, the net electricity generation is estimated to increase further and the avoided NO _x emissions will increase in parallel.
Way of monitoring	How	Indirectly; by measuring net electricity generation and multiplication with the baseline NO _x intensity of the Turkish grid.
	When	Continuously.
	By who	Project owner.
<i>Repeat for each parameter</i>		
Chosen parameter		Reduction of Volatile Organic Compounds.
Current situation of parameter		The VOCs are emitted freely to the atmosphere.
Estimation of baseline situation of parameter		The non-methane VOCs are typically roughly 2% of methane emissions ²⁶ . The methane destroyed by the Project in the first full operation year is 4,788 tonnes = 6,679,184 m ³ . Baseline VOCs emissions: $6,679,184 \text{ m}^3 * 2\% = 133,584 \text{ m}^3$
Future target for parameter		The VOC destruction by combustion or flaring can be expected to be greater than 98% ²⁷ . This leads to the following baseline emissions of VOCs: $\text{VOCs Reduced} = 133,584 \text{ m}^3 * 98\% = 130,912 \text{ m}^3$ The amount of methane destroyed is expected to rise in forthcoming years, increasing also the amount of VOCs reduced.
Way of monitoring	How	By measuring the amount of methane destroyed through combustion or flaring.
	When	Continuously.
	By who	Project owner.
<i>Repeat for each parameter</i>		
Chosen parameter		H₂S: H ₂ S is emitted from the landfill site freely to the atmosphere, creating bad odour and worsens the living conditions of the nearby communities. Although there are a number of odorous gases in LFG, as a representative indicator of air pollution, hydrogen sulphide is selected because it is a very poisonous, flammable gas with the characteristic foul odour of rotten eggs ²⁸ .

26 "Estimating Landfill Greenhouse Gas Emissions from Measured Ambient Methane Concentrations and Dispersion Modeling", Figueroa, Cooper, and Mackie, Link: http://cee.ucf.edu/odormodeling/publications/Final_Paper_-_Figueroa_et_al_-_AWMA_2008.pdf

27 "Gas Recovery and Utilization From Municipal Solid Waste Landfills", Todd Potas. Link: http://www.anl.gov/PCS/acsfuel/preprint%20archive/Files/38_3_CHICAGO_08-93_0895.pdf

28 Source: Wikipedia (http://en.wikipedia.org/wiki/Hydrogen_sulfide)

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Current situation of parameter		The gas measurements on the Project site show that the H ₂ S concentration in the LFG is 52.8 ppm ²⁹ on average. All of the H ₂ S is freely emitted to the atmosphere.
Estimation of baseline situation of parameter		The baseline is the same as the current situation.
Future target for parameter		The Project is expected to destroy 4,788 tons of methane in the first year of its operation. This corresponds to 529 kg of avoided H ₂ S ³⁰ . As the Project capacity is expanded in later years, this value is expected to increase in parallel to the combusted LFG amount.
Way of monitoring	How	By measuring LFG destruction and multiplying with the ex-ante baseline H ₂ S intensity of the LFG.
	When	Continuously.
	By who	Project owner.
<i>Repeat for each parameter</i>		
Chosen parameter		Reduction of odor
Current situation of parameter		By effectively collecting LFG that would otherwise be emitted freely, the Project will reduce H ₂ S (a foul smelling gas) and VOC emissions.
Estimation of baseline situation of parameter		The gases were being emitted freely from the landfill site and blown away in the wind direction, frequently towards nearby neighbourhoods.
Future target for parameter		By effective collection and destruction of landfill gas, the foul odor is expected to be reduced.
Way of monitoring	How	Interview with local community.
	When	Periodically.
	By who	Project owner.

No	02
Indicator	Water quality and quantity
Mitigation measure	N/A
<i>Repeat for each parameter</i>	
Chosen parameter	Reduction of discharged cooling water in the baseline
Current situation of parameter	Power generated by thermal plants result in cooling water consumption, which will be substituted partially by the Project.
Estimation of baseline situation of parameter	In 2008, 4.45 billion m ³ cooling water was discharged by thermal power plants in Turkey ³¹ . Net electricity generation in 2008 was 189,762 ³² MWh, corresponding to 23.5 m ³ /MWh discharged cooling water intensity ³³ .

²⁹ Source: Feasibility study of the Project.

³⁰ Calculation details are provided to the DOE. This figure will be updated with the actual project performance results.

³¹ Source: Turkish Statistical Institute (<http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=6171>)

³² Source: TEIAS, [http://www.teias.gov.tr/istatistik2008/30\(84-08\).xls](http://www.teias.gov.tr/istatistik2008/30(84-08).xls)

³³ This is a conservative approach because most of the cooling water discharge stems from thermal and nuclear (not existing) power plants. The average share of thermal power is estimated to continue in coming years (see PDD for details) and the used technologies or fuel types do not indicate a clear

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Future target for parameter		Estimated discharged cooling water reduction of in the first operational year is: $23.5 \text{ m}^3/\text{MWh} * 25,655 \text{ MWh} = 601,614 \text{ m}^3$ This amount is expected to increase in forthcoming years.
Way of monitoring	How	The net electricity generation of the Project will be recorded and multiplied with the ex-ante cooling water discharge intensity.
	When	Continuously.
	By who	Project owner.
<i>Repeat for each parameter</i>		
Chosen parameter		Leachate management
Current situation of parameter		The leachate is properly collected, stored and transported safely to the municipal treatment facility.
Estimation of baseline situation of parameter		The leachate on site is collected in a pond on site and is then transported to the municipal waste water treatment plant with lorries by the Municipality.
Future target for parameter		Most of these tasks are taken over by the Project owner until a leachate treatment system becomes operational at landfill site. Leachate collection, storage and transportation to the treatment plant are properly managed by the Project owner. The Municipality plans to setup a small treatment facility next to the leachate pond.
Way of monitoring	How	Available leachate management records will be evaluated. Leachate transportation truck information will be kindly requested from the Municipality and evidence of such correspondence will be provided for verification purposes.
	When	Annually.
	By who	Project owner.

No		03
Indicator		Soil Condition
Mitigation measure		N/A
<i>Repeat for each parameter</i>		
Chosen parameter		Hazardous waste processing
Current situation of parameter		The landfill does not accept hazardous waste.
Estimation of baseline situation of parameter		The landfill is expected not to accept hazardous waste.
Future target for parameter		The Project shall <i>not</i> function as a hazardous waste disposal or processing facility (i.e. as a hazardous waste gasification – or incineration facility).
Way of monitoring	How	Assessment of waste management practice.
	When	Continuously.
	By who	Project owner.

changing trend. There is not any expected change in environmental legislation or technological requirement to limit cooling water discharges.

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No		04
Indicator		Quality of employment
Mitigation measure		N/A
<i>Repeat for each parameter</i>		
Chosen parameter		Safe and healthy working conditions
Current situation of parameter		N/A
Estimation of baseline situation of parameter		N/A
Future target for parameter		Necessary safety equipments will be available and properly used. The working environment will not present health risks or hazardous tasks.
Way of monitoring	How	Assessment of working conditions by checking safety material, tasks of the personnel etc.
	When	Continuously
	By who	Project owner.

No	05																
Indicator	Access to affordable and clean energy services																
Mitigation measure	N/A																
<i>Repeat for each parameter</i>																	
Chosen parameter	Avoided fossil fuel consumption. The Project will generate and supply clean energy to the national grid, improving the carbon intensity of the power mix.																
Current situation of parameter	The baseline consists of consumption of different fossil fuels. The latest available (2008) fuel consumption and electricity generation figures will be compared with the Project generation to show how much baseline fuel consumption is avoided on a fuel type basis. The fossil fuel consumption intensity (t/GWh, m³/GWh) are ex-ante and are as following³⁴: <table border="1"> <thead> <tr> <th>Fuel Type</th><th>Fuel Consumption Intensity [t/GWh, m³/GWh]</th></tr> </thead> <tbody> <tr> <td>Coal</td><td>395</td></tr> <tr> <td>Lignite</td><td>1,585</td></tr> <tr> <td>Fuel Oil</td><td>301</td></tr> <tr> <td>Diesel Oil</td><td>492</td></tr> <tr> <td>LPG</td><td>0</td></tr> <tr> <td>Naphtha</td><td>243</td></tr> <tr> <td>Natural Gas</td><td>218</td></tr> </tbody> </table>	Fuel Type	Fuel Consumption Intensity [t/GWh, m ³ /GWh]	Coal	395	Lignite	1,585	Fuel Oil	301	Diesel Oil	492	LPG	0	Naphtha	243	Natural Gas	218
Fuel Type	Fuel Consumption Intensity [t/GWh, m ³ /GWh]																
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Lignite	1,585																
Fuel Oil	301																
Diesel Oil	492																
LPG	0																
Naphtha	243																
Natural Gas	218																
Estimation of baseline situation of parameter	The baseline situation is the same as the current situation.																

³⁴ Details are provided to the DOE in a separate spreadsheet.

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Future target for parameter		The Project is expected to substitute 25,655 MWh in the first year of operation. This corresponds to the following expected fuel avoidance: <table><tr><th>Fuel Type</th><th>Avoided Fuel Consumption [t/m3]</th></tr><tr><td>Coal</td><td>1,026</td></tr><tr><td>Lignite</td><td>10,862</td></tr><tr><td>Fuel Oil</td><td>356</td></tr><tr><td>Diesel Oil</td><td>21</td></tr><tr><td>LPG</td><td></td></tr><tr><td>Naphtha</td><td>2</td></tr><tr><td>Natural Gas</td><td>3,536</td></tr></table>	Fuel Type	Avoided Fuel Consumption [t/m3]	Coal	1,026	Lignite	10,862	Fuel Oil	356	Diesel Oil	21	LPG		Naphtha	2	Natural Gas	3,536
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Diesel Oil	21																	
LPG																		
Naphtha	2																	
Natural Gas	3,536																	
Way of monitoring	How	It is assumed that the net electricity generation during the monitoring period will be distributed among fossil fuels with the same weight as the fossil fuels. These values will be multiplied with the fuel consumption intensities given above to find the respective reduction of fossil fuel consumption.																
	When	Continuously.																
	By who	Project owner.																

No		06
Indicator		Quantitative employment and income generation
Mitigation measure		N/A
<i>Repeat for each parameter</i>		
Chosen parameter		Number of local employees of the Project
Current situation of parameter		11
Estimation of baseline situation of parameter		0
Future target for parameter		11
Way of monitoring	How	By checking the social security and residence records of the personnel.
	When	Continuously.
	By who	Project owner.

No	07
Indicator	Balance of payments and investment
Mitigation measure	N/A
<i>Repeat for each parameter</i>	
Chosen parameter	Value of the imported natural gas avoided (conservative)
Current situation of parameter	Some portion of liquid and solid fossil fuels are extracted in the host country. However, most of the natural gas consumed in the host country is imported. Average natural gas price at the current situation is 3.8 USD/MMBtu ³⁵ .
Estimation of baseline situation of parameter	The baseline situation is the same as the current situation.
Future target for parameter	The Project is expected to substitute 25,655 MWh in the first

³⁵ Source: <http://www.bloomberg.com/energy/>

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		year of operation. This corresponds to a natural gas value of 461,323 USD. Almost all of this natural gas would have to be imported in the absence of the Project activity.
Way of monitoring	How	The avoided natural gas amount will be taken from the indicator “Access to affordable and clean energy services”. The energy content of this amount will then be multiplied by the ex-ante natural gas price.
	When	Continuously.
	By who	Project owner.

Additional remarks monitoring

The necessary data that are needed for monitoring the sustainable development indicators will be collected by the Project owner. The data collection will be managed by the company manager of the Project owner company and the data will be gathered by the project manager on site. Details regarding responsibilities and management structure are explained in the PDD section “B.7.2 *Description of the monitoring plan*”.

The Project owner will ensure that the indicators included in the monitoring plan in the Gold Standard Passport are monitored with high quality. The responsible personnel of the Project owner will prepare periodic reports about the electricity generation and the LFG consumption.

All monitoring equipment, installations, mountings, cabling, and connectors will be inspected by the Project owner periodically for functionality, integrity, and corrosion. All equipment will be maintained according to their manufacturers’ instructions. Any defective components will be identified and replacements will be obtained and replaced in a timely manner to ensure high measurement and operations quality.

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SECTION H. Additionality and conservativeness



This section is only applicable if the section on additionality and/or your choice of baseline does not follow Gold Standard guidance

H.1. Additionality

Not applicable as the section in the PDD on additionality and choice of baseline follows Gold Standard guidance.

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H.2. Conservativeness

The baseline study is provided within the PDD and follows the Gold Standard Guidance for conservative approach ensuring that the baseline does not lead to an overestimation of emission reductions.

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ANNEX 1 ODA declaration



02.08.2010

Project reference: Gaziantep Landfill Gas to Energy Project, Turkey

To: Gold Standard Foundation

Declaration of Non-Use of Official Development Assistance by Project Owner

CEV Enerji Ür. San. Ve Tic. Ltd. Sti.

As Project Owner of the above-referenced project, acting on behalf of all project participants, I now make the following representations:

Mavi Sürdürülebilir Kalkınma Proje ve Danışmanlık Hiz. Ltd. Sti. ("Mavi Consultants"):

I hereby declare that I am duly and fully authorised by the project owner of the above-referenced project, acting on behalf of all project participants, to make the following representations on Project Proponent's behalf:

I. Gold Standard Documentation

I am familiar with the provisions of Gold Standard Documentation relevant to Official Development Assistance (ODA). I understand that the above-referenced project is not eligible for Gold Standard registration if the project receives or benefits from Official Development Assistance under the condition that some or all credits coming out of the project are transferred to the ODA donor country. I now expressly declare that no financing provided in connection with the above-referenced project has come from or will come from ODA that has been or will be provided under the condition, whether express or implied, that any or all of the credits [CERs, ERUs or VERs] issued as a result of the project's operation will be transferred directly or indirectly to the country of origin of the ODA.

II. Duty to Notify Upon Discovery.

If I learn or if I am given any reason to believe at any stage of project design or implementation that ODA has been used to support the development or implementation of the project, or that an entity providing ODA to the host country may at some point in the future benefit directly or indirectly from the credits generated from the project as a condition of investment, I will make this known to the Gold Standard immediately.

III. Sanctions. I am fully aware that under Section 10 of the Gold Standard Terms and Conditions sanctions and damages may be incurred for the provision of false information related to Projects and/or Gold Standard credits.

Signed:


CEV
ENERJİ ÜRETİM SAN. VE TİC. LTD. ŞTİ.
Kuşbaşı Cad. No:6/4
Altunizade - Üsküdar / İSTANBUL
Üsküdar V.D. 206 066 3862

Name: Mr. Ata Ceylan

Title: General Manager

On behalf of: CEV Enerji Ür. San. Ve Tic. Ltd. Sti.

CEV Enerji Üretim San. ve Tic. Ltd. Şti.

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