



VALIDATION REPORT

for the CDM Project Activity

Palmeras POME Co-composting Project In Colombia

Report No. 01 997 9105060286
Version No. 07, 2012-12-18

Designated Operational Entity (DOE)

TÜV Rheinland (China) Ltd

Unit 707, AVIC Building, No. 10B, Central Road, East 3rd Ring Road,
Chaoyang District, Beijing 100022,

People's Republic of China.

Tel.: +86 10 65 66 66 60 (ext.169)

FAX: +86 1065 66 66 67

E-mail: doe@chn.tuv.com

I. Project description:

Project title:	Palmeras POME Co-composting Project		Report No.: 01 997 9105060286
Host Country:	Colombia		Current revision No.: 07
Methodology:	AMS-III.F version 10	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale	Date of current revision: 2012-12-18 Date of first issue: 2011-07-11
Annual average emission reductions (estimate):			35,557 tCO ₂ e/yr
GHG reducing measure/technology:	To reduce the pollution potential of EFB and POME by implementing an aerobic composting process of its waste streams. It consists of co-composting EFB that would have been left to decay along with POME. The project activity will result in the avoidance of large quantity of methane that would have been released in an uncontrolled manner into the atmosphere from the anaerobic decay of EFB and POME.		

Party	Project Participants	Party considered a project participant	Contract party
Colombia (Host)	Palmeras de la Costa S.A.	No	<input type="checkbox"/>
	Aretech Cambio Climático S.A.	No	<input checked="" type="checkbox"/>

II. Validation Team:

Validation Team			Role									
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Víctor Abarca (team leader since 17/12/2010)	Chile	1.2, 6.1, 13.2	X									
Nicolás Ortner (Ex-Team leader until 16/12/2010)	Argentina	12.1, 13.1	X									
Cuiping Deng (TR until 24/09/2012)	China	1.2, 5.1, 11.1, 12.1								X		
Danae Diaz	Mexico	1.2, 13.1								X		

Validation Phases and Validation Status:

- ☒ Desk Review
 ☒ Follow up interviews
 ☒ Resolution of outstanding issues
☒ Corrective Actions / Clarifications Requested
 ☒ Full Approval and Submission for Registration
☐ Rejected

III. Validation Report:

Final approval	Released	Distribution
<input checked="" type="checkbox"/>	By: Mr. Praveen Urs	<input type="checkbox"/> No distribution without permission from the Client or responsible organizational unit <input checked="" type="checkbox"/> Unrestricted distribution
Date: 18/12/2012		

Executive Summary – Validation Opinion

The validation team assigned by the DOE (TÜV Rheinland (China) Ltd.), here after called TRC, has been assigned by “Palmeras de la Costa S.A.” and “Aretech Cambio Climático, S.A.” to perform the validation of their project “Palmeras POME Co-composting Project”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism. The scope of the validation is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against CDM Validation and Verification Manual (Version 01.2), Kyoto Protocol requirements, CDM Executive Board/UNFCCC rules.

The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, site visit, stakeholder interviews, review of the applicable methodology and its underlying formulae and calculations.

Validation methodology and process

The validation has been performed as described in the VVM version 01.2 and constitutes the following steps:

- Publication of the PDD on the UNFCCC website (26/05/2010 – 24/06/2010)
- Desk review of the PDD and the relevant documents
- On-site assessment (13/07/2010 – 14/07/2010)
- Issuance of Validation Report

Validation criteria

The following CDM requirements have been considered:

- Article 12 of the Kyoto Protocol,
- Modalities and procedures for CDM (Marrakech Accords)
- Subsequent decisions by the COP/MOP and CDM Executive Board
- Host country criteria
- Criteria given to provide for consistent project operations, monitoring and reporting.

The host party is Colombia and the party fulfil the participation criteria and have approved and authorized the project and the project participant. The DNA from Colombia confirms that the project assists in achieving sustainable development.

The project correctly applies the baseline and monitoring methodology AMS-III.F, version 10, “Avoidance of methane emissions through composting”.

The project results in reductions of CO₂ and 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 validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards “Colombia”.

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 TRC’s opinion that the project participants are able to implement the monitoring plan.

By reducing the pollution potential of EFB and POME by implementing an aerobic composting process of its waste streams the project activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

The total emission reductions from the project are estimated to be 248,897 t of CO₂e over a 7 year crediting period, averaging 35,557 t of CO₂e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not alter.

The validation protocol describes a total of 32 findings which include:

17 Corrective Action Requests (CARs);

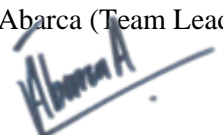
15 Clarification Requests (CLs);

0 Forward Action Requests (FARs); and all findings have been closed satisfactorily.

TRC concludes that the CDM Project Activity “Palmeras POME Co-composting Project” in Colombia, as described in the PDD (version 5, dated 24/09/2012), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board.

The selected baseline and monitoring methodology AMS-III.F, Version 10 is applicable to the project and correctly applied. The TRC therefore requests the registration of the project as a CDM project activity with UNFCCC.

Mr. Víctor Abarca (Team Leader)



TÜV Rheinland Chile
Santiago, 2012-12-18

Mr. Praveen Nagaraje Urs (DOE Manager)



TÜV Rheinland (China) Ltd.
Beijing, 2012-12-18

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
Board	Executive Board of clean development mechanism
CER	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated operational entity
EFB	Empty Fruit Bunches
FAR	Forward Action Request
FFB	Fresh Fruit Bunches
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of approval
LSC	Local Stakeholder Consultation
N ₂ O	Nitrous oxide
NGO	Non-governmental Organization
NPV	Net Present Value
ODA	Official Development Assistance
PDD	Project Design Document
PKS	Palm Kernel Shells
PP	Project Participants
POME	Palm Oil Mill Effluent
SWDS	Solid Waste Disposal Site
tCO ₂ e	Tonnes of CO ₂ equivalents
TRC	TÜV Rheinland (China) Ltd.
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual
WWTP	Wastewater Treatment Plant

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Appendix A: Validation Protocol

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1. Introduction:

The organization “Aretech Cambio Climático S.A.” has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a validation of the CDM Project Activity “Palmeras POME Co-composting Project” in Colombia (hereafter called “the project”). This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures or the simplified modalities and procedures for small-scale CDM project activities (as applicable) and the subsequent decisions by the CDM Executive Board.

1.1 Objective:

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope:

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual employed (latest version) a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs. 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.

While carrying out the validation, TRC determines if the project activity complies with the requirements of Para 37 of the CDM M&P and also assess the claims and assumptions made in the PDD without limitation on the information provided by the project participants.

The scope of the validation is:

- To apply TRC's own quality management system integrated with the VVM standard along with the recent decisions and guidance provided by the UNFCCC board to determine if the project activity meets all applicable CDM requirements, including those specified in the relevant methodologies, tools and guidelines;
- Asses the accuracy, conservativeness, relevance, completeness, consistency and transparency of the information provided by the project participants;
- Determine whether information provided by the project participants are reliable and credible;
- Present information in the form of validation report in a factual, neutral, coherent manner and document all assumptions, provide references to the background material and identify changes made to the documentation;
- Base the findings and conclusions on objective evidence and conduct all validation in accordance with CDM rules and procedures;
- Apply consistent validation criteria in providing expert judgments to the requirements of applicable approved methodologies, tools and also cross check the same with projects of similar characteristics, technology, time period and region; and
- Safeguard the confidentiality of all information's obtained or created during validation.
- Where sampling is involved, the standard for sampling and surveys are applied.

2. Methodology:

The validation consists of the following four phases:

- I A desk review of the project design documents
 - Publication of PDD in UNFCCC for global stakeholder consultation;
 - A review of data and information;
 - Cross checking between information provided in PDD with all necessary means without limitations to the information provided by the project proponent;
- II On-site visit and follow-up interviews with project stakeholders
 - Interviews with relevant stakeholders in host country with personnel's having knowledge with the project development via telephone, email or direct on-site visits;
 - Cross checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project proponent;
- III Reference to available information's relating to projects or technologies similar projects under validation and review based on the approved methodology being applied of the appropriateness of formulae and accuracy of calculations.
- IV The resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

2.1 Desk Review of the Project Design Documentation:

The following table outlines the documentation reviewed during the validation:

Ref no.	Reference Document
/1/	PDD [Palmeras POME Co-composting Project], Version 1, Date 17/05/2010
/2/	PDD [Palmeras POME Co-composting Project], Version 5, Date 24/09/2012
/3/	Host Country Approval / Letter of Approval: Colombia, DNA Dirección de Cambio Climático, Ministerio de Ambiente y Desarrollo Sostenible, reference number 2000 2 88586, Date: 15/10/2010
/4/	List of documents/ Attached Files [PDD v2.pdf]
/5/	Modalities of Communication: dated 31/03/2011 Signature verification according to following docs: -Signature Mr. Alberto Manotas (I.D and power of Attorney for Palmeras de la Costa) [CEDULA AMC.pdf; CERT.EXIST.REP.LEGAL.pdf] -Signature Mr Lawrence Philp (passport and power of Attorney for Aretech Cambio Climático) [LWP Passport lo res.pdf; 08.07.03-1434. Aceptación de Cargo Andrés Blanco y Laurence William Philp.pdf]
/6/	CDM Validation and Verification Manual (Version 01.2)
/7/	As applicable: CDM-SSC-PDD - Project Design Document form for Small-Scale project activities, Version 03 http://cdm.unfccc.int/Reference/PDDs_Forms/index.html#reg Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM), Version 05.0 http://cdm.unfccc.int/Reference/Guidclarif/index.html#pdd CDM-EB-A04-GLOS - Glossary of CDM terms, version 07, EB 70 Annex 7.
/8/	Approved Baseline & Monitoring Methodology: AMS-III.F "Avoidance of methane emissions through composting", version 10. This methodology refers to AMS-III.H., version 16 "Methane recovery in wastewater treatment" and to the Methodological Tool "Emissions from solid waste disposal sites", version 06.0.1
/9/	Tools have been applied: - Tool to calculate baseline, project and/or leakage emissions from electricity

	<p>consumption, version 01;</p> <ul style="list-style-type: none"> - Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion, version 2; <p>Tool to calculate the emission factor for an electricity system, version 02.2.1</p>
/10/	UNFCCC, Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, III.F. "Avoidance of methane emissions through composting", version 10.0, EB 59.
/11/	UNFCCC, Guidelines on assessment of debundling for SSC project activities, version 03, EB 54 Report, Annex 13.
/12/	UNFCCC, Non-binding best practice examples to demonstrate additionality for SSC project activities, version 01, EB 35 Report, Annex 34.
/13/	<p>Standard for sampling and surveys for CDM project activities and programme of activities, version 02.0. Dated 25/11/2011</p> <p>General guidelines for sampling and surveys for small-scale CDM project activities, version 01, EB 50, 16/10/2009.</p>
/14/	Guidelines for the Demonstration of Additionality of Small-Scale Project Activities" v09, EB 68 Report, Annex 27
/15/	Minutes of Palmeras Board Meeting dated 24/11/2009
/16/	Emission reduction calculation [Emission Calculation Palmeras final.xls]. Dated 24/09/2012
/17/	Investment Analysis to 20 years [Investment Analysis Palmeras final20.xls]. Dated 24/09/2012
/18/	Compost plant design and final report [2 Informe Final - PALMERAS DE LA COSTA II.doc]. Issued by Bioprocesos S.A.; Dated 01/03/2010
/19/	<p>Colombian Palm Sector R&D Report</p> <p>[3FN1200956101630_Informe_Final_Agenda_Prospectiva_Tecnológica_Palma_de_Aceite.pdf]. Issued by CENIPALMA (from spanish <i>Centro Corporación de Investigación de la Palma de Aceite</i>) and FEDEPALMA (from spanish <i>Federación Nacional de Cultivadores de Palma de Aceite</i>). Dated 02/2009</p>
/20/	Bioprocesos, S.A., Estimate cost for the Compost Plan [4 Plant Costs.pdf]. Dated 07/04/2010
/21/	Emission Factor for National Electricity Grid [5 FN2_3 Calculo_Factor_Emision-V0.1.pdf], Issued by Mining and Energy Planning Unit of Mining and Energy Ministry of Republic of Colombia.
/22/	General Local Information including temperature data [6 FN4 El Copey.pdf]. Issued by Official website of El Copey Municipality. Dated 31/03/2010
/23/	Meteorological Station Data 7 FN5 [Original name of the file in Spanish: "7 FN5_Estación Meteorológica (Brillo Solar Evaporación Viento y Precipitación) Del 1995 al 2008.xls"]. Dated since 1995 until 2008
/24/	WWTP Design [8 Planta Tratamiento Aguas.pdf]. Issued by Palmeras de la Costa S.A.
/25/	Energy Statistics Working Group Meeting, Density of Oil Products [9 SIP9 Densities of Oil Products.pdf]. Dated 16-17/11/2004
/26/	QA System: Process Description [from Spanish: <i>10 5.9 descripcion proceso de produccion.doc</i>]. Dated 10/12/2009
/27/	QA System: QC Plan [from Spanish: <i>11 plan de calidad.doc</i>]. Dated 10/02/2009
/28/	Law 99/1993, Environmental Impact [12 FN6 ley99.pdf]
/29/	Decree 1220/2005, Environmental Impact [13 FN6 dec_1220_210405.pdf]
/30/	Waste Management Policy [14 FN7 MAVDT Waste Policy.pdf]
/31/	Resolution 551/2009, CDM [Original name of the file in Spanish "15 FN8 Resolución 551 c Anexos.pdf"]
/32/	<p>Stakeholder Analysis, list of the documents:</p> <ul style="list-style-type: none"> - Submission of Project Dossier [1 radicación de dossier en personería municipal.pdf]. Dated 16/03/2010 - Project Dossier [2 dossier radicado en personería municipal.pdf]. Dated 16/03/2010 - Official invitations to the LSC meeting [3 oficios de invitación a socialización.pdf]. Dated 15/04/2010 - Public invitation to the LSC meeting [4 constancia de convocatoria a socialización en personería.pdf]. Dated 29/04/2010 - Minutes of the LSC meeting [5 acta de socialización reunión abril 28 de 2010.pdf]. Dated 28/04/2010

	<ul style="list-style-type: none"> - Attendance list of the LSC meeting [6 listado de asistentes a reunión abril 28 de2010.pdf]. Dated 28/04/2010 - Photographs of the LSC meeting [7 material fotográfico socialización abril 28 DE 2010.pdf] . Dated 28/04/2010 - Documents handed out during the LSC meeting [8 documentos entregados a asistentes a reunión abril 28 DE 2010.pdf] . Dated 28/04/2010
/33/	Estimated power consumption [from Spanish: <i>C8 bis1 Consumo Eléctrico estimado vNuevo.xls</i>]. Dated 10/2010
/34/	Caudal of pumps: <ul style="list-style-type: none"> - [C8 bis2 Cornell model pump 3rb.jpg] - [C8 bis3 pump 6hp.jpg]
/35/	Official Act N° 517 of meeting of Palmeras's Board [C16 2a bis Acta Oficial.pdf]. The meeting was held 27/07/2010
/36/	Clarification on the Compost Pricing Formula and Calculations [C16 2bis Clarification on the Compost Pricing Formula and Calculations.doc]. Dated 25/08/2010
/37/	Flow diagram [from Spanish: <i>C27bis Flujograma de controles con variables.pdf</i>]
/38/	Report of scientific and technological research [from Spanish: <i>fn1 Suelos Ecuatoriales 39_1 15a20.pdf</i>] Dated. 15/05/2009
/39/	Workshop report of development and use of global water quality indicators and indices [fn11 indicators_workshop_report.pdf]. Dated 4-6/05/2005
/40/	El Copey general description [El Copey Info General.pdf]
/41/	Handbook for Palm Oil Mills, translated version distributed by FEDEPALMA. Author: M. Wambeck [fn15 Wambeck vFedepalma.pdf]. Dated 2005
/42/	Wastewater Handbook extract [Wastewater Handbook Extract.pdf]. Available at: http://www.sciencesclub.com/library/engineering/books/english/Water/Waste%20Water%20Engineering/Waste%20Water%20Engineering.pdf
/43/	Palmeras contract [Palmeras contract w- deposit.pdf]. Dated 18/01/2011 Palmeras signed contract [Palmeras signed contract pg.2 of 2 pgs.pdf].
/44/	Certificate of swift issued by Bancolombia for Frontier Industrial Corporation
/45/	Purchase and sale contract between Palmeras de la Costa and Frontier Industrial Corporation
/46/	Audit report from CENIPALMA to Palmeras de la Costa
/47/	Various documents related to laboratory samples and others <ul style="list-style-type: none"> - Results of analysis of residual water issued by Proambiente Ltda. (accredited by Colombian Environmental Ministry for wastewater determination) for the years 2008, 2009 and 2010 [Lab analysis 1.pdf; Lab analysis 2.pdf] - Brochure of Flow meter [Flow meter.pdf] - Fuel pump calibration certificate [Fuel pump calibration certificate.pdf]. Issued by SGS Colombia S.A. Dated 07/05/2009 - Brochure of Probe specifications [Probe.pdf]. Issued by REOTEMP Instrument Corporation - Scale calibration certificate [Scale calibration certificate 0174.pdf Scale calibration certificate]. Issued by Wilfort Betancourt C & CIA Ltda, dated 21/05/2010 and issued by Básculas Prometalicos S.A, dated 19/08/2009, respectively. - Brochure of Windrow data logger [Windrow datta logger.pdf]. Issued by REOTEMP Instrument Corporation.
/48/	Training program for the project activity [C29 Formacion.pdf]
/49/	Palmeras' environmental permits issued by the regional authority (Corpocesar): <ul style="list-style-type: none"> - Waste management permit: Resolution 054, 7 feb 2007; - Water discharge permit: Resolution 1050, 10 Oct 2006; - Approved environmental management plan: Resolution 437, 17 Jun 2004; - Groundwater concession: Resolution 074, 7 Feb 2006; - Surface water concession: Resolutions 001/2002 and 001/2004 regulate surface water rights in the entire region.
/50/	Discount rate calculated by PP based on the SIREM dataset published by the Colombian Superintendent of Companies <ul style="list-style-type: none"> - Use of SIREM (from Spanish <i>Sistema de Información y Riesgo Empresarial</i> of

	Republic of Colombia) [C16 1a Ejemplo Uso SIREM.pdf]. The date on which it consulted the database was 30/08/2010. - Food products sector cash flow 2007-09 [C16 1b Flujo Efectivo Sector Productos Alimenticios 2007 09.pdf] - Food products sector balance sheets 2007-09 [C16 1c Balances Sector Productos Alimenticios 2007 09.pdf] - Edible oil subsector cash flow 2007-09 [C16 1d Flujo Efectivo Subsector Aceites 2007 09.pdf] - Edible oil subsector cash flow 2007-09 [C16 1e Balances Subsector Aceites 2007 09.pdf]
/51/	Colombian Decree 3019 of 1989 by which amending Decree 1649 of 1976 and is partially regulated by the Tax Code of the Taxes Administered by the Department of National Revenue. [C16 3b Decreto 3019 de 1989.pdf]
/52/	Average exchange rates of Colombian pesos to USD for period 2008-2009 published by Colombian Central Bank. [C16 3a COP USD Banco de la Republica.pdf]
/53/	Colombian Law 1111 of 2006 by which amending Tax Status of the Taxes Administered by the Directorate of Taxes and National Aduanas[C16 3c Ley 1111 de 2006.pdf]
/54/	Palmeras accounting records of wastewater management costs, 2007-2009
/55/	Emails communication between PP and Windrow technology suppliers Bioprocesos S.A. and AV Composting Ltda. Related to the confirmation the low composting in oil extraction in Colombia and that Palmeras de la Costa and Indupalma are the first in the host country, dated 18/07/2010. Besides to the confirmation of project activity of Palmeras de la Costa is the first of Bioprocesos S.A. in the Palma sector, dated 11/10/2010 [email Ricardo Morales 20100718.pdf; email Alejandro Restrepo 20101011.pdf]
/56/	Cost Benchmarks for POME and EFB Windrow Co-Composting Palmeras [Benchmarks Compost Palmeras.xls]. Dated 09/2012
/57/	Analysis of compost delivery [ASAC representative sites.xls] dated 08/11/2012

2.2. Follow-up Interviews with Project Stakeholders:

TÜV Rheinland validation team carried out an on-site visit dated (2010-07-13) and performed interviews with the project representatives and stakeholders. The site visit was conducted to validate the accuracy and completeness of the project description as specified under webhosted PDD.

During the site visit, the validation team reviewed the available project activity designs, feasibility studies, documentation check and comparison analysis with equivalent projects as appropriate.

Prior to the interview salient points to be discussed were planned. Date of interview, interviewee and points discussed are given in the following table.

	Date	Name	Organization	Topic
/i/	2010-07-13	Larry Philp	ARETECH	Project design/PDD development/prior consideration
/ii/	2010-07-13	Dr. Jaime López Durán	Palmeras, Managing Director	Project design, starting date
/iii/	2010-07-13	Andrés V. Bomacelly Dominguez	People's Representative, El Copey Municipality	GSP
/iv/	2010-07-13	Héctor Muñoz	Palmeras, Technical Manager	PDD, Project design, starting date, environmental issues, site visit
/v/	2010-07-13	Hadee Escorcía	Palmeras, Quality and environmental coordinator.	environmental issues, site visit

/vi/	2010-07-13	Alejandro Restrepo	Bioprocesos S.A., Manager	Monitoring Plan, PDD
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Validation Team considered the views obtained in these interviews while arriving at Validation Opinion.

2.3 Resolution of Outstanding Issues:

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

- It organizes, details and clarifies the requirements a CDM project is expected to meet CDM requirements;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the validation report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for this project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- Mistakes have been made with a direct influence the ability of the project activity to achieve on project results like real, measurable, verifiable and additional emission reductions;
- CDM and/or methodology specific requirements have not been met; or
- There is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

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 CDM requirements for registration.

Validation Protocol Table 1: Validation requirements				
Checklist Question	Reference	Means of Validation (MoV)	Comment	Draft and/or Final Conclusion
The various UNFCCC requirements as specified in the VVM are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the VVM.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of validation are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Table 3: List of forward action requests (FARs)			
FAR number	Reference	Summary of project owner response	Validation team conclusion
Forward action request (FAR) to be raised during validation to highlight issues related To project implementation that requires review during the first verification of the project activity. FARs Shall not relate to the CDM requirements for registration.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1. Validation protocol tables

2.4 Internal Quality Control:

The final validation report underwent a technical review by a qualified independent reviewer before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

2.5 Validation Team:

Before the assessment begins, members of the validation team are ensured to cover the technical area(s), sectoral scope(s) and relevant host country experience including local language ability for evaluating the CDM project activity. The qualification of the team is as per the criterias defined by the EB guidelines for qualification.

Validation Team			Type of Involvement						
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support	Technical Reviewer
Víctor Abarca (Team leader since 17/12/2010)	Chile	1.2, 6.1, 13.2	X	X	X	X			
Nicolás Ortner (Ex-Team leader until 16/12/2010)	Argentina	12.1, 13.1			X				
Cuiping Deng (TR until 24/09/2012)	China	1.2, 5.1, 11.1, 12.1							X
Danae Diaz	Mexico	1.2, 13.1							X

On site visit: 13/07/2010 – 14/07/2010

3. 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 the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Approval and Participation:

3.1.1 Letter of Approval:

The below table summarizes the project participants and parties involved. The authenticity of the letters of approval has been validated by TÜV Rheinland validation team.

These LoA(s) are therefore regarded as valid and meeting the requirements.

Project participants	1. Palmeras de la Costa S.A.	2. Aretech Cambio Climático S.A.
Parties involved	Colombia (host)	
APPROVAL		
LoA received	Yes	
Date of LoA	2010-10-15	
Reference to document	Ref. #4	
LoA received from	PP /DNA	
Validation of authenticity	Crosschecked with the local DNA website	
Validity of LoA	Valid	
PARTICIPATION		
Party is party to Kyoto Protocol	Yes	
Voluntary participation	Yes	
Diversion of official development aid towards host country	Yes	
Project contribution to SD	Yes	

The validation team confirms that the information related to the letter of approval as mentioned in the above table is authentic. The validation team has confirmed the same through DNA website / telephonic interview or email communication with the DNA personnel. The entire project participants listed in the tabular form of the PDD have obtained the letter of approval from their respective DNA.

The validation team also confirmed that the project is financed entirely by Palmeras /35/,/44/,/ii/. Since the financing is 100% private, the validation team concluded that no ODA is involved, and hence it is not possible that ODA is diverted to this project activity.

3.1.2 Modalities of Communications:

Requirement of MOC	Criteria fulfilled	Determination by the validation team
Is the focal point identified	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	In the MoC the respective focal point is identified in the submitted document /5/.
Is the MOC signed by all project participant (including focal point identified entity/personal)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All project participants have signed correctly the MoC./5/
Is the written confirmation obtained by the PP's stating the authorization, specimen signatures and personal details, employment status are valid and accurate?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Each of the PP who signed the MoC, are employees from the PPs. During on site audit, documents from each company were crosschecked to validate the information stated on the PDD. /5/
Is MOC received by the validation team from the PP with whom DOE has the contractual relationship?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The MOC was received directly by the PP and confirmed the contractual entities (2) authorized to signed the corresponding MOC. /5/

The validation team confirms that the applicable latest template is been employed by the project participant for the MOC. The MOC is been received from the DOE's contractual project participant. All the personal who have duly signed the MOC are been confirmed from the written communication by the project proponent regarding their personal identity, specimen signatures and employment status,

3.2 Project Design Document:

The Project Design Document is based on the currently valid PDD template and is completed in accordance with the applicable guidance document /7/.

3.3 Project Description:

This project activity is a co-composting project in Palmeras de la Costa, S.A., located in the region of Cesar, Colombia.

The process of crude palm oil production generates 3 types of solid waste: Empty Fruit Bunches (EFB), Mesocarp Fibres, and Palm Kernel Shells (PKS). Also, the liquid Palm Oil Mill Effluent (POME) with a high chemical oxygen demand is generated.

EFB is currently mulched and applied in the plantation, where it undergoes anaerobic and aerobic decomposition. Fibres and PKS are used in the palm oil mill's energy plant to generate electricity and steam. The mill is connected to the power grid; power requirements that are not generated through these renewable source onsite are purchased through the grid.

POME is currently treated in series of open lagoons before being discharged. During the anaerobic digestion in lagoons, methane gas is generated and emitted into the atmosphere. The lagoons are required to provide enough retention time to bring the COD of the wastewater down to the level of the local discharge standards.

The main objective of the project is to reduce the pollution potential of EFB and POME by implementing an aerobic composting process of its waste streams. It consists of co-composting EFB that would have been left to decay along with POME. The project activity will result in the avoidance of large quantity of methane that would have been released in an uncontrolled manner into the atmosphere from the anaerobic decay of EFB and POME.

The technology used will avoid the emission of methane based on the anaerobic decay of the Empty Fruit Bunch (EFB) and POME in the company's activities. A co-composting process helps the project to reduce emissions based on the following process: The project will be carried out in a newly built composting plant adjacent to existing wastewater treatment lagoons. The plant will occupy approximately 20.000 m².

For compost of EFB will be used Windrow technology. In case of POME, it's added to the composting process to maintain moisture level and provide additional nitrogen content for a compost rich in nutrients, throughout the process cycle. By means Windrow turners, the compost piles will be rotated frequently with the objective of ensure the aerobic composting conditions, which will be monitored through the compost quality control plan.

The validation team compared the project description in the PDD to the detailed design study /18/, the specifications of the Windrow turner /45/, the process flow diagram /37/ and the project implementation cost estimate/20/. The defined equipment in the PDD, plus information of purchased equipment, scrutinized by the audit team defines the real definition of the project activity.

Starting date of project	Expected project operational lifetime	Crediting period
18/01/2011 (date of signing contract to order Window turner; the wire transfer for the initial payment was carried out 20/01/2011)./44,45/	25 years	01/01/2013 or registration date, if later. 7 years, renewable

Herewith, the Validation Team summarizes major changes between webhosted PDD and final version of PDD for submission as follows:

Subject	Webhosted PDD	Correction to webhosted PDD in the final PDD submission for registration with DOE
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		assessment and reason of acceptance.
PDD (project title / participants involved/ project location /project technology etc)	Palmeras POME Co-composting Project/ Palmeras de la Costa, S.A. (Private Company), Aretch Cambio Climatico, S.A. (Private Company)	Title and project participants remain the same in the initial and final version of the PDD.
Methodologies and tools applied (scope and version numbers)	AMS-III.F, version 08 Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04; Tool to calculate the Emission Factor for an electricity system, version 02; Tool to calculate baseline, project and/or leakage emissions from electricity consumption, version 01;	AMS-III.F, version 10 Tool to calculate baseline, project and/or leakage emissions from electricity consumption, version 01; Tool to calculate project or leakage CO2 emissions from fossil fuel combustion, version 2; The SWDS tool is not used in the final PDD, to be conservative.
CER calculations (formula applied/ amount of emission reduction)	41,912 tCO2e/yr	35,557 tCO2e/yr The webhosted PDD included baseline methane emissions from EFB decay. To be conservative, these emissions are ignored in the final PDD.
Additionality: (Benchmark / input values/analysis type/project start date/IRR or NPV values etc.)	Attachment A of the Appendix B of the simplified modalities and procedures for small-scale CDM Project activities: Simple cost analysis (investment barrier) Non-binding best practice example for the prevailing practice barrier.	A benchmark analysis is used instead of a simple cost analysis. The benchmark chosen is the net present value of project and baseline scenario cash flows. The input values and their validation are shown in section 3.5.
Monitoring (parameters / frequency)	Parameters are according to methodology, frequency requirements from the methodology.	Sampling plans have been added for the parameters that will be monitored via sampling (Annexes A.4.2 and A.4.3). These sampling plans comply with the Standard for sampling and surveys for CDM project activities and programme of activities v02.
Crediting period (type / start date)	1/11/2010 or registration date, if later. 7 years, renewable	01/01/2013 or registration date, if later. 7 years, renewable
<p>Please refer to Appendix A of this report for details of each change between webhosted PDD and the final PDD for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol.</p> <p>With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team.</p> <p>It is concluded that the Validation Team has reviewed the project in line with the VVM (version 01.2) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the Validation Team, issuing the positive validation opinion for project registration.</p>		

TÜV Rheinland validation team considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

3.4 Baseline and Monitoring Methodology:

3.4.1 Applicability of the selected methodology to the project activity

During audit activities the audit team follows the VVM instructions to perform the audit, first doing a document review of the PDD, and cross checking methodology, tools and evidences which supports this document. During on-site audit, interviews of relevant stakeholders, and project proponent were held, and evidences to support additionality, calculations, and monitoring procedures were scrutinized so to conclude a clear definition, of the quality of the project.

Regarding methodology and tools the Project Activity meets all applicability of the methodology, which was fully described on the PDD.

The emission reduction claimed by this projects are those related to emission reductions based on CH₄, generated by the decay of POME without the project. On the PDD this main emission is clearly described on section B.3.

As stated on the PDD, the project activity will reduce the emission based on the project implementation.

The project activity is a Small scale project due to the description for Type III small scale project activities: Type III: Other projects that both reduce anthropogenic emissions by sources and directly emit less than 60 kilotonnes of carbon dioxide equivalent annually. The commented project activity reduces 35,557 tCO₂e/yr.

Approved baseline and monitoring methodology AMS-III.F “Avoidance of methane emissions through composting” (version 10) has been applied for the proposed project activity. At the time of GSP of the PDD (version 1, dated 2010/05/17) and methodology AMS-III.F version 8.0 applied was the latest one. The version 10 is applicable, if requests for registration for the project can be submitted until 2013/25/01, 23:59 GMT. However and as the validation activities continued, CAR33 was raised regarding the update of the project activity to the version 10.

The validation team determined the applicability of methodology AMS-III.F (version 10) as follows:

Applicability criteria of the methodology AMS-III.F., Version 10	Criteria fulfilled	Determination by the validation team
Point 1: This methodology comprises measures to avoid the emissions of methane to the atmosphere from biomass or other organic matter that would have otherwise been left to decay anaerobically in a solid waste disposal site (SWDS), or in an animal waste management system (AWMS), or in a wastewater treatment system (WWTS).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	EFB and POME management by the project activity will avoid emissions.
Point 1: In the project activity, controlled aerobic treatment by composting of biomass is introduced.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The project activity involves composting, based on the Windrow technology which maintains aerobic conditions. /18/
Point 2: The project activity does not recover or combust landfill gas from the disposal site (unlike AMS-III.G “Landfill methane recovery”), and does not undertake controlled combustion of the waste that is not treated biologically in a first step (unlike AMS-III.E “Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment”). Project activities that recover biogas from wastewater treatment shall use methodology AMS-III.H “Methane recovery in wastewater treatment”. Project activities involving co-digestion of organic matters shall apply methodology AMS-III.AO	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The project activity involves only composting. /18/

“Methane recovery through controlled anaerobic digestion”.		
Point 3: Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO ₂ equivalent annually.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Project emissions are lower than the threshold. /16/
Point 4: This methodology is applicable to the composting of the organic fraction of municipal solid waste and biomass waste from agricultural or agro-industrial activities including manure.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The project activity consumes biomass waste from agricultural or agro-industrial activities. /18/
Point 5: This methodology includes construction and expansion of treatment facilities as well as activities that increase capacity utilization at an existing facility. For project activities that increase capacity utilization at existing facilities, project participant(s) shall demonstrate that special efforts are made to increase the capacity utilization, that the existing facility meets all applicable laws and regulations and that the existing facility is not included in a separate CDM project activity. The special efforts should be identified and described.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	This project is the construction of a new facility. The provisions for increasing capacity at an existing facility do not apply. /18/
Point 6: This methodology is also applicable for cocomposting wastewater and solid biomass waste, where wastewater would otherwise have been treated in an anaerobic wastewater treatment system without biogas recovery. The wastewater in the project scenario is used as a source of moisture and/or nutrients to the biological treatment process e.g. composting of empty fruit bunches (EFB), a residue from palm oil production, with the addition of palm oil mill effluent (POME) which is the wastewater coproduced from palm oil production.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	It is part of the project activity the co-compositing wastewater and solid biomass waste /18/
Point 7: In case of co-composting, if it can not be demonstrated that the organic matter would otherwise been left to decay anaerobically, baseline emissions related to such organic matter shall be accounted for as zero, whereas project emissions shall be calculated according to the procedures presented in this methodology for all co-composted substrates.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	In a conservative approach the PP assumes for solid organic matter baseline emissions equal 0. /2/
Point 8: The location and characteristics of the disposal site of the biomass, animal manure and co-composting wastewater in the baseline condition shall be known, in such a way as to allow the estimation of its methane emissions, using the provisions of AMS-III. G, AMS-III.E (concerning stockpile), AMS-III.D “Methane recovery in animal manure management systems” or AMS-III.H respectively.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	SWDS for biomass and the WWTS for co-composting wastewater are included in the project boundary. /2/ Remaining provisions for stockpiles and manure management do not apply to this project activity. /18/
Point 8: Project activities for composting of animal manure shall also meet the requirements under paragraphs 1, and 2(c) of AMS-III.D. Further no bedding material is used in the animal barns or intentionally added to the manure stream in the baseline. Blending materials may be added in the project scenario to increase the efficiency	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

of the composting process (e.g. to achieve a desirable C/N ratio or free air space value), however, only monitored quantity of solid waste or manure or wastewater diverted from the baseline treatment system is used for emission reduction calculation.		
Point 8: The following requirement shall be checked ex ante at the beginning of each crediting period: (a) Establish that identified landfill(s)/stockpile(s) can be expected to accommodate the waste to be used for the project activity for the duration of the crediting period; or (b) Establish that it is common practice in the region to dispose off the waste in solid waste disposal site (landfill)/stockpile(s).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Option (a) was chosen and justified in the PDD. /2/
Point 9: The project participants shall clearly define the geographical boundary of the region referred in paragraph 8(b), and document it in the CDM-PDD. In defining the geographical boundary of the region, project participants should take into account the source of the waste i.e. if waste is transported up to 50 km, the region may cover a radius of 50 km around the project activity. In addition, it should also consider the distance to which the final product after composting will be transported. In either case, the region should cover a reasonable radius around the project activity that can be justified with reference to the project circumstances but in no case it shall be more than 200 km. Once defined, the region should not be changed during the crediting period(s).	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A, since 8(a) was demonstrated instead of 8(b)
Point 10: In case produced compost is handled aerobically and submitted to soil application, the proper conditions and procedures (not resulting in methane emissions) must be ensured.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Project activity considers in situ monitoring of soil application/2/
Point 11: In case produced compost is treated thermally/mechanically, the provisions in AMS-III.E related to thermal/mechanical treatment shall be applied.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A
Point 12: In case produced compost is stored under anaerobic conditions and/or delivered to a landfill, emissions from the residual organic content shall to be taken into account and calculated as per the latest version of the “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site”.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	N/A

The assessment of the project's compliance with the applicability criteria of the methodology AMS-III.F (version 10) as documented in the PDD part B and annex 3, which are evaluated in detail under the validation protocol in Appendix A to this report based from the webhosted PDD.

3.4.2 Project Boundary:

The activity is a unique project defined from the beginning as small scale project and is not part of a debundled component of a large scale project. No other project activity is defined and were described also in the Colombian DNA, or related to this project. This is demonstrated by the issuance of the LoA by the local DNA and the previous information.

The different sources of GHG are clearly defined and analyzed in the PDD. As per part 14 of AMS III.F v10.0, the project boundary includes the following physical, geographical sites:

<i>Project Boundary Requirement as per AMS III.F v10</i>	<i>This Project Activity</i>
Where the solid waste would have been disposed and the methane emission occurs in absence of the proposed project activity;	EFB has been disposed of historically within the plantations associated with Palmeras' mill.
In the case of projects co-composting wastewater, where the co-composting wastewater would have been treated anaerobically in the absence of the project activity;	Wastewater has been treated historically in Palmeras' onsite anaerobic treatment lagoons.
Where the treatment of biomass through composting or anaerobic digestion takes place;	Composting will take place on Palmeras' agro-industrial facility, adjacent to the wastewater treatment lagoons.
Where the residual waste from biological treatment or products from those treatments, like compost and slurry, are handled, disposed, submitted to soil application, or treated thermally/mechanically;	Compost will be applied on the plantations associated with Palmeras' mill. Compost will not be sold for other uses.
Where biogas is burned/flared or gainfully used;	No biogas is generated in this project activity.
And the itineraries between them (a, b, c, d and e), where the transportation of waste, wastewater, where applicable manure, compost/slurry/products of treatment or biogas occurs.	All of these itineraries are located within the Palmeras' agro-industrial facilities and the plantations associated with the mill.

The geographical and physical project boundary of the project activity was determined by the validation team during the on-site assessment. The coordinates were correctly documented in the PDD. The sources and sinks of greenhouse gas identified in the PDD are deemed to be appropriate. The coordinates were confirmed by the validation team through GPS.

Emissions	GHGs involved	Description
Baseline emissions	CH ₄	Methane emissions from biomass decay in the landfills (disposed in unmanaged landfills) Methane emissions from anaerobic process (open lagoons)
Project emissions	CH ₄	Methane emissions from anaerobic pockets during composting process (Composting process). Methane emissions from anaerobic process of runoff water collected after the project activity (runoff water)
	CO ₂	Incremental emissions from grid electricity and fossil fuel (Auxiliary equipment)

In summary, the project boundary was correctly identified in accordance with the methodology AMS-III.F (version 10). All greenhouse gas emissions occurring within the proposed project activity boundary as a result of the implementation of the proposed CDM project activity have been appropriately addressed in the PDD. The identified project boundary and selected sources of emissions are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed CDM 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, with respect to the methodology applied.

3.4.3 Baseline Identification:

Baseline is described as the situation previously existing and without the project activity for EFB and POME. In fact, the current activity for treating POME is to treat them in anaerobic lagoons. Also EFB is piled on the Palmeras plantation on the ground and left to decay naturally. This was observed by the validation team during the on-site visit, and is documented as common in Colombia in "Prospective agenda for research and Development in the Value chain for Palm Oil, from CENIPALMA and FEDEPALMA, issued February 2009 /19/.

Existing permits from the local authorities allowing to the above practice were shown to the audit team./49/

The baseline is in accordance with the actual practice, which was observed during the audit on-site.

As per the applied methodology AMS-III.F (version 10), Avoidance of methane emissions through composting", the validation team confirms that the proposed project activity meets the above requirement. Therefore, the baseline scenario as prescribed in the AMS-III.F (version 10) is applicable to the proposed project activity. The validation took cognizance of § 105 of VVM (version 01.2).

The approved baseline methodology applicable to the project explicit criteria implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>AMS III.F v10.0 defines the baseline as the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere.</p> <p>Baseline emissions for EFB are ignored, to be conservative.</p> <p>Treatment of POME in anaerobic lagoons is justified as the baseline based on current and common practice /19/</p> <p>Direct discharge of POME is discarded in the PDD for non-compliance with local regulations. Alternative treatments for POME (biodigestors or methane capture either with or without energy production) are discarded in the PDD since they would involve both investment and higher operating costs.</p> <p>Therefore the baseline scenario for this project is the continuation of current practices based on the following considerations:</p> <p>A. Current practice for managing EFB</p> <p>B. Current practice for managing POME</p> <p>C. Common practices for managing EFB and POME in the Colombian palm oil sector</p> <p>D. Compliance with legal and regulatory requirements</p> <p>E. Feasibility</p> <p>Key data:</p> <table><tr><th>Parameter</th><th>Units</th><th>Value</th><th>Source/Explanation</th></tr><tr><td>FFB Processed</td><td>t/yr</td><td>220,000</td><td>Projected 2012 production</td></tr><tr><td>EFB</td><td>% of FFB</td><td>23%</td><td>Historic average</td></tr><tr><td>Effluent</td><td>m³/tFFB</td><td>0.8</td><td>Historic average</td></tr><tr><td>Effluent BOD</td><td>kg/m³</td><td>25.0</td><td>Handbook value /41/</td></tr></table> <p>Source: section B. 4 PDD v.5</p>	Parameter	Units	Value	Source/Explanation	FFB Processed	t/yr	220,000	Projected 2012 production	EFB	% of FFB	23%	Historic average	Effluent	m ³ /tFFB	0.8	Historic average	Effluent BOD	kg/m ³	25.0	Handbook value /41/
	Parameter	Units	Value	Source/Explanation																		
	FFB Processed	t/yr	220,000	Projected 2012 production																		
	EFB	% of FFB	23%	Historic average																		
Effluent	m ³ /tFFB	0.8	Historic average																			
Effluent BOD	kg/m ³	25.0	Handbook value /41/																			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, the PDD includes the data requested.																					
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, the information is included in the list of documents.																					

scenario		
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The references and documents provided by the client were taken in consideration for the project activity definition and CER calculation.
All relevant policies / regulations considered are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All environmental permits are listed and referenced in the PDD
Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The alternatives presented on the PDD are the most used technologies, applied for such type of activities.
The baseline scenario selection is appropriate and determined according to the methodology	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The applied analysis by the PP, recognize the baseline scenario fulfilling the methodology.
The approved methodology used is applicable to the identified baseline scenario	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	It is fully applicable for the project activity as explained in section 3.4.1.

The approved baseline methodology has been correctly applied to identify a realistic and credible baseline scenario, and the identified baseline scenario most reasonably represents what would occur in the absence of the proposed CDM 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.

3.4.4 GHG Emission Reductions:

In summary, the calculation of emission reductions was correctly demonstrated by the PP according to the methodology AMS-III.F (version 10) and its tool “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”, version 01; “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, version 2; the SWDS tool is referenced by the methodology but not used by this project, to be conservative. The table below summaries validation team’s determination of emission reduction:

All assumptions made for estimating GHG are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Calculation spreadsheet was submitted and is according to methodology. Include all parameters as stated on the PDD./2/.8/.9/.16/
All data used by project participants are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes. All data included in the PDD, i.e. estimated values, fixed values, IPCC 2006 reference values between others were applied correctly in the calculation of CERs and estimation are appropriate.
Their references and sources are also listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All references are listed in the PDD and supported by evidences which were crosschecked during on site audit.
Formulas, parameters, values are complete, accurate, transparent and conservative	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	All data provided in the PDD is complete, accurate and traceable according to methodology.
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Data provided from real documents submitted to the audit team and are included in the list of documents in section 2.1
Methodology has been applied correctly to calculate project emissions, baseline	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Spreadsheet supports this issue and methodology is correctly applied. Audit team could identify each source of data for ex-ante estimations, and how the replication could be supported on physical evidences provided by the PP.

emissions, leakage emissions and emission reductions		
All the emissions of baseline emissions can be replicated using information provided in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The baseline values could be replicated and evidences were strong and also was submitted to the audit team, to crosscheck the calculations.

Baseline emissions

$$BE_y = BE_{CH_4,SWDS,y} + BE_{ww,y} + BE_{CH_4,manure,y} - MD_{y,reg} * GWP_{CH_4}$$

Where

BE_y = Baseline emissions associated with the project activity in the year y (tCO₂e).

$BE_{CH_4,SWDS,y}$ = Yearly methane generation potential of the solid waste composted by the project activity during the years x from the beginning of the project activity (x=1) up to the year y (tCO₂e).

$BE_{ww,y}$ = Where applicable, baseline emissions from the wastewater co-composted, calculated as per the procedures in AMS III.H (tonne)

$BE_{CH_4,manure,y}$ = Where applicable, baseline emissions from manure composted by the project activities, as per the procedures of AMS-III.D

$MD_{y,reg}$ = Amount of methane that would have to be captured and combusted in the year y to comply with the prevailing regulations (tonne)

GWP_{CH_4} = GWP for CH₄

The value of $BE_{CH_4,manure,y}$ is 0, due to the term does not apply, since manure is no composted in this project activity.

According to the methodology AMS-III.H (version 16) the term $BE_{ww,treatment,y}$ be calculated as follows:

$$BE_{ww,treatment,y} = \sum_i (Q_{ww,i,y} * COD_{inflow,i,y} * \eta_{COD,BL,i} * MCF_{ww,treatment,BL,i}) * B_{o,ww} * UF_{BL} * GWP_{CH_4}$$

Where:

$Q_{ww,y}$ = Volume of wastewater entering the co-composting facility in the year y (m³).

$COD_{inflow,y}$ = Chemical oxygen demand of the wastewater entering the co-composting facility in the year y (tonnes/m³).

$\eta_{COD,y}$ = COD removal efficiency of the baseline WWTS.

$MCF_{ww,treatment,BL}$ = Methane correction factor for the wastewater treatment system in the baseline scenario.

$B_{o,ww}$ = Methane producing capacity for the wastewater (kg CH₄/kg BOD).

UF_{BL} = Model correction factor to account for model uncertainties for wastewater.

According to the methodology AMS-III.H (version 16) allows BOD or COD to be used, the project participant have selected and justified the BOD option. Moreover, due to only one wastewater stream is used in this project activity, hence the summation sign and index *i* can be ignored.

Thus, the formula as follows:

$$BE_{ww,treatment,y} = Q_{ww,i,y} * BOD_{inflow,i,y} * \eta_{BOD,BL,i} * MCF_{ww,treatment,BL,i} * B_{o,ww} * UF_{BL} * GWP_{CH_4}$$

Where:

$BOD_{inflow,y}$ = Biological oxygen demand of the wastewater entering the co-composting facility in the year y (tonnes/m³).

$\eta_{BOD,y}$ = BOD removal efficiency of the baseline WWTS.

$MCF_{ww,treatment,BL}$ = Methane correction factor for the wastewater treatment system in the baseline scenario.

For the first year, the result as follows:

$BE_{ww,treatment,1} = 37,065 \text{ ton CO}_2\text{e}$

For the reasons explained above, the equation of baseline emission is simplified as follows:

$$BE_y = BE_{ww,treatment,i}$$

Baseline emissions for year 1 are thus calculated to be:

$$BE_1 = 37,065 \text{ ton CO}_2\text{e}$$

Project Emissions

$$PE_y = PE_{y,transp} + PE_{y,power} + PE_{y,comp} + PE_{y,runoff} + PE_{y,res waste}$$

Where:

PE_y = Project activity emissions in the year y (tCO₂e).

$PE_{y,transp}$ = Emissions from incremental transportation in the year y (tCO₂e).

$PE_{y,power}$ = Emissions from electricity or fossil fuel consumption in the year y (tCO₂e).

$PE_{y,comp}$ = Methane emissions during composting process in the year y (tCO₂e).

$PE_{y,runoff}$ = Methane emissions from runoff water in the year y (tCO₂e).

$PE_{y,res waste}$ = In case produced compost is subject to anaerobic storage or disposed in a landfill: methane emissions from the anaerobic decay of the residual organic content (tCO₂e).

Due to the project activity does not involve incremental transport or storage under anaerobic conditions, the $PE_{y,transp}$ and $PE_{y,res waste}$ do not apply.

$PE_{y,power}$ is defined by electric power and fossil fuel consumption from project equipment items.

$$PE_{1,power} = 630 \text{ ton CO}_2\text{e}$$

$$PE_{1,comp} = 850 \text{ ton CO}_2\text{e}$$

$$PE_{1,runoff} = 28 \text{ ton CO}_2\text{e}$$

The equation of PE_y is simplified to reflect that no incremental emissions occur due to waste transport, leakage or anaerobic decomposition of residual waste:

$$PE_y = PE_{y,power} + PE_{y,comp} + PE_{y,runoff}$$

Sum of above (for the first year):

$$PE_1 = 1,509 \text{ ton CO}_2\text{e}$$

Note: reported values are subject to independent rounding and might not sum exactly as if they were integers.

Leakage

According to methodology AMS-III.F (version 10), if the project technology is the equipment transferred from another activity or if the existing equipment is transferred to another activity, leakage effects are to be considered... The composting equipment is newly purchased /43,44,45/. This is a new composting facility, so no existing equipment exists for composting, as observed during the site visit. Therefore leakage does not apply.

Emission Reductions

Since leakage emissions can be ignored for this project activity, the emission reductions for year 1 are estimated by subtracting the project emissions from the baseline emissions (for the first year):

$$ER_1 = 35,557 \text{ ton CO}_2\text{e}$$

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 35,557 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 and conservative 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.

3.5 Additionality:

The project activity is categorized as a small scale and to demonstrate and assess the additionality the project proponent use the “Guidelines for the Demonstration of Additionality of Small-Scale Project Activities” v09 .

A barrier analysis is carried out to demonstrate the investment and prevailing practice barriers. The investment barrier is demonstrated through investment analysis. All the information to support the investment analysis is submitted to the audit team and crosschecked against the information provided in the PDD.

The investment barrier in the PDD concludes that the financing of the project activity is entirely from Palmeras, and the company conclusion to go forward is the benefit from the CDM revenues.

The prevailing practice barrier analysis is based on the information provided in Section B.4 from the different scenarios, and additional references cited in Section B.5. The validation team has verified the content and authenticity of the cited references. The non-binding best practice for small-scale CDM project activities indicates that the prevailing practice barrier is satisfied when a project is “among” the first of its kind. The evidences reviewed by the validation team support the conclusion that it is “among” the first of its kind but it might not be the very first of its kind. As per the clarification issued in Annex 28 to EB68, the use of “among” the first of its kind is appropriate to this SSC project activity. The validation team concludes that the prevailing practice barrier supports the investment analysis to demonstrate additionality.

3.5.1 CDM consideration:

Timeline	Milestone	Determination by the validation team
24/11/2009	Palmeras’ board decision to design and develop the project, considering CDM income as a key element	Evidence crosschecked /15/
28/11/2009	Agreement between Palmeras and Aretech to collaborate in developing the project	Agreement crosschecked during on site audit and provided as evidence /43/
25/02/2010	Prior Consideration Notification	Crosschecked during on site audit and evidences were shown and submitted corresponding to Board of Directors minutes /15/
01/03/2010	Compost plant design report	Evidence crosschecked /18/
07/04/2010	Compost plant cost estimate	Evidence crosschecked /20/
28/04/2010	Local Stakeholder Consultation	Crosschecked during on site audit and evidences were shown and submitted /32/
26/05/2010	Global Stakeholder Comment	Crosschecked on the UNFCCC website
27/07/2010	Palmeras’ board decision to invest in the project	Evidence crosschecked /35/
15/10/2010	Letter of Approval, Colombian DNA	LoA crosschecked and validated with the local DNA website /3/
18/01/2011	Project Start Date, determined through the purchase order for the Windrow turner (please see section C.1.1)	Documents from the transaction were crosschecked. /44/, /45/
Nov 2011	Start-up of composting operations	Confirmed via email by PP

It is TÜV Rheinland validation team opinion that the proposed CDM project activity complies with the requirements of the latest version of the guidance on prior consideration of CDM.

Starting date of project	Justification of and evidences (references) on the starting date of project	Date of CDM consideration
18/01/2011	Date of signing contract to order Window turner /44/; the wire transfer for the initial payment was carried out two days later, on 20/01/2011). /45/ The PDD selects the earlier of the two dates. It is the largest item in the project cost /20/ and has a long lead time /45/. The validation team concludes the evidence to be credible demonstration of start date as defined in the CDM Glossary of Terms./7/	25/02/2010

In conclusion, the starting dates of the project activity were before 02/08/2008 as well as the date of publication of the PDD for global stakeholder process. Thus, the proposed project activity is defined as an “Existing project activity” according to the Annex 13 of EB 62 “Guidelines on the demonstration and assessment of prior consideration of the CDM (version 04.0)”.

3.5.2 Alternatives:

As stated by the methodology AMS III.F v.10.0, the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere.

The PDD justifies with supporting references the identification of the baseline scenario for EFB as piling and mulching. The justification of baseline scenario is based on the following considerations:

- Current practice for managing EFB
- Current practice for managing POME
- Common practices for managing EFB and POME in the Colombian Palm oil sector
- Compliance with legal and regulatory requirements
- Feasibility

To be conservative, baseline emissions from EFB management are ignored.

The approved methodology does not require an analysis of alternatives to select the EFB baseline scenario. Since the PP selects to ignore baseline EFB emissions, the validation team concludes the EFB baseline analysis is sufficient.

The PDD justifies with supporting references the identification of the baseline scenario for POME its treatment in anaerobic lagoon prior to discharge. This justification is based on current practice, common practice, legal requirements, and feasibility. The evidence that anaerobic lagoons are common practice is recent and authentic /19/. It is also described in registered CDM project 1942. Current practice of anaerobic lagoons was observed during the site visit and is documented./24/.

The approved methodology does not require an analysis of alternatives to select the POME baseline scenario. The evidences cited in the PDD to support the POME baseline scenario have been reviewed for accuracy and authenticity by the validation team. The validation team concludes the POME baseline analysis is sufficient.

TÜV Rheinland validation team considers the selected baseline is credible and complete.

3.5.3 Investment analysis:

The Barrier analysis was analyzed for the demonstration and assessment of additionality and presented in the next section.

3.5.4 Barrier analysis

In this proposed Project, the investment barrier is analyzed in order to determine additionality. The additionality is also supported by the prevailing practice barrier.

Investment Barrier Analysis

This project activity will have two revenue streams: income from compost sold to plantation owners (that are also Palmeras' shareholders) and CERs. The PDD correctly cites the nonbinding best practice examples, indicating that a simple cost analysis is not to be applied to a project with two revenue streams. The decision context of the project activity is whether or not to invest in the compost plant, since Palmeras already has anaerobic lagoons to treat the POME. Therefore, the selection of a benchmark analysis is also supported by the investment analysis guidelines, since the baseline scenario would require no new investment.

NPV of project cash flows is selected as the benchmark. A positive NPV would indicate an attractive investment opportunity in the absence of CER revenues. This selection of benchmark is deemed appropriate.

The cash flow analysis is carried out on a real basis (not nominal, so inflation and price escalators are not applied), after tax, prior to financing expenses. The parameters have been validated for consistency with this basis.

1 Period of Assessment

The period of assessment is 20 years, plus one year of construction. It is justified in the PDD based on the accounting lifetime of the civil works./51/ The PDD also indicates an operational lifetime for the project of 25 years, if the Windrow turner is replaced at the end of its lifetime of 10 years. This operational lifetime is considered reasonable by the validation team, considering the equipment specifications and the depreciation schedules for the different asset classes within the project design./51,18/ The validation team observes the correct interpretation of paragraph 3 of EB62 An05: 1) the period is within the suggested range of 10 to 20 years; 2) since the expected operational lifetime of the project is longer, a fair value is assigned; 3) the replacement of the Windrow turner is included at the end of year 10, since it is within the period of assessment. The validation team considers this period of assessment to be adequate, considering the residual values applied to those components with remaining lifetime at its end.

2 Fair Values

All of the initial investment is fully depreciated by the end of the period of assessment. The PDD applies 33% of the original investment amount in civil works to reflect its residual value. This is considered conservative, since the book value would be zero at that point in time. Also, the PDD assumes recovery of 100% of the investment in working capital. The validation team observes the correct interpretation of paragraph 4 of EB62 An05.

3 Depreciation and corporate income tax

Depreciation and corporate income tax are calculated according to Colombian regulations, correctly cited in the PDD./51/

4 Discount rate

The PDD identifies a sectoral discount rate of 8.0%. This discount rate is based on the average sectoral return on restated assets, and is considered consistent with the basis of the analysis: real, after tax, before financing. It is the average rate based on data published by the Colombian Superintendent of Companies./50/ The validation team confirmed the correct use of the data from the Food Products Sector and its Oils and Fats Subsector from the SIREM database /50/ and confirmed the calculations to determine the sectoral discount rate. The

validation team also observes that it is lower than the real, after tax, equity discount rate of 12.0% for sectoral scope 13 projects in Colombia in the appendix to EB62 Annex 05.

The validation team notes that this discount rate is in real, not nominal terms, since the denominator includes restated assets values, adjusted for inflation. The PDD chooses to exclude inflation and escalators in the cash flow analysis, also on a real basis. The validation team concludes that the exclusion of inflation adjustment is consistent with the real basis of the discount rate, and therefore adequate.

The PDD argues that the relevant sector is food processing, not composting, citing the integrated nature of the palm growing and oil extraction industry between Palmeras and its owners. This argument is deemed suitable by the validation team, since the project converts Palmeras' wastes into compost to sell back to Palmeras and its owners-suppliers.

5 Input Values

The following input values are used in the investment analysis and have been validated:

Parameter:	Investment Cost, in thousand COP	
Value applied for the NPV calculation:	Civil Works	1,524,570
	Plant and Equipment	1,024,284
	engineering and Supervision	250,000
	Working capital	148,161
	Total	2,947,015
Source of the value:	Engineering Design Study and Additional Project Design Information Supplied by Bioprocesos, S.A. /18,20/	
Consistency of the value:	<p>The values are derived from a detailed engineering cost estimate, summing the individual components.</p> <p>The largest value item, the Windrow turner, is consistent with the vendor quote /45/</p> <p>The total value is consistent with investment cost benchmarks from other EFB and POME co-composting CDM projects, as analyzed below./56/</p> <p>The validation team concludes the accuracy of this value.</p>	
Validity of input value at the time of investment decision making:	<p>The final cost estimate is dated April 2010./20/. The initial Board decision to design and develop the project is dated 24/11/2009./15/ This was ratified by the board committed to investing in the project on 27 July 2010 /35/ /36/. The project implementation was initiated after the rain season in January 2011 /22/,/45/. The proximity of these dates demonstrates the validity of the values at the time of decision making.</p>	
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	<p>The validation team has traced the value to its original sources and is consistent. The period of time between the final cost estimate and the board decision is short: 3 months (Compost plant estimate on 07/04/2010 /20/ and Palmeras' board decision to invest in the project on 27/07/2010 /35/). The value is therefore valid at decision making. The value also coincides with CDM project benchmarks./56/</p>	
Parameter:	Annual O&M costs	

Value applied for the NPV calculation:	734,367 (in thousand COP)
Source of the value:	Engineering Design Study and Additional Project Design Information Supplied by Bioprocesos, S.A./18,20/
Consistency of the value:	<p>The value is derived from a detailed engineering cost estimate, summing the individual components.</p> <p>Operating requirements have been confirmed with vendor specification of important equipment items /33/, /45/</p> <p>The total value is consistent with O&M cost benchmarks from other EFB and POME co-composting CDM projects, as analyzed below; this value is constant yearly during the period of assessment according to the engineering Design Study/42/, since production levels are expected to be stable and scheduled maintenance activities are constant each year.</p> <p>The validation team concludes the accuracy of this value.</p>
Validity of input value at the time of investment decision making:	<p>The final cost estimate is dated April 2010 /20/. The initial Board decision to design and develop the project is dated 24/11/2009 /15/. This was ratified by the board committed to investing in the project on 27 July 2010 /35/ /36/. The project implementation was initiated after the rain season in January 2011 /22//45/. The proximity of these dates demonstrates the validity of the values at the time of decision making.</p>
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	<p>The validation team has traced the value to its original sources and is consistent. The period of time between the final cost estimate and the board decision is short: 3 months(Compost plant estimate on 07/04/2010 /20/ and Palmeras' board decision to invest in the project on 27/07/2010 /35/). The value is therefore valid at decision making. The value also coincides with CDM project benchmarks.</p>

Parameter:	Depreciation Periods in years						
Value applied for the NPV calculation:	<table border="1"> <tr> <td>Civil Works</td><td>20 years</td></tr> <tr> <td>Plant and Equipment</td><td>10 years</td></tr> <tr> <td>Engineering and Supervision</td><td>10 years</td></tr> </table>	Civil Works	20 years	Plant and Equipment	10 years	Engineering and Supervision	10 years
Civil Works	20 years						
Plant and Equipment	10 years						
Engineering and Supervision	10 years						
Source of the value:	Colombian regulation: Article 2 of Decree 3019 of 1989/51/						
Consistency of the value:	Data is consistent with the source.						
Validity of input value at the time of investment decision making:	The values were crosschecked with the Colombian Decree N°3019 of 1989.						
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	Data is obtained from official sources, traceable, and could be crosschecked.						

Parameter:	Compost Selling Price
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Value applied for the NPV calculation:	18,139 (COP/t)
Source of the value:	<p>Application of the compost pricing formula ratified by Palmeras' board of directors on August 25th, 2010 in accordance with the investment decision of July 27th, 2010 /35/ /36/.</p> <p>The compost price is determined by the following formula: Compost selling price = Revenue from compost sale / Estimated compost production</p> <p>Where, Revenue from compost sale = recurring costs – discount for farmers to participate in CDM benefits</p> <p>This discount corresponds to harness of 4 USD per tonne of CO₂ reduced, which is calculated as the resultant of 92% of each ton of compost, that is: Discount = Estimated compost production (t/y) * 4USD * 92% * 2.061COP/USD /35/,/36/</p> <p>Therefore, Discount = 36,465 t/y * 4 USD * 0.92 * 2.061 COP/USD</p> <p>Compost selling price is equal to: Revenue from compost sale / Estimated compost production</p> <p>Hence, Compost selling price = 661,456 /36,465 (in thousand COP) Compost selling price = 18.139 (COP/t)</p> <p>Average exchange rate 2.061COP = 1USD for period 2008-2009 published by Colombian Central Bank (most recent two-year dataset available at investment decision as per historical prices rate mobility, it was decided by the Board of Director to applied an average for these years for conservativeness)/52/</p>
Consistency of the value:	Data is consistent with the source and source is credible.
Validity of input value at the time of investment decision making:	The compost pricing decision (25/08/2010) was ratified after the initial decision to design and develop the project (24/11/2009)/15/ and prior to the starting date (18/01/2011) /45/ and therefore valid at the time of decision making. This data was the most recent available when Palmeras' board took the decision to invest in the project (27/07/2010)./35/
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	Data is obtained from reliable sources, traceable, and could be crosschecked.
Parameter:	Foregone Annual WWTP Costs
Value applied for the NPV calculation:	34,510 (in thousand COP)

Source of the value:	Average WWTP costs for 2007-2009 derived from Palmeras' accounting records/54/
Consistency of the value:	Data is consistent with the source.
Validity of input value at the time of investment decision making:	The values were crosschecked and were submitted during the audit on-site. This data was the most recent available when Palmeras' board took the decision to invest in the project (27/07/2010)./35/
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	Data is obtained from reliable sources, traceable, and could be crosschecked. /54/

Parameter:	Corporate Income Tax Rate
Value applied for the NPV calculation:	33%
Source of the value:	Colombian Regulation: Article 12 of Law 1111 of 2006/53/
Consistency of the value:	Data is consistent with the source.
Validity of input value at the time of investment decision making:	The values were crosschecked with the Colombian Law N°1111 of December 27 th , 2006, applicable at the time of the investment decision.
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	Data is obtained from official sources, traceable, and could be crosschecked.

Parameter:	Discount Rate
Value applied for the NPV calculation:	8.0%
Source of the value:	After tax, before financing sectorial return on restated assets (based on dataset from Colombian Superintendent for Corporations)/50/.
Consistency of the value:	The validation team has traced the sectorial accounting data to the original data for the Food Products Sector and its Oils and Fats Subsector from the SIREM dataset and confirmed the consistency of the dataset with its original source. The PDD defines the discount as the average, after-tax operational cash flow divided by total restated assets. The validation team concludes that this definition is consistent with the NPV analysis of the project and therefore appropriate. The calculation of the discount rate has been reviewed and the validation team concludes that it is consistent with the definition provided. Therefore, the validation team has reviewed and confirmed the calculations and consistency of this value. The validation team also observes that it is lower than the real,

	after tax, equity discount rate of 12.0% for sectoral scope 13 projects in Colombia in the appendix to EB62 Annex 05. The discount rate calculated by the PP can therefore be considered conservative.
Validity of input value at the time of investment decision making:	The value is based on the 2009 data set. It is the most recent value available at the time of decision making.
Justification by the validation team according to §113 of VVM: (cross checking and comparison as applicable)	The basis of the value, after tax and before financing, is consistent with the method used in the investment analysis. No risk premiums are assigned, but rather, the value is a sector average. Data is obtained from an official source, traceable, and could be crosschecked.

The validation team has been able to trace all of these input values to their original sources and confirm their validity.

Cost Benchmark

Unit cost benchmarks have been derived by the 7 EFB and POME co-composting SSC projects registered under the CDM over the past two years:

CDM Short Name	4841 Kilang Kelapa	4445 Sandabi Indah	3916 Kalabakan	3916 Jerangau	3717 Bumi Sawindo	3401 Rohul Sawit	3379 Tian Siang
EFB, t/y	47,520	33,534	47,520	39,600	31,008	58,400	39,600
Investment Benchmark							
Investment Cost	8,140,000	9,850,000	6,580,000	7,059,000	14,399,452	1,231,963	4,547,450
Currency	RM	k IDR	RM	RM	k IDR	USD	RM
Basis	2006	2008	2007	2007	2008	2007	2006
Exchange Rate	3.66567	9,684.89	3.43669	3.43669	9,684.89	1	3.66567
CPI at Basis	201.600	215.303	207.342	207.342	215.303	207.342	201.600
CPI New Basis	218.056	218.056	218.056	218.056	218.056	218.056	218.056
Investment, 2010 USD	2,401,865	1,030,053	2,013,568	2,160,148	1,505,807	1,295,622	1,341,813
Benchmark, 2010 USD / tpy EFB	50.54	30.72	42.37	54.55	48.56	22.19	33.88
Annual Cost Benchmark							
Annual Cost	989,000	1,751,726	945,776	655,758	3,013,891	230,196	1,340,000
Currency	RM	k IDR	RM	RM	k IDR	USD	RM
Basis	2006	2008	2007	2007	2008	2007	2006
Exchange Rate	3.66567	9,684.89	3.43669	3.43669	9,684.89	1.000	3.66567
CPI at Basis	201.600	215.303	207.342	207.342	215.303	207.342	201.600
CPI New Basis	218.056	218.056	218.056	218.056	218.056	218.056	218.056
Annual Cost, 2010 USD	291,824	183,185	289,420	200,671	315,174	242,091	395,393
Benchmark, 2010 USD / t EFB	6.14	5.46	6.09	5.07	10.16	4.15	9.98

The median value investment benchmark is US\$ 42.37 per annual ton EFB. Palmeras' unit investment is US\$ 40.04 (2,947 million COP, exchange rate US\$ 1 = 2,016 COP, 50,600 t/y EFB). This unit investment is highly consistent with the benchmark.

The median value annual cost benchmark is US\$ 6.09 per ton EFB. Palmeras' unit annual cost is US\$ 7.04 per ton EFB. Again, this value is considered highly consistent with the benchmark.

In summary, the validation team is able to confirm that the input values used in the investment analysis are reasonable and valid.

6 Discounted Cash Flow Calculations

The validation team has reviewed the discounted cash flow calculations and determined that they are correct. The negative NPV of 2.1 billion pesos is consistent with the input values.

7 Sensitivity Analysis

According to the “Guidelines on the assessment of investment analysis” (version 05), only variables including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. The validation team thus confirms that the following parameters meet the requirement and these parameters have been subjected to variations in the range of +10% and -10% in the PDD.

- Investment Cost
- O & M Cost
- Discount Rate

The investment analysis spreadsheet annexed to the PDD analyzes 6 cases of sensitivity analysis. All key variables (investment cost; operation and maintenance cost; discount rate) were evaluated in $\pm 10\%$:

Input Values: NPV (thousand COP)	+10%	0%	-10%
Base Case	-	-2,907,781	-
Investment Cost	-3,039,330	-	-2,776,233
O & M Cost	-2,907,781	-	-2,907,781
Discount Rate	-2,908,636	-	-2,905,683

*values in thousand COP.

The sensitivity analysis assesses the variations of all of the input parameters that could impact the results. The result that the NPV is not affected by variations of the O & M cost is attributed to the compost pricing formula adopted by the Palmeras’ board of directors to sell the compost at cost, i.e. any variation in the O & M cost would be passed through via compost selling price. The validation team has concluded that the sensitivity calculations are carried out in accordance with the “Guidelines on Assessment of Investment Analysis version 05”.

8 Breakeven Analysis

PDD version 5 has a breakeven analysis to determine at the values of the key input parameters where the NPV would become positive, determining the following results:

- At zero investment cost, the NPV is still negative
- At zero operation and maintenance cost, the NPV is still negative
- At zero discount rate, the NPV is still negative

The breakeven analysis is robust: under no plausible circumstances the conclusion of the project's additionality would vary.

Prevailing Practice Barrier Analysis

The PDD utilizes the first of its kind considerations from the “non-binding best practice examples to demonstrate additionality from SSC project activities V01.0”. These considerations are less rigorous than those in the “Guidelines on additionality of first-of-its-kind project activities v01.0”. The clarification issued as EB68 Annex 28 confirms the validity of the approach used in the PDD.

The evidence cited by the project participants that the proposed project activity is “among” the first of its kind includes:

- A recent technical reference that⁴⁷ indicates that 99% of the palm oil mills in Colombia treat POME in anaerobic lagoons./19/

- 32 of Colombia's palm oil mills are included in registered CDM project 1942, all of which treat POME in anaerobic lagoons.
- Only three other palm oil mills in Colombia have published a PDD for global stakeholder review to co-compost POME and EFB, two of which were after the GSC of this project.
- Consultations with two leading composting equipment suppliers/55/

The evidences have been checked by the validation team and are considered valid. The validation team concludes with the PDD that as a result of the analysis of the prevailing practice barrier, the additionality of the Project is supported.

3.5.5 Common practice analysis

Not applicable as this is a small scale project.

3.5.6 Conclusion of assessment of Additionality

The CDM was seriously considered by the PP. The evidences were transparently reviewed by the validation team and considered to be effective. The barrier analysis clearly demonstrates that the proposed project activity is unattractive without the CDM. Therefore, the proposed project activity is not business-as-usual, i.e. the proposed project activity is additional.

3.6 Monitoring

The project applies the approved monitoring methodology AMS-III.F Avoidance of Methane Emissions through Composting (version 10). The monitoring plan, as described in the section B.7.2 of the PDD (version 05) is confirmed to be documented in line with the requirements for newly built composting plants according to AMF-III.F version 10.

It is DOE's opinion that the project participants are able to implement the monitoring plan.

3.6.1 Parameters determined ex-ante

The following parameters are determined ex-ante. The validation team has determined that the values shown are valid and consistent with the requirements of AMS III.F v10 and/or the other approved methodologies or tools that it cites by reference:

Parameter	Unit	Value	Source / Validation	Definition
$\eta_{\text{BOD,BL/}}$	-	0.939	Obtained of AMS III.H version 16.0 part 26 requires at least one year of historical records. Vintage 2009 has been used and is compliant with the methodology./47/	COD/BOD removal efficiency of the baseline treatment system
$\text{MCF}_{\text{ww,treatment}}$		0.8	Methodology default value from AMS III.H version 16.0 Table III.H.1 for lagoons with a depth over 2m. Palmeras' anaerobic lagoons have a depth of 3m./24/	Methane correction factor for the wastewater treatment system in the baseline scenario
$\text{B}_{\text{o,ww}}$	kg CH ₄ /kg BOD	0.60	Methodology default value from AMS III.H version 16.0	Methane producing capacity for the wastewater
UF_{BL}		0.89	Methodology default value from AMS III.H version 16.0	Model correction factor to account for model uncertainties for wastewater
$\text{EF}_{\text{CO}_2, \text{Elec}}$	tCO ₂ e/MWh	1.3	Default value from tool to calculate baseline,	Emission factor for

			project and/or leakage from electricity consumption, version 01	electricity consumed
EF_{CO₂,Diesel}	tCO ₂ e/GJ	0.0748	IPCC Guidelines version 2006 default values to be consistent with the emission factor units prescribed by AMS III.F version 10.0	CO ₂ emission factor for diesel fuel
EF_{composting}	T CH ₄ /ton waste treated	0.004	Methodology default value from AMS III.F version 10.0	Emission factor for composting of organic waste and/or manure
B_{o,ww,runoff}	kg CH ₄ /kg COD	0.25	Methodology default value from AMS III.F version 10.0	Methane producing capacity of the wastewater
MCF_{ww,runoff}		0.2	Methodology default value from AMS III.H version 16.0 Table III.H.1 for lagoons with a depth under 2m. Palmeras' lagoons have a depth of 3m. Untreated runoff water would have to exceed 67% of POME volumes for this depth to be exceeded. Since the composting plant is covered and POME will be applied gradually over the 8-week composting period, it is considered highly improbable that runoff could exceed 67% of POME volume./24/	Methane correction factor for the wastewater treatment system where the runoff water is treated
UF_{b,runoff}	-	1.12	Methodology default value from AMS III.F version 10.0	Model correction factor to account for model uncertainties for runoff

Ex-ante Parameters for Baseline and Project Emission Calculations

The ex-ante calculation of emission reductions also includes the estimation of parameters that will be monitored in the future. The values only impact the ex-ante estimate, since real, monitored values would be used in the future to quantify emission reductions. The values have been validated to be reasonable as described in the following table:

Parameter	Unit	Value	Source / Validation	Description
Q_{ww,y}	m ³	176,000	Based on projected fresh fruit production (212,000 tonnes) and historical POME volume (0.8 m ³ /t). Consistent with the design basis of the compost plant./18,47/	POME production
BOD_{inflow,y}	tonnes/m ³	0.025	Handbook value. Validated as fully compliant./41/	COD in POME
EC_y	MWh	96.0	Based on equipment specifications and projected usage. Validated as a reasonable estimate/33/	Project power consumption
FC_{Diesel, y}	kl	176,7	Based on equipment specifications and projected usage. Validated as a reasonable estimate/33/	Project diesel consumption
TDL_y		0.20	Default value from tool. Validated as fully compliant	Transmission and distribution losses

GWP_CH4		21	Default value from AMS III.F v10.0 Validated as fully compliant	Global Warming Potential Methane
Q_{y,Portion}	t	10,120	20% of estimated EFB production. Validated as conservative and thus reasonable, since the process goal is all compost is aerobic – 0% produced in less than 8% oxygen content.	Amount of compost produced in less than 8% oxygen content
Q_{y,ww,runoff}	m ³	24,000	Estimated based on annual rainfall and compost plant dimensions. Validated as fully compliant/18,23/	Runoff water volume from compost plant
COD_{y,ww,runoff}	t COD / m ³	0.001	Handbook value for domestic wastewater as prescribed for ex-ante calculation by AMS III.F v10. Validated as fully compliant/42/	COD in compost plant runoff water
NCV_{Diesel}	GJ/kl	36.359	Value obtained of IPCC Guidelines (version 2006 at validation). The IPCC value of 43.3 GJ/t (95% confidence level upper value, table 1.2, Volume 2, 2006 Guidelines) is converted to volumetric units as required by the applicable tool using 0.8397 kg/l (Reece, Mieke. Densities of Oil Products. IEA, Paris. Nov 2004), published by the International Energy Agency and thus well-documented and reliable as per data source c) for density within the referenced tool.	Net calorific value of diesel fuel in volumetric units

The parameters P_{diesel} , EF_{diesel} , EF_{CO_2} , $EF_{\text{composting}}$, $B_{\text{o,ww,runoff}}$, $MCF_{\text{ww,runoff}}$, $UF_{\text{b,runoff}}$ and their values have been already discussed in the previous table.

The validation team confirms that all relevant parameters have been sufficiently considered and the values of the parameters are real, measureable and conservative.

3.6.2 Parameters monitored ex-post

According to the approved methodology AMS-III.F “Avoidance of methane emissions through composting version 10, the following parameters will be monitored:

Sl. No.	Parameters	Description	Monitoring Method	Validation Opinion
1	$MD_{y,\text{reg}}$	Amount of methane that would have to be captured and combusted in the year y to comply with the prevailing regulations	Annual monitoring of a regulatory parameter from official sources.	Compliant monitoring for a regulatory parameter
2	$GWP_{\text{CH}_4} / GWP_{\text{CH}_4}$	GWP for CH_4 /default value from UNFCCC	Annual monitoring of a regulatory parameter from official sources.	Compliant monitoring for a regulatory parameter. As per the “Standard for application of the global warming potential to Clean Development Mechanism project activities and programs of activities for the second commitment period of the Kyoto Protocol” version 01.0,

				this value will be updated effective 01/01/2013 to be in accordance with decision 4/CMP.7.
3	Q _y	Amount of organic waste type j prevented from disposal in the SWDS in the year x (EFB)	Continuous monitoring using on-site truck scale with annual calibration	Continuous, onsite monitoring is compliant and reliable
			Calibration: annual	Annual calibration is compliant with manufacturer's recommendation.
			Precision: 1% of full scale	High precision but not relevant since parameter is ignored for baseline emission reduction calculations-
4	Q _{ww,y}	Volume of wastewater entering the co-composting facility in the year y (POME)	Direct measurement. Continuous monitoring using on-site flow meter with off-site calibration every 3 years	Continuous, onsite monitoring is compliant and reliable. According to methodology "Emissions from solid waste disposal site", version 06.0.1
			Calibration: 3 years	Calibration every 3 years is compliant with manufacturer's recommendation
			Precision: ±4%	High precision, considering the BOD sampling plan is designed to ±10% at a 90% confidence interval
5	BOD _{inflow,y}	Biological oxygen demand of the wastewater entering the co-composting facility in the year y	Sampling for analytical determination at an accredited laboratory.	<p>The sampling frequency and sampling plan is fully explained in Annex A.4.3 of the PDD in application of the "Standard for sampling and surveys for CDM project activities and programme of activities version 03.0". The Standard is applied correctly.</p> <p>The monitoring plan is compliant and conservative if the target precision is not met.</p>
6	EC _y	Electricity consumption from project equipment items in the year y	Continuous monitoring using an on-site power meter with off-site calibration every 3	Continuous, onsite monitoring is compliant and reliable

			years	
			Calibration: 3 years	Calibration every 3 years is compliant
			Precision: $\pm 2\%$	High precision for continuous monitoring of this parameter
7	TDL	Average technical transmission and distribution losses for the power grid.	Default value from “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” version 01. For the system losses, this project uses the conservative default value of 20% as per the tool..	Compliant and conservative monitoring for a regulatory parameter.
8	FC _{Diesel,y}	Consumption of diesel fuel from project equipment in the year y	Continuous monitoring using an on-site diesel fuel meter with off-site calibration annually	Continuous, onsite monitoring is compliant and reliable
			Calibration: annually	Calibration annually is compliant with manufacturer’s recommendation.
			Precision: $\pm 4\%$	High precision for continuous monitoring of this parameter.
9	NCV _{Diesel}	Net calorific value of diesel fuel in volumetric units	Annual monitoring of CDM variables.	<p>The data source is according to request of “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, version 02./9/</p> <p>The alternative (d) of data source is chosen because NCVs are not reported on purchasing records of commercial liquid fuels; only volumes are reported. The value is obtained of IPCC Guidelines (version 2006 at validation). The IPCC value of 43.3 GJ/t (95% confidence level upper value, table 1.2, Volume 2, 2006 Guidelines) is converted to volumetric units as required by the applicable tool using 0.8397 kg/l</p>

				(Reece, Mieke. Densities of Oil Products. IEA, Paris. Nov 2004), published by the International Energy Agency and thus well-documented and reliable as per data source c) for density within the referenced tool.
10	EF _{CO2,Diesel}	Emission factor for diesel fuel	<p>Value obtained of IPCC Guidelines (version 2006 at validation).</p> <p>The IPCC value at validation is 0.0748 tCO₂/GJ (95% confidence level upper value, table 1.4, Volume 2, 2006 Guidelines).</p>	<p>The data source is according to request of “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, version 02.</p> <p>The alternative (d) of data source is chosen because EFs are not reported on purchases of commercial liquid fuels, only volumes.</p>
11	Q _{y,Portion}	Portion of waste material that is composted in the presence of less than 8% Oxygen	Sampling monthly with a self-calibrating oxygen probe.	<p>The sampling frequency and sampling plan is fully explained in Annex A.4.2 of the PDD in application of the “Standard for sampling and surveys for CDM project activities and programme of activities version 03.0”. The Standard is applied correctly.</p> <p>The monitoring plan is compliant and conservative if the target precision is not met.</p>
12	Q _{y,ww,runoff}	Volume of runoff water in the year y	Continuous monitoring using on-site flow meter with off-site calibration every 3 years	Continuous, onsite monitoring is compliant and reliable
			Calibration: 3 years	Calibration every 3 years is compliant with manufacturer's recommendation
			Precision: ±4%	High precision, considering the runoff COD sampling plan is designed to ±10% at a 90% confidence interval.
13	COD _{y,ww,runoff}	Chemical oxygen demand of the runoff water leaving the	Sampling bimonthly for analytical	The sampling frequency and sampling plan is fully explained in Annex A.4.3

		composting facility in the year y	determination at an accredited laboratory.	of the PDD in application of the “Standard for sampling and surveys for CDM project activities and programme of activities version 03.0”. The Standard is applied correctly. The monitoring plan is compliant and conservative if the target precision is not met.
14	Compost Quality Control Program	The operation of the co-composting facilities will be documented in a quality control program, monitoring the conditions and establishing the procedures that ensure the aerobic condition of the waste during the composting process (pile geometry, turning frequency, oxygen, moisture, temperature, etc.).	The compost quality control program will be integrated into Palmeras’ quality management system, certified to the ISO 9001 Standard	The ISO 9001 Standards meets or exceeds the quality control requirements of AMS III.F v10
15	Adequate Soil Application of Compost	Soil application of the compost will be monitored	Compost dispatch records to track final use of compost. Onsite annual inspections of soil application of compost	The approved methodology requires a “representative sample” of user sites./57/ The PDD, instead of preparing a sampling plan as per the applicable standards, opts for monitoring all representative sites, defined as those that receive over 500 t/y compost. Based on planted area, historic production and expected compost production, the PP demonstrates that over 90% of compost use will be monitored./57/ The validation team considers this proposed monitoring scheme to fulfill or exceed all applicable requirements.

In summary, the validation team is convinced of compliance of the monitoring plan with the requirements of the monitoring methodology of AMS-III.F (version 10). The Standard for sampling and surveys for CDM project

activities and programme of activities version 03.0 (EB 69 Annex 4) supersedes General guidelines for sampling and surveys for SSC project activities (version 01.0) (EB 65 Annex 2 dated 25/11/2011).

3.6.3 Management system and quality assurance

The PDD establishes the following:

- Continuous monitoring will be implemented for all parameters where feasible
- Sampling plans based on the relevant CDM standard are provided for those parameters that will be determined through sampling instead of continuous monitoring.
- Specific monitoring provisions are established for CDM a regulatory parameters
- Program monitoring is designed for the Adequate Soil Application of Compost and for the Compost Quality Control Program (Annex A4.4)

The project proponent will integrate the monitoring for this project activity under procedures included in the Management system (certified ISO 9001)./26,27/ This management system contains full provisions for the inventory of monitoring equipment, maintenance and calibration of measurement equipment, data collection, reporting, data storage, and responsibilities

QA/QC procedures will cross-check some monitored CDM parameters against the palm oil mill mass balance for EFB and POME (Q_y and $Q_{ww,y}$). QA/QC procedures will cross-check other monitored CDM parameters against accounting records (EC_y , $FC_{Diesel,y}$)

Other procedures will be implemented for avoiding erroneous or missing measurements and in case of emergencies a specific procedures were described in the PDD.

The validation team interviewed project participants /ii, iv, v/. The implementation of the monitoring plan is planned as stated in the PDD, regarding project organization and responsibility, maintenance and data acquisition.

It is the opinion of validation team that the monitoring arrangements described in the monitoring plan are feasible within the project design. That the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the resulting emission reductions achieved by the proposed CDM project activity can be reported ex post and verified.

It is the validation team's opinion that the monitoring plan complies with the requirements of the methodology AMSIII.F and related tools. Furthermore, the project participant is able to implement the monitoring plan.

3.7 Sustainable Development

Based on local environmental regulation –Law 99/1993 by which it's creating Environment Ministry, rearrange the Public Sector, responsible for the management and conservation of the environment and renewable natural resources, organizes the National Environmental System and other provisions and Decree 1220/2005/28/,/29/ this project did not required the presentation of an EIA as this project is categorized as low impact (composting is not listed in either Law 99/1993 or Decree 1220/2005), and therefore is not requested by environmental authorities to present the assessment. Nevertheless the LOA clearly stipulate that this project promotes the sustainable development.

3.8 Environmental Impacts

The PDD contains a comprehensive description on how the project was not required to develop an EIA./28,29/ based on regulatory aspect which laid out the described project activity, due to the low environmental risk of it and moreover the benefits which are provided by this activity.

The validation team crosschecked local environmental regulations confirming that for this type of activity is not classified to be assessed by an EIA (Composting is not listed in either Law 99/1993 or Decree 1220/2005)./28./29/.

The validation team concludes that the environmental impact by the project activity is been assessed by the project proponent and the same is stated in the PDD. To confirm the impact associated with the project Activity, the validation team has physically inspected the site and interviewed local stakeholders. It is validation team's opinion that the project activity does not cause the adverse environmental impacts and there are no regulations or requirement by the host country to conduct the EIA for the project activity. The same is confirmed from the local environmental authority.

3.9 Local Stakeholder Consultation

TUV Rheinland considers the local stakeholder consultation carried out adequately. The local stakeholder consultation was carried on 28/04/2010 at El Copey Town Hall. The stakeholders were invited by the means of letter and public announcement. A total of 50 persons attended the public meeting, representing local and regional government agencies, NGOs, private enterprises, local farmers, educators, and other members of the local community /32/. The project participants have taken due account of all comments received by the stakeholders and its summary is described in the PDD adequately.

A total of 21 comments were registered during the meeting and are described in the following table:

Number of Comments	Summary of Comments
7	Congratulations to the Project.
4	Questions about the CDM process and other potential regional opportunities for CDM projects.
3	Questions about specific aspects of the Project and its compost technology.
3	General comments about regional environmental management issues, above and beyond the scope of the Project
1	Question about regional environmental and water resource management
1	Question about environmental management at Palmeras, above and beyond the scope of the Project.
1	Request for more public meetings of this nature about regional environmental management issues
1	Prayer for meeting attendees and the environment in general

No negative comments were received and hence, there was no need to take due account of the comments

3.10 Comments by Parties, Stakeholders and NGOs

The PDD version 1 dated 17/05/2010 was made publicly available on (<http://cdm.unfccc.int/Projects/Validation/DB/2JCDZV7Q8FXUGG636F3R6TFQJLFTWE/view.html>) from "26/05/2010" to "24/06/2010" <http://cdm.unfccc.int/Projects/Validation/DB/2JCDZV7Q8FXUGG636F3R6TFQJLFTWE/view.html> from 26/05/2010 to "24/06/2010 in order to invite comments from public stakeholders.

No public comments have been received during that period.

Appendix A

CDM Validation Protocol

Palmeras POME Co-composting Project in Colombia

Report No. 01 997 9105060286

Table 1: Validation requirements (based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual version 1.2)					
Checklist question	Ref.	MoV1	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Approval(VVM V E.1)					
1.1 Have Letters of Approval have been provided from all involved Parties?	/3/	DR	CAR 1: No LoA has been provided.	CAR 1	Ok
1.2 Are all Parties, who issued the LoA, Parties to the Kyoto Protocol and are this, stated in the LoA?	/3/	DR	See CAR 1 above.	CAR 1	Ok
1.3 Is every LoA from the Parties involved issued by an organisation listed as Designated National Authority (DNA) on the UNFCCC web site?	/3/	DR	See CAR 1 above.	CAR 1	Ok
1.4 Is the participation in the CDM project activity voluntary and is this stated in all LoAs?	/3/	DR	See CAR 1 above.	CAR 1	Ok
1.5 Is the LoA unconditional with respect to 1.2 to 1.4?	/3/	DR	See CAR 1 above.	CAR 1	Ok
1.6 Is the title of the CDM project activity as given in the PDD identical with the title given in all LoAs and Modalities of Communication?	/2/, /3/	DR	See CAR 1 above.	CAR 1	Ok
1.7 If any of provided LoAs contains additional specification of the CDM project activity (PDD version number, validation report version number, amount of ER, etc.) are those specifications valid and consistent with other documents?	/3/	DR	See CAR 1 above.	CAR 1	Ok
1.8 Does the project activity involve any public funding from Annex I Parties? If yes, has Annex I Party provided a written confirmation that the use of such funding does not lead to the diversion of the official development assistance.	/2/	DR	Project participants confirmed verbally that no public funding from Annex I Parties is involved. The project will be financed by Palmeras de la Costa S.A.	Ok	Ok

¹ MoV = Means of Validation, DR = Document Review, I = Interview, www = internet search.

1.9 Is the MOC provided in line with the latest template available from the UNFCCC	/5/	DR	Yes, MOC has been provide in line with the latest template.	Ok	Ok
1.10Is MOC correctly filled and signed by authorized signatories identifying the focal point?	/5/	DR	Yes, MOC is signed correctly. And the specimens which support the validity of each signature were provided.	Ok	Ok
1.11Is the written confirmation obtained by the PP's stating the authorization, specimen signatures and personal details are valid and accurate?	/5/	DR	Yes	Ok	Ok
2. Participation (VVM V E.2)					
2.1 Are the Parties and project participants (PP) listed in the section A.3 of the PDD correctly and is this information consistent with the contact details provided in Annex 1 of the PDD?	/2/	DR, I	Palmeras de la Costa S.A. and Aretech Cambio Climático S.A. are consistently listed in A.3 of the PDD and Annex 1 of the PDD.	Ok	Ok
2.2 Has every Party involved approved the participation of each corresponding PP, either by means of a LoA or by a separate written document?	/2/, /3/	DR, I	No LoA has been provided.	CAR 1	Ok
2.3 Do all participating Parties fulfil the participation requirements as follows: a) Party has ratified the Kyoto Protocol b)Party has designated a Designated National Authority c) The assigned amount has been determined	/2/	DR	See CAR 1 above.	CAR 1	Ok
2.4 Do the letters of approval meet the following requirements? a) LoA confirms that Party has ratified the Kyoto Protocol b) LoA confirms that participation is voluntary c) The LoA confirms that the project contributes to the sustainable development of the host country? d) The LoA refers to the precise project activity title in the PDD	/2/	DR	See CAR 1 above.	CAR 1	Ok
3. Project Design Document (VVM V E.3)					
3.1 Is the PDD presented for validation based on the latest template available at the UNFCCC website?	/2/	DR	Yes, CDM-SSC-PDD version 03 template has been applied.	Ok	Ok
3.2 Has the PDD been established in accordance with	/2/, /7/	DR	The PDD has been established in	Ok	Ok

the CDM requirements for completing PDDs issued by the CDM EB?			accordance with the guidelines for completing the PDD.		
4. Project Description (VVM V E.4)					
4.1 Does the PDD contain a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? 4.1b) Is the description (incl. any process flow-charts, Spreadsheets etc.) complete, coherent and consistent with the provisions of the monitoring plan? 4.1c) Is the project's location clearly defined?	/2/	DR, I	4.1 The PDD contains a clear description of the technical aspects of the project activity. 4.1.b) The description is complete, coherent and consistent with the provisions of the monitoring plan.	Ok	Ok
4.2 In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals?	/2/	DR, I	Not applicable. It is not a Greenfield project activity.	Ok	Ok
4.3 Does the project activity reflects current good practices, uses state of the art technology or would the technology result in a significantly better performance, than any commonly used technologies in the host country?	/2/	DR, I	The project activity reflects current good practices in composting.	Ok	Ok
4.4 In cases where the project activity involves the alteration of an existing installation or process, does the PDD provide a clear description of the differences between the project and the pre-project scenario?	/2/	DR, I	Yes, the PDD contains a clear description of: Pre-Project scenario: EFB is mulched and applied in the plantation. POME is treated in series of open lagoons before being discharged.	Ok	Ok
4.5 What type is the project? i) Project in existing facility or utilizing existing equipment(s) ii) Project is either a large scale project or a non-bundled small scale project with emission reductions exceeding 15 000 tCO ₂ e per year. In this case, a site visit must be performed. iii) 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	/2/	DR	i) Project is a small scale project activity, developed in an existing facility.	Ok	Ok

number of physical site visits may be based on sampling, if the sampling size is appropriately justified through statistical analysis. iv) The project is an individual small scale project activity with emission reductions not exceeding 15 000 tCO ₂ e per year. In this case, DOE may not conduct a physical site visit as appropriate. v) Greenfield project					
4.6 How was the design of the project assessed? i) Physical site inspection ii) Reviewing available designs and feasibility studies	/2/	DR, I	i) A physical site inspection was performed, and design was confirmed during on site audit.	Ok	Ok
4.7 Does the project qualify as a small scale CDM project activity as defined in paragraph 6(c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/2/	DR, I	Yes the project qualifies under methodology III.F, §3. "Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO ₂ equivalent annually".	Ok	Ok
4.8 Is the small scale project activity a debundled component of a larger project activity in accordance with the rules defined in appendix C of the simplified modalities and procedures for small-scale CDM project activities?	/2/	DR, I	No, is an unique project	Ok	Ok
5. Baseline and Monitoring methodology(VVM V E.5)					
5.1 General requirements					
5.1.1 Is the methodology used in the project activity approved by the CDM EB and is the selected version still valid?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	CAR33: PP should update the methodology to a valid version.	CAR33	Ok
5.2 Applicability of the selected methodology					
5.2.1 Does the project activity qualify under the criteria for small-scale CDM project activities set out in § 6 (c) of decision 17/CP.7 and Annex II of the Modalities and Procedures for the CDM? 5.2.1a) If the project applies a small-scale methodology, does the project also comply with the general	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	Yes, emission reductions are less than 60 kt in all years of the crediting period.	Ok	Ok

guidelines to SSC CDM methodologies, which provides guidelines on equipment capacity, equipment performance/lifetime, baseline identification for type-II/III Greenfield project activities, sampling and other monitoring-related issues?					
5.2.1.1 If yes, does the PDD extensively demonstrates and confirms that the small-scale project activity is not a debundled component of a larger project?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	The PDD confirms that the small-scale project activity is not a debundled component of a larger project.	Ok	Ok
5.2.2 Are all applicability conditions of the selected baseline and monitoring methodology and all tools involved satisfied by the project activity?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	CL 2: the complete text of applicability conditions should appear in the PDD. CL 3: please clarify in the PDD if any increase in the capacity utilization of the existing treatment facility is expected. CAR 4: applicability condition N° 7 is not entirely discussed. See CAR33	CL 2 CL 3 CAR 4 CAR33	Ok
5.2.3 Is the selection of the applied baseline and monitoring methodology justified?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	The selection of AMS-III.F is justified.	Ok	Ok
5.2.4 Is the selected methodology correctly quoted in all related documents?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	AMS-III.F is correctly quoted.	Ok	Ok
5.2.5 Does the PDD sufficiently describe all the GHG emission sources or sinks occurring as a result of project activity, which have not been accounted for under the selected methodology and are expected to contribute more than 1% of the overall expected average annual emission	/2/	DR	No sources have been identified, which have not been accounted for under AMS-III.F.	OK	Ok

reductions?					
5.3 Project boundary					
5.3.1 Does the PDD correctly describe the project boundary? Are they clearly defined and in accordance with the methodology?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	Yes, the PDD describes correctly the project boundary.	Ok	Ok
5.3.2 Does the PDD correctly indicate and describe the emission sources and sinks of GHG gases that are included in the project boundary?	/2/	DR	The PDD indicates correctly and describes the emission sources included in the project boundary.	Ok	Ok
5.3.3 In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, is the choice explained and justified by PPs?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	CL 5: it has to be clearly justified why additional emissions from transportation were excluded.	CL-5	Ok
5.3.4 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?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	No.	Ok	Ok
5.4 Baseline identification					
5.4.1 Has the procedure contained in the selected methodology to identify the most reasonable baseline scenario been applied correctly and documented in the PDD?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	AMS-III.F does not contain any procedure to identify the baseline scenario.	Ok	Ok
5.4.1.1 Is the identified baseline scenario plausible?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	The identified baseline scenario is plausible.	Ok	Ok
5.4.1.2 Are all assumptions stated in a transparent and conservative manner?	/2/	DR	All assumptions are stated in a transparent manner.	Ok	Ok
5.4.2 Does the selected methodology require the use of tools and does PDD reflects that correctly?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	AMS-III.F does not require the use of any tools to identify the baseline scenario.	Ok	Ok
5.4.2.1 Were all the tools applied correctly?	/2/, /8/, /9/, /10/	DR	AMS-III.F does not require the use of any tools to identify the baseline scenario.	Ok	Ok

	/11/, /12/, /13/, /14/				
5.4.3 In case the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, have all scenarios been considered and have no reasonable alternative scenario been excluded?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	AMS-III.F does not require several alternative scenarios to be considered.	Ok	Ok
5.4.3.1 Has the choice of the baseline scenario been done using conservative assumptions?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	AMS-III.F does not require several alternative scenarios to be considered.	Ok	Ok
5.4.4 Is the identified baseline scenario reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	The identified baseline scenario is reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources.	Ok	Ok
5.4.6 Does the PDD describe how the national and sectoral policies, macro-economic trends and political aspirations relevant to the baseline scenario have been identified and considered in the PDD?	/2/	DR	CL 6: national and sectoral policies or applicable regulations are not clearly described in the PDD.	CL 6	Ok
5.4.7 Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the project activity?	/2/	DR	The PDD provides a verifiable description of the identified baseline scenario.	Ok	Ok
5.5 Algorithm and/or formulae used to determine emission reductions					
5.5.1 Are all calculations applied and documented according to the selected methodology and in a complete and transparent manner to calculate emission reductions from the project activity?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	CL 7: the absence of incremental transport in the project activity is not clearly demonstrated.	CL 7 CAR 8	Ok
5.5.1b) Are correct units applied and consistency between parameter dimensions and parameter value ensured?			CAR 8: the application of the “Tool to calculate the emission factor of an electricity system” and of the “Tool to calculate baseline, project and/or leakage		

			emissions from electricity consumption” is not correctly documented.		
5.5.2 In case the methodology allows a selection between different options for equations or parameters, has adequate justification been given and have the correct equations and parameters been used, in accordance with the methodology selected?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	CAR 9: equations of the “Tool to calculate the emission factor of an electricity system” are not documented in the PDD.	CAR 9	Ok
5.5.3 In case some data and parameters will not be monitored throughout the crediting period, but have already been determined and fixed, are all data sources, assumptions and calculations correct, applicable to the proposed CDM project activity and conservative?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/, /21/	DR	CAR 10: the calculations spreadsheet of the Grid Emission Factor has not been provided to the Validation Team.	CAR 10	Ok
5.5.4 In case data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters reasonable?	/2/, /8/, /9/, /10/	DR	CL 11: the calculation method of Qy should be detailed in a stepwise manner to improve clarity. (portions of Qy where the monitored oxygen content of the composting process is above 8%)	CL 11	Ok
5.5.5 Have the major risks and uncertainties, which can influence the emission reduction estimates, been identified and addressed in the PDD?	/2/	DR	Yes. PP has consider in the PDD major risk and uncertainties in the devolpmente of the PDD.	Ok	Ok
5.5.6 Are the calculations documented according to the approved methodology and in a complete and transparent manner in calculating the project emissions? Have conservative assumptions been used when calculating the project emissions?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	All calculations has consider conservative assumption for the emissions reductions calculations. All parameters were incñuded according to the methodology.	Ok	Ok
5.5.7 Are uncertainties in the project emission estimates properly addressed?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR,	Yes.	Ok	Ok
5.6 Leakage					
5.6.1 Has the leakage been identified and calculated	/2/, /8/,	DR	CAR 12: discussion on leakage is missing	CAR 12	Ok

according to the approved methodology?	/9/, /10/, /11/, /12/, /13/, /14/		from the PDD.		
5.6.2 Have the leakage been addressed in complete, conservative and substantiated manner?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	See CAR 12 above.	CAR 12	Ok
5.6.3 Are uncertainties in the leakage emission estimates properly addressed?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	See CAR 12 above.	CAR 12	Ok
6. Methodology-related issues for afforestation or reforestation CDM project activities					
Add specific A/R requirements – if applicable!			Not applicable for this CDM project activity	O.K.	O.K.
7. Additionality (VVM V E.6)					
7 a) What approach/tool does the project use to assess additionality? Is this in line with the methodology? In case of small-scale CDM project activities, is Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities applied considering also the “Non-binding best practice examples to demonstrate additionality for SSC project activities”.	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities was applied	Ok	Ok
7 b) Have the regulatory requirements correctly been taken into account to evaluate the project activity and the alternatives? Is sufficient evidence provided to support the relevance of the arguments made?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	Yes. Information to support the other alternatives was provided.	Ok	Ok
7 c) What is the project additionality mainly based on (Investment analysis or barrier analysis)?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	Barrier analysis. “Guidelines for Objective Demonstration and Assessment of Barriers” was applied	Ok	Ok
7.1 Prior consideration of the CDM (VVM V E.6.III.a)					
7.1.1 Is there documented evidence provided by the project participants on how and when the decision	/2/, /15/	DR, I	CAR 13: the PDD does not describe how	CAR 13	Ok

to proceed with the project activity was taken?			the prior consideration has been carried out. Project implementation timeline is missing.		
7.1.2 Is the starting date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms” and CDM VVM (§99)?	/2/, /15/	DR, I	CAR 14: starting date of the project activity shall be updated.	CAR 14	Ok
7.1.3 Is the date stated in the provided evidence consistent with other available evidence (e.g. dates of construction, purchase orders for equipment)?	/2/, /15/	DR, I	Yes, all evidences indicated in the respective PDD and backup evidences were scrutinized and are valid.	Ok	Ok
7.1.4 If the project was not published and the starting date is on or after 2nd August 2008, was it possible to receive from UNFCCC secretariat and DNA a written confirmation that PPs previously informed the above entities on commencement of the project activity and of their intention to seek CDM status?	/15/	DR	The project has been published for GSP before the starting date.	Ok	Ok
7.1.5 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were previously aware of CDM?	/15/	DR	Not applicable, the starting date is after 2 nd August 2008.	Ok	Ok
7.1.6 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that CDM benefits have been a decisive factor in the decision to proceed with the project activity?	/15/	DR	Not applicable, the starting date is after 2 nd August 2008.	Ok	Ok
7.1.7 Does the individual or body that took the decision to proceed with the project activity have/had the authority to do so?	/2/, /15/	DR	CL 15: please clarify if the decision to proceed with the project has been taken.	CL 15	Ok
7.1.8 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were taking continuing and real actions to secure CDM status for the project in parallel with its implementation?	/2/	DR	Not applicable, the starting date is after 2 nd August 2008.	Ok	Ok

7.1.7 In case there is a significant gap between the start date of the project activity and the commencement of validation, how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion?	/2/	DR	Not applicable, the starting date is after 2 nd August 2008.	Ok	Ok
7.1.8 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?	/2/	DR	18/01/2011 is the date of signing contract to order Windrow turner; and the evidence to support this purchase was the wire transfer for the initial payment which was carried out 20/01/2011).	Ok	Ok
7.1.9 Is the stated expected operational lifetime of the project activity reasonable?	/2/	DR	Yes	Ok	Ok
7.1.10 Is the crediting period start date, the type (renewable/fixed) and the length of the crediting period clearly defined and reasonable?	/2/	DR	Crediting period is clearly defined in 7 years renewable, and was reasonable to apply for three periods due to lifetime is over 25 years.	Ok	Ok
7.2 Identification of alternatives(VVM V E.6.III.b)					
7.2.1 Does the PDD identify and list credible alternatives to the CDM project activity in order to determine the most realistic baseline scenario, unless selected approved methodology prescribes/identifies the baseline scenario and no further analysis is required?	/2/, /8/, /9/, /10/, /11/, /12/, /13/, /14/	DR	AMS-III.F prescribes the baseline scenario.	Ok	Ok
7.2.2 Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a CDM project activity?	/2/, /8/, /9/, /10/	DR	AMS-III.F prescribes the baseline scenario.	Ok	Ok
7.2.3 Does the list contain all realistic/credible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the project activity?	/2/, /8/, /9/, /10/	DR	AMS-III.F prescribes the baseline scenario.	Ok	Ok
7.2.4 Is the exclusion of the alternatives for legal reasons justified?	/2/, /8/, /9/, /10/	DR	AMS-III.F prescribes the baseline scenario.	Ok	Ok
7.3 Investment Analysis(VVM V E.6.III.c)					
7.3.1 Are all sources of revenues (including savings)	/2/, /17/	DR, I	CAR 16: sources of revenues have been	CAR 16	Ok

have been considered in the PDD and all calculations?			ignored in the investment analysis. Type of Investment Analysis has not been correctly selected. Investment Analysis has to follow the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB		
7.3.2 Is the type of investment analysis selected correctly in the PDD? Is the choice of benchmark analysis, investment comparison or simple cost analysis correct?	/2/, /17/	DR, I	See CAR 16 above.	CAR 16	Ok
7.3.3 Is the selected financial indicator chosen and applied correctly? Is it on equity/project basis? Before/after tax? Is the financial indicator in correspondence with the benchmark?	/2/, /17/	DR, I	See CAR 16 above.	CAR 16	Ok
7.3.4 Is the guidance on IRR calculation and assessment correctly applied?	/2/, /17/	DR, I	See CAR 16 above.	CAR 16	Ok
7.3.5 In case project participants use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?	/2/		N/A	Ok	Ok
7.3.6 Are all the values consistent between FSR and PDD and are inconsistencies properly justified?	/2/		N/A	Ok	Ok
7.3.7 Were all the values from FSR applicable and valid at the time of the investment decision?	/2/		N/A	Ok	Ok
7.3.8 Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have led to a change in the benchmark?	/2/, /17/	DR	See CAR 16 above.	CAR 16	Ok
7.3.9 Is the Investment Analysis prepared in compliance with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB?	/2/, /17/	DR	See CAR 16 above.	CAR 16	Ok

7.3.10 Do the project include all the data sources used (input & output / loss & profit) and list all the projects that have been used for cross-checking in accordance with VVM paragraph 95. Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the host country? Has salvage value been taken into account? Is working capital returned in the last year of operation? How are the PLF of the project assessed? How are output price assessed? How are O&M cost assessed?	/2/	DR	N/A	Ok	Ok
7.3.11 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? Is the range of variations (10% in default) is reasonable in the project context? Have the key parameters been vary to reach or cross the benchmark and have the likelihood of this to happen been justified?	/2/	DR	N/A	Ok	Ok
7.4 Barrier analysis(VVM V E.6.III.d)					
7.4.1 Are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis?	/2/, /17/	DR	Investment barriers have been assessed by investment analysis.	Ok	Ok
7.4.2 Do the listed barriers exist and is their existence substantiated?	/2/	DR	CAR 17: supporting sources and references of prevailing practice barrier shall be clearly indicated in the PDD.	CAR 17	Ok
7.4.3 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of	/2/	DR	The identified barriers prevent the project activity but not the identified baseline scenario.	Ok	Ok

the identified baseline scenario?					
7.5 Common practice analysis(VVM V E.6.III.e)					
7.5.1 If the PPs claim in the PDD that CDM project activity is the “first of its kind”, is it justified?	/2/	DR	See CAR 17 above.	CAR 17	Ok
7.5.2 Are the geographical boundaries of the project activity identified correctly?	/2/	DR	Common practice analysis has not been performed, but demonstration of prevailing practice barrier.	Ok	Ok
7.5.3 Does the PDD provide an explanation why this region was selected and deemed more appropriate and is this explanation traceable and reliable?	/2/	DR	Common practice analysis has not been performed, but demonstration of prevailing practice barrier.	Ok	Ok
7.5.4 Are there similar operational project activities, other than CDM activities, “widely observed and commonly carried out” in the defined region?	/2/	DR	Common practice analysis has not been performed, but demonstration of prevailing practice barrier.	Ok	Ok
7.5.5 In case there are similar commercially operated project activities, other than CDM activities, already “widely observed and commonly carried out” in the defined region, are there essential distinctions between the CDM project activity and the other similar activities?	/2/	DR	Common practice analysis has not been performed, but demonstration of prevailing practice barrier.	Ok	Ok
8. Monitoring plan (VVM V E.7)					
8.1 Are all parameters required by the selected approved methodology or tool identified and listed in the PDD? Note: not all methodologies indicate monitoring parameters in tabular form or by reference to the variables used in formulae; Nonetheless, all parameters indicated in the methodology and applicable to the project must be listed in the PDD, omissions due to non-applicability be justified.	/2/, /8/, /9/, /10/	DR	<p>CAR 18: TDL is a monitoring parameter and should be included in section B.7.1 instead of B.6.2.</p> <p>CAR 19: “f” should be included in B.6.2 instead of B.7.1</p> <p>CL 20: please clarify if $W_{j,x}$ is the same parameter as Q_y.</p> <p>CL 21: please clarify the source of data to be used and QA/QC procedures related to the monitoring of $MD_{y,reg}$.</p>	CAR 18 CAR 19 CL 20 CL 21	Ok

<p>8.2 Is the measurement method clearly stated for each value to be monitored and deemed appropriate?</p> <p>Does the monitoring plan record data in the original form as generated, providing QA/QC procedures to be used on the measurement method?</p>	<p>/2/, /8/, /9/, /10/</p>	<p>DR</p>	<p>CAR 22: Please clarify how will be performed the representative sampling of the waste composition in relation to the requirements of the “Tool to determine methane emissions avoided from disposal of a waste at a solid waste disposal site” and to the requirements of the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30).</p> <p>CAR 23: Sampling plan of</p> <ul style="list-style-type: none"> - $COD_{y,ww,untreated}$, - $COD_{y,ww,runoff}$, and - $TSS_{ww,y}$ <p>should be included in the PDD, in line with the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30).</p> <p>CAR 24: Sampling plan of $f_{dry,y}$ should be included in the PDD, in line with the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30) and with the requirements of paragraph 24 of AMS-III.F.</p> <p>CL 25: clarify in the compost quality control program, which conditions are related to the control of the compost process, in order to ensure aerobic conditions. Procedures and frequencies should be further explained.</p>	<p>CAR 22 CAR 23 CAR 24 CL 25 CAR 26</p>	<p>Ok</p>
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			CAR 26: Monitoring of the soil application of the compost should also include : - documenting the sales or delivery of the compost final product, and a sampling plan in line with the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30).		
8.3	Are values of the ex-ante parameters / monitoring parameters selected correctly and conservative in accordance to methodology or tools? See the NOTE in section 3.6.1 above!	/2/, /8/, /9/, /10/	DR	CAR 10: the calculations spreadsheet of the Grid Emission Factor has not been provided to the Validation Team.	CAR 10 Ok
8.4	Is the measurement equipment for each parameter described and deemed appropriate? Are the locations of all measurement equipment clearly identified and consistently described, incl. process flow-charts contained in the PDD?	/2/, /8/, /9/, /10/	DR	CL 27: please provide a flow chart with the location of the measurement points of monitoring parameters.	CL 27 Ok
8.5	Is the measurement accuracy addressed and deemed appropriate?	/2/	DR	Measurement accuracy is mentioned in each monitoring parameter and deemed appropriate.	Ok Ok
8.6	Are procedures in place on how to deal with erroneous measurements and are the corrective actions identified?	/2/	DR	CL 28: please clarify if any procedures will be in place to deal with erroneous measurements.	CL 28 Ok
8.7	Is the frequency of measurement identified and deemed appropriate?	/2/	DR	See CARs/CL 22 to 26 above.	CAR 22 CAR 23 CAR 24 CL 25 CAR 26 Ok
8.8	Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/2/	DR	See CARs/CLs 18 to 21 above.	CAR 18 CAR 19 CL 20 Ok

				CL 21	
8.9 Are the sampling, measurement methods and procedures defined?	/2/	DR	See CARs/CL 22 to 26 above.	CAR 22 CAR 23 CAR 24 CL 25 CAR 26	Ok
8.10 Are procedures identified for maintenance of monitoring equipment and installations?	/2/	DR	Procedures for equipment maintenance are described in the PDD.	Ok	Ok
8.11 Are the equipment calibration intervals identified and justified?	/2/	DR	Calibration intervals are described in the PDD.	Ok	Ok
8.12 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/2/	DR	Procedures for data collection and archiving are described in the PDD.	Ok	Ok
8.13 Are the monitoring arrangements described in the monitoring plan feasible within the project design?	/2/	DR	See CL 27 above.	CL 27	Ok
8.14 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified?	/2/	DR	Yes, according the description in the PDD.	Ok	Ok
8.15 Do the PPs make provisions for personnel training needs?	/2/	DR	CL 29: please clarify the expected provisions for personnel training.	CL 29	Ok
8.16 Is the authority and responsibility of overall project management clearly described?	/2/	DR	Authority and responsibilities are described in the PDD.	Ok	Ok
8.17 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/2/	DR	CL 30: please clarify if any procedures will be in place for emergency preparedness for cases where emergencies can cause unintended emissions.	CL 30	Ok
8.18 Are procedures identified for review of reported results/data?	/2/	DR	CL 30: please clarify if any procedures will be in place for review of reported results/data.	CL 31	Ok

8.19	Is the data archiving period for this project activity stated in the PDD and appropriate?	/2/	DR	Yes, two years after the end of the crediting period or the last issuance of CER's, whichever occurs later.	Ok	Ok
8.20	Is the monitoring parameters for all project emissions captured?	/2/, /8/, /9/, /10/	DR	Yes, the parameters required by the methodology are applied accordingly	Ok	Ok
8.21	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?	/2/, /8/, /9/, /10/	DR	Yes, all data will be stored after a period of two years after the end of the crediting period.	Ok	Ok
8.22	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?	/2/	DR	Yes.	Ok	Ok
8.2 Monitoring of the leakage						
8.2.1	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/2/	DR	CAR 12: discussion on leakage is missing from the PDD.	CAR 12	Ok
8.2.2	Is the choice of project leakage indicators made according to selected methodology in a reasonable and conservative manner?	/2/	DR	See CAR 12 above.	CAR 12	Ok
8.2.3	Is the measurement method clearly stated and deemed appropriate for each leakage value?	/2/	DR	See CAR 12 above.	CAR 12	Ok
9. Sustainable development(VVM V E.8)						
9.1	Does the LoA from the Host country DNA contain the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party?	/3/	DR	CAR 1: No LoA has been provided.	CAR 1	Ok
9.2	If PDD indicates any additional environmental benefits of the project, other than GHG emission reductions, were those benefits properly substantiated?	/2/	DR	Yes, benefits are substantiated in documentation presented to the DNA in Colombia.	OK	Ok
10. Stakeholders' consultation and comments (VVM V E.9)						
10.1	Were the stakeholders identified in appropriate and complete manner?	/2/, /32/	DR, I	Yes	Ok	Ok

10.2 Are the identified stakeholders plausible?	/2/, /32/	DR, I	Yes	Ok	Ok
12.3 Does PDD describe the means being used to invite local stakeholder's comments?	/2/, /32/	DR, I	Yes	Ok	Ok
12.4 Were those means appropriate?	/2/, /32/	DR, I	Yes	Ok	Ok
12.5 Was the project presented to the stakeholders in unbiased manner?	/2/, /32/	DR, I	Yes	Ok	Ok
12.6 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?	/2/, /32/	DR, I	Yes	Ok	Ok
12.7 Is a summary of the stakeholder comments provided in the PDD?	/2/, /32/	DR, I	Yes	Ok	Ok
12.8 Has due account of any stakeholder comments been taken by PPs and reflected in the PDD?	/2/, /32/	DR, I	Yes	Ok	Ok
11. Environmental impacts(VVM V E.10)					
11.1 Is the documentation supplied by the PPs regarding environmental impacts relevant and accurately reflected in the PDD?	/2/	DR, I	Yes	Ok	Ok
11.2 Is an environmental impact assessment (EIA) required for the CDM project activity?	/2/	DR, I	Yes	Ok	Ok
In case an EIA is required, has the EIA has been approved by local authorities and is the outcome accurately reflected in the PDD?	/2/	DR, I	Yes	Ok	Ok
11.4 Does the PDD include a brief description of the environmental effects of the project, including trans boundary?	/2/	DR, I	Yes	Ok	Ok
11.5 Are those effects properly addressed in the design of the project activity?	/2/	DR, I	Yes	Ok	Ok
11.6 Does the project comply with environmental legislation in the host country?	/2/, /28/, /30/, /49/	DR, I	Yes	Ok	Ok

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

Validation / Verification Manual

(35) The DOE shall raise a corrective action request (CAR) 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 CDM requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

(36) The DOE shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The wording of CAR/CL shall clearly address nonconformity or seek clarification, and avoid instructive / consultative language in order to prevent actual or perceived consultancy.

No.	CAR/CL	Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1	X	No LoA has been provided.	1.1 to 1.7 2.2 9.1	The LoA has been requested. It will be provided when issued.	The LoA of Host Country Colombia has been provided. Closed.
2	X	The complete text of applicability conditions should appear in the PDD.	5.2.2	PDD v1 ignored applicability conditions that pertain to biogas recovery, manure management and other technology options that do not apply to this project. The revised PDD includes all applicability conditions (B.2).	Point 1 is still not entirely correct. Open
				<u>Response N°2:</u> Point 1 now incorporates all text from meth.	The revised PDD includes all analysis of the applicability criteria of the methodology. Closed
3	X	Please clarify in the PDD if any increase in the capacity utilization of the existing treatment facility is expected.	5.2.2	The revised PDD specifically addresses capacity utilization of an existing treatment facility within applicability condition N° 5 (B.2). The design basis for existing WWTS is 60tFFB/h (actual mill capacity 45t/h).* Therefore, the investment analysis does not consider additional WWTS capacity.	The revised PDD explicitly states that no increase in capacity utilization is expected. Closed.

4	X		Applicability condition N° 7 is not entirely discussed.	5.2.2	The revised PDD includes a full discussion of all criteria en applicability condition N° 7 (B.2).	Point 7: No comment about Guidance in paragraphs 4, 6 and 7 of AMS-III.E has been provided. Open
					<u>Response N°2:</u> Paragraphs 4, 6 and 7 of AMSIII.E are fully commented.	Applicability condition N°7 to meth AMS III.F has been modified between version 8 and version 10. The reference to paragraphs 4, 6, and 7 of AMS III.E have been deleted. The revised PDD has a complete discussion of applicability criteria for AMS III.F version10. Closed
5		X	It has to be clearly justified why additional emissions from transportation were excluded.	5.3.3	The revised PDD includes a complete justification why excluding these emissions is conservative (B.3)	The justification provided in the revised PDD is considered to be adequate. Closed.
6		X	National and sectoral policies or applicable regulations are not clearly described in the PDD.	5.4.6	Existing environmental permits and concessions are clearly indicated in the revised PDD (B.4) to demonstrate compliance with applicable national and sectoral regulations.	The relevant legislation is now indicated in the revised PDD. Closed.
7		X	The absence of incremental transport in the project activity is not clearly demonstrated.	5.5.1	Documentary evidence demonstrates the historical dispatch of EFB and the use of return trips of FFB delivery for EFB dispatch. Compost will be dispatched similarly, and since it weighs less than EFB, will require less fuel consumption.*	Same distances for transportation of EFB, FFB and compost are plausible. But the statement that compost weighs less than EFB shall be justified.
					<u>Response N°2:</u> Compost weighs less than EFB due to moisture loss and decay. EFB moisture	Annex A4.4 shows that the moisture content during the active phase could reach 65% but the target moisture after the

					is about 73% (ref2, p.5). Compost target moisture is under 35% (PDD Annex A4.4). Decay is quantified through the SWDS tool.	curing phase is 35%. The information submitted supports the requested information. Closed
8	X		The application of the “Tool to calculate the emission factor of an electricity system” and of the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” is not correctly documented.	5.5.1	The revised PDD uses the default values of 1.3 tCO ₂ /MWh for EF and 0.2 for TDL from the tool to calculate electricity consumption. The electricity system tool is no longer used in the revised PDD. An updated power consumption estimate is provided.*	<p>The “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” has not been applied stepwise. The term “$EC_y * EF_{CO_2, ELEC, y} * TDL$” is not in accordance with the tool.</p> <p>Regarding the power consumption, please provide the sources of the respective equipments power. Please clarify the assumption for the operation hours.</p> <p>Please clarify the source of the term “$FC_{Diesel, y} * \rho_{Diesel} * NCV_{Diesel} * EF_{Diesel}$” since it is not exactly in line with the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” Open</p>
					<p><u>Response N°2:</u></p> <p>Both tools are described stepwise in the revised PDD.</p> <p>Additional documentation on power consumption is attached.</p>	Project proponent includes the corrections for the formulae and described the procedure stepwise for the “tool to calculate baseline, project and/or leakage emissions from electricity consumption” used.

						The other tool, "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" applied considers the respective parameters accordingly. Closed
9	X		Equations of the "Tool to calculate the emission factor of an electricity system" are not documented in the PDD.	5.5.2	This tool is no longer used in the revised PDD	The tool is no longer referenced in the revised PDD. Closed
10	X		The calculations spreadsheet of the Grid Emission Factor has not been provided to the Validation Team.	5.5.3 8.3	The default value is used in the revised PDD, therefore the spreadsheet is not required	The tool is no longer referenced in the revised PDD. Closed
11		X	The calculation method of Qy should be detailed in a stepwise manner to improve clarity. (portions of Qy where the monitored oxygen content of the composting process is above 8%)	5.5.4	After reviewing all registered projects under this version of the methodology, we have revised the formula in the PDD and determined that Qy is the same as W in the FO decay formula. Please see section B.6.1 of the revised PDD *	Please justify how the value for f_{anaer} is justified. Open.
					<u>Response N°2:</u> The stepwise justification of f_{anaer} is included in the revised PDD	The term f_{anaer} has been deleted from the revised PDD. The formulas used are fully consistent with the approved methodology AMS III.F v10. Closed
12	X		Discussion on leakage is missing from the PDD.	5.6.1 5.6.2 5.6.3 8.2.1 8.2.2 8.2.3	A discussion of leakage has been added to section B.6.1 in the revised PDD	The discussion of leakage in the revised PDD is fully justified. Closed.
13	X		The PDD does not describe how the prior consideration has been carried out. Project implementation timeline is missing.	7.1.1	A discussion of prior consideration has been added to section B.5	The discussion of prior consideration and project timeline in the revised PDD is complete and referenced. Closed.

14	X		Starting date of the project activity shall be updated.	7.1.2	Construction activities are programmed for December (2010) through February (2011), being the months with lowest rainfall. The starting date is thus estimated to be November 15 (2010). Confirmation will be provided when available.	The project starting date in the revised PDD (18/01/2011) is compliant with the CDM definition and justified. Closed.
15		X	Please clarify if the decision to proceed with the project has been taken.	7.1.7	The minutes of the board meetings reviewed during the site visit confirm the decision to proceed with the project has been taken. Construction will coincide approximately with CDM registration request.	The project starting date occurred during validation. Closed.
16	X		Sources of revenues have been ignored in the investment analysis. Type of Investment Analysis has not been correctly selected. Investment Analysis has to follow the "Guidance on the Assessment of Investment Analysis" as provided by the CDM EB	7.3.1 7.3.2 7.3.3 7.3.4 7.3.8 7.3.9	A complete investment analysis comparing NPV costs is included in the revised PDD, B.5. A spreadsheet is also attached. All parameters in the investment analysis are supported by documentary evidence.	<ul style="list-style-type: none"> - In the PDD is stated that investment comparison has been chosen, but no comparison of alternatives is being actually performed. It seems the analysis is rather a benchmark analysis (in such case, the chosen benchmark should be justified). The framework for investment decision is not clear enough. (See transcript at the end of the table) - The period of assessment (10 years) is less than the technical lifetime stated in the PDD (25 years). - Please provide

						<p>References 1, 2 and 5 mentioned in the excel spreadsheet.</p> <ul style="list-style-type: none"> - Please provide a copy of the meeting minute of board of directors, defining the price of compost. - Please clarify the formula for calculating the price of compost.
					<p><u>Response N°2:</u></p> <p>The revised PDD explains the choice of benchmark analysis. It also justifies the period of assessment compared to the expected project lifetime.</p> <p>Reference 1 was provided with PDD v1 as ref2. Reference 2 is the minutes of the 25 Aug 2010 Board meeting and is attached. Ref 5 was provided with responses to CARs and CLs as spreadsheet C16 4.</p> <p>Attached is an explanation of spreadsheet C16 2b</p>	<p>The information submitted supports the above request. Closed.</p>
17	X		Supporting sources and references of prevailing practice barrier shall be clearly indicated in the PDD.	7.4.2 7.5.1	Footnotes have been added to document the sources in the revised PDD.*	<p>The footnotes and references provided justify the arguments put forth in the revised PDD regarding the prevailing practice barrier. Closed.</p>
18	X		TDL is a monitoring parameter and should be included in section B.7.1 instead of B.6.2.	8.1 8.8	The fixed default value of TDL has been chosen and thus is in B.6.2	<p>Open.</p> <p>According to the tool TDL is under "Data and parameters</p>

					<p><u>Response N°2:</u></p> <p>As per the tool, it should be monitored annually if the first option, “recent, accurate and reliable data available within the host country” is used. This project uses the second option, a default value of 20%. This value is known at validation and will not be modified. Thus it is described in B.6.2, not B.7.1, in compliance with the PDD guidelines.</p>	monitored”. Even though methodology and tools describes the respective parameters in section B.7.1. PP considers the need to define them in Section B.6.2 due to values are fixed during the crediting period. The alternative mentioned is plausible. Closed
19	X		“f” should be included in B.6.2 instead of B.7.1	8.1 8.8	As per the SWDS tool, f should be monitored and remains in B.7.1	The SWDS tool is not referenced in the revised PDD to be conservative. Closed
20		X	Please clarify if $W_{j,x}$ is the same parameter as Q_y .	8.1 8.8	W_x and Q_y are the same parameters – the quantity of EFB that is composted. Please see CL11.	The SWDS tool is not referenced in the revised PDD to be conservative. Closed.
21		X	Please clarify the source of data to be used and QA/QC procedures related to the monitoring of $MD_{y,reg}$.	8.1 8.8	The description has $MD_{y,reg}$ has been updated (revised PDD, B.7.1) An example of the source is provided.*	The monitoring of the parameter $MD_{y,reg}$ is fully described in the revised PDD. Closed.
22	X		Please clarify how will be performed the representative sampling of the waste composition in relation to the requirements of the “Tool to determine methane emissions avoided from disposal of a waste at a solid waste disposal site” and to the requirements of the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30).	8.2 8.7 8.9	The tool defines waste composition via the parameter $p_{n,j,x}$ – weight fraction. As per the tool, this variable is to be monitored through sampling, unless only one waste type is included in the project activity, as in this case. EFB is the only solid waste considered in this project. Therefore, the monitoring plan is fully compliant with the tool.	The SWDS tool is not referenced in the revised PDD to be conservative. Closed.
23	X		Sampling plan of - $COD_{y,ww,untreated}$, - $COD_{y,ww,runoff}$, and	8.2 8.7 8.9	TSS is no longer a parameter in the revised PDD, since it is not mentioned in the approved methodology. A	The sampling plan for COD measurement in Annex A4.3 to the revised PDD is fully

			- TSS _{ww,y} should be included in the PDD, in line with the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30).		sampling plan for both COD measurements, as per the guidelines, is included as Appendix A4.3*	compliant with the Standard for sampling and surveys for CDM project activities and programme of activities v02. The variable names are updated according to the new version of the methodology. Closed
24	X		Sampling plan of $f_{dry,y}$ should be included in the PDD, in line with the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30) and with the requirements of paragraph 24 of AMS-III.F.	8.2 8.7 8.9	Variables f_{dry} and f_{anaer} have been removed from the revised PDD in order to avoid misunderstandings. The sampling plan as per the guidelines is included as Appendix A4.2	The variables f_{dry} and f_{anaer} have been eliminated from the revised PDD. The sampling plan for monitoring oxygen content under 8% during the composting process in Annex A4.2 to the revised PDD is fully compliant with the Standard for sampling and surveys for CDM project activities and programme of activities v02 Closed
25		X	Clarify in the compost quality control program, which conditions are related to the control of the compost process, in order to ensure aerobic conditions. Procedures and frequencies should be further explained.	8.2 8.7 8.9	The key parameters to ensure aerobic composting conditions are those listed in Annex A4.4 under the “compost process, active phase”. These parameters are further explained in the revised PDD.	The revised PDD includes a more complete description of the monitoring of this parameter. Closed
26	X		Monitoring of the soil application of the compost should include also: - documenting the sales or delivery of the compost final product, and a sampling plan in line with the “General guidelines for sampling and surveys for small-scale CDM project activities” (EB50, Report Annex 30).	8.2 8.7 8.9	The monitoring of this variable has been modified in the revised PDD. The dispatch of the compost will be weighed on the truck scale and recorded (please see sample documents under CL7). Since all lots will be weighed (batch-wise, continuous monitoring), sampling does not apply.	The revised PDD includes a more complete description of the monitoring of this parameter. Closed.
27		X	Please provide a flow chart with the location of the measurement points of monitoring	8.4 8.13	Flow chart attached*	Please indicate in the provided flow chart, the parameters

			parameters.			included in the monitoring plan, using the respective nomenclature. Open
					<u>Response N°2:</u> Please see attached file	A flowchart was submitted defining the monitoring points. Closed.
28		X	Please clarify if any procedures will be in place to deal with erroneous measurements.	8.6	Procedures for dealing with missing or erroneous measurements from data that are monitored continuously are included in the revised PDD B.7.2	The revised PDD includes provisions for missing or erroneous measurements. Closed.
29		X	Please clarify the expected provisions for personnel training.	8.15	Training plan attached*	A training plan was submitted. Closed.
30		X	Please clarify if any procedures will be in place for emergency preparedness for cases where emergencies can cause unintended emissions.	8.17	Palmeras has an emergency action plan that will affect the compost plant.* Since the plan emphasizes emergency response and worker safety, the compost plant will be abandoned under severe emergencies. Clarification is provided in the revised PDD, B.7.2.	The revised PDD includes provisions for emergency situations that could affect the compost plant. Closed
31		X	Please clarify if any procedures will be in place for review of reported results/data.	8.18	Review procedures are included in the revised PDD B.7.2.	The revised PDD includes review procedures. Closed
32	x		Formal observations: - Geographical Coordinates should be given in decimal format. - In the LoA of Colombia, the name of project participants appear without “commas”. Therefore, their names in sections A.3 and annex 1 of the PDD should also appear without “commas”.		Both changes are reflected in the revised PDD	Coordinates included on the last version of the PDD are accordingly to request. LoA was correctly issued. Closed
33	X		PP should update the methodology to a valid version.	5.1.1	The methodology AMS-III.F has been updated to the version 10, what is valid until 25/01/2013, 23:59 GMT	The validation team confirmed the update of methodology in the last version of PDD. The methodology AMS-III.F version 10 is approved by the

						CDM EB. Closed
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Table 3: List of forward action requests (FARs)

Validation / Verification Manual

(37) The DOE shall raise a forward action request (FAR) 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 CDM requirements for registration.

FAR number	Reference	Summary of project owner response	Validation team conclusion
Not FAR requested in the Validation activity.			

Appendix B

Certificates of Competence

Qualification

Abarca Arriagada, Víctor Claudio /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification
Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)

ja

Add. reviewer:
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 13 - Waste handling and disposal
CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 06 - Construction

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

23-10-2010

Valid to:
(Gültig bis)

22-10-2013

Remarks:

TA 1.2 - Renewable energy
TA 6.1 - Construction
TA 13.1 - Waste handling and disposal

Languages:

Spanish
German
English

Qualification

Ortner, Nicolás Joaquín /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification

Auditor

Level:
(Qualifikationsstufe)

External:
(Externer)

Add. reviewer:
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 12 - Solvents use
CDM 13 - Waste handling and disposal

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

25-03-2007

Valid to:
(Gültig bis)

09-08-2011

Remarks:

Scope 13 limited to 13a) -Avoidance of anaerobic decay (LFG capture&destruction, Composting, WW treatment)

Languages:

Spanish
English
German

Qualification

Deng, Cuiping /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification

Lead Auditor

Level:

(Qualifikationsstufe)

External:

(Externer)

Add. reviewer:

yes

(Zusätzlicher

Prüfer)

EAC Scopes:

(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)

CDM 05 - Chemical industry

CDM 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride

CDM 12 - Solvents use

CDM 04 - Manufacturing industries

CDM 08 - Mining/Mineral production

CDM 10 - Fugitive emissions from fuels (solid; oil and gas)

Add.

qualification:

(zus. Qualifikation)

First

Appointment:

(Erstberufung)

09-10-2010

Valid to:

(Gültig bis)

08-10-2013

Remarks:

Appointed as Technical Reviewer for TA 1.2 TA 5.1, 11.1, 12.1 and TA 4.1, 4.5, 8.2, 10.2 based on Annex D para 9 of Accreditation Standard

Languages:

Experience Exchange

Date

Location

Remarks

Accreditation(s)

2010-12-21

Beijing

GC CDM Auditor Experience Exchange, Beijing, 2010-12-21to23

Qualification

Diaz, Danae /

Emission Trading

United Nations Framework Convention on Climate Change

(The following data is set by the certification body)

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

ja

Qualification

Auditor

Level:
(Qualifikationsstufe)

External:
(Externer)

Add. reviewer: yes
(Zusätzlicher
Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 13 - Waste handling and disposal
CDM 01 - Energy industries (renewable - / non-renewable sources)

Add.
qualification:
(zus. Qualifikation)

First
Appointment:
(Erstberufung)

27-10-2011

Valid to:
(Gültig bis)

26-10-2014

Remarks:

Valid for TA1.2, 13.1 and 13.2

Languages:

Spanish
English
Portuguese