



GOLD STANDARD VALIDATION REPORT

ADANA LANDFILL WASTE MANAGEMENT PROJECT PROJECT IN TURKEY

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GOLD STANDARD VALIDATION REPORT

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Summary:

Project Name: Adana Landfill Waste Management Project - Turkey

Country: Republic of Turkey

Methodology: ACM0001 ver. 11 and AM0025 ver. 12

GHG reducing Measure/Technology: landfill gas sequestration and waste treatment

ER estimate: 322 947 tCO₂e per year (average)

Size

☒ Large Scale

☐ Small Scale

Validation Phases:

☒ Desk Review

☒ Follow up interviews

☒ Resolution of outstanding issues

Validation Status

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Full Approval and submission for registration

☐ Rejected

In summary, it is DNV's opinion that the validation of the "Adana Landfill Waste Management Project - Turkey" in the Republic of Turkey, as described in the PDD, version 8 of 20 September 2012, meets all relevant Gold Standard requirements and correctly applies the baseline and monitoring methodology ACM0001 ver. 11 and AM0025 ver. 12. Hence DNV requests the registration of the project as a Gold Standard project activity.

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Report title: Adana Landfill Waste Management Project Project in Turkey	
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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EMRA	Energy Market Regulatory Authority
ESMAP	Energy Sector Management Assistance Program
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GS	Gold Standard
GPS	Global Positioning System
GWP	Global Warming Potential
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ITC	Invest Trading & Consulting
LoA	Letter of approval
LSC	Local Stakeholder Consultation
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
O&M	Operation and Maintenance
PDD	Project Design Document
O ₂ e	Tonnes of CO ₂ equivalents
TSKB	Industrial Development Bank of Turkey
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USEPA	United States Environment Protection Agency



1 EXECUTIVE SUMMARY – VALIDATION OPINION

DNV Climate Change Services AS (DNV) has performed a validation of the project activity “Adana Landfill Waste Management Project - Turkey” in Republic of Turkey. The validation was performed on the basis of the Gold Standard Foundation criteria and relevant criteria in the applied CDM methodologies as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project correctly applies the baseline and monitoring methodology ACM0001 ver. 11 and AM0025 ver. 12.

The proposed project includes two activities, one being the LFG extraction and utilization project, and the other one is the biogas generation from anaerobic digesters and utilization of this biogas. The landfill, known as the Adana-Sofulu Landfill was established as a landfill area in 1990 and currently receives the waste of approximately 1,5 million people living in the municipalities of the Adana Greater Municipality. The daily average amount of waste landfilled is approximately 1,500 – 1,700 tonnes of municipal waste.

The proposed project activity involves the covering of the landfill and the installation of a landfill gas extraction system, capturing the landfill gas and feeding it to gas engines for electricity generation. Furthermore, the incoming municipality waste is sorted and the organic waste fed to anaerobic digesters which generate biogas, and which is further utilised for electricity production. The total electricity generation capacity of the proposed project is projected to reach 16 MW. The generated electricity will be delivered to the national grid.

The proposed VER project is a part of a larger landfill and waste management project (hereafter referred to as the “Generic Project”). The other component of the Generic Project is a gasification system, in which carbon-rich waste material is fed into a gasifier producing syngas. The syngas is also utilized to generate electricity.

As a result, the project results in reductions of CO₂ / CH₄ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 322 947 tCO₂e per year over the selected 7 year renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is DNV’s opinion that the project participants are able to implement the monitoring plan.



In summary, it is DNV's opinion that the project activity "Adana Landfill Waste Management Project - Turkey" in Republic of Turkey, as described in the PDD, version Version 8 of 20 September 2012 meets all relevant Gold Standard version 2.1 requirements and correctly applies the CDM baseline and monitoring methodology ACM0001 ver. 11 and AM0025 ver. 12. Hence, DNV requests the registration of the project as a Gold Standard project activity.

Venice and Oslo, 2012-03-14

Jan Van Evercooren
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DNV Milan, Italy

Michael Lehmann
Director of Services and Technologies
DNV Climate Change Services AS



2 INTRODUCTION

ITC Invest & Trading Consultant A.G. has commissioned DNV Climate Change Services AS (DNV) to perform a validation of the Adana Landfill Waste Management Project - Turkey project in the Republic of Turkey (hereafter called “the project”) in relation to the Gold Standard (GS). This report summarises the findings of the validation of the project, performed on the basis of relevant criteria in the applied CDM methodology, Gold Standard version 2.1 criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the applied CDM methodologies, and the associated decisions by the CDM Executive Board.

2.1 Objective

The objective of the validation in accordance with the GS is to have an independent third party assess that the project design of a GS project fulfils the requirements set out by the GS.

The GS validation seeks premium quality carbon credits, by ensuring that the project meets the additionality requirements posed by the GS and that the project results in real and measurable benefits to local stakeholders.

Hence, the validator will confirm that the project design is sound and reasonable and meets the relevant criteria. This implies that the project, its baseline and the monitoring plan, must be in compliance with relevant UNFCCC and host party criteria, as well as the GS specific criteria.

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD) and other relevant documents. The information in these documents is reviewed against the Gold Standard version 2.1, the approved baseline and monitoring methodology ACM0001 ver. 11 and AM0025 ver. 12. The validation was based on the recommendations in the Validation and Verification Manual /43/ and in the *Gold Standard Toolkit* Version 2.1 /52/.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.



3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

3.1 Desk review of the project design documentation

The following tables list the documentation that was reviewed during the validation.

3.1.1 DOCUMENTATION PROVIDED BY THE PROJECT PARTICIPANTS

- /1/ OakDanismanlık: *CDM-PDD for project activity "Adana Landfill Waste Management Project - Turkey" in Republic of Turkey*, Version 01 dated 21 February 2011, and version 8 of 20 September 2012
- /2/ OakDanismanlık: *Adana Emission Reduction Calculation Excel Sheet*, Version 01, 22 February 2011
- /3/ ITC Invest Trading & Consulting A.G.: *Adana LSC report*, 30 May 2009
- /4/ ITC Invest Trading & Consulting A.G.: *ODA declaration form A*, 21 December 2009
- /5/ TSKB: *ODA declaration form B*, 21 December 2009
- /6/ TSKB: *Statement regarding investment barrier*, 22 March 2011
- /7/ TSKB: *Statement regarding investment barrier*, 06 April 2011
- /8/ Ministry of Environment of Turkey: *EIA clearing document*, 12 June 2007
- /9/ ITC Invest Trading & Consulting A.G.: *Environmental Impact Assessment*, submitted to the Ministry of Environment and Forestry on 15 May 2007
- /10/ Ministry of Environment and Forestry : *Letter Re. Final EIA Report*, 15 May 2007
- /11/ ITC Invest Trading & Consulting A.G.: *ITC Board decision on Adana*, 19 May 2008
- /12/ ITC Invest Trading & Consulting A.G.: *Agreement for the subcontracting of the landfill to ITC*, 24 August 2009
- /13/ US Environmental Protection Agency: *Landfill Methane Outreach Program*, available at <http://www.epa.gov/lmop/>
- /14/ UK Environment Agency: *Investigation of the Composition and Emissions of Trace Components in Landfill Gas*, 2002, available at: <http://publications.environment-agency.gov.uk/pdf/SP1-438-TR-e-p.pdf>
- /15/ UK Environment Agency: *Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water*, available at: <http://www.environment-agency.gov.uk/business/sectors/108918.aspx>
- /16/ Kjeldsen et al : *Present and Long-Term Composition of MSW Landfill Leachate: A Review. Critical Reviews in Environmental Science and Technology*, 32(4):297-336, 2002, available at: <http://cues.rutgers.edu/bioreactorlandfill/pdfs/15-Kjeldsenetall2002CritRevEnvSciLandfillLeachat.pdf>



- /17/ Ministry of Social Security and Labour / Hakkı Mümin Ay: *Unregistered Employment in Turkey*, 2007
- /18/ IEA Energy Statistics, *Energy Balances for Turkey* [graph: Electricity generation by fuel], available at [http://www.teias.gov.tr/istatistik2009/26\(06-09\).xls](http://www.teias.gov.tr/istatistik2009/26(06-09).xls)
- /19/ UN: *Report on the World Social Situation - The Employment Imperative*, 2007
- /20/ ITC Invest Trading & Consulting A.G.: *Adana IRR calculation first quarter 2009*
- /21/ Government of Turkey: *Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical-Energy - Law No. 5346*, Ratification Date: 10 May 2005, Enactment Date: 18 May 2005
- /22/ Government of Turkey: *Regulation on Managed Waste Landfilling [27533]*, 26 March 2010
- /23/ ITC Invest Trading & Consulting A.G.: *Technical Feasibility Adana Project*, March-April 2008
- /24/ ITC Invest Trading & Consulting A.G.: *Adana Waste Composition*, 7 April 2009
- /25/ Adana Province Governorship - Provincial Directorate of Environment and Forestry, *Landfill Permit I*, 21 December 2010
- /26/ Adana Province Governorship - Provincial Directorate of Environment and Forestry, *Landfill Permit II*, 10 February 2011
- /27/ T.C. Resmi Gazete, *Regulation of Medical Waste Control*, 22 July 2005
- /28/ Ministry of Environment and Forestry, *Medical Waste Sterilization*, (2006/7-ÇOB-ÇYGM), 31 March 2006
- /29/ Optimed, *Medical Waste Sterilization System*, 15 January 2011
- /30/ Yıldız Technical University, *Rear-Breaking System Draft in Autoclave Aided – Sterilization as an Elimination Method of Medical Waste*, 22 July 2007
- /31/ European Association for Coal and Lignite, Turkey, available at: <http://www.euracoal.org/pages/layout1sp.php?idpage=475>
- /32/ Teias, *Annual development of fuels consumed in thermal power plants in Turkey by the electric utilities*, 25 October 2010
- /33/ Ministry of Environment and Forests, *Adana Provincial Environment Annual Report*, 6 July 2008
- /34/ Turkish Statistic Institute, *Number and population of municipalities served by municipal waste services and amount of waste collected seasonally*, available at: http://www.tuik.gov.tr/PreHaberBultenleri.do?id=6214&tb_id=1
- /35/ Adana Municipality, *Landfill concession*, 18 July 2008
- /36/ ITC Invest Trading & Consulting A.G.: *ITC official website*, available at: www.itcturkiye.com
- /37/ ITC Invest Trading & Consulting A.G.: *Adana project's financial structure*, 4 February 2011
- /38/ Eunomia Research & Consulting: *Economic analysis of options for managing biodegradable municipal waste*, 2002 available at: http://ec.europa.eu/environment/waste/compost/pdf/econanalysis_finalreport.pdf
- /39/ UKPS Ltd, *Technical guidance note C-E07/94 - Combined landfill gas and leachate extraction systems*, available at: <http://www.environmentalexpert.com/Files%5C6283%5CArticles%5C4814%5Ccombinedlandfillgasandleachateextraction%5Csystems.pdf>



- /40/ World Bank: *Landfill Gas Capture; Design and Actual Performance and the Future for CDM Projects*, 2007
<http://siteresources.worldbank.org/INTLACREGTOPURBDEV/Resources/840343-1178120035287/EditedLFGWorkshopReportAugust14.pdf>
- /41/ ITC Invest Trading & Consulting A.G.: *Adana Employee List*, 26 September 2006
- /42/ Denise J Welch: *Adana Landfill Project: Local Stakeholder Report* uploaded, 17 July 2009

3.1.2 METHODOLOGIES, TOOLS AND OTHER GUIDANCE BY THE CDM EXECUTIVE BOARD AND THE GS TECHNICAL ADVISORY COMMITTEE

- /43/ CDM Executive Board: *Validation and Verification Manual*, version 1.2
- /44/ CDM Executive Board: *Consolidated methodology for landfill gas project activities*, ACM0001 ver. 11
- /45/ CDM Executive Board: *Avoided emissions from organic waste through alternative waste treatment process*, AM0025 ver. 12
- /46/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*, Version 05.2
- /47/ CDM Executive Board: *Tool to determine project emissions from flaring gases containing methane*, Version 01
- /48/ CDM Executive Board: *Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal Site*, Version 05
- /49/ CDM Executive Board: *Tool to calculate the emission factor for an electricity system*, Version 02, EB50
- /50/ CDM Executive Board: *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*, Version 01
- /51/ The Gold Standard Foundation, *Gold Standard Requirements*, version 2.1, 1 July 2009
- /52/ The Gold Standard Foundation: *Gold Standard Toolkit*, Version 2.1
- /53/ CDM Executive Board: *Guidelines For Objective Demonstration And Assessment Of Barriers, (Guideline 6) of EB 50 Annex 13*, 16 October 2009
- /54/ CDM Executive Board: *Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site (Version 05)*, EB 55 Annex 18

3.1.3 DOCUMENTATION USED BY DNV TO VALIDATE / CROSS-CHECK THE INFORMATION PROVIDED BY THE PROJECT PARTICIPANTS

- /55/ Turkish Court of Accounts: *Waste Management in Turkey National Regulations and Evaluation of Implementation Results*, January 2007
- /56/ Intergovernmental Panel on Climate Change: *The Physical Science Basis. Changes in Atmospheric Constituents and in Radiative Forcing*, 2007
- /57/ Turkey Statistical Institute: *Data on municipalities and waste*, available at http://www.turkstat.gov.tr/PreIstatis/tikTablo.do?istab_id=498
- /58/ EMRA: *Data on licenses*, available at http://www2.epdk.org.tr/lisans/elektrik/lisansdatabase/verilentes_is_tipi.asp



- /59/ Worldbank/ESMAP: *Handbook for the preparation of LFG to energy projects in Latin America and the Caribbean*, January 2004
- /60/ Intergovernmental Panel on Climate Change: *2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2: Energy*
- /61/ Ministry of Environment and Forestry: *Turkey Environmental Atlas*, 2004
- /62/ General Electric: *FlexEfficiency* 50 Combined Cycle Power Plant*, available at: http://www.ge-energy.com/products_and_services/index.jsp
- /63/ Government of Turkey, Ministry of Environment: "Regulation on solid waste management" Article 22, Published in the Official Gazette dated 14.03.1991 number 20814, available at: www.cygm.gov.tr/CYGM/Files/mevzuat/yonetmelik/kaky.doc
- /64/ Electricity Market Regulatory Authority: *Resolution NO: 2338*, 10 December 2009
- /65/ Association of Electricity Generators: *Insufficient Renewable Energy Purchase Price*, 17 January 2011 - Available at: <http://www.eud.org.tr/TR/Genel/BelgeGoster.aspx?F6E10F8892433CFFAAAF6AA849816B2EF6883A22BF87BFC23>
- /66/ US Department of Energy: *Gasification 2010 Worldwide Database*, 2010, available at: http://www.netl.doe.gov/technologies/coalpower/gasification/worlddatabase/2010_Worldwide_Gasification_Database.pdf

3.2 Follow-up interviews with project stakeholders

On 1 and 2 March 2011, DNV visited the landfill and performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the desk review. DNV also visited the project participant headquarter near Ankara on 3 March 2011 to continue the validation and interview the company top management.

The main topics of the interviews are summarised in the following table.

	Date	Name	Organization	Topic
/67/	1 - 2 March 2011, Adana-Sofulu Landfill	Omer Akyurek (consultant) and Tugba Kirer	OAK danismanlik and ITC respectively	All aspects of project activity
/68/	1 - 2 March 2011, Adana-Sofulu Landfill	Cevdet Kurtay	ITC / Adana Project Manager	Implementation status of project activity
/69/	1 March 2011, Adana-Sofulu Landfill	Mr. Cengiz Karabudak	Village headman	Whether the project activity represented an improvement for local residents compared with the situation before the implementation of the project activity
/70/	1 March 2011, Adana-Sofulu Landfill	Sercin Murat Aksoy	Local electricity distribution company	Grid connection, electricity purchase, metering issues, whether the project activity represented an



				improvement for local residents compared with the situation before the start of the project activity
/71/	2 March 2011, Adana-Sofulu Landfill	Mr Sener Hacisalihoglu	Ankara Municipality's Environmental Services	Local and national environmental regulations
/72/	3 March 2011, headquarters Ankara	Ali Kantur and Erdogan Gogen	ITC / Chairman and ITC/ General Manager respectively	Financial aspects of project activity and availability of financial data

3.3 Resolution of outstanding issues

The objective of this phase of the validation is to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a GS project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of four tables:

Table 1	CDM Methodology Requirements Checklist
Table 2	GS Requirements Checklist
Table 3	Resolution of Corrective Action Requests and Clarification Requests
Table 4	Forward Action Requests.

Table 2 of the validation protocol documents the findings of the desk review of the project design documentation and follow-up interviews with project stakeholders. Any findings raised in Table 2 are listed in Table 3 of the protocol, and changes to the description of the project design as a result of these findings will be addressed in Table 3. Table 2 thus may not reflect all aspects of the project as described in the final PDD submitted for registration.

A corrective action request (CAR) is raised if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The GS or CDM methodology requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.



A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable GS or CDM methodology requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the GS or CDM methodology requirements for registration.

3.4 Internal quality control

The validation report underwent a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.



3.5 Validation team

Role	Last Name	First Name	Country	Type of involvement						
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA 13.1 competence	Financial expertise
Team leader (Validator)	Van Evercooren	Jan	Belgium	✓		✓	✓		✓	
Validator	Zamarron	Francisco	Italy		✓					✓
Assessor under training	Faggin	Matteo	Italy	✓	✓	✓			✓	✓
Assessor under training	Feller	Francesca	Italy	✓	✓	✓				
Technical reviewer	Telnes	Einar	Norway					✓	✓	✓
Technical reviewer	Lehmann	Michael	Norway					✓		

The qualification of each individual validation team member is detailed in Appendix B to this report.



4 CDM VALIDATION FINDINGS

The findings of the validation of relevant requirements of the CDM baseline and monitoring methodologies applied by the project are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in Table 1 of the validation protocol in Appendix A.

Table 1 of the validation protocol in Appendix A is based on the project design as documented and described in the PDD, version 8 dated 20 September 2012. Table 3 of the validation protocol will as applicable describe any changes made to this version of the PDD as a result of CARs and CLs raised by DNV.

4.1 Project design

The project activity will be implemented within the Adana Landfill in Sofulu district of Adana province. The location of the landfill is uniquely defined by its geographical coordinates: latitude 37°3'1.93"N, longitude 35°23'44.22"E. These have been cross-checked by DNV on site with a GPS instrument and found to be correct.

The project activity consists of:

- the covering of the landfill and the installation of a gas extraction system, capturing the landfill gas (LFG) and feeding it to gas engines for electricity generation;
- the implementation of a waste sorting facility to allow separation of organic fraction of the newly conferred waste (plus sorting of other fractions that is out of the scope of the GS projects as detailed below);
- the installation of three anaerobic digesters for the organic fraction of the newly conferred waste, generating biogas which will power 6 gas engines of 1.4 MW each;
- the installation of 5 LFG engines of 1.4 MW each for electricity generation;
- the installation of LFG flaring system for emergency purposes;
- the implementation of landfill leachate drainage system that is required to remove liquids from the landfill and permit LFG extraction;
- the installation of the grid connection lines and substations, and
- the operation and maintenance of above equipment.

Total capacity of the proposed electricity generating equipment is projected to reach 15.4 MW, of which 7 MW from LFG combustion, and 8.4 MW from anaerobic digesters. The generated electricity will be delivered to the national grid.

The proposed VER project is a part of a larger landfill and waste management project (hereafter referred to as the "Generic Project"). The other components of the Generic Project are:

- a gasification system, in which non-organic carbon-rich material is fed into a gasifier producing syngas (i.e. a synthetic gas) which is then utilized to generate electricity;



- a recycling facility in which the recyclables (plastic, cardboards, paper, glass) are sorted out of the newly conferred waste for sale purposes.

The accuracy and completeness of the above information were verified by DNV during a site visit /67/ to /72/. In that occasion the project was only partially implemented, with the landfill covered, three LFG engines already active and the three digesters under start-up operations.

The starting date for the project activity was set to 24 August 2009. That is the date that the contract with the subcontractor responsible for the construction works entered into force /12/.

The LSC meeting took place on 3 May 2009 /3/ and the report was uploaded to the registry (time of first submission) on 17 July 2009 /42/. The upload of the LSC report is the date of the first submission according to the Gold Standard Requirements /51/. Since the date of first submission is before the date of the start of operations, in accordance with the Gold Standard Toolkit /52/ the project correctly applies the normal project cycle.

The stated expected operational lifetime of the project activity is 30 years /35/. The lifetime of the equipment utilizing the LFG is 20 years. This lifetime has been verified to be reasonable according to the WorldBank/ESMAP-Handbook /59/. Nevertheless, the actual lifetime will depend on proper operations and maintenance and correct management which takes into account site-specific conditions.

The selected crediting period is of a renewable 7 years, starting on 1 June 2010 which coincides with the start-up of the gas extraction system.

4.2 Application of selected baseline and monitoring methodology

Two baseline and monitoring methodologies were used by the project activity:

- Approved consolidated baseline methodology ACM0001 “Consolidated methodology for landfill gas project activities” Version 11;
- Approved baseline and monitoring methodology AM0025 “Avoided emissions from organic waste through alternative waste treatment process” Version 12.

Moreover, the following Tools were used in addition to the above mentioned methodologies:

- “Tool for the demonstration and assessment of additionality” Version 05.2;
- “Tool to determine project emissions from flaring gases containing methane” Version 01;
- “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 05;
- “Tool to calculate the emission factor for an electricity system” Version 02, EB50;
- ‘Tool to calculate baseline, project and/or leakage emissions from electricity consumption’ version 01.

In each case, the version used is the most recent valid version. Section B.2. of the PDD discusses the applicability criteria of the methodologies and Tools, which are the following:

ACM0001 ver. 11



The methodology is applicable since the project is a LFG capture project activity where the baseline is the total atmospheric release of the gas, and the captured gas is used to produce electricity. DNV inspected the LFG collecting pipelines and electricity producing equipment during site visit /67/ to /71/ substantiate the claim expressed in the PDD, and concluded that the information submitted is correct.

Applicability of AM0025 ver. 12

- a. The project activity involves anaerobic digestion with biogas collection and flaring and its use. The use for electricity generation was observed and confirmed by DNV during the site visit /67/ to /71/;
- b. The residual waste from these processes is delivered to the Adana landfill. The project boundary outlined in the PDD (Figure 2) /1/ is consistent with this, as it indicates that the AD residue is included within the project boundary;
- c. The project activity does not involve composting, as observed by DNV during the site visit /67/ to /72/;
- d. Neither RDF nor stabilized biomass is involved in the project activity. DNV visited the project facilities and confirms that no RDF is involved in the proposed project activity;
- e. As no RDF nor stabilized biomass is involved in the project activity, /67/ /72/, it is therefore no landfilling of such waste;
- f. Waste incineration is not involved in the project activity, as observed by DNV during the site visit /67/ to /71/.
- g. The proportions and characteristics of different types of organic waste processed in the project activity is determined by sampling the waste characteristics of waste trucks entering the Adana Landfill area /67/ to /72/. The information is collected in order to apply a multiphase landfill gas generation model to estimate the quantity of landfill gas that would have been generated in the absence of the project activity;
- h. The project activity includes electricity generation from the biogas captured, with electricity exported to the grid, as observed by DNV on site review of power meters /67/ to /71/.
- i. As confirmed by a representative of Ankara Municipality /71/, there is currently no national law/regulation mandating the treatment of waste;
- j. As confirmed by a representative of Ankara Municipality /71/, there is currently no national law/regulation mandating the treatment of waste. Therefore the compliance factor regarding environmental regulation during the crediting period is applied as 0;
- k. The project activity does not involve RDF production, thermal treatment, not RDF use, as confirmed during site visit interviews: /67/ to /72/;
- l. The project activity does not involve thermal treatment process of neither industrial or hospital waste. As observed by DNV during the site visit, medical waste is handled at the project site, however it is sterilized by autoclave, and not by thermal treatment /27//28//29//30/. Regarding treatment of industrial waste, according to national law /63/ industrial waste is considered as hazardous and/or dangerous waste, and cannot be landfilled together with municipal waste.



- m. The project activity does not involve was incineration, as confirmed during site visit interviews: /67/ to /72/;

The LFG extraction and utilization is treated as a separate project activity, and AM0025 ver. 12 does not apply to it. DNV was able to observe on site that both organic waste treatment and LFG extraction and utilization take place.

Applicability of “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” version 05

The project does not consist of waste stockpiles, and the solid waste disposal site where the waste would be dumped can be clearly identified. This was observed by DNV on site /67/ to /71/. Moreover, it was confirmed during the site visit that the project does not involve the landfilling of hazardous waste. The project’s facility does handle medical waste, but this is sterilized by autoclave, thus being transformed in to regular waste /27//28//29//30/, and only at this point disposed of in the landfill.

Applicability of “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” version 01

The electricity consumed by the project activity equipment for its operation is obtained entirely from the national grid, and no captive power plant is installed for this purpose. This was observed by DNV on site review of power meters /67/ to /71/.

Applicability of Methodological “Tool to determine project emissions from flaring gases containing methane” version 01

Methane is the only combustible gas present in LFG, and the residual gas stream to be flared is obtained from decomposition of organic material through a landfill /23/.

According to the PDD /1/, the selected baseline is the “Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid-connected power plants”. This is one of the baseline alternatives described in ACM0001 /44/. Methodology AM0025 /45/, on the other hand, does not specify the baseline to be adopted, but lists the following alternatives as the only applicable:

- a) The most plausible baseline scenario for the waste treatment component is identified as either the disposal of the waste in a landfill without capture of landfill gas (M3) or the disposal of the waste in a landfill where the landfill gas is partially captured and subsequently flared (M2);
- b) The most plausible baseline scenario for the energy component of the baseline scenario is one of the following:
 - 1) The disposal of the waste in a landfill site without capturing landfill gas or the disposal of the waste in a landfill site where the landfill gas is partly captured and



subsequently being flared. The electricity is obtained from an existing/new fossil based captive power plant or from the grid and heat from an existing/new fossil fuel based boiler;

- 2) The disposal of the waste in a landfill site without capturing landfill gas or the disposal of the waste in a landfill site where the landfill gas is partly captured and subsequently being flared. The electricity and/or heat are generated by an existing/new fossil fuel based cogeneration plant.

The selected baseline fulfils condition a) above (“disposal of the waste at a landfill without the capture and/or flaring of landfill gas”) and condition b) 1) (“the electricity is generated by existing grid-connected power plants”). Hence the selected baseline confirms the applicability of both methodologies.

The assessment of the project’s compliance with the applicability criteria of ACM0001 “Consolidated methodology for landfill gas project activities” Version 11 and Approved baseline and monitoring methodology AM0025 “Avoided emissions from organic waste through alternative waste treatment process” Version 12 are documented in detail in section B.2 of Table 2 in the validation protocol in Appendix A to this report. It can be concluded that both methodologies are applicable to the proposed project activity.

4.3 Project boundary

The project’s boundaries have been defined as the site where the landfill gas is captured and destroyed (LFG collection system, transportation pipeline network, power generation system and flaring system) and where the organic waste is treated (waste sorting facility, anaerobic digesters, transportation pipeline network, power generation system and flaring system). The project will use and feed electricity to the national grid and the grid power sources (national grid and off-grid captive power generation) are included in the project boundary /1/.

Since on the physical site of the project activity there are other facilities that are not part of the GS VER-generating project (namely a gasifier which will be added in the future, and a waste sorting facility), a distinction is made between the “General Project” and the GS project /1/.

For what concerns the separation of both the gasifier and the sorting facility for the purpose of calculating emission reductions, emissions from the electricity consumption of both gasification and sorting plant will be added to those of the GS project activity as a conservative approach. However, since gasification system is excluded from the GS VER project boundary, no credits could be claimed for its emission reductions in accordance with the Gold Standard rules. Therefore, the gasification system will be completely separated from the rest of the system (AD and LFG system), where the syngas will be separately collected and utilized at dedicated gas engines. These dedicated gas engines will only utilize syngas coming from the gasification system and under no circumstances the syngas will not be mixed with biogas or LFG as they will have no physical connections.

Since the gasification systems has not yet been built at the time of validation, its effective separation from the AD and LFG systems will have to be checked in the course of future verifications. A FAR has been raised in this respect.



The following GHG are included in the project boundary:

	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	CH ₄	Due to emissions from decomposition of waste at the landfill site
	CO ₂	Emissions from electricity consumption
<i>Project emissions</i>	CO ₂	Emissions due to on-site electricity consumption for project activity from the grid
	N ₂ O	Direct emissions from the waste treatment process (from anaerobic digestion of the waste)
	CH ₄	Direct emissions from the waste treatment process (leakage from the anaerobic digester)
<i>Leakage</i>	According to both methodologies <i>Consolidated methodology for landfill gas project activities</i> , ACM0001 ver. 11, and <i>Avoided emissions from organic waste through alternative waste treatment process</i> , AM0025 ver. 12, leakage emissions are not included in the project boundaries.	

The identified boundary and selected sources and gases are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed VER project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, which are not addressed by ACM0001 “Consolidated methodology for landfill gas project activities” Version 11 and AM0025 “Avoided emissions from organic waste through alternative waste treatment process” Version 12.

4.4 Baseline identification

The alternative baseline scenarios that had to be taken into consideration according to the two selected methodologies, ACM0001 version 11 and AM0025 version 12 are the following:

ACM0001

LFG1: The project activity (i.e. capture of landfill gas and its flaring and/or its use) undertaken without being registered as a CDM project activity.

LFG2: Atmospheric release of the landfill gas or partial capture of landfill gas and destruction to comply with regulations or contractual requirements, or to address safety and odour concerns.

If LFG is used for generation of electric or heat energy for export to a grid and/or to a nearby industry or used on-site, realistic and credible alternatives should also be separately determined for:

- Power generation in the absence of the project activity;
- Heat generation in the absence of the project activity.

For power generation, the realistic and credible alternative(s) considered are:



- P1 - Power generated from landfill gas undertaken without being registered as CDM project activity;
- P2 - Existing or construction of a new on-site or off-site fossil fuel fired cogeneration plant;
- P3 - Existing or construction of a new on-site or off-site renewable based cogeneration plant;
- P4 - Existing or construction of a new on-site or off-site fossil fuel fired captive power plant;
- P5 - Existing or construction of a new on-site or off-site renewable based captive power plant;
- P6 - Existing and/or new grid-connected power plants.

The alternative scenarios relative to heat generation have not been considered since the project activity does not involve heat generation.

As to alternatives P2 to P5, the project activity is located in an area allocated for land filling, and different land uses such as the development of fossil fuel or renewable power generation are not foreseen by the municipality. The Project Participant was allowed to develop the proposed project activity only because it utilised the LFG extracted on site. This was confirmed during the site visit by a representative of Ankara Municipality's Environmental Services /71/ when discussing applicable regulations.

Moreover, the alternative baseline scenarios requiring the construction of fossil fuel or renewable power plants were discarded because, ITC Invest Trading and Consulting A.G being a company only involved in waste management project activities, it has no intention nor experience to develop other types of power plants. Therefore alternatives P2, P3, P4 and P5 do not represent realistic and credible alternatives available to the project participant.

AM0025

- M 1 - The project activity (anaerobic digestion) not implemented as VER project
- M 2 - Disposal of the waste at a landfill where landfill gas captured is flared
- M 3 - Disposal of the waste on a landfill without the capture of landfill gas

Based on a combination of all applicable alternative baseline scenarios, the following alternative baseline scenarios were identified:

- The project activity undertaken without being registered as a VER project;
- Disposal of the waste at a landfill where landfill gas is captured and flared. The electricity is generated by existing grid connected power plants;
- Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants.



The list of baseline scenario's is complete since it includes all meaningful combinations of alternatives proposed by methodologies and no further alternatives could be found.

In order to select the most appropriate baseline scenario, the 'Tool for demonstration and assessment of additionality' was used, as required by both methodologies.

Scenario 1 - The project activity undertaken without being registered as a VER project - has been eliminated because of financial barriers as further detailed in barrier analysis section.

Scenario 2 - Disposal of the waste at a landfill where landfill gas is captured and flared, and the electricity is generated by existing grid connected power plants - has been eliminated because of common practice barriers as further detailed in the following barrier analysis section.

Scenario 3 - Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants - has not been eliminated.

The information used to determine the baseline scenario, and in particular the common practice in the host country and national sectoral policies, have been cross-checked during an interview with one representative of Ankara Municipality's Environmental Services /71/, who confirmed the motivations presented in the PDD.

Moreover, DNV investigated the possibility that, in the absence of the proposed project activity, waste treatment would have implemented by the municipality. However, during the site visit DNV received confirmation that advanced waste treatment by municipalities, i.e. waste management other than simple landfilling, is not common practice in Turkey, and in fact, before the project activity was implemented, the landfill had always been operated by the Adana municipality with no capture, flare or utilization of LFG until the "right of use" of the landfills was transferred to the project Participant.

It is DNV's opinion that, in the absence of the proposed project activity, no waste treatment would have been implemented by the municipality.

The selected baseline scenario is thus the "Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants".

The approved baseline methodologies have been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed GS project activity.

All the assumption and data used by the project participants are listed in the PDD and/or supporting documents. All documentation relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD.



4.5 Additionality

4.5.1 Evidence for prior CDM consideration and continuous actions to secure CDM status

The project does not seek CDM status. With regard to prior consideration of the Gold Standard, the date of first submission - 17 July 2009 /42/ - is before the date of the start of operations - 24 August 2009 /12/. Therefore, in accordance with the requirements of Gold Standard Toolkit /52/, the project correctly applies the normal project cycle, and retroactive registration is not required. Moreover, based on the evidence submitted by the project participant it can be confirmed that carbon revenues were considered before the starting date of the project activity: VERs were considered as early as 19 May 2008 /11/, while the starting date of the project activity has been correctly identified as 24 August 2009 /12/. Evidence for continuous action to register the project as a VER project activity also includes a board decision dated 19 May 2008 demonstrating that the investment decision is based on the expectation of carbon revenues /11/, and the consultation of local stakeholders in relation to the proposed project activity, which took place on the 30 May 2009 /3/.

4.5.2 Identification of alternatives to the project activity

The project uses the 'Tool for demonstration and assessment of additionality' (Version 05.2). This is in line with both ACM0001 ver. 11 and AM0025 ver. 12 methodologies.

The alternatives to the project's activity were identified as follows:

- 1) The project activity undertaken without being registered as a VER project;
- 2) Disposal of the waste at a landfill where landfill gas is captured and flared. The electricity is generated by existing grid connected power plants;
- 3) Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants.

DNV considers the listed alternatives to be credible and complete, since all likely alternatives have been identified for individual components to the proposed project activity in accordance with the two methodologies /44//45/, i.e. LFG extraction, anaerobic digestion and electricity production, and then combined in three combined scenarios, representing the most likely combination considering applicable laws and regulations.

4.5.3 Investment analysis

The project does not rely on an investment analysis to demonstrate additionality.

4.5.4 Barrier analysis

The barrier claimed by the Project Participant towards the implementation of the project activity is a financial barrier, consisting of limited access to financing due to perceived country risk. The project participant also identified a number of unfavourable conditions leading to limited access to finance, namely the impact of the feed-in tariff on investment, uncertainty in electricity generation, and prevailing practice.



This is in accordance with the requirements of the *Tool for the demonstration and assessment of additionality*, Version 05.2 /46/.

Financial Barrier

The investment in the proposed project activity relies for 75% on a bank loan, and for the remaining 25% on equity, as shown in the project's financial calculations provided to DNV /37/. However, the project participant was only able to obtain debt funding by demonstrating the additional revenues from VERs in order to overcome perceived country risk. Perceived country risk in this case originates from the fact that investments in the waste management sector are still perceived as investments with high risks, since waste treatment is a relatively new technology. Moreover, the project suffers from an unfavourable investment and finance structure due to several reasons, detailed in the following sections (technological barriers, prevailing practice barriers, other barriers).

In support to the claim of financial barriers, the Project Participant submitted a statement /6/ issued by TSKB, the financing institution, dated 22 March 2010, stating that:

“The prospect of generating tradable Verified Emission Reduction credits (VERs) and the expected revenues from carbon credits have been included in the feasibility study prepared by the Company and submitted to us for the contemplated project and they have been taken in the consideration during our evaluation regarding the credit and considered as a basis for our credit decision”.

As explanation, TSKB declares that:

“Landfill gas utilization projects need a high level of financing and loan repayment periods. Both of those characteristics are difficult to realize in Turkey due to the perception of the country risk in the international markets as of the date of our credit decision.”

The project's financing structure (/37/) submitted to TSKB shows that revenues from emission reductions were indeed included in the calculations with a unit price of €5, or \$7. These calculations refer to the general project, which includes GS-eligible and non-eligible technologies alike.

Following an analysis of potential impacts of non-project components on the additionality of the proposed GS project, DNV raised concerns regarding TSKB's understanding of the distinction between the General Project and the GS project. This was to establish whether the financial barriers claimed also applied to project components that are not eligible for GS VERs, since there was a possibility that these could have been financed without the prospect of carbon revenues. In response to this concern, TSKB issued a second statement /7/ on 6 April 2011 explaining that:

“Although the project activity involves several technologies, including LFG extraction, Anaerobic Digestion and Gasification, we do acknowledge that the emission reductions due to gasification will not result in GS VERs and therefore our decision is significantly based on assessment of project activities resulting in tradable Verified Emission Reduction credits”.



TSKB thus acknowledges their awareness that some components will not generate carbon revenues, and confirms that their decision to finance the general project was made because of the prospects of obtaining carbon revenues from the rest of the project components. In fact, this second statement /7/ reiterates that:

“The prospect of generating tradable Verified Emission Reduction credits (“VER”s) and the expected revenues from carbon credits have been included in the feasibility study prepared by the Company and submitted to us in the 1st quarter of 2009, for the contemplated project and they have been taken into consideration during our evaluation regarding the credit and considered as a basis for our credit decision.”

DNV’s assessment of the evidence presented is that, although the non-GS components faced the same financial barriers of the anaerobic digester and LFG extraction and utilisation, at the time of TSKB decision they benefitted from the prospect of carbon revenues from the GS-eligible technologies.

To further investigate the hypothesis that the non-GS eligible components, in particular the gasification system, could be financially more sustainable in its own right and therefore make a significant contribution to the overall financial viability of the project, the Project Participant submitted evidence that the use of this technology is “first of its kind” in Turkey, and therefore faces barriers that go beyond financial profitability, such as lack of know-how, risk due to this being an un-proven technology, limited access to finance, technological barriers (the application of this technology is 0% in Turkey). Even if the geographical boundaries are extended to worldwide the situation doesn’t change: according to the US Department of Energy’s Gasification 2010 Worldwide Database /66/, there are only 144 gasification (mostly gasification of coal) projects worldwide with a total capacity of 70 817 MW_{th}, which only 9 projects use waste with a total capacity of 373 MW_{th}.

It is DNV’s conclusion that that the non-GS components face the same – if not stronger – barriers to their implementation, which are only mitigated by the prospect of carbon credits from GS-eligible components. It is therefore possible to exclude the possibility that non-GS components could contribute to the elimination of access-to-finance barriers for the overall project activity, and facilitate, let alone enable, the implementation of GS-eligible components, thus casting doubts on the project’s additionality.

The investment barrier claimed is in accordance with CDM EB 50 Annex 13 “Guidelines for Objective Demonstration and Assessment of Barriers” version01 (/53/), which state:

“Guideline 6: *In case the PPs make the claim for investment barriers, they should demonstrate in the PDD that the financing of the project was assured only due to the benefit of the CDM. Therefore, it should be demonstrated that the loan approval (or other significant financing decision(s)) by the lender takes explicitly the CDM registration into account.”*

Impact of Renewable Energy Law to the investment environment:

A second element of the financial barrier contributing to the difficulties in obtaining credit is the feed-in tariff established for the promotion of renewable energy. According to “The Law on Utilization of Renewable Energy Resources for the Purpose of Generating electrical



Energy” of 18 October 2005 /21/, the price the energy from renewable sources fed into the grid cannot be lower than 5.0 ¢cent/kWh and cannot be higher than 5.5 ¢cent/kWh. It is claimed that instead of providing an incentive for investment in renewable energy, such tariff keeps the energy price below the actual market price, thus discouraging investment. This was cross-checked against publicly available information, which confirmed that in fact, the wholesale electricity tariff announced in 2009 by EMRA (Electricity Market Regulatory Authority) /64/ is 15.28 YKr/kWh, which corresponds to 6.97 ¢cent/kWh (1¢cent=2.19 YKr), significantly higher than the guaranteed price in the Renewable Energy Law. Moreover, there are several articles and reports published online indicating that price set under the renewable energy law is insufficient from both the investors and creditor’s perspective, e.g. /65/.

Based on the above evidence, Scenario 1 (The project activity undertaken without being registered as a VER project) is prevented by the lack of financing, while Scenario 2 (disposal of the waste at a landfill where landfill gas is captured and flared) and Scenario 3 (Disposal of the waste at a landfill without the capture and/or flaring of landfill gas) do not entail investment by the project participant and are therefore not prevented under the same circumstances.

Uncertainty in the electricity generation

The third unfavourable condition leading to limited access to finance is the uncertainty associated with correctly modelling LFG generation and thus predicting the performance of LFG projects. This uncertainty is widely recognized, and confirmed by technical literature /39//40/.

The VER project will contribute to overcoming this barrier by providing the bank responsible for funding the project additional assurance on the project financial viability.

Prevailing Practice

Since landfill waste management in Turkey is not mandated by law, the most frequent method for the disposal of wastes in Turkey is the irregular land filling (‘dumping’). This is confirmed by Turkey waste management audit report of 2007 /55/, and directly to DNV by a representative of the Ankara Municipality /71/. Therefore, it is DNV opinion that the technology used in the proposed project activity cannot be considered prevailing practice.

4.5.5 Common practice analysis

The following criteria have been applied in the common practice analysis to identify “similar project activities”:

- Geographical scope: in the same country (Turkey). This is in accordance with the requirements of the additionality Tool /46/, “Projects are considered similar if they are in the same country/region;
- Technology type: project activities rely on LFG extraction and utilization as well as AD biogas utilization in a landfill area;
- Project scale: the proposed project activity is planned to reach 15.4 MW and is considered as large scale project activity. A conservative range of $\pm 50\%$ capacity have been considered in



defining the “similar scale” and any project outside this range have been excluded from the analysis;

- Projects status: only project activities that are operational have been included in the analysis;
- Comparable environment: Project activities built and/or operated by state owned companies/organizations (such as municipalities) although investigated in the analysis for transparency, have then been formally excluded from the conclusion since neither the investment climate nor the access to finance shows similarities to the proposed project activity. In fact, also considering projects run by municipalities, waste treatment projects utilizing the technology employed by the Project Participant cannot be considered common practice, since only 4 municipalities in Turkey have composting plants, and 2 have an incineration plant, as summarized in Table 16 of the PDD /1/. This was crosschecked by DNV with Turkey’s official statistics website /34/, which confirms that, apart from the 6 exceptions mentioned, municipalities in Turkey are not involved in advanced waste treatment.

Table 16 of the PDD /1/ presents a list of facilities operating within the selected geographical and technological scope (LFG extraction in Turkey). The table clearly indicates which other criteria have not been met (scale, comparable environment), clearly showing why these projects have not been considered “similar project activities”.

Based on the evidence presented in support to the project’s additionality, it can be concluded that the project activity will reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the registered CDM project activity.

4.6 Monitoring

The monitoring plan comprises the following data and parameters:

4.6.1 Parameters determined ex-ante

- Regulatory requirements relating to landfill gas projects: this will be monitored through the official website of the “Directorate of Legislation Development and Publication”, the official governmental organization responsible for publication of any legislative changes in Turkey. Any changes will be applied at renewal of each crediting period;
- GWP_{CH_4} - Global warming potential of CH_4 : the value of 21 tCO_{2e}/tCH_4 for GWP_{CH_4} is given by approved methodology ACM0001;
- GWP_{N_2O} - Global warming potential of N_2O : the project activity applies a value of 310 tCO_{2e}/tCH_4 , which was validated against IPCC 2007 /56/;
- D_{CH_4} - Density of methane: the value of 0.0007168 $tCH_4/m^3 CH_4$ for D_{CH_4} is given by approved methodology ACM0001;
- $BE_{CH_4,SWDS,Y}$ - Methane generation from the landfill in absence of the project activity at year y: Calculated as per “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site”. DNV checked the calculations and found them in accordance with the requirements of the tool /48/;



- EG_{gross} - Gross electricity production by fossil fuel power sources (2007-2009): The values applied for last three available years (2007-2009) were derived from Teias (national grid company) publicly available data (<http://www.teias.gov.tr/istatistik2007/40.xls>; <http://www.teias.gov.tr/istatistik2008/41.xls>; [http://www.teias.gov.tr/istatistik2009/37\(06-09\).xls](http://www.teias.gov.tr/istatistik2009/37(06-09).xls));
- $FC_{i,y}$ - Amount of fossil fuel type i consumed in the project electricity system by generation sources in year y (2007-2009): Gross electricity production by fossil fuel power sources (2007-2009): The values applied for last three available years (2007-2009) were derived from Teias (national grid company) publicly available data (<http://www.teias.gov.tr/istatistik2009/46.xls>);
- Electricity Imports: The values applied for last three available years (2007-2009) were derived from Teias (national grid company) publicly available data ([http://www.teias.gov.tr/istatistik2009/26\(06-09\).xls](http://www.teias.gov.tr/istatistik2009/26(06-09).xls));
- $NCV_{i,y}$ - Net calorific value (energy content) of fossil fuel type i in year y : The values applied for last three available years (2007-2009) were derived from Teias (national grid company) publicly available data (<http://www.teias.gov.tr/istatistik2009/46.xls>);
- $EF_{CO_2,i,y}$ - CO_2 emission factor of fossil fuel: The data are taken from the 2006 IPCC Guidelines /60/;
- $\eta_{m,y}$ - Average net energy conversion efficiency of power unit m in year y : the information has been sources from a report published by Environmental Inventory Head Department under Ministry of Environment and Forestry and publicly available online /61/;
- Capacity additions: The values applied for last three available years (2007-2009) were derived from Teias (national grid company) publicly available data ([http://www.teias.gov.tr/istatistik2009/37\(06-09\).xls](http://www.teias.gov.tr/istatistik2009/37(06-09).xls));
- ϕ - Model correction factor to account for model uncertainties: The applied value of 0.9 derives directly from “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” /48/. This is the only value allowed by tool;
- OX - Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste): The applied value of 0 derives from “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” /48/. The tool in fact allows to use 0.1 for managed solid waste disposal sites that are covered with oxidizing material such as soil or compost, and 0 for all other sites. 0 is the correct value to apply since the selected baseline is the landfill as it was before the project implementation (unmanaged and uncovered);
- F - Fraction of methane in the SWDS gas (volume fraction): The applied value of 0.5 derives directly from “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” /48/. A default value of 0.5 is recommended by IPCC;
- DOC_f - Fraction of degradable organic carbon (DOC) that can decompose: The applied value of 0.5 derives directly from “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” /48/. This is a tool default value based on IPCC guidelines;



- MCF - Methane correction factor: In accordance to the “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site” version 5 /48/, a value of 0.8 has been used because the selected baseline would be the unmanaged landfill, with average dept of 20-30 meters as witnessed by DNV during the site visit /69/ /70/;
- DOC_j - Fraction of degradable organic carbon (by weight) in waste type j: this valued is correctly derived from “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site”, which in turn applies IPCC 2006 values;
- k_j - Decay rate for the waste type j: values for MAT and MAP/PET have been sourced from the Adana Provincial Environment Annual Report 2007 /33/ and correctly applied;
- f - Fraction of methane captured at the SWDS and flared, combusted or used in another manner. This is assumed to be 0 since the project aims to utilize 100% of the LFG and biogas for electricity generation. The amount of LFG flared is in any case included in the monitored parameters, should flaring occur in case of emergency or overproduction;

CEF_d – Emission factor for the production of the electricity in the project activity: this has been calculated according to the “Tool to calculate emission factor for an electricity system” /49/. The calculations were checked and found to be correct. The list of values and parameters is considered complete, and in accordance with ACM0001 ver. 11 and AM0025 ver. 12.

4.6.2 Parameters monitored ex-post

The parameters included in the monitoring plan and relevant measurement equipment are as follows:

- $LFG_{total,y}$ Total amount of landfill gas captured at normal temperature and pressure; measured by flow meter on the main pipe from landfill extraction to the booster;
- $LFG_{flare,y}$ Amount of landfill gas flared at normal temperature and pressure; the amount flared is measured on the pipe from the booster to the flare;
- $LFG_{electricity,y}$ Amount of landfill gas combusted to produce electricity at normal temperature and pressure; measured by flow meter on the pipe from booster to engines (cumulative);
- T Temperature of the landfill gas; measured by temperature meter on the main pipe from landfill extraction to the booster;
- P Pressure of the landfill gas; measured by pressure meter on the main pipe from landfill extraction to the booster;
- T_{flare} Temperature in the exhaust gas of the enclosed flare; This will be measured continuously by means of a thermocouple;
- $\eta_{flare,k}$ Flare efficiency in hour h: This will be defined as stated under the “Tool to determine project emissions from flaring gases containing methane “
- W_{ch4} Methane fraction in the landfill gas; measured continuously by gas analyzer;
- Operation of the energy plant; This is measured continuously by plant control system, while the total quantity is calculated annually;
- $EC_{PJ,j,y}$ Amount of electricity consumed from the grid as a result of the project activity; measured by electricity meter;



- $TDL_{j,y}$ Average technical transmission and distribution losses for providing electricity for source j , in year y : This parameter will be monitored annually based on literature;
- $SG_{a,y}$ Stack volume flow rate; will be calculated based on other available variables and quarterly physical measures;
- $MC_{N_2O,a,y}$ Concentration of N_2O in stack This will be measured by quarterly physical measures;
- $MC_{CH_4,a,y}$ Concentration of CH_4 in stack gas: measured continuously by gas analyzer;
- W_x Total amount of organic waste prevented from disposal and fed into the anaerobic digester in year x : this will be measured by means of a scale on the belt feeding the digesters. Measuring will be continuous, and data aggregated annually;
- $p_{n,j,x}$ Weight fraction of the waste type j in the sample n collected during the year x Sampling will take place at least 4 times a year. Sample measurements were performed by Project Participant in 2009 based in incoming waste. The composition of historical waste is not known;
- z Number of samples collected during the year x ; recorded by project participant;
- MB_y Methane produced in the landfill in the absence of the project activity in year y : this will be calculated according to the “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site” version 05;
- $EG_{d,y}$ The amount of electricity generated utilizing the biogas and LFG, measured by electricity meters;
- AF Methane destroyed due to regulatory or other requirements: this parameter remains fixed for the duration of the crediting period, but will be updated based on potential future amendments of the “Environmental Law”;
- EL_{LFG} Net amount of electricity generated using LFG;
- $PE_{flare,y}$ Project emissions from flaring of the residual gas stream in year y : These will be calculated as per the “Tool to determine project emissions from flaring gases containing methane” version 01;
- $A_{ci,x}$ Amount of residual waste type “ci” from anaerobic digestion: the amount of residual wasted from the anaerobic digester will be measured through a weight bridge;
- Other flare operation parameters: these will be monitored to ensure that the flare operates within the range of operating conditions according to manufacturer’s specifications;
- Methane utilisation ratio: The utilization rate is defined as the ratio between the volume of the biogas captured on an annual basis, and the volume of the biogas used to deliver energy services. This parameter is monitored based on two other monitored parameters: LFG_{total} and $LFG_{electricity}$.

The list of values and parameters is considered complete, and in accordance with ACM0001 ver. 11 and AM0025 ver. 12.

4.6.3 Management system and quality assurance

Based on verification experience in similar projects elsewhere (among others, UNFCCC nr 1921, Durban Bisasar Road), DNV confirms that the choice of monitoring arrangements for



the project activity are common and should be feasible for the project design. However, given the sensitivity of the monitoring equipment, regular maintenance and calibration will be required.

4.7 Algorithms and/or formulae used to determine emission reductions

Both ex ante and ex post calculations are presented in a complete and transparent manner, in line with methodologies ACM0001 ver. 11 and AM0025 ver. 12.

Baseline emissions consist of:

- Emissions from decomposition of waste at the landfill site that have been avoided due to the installation of the anaerobic digester and to the landfill gas capture and utilization;
- Emissions from electricity consumption, calculated based on the amount of electricity generated and delivered to the grid by the project activity which would have otherwise been produced by the Turkish grid.

Emissions from the decomposition of waste at the landfill consist of both the emission from organic waste fed into the biodigester, which in the absence of the project activity would have been landfilled in unmanaged conditions, and the emissions from historic waste that are fed into the LFG collection and utilization system. The *Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal Site*, Version 05, was used to calculate this part of baseline emissions.

The *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*, Version 01 and the *Tool to calculate the emission factor for an electricity system*, Version 02, EB50 were used to calculate baseline emissions from electricity use.

With regard to project emissions, these consist of the emissions associated with the consumption of electricity from the grid used by the biodigester, the LFG extraction system for their own operation, and of the emissions from the anaerobic digestion process. The *Tool to determine project emissions from flaring gases containing methane*, Version 01, the *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*, Version 01, the *Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site*, version 05, and the *Tool to calculate the emission factor for an electricity system*, Version 02, EB50 were used to calculate project emissions.

Leakage emissions considered were leakage emissions from the residual waste from the anaerobic digestion.

Although minor changes in the waste fraction could be expected throughout the project period, for the purpose of ex ante estimation of emission reduction the fractions of waste composition are assumed to remain constant over time. This is in line with the requirements of the CDM, where the ex-ante calculations are based on the best available data at the time of the PDD writing, and therefore accepted by DNV.

Uncertainties are not explicitly addressed by the Project Participant. Nevertheless, considering the fact that ACM0001 ver. 11 and AM0025 ver. 12 have become well established



methodologies these days and implicitly address uncertainty via conservative values in the applied formulas, and were correctly applied by the Project Participant, this is not considered an issue by DNV.

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average *ex-ante* estimation of emission reduction conservatively calculated to be 322 947 tCO₂e per year for the selected crediting period.

All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources. All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD. All values used in the PDD are considered reasonable in the context of the proposed CDM project activity. The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions. All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD.

4.8 Environmental impacts

The host country requires an EIA to be carried out for this project /22/, and a copy of the EIA was submitted to DNV during the site visit /9/. The EIA has been approved by local authorities /8/, thus confirming adherence to host country requirements relatively to environmental impact. No conditions to be monitored were included in the approval document.

5 GS VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in Table 2 of the validation protocol in Appendix A.

Table 2 of the validation protocol in Appendix A is based on the project design as documented and described in the PDD, version 8 dated 20 September 2012. Table 3 of the validation protocol will as applicable describe any changes made to this version of the PDD as a result of CARs and CLs raised by DNV.

5.1 Project Type Eligibility Screen

The project is eligible under Gold Standard eligibility criteria since it generates energy from a renewable source and aims to reduce atmospheric emissions of carbon dioxide and methane. These fundamental components of the project design were confirmed during the site visit.

5.2 Additionality Screen

No public funding has been obtained for the project. The PP has submitted two statements as evidence that no ODA has been used in the project activity:

- one signed by ITC's General Manager /4/
- the other issued by the project's financing institution /5/.



The only public contribution to the project consists of the waste disposal fees that the municipality pays the landfill per ton of waste accepted. This fee was determined in reverse auctioning during the tender process to assign the management of the landfill, and as such it reflects the market price and not any development aid. This information was provided by the Project Participant and confirmed by a local representative during the site visit /69/.

5.3 Do no harm assessment

The project activity has been assessed against the GS safeguarding principles, and the assessment established that the risk of breaching any of the safeguarding principles is low. DNV compared the information provided in the GS passport against the information collected on site through the physical inspection of the project site and the interviews held with relevant stakeholders /71//70//68//69/, and concluded that the assessment performed by the project participant is exhaustive. Since compliance with each of the safeguarding principles can only be observed once the project activity is operational, this will be checked as part of the project verification. However, the fact that most of the safeguarding principles are also the object of national regulation is considered as an additional guarantee of compliance.

5.4 Sustainable Development Screen

The scoring of all twelve GS screening indicators was completed, and the project did not receive any negative scores. The scores received by each indicator are as follows:

1. Air quality, +1

This indicator received a positive score thanks to reduction SO_x and NO_x emission from the grid power plants, which in Turkey are mainly powered by fossil fuels /32/. The proposed project activity will displace electricity produced from fossil fuels, thus having a positive effect on air quality.

2. Water quality and quantity, +1

This received a positive score for collection/treatment of leachate previously not collected and therefore polluting the groundwater table. Supporting documentation includes guidance from the UK Environmental Agency /15/ and a paper on the composition of landfill leachate /16/.

3. Soil conditions, +1

The collection of leachate is judged to have a positive impact, as indicated by guidance from the UK Environmental Agency /15/ and a paper on the composition of landfill leachate /16/.

4. Other pollutants; +1

This received a positive score thanks to reduction of odour nuisance (by destruction of LFG odorous components especially sulphur compounds in the gas motors). Reference is made to publications by the US Environmental Protection Agency /13/ and UK Environment Agency /14/.

5. Biodiversity; 0

No impact: this is conservative, as it does not take into consideration the planting of trees performed /67/.

6. Quality of employment, +1

This was assessed to have a positive impact: indicator (Number of contracts, number of



trainings & attendance) is explained and reference for average employment condition (unregistered employment) is provided (/17/). The positive impact is due to the creation of registered job positions with social security and training. The creation of employment was confirmed by Mr. Cengiz Karabudak, the nearby village headman's subjective opinion, /69/.

7. Livelihood of the poor , +1

This was assessed to have a positive impact: indicator (# of scavengers receiving a contract w/social security) is explained and referenced. The improvement of livelihood of local residents was confirmed by Mr. Cengiz Karabudak, the nearby village headman's subjective opinion, /69/.

8. Access to affordable and clean energy services, +1

This received a positive score: indicator (electricity generated) is explained and reference is given for country negative energy balance /18/.

9. Human and institutional capacity, +1

This received a positive score: the Adana landfill waste treatment system constitutes an example in Turkey (evidence provided in the common practice analysis and confirmed by Mr Sener Hacisalihoglu during the site visit /71/).

10. Quantitative employment and income generation, +1

This received a positive score: the PP will use the number of contracts as indicator /41/.

11. Balance of payments and investment; 0

No impact: no changes are expected to the host country balance of payment nor to the balance of investment (project developed with local funds).

12. Technological transfer and technological self-reliance, 0

Despite the fact the project entails a technology transfer from an Annex-1 Party to Turkey /62/, this indicator has been scored as neutral due to the difficulties in monitoring the uptake of the technology outside the project area.

The list of SD indicators is complete and in compliance with the requirement of the Gold Standard Toolkit /52/.

5.5 Monitoring Requirements and Monitoring Plan

All Sustainable Development indicators will be monitored in accordance with the Gold Standard Toolkit /52/.

5.6 Comments by local stakeholders

On 30 May 2009 a public consultation involving relevant stakeholders (representatives of the Government, the local Government, environmental NGOs, education institutions and local residents, including scavengers) was organized by the project participant. The details of the consultation are included in LSC report in accordance with Gold Standard requirements. Although the process is not mandated by law in Turkey /22/, a local stakeholder consultation was carried out in order to comply with the Gold Standard Toolkit, Version 2.1 /54/. A



summary of the stakeholders comments have been provided in the LSC report /3/. As per E.1.4 and the LSC report /3/, no comments were received that required to be taken into account in further developing the project activity. This was also verified during the site visit interviews /67/ to /71/.

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APPENDIX A

VALIDATION PROTOCOL

Table 1 CDM Requirements Checklist

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A General description of project activity					
A.1 Title of the project activity (VVM para 55-57)					
A.1.1 Does section A.1 of the PDD include a clearly identifiable project title, version number of the PDD and date of the PDD?	/1/	DR	Title: Adana Landfill Waste Management Project – Turkey Version Number of the Document: 01 Date: 21 February 2011 ☒ Clearly identifiable title of the project activity ☒ Version number of the PDD is included ☒ Date of the PDD is included.		OK
A.1.2 Is the PDD is in accordance with the applicable requirements for completing PDDs?	/1/	DR	☒ Yes		OK
A.2 Description of the project activity (VVM para 58-64) and VVM para 135 and 136 (a) & (c) for small-scale project activities, as applicable)					
A.2.1 How was the design of the project assessed?	/1/ /67/ to /71/	DR I	What type is the project? ☒ Project in existing facility or utilizing existing equipment(s) ☒ Project is either a large scale project or a small scale project with emission reductions exceeding 15 000 tCO ₂ e per year. In this case, a site visit must be performed. ☐ Project is a bundled small scale project, with each project in the bundle with emission reductions not exceeding 15,000 tCO ₂ e per year. In such case the number of	~~CL1~~	OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis. ☐ The project is an individual small scale project activity with emission reductions not exceeding 15 000 tCO₂e per year. In this case, DOE may not conduct a physical site visit as appropriate. ☐ Greenfield project <i>How was the design of the project assessed?</i> ☒ Physical site inspection /67/ to /71/ ☒ Reviewing available designs and feasibility studies <i>b) The project participant is requested to submit the technical feasibility study</i>		
A.2.2 If a greenfield project, describe the physical implementation of the project when the validation was commenced.	/1/	DR	Not applicable: not a greenfield project		OK
A.2.3 If physical site visits were performed based on sampling (only applicable for bundled small scale projects, each with emission reductions not exceeding 15 000 tCO ₂ e per year), justify the sampling through a statistical analysis:	/1/	DR	Not applicable: not a bundled small scale project		OK
A.2.4 Does the description of the proposed project activity as contained in the PDD sufficiently cover all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed project activity?	/1/ /67/ to /71/	DR I	The objective of the proposed project activity is to extract the biogas from a landfill and from anaerobic digesters and generate electricity. The landfill already exists and the project activity has been partially constructed in the course of 2010 (the landfill is currently covered, three LFG engines are already active and the three digesters are under start-up operations) and will be	~~CL1~~	OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			completed during 2011 and 2012. The landfill will be used for disposal of municipal waste at an average 1 500 tonnes per day. The landfill will be operated by ITC, the project participant. The project activity consists of: - the covering of the landfill and the installation of a gas extraction system, capturing the landfill gas (LFG) and feeding it to 5 gas engines of 1.4 MW each for a total electricity generation of 7 MW; - the installation of three anaerobic digesters for the organic fraction of the newly conferred waste, generating biogas which is further utilised for electricity production by 6 gas engines of 1.4 MW each, for a total generation of 8.4 MW. The number of gas engines could increase, although the number of generators will remain the same; - the implementation of a waste sorting facility to allow separation of organic fraction of the newly conferred waste (plus sorting of other fractions that is out of the scope of the GS projects as detailed below); - the installation of LFG flaring system for emergency purposes; - the implementation of landfill leachate drainage system that is required to remove liquids from the landfill and permit LFG extraction;		

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			- the installation of the grid connection lines and substations - the operation and maintenance of above equipment. The proposed VER project is a part of a larger landfill and waste management project (hereafter referred to as the “Generic Project”). The above information were verified by DNV during site visit. /67/ to /71/ In that occasion the project was only partially implemented, with the landfill covered, three LFG engines already active and the three digesters under start-up operations. <i>a) The project participant is requested to better detail the design of the project in the PDD: how many LFG wells are planned; how many engines are designed for the LFG system; how many engines are designed for the digesters system; how many digesters are foreseen; what will be the total MW installed generation capacity (for GS project only, excluding non-GS facilities)?</i>		
A.2.5 Does the project activity involve alteration of existing installations? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/ /67/ to /71/	DR I	As stated in the PDD, and witnessed by DNV in the course of the site visit /67/ to /71/: - the project activity involves the alteration of the existing Adana landfill with the installation of an LFG collection system, a gas flaring system, a digester and power generators facilities - other improvements also take place within the project activity, such as the coverage of the landfill, leachate drainage system and grid connection. Moreover it was confirmed witnessed that the		OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				Generic Project includes additional activities outside the scope of the VER project, i.e. a recycling centre and a gasification system.		
A.2.6	Does the project design engineering reflect current good practices?	/1/	DR	Impossible to evaluate since performed technical feasibility study is not provided. <i>b) The project participant is requested to submit the technical feasibility study</i>	~~CL~~	OK
A.2.7	Would the technology result in a significantly better performance than any commonly used technologies in the host country? Is any transfer of technology from any Annex-I Party involved?	/1/	DR	The appears to implement technology that results in a significantly better performance than any commonly used technologies in the host country, but to draw final conclusions on the issue, the following CL is to be answered. <i>b) The project participant is requested to submit the technical feasibility study</i> With regard to the transfer of technology, the PP explained during the site visit that the generators are of foreign construction (General Electric), while the digesters follow foreign design but are built locally. Technology transfer also took place via the involvement of consultants from ITC, which also operates in Switzerland.	~~CL~~	OK
A.3 Participation requirements (VVM para 51-54, 125-127)						
A.3.1	Do all participating Parties fulfil the participation requirements:	/1/	DR	Turkey is an Annex 1 Party to the Kyoto Protocol but is not included in Annex B. Since the project activity is a GS project and not a CDM project, the CDM participation requirements do not apply.		OK
A.4 Technical description of the project activity (VVM para 58-64)						
A.4.1	Is the project's location clearly defined?	/1/	DR	The project is located within the Adana Landfill		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
		I	in Sofulu district of Adana province. The project location is uniquely defined by its geographical coordinates: latitude Latitude: 37°3'1.93"N, Longitude: 35°23'44.22" E. These have been cross-checked by DNV during site visit with GPS device and found to be correct.		
A.5 Public funding of the project activity					
A.5.1 In case public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/1/ /6/	DR I	The project will be financed through a bank loan and equity, not through public funding /6/.		OK
B Application of a baseline and monitoring methodology					
B.1 Methodology applied (VVM para 65-76) and VVM para 136 (b) for small-scale project activities, as applicable)					
B.1.1 Does the project apply an approved methodology and the correct and valid version thereof?	/1/ /44/ /45/	DR	The project applies the two approved methodologies ACM0001 ver. 11 and AM0025 ver. 12. The versions used are the most recent and valid versions. ACM0001 ver. 11 is valid "from 11 Jun 09 onwards"; AM0025 ver. 12 is valid "from 13 Aug 10 onwards".		OK
B.1.2 If applicable, has any specific guidance provided by the CDM-EB in respect to the applied methodology been considered?	/1/ /53/	DR	Regarding methodology ACM0001 ver. 11, no specific guidance has been considered. Regarding methodology AM0025 ver. 12, no specific guidance has been considered		OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.2 Applicability of methodology (and tools) (VVM para 65-76) <i>Insert a row for each applicability criteria of the applied methodology (and tools)</i>						
Applicability of ACM0001 ver. 11						
B.2.1	How was it validated that project complies with the following applicability criterion? This methodology is applicable to landfill gas capture project activities, where the baseline scenario is the partial or total atmospheric release of the gas and the project activities include situations such as: (a) The captured gas is flared; and/or (b) The captured gas is used to produce energy (e.g. electricity/thermal energy). Emission reductions can be claimed for thermal energy generation, only if the LFG displaces use of fossil fuel <u>either in a boiler or in an air heater</u> . For claiming emission reductions for other thermal energy equipment (e.g. kiln), project proponents may submit a revision to this methodology (c) The captured gas is used to supply consumers through natural gas distribution network. If emissions reductions are claimed for displacing natural gas, project activities may use approved methodology AM0053.	/1/ /67/ to /71/	DR I	The methodology is applicable since the project is a LFG capture project activity, where - the baseline is the total atmospheric release of the gas and - the project activities include the following situations: (a) Not included. The captured LFG is only flared in case of emergency or unavailability of the project equipment for electricity production (b) The captured gas is used to produce electricity. During the site visit /67/ to /71/ DNV inspected the LFG collecting pipelines and electricity producing equipment to substantiate the claim expressed in the PDD (c) Not included as validated during site visit /67/ to /71/ by verifying that no pipeline was present from the LFG collection system to any premises outside the Adana landfill.		OK
Applicability of AM0025 ver. 12						
B.2.2	How was it validated that project complies with the following applicability criterion? The project activity involves one or a combination of the following waste treatment options for the fresh waste that in a given year would have otherwise been disposed of in a landfill: (a) The project activity involves: a composting process in aerobic conditions	/1/ /67/ to /71/	DR I	The project activity involves one or a combination of the following waste treatment options for the fresh waste that would have otherwise been disposed of in the Adana landfill: (a) Not involved (b) Not involved (in accordance with non-allowance under the GS) (c) Anaerobic digestion with biogas collection		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
(b) The project activity involves: gasification to produce syngas and its use (c) The project activity involves: Anaerobic digestion with biogas collection and flaring and/or its use (d) The project activity involves: Mechanical/thermal treatment process to produce refuse-derived fuel (RDF)/stabilized biomass (SB) and its use (e) The project activity involves: Incineration of fresh waste for energy generation, electricity and/or heat.			and flaring and its use. The use for electricity generation was observed by DNV during the site visit /67/ to /71/ (d) Not involved (e) Not involved.		
B.2.3 How was it validated that project complies with the following applicability criterion? In case of anaerobic digestion, gasification or RDF processing of waste, the residual waste from these processes is aerobically composted and/or delivered to a landfill.	/1/	DR I	During the site visit, the PP confirmed that the residue of the anaerobic digester is landfilled in the Adana landfill. The project boundary outlined in the PDD (Figure 2) /1/ is consistent with such design. <i>a) The project participant is requested to provide operating procedures or other reference that confirms that the residual waste from anaerobic digestion is delivered to the Adana landfill.</i>	~~CL2~~	OK
B.2.4 How was it validated that project complies with the following applicability criterion? In case of composting, the produced compost is either used as soil conditioner or disposed of in landfills.	/1/	DR I	The project activity does not involve composting.		OK
B.2.5 How was it validated that project complies with the following applicability criterion? In case of RDF/stabilized biomass processing, the produced RDF/stabilized biomass should not be stored in a manner that may result in anaerobic conditions before its use.	/1/	DR I	Neither RDF nor stabilized biomass is involved in the project activity.		OK
B.2.6 How was it validated that project complies with the following applicability criterion? If RDF/SB is disposed of in a landfill, project proponent shall provide degradability analysis on an annual basis to demonstrate that the methane generation, in the life-cycle of	/1/	DR I	Neither RDF nor stabilized biomass is involved in the project activity.		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
the SB is below 1% of related emissions. It has to be demonstrated regularly that the characteristics of the produced RDF/SB should not allow for re-absorption of moisture of more than 3%. Otherwise, monitoring the fate of the produced RDF/SB is necessary to ensure that it is not subject to anaerobic conditions in its lifecycle.					
B.2.7 How was it validated that project complies with the following applicability criterion? In the case of incineration of the waste, the waste should not be stored longer than 10 days. The waste should not be stored in conditions that would lead to anaerobic decomposition and, hence, generation of CH ₄ .	/1/	DR I	Waste incineration is not involved in the project activity.		OK
B.2.8 How was it validated that project complies with the following applicability criterion? The proportions and characteristics of different types of organic waste processed in the project activity can be determined, in order to apply a multiphase landfill gas generation model to estimate the quantity of landfill gas that would have been generated in the absence of the project activity.	/1/	DR I	The project participant declared they performed initial characterization of the waste conferred to landfill and inferred characteristics of organic waste for anaerobic digesters. However, no test method/results or other evidence was provided. <i>b) The project participant is required to supply the result of the test for characterization of waste to be landfilled and detailed explanation of how the characterization of waste for anaerobic digesters was inferred.</i>	~~CL2~~	OK
B.2.9 How was it validated that project complies with the following applicability criterion? The project activity may include electricity generation and/or thermal energy generation from the biogas, syngas captured, RDF/stabilized biomass produced, combustion heat generated in the incineration process, respectively, from the anaerobic digester, the gasifier, RDF/stabilized biomass combustor, and waste incinerator. The electricity can be exported to the grid and/or used internally at the project site. In the case of RDF/SB produced, the emission reductions can be claimed	/1/ /67/ to /71/	DR I	The project activity includes electricity generation from the biogas captured, with electricity exported to the grid, as observed by DNV on site review of power meters /67/ to /71/.		OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
only for the cases where the RDF/SB used for electricity and/or thermal energy generation can be monitored.					
B.2.10 How was it validated that project complies with the following applicability criterion? Waste handling in the baseline scenario shows a continuation of current practice of disposing the waste in a landfill despite environmental regulation that mandates the treatment of the waste, if any, using any of the project activity treatment options mentioned above.	/1/ /22/	DR I	Not applicable since there is no national law/regulation /22/ mandating the implementation of the anaerobic digesters for the treatment of waste. <i>c) Project participant is requested to include in baseline definition explicit mention that the baseline scenario constitutes continuation of current practice, and that it consisted of unmanaged and uncovered landfill.</i>	~~CL2~~	OK
B.2.11 How was it validated that project complies with the following applicability criterion? The compliance rate of the environmental regulations during (part of) the crediting period is below 50%; if monitored compliance with the MSW rules exceeds 50%, the project activity shall receive no further credit, since the assumption that the policy is not enforced is no longer tenable.	/1/ /22/	DR CC I	Not applicable since there is no national law/regulation /22/ mandating the implementation of the anaerobic digesters for the treatment of MSW. Nonetheless for further crosschecking copy of landfill permit is required. <i>d) Project participant is requested to provide copy of landfill permit (or interim documentation if the permit is not available).</i>	~~CL2~~	OK
B.2.12 How was it validated that project complies with the following applicability criterion? Local regulations do not constrain the establishment of RDF production plants/thermal treatment plants nor the use of RDF/stabilized biomass as fuel or raw material.	/1/	DR I	Neither RDF nor stabilized biomass is involved in the project activity.		OK
B.2.13 How was it validated that project complies with the following applicability criterion? In case of RDF/stabilized biomass production, project proponent shall provide evidences that no GHG emissions occur, other than biogenic CO ₂ , due to chemical reactions during the thermal treatment process (such as Chimney Gas Analysis report).	/1/	DR I	Neither RDF nor stabilized biomass is involved in the project activity.	~~CL2~~	OK
B.2.14 How was it validated that project complies with the following	/1/	DR	As checked during site visit, the Adana landfill		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
applicability criterion? The project activity does not involve thermal treatment process of neither industrial nor hospital waste.	/67/ to /71/	I	accepts not only municipal waste, but also medical waste collected through a dedicated collection system. After the arrival to the site, the medical waste is treated (sterilized) and thus reduced to municipal waste that is lawfully landfilled. Medical waste sterilization is subjected to tests by an internal laboratory, inspected every 6 months by an accredited external laboratory. However, compliance is impossible to evaluate since it is not clear if sterilization is a thermal treatment process. <i>e) The project participant is requested to describe equipment and to explain method used for the sterilization, in particular to clarify if thermal treatment is applied.</i>		
B.2.15 How was it validated that project complies with the following applicability criterion? In case of waste incineration, if auxiliary fossil fuel is added into the incinerator, the fraction of energy generated by auxiliary fossil fuel is no more than 50% of the total energy generated in the incinerator.	/1/	DR I	No waste incineration is involved in the project activity.		OK
B.2.16 How was it validated that project complies with the following applicability criterion? This methodology is not applicable to project activities that involve capture and flaring of methane from existing waste in the landfill. This should be treated as a separate project activity due to the difference in waste characteristics of existing and fresh waste, which may have an implication on the baseline scenario determination.	/1/	DR I	The LFG extraction and utilization is treated as a separate project activity. <i>To comply with AM0025 applicability conditions, the project participants are requested to correct the PDD to reflect that two separate project activities are included in the project, one being the LFG extraction and utilization project, the other is the anaerobic digesters biogas generation and utilization project.</i>	CAR2	OK
Applicability of “Tool to determine methane emissions avoided					

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
from disposal of waste at a solid waste disposal site”					
B.2.17 How was it validated that project complies with the following applicability criterion? The tool is not applicable to stockpiles	/1/	DR	The tools applicability conditions are not discussed in the PDD <i>The project participants are requested to include in the methodology applicability analysis also the applicability conditions for all methodological tools applied.</i>	~~CAR1~~	OK
B.2.18 How was it validated that project complies with the following applicability criterion? The tool is applicable in cases where the solid waste disposal site where the waste would be dumped can be clearly identified	/1/	DR	The tools applicability conditions are not discussed in the PDD <i>See CAR1</i>	~~CAR1~~	OK
B.2.19 How was it validated that project complies with the following applicability criterion? The tool is not applicable to hazardous wastes	/1/	DR	The tools applicability conditions are not discussed in the PDD <i>See CAR1</i>	~~CAR1~~	OK
Applicability of “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”					
B.2.20 How was it validated that project complies with the following applicability criterion? The tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only. Either no captive power plant is installed at the site of electricity consumption or, if any on-site captive power plant exists, it is not operating or it can physically not provide electricity to the source of electricity consumption. Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumption source and supply the source with electricity.	/1/	DR	The tools applicability conditions are not discussed in the PDD <i>See CAR1</i>	~~CAR1~~	OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
The captive power plant(s) is/are not connected to the electricity grid. Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumption source. The captive power plant(s) can provide electricity to the electricity consumption source. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumption source can be provided with electricity from the captive power plant(s) and the grid.					
B.2.21 How was it validated that project complies with the following applicability criterion? This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO ₂ emissions.	/1/	DR	The tools applicability conditions are not discussed in the PDD <i>See CAR1</i>	~~CAR1~~	OK
Applicability of Methodological “Tool to determine project emissions from flaring gases containing methane”					
B.2.22 How was it validated that project complies with the following applicability criterion? This tool is applicable under the following conditions: • The residual gas stream to be flared contains no other combustible gases than methane, carbon monoxide and hydrogen; • The residual gas stream to be flared shall be obtained from decomposition of organic material (through landfills, biogas digesters or anaerobic lagoons, among others) or from gases vented in coal mines (coal mine methane and coal bed methane).	/1/	DR	The tools applicability conditions are not discussed in the PDD <i>See CAR1</i>	~~CAR1~~	OK
B.2.23 Is the selected baseline one of the baseline(s) described in the methodology and this hence confirms the applicability of the	/1/ /44/	DR	According to the PDD, the selected baseline is: ”Disposal of the waste at a landfill without the		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
methodology?	/45/		capture and/or flaring of landfill gas. The electricity is generated by existing grid-connected power plants”. This is one of the baseline(s) described in ACM0001. Methodology AM0025 instead does not specify the baseline to be adopted, but lists the following alternatives as the only applicable: c) The most plausible baseline scenario for the waste treatment component is identified as either the disposal of the waste in a landfill without capture of landfill gas (M3) or the disposal of the waste in a landfill where the landfill gas is partially captured and subsequently flared (M2); d) The most plausible baseline scenario for the energy component of the baseline scenario is one of the following scenarios described in Table 1 below: 3) The disposal of the waste in a landfill site without capturing landfill gas or the disposal of the waste in a landfill site where the landfill gas is partly captured and subsequently being flared. The electricity is obtained from an existing/new fossil based captive power plant or from the grid and heat from an existing/new fossil fuel based boiler 4) The disposal of the waste in a landfill site without capturing landfill gas or the disposal of the waste in a landfill site where the landfill gas is partly captured		

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				and subsequently being flared. The electricity and/or heat are generated by an existing/new fossil fuel based cogeneration plant. The selected baseline fulfils condition a) above (“disposal of the waste at a landfill without the capture and/or flaring of landfill gas”) and condition b) 1) (“the electricity is generated by existing grid-connected power plants”).		
B.3 Project boundary (VVM para 78-80)						
B.3.1	What are the project’s system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/	DR	The project’s boundaries have been defined as the site of the project activity where the gas is captured and destroyed (LFG collection system, transportation pipeline network, power generation system and flaring system) and where the organic waste is treated (waste sorting facility, anaerobic digesters, transportation pipeline network, power generation system and flaring system). The project will use and feed electricity to the national grid and the grid power sources (national grid and off-grid captive power generation) are included in the project boundary. <i>Since the project site contains facilities that are outside the project boundary (namely, the sorting facility and the gasifier), the project participants are requested to describe in detail how these will be effectively and conservatively separated.</i>	CL3	FAR1
B.3.2	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	/1/	DR	Baseline emissions: CH₄ due to emissions from decomposition of waste at the landfill site; CO₂ emissions from electricity consumption. Project emissions: CO₂ emissions due to on-site		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				electricity consumption for project activity from the grid; N ₂ O direct emissions from the waste treatment process (from anaerobic digestion of the waste); CH ₄ direct emissions from the waste treatment process (leakage from the anaerobic digester). According to the approved baseline methodologies no leakage effects need to be accounted for under these methodologies.		
B.3.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR I	No, there are no other emission sources which contribute with more than 1% of the estimated emission reductions of the project.		OK
B.4 Baseline scenario determination (VVM para 81-88, 105-107) <i>Ensure that the evaluation of all alternatives provided in the PDD and required by the methodology and also possible alternatives/offshoots of alternatives are discussed. Check that all alternatives required to be considered by the methodology are included in the final PDD. If baseline alternatives required to be considered by the methodology are considered not applicable, please assess the justification for this.</i>						
B.4.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/ /44/ /45/	DR	The following list of alternative baseline scenarios was determined: 1) The project activity undertaken without being registered as a VER project; 2) Disposal of the waste at a landfill where landfill gas is captured and flared. The electricity is generated by existing grid connected power plants; 3) Disposal of the waste at a landfill without the capture and/or flaring of landfill gas.		OK

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			The electricity is generated by existing grid connected power plants. The alternatives to baseline electricity production that required construction of new power plants (P2, P3, P4 and P5) were discarded because the project activity is located in an area allocated for land filling and therefore there is no possibility to develop a power plant. The list of baseline scenario is complete since it includes all meaningful combinations of alternatives proposed by methodologies and no further alternatives could be found.		
B.4.2 How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR	Scenario 1 (The project activity undertaken without being registered as a VER project) has been eliminated because of financial barriers as further detailed in the barrier analysis section. Scenario 2 (Disposal of the waste at a landfill where landfill gas is captured and flared. The electricity is generated by existing grid connected power plants) has been eliminated because of common practice barriers as further detailed in the barrier analysis section. Scenario 3 (Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants) has not been eliminated.		OK
B.4.3 What is the baseline scenario?	/1/	DR	The identified baseline scenario is "Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants".		OK
B.4.4 Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/ /44/	DR	Yes, the baseline has been determined in accordance with the guidance in ACM0001 ver.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	/45/		11 and AM0025 ver. 12: The PDD does in fact develop a list of alternatives in accordance with the baseline alternatives given by the methodologies and then proceeds with eliminating such alternatives using 'Tool for demonstration and assessment of additionality' as required by both methodologies.		
B.4.5 Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	No conservative assumptions have been used. DNV does not see this as an issue, as in our opinion the current project and applied methodologies do not provide for further conservative assumptions.		OK
B.4.6 Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /71/ /21/	DR	The baseline scenario determination takes into account that no regulation requires the Adana landfill to implement the project activity or any other measure. As confirmed in the interview with Mr Sener Hacisalihoglu /71/, the national law from 26 Mar 2010 mandates only new landfills to be covered (thus excluding the existing Adana landfill). Furthermore, the "Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy" /21/ was enacted on 18 May 2005, with the purpose to expand the utilization of renewable energy resources for electricity generation in Turkey but does not mandate implementation of landfill projects.		OK
B.4.7 Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /71/	DR CC	The information used to determine the baseline scenario, and in particular the common practice in the host country and national sectoral policies, have been cross-checked during an interview with one representative of Ankara Municipality's Environmental Services /71/, who confirmed the	~~CL4~~	OK

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			motivations presented in the PDD. Links cross-checked: - 10 Reference: The official webpage of EMRA. http://www.epdk.org.tr/mevzuat/kanun/elektrik/elektrik_piyasalari_kanunu.pdf - 11 Reference: The official webpage of EMRA. www.epdk.org.tr/mevzuat/diger/yeni_lenebi_lir/yeni_lenebi_lir.doc - 12 Reference: The official webpage of the Ministry of Environment and Forestry. www.cevreorman.gov.tr/yasa/k/2872.doc. <i>The PDD does not contain updated links for all cited supporting evidences. Project participants are requested to update the following links to on-line resources in the PDD to ensure they can be opened by third parties.</i>		
B.4.8 Is the baseline determination adequately documented in the PDD? • All assumptions and data used by the project participants are listed in the PDD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed	/1/	DR	<i>Not possible to validate until CL4 is solved because of lack of data.</i>	CL4	OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
CDM project activity					
B.5 Additionality determination (VVM para 94-121) and VVM para 137 for small-scale project activities, as applicable)					
B.5.1 What approach/tool does the project use to assess additionality? Is this in line with the methodology?	/1/	DR	The project uses the ‘Tool for demonstration and assessment of additionality’ (Version 05.2). This is in line with both ACM0001 ver. 11 and AM0025 ver. 12 methodologies. The following list of alternatives was determined (idem list of alternative baseline scenarios): 5. The project activity undertaken without being registered as a VER project; 6. Disposal of the waste at a landfill where landfill gas is captured and flared. The electricity is generated by existing grid connected power plants; 7. Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants.		OK
B.5.2 Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives?	/1/ /21/ /71/	DR CC	Yes, reference is made to “The Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy” /21/. Info was cross-checked and confirmed by local representative of Ankara Municipality’s Environmental Services /71/.		OK
B.5.3 Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	<i>Not possible to validate until CL4 is solved because of lack of evidence.</i>	~~CL4~~	OK
B.5.4 What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/1/	DR	The project additionality is based on barrier analysis. An investment analysis has not been performed.		OK
Prior consideration of CDM (VVM para 98-103)					
B.5.5 What is the evidence for serious consideration of CDM prior	/1/	DR	N/A.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
to the time of decision to proceed with the project activity?	/11/ /12/ /3/		The project does not seek CDM status.		
B.5.6 If the starting date is after 2 August 2008 and before the global stakeholder consultation, has the DNA and UNFCCC confirmed that the project participants have informed in writing of the project's intention to seek CDM status?	/1/	DR	N/A. See above.		OK
Continuous efforts to secure CDM status (only to be completed if starting date is before 2 August 2008)					
B.5.7 What initiatives were taken by the project participants from the starting date of the project activity to the start of validation in parallel with the physical implementation of the project activity?	/1/	DR	N/A. See above.		OK
B.5.8 When did the construction of the project activity start?	/1/	DR	N/A. See above.		OK
B.5.9 When was the project commissioned?	/1/	DR	N/A. See above.		OK
B.5.10 Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status?	/1/	DR	N/A. See above.		OK
Investment analysis (VVM para 108-114) <i>The list of questions below must be adjusted to the parameters in the investment analysis relevant to the project under validation.</i>					
B.5.11 Does the project activity or any of the remaining alternatives generate revenues apart from CDM? Is this reflected in the PDD?	/1/	DR	Scenario 1 (The project activity undertaken without being registered as a VER project) is only alternative that does generate revenues (from the sale of electricity generated). In PDD this is not reflected in the performance of an investment analysis, but only in the barrier analysis (investment barrier regarding "Impact of		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.12 Do any of the alternatives to the project activity involve investment? Is this reflected in the PDD?	/1/	DR	feed-in tariff on investment”). Neither Scenario 2 (Disposal of the waste at a landfill where landfill gas is captured and flared. The electricity is generated by existing grid connected power plants) nor Scenario 3 (Disposal of the waste at a landfill without the capture and/or flaring of landfill gas. The electricity is generated by existing grid connected power plants) involve investments by the project participant. In PDD this is not reflected e.g. in the performance of an investment analysis.		OK
B.5.13 Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/1/	DR	Not applicable: the PP does not use an investment analysis to assess additionality.		OK
B.5.14 Is the benchmark/discount rate the latest available at the time of decision?	/1/	DR	Not applicable.		OK
B.5.15 What is the financial indicator? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/1/	DR	Not applicable.		OK
B.5.16 Are the underlying assumptions appropriate, e.g. what is considered as waste in the baseline is considered to have zero value?	/1/	DR	Not applicable.		OK
B.5.17 Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country?	/1/	DR	Not applicable.		OK
B.5.18 Is the time period of the investment analysis and operating time of the project realistic? Has salvage value been taken into account? Is working capital returned in the last year of operation?	/1/	DR	Not applicable.		OK
B.5.19 When a feasibility study report or similar approved by the government is used as the basis for the investment analysis: Can it be confirmed that the values used in the PDD are fully consistent with the FSR and is the period of time between	/1/	DR	Not applicable.		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
finalization of the FSR and the investment decision adequate?					
B.5.20 How was the amount of output (e.g. sales of electricity) assessed? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/	DR	☐ The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval ☐ The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company) ☐ Other approach. <i>Provide details on how the load factor was validated::</i> Not applicable.		OK
B.5.21 How was the output price (e.g. electricity price) assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants <i>Provide details on how the output price was validated:</i> Not applicable.		OK
B.5.22 How were the investment costs assessed? Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements, contracts and annual financial reports related to the project and the project participants <i>Provide details on how the investment costs were validated:</i> Not applicable.		OK
B.5.23 How were the O&M costs assessed? Were the data available	/1/	DR	☐ Cross-check against third-party or publicly		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.			available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants <i>Provide details on how the O&M costs were validated:</i> Not applicable.		
B.5.24 Describe the assessment of the other input parameters. Were the data available and valid at the time of decision? Remember to include all the data sources used and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95.	/1/	DR	☐ Cross-check against third-party or publicly available sources (e.g. invoices or price indices) ☐ Review of feasibility reports, public announcements and annual financial reports related to the project and the project participants <i>Provide details on how other input parameters were validated:</i> Not applicable.		OK
B.5.25 Was the financial calculation spreadsheet verified and found to be correct?	/1/	DR	Not applicable.		OK
B.5.26 Sensitivity analysis: Have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified? Has possible correlation between the parameters been considered?	/1/	DR	Not applicable.		OK
B.5.27 Sensitivity analysis: Is the range of variations is reasonable in the project context?	/1/	DR	Not applicable.		OK
B.5.28 Have the key parameters been varied to reach the benchmark and the likelihood of this to happen been justified to be small?	/1/	DR	Not applicable.		OK
Barrier analysis (VVM para 115-118)					
B.5.29 Are the barriers identified complimentary to a potential investment analysis? Does the barrier have a clear impact on the financial returns so that it can be assessed in an investment analysis? Each barrier is discussed separately.	/1/ /6/	DR	The financing institution provided a letter /6/ stating that revenues from VERs were included in the financial assessment of the project and that the decision for financing the project was based more on the project activity than on the Generic	~~CAR3~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			Project. <i>The project participant is requested to provide a more relevant statement by the financing institution, that clearly states that:</i> - only the project activity (GS, VER generating) was taken into account in the financial analysis excluding facilities outside the project activity boundaries; - the financing was conditional to pursuing GS registration. <i>Should this approach not succeed, the project participant is requested to submit a full investment analysis.</i>		
B.5.30 How were the <u>investment barriers</u> assessed to be real? Are the investment barriers substantiated by a source independent of the project participants?	/1/ /6/ /53/	DR I	The investment barriers consist of difficulties in securing investment capital for the project activity. This has been supported by a statement issued by the financing institution stating that VERs “have been taken into the consideration during our evaluation regarding the credit and considered as a basis for our credit decision” /6/. This is in line with Guideline 6 of EB 50 Annex 13 /53/. See CAR3. <i>a) The project participants are requested to explicitly explain in the PDD that, as confirmed during the site visit, the additionality is only based on the investment barriers and that the other barriers (new technology, uncertainty in generation, prevailing practice), are provided just to support this barrier.</i>	~~CAR3~~ CL5	OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.31 How does GS registration alleviate the investment barriers?	/1/	DR	<i>b) The project participants are requested to clarify how the GS registration would alleviate the claimed investment barriers.</i>	~~CL5~~	OK
B.5.32 Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/ /6/	DR	Based on the above described bank letter, the project activity is not clearly prevented from the lack of financing. <i>See CAR3.</i> Scenario 2 (disposal of the waste at a landfill where landfill gas is captured and flared) and Scenario 3 (Disposal of the waste at a landfill without the capture and/or flaring of landfill gas) do not entail investment by the project participant and are therefore not prevented under the same circumstances.	~~CAR3~~	OK
B.5.33 How were the <u>technological barriers</u> assessed to be real? Are the technological barriers substantiated by a source independent of the project participants?	/1/	DR	The PP does claim technological barriers because the project applies “new technology” and because there is “uncertainty in the electricity generation” The claimed technological barriers cannot be validated by DNV because as it is insufficiently motivated. <i>a) The project participants are requested to explicitly explain in the PDD that, as confirmed during the site visit, the additionality is only based on the investment barriers and that the other barriers (new technology, uncertainty in generation, prevailing practice), are provided just to support this barrier.</i>	~~CL5~~	OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.5.34 How does GS registration alleviate the technological barriers?	/1/	DR	See CAR3	~~CAR3~~	OK
B.5.35 Is the project activity prevented by the technological barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See CAR3	~~CAR3~~	OK
B.5.36 How were the <u>barriers due to prevailing practise</u> assessed to be real? Are the barriers due to prevailing practise substantiated by a source independent of the project participants?	/1/	DR	The PP does claim barriers due to prevailing practice. The claimed prevailing practice barriers cannot be validated by DNV because it is insufficiently motivated. <i>a) The project participants are requested to explicitly explain in the PDD that, as confirmed during the site visit, the additionality is only based on the investment barriers and that the other barriers (new technology, uncertainty in generation, prevailing practice), are provided just to support this barrier.</i>	~~CL5~~	OK
B.5.37 How does GS registration alleviate the barriers due to prevailing practise?	/1/	DR	See CAR3	~~CAR3~~	OK
B.5.38 Is the project activity prevented by the barriers due to prevailing practise and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See CAR3	~~CAR3~~	OK
B.5.39 How were the <u>other barriers</u> assessed to be real? Are the other barriers substantiated by a source independent of the project participants?	/1/	DR	Not applicable: no other barriers were considered.		OK

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B.5.40 How does GS registration alleviate the other barriers?	/1/	DR	Not applicable.		OK
B.5.41 Is the project activity prevented by the other barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	Not applicable.		OK
Common practice analysis (VVM para 119-121)					
B.5.42 What is the geographical scope of the common practice analysis? Is this justified?	/1/	DR	Impossible to evaluate since geographical scope is not clear. <i>a) The project participants are requested to clarify what is the geographical scope of the common practice analysis and what was the rationale for its selection.</i> The PDD has been updated with a description of the selected geographical and technological scope applied in the common practice analysis /1/.	~~CL6~~	OK
B.5.43 What is the scope of technology and size (e.g. capacity of power plant) for the common practice analysis and how has this been justified?	/1/	DR	Impossible to evaluate since scope of technology and size is not clear. <i>b) The project participants are requested to clarify what is the scope of technology and size (capacity of the generation equipment) of the common practice analysis and what was the rationale for its selection.</i>	~~CL6~~	OK
B.5.44 What is the data source(s) used for the common practice analysis?	/1/	DR	Two sources have been used: the Turkish Statistics Institute official website /57/ and the official webpage of EMRA (Licenses) /58/.		OK
B.5.45 How many similar non-CDM/VER-projects exist in the region within the scope?	/1/	DR	All existing waste treatment facilities not making use of CERs/VERs are too deviating in capacity for the comparison to be meaningful.	~~CL6~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<i>c) The project participants are requested to also include GS VER projects in the common practice analysis (appropriately disclosing which project is VER and which is not).</i>		
B.5.46 How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	Not applicable as there are no similar activities within Turkey among projects that do not enjoy VER status.		OK
B.5.47 What is the conclusion of the common practice analysis?	/1/ /71/	DR	It is not common practice in Turkey to equip landfills with biogas extraction systems and anaerobic digesters.		OK
Conclusion					
B.5.48 What is the conclusion with regard to the additionality of the project activity?	/1/	DR	CAR3, CL4, CL5 and CL6 have been satisfactorily closed by the project participant, and discussed in section 4.5 of the validation report.		OK
B.6 Calculations of GHG emission reductions					
Data and parameters that are available at validation and that are not monitored (VVM para 199-203)					
B.6.1 How was the GWP_{CH_4} - Global warming potential of CH_4 available at validation verified?	/1/ /44/	DR	The value of 21 tCO_2e/tCH_4 for GWP_{CH_4} is given by approved methodology ACM0001.		OK
B.6.2 How was the GWP_{N_2O} - Global warming potential of N_2O available at validation verified?	/1/ /56/	DR	The project activity applies a value of 310 tCO_2e/tCH_4 , which was validated against IPCC 2007 /56/.		OK
B.6.3 How was the D_{CH_4} - Density of methane available at validation verified?	/1/ /44/	DR	The value of 0.0007168 tCH_4/m^3 for D_{CH_4} is given by approved methodology ACM0001.		OK
B.6.4 How were the following parameters available at validation verified? - EG_{gross} - Gross electricity production by fossil fuel power sources (2007-2009); - $FC_{i,y}$ - Amount of fossil fuel type i consumed in the project electricity system by generation sources in year y (2007-	/1/	DR	The values applied for last three available years (2007-2009) were derived from Teias (national grid company) publicly available data. <u>For EG_{gross}:</u> http://www.teias.gov.tr/ist2007/40.xls http://www.teias.gov.tr/istatistik2008/41.xls		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.												
	2009); - Electricity Imports; - NCV _{i,y} - Net calorific value (energy content) of fossil fuel type <i>i</i> in year <i>y</i> ; - Capacity additions;			http://www.teias.gov.tr/istatistik2009/37(06-09).xls For FC _{i,y} : http://www.teias.gov.tr/istatistik2009/46.xls For Electricity Imports: http://www.teias.gov.tr/istatistik2009/26(06-09).xls For NCV _{i,y} : http://www.teias.gov.tr/istatistik2009/46.xls For Capacity additions: http://www.teias.gov.tr/istatistik2009/37(06-09).xls .														
B.6.5	How was the EF _{CO₂,i,y} - CO ₂ emission factor of fossil fuel type <i>i</i> in year <i>y</i> available at validation verified?	/1/ /60/	DR	The data are taken from the 2006 IPCC Guidelines /60/: <table><tr><td>Natural Gas</td><td>0,054</td></tr><tr><td>Lignite</td><td>0,091</td></tr><tr><td>Coal</td><td>0,095</td></tr><tr><td>Fuel Oil</td><td>0,073</td></tr><tr><td>Hydro</td><td>0</td></tr><tr><td>Wind</td><td>0</td></tr></table> Not clear: - why the rounded “lower” values are used instead of the unrounded “default emission factor” values - if “anthracite” and “gas/diesel oil” are representative for the Teias fossil fuel types “coal” and “fuel oil”. a) The project participants are required to explain their choice for the rounded lower values. Furthermore, they shall explain why the TEIAS: - “coal” would be of the IPCC type “anthracite”	Natural Gas	0,054	Lignite	0,091	Coal	0,095	Fuel Oil	0,073	Hydro	0	Wind	0	CL7	OK
Natural Gas	0,054																	
Lignite	0,091																	
Coal	0,095																	
Fuel Oil	0,073																	
Hydro	0																	
Wind	0																	

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				- "fuel oil" would be of the IPCC type "gas/diesel oil".		
B.6.6	How was the $\eta_{m,y}$ - Average net energy conversion efficiency of power unit m in year y available at validation verified?	/1/	DR	Impossible to assess since source of data is not indicated. <i>Missing evidences to assess value. See CL4</i>	~~CL4~~	OK
B.6.7	How was the η - Model correction factor to account for model uncertainties available at validation verified?	/1/ /48/	DR	The applied value of 0.9 derives directly from "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" /48/. This is the only value allowed by tool.		OK
B.6.8	How was the OX - Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste) available at validation verified?	/1/	DR	The applied value of 0 derives from "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" /48/. The tool in fact allows to use 0.1 for managed solid waste disposal sites that are covered with oxidizing material such as soil or compost, and 0 for all other sites. 0 is the correct value to apply if the selected baseline would be the landfill as it was before project implementation (unmanaged and uncovered). Therefore, <i>c) Project participant is requested to include in baseline definition explicit mention that the baseline scenario constitutes continuation of current practice, and that it consisted of unmanaged and uncovered landfill.</i>	~~CL2~~	OK
B.6.9	How was the F - Fraction of methane in the SWDS gas (volume fraction) available at validation verified?	/1/ /48/	DR	The applied value of 0.5 derives directly from "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" /48/. A default value of 0.5 is recommended by IPCC.		OK
B.6.10	How was the DOC_f - Fraction of degradable organic carbon	/1/	DR	The applied value of 0.5 derives directly from	~~CL2~~	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
(DOC) that can decompose available at validation verified?		/48/		“Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” /48/. This is a tool default value based on IPCC guidelines. <i>b) The project participant is required to supply the result of the test for characterization of waste to be landfilled and detailed explanation of how the characterization of waste for anaerobic digesters was inferred.</i>		
B.6.11	How was the MCF - Methane correction factor available at validation verified?	/1/ /48/ /69/ /70/	DR I	In accordance to the “Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site” version 5 /48/, a value of 0.8 has been used because the selected baseline would be the unmanaged landfill, with average dept of 20-30 meters as witnessed by DNV during the site visit /69/ /70/. <i>c) Project participant is requested to include in baseline definition explicit mention that the baseline scenario constitutes continuation of current practice, and that it consisted of unmanaged and uncovered landfill.</i>	~~CL2~~	OK
B.6.12	How was the DOC_j - Fraction of degradable organic carbon (by weight) in waste type j available at validation verified?	/1/ /48/ /60/	DR	OK, as correctly derived from “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site”, which in turn applies IPCC 2006 values.		OK
B.6.13	How was the k_j - Decay rate for the waste type j available at validation verified?	/1/	DR	Impossible to assess since source of MAT and MAP/PET is not indicated. <i>b) In the definition of k_j the project participants are requested to include relevant references documenting MAT and MAP or MAP/PET for the project site.</i>	~~CL7~~	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
Baseline emissions (VVM para 89-93)						
B.6.14	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	To be determined after CL7 has been closed.	~~CL7~~	OK
B.6.15	Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	<i>Impossible to determine until CL2 is resolved</i> <i>c) Project participant is requested to include in baseline definition explicit mention that the baseline scenario constitutes continuation of current practice, and that it consisted of unmanaged and uncovered landfill.</i>	~~CL2~~	OK
B.6.16	Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Uncertainties are not explicitly addressed by the PP in the ex ante baseline emissions, apart from the model correction factor (0.9) which is imposed by the methodology.		OK
Project emissions (VVM para 89-93)						
B.6.17	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Both ex ante and ex post calculations are presented in a complete and transparent manner, in line with methodologies ACM0001 ver. 11 and AM0025 ver. 12. A summary is given below. The ex ante project emissions have been calculated according to ACM0001 ver. 11 and AM0025 ver. 12. For this calculation it is assumed that all the electricity consumed by the project activity will be produced by grid power plants. The ex post calculated project emissions will be based on data from electricity consumption from the national grid.		OK
B.6.18	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Conservative assumptions have been used when calculating the project emissions.		OK
B.6.19	Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Uncertainties are not explicitly addressed by the PP. Nevertheless, considering the fact that		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				ACM0001 ver. 11 and AM0025 ver. 12 have become well established methodologies these days, and were correctly applied by the PP, this is not considered an issue by DNV.		
Leakage (VVM para 89-93)						
B.6.20	Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	According to the approved methodologies ACM0001 ver. 11 and AM0025 ver. 12 no leakage effects need to be accounted.		OK
B.6.21	Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	Not applicable.		OK
B.6.22	Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	Not applicable.		OK
Emission Reductions (VVM para 89-93)						
B.6.23	Algorithms and/or formulae used to determine emission reductions: - All assumptions and data used by the project participants are listed in the PDD and related document submitted for registration. The data are properly referenced - All documentation is correctly quoted and interpreted. - All values used can be deemed reasonable in the context of the project activity - The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration.	/1/	DR	CL2, CL4 and CL7 have been satisfactorily closed by the project participant, and discussed in section 4.7 of the validation report. Based on the calculations and results presented, the implementation of the project activity will result in an average <i>ex-ante</i> estimation of emission reduction conservatively calculated to be 322 947 tCO₂e per year for the selected crediting period. DNV concludes that: - All assumptions and data used by the project participants are listed in the PDD and related document submitted for registration. The data are properly referenced; - All documentation is correctly quoted and interpreted. - All values used can be deemed reasonable in the context of the project activity		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				The methodology has been correctly applied to calculate the emission reductions and this can be replicated by the data provided in the PDD and supporting files to be submitted for registration.		
B.7 Monitoring plan (VVM para 122-124)						
Data and parameters monitored						
B.7.1	Do the means of monitoring described in the plan comply with the requirements of the methodology?	/1/	DR	In general there is compliance with ACM0001 ver. 11 and AM0025 ver. 12. However: <i>a) The project participants are requested to include a diagram/flow-sheet in the PDD showing the measurement equipment.</i> <i>b) The project participants are requested to provide details on how the facilities outside the project boundaries will be monitored (especially for electricity generation and electricity consumption).</i>	CL8	OK
B.7.2	Does the monitoring plan contains all necessary parameters, and are they clearly described?	/1/	DR	The following parameters are included in the monitoring plan: - $LFG_{total,y}$ Total amount of landfill gas captured at normal temperature and pressure; - $LFG_{flare,y}$ Amount of landfill gas flared at normal temperature and pressure; - $LFG_{electricity,y}$ Amount of landfill gas combusted to produce electricity at normal temperature and pressure; - T Temperature of the landfill gas; - P Pressure of the landfill gas; - T_{flare} Temperature in the exhaust gas of the	CL8	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			enclosed flare; - $\eta_{flare,h}$ Flare efficiency in hour h; - w_{CH4} Methane fraction in the landfill gas; - Operation of the energy plant; - $EC_{PJ,j,y}$ Amount of electricity consumed from the grid as a result of the project activity; - $TDL_{j,y}$ Average technical transmission and distribution losses for providing electricity for source j, in year y; - $SG_{a,y}$ Stack volume flow rate This will be measured continuously and aggregated annually; - $MC_{N2O,a,y}$ Concentration of N_2O in stack; - $MC_{CH4,a,y}$ Concentration of CH_4 in stack gas; - W_x Total amount of organic waste prevented from disposal and fed into the anaerobic digester in year x; <i>c) The project participants are required to supply (or include in the PDD) a report on how the historical amount of waste was calculated and how the future amounts were derived</i> - $p_{n,j,x}$ Weight fraction of the waste type j in the sample n collected during the year x; - z Number of samples collected during the year x; - MB_y Methane produced in the landfill in the absence of the project activity in year y; - $EG_{d,y}$ The amount of electricity generated utilizing the biogas and LFG;		

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				- EL_{LFG} Net amount of electricity generated using LFG.		
B.7.3	In case parameters are measured , is the measurement equipment described? Describe each relevant parameter.	/1/	DR	The following list depicts the parameters measured and the corresponding measuring equipment: - $LFG_{total,y}$ Total amount of landfill gas captured at normal temperature and pressure; measured by flow meter on the main pipe from landfill extraction to the booster. - $LFG_{flare,y}$ Amount of landfill gas flared at normal temperature and pressure; the amount flared is measured on the pipe from the booster to the flare. - $LFG_{electricity,y}$ Amount of landfill gas combusted to produce electricity at normal temperature and pressure; measured by flow meter on the pipe from booster to engines (cumulative). - T Temperature of the landfill gas; measured by temperature meter on the main pipe from landfill extraction to the booster. - P Pressure of the landfill gas; measured by pressure meter on the main pipe from landfill extraction to the booster. - T_{flare} Temperature in the exhaust gas of the enclosed flare; This will be measured continuously by means of a thermocouple; - w_{CH4} Methane fraction in the landfill gas; measured continuously by gas analyzer; - Operation of the energy plant; This is	~~CL8~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			measured continuously by plant control system, while the total quantity is calculated annually; - $EC_{PJ,j,y}$ Amount of electricity consumed from the grid as a result of the project activity; measured by electricity meter <i>b) The project participants are requested to provide details on how the facilities outside the project boundaries will be monitored (especially for electricity generation and electricity consumption).</i> - $SG_{a,y}$ Stack volume flow rate; will be calculated based on other available variables and quarterly physical measures ; - $MC_{N2O,a,y}$ Concentration of N_2O in stack This will be measured by quarterly physical measures <i>f) The PP is requested to provide details of the measuring equipment used.</i> - $MC_{CH4,a,y}$ Concentration of CH_4 in stack gas: measured continuously by gas analyzer. - W_x Total amount of organic waste prevented from disposal and fed into the anaerobic digester in year x: this will be measured by means of a scale on the belt feeding the digesters. Measuring will be continuous, and data aggregated annually. - $p_{n,j,x}$ Weight fraction of the waste type j in the sample n collected during the year x Sampling will take place at least 4 times a year. Sample measurements were performed by PP		

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				in 2009 based in incoming waste. The composition of historical waste is not known. - z Number of samples collected during the year x; recorded by project participant - EG_{d,y} The amount of electricity generated utilizing the biogas and LFG, measured by electricity meters. - EL_{LFG} Net amount of electricity generated using LFG. <i>d) The project participants are requested to update the PDD so that for all measured parameters it is clearly described the measuring equipment, the measuring accuracy, the requirements for maintenance and calibration and the monitoring frequency.</i> The PDD /1/ has been updated to indicate the type of equipment, maintenance, calibration procedures and monitoring frequency of monitored parameters.		
B.7.4	In case parameters are measured, is the measurement accuracy addressed and deemed appropriate? Describe each relevant parameter.	/1/	DR	Impossible to evaluate since there is measuring equipment that is not sufficiently documented. <i>See CL8</i>	~~CL8~~	OK
B.7.5	In case parameters are measured, are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate? Describe each relevant parameter.	/1/	DR	Impossible to evaluate since there is measuring equipment that is not sufficiently documented. <i>See CL8</i>	~~CL8~~	OK
B.7.6	Is the monitoring frequency adequate for all monitoring parameters? Describe each parameter.	/1/	DR	Impossible to evaluate since there are parameters that are not sufficiently documented. <i>See CL8</i>	~~CL8~~	OK
B.7.7	Is the recording frequency adequate for all monitoring	/1/	DR	Impossible to evaluate since there are parameters	~~CL8~~	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
parameters? Describe each parameter.				that are not sufficiently documented. <i>See CL8</i>		
Ability of project participants to implement monitoring plan						
B.7.8	How has it been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/	DR	Based on verification experience in similar projects elsewhere (among others, UNFCCC nr 1921, Durban Bisasar Road), DNV is in a position to confirm that the choice of monitoring arrangements for the project activity are common and should be feasible for the project design. Given the sensitivity of the monitoring equipment, regular maintenance and calibration will be required though.		OK
B.7.9	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?			<i>e) The project participants are requested to include in the PDD procedures identified for day-to-day records handling and type and duration of data storage (be kept for two years after the end of the crediting period or the last issuance of VERs, for this project activity, whichever occurs later).</i>	~~CL8~~	OK
B.7.10	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/1/	DR	<i>See above.</i>	~~CL8~~	OK
B.7.11	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/	DR	<i>See above.</i>	~~CL8~~	OK
Monitoring of sustainable development indicators/ environmental impacts						
B.7.12	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /55/	DR	Monitoring of sustainable development indicators is not required by law (Turkish Court of Accounts /55/). With regards to environmental		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			impacts, these were assessed in the EIA performed, which was then approved by local authorities /8/.		
B.7.13 Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	No, the monitoring plan does not foresee in the collection and archiving of relevant data concerning environmental, social and economic impacts.		OK
B.7.14 Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR	Not applicable: no monitoring of sustainable development indicators/ environmental impacts.		OK
C Duration of the project activity / crediting period					
C.1.1 Start date of project activity (VVM para 99-100, 104)					
C.1.2 How has the starting date of the project activity been determined? What are the dates of the first contracts for the project activity? When was the first construction activity?	/1/ /12/	DR	The starting date is fixed to 24 August 2009, date of signature of the first contract for the construction of the project activity /12/. Nonetheless this date and the general project activity timeline are not explained in the PDD. <i>a) The project participant does not give sufficient information in the PDD regarding the project activity starting date and implementation timeline. The project participants are requested to include in the PDD a detailed timeline for the project activity including starting date and how this was determined, and date of the first construction activity, together with any prior consideration event/documentation.</i>	~~CL9~~	OK
C.1.3 Is the stated expected operational lifetime of the project activity reasonable?	/1/	DR	The alleged operational lifetime of the project activity is 30 years. The PP intends to operate the GS project during 21 years (3 x 7 years). There is no sufficient evidence provided to support this	~~CL9~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			estimated operational lifetime. <i>b) The project participants are requested to supply evidence that all parts of the project activity (mainly LFG and the digesters) will be able to operate for the claimed 30 year project lifetime.</i>		
C.1.4 Is the start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable?	/1/	DR	The start date is 01 June 2010, coinciding with the first generation of electricity, but no evidence is provided to support this claim. <i>c) The project participants are requested to supply evidence for the crediting period start date, documenting the start of LFG electricity generation by mean of energy invoices and internal production reports.</i> Conclusion on the reasonability of crediting period duration cannot be reached until above CLs are solved.	~~CL9~~	OK
D Environmental Impacts (VVM para 131-133) and VVM para 136 (d) for small-scale project activities, as applicable)					
D.1.1 Are there any host country requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? Does the approval contain any conditions that need monitoring?	/1/ /8/ /9/ /22/	DR I	The host country requires EIA /22/. A copy of the EIA was submitted during the site visit /9/. The EIA was approved by local authorities, /8/ which implies adherence to host country requirements. No condition for monitoring were included in the approval document. <i>The PDD states that the project did not require EIA, but during the site visit a copy of EIA was given to DNV upon request. The PP is to clarify this point and to provide date of EIA (no date was</i>	~~CAR4~~	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			<i>available on the printed document).</i>		
D.1.2 Does the project comply with environmental legislation in the host country?	/1/ /8/ /55/	DR	As proved by the EIA approval /8/, the project complies with host country environmental legislation /55/.		OK
D.1.3 Will the project create any adverse environmental effects?	/1/	DR	The EIA did not identify substantial environmental impacts /8/. The project will not create any adverse environmental effect as demonstrated by EIA approval.		OK
D.1.4 Have identified environmental impacts been addressed in the project design?	/1/	DR	Need project design to assess this aspect. <i>b) The project participant is requested to submit the technical feasibility study</i> The technical feasibility study has been submitted /23/. The feasibility reports takes environmental issues into account (e.g. odour, risk of air pollution though the releases of gasses, potential damage to vegetation, emission of VOCs).	~~CL~~	OK
E Stakeholder Comments (VVM para 128-130)					
E.1.1 Have relevant stakeholders been consulted?	/1/ /3/	DR	On 30 May 2009 a public consultation was organized by the project participant involving relevant stakeholders (representatives of Government, local Government, environmental NGOs, education institutions and local residents including scavengers) as detailed in LSC report /3/.		OK
E.1.2 Have appropriate media been used to invite comments by local stakeholders?	/1/ /3/	DR	Local stakeholders were invited to the 30 May 2009 meeting through direct invitation in person, via telephone, via mail and also via newspaper announcement (on 16 May 2009 issue of Türkiye		OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
E.1.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/ /3/ /22/ /54/	DR I	newspaper) A stakeholder consultation process is not required by the laws in Turkey /22/. The LSC (see report /3/) has anyway been carried out in compliance with the Gold Standard Toolkit, Version 2.1 /54/.		OK
E.1.4 Is a summary of the stakeholder comments received provided?	/1/ /3/	DR	A summary of stakeholders comments have been provided in the LSC report /3/. The main comments received and answers provided can be summarized as follows: Q: Are there any facilities like this in Turkey? A: Adana will be the 2nd city. In Ankara, Mamak and Sincan-Çadırtepe facilities are integrated. And Adana is the 2nd one among the cities. This comment makes reference to the fact that there are two projects using similar technology to in Ankara – the proposed project activity and Mamak landfill project, also registered as Gold Standard. In the municipality of Adana a similar project is being implemented (also undergoing GS validation). Q: Will there be a separation at source? A: Similar to Ankara, this system will be implemented in Adana, too. (detailed explanation) Explanation: Our target is to establish a sustainable system. There will be activities and campaigns to raise the public awareness about the solid waste management and the recycling issues. Q: (by the Chambers of Environmental Engineers) How will you handle the leachate		OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			water? A: It is handled by collection and recycling to the system, or a treatment system may be implemented. The alternatives will be assessed. Q: When will the facilities start to operate? A: The facilities will be constructed within 2 years and then they will start to operate. Commented by the village headman and lecturer: It is a positive side that the company will carry out both the construction and operation activities.		
E.1.5 Has due account been taken of any stakeholder comments received?	/1/ /3/	DR I	As per E.1.4 and LSC report /3/, no comment was received that required to be taken into account in further developing the project activity as also verified during site visit interviews /67/ to /71/.		OK

Table 2 GS Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
1. Additionality					
-ODA <i>additionality</i>. Please provide a clear financial plan confirming that the project does not make use of ODA.	/1/ /4/ /5/ /69/	DR	No financial plan provided. However, no public funding has been obtained for the project. The PP has submitted two statements, indicating that no ODA has been used in the project activity: - one signed by ITC's General Manager /4/ - the other issued by the project's financing institution /5/. The only public contribution to the project consists of the waste disposal fees that municipality pay to the landfill per ton of waste disposed. However this fee has been determined in reverse auctioning during the tender to assign the management of the landfill, and as such is reflecting market price and not development aid. This information was provided by PP and confirmed during site visit by local representative /69/.		OK
2. Sustainable Development Assessment Matrix					
The scoring of all twelve indicators of the SD matrix should be completed, taking into account the comments below. The scoring of the SD indicators must be easily reproducible by the DOE and the reviewers. Please support the scoring of the SD indicators with more evidence and some quantitative data when possible, and try your best to systematically refer to publicly available and easily accessible references (use weblinks, page numbers, etc., to enable traceability) for all justification paragraphs, regardless of the score. A reference can be any academic or nonacademic source such as a feasibility study or government report, website, local expert	/1/ /13/ /14/ /15/ /16/ /17/ /18/ /19/ /69/ /67/	DR I	The scoring of all twelve indicators has been completed. 1. Air quality, +1 This received a positive score thanks to reduction of odour nuisance (by destruction of LFG odorous components especially sulphur compounds in the gas motors). Reference is made to publications by the US Environmental Protection Agency /13/ and UK Environment Agency /14/. 2. Water quality and quantity, +1 This received a positive score for collection/treatment of leachate previously not collected and therefore	CL10	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
opinion (provide contact details), EIA, sections of the PDD, etc. All 12 indicators require a justification paragraph and reference source.	to /71/		polluting the groundwater table. Supporting documentation includes guidance from the UK Environmental Agency /15/ and a paper on the composition of landfill leachate /16/. 3. Soil conditions, +1 The collection of leachate is judged to have a positive impact , as indicated by guidance from the UK Environmental Agency /15/ and a paper on the composition of landfill leachate /16/ 4. Other pollutants; 0 No impact: noise nuisance is discussed and found not significant by the stakeholders given that the location of the new equipment is within the landfill perimeter and distant from nearest residential area, as confirmed during physical inspection during the site visit /67// to /71/. 5. Biodiversity; 0 No impact: this is conservative, as it does not take into consideration the planting of trees performed /67/. 6. Quality of employment, +1 This was assessed to have a positive impact: indicator (Number of contracts, number of trainings & attendance) is explained and reference for average employment condition (unregistered employment) is provided (/17/). The positive impact is due to the creation of registered job positions with social security and training. The creation of employment was confirmed by Mr. Cengiz Karabudak, the nearby village headman's subjective opinion, /69/. 7. Livelihood of the poor , +1		

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			This was assessed to have a positive impact: indicator (# of scavengers receiving a contract w/social security) is explained and referenced. The improvement of livelihood of local residents was confirmed by Mr. Cengiz Karabudak, the nearby village headman's subjective opinion, /69/. 8. Access to affordable and clean energy services, + positive impact: indicator (electricity generated) is explained and reference is given for country negative energy balance /18/. 9. Human and institutional capacity, +1 This received a positive score: indicator (electricity generated) is explained and reference is given for country negative energy balance /18/. 10. Quantitative employment and income generation, + positive impact: the PP will use the number of contracts as indicator. <i>a) The project participants are requested to submit quantitative evidence of claimed employment and income generation.</i> 11. Balance of payments and investment; 0 No impact: no changes are expected to the host country balance of payment nor to the balance of investment (project developed with local funds). 12. Technological transfer and technological self-reliance, +1 The project activity will use Jenbacher Gas Engines designed and produced by GE /62/, which is entails technology transfer into Turkey.		

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<i>b) The project participants are requested to provide more detailed information on the technological transfer involved in the project activity.</i>		
- Please take note that the sensitive and crucial SD indicators have to be identified with an asterisk (*) in the SD Matrix and included in the monitoring plan. A sensitive indicator is an indicator which is likely to change over the crediting period due to changes in the boundary conditions. A crucial indicator is either an indicator which strongly contributes to an overall positive score (i.e.: at least all indicators scored +2), either an indicator scored –1, either an indicator specifically pointed at by the stakeholders during the consultation.	/1/ /52/	DR	The sensitive and crucial SD indicators are not identified in the SD Matrix as required. <i>c) The project participants are requested to follow Gold Standard Toolkit, Version 2.1 with regard to the identification of sensitive or critical SD indicators.</i>	CL10	OK
3. Stakeholder consultation					
- Whether the process of the first round stakeholder meeting is appropriate?	/1/ /3/ /52/	DR	Seen the LSC report /3/, the LSC has been carried out according to GS requirements, in compliance with the Gold Standard Toolkit, Version 2.1 /52/.		OK
- Whether the process of the second round stakeholder meeting is appropriate?	/1/	DR	Second round stakeholder meeting has not yet taken place. <i>d) The project participants are requested to complete the second round of stakeholder meeting and provide evidences from this.</i>	CL10	OK
4. Monitoring					
- The monitoring plan should include all sensitive or critical SD indicators identified.	/1/	DR	The sensitive and crucial SD indicators are not identified in the monitoring plan as required. <i>c) The project participants are requested to follow Gold Standard Toolkit, Version 2.1 with regard to the identification of sensitive or critical SD indicators.</i>	CL10	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
5. Others					
Project eligibility: <i>Methane recovery project activities shall be eligible for emission reductions from both methane avoidance (including from the flared biogas fraction) and non-renewable fuel substitution under the following conditions:</i> - <i>At the time of validation, project proponents shall demonstrate that the system is designed in a way to maximise the utilisation ratio of the biogas for the delivery of energy services (e.g. electricity, heat). The rated biogas consumption of the generator(s) should at least correspond to 65% of the expected volume of methane captured (minimum utilisation ratio).</i> - <i>Project proponents shall monitor the methane utilisation ratio over the monitoring period considered. If a 65% minimum threshold is not met during a given monitoring period (e.g. technical failure, unexpected fluctuations of LFG production, etc.), the eligibility of the project activity is not compromised but project proponents shall demonstrate that everything is undertaken to meet compliance again for the next monitoring period. Only then can they claim emission reductions for the monitoring period that did not meet the minimum utilisation ratio. In such a case however, emission reductions from methane avoidance by flaring can only be eligible for a maximum of 35% of the total volume of methane captured.</i> - <i>The difference in pressure, temperature, and methane fraction between the biogas fed to the generator(s) and the biogas flared/released shall be taken into account in the calculation of utilisation ratio. The volumes of biogas fed to</i>	/1/	DR	The project is designed to maximise electricity generation over methane release, since this is its only source of revenues. This eligibility criterion will be monitored through LFG_{flare} and LFG_{electricity} which are already included in the monitoring plan.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>the generator(s) and flared/released shall be calculated at normal conditions (0°C and 1 Atm).</i> <i>- Whenever the fraction of the methane flared/released is not monitored for the purpose of costs savings, project proponents cannot claim GS credits/labels from methane avoidance from flaring. They also have to demonstrate that the utilization ratio can reasonably be estimated, i.e. with an acceptable error level.</i> <i>- In line with the Gold Standard Requirements, project proponents may choose to exclude the start-up phase of a methane recovery project activity from the calculation of the 65% threshold by opting-in at a later stage in the crediting period, when a stable utilisation of biogas is technically easier to achieve.</i>					

Table 3 Resolution of Corrective Action Requests and Clarification Requests

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CAR1: <i>The project participants are requested to include in the methodology applicability analysis also the applicability conditions for all methodological tools applied.</i>	B.2	The related section(s) of the PDD have been revised to include a more detailed analysis of the applicability conditions of referred methodologies and tools.	All applicability criteria listed in the two methodologies used /44//45/ and in the applicable Tools /48//50//49//47/46 have been included and discussed in the PDD /1/. CAR1 is closed.
CAR2: <i>To comply with AM0025 applicability conditions, the project participants are requested to correct the PDD to reflect that two separate project activities are included in the project, one being the LFG extraction and utilization project, the other is the anaerobic digesters biogas generation and utilization project.</i>	B.2	Several sections of the PDD already include statements on separation of the two activities. However in order to strengthen the message and to avoid any misunderstanding, a statement on this issue has been included under section A.2 and under B.2 “Applicability of AM0025”. The PDD has been revised accordingly.	It is now clear from the PDD /1//1/ that the project consists of two different activities. CAR 2 is closed.
CAR3: <i>The project participant is requested to provide a more relevant statement by the financing institution, that clearly states that:</i> - only the project activity (GS, VER generating) was taken into account in the financial analysis excluding facilities outside the project activity boundaries; - the financing was conditional to pursuing GS registration. <i>Should this approach not succeed, the project</i>	B.5	A revised statement from the Bank has been provided to the DOE on 18th of April 2011. A clear statement addressing to the “GS VER generating” activities has been inserted in the letter. In addition, the revised bank statement also provides a clear statement that “VERs have been taken into consideration during the evaluation and has been <u>the basis of their credit decision</u>”. In line with the	The revised bank statement provided /7/ clearly differentiates between the VER-generating part of the project and the “general project”. TSKB acknowledges their awareness that some components will not generate carbon revenues, and confirms that their decision to finance the general project was made because of the prospects of obtaining carbon revenues from the rest of the project components. Moreover, the Project Participant submitted reference that the gasifier will be the first to be

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<i>participant is requested to submit a full investment analysis</i>		requirements of CDM rules and guidelines¹, the bank statement satisfies and provides clear evidence on; A) There was an awareness of the VER prior to the project activity start date, and that the benefits of the VER were a decisive factor in the decision to proceed with the project activity. B) The financing of the project was assured due to the expected benefit of the VER. Therefore, it is demonstrated that the loan approval by the Bank takes explicitly VER registration into account. The Project Participant and the Creditor Bank is in continued contact on progress of GS VER registration.	implemented in turkey. Therefore, for what concern the impacts of non-GS components on the project additionality, it is DNV's conclusion that that the non-GS components face the same – if not stronger – barriers to their implementation, which are only mitigated by the prospect of carbon credits from GS-eligible components. It is therefore possible to exclude the possibility that non-GS components could facilitate, let alone enable, the implementation of GS-eligible components, thus casting doubts on the project's additionality. CAR3 is closed.
CAR4: <i>The PDD states that the project did not require EIA, but during the site visit a copy of EIA was given to DNV upon request. The PP is to clarify this point and to provide date of EIA (no date was available on the printed document).</i>	D.1.	An Environmental Impact Assessment has been conducted by the Adana Greater Municipality before the landfill was transferred to the Project Participant. Based on the Environmental Impact Assessment, Ministry of Environment and Forestry / General Directorate of Environmental Impact Assessment and Planning has granted "EIA positive" license on 12/06/2007 (considered as the date of EIA). Therefore the Project Participant did not require an additional EIA.	A copy of the EIA performed, and of the "EIA positive" license on 12/06/2007 /9/ were submitted to the DOE. <i>While 12/06/2007 is the date in which the submitted EIA was approved, the Project Participant is requested to communicate the date of the EIA report submitted to the Ministry of the Environment and Forestry</i> CAR4 remains open.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		Section D1 has been revised in order to provide clarity and a summary of the outcomes of the EIA report has been included. <u>2. Round Response by the Project Participant:</u> The EIA has been submitted to the Ministry of Environment and Forestry on 15.05.2007. The correspondence with MoE has been submitted to the DOE.	A copy of the EIA submission letter dated 15.05.2007 has been submitted to DNV /10/. A copy of the EIA report submitted to the Ministry of the environment and Forestry on 15 May 2007 /10/, and a copy of the “EIA positive” licence issued on 12 June 2007 /9/ have been submitted to DNV. It is therefore concluded that EIA requirements have been fulfilled by the project activity. CAR4 is closed.
CL1: <i>a) The project participant is requested to better detail the design of the project in the PDD: how many LFG wells are planned; how many engines are designed for the LFG system; how many engines are designed for the digesters system; how many digesters are foreseen; what will be the total MW installed generation capacity (for GS project only, excluding non-GS facilities)?</i> <i>b) The project participant is requested to submit the technical feasibility study</i>	A.2 A.5	a) The collected LFG will be fed into 5 gas engines to support 7 MW installed capacity from LFG utilization. The Anaerobic digesters will generate biogas to be fed into 6 units of gas engines to support 8.4 MW installed capacity from biogas utilization. Currently there are 3 digesters installed at the site, however this number might be increased to support 6 units of gas engines. The total installed capacity of the project (GS project only) is estimated to reach 15.4 MW. With regards to the LFG wells, the aim is to install the optimum amount of wells to the area to enable optimum amount of LFG extraction, which naturally might differ during the operational lifetime of the	a) The project design is now clearly described in the PDD/1/. b) A copy of the feasibility study has been submitted to the DOE /23/. <i>The Project Participant is requested to communicate the author and date of the technical feasibility study.</i> CL1 remains open. The technical feasibility reprot has been submitted /23/. The feasibility reports takes environmental issues into account (e.g. odour, risk of air pollution though the releases of gasses, potential damage to vegetation, emission of VOCs).

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		project activity depending on the efficiency of the wells. Therefore the Project Participant wishes not to fix a number of LFG wells in the PDD taking into account also this has no impact qualitative and quantitative on the monitoring aspects of the proposed project activity. b) The technical feasibility study has been provided to the DOE. <u>2. Round Response by the Project Participant:</u> The technical feasibility is developed by The technical department of ITC in March – April 2008.	CL1 is closed.
CL2: <i>a) The project participant is requested to provide operating procedures or other reference that confirms that the residual waste from anaerobic digestion is delivered to the Adana landfill.</i> <i>b) The project participant is required to supply the result of the test for characterization of waste to be landfilled and detailed explanation of how the characterization of waste for anaerobic digesters was inferred.</i> <i>c) Project participant is requested to include in baseline definition explicit mention that the baseline scenario constitutes continuation of current practice, and that it consisted of unmanaged and uncovered landfill.</i>	B.2	a) In some cases the solid residue of the AD process are used as a soil conditioner, however the Project Participant has no intention nor any plan on using the residue from the AD as a soil conditioner and therefore will be delivered to the landfill. The project boundary under figure 2 has been revised accordingly to reflect that the residue is delivered to the landfill. b) A test for sampling the waste characteristics of waste trucks entering the Adana Landfill area have been provided to the DOE. c) A clear statement has been inserted under section B.4.	a) The landfilling of the solid residue of the AD is now included in the project design, and appears in the PDD Figure 2 /1/, which graphically outlines the various components of the GS project as well as the general project. b) A copy of 3 sampling test was submitted to DNV /24/. c) Section B.4 of the PDD /1/ now includes the statement: “The baseline scenario constitutes continuation of current practice, which is uncontrolled and unmanaged landfill.”

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
d) Project participant is requested to provide copy of landfill permit (or interim documentation if the permit is not available). e) The project participant is requested to describe equipment and to explain method used for the sterilization, in particular to clarify if thermal treatment is applied.		d) A copy of the landfill permit (stating that the project activity is in line with the environmental regulation) provided by the “Adana Province Governorship, Provincial Directorate of Environment and Forestry has been provided to the DOE”. The permit for connection to Adana Greater Municipality Waste Water Treatment Centre (ASKI) for the leachate has been provided to the DOE. e) Due to the fact that Adana Landfill Area is the only landfill area in Adana, the Greater Municipality of Adana has asked from the Project Participant for a medical waste treatment facility within the landfill area, enabling appropriate and hygienic management of medical wastes. To satisfy the needs of the Municipality the Project Participant has also undertaken the responsibility for operating the medical waste sterilization facility within the landfill area. The medical waste is not thermally treated. Legal elimination methods of medical wastes have been enumerated in the “Regulation of Medical Waste Control”². With this regulation, alternative elimination	d) A copy of the landfill permit has been provided to the DOE /25//26/. e) Third party reference has been submitted to the DOE indicating that the medical waste conferred to the Adana landfill will be sterilised through autoclave sterilisation, and not thermal treatment /27//28//29//30/. Once the medical waste has been sterilised, it is considered regular municipal waste and landfilled. CL2 is closed.

² Reference: <http://www.cygm.gov.tr/CYGM/Files/mevzuat/yonetmelik/tibbi.doc>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		methods excluding the “Burning Technology” have been allowed in Turkey; also, among alternative technologies the “sterilization method” has been recommended in the Communiqué #2006/7³ published by the Ministry of Environment and Forestry. According to this regulation sterilization means complete annihilation of all kinds of microbial lives including bacteria spores. Although the sterilization can be done in many ways, the most effective and efficient elimination method is “autoclave method”, which is also the method, used in Adana Landfill Area⁴. Autoclaves are closed chambers that apply both steam and pressure over a period of time to sterilize medical waste. Medical waste that is subjected to an autoclave is also subjected to a compaction process, such as shredding, after treatment so that it is no longer recognizable and cannot be re-used for other purposes. The compaction process reduces the volume of the treated waste significantly. After treatment and compaction, the treated waste becomes inert can be combined with general waste	

³ Reference: <http://www.cmo.org.tr/index.php/ulusal-cevre-mevzuat/genelgeler/1375-tibbi-atik-sterilizasyon>

⁴ Reference: “OptiMet” an upgraded autoclave system, which is the state of the art technology has been chosen for medical waste sterilization will be used in Adana Landfill. A technical brochure of “OptiMet” has been provided to the DOE for more detail on the process.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		and disposed of in traditional manners. The process is an entirely closed cycle ⁵ .	
CL3: <i>Since the project site contains facilities that are outside the project boundary (namely, the sorting facility and the gasifier), the project participants are requested to describe in detail how these will be effectively and conservatively separated.</i>	B.3	Although the gasification system is resulting in significant amounts of emission reductions compared to the baseline and is considered as eligible under AM0025, the gasification system is excluded from the GS VER project boundary as no credits could be claimed in accordance with the Gold Standard rules. Therefore, the gasification system is completely separated from the rest of the system (AD and LFG system), where the syngas will be separately collected and utilized at dedicated gas engines. These dedicated gas engines will only utilize syngas coming from the gasification system and under no circumstances the syngas will not be mixed with biogas or LFG as they will have no physical connections. Although the gasification and sorting facility is not a part of the project boundary, the project emissions from the electricity consumption of both gasification and sorting plant will be included (for conservativeness) in the calculation as $EC_{PJ,j,y}$ will be measuring the electricity consumption of the entire facility.	The explanation provided by the Project Participant regarding the complete exclusion of the emission reductions generated by the gasification system from the GS part of the project is considered sufficient to close CL3. Since the gasification systems had not yet been built at the time of the site visit, its effective separation from the AD and LFG systems will have to be checked in the course of future verifications once the gasifier is built. A FAR has been raised in this respect. CL3 is closed.

⁵ Reference: <http://www.yildiz.edu.tr/~kvarinca/Dosyalar/Yayinlar/yayin017.pdf> (Yıldız Technical University / Rear-Breaking System Draft in Autoclave Aided – Sterilization as an Elimination Method of Medical Waste)

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
CL4: <i>The project participants are requested to update the following links to on-line resources in the PDD to ensure they can be opened by third parties:</i> - 10 Reference: The official web page of EMRA http://www.epdk.org.tr/mevzuat/kanun/elektrik/elektrik_piyasalari_kanunu.pdf - 11 Reference: The official web page of EMRA; www.epdk.org.tr/mevzuat/diger/yeni/lenebi_lir/yeni/lenebi_lir.doc - 12 Reference: The official web page of the Ministry of Environment and Forestry; www.cevreorman.gov.tr/yasa/k/2872.doc	All sections	The references have been updated and the PDD has been revised. The updated web pages were accessed on 03.06.2011 latest and confirmed to be working. <u>2. Round Response by the Project Participant:</u> An alternative link has been provided in the PDD. The downloaded file has been also submitted to the DOE.	The following resource could not be found: “Environmental Map” published by Environmental Inventory Head Department under Ministry of Environment and Forestry. <i>The Project Participant is requested to provide a copy of the document (or section relevant to the average net energy conversion efficiency of power units).</i> CL4 remains open A copy of the document “Environmental Map” published by Environmental Inventory Head Department under Ministry of Environment and Forestry has been submitted to DNV /61/. CL4 is closed.
CL5: <i>a) The project participants are requested to explicitly explain in the PDD that, as confirmed during the site visit, the additionality is only based on the investment barriers and that the other barriers (new technology, uncertainty in generation, prevailing practice), are provided just to support this barrier.</i> <i>b) The project participants are requested to clarify how the GS registration would alleviate the claimed investment barrier</i>	B.5	a) The PDD has been revised accordingly. b) Investment Barrier/Access to Finance has been identified as the main barrier towards the implementation of the project activity. The potential GS VER revenues of the proposed project activity have been assessed by the Bank and considered to be the basis of their loan decision providing the necessary debt funding and securing the finance towards implementation of the	a) The PDD /1/ clearly indicates that the Investment Barrier/Access to Finance has been identified as the main barrier towards the implementation of the project activity, and the other barriers claimed are in support to the financial barrier. b) The PDD /1/ has been updated with a clear statement indicating that GS registration would alleviate the investment barrier (access to credit).

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		proposed project activity. The conclusive paragraph at the end of section B.5 sub-step 3a already provides a clear statement on how the GS registration alleviate the investment barrier, however the paragraph have been revised to strengthen the statement.	CL5 is closed.
CL6: <i>a) The project participants are requested to clarify what is the geographical scope of the common practice analysis and what was the rationale for its selection.</i> <i>b) The project participants are requested to clarify what is the scope of technology and size (capacity of the generation equipment) of the common practice analysis and what was the rationale for its selection.</i> <i>c) The project participants are requested to also include GS VER projects in the common practice analysis (appropriately disclosing which project is VER and which is not).</i>	B.5	CL 06 a&b) According to the “Tool for demonstration and assessment of additionality” v5.2, an analysis of any other activities that are operational and that are similar to the proposed project activity should be provided. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology access to finance etc. Other CDM project activities (interpreted as other VER project activities) are not to be included in this analysis. Regarding the project activity the following scopes have been applied in determining the “similar project activities”; - In the same country (Turkey). This is the most conservative approach provided under the applicable rule. - Project activities rely on LFG extraction and utilization as well as AD biogas	<i>The Project Participant is requested to update the PDD with explicit mention of the selected geographical and technology scope for the common practice analysis.</i> <i>Moreover, the Project Participant is requested to only include in the list of facilities listed in table 16 those that fall within the identified scope of the common practice analysis.</i> CL6 remains open. The PDD has been updated with a description of the selected geographical and technological scope applied in the common practice analysis /1/. Moreover, table 16 of the PDD /1/ presents a list of facilities operational within the selected geographical and technological scope (LFG extraction in Turkey). The table clearly indicates which other criteria have not been met (scale, comparable environment), clearly showing why these

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		utilization in a landfill area. Biogas production from waste water treatment centres has been excluded (if any) from the analysis since the environment, technology, input and process is significantly different from the technologies/process within the scope of the proposed project activity. - With similar scale. The proposed project activity is planned to reach 15.4 MW and is considered as a large scale project activity. A conservative range of $\pm 50\%$ capacity have been considered in defining the “similar scale” and any project outside the range 30-7 MW have been excluded from the analysis. - Projects those are operational. In line with the requirements, only project activities that are operational have been included in the analysis. - In a comparable environment. Project activities built and/or operated by state owned companies/organizations (such as municipalities) have been excluded since the neither the investment climate nor access to finance shows similarities to the proposed project activity. c) Upon request from the DOE, GS VER projects have been included in the revised PDD. 2. Round Response by the Project	projects have not been considered “similar project activities”. CL6 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		<u>Participant:</u> a) The PDD has been updated to include an explicit mention of the selected geographical and technology scope for the common practice. b) Table 16 is related to general information on waste indicators of Municipalities in Turkey and aims to provide a comprehensive overview of the “waste situation” in Turkey for the PDD readers. However the data source is not comprehensive enough to make a decision on which of these municipalities does and does not fall under the scope of “similar project activities”. This is the reason why a more detailed survey has been conducted from EMRA License records in the following part of the PDD. In order to provide more clarity to the PDD, this information has been separated under two sub topics and the PDD has been revised accordingly.	
CL7: <i>a) The project participants are required to explain their choice for the rounded lower values.</i> <i>Furthermore, they shall explain why the TEIAS:</i> - “coal” would be of the IPCC type “anthracite” - “fuel oil” would be of the IPCC type “gas/diesel”	B.6	a) All the calculations are conducted through excel sheets the result is transferred to the PDD rounded down where applicable. - A default value of 0.0946 tons/GJ has been used for calculations for “Coal”	b) The use of both hard coal and lignite in the Turkish energy sector is confirmed by the information provided on the website of the European Association of Coal and Lignite /31/. Moreover, the supporting information provided, which

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
oil”. b) In the definition of kj the project participants are requested to include relevant references documenting MAT and MAP or MAP/PET for the project site.		corresponding to IPCC type “Anthracite”, which is another name for “Hard Coal”⁶. Hard Coal is used as a fuel at thermic power plants for electricity generation in Turkey⁷ (other than lignite). - According to TEIAS statistics⁸, 1,783,366,000 tons of “liquid fuel” has been consumed in year 2009, which constitutes of 89% fuel-oil and 10% of diesel oil (which is also a type of fuel oil) while only 0.06% is LPG and 0.45% is Naphta. It is therefore conservative to take into account IPCC type “gas/diesel oil”, which represents the 99% of the total liquid fuel consumption in Turkey. b) According to the latest available report on Adana Provincial Environment Annual Report (2007)⁹ the Mean Annual Temperature (MAT) is 19°C (p44 table 22); Mean Annual Precipitation (MAP) is 574.2 mm (p45 table 23) and Potential Evapotranspiration (PET) is 1466 .1 (p44). References for the mentioned values have been provided in the revised PDD.	consists of TEIAS publicly available statistics, indicates that fuel oil and diesel represents the bulk of liquid fuel consumed in Turkey in 2009 /32/. c) The Adana Provincial Environment Annual Report 2007 /33/ indicates that the MAT for the city area is 190C, and that MAP/PET <1. Therefore the use of boreal and temperate values for waste’s rate of decay is considered correct. CL7 is closed.
CL8: a) The project participants are requested to	B.7	a) A flow-sheet has been included in the revised PDD.	a) Annex 4 of the PDD /1/ now includes a flow chart showing how the monitoring

⁶ Reference: <http://www.thefreedictionary.com/anthracite>

⁷ Reference: <http://www.euracoal.org/pages/layout1sp.php?idpage=475> (Please also refer to references provided in the PDD for primary fuel sources for electricity generation)

⁸ Reference: <http://www.teias.gov.tr/istatistik2009/44.xls>

⁹ Reference: <http://www.adana-cevreorman.gov.tr/dosyalar/CDR/2007CDR.pdf>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<i>include a diagram/flow-sheet in the PDD showing the measurement equipment.</i> <i>b) The project participants are requested to provide details on how the facilities outside the project boundaries will be monitored (especially for electricity generation and electricity consumption).</i> <i>c) The project participants are required to supply (or include in the PDD) a report on how the historical amount of waste was calculated and how the future amounts were derived</i> <i>d) The project participants are requested to update the PDD so that for all measured parameters it is clearly described the measuring equipment, the measuring accuracy, the requirements for maintenance and calibration and the monitoring frequency.</i> <i>e) The project participants are requested to include in the PDD procedures identified for day-to-day records handling and type and duration of data storage (be kept for two years after the end of the crediting period or the last issuance of VERs, for this project activity, whichever occurs later).</i> <i>f) The PP is requested to provide details of the measuring equipment used.</i>		b) There are mainly two systems/activities outside the GS VER project namely the gasification system and the sorting plant. For conservativeness, electricity consumption of the facility (including also the sorting facility and gasification system) will be monitored and will be included in the ex-post calculation of project emissions due to electricity consumption. The monitoring of the electricity consumption will be done from the main electricity meter (bi-directional) which will measure both electricity delivered to the grid and electricity consumed from the grid. c) Adana Landfill area has accepted municipal waste since 1990 however there have been no tracking or measurement by the municipality of the waste amount. The value of 1500t/day – 1700 t/day is an estimated and approximate value derived from a conservative approach from the statistics of Adana region (taken from official statistics of Adana Province) which identifies a waste generation of 700,085 ton/year in 2001 and reaching to 771,361 ton/year in 2008. This results in an estimated daily amount of 1900 t/day – 2100 t/day municipal waste¹⁰. For conservativeness only 80% of the lower	plan is planned to be implemented. b) The monitoring plan developed by the Project Participant includes the measurement of electricity consumption and production at grid connection level, and the monitoring of electricity produced by each type of gas directly at the engines. Such plan is compatible with the PP's claim that the electricity consumption of those parts of the general project that are not included in the GS project activity will be included as a conservative approach, while the electricity produced by the gasification systems will be excluded from the GS VER calculations. Since the gasification systems had not yet been built at the time of the site visit, the effective separation from the AD and LFG from the other facilities of the general project will have to be checked in the course of future verifications. A FAR has been raised in this respect. c) The evidence submitted /34/ confirm that the estimated 1 500 t/day is a conservative estimate of the amount of waste landfilled on site.

¹⁰ Reference: http://www.tuik.gov.tr/PreIstatistikTablo.do?istab_id=497 (Turkish Statistics Institute / Waste Amount per Provinces)

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		value is considered to end up in Adana Landfill (1500 t/day) for ex-ante calculations. In the emission reduction calculation sheet “Input – Waste LFG”, the amount of waste in tons that will be dumped were reduced as some portion of the waste will be diverted to the AD system. As an example in year 2013, 630 t/day waste will be diverted to the AD leaving approximately 900 t/day waste to be landfilled. It should be also noted that these values are estimated values to perform an ex-ante estimation of the emission reductions due to the project activity however the actual emission reductions will be calculated using actual measuring of the LFG destroyed (a different approach from ex-ante calculation). d) The of methodologies and tools have been taken into account and have been reflected in the monitoring parameters under section B.7.1. Revisions have been made where applicable. e) It is already stated under section B.7.2 “Monitoring Plan / Registration of the monitored data” of the PDD.	d) The PDD /1/ has been updated to indicate the type of equipment, maintenance, calibration procedures and monitoring frequency of monitored parameters. e) The PDD /1/ has been updated to indicate how the relevant data will be collected, including how responsibility for collection has been allocated. f) The PDD /1/ has been updated to indicate the type of equipment, maintenance, calibration procedures and monitoring frequency of monitored parameters. CL8 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		f) Details with regards to the measuring accuracy, the requirements for maintenance and calibration and the monitoring frequency have been already provided in the PDD as required by the applicable methodology(ies) and tools. There is always a possibility that a monitoring device might be upgraded or replaced by another during the crediting period. Therefore the Project Participant wishes not include specific details of the monitoring equipment (such as model, brand, serial number etc) in the PDD as this type of detailed information is more subject to verification rather than validation.	
CL9: <i>a) The project participant does not give sufficient information in the PDD regarding the project activity starting date and implementation timeline. The project participants are requested to include in the PDD a detailed timeline for the project activity including starting date and how this was determined, and date of the first construction activity, together with any prior consideration event/documentation.</i> <i>b) The project participants are requested to supply evidence that all parts of the project activity (mainly LFG and the digesters) will be able to operate for the claimed 30 year project lifetime.</i> <i>c) The project participants are requested to supply evidence for the crediting period start date,</i>	C.1	a) A table indicating important milestones of the project activity has been included in the revised PDD. b) The project participant is entitled to operate the facility for 30 years according to the Generation License obtained from EMRA. c) As mentioned under the EB 41 Annex 12 “Guidelines for completing the PDD and the proposed new baseline and monitoring methodologies” the starting date of the first crediting period is indicative. According to GS Toolkit v2 section 1.2 “Assess project eligibility / Retroactive crediting” the project activity is eligible for receiving	a) The PDD /1/ has been updated with project milestones; b) A copy of the concession licence issued by the Adana Municipality was submitted to the DOE during the site visit /35/. The validity time of the licence is 30 years. c) The explanation provided by the project Participant regarding the start of the crediting period is in line with the provisions of the Gold Standard on retroactive crediting. The starting date of the crediting period is therefore considered acceptable. CL9 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
<i>documenting the start of LFG electricity generation by mean of energy invoices and internal production reports.</i>		credits for realized emission reductions prior to GS registration for maximum period of two years. Therefore the starting date will be updated according to the related rules of the GS if the registration of the project is delayed.	
CL10: <i>a) The project participants are requested to submit quantitative evidence of claimed employment and income generation.</i> <i>b) The project participants are requested to provide more detailed information on the technological transfer involved in the project activity.</i> <i>c) The project participants are requested to follow Gold Standard Toolkit, Version 2.1 with regard to the identification of sensitive or critical SD indicators.</i> <i>d) The project participants are requested to complete the second round of stakeholder meeting and provide evidences from this.</i>	Table 2	a) The Sustainable indicator “Quantitative Employment and Income Generation” has already been included as a monitoring parameter and will be subject to monitoring throughout the crediting period (please refer to GS Passport). Currently there are around 60 people employed by the project activity. Their income is variable depending on their responsibility and job descriptions however the minimum wage is set according to the applicable regulations¹¹. b) The project results in the transfer of knowledge on waste management principles, landfill gas extraction, landfill gas utilisation, and anaerobic digesters. The Adana landfill gas facility is the second of its kind in Turkey and the first of its kind in terms of Anaerobic Digestion Technology. Its implementation and viability demonstrates the potential of this type of waste management and leads to further experiences of the applied technologies in Turkey. This can lead to the further implementation of such plants in Turkey	a) <i>The PP is requested to provide quantitative evidence of employment generation until now;</i> b) <i>The Project Participant is requested to provide information on the following:</i> <i>Which is the country where the technology used originates from, how does the actual transfer take place (e.g. import of foreign technology, training and capacity building, secondment of technical staff, etc)</i> c) All Sustainable Development indicators listed in the GS passport will be monitored. This is in accordance with the GS Toolkit /52/. d) At the time of validation, information relative to the GS second round of stakeholder consultation is available on the Project Participant’s website /36/.

¹¹ Reference: <http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.5454&MevzuatIliski=0&sourceXmlSearch=> (Regulation on Minimum Wage)

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		and the region. c) According to GS toolkit v2.1 section 0.3 “Validity of versions”; “Projects that request the Gold Standard applicant status by uploading a Local Stakeholder Consultation report or that apply for retroactive registration by uploading the required documentation and paying the pre-feasibility assessment fee before August 1, 2009 will still be able to use version 2.0. In line with the validity requirements of version 2.0, the project participant have uploaded the LSC report for Adana Project on July 17 2009. The e-mail exchange with GS on this issue has been provided to the DOE. d) The stakeholders feedback round is a two month period, where all necessary documents are made publically available. On 11th of May 2011, the translation of the LSC report and the GS Passport have been provided as hard copies to the locals through the muchtars and were invited to provide comments on the documents. ITC has also announced the SFR inside the company for employees feedback with making available documents at the secretary. Furthermore the documents were made	A list of employees of ITC has been submitted to DNV /41/, including their names and roles. As the facilities that are part of the generic project, but not of the VER project activity, are not yet in place, the employees listed are involved in the operation of the project activity. With regard to technology transfer, the project activity will use Jenbacher Gas Engines designed and produced by GE /62/, which is entails technology transfer into Turkey. CL10 is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		available on the webpage of ITC www.itcturkiye.com as well for feedback. The documents were also submitted to the stakeholders invited to the Local Stakeholders Consultation Meeting and were asked kindly to provide a feedback on the project. The feedback round will end on 11st of July 2011 and the Passport will be updated accordingly based on the results and comments provided as a feedback from the stakeholders. The PDD has been revised to include the above statement. <u>2. Round Response by the Project Participant:</u> a) A detailed breakdown of the employees has been provided to the DOE. b) Most of the critical equipment such as the gas engines (GE Jenbacher), monitoring devices (ABB), PLC, drivers and redactors and thus related technology has been imported from abroad mainly from EU countries such as Germany. c) The Sustainable Indicators which are monitored are explicitly stated under the GS Passport v2 provided to the DOE. All the sustainable indicators, which are critical	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation conclusion
		to sustainable development are included in the monitoring plan in line with the requirements of the applicable GS rules.	

Table 4 Forward Action Requests

Forward action request	Reference to Table 2	Response by project participants
FAR1: Ensure that emission reductions from facilities that are part of the “general project” but are not eligible for VERs under Gold Standard regulation are effectively excluded from the emission reduction calculations. This should be reflected in the monitoring of electricity generation.	B.3.	
FAR2: The technical specifications of the anaerobic digester to be installed as part of the project activity need to be checked to ensure that emissions due to physical leakage are correctly accounted for.	B.6.	

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APPENDIX B

CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

Jan Van Evercooren, holds a PhD Degree in Chemistry. Having an overall experience of around 40 years. Prior to joining DNV having 4 years experience in iron and steel industry covering sampling & analysis of solid bulk materials and assessment of their quality as raw material for pig iron and steel. Also having more than 25 years experience in environmental consulting in various technical areas covering set-up of air pollutant emission inventories, air pollutant emission & immission measuring, air pollution dispersion modelling and environmental impact assessment (EIA). Acknowledgment for actually 20 years as Flemish EIA expert in the domains air pollution and climatological effects.

He has experience of around 5 years in validation and verification of CDM/JI projects and other 3rd party validation/verification services.

His qualification, industrial experience and experience in CDM demonstrate his sufficient sectoral competence in “Iron and Steel”, “Metal production”, “Coke” and “Waste handling and disposal”.

Francisco Zamarron holds a 6 year Diploma in Civil Engineering and a 2 year post-graduated Master in Business Administration. He has an overall working experience of around 25 years.

Before joining DNV in 1996 he has worked as a Project Manager in the construction sector, Business Developer Manager in process automation sector mainly for the oil and gas industry and Management Consultant for small and medium organizations. From 1996 until 2005 he has conducted, on behalf of DNV, third party Management System Audits against ISO 9001, ISO 14001, EMAS and ISO 14044 Standards in a large spectrum of industrial and service sectors.

Since 2005 he has continued his professional carrier in DNV in the climate change field, with particular focus on the Kyoto Protocol Mechanisms, as a CDM Validator and EU ETS Service Responsible. He has managed the validation of many CDM and has carried out verifications and technical review of numerous EU ETS reports. Through his work experience, he has acquired sectoral competence within energy generation from renewable energy sources and construction.

He has also experience in providing technical environmental advisory services and verifying corporate greenhouse gas emissions; emission reductions and product carbon footprints.

Matteo Faggin holds a Master Degree in Business Administration and a Master Degree in Mechanical Engineering.

He has an overall experience of around 8 years. Prior to joining DNV having 7 years experience in the cement, construction and aluminium industries covering industrial operations and new project implementation for cement plants, quarries, energy and thermal distribution projects.

He has experience of around 1 year in validation and verification of numerous CDM projects.

His qualification, industrial experience and experience in CDM demonstrate him sufficient sectoral competence in Cement Industry, Electricity Distribution, Heat Distribution, Mining and Mineral processes.

Expertise in Project Management for the execution of large projects aimed at reducing the greenhouse gasses emissions and increasing the energy efficiency of manufacturing plants.

Francesca Feller in 2004 started working on research and training on sustainable development and CSR for businesses in Italy. From 2007 she worked as Climate Change Officer in London, an urban area undergoing major regeneration. The role involved achieving carbon reductions in all new developments (residential, schools, hospitals, commercial), by embedding energy efficiency, renewable energy technologies, and improved energy distribution in planning conditions. The role also included ensuring compatibility with a large district heating scheme under construction, and incorporating climate change adaptation measures in new developments. In 2009 Francesca moved on to work for a company specialised in taking part to tenders financed by the United Nations, the World Bank, the European Union and the Italian Ministry of Foreign Affairs for development programmes. Her role as Project Manager focused on the supply of off-grid renewable energy technologies for rural electrification.

Einar Telnes is a world renowned expert on monitoring, verification and accreditation for CDM and JI projects, and climate change system design. He was Technical Director and Director for DNV's Climate Change Services and was involved in the validation and verification of numerous CDM projects and has performed technical review of numerous CDM validation or verification reports. He is experience with carbon projects across many technologies and has extensive experience with TQM and management systems audit and implementation. He has work experience from approximately 60 countries around the world, in all continents.

Michael Lehmann holds a Master Degree in Environmental Sciences with a specialisation in environmental chemistry. He has an overall working experience of around 13 years.

Since 1999 he has worked in the climate change field and has closely followed the international response to the climate change challenge (UNFCCC, Kyoto Protocol) and the responses by national governments (EU ETS, UK ETS) and business. He has managed the validation and verification of many CDM and JI projects and has carried out the technical review of numerous climate change project validations and verifications. He is currently Director of Services and Technologies for DNV's Climate Change Sevices.