VALIDATION REPORT

N_2O EMISSION REDUCTION IN PAULÍNIA, SP, BRAZIL

REPORT NO. 2005-1031

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DET NORSKE VERITAS

VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "N_2O Emission Reduction in Paulínia, SP, Brazil" project, on the basis of UNFCCC and host Party criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and subsequent decisions by the CDM Executive Board. This validation report summarizes the findings of the validation.

The validation consisted of the following three phases: i) a desk review of the project design, the baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV's opinion that the "N_2O Emission Reduction in Paulínia, SP, Brazil", as described in the revised PDD of 20 July 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0021. Hence, DNV will request the registration of the "N_2O Emission Reduction in Paulínia, SP, Brazil" project as a CDM project activity. Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, France and Japan, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

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Report title: N_2O Emission Reduction in Paulínia, SP, Brazil	
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Appendix A Validation Protocol

Abbreviations

BDP	Best Daily Production
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CETESB	São Paulo State Environmental Agency
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
ONS	National Electric System Operator
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Rhodia Energy (Rhodia) has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the "N_2O Emission Reduction in Paulínia, SP, Brazil" project (hereafter called "the project"). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC and host Party criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Mr Michael Lehmann	DNV Oslo, Norway	Team Leader, GHG auditor
Mr Ramesh Ramachandran	DNV Chennai, India	GHG auditor
Mr Luis Filipe Tavares	DNV Rio de Janeiro, Brazil	GHG auditor
Ms Cintia Dias	DNV Rio de Janeiro, Brazil	GHG auditor
Mr K. Chandrashekara	DNV Bangalore, India	Chemical sector expert

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the 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 Kyoto Protocol criteria for the CDM, the CDM modalities and procedures as agreed in the Marrakech Accords and relevant decisions by the CDM Executive Board. The validation team has, based on the recommendations in the Validation and Verification Manual /10/, employing 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.

1.3 Description of Proposed CDM Project

The "N_2O Emission Reduction in Paulínia, SP, Brazil" project activity consists of the installation of a facility to thermally decompose nitrous oxide (N_2O) from a adipic acid manufacturing unit located in Paulínia, Brazil, operated by Rhodia Poliamida e Especialidades Ltda. N_2O is generated as a by-product of the nitric acid oxidation stage and is emitted in the waste gas stream. Currently, the waste gas stream from the adipic acid unit goes through a treatment process to recover nitrogen oxides (NO_x), but N_2O is with the off gases released to atmosphere.

The project is expected to reduce GHG emission by approximately 5.96 million tonnes of CO_2-equivalents (tCO_2e) per year.

2 METHODOLOGY

The validation consisted of the following three phases:

I a desk review of the project design, the baseline and monitoring plan (July to August 2005)
II follow-up interviews with project stakeholders (August 2005)
III The resolution of outstanding issues and the issuance of the final validation report and opinion (August 2005).

2.1 Review of Documents

The PDD /1/ and the Monitoring Plan /2/ for the "N_2O Emission Reduction in Paulínia, SP, Brazil" project were reviewed. Other documents related the project design and the determination of the baseline were reviewed during the follow-up interviews /3//4//5//6//7/.

In order to ensure transparency, a validation protocol was customised for the project, according to Validation and Verification Manual /10/. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "N_2O Emission Reduction in Paulínia, SP, Brazil" project is enclosed in Appendix A to this report.

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

i) mistakes have been made with a direct influence on project results;
ii) CDM or host Party requirements have not been met; or
iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

Request for *Clarification* are used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*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 verification 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). **Clarification** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project participants' response***	***Validation conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the Client or other 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

2.2 Follow-up Interviews

On 22 August 2005, DNV conducted interviews with Rhodia Poliamida e Especialidades Ltda. /12//13/ to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarised in Table 1 and the persons interviewed are listed in the "References" section of this report. Moreover, persons from the State Environment Agency (CETESB) and CFI were interviewed /14//15/.

Table 1 Interview topics

Interviewed organisation	Interview topics
Rhodia Poliamida e Especialidades Ltda.	➢ Thermal decomposition technology (Status with regard to selection of technology supplier, expected efficiency of N_2O destruction, technology supplier's past record with regard to thermal decomposition systems, current status and planned schedule for project implementation) ➢ Training of staff ➢ Environmental impacts ➢ Consultations with local stakeholders ➢ Production capacity (Plant's production capacity in 2004, historic records for cyclohexanol and cyclohexanone consumption, nitric acid yield and purity) ➢ Evidence to demonstrate the additionality of the project (NPV analysis and the input data used in the NPV analysis) ➢ Current possibilities to market N_2O and market price of N_2O ➢ Measurement equipment (Equipment used for measuring effluent gas flow and N_2O concentration in gaseous effluent, precision level and provisions for calibration) ➢ Monitoring and reporting procedures (Monitoring and reporting of adipic acid production, nitric acid consumption, losses of nitric acid or its derivatives and calculation of N_2O emission rate (N_2O_/ AdOHy) ➢ Authorities and responsibilities for monitoring and reporting and provisions for quality assurance / quality control of monitoring reports

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design. The initial validation identified four requests for *Clarification.* These were presented to the project participants in the form of a draft validation report (rev. 0). The project participants provided on 28 August 2005 a response to DNV's requests for *Clarification*. The response provided by the project participants addressed the requests to DNV's satisfaction.

To guarantee the transparency of the validation process, the concerns raised by DNV and the response provided by the project participants are documented in Table 3 of the Validation Protocol in Appendix A to this report.

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 validation findings relate to the project design as documented and described in the PDD of 20 July 2005.

3.1 Participation Requirements

The project participants are Rhodia Energy Brazil Ltda, Rhodia Energy SAS of France, Rhodia Energy GHG SAS of France and Rhodia Japan Ltd. The participating Parties –Brazil as host Party and France and Japan as Annex I Parties - meet all relevant participation requirements.

3.2 Project Design

The project activity consists of the installation of a facility to thermally decompose N_2O from an adipic acid manufacturing unit located in Paulínia, Brazil.

The thermal decomposition facility will consist of a thermal oxidiser and a boiler which generates steam with the high-temperature flue gas coming from the thermal oxidizer.

In a first chamber of the thermal oxidizer unit, natural gas is fed with the off gas adipic acid production containing N_2O. The natural gas is burned (oxidized) to CO_2 and water vapour, using N_2O as an oxidizer ($CH_4 + 4\ N_2O \rightarrow CO_2 + 2\ H_2O + 4\ N_2$). The temperature in the furnace is kept at about 1300°C and under fuel rich conditions, so as to promote the complete decomposition of N_2O while minimizing the formation of unwanted combustion by-products such as NO and NO_2. The gas is then quenched with air to complete the combustion of natural gas at a temperature of about 950°C in a second chamber.

The flue gas coming from the thermal oxidizer is used to produce super-heated steam, which will be fed into the existing on-site steam network and will partially offset steam generation in existing boilers.

A destruction efficiency of >99% is assumed based on experience with a similar facility in France operated by Rhodia. However, the N_2O destruction efficiencies for thermal decomposition reported in the IPPC Good Practice Guidelines are in the range 98-99% /11/ and a destruction efficiency of >99% does thus not necessarily represent a conservative assumption.

Project construction started on 1 July 2005. A renewable crediting period of 7 years starting on 1 January 2007 is selected.

3.3 Baseline

The project applies the baseline methodology AM0021 titled "Decomposition of N_2O from existing adipic acid production plants" /8/. The project meets the methodology's applicability criteria:

a) The project involves the thermal decomposition of N_2O from adipic acid production at existing production capacities.

b) Data both related to baseline & project activity exist to undertake the assessments.

c) The methodology is applicable only for installed capacity (measured in tonnes of adipic acid per year) that exists by the end of the year 2004.

As verified during the site visit, the production capacity for the end of 2004 was established based on the Best Daily Production (BDP) during 3 continuous days times 365 days times OI% (availability). The BDP that has been operationally reached in the plant was 260 tonnes/day. The average OI% (availability) of the plant in 2004 and first xix months of 2005 was 92%. Hence, the installed yearly capacity at the end of 2004 was: 260 x 365 x 0.92= 87 308 tonnes/year.

Baseline emissions consist of the N_2O emissions that would be released without the implementation of the project activity and the CO_2 emissions that would be released due to on site fuel usage for steam production in case the project activity is not implemented. The algorithms and emission factors mentioned in the approved methodology have been used for determining the baselines.

As per AM0021, the additionality of the project test takes into account the following conditions:

- There is currently no existing regulation in Brazil
- Project activity is not common practice in the relevant sector and region.
- Commercial viability of project activity taking into account by-product like steam.

Supporting evidence that project satisfies the first two conditions have been verified during the site visit. The NPV values calculated for various discount rates indicate commercial non viability and the emission reductions from the project can thus be considered additional. The NPV calculations consider the investments for project implementation, operational costs (4% of investment), costs of natural gas (considering the present purchase contract) and revenues originated from substituting steam production (considering natural gas as fuel).

3.4 Monitoring Plan

The project applies the approved monitoring methodology AM0021 proposed for decomposition of N_2O from existing adipic acid manufacturing plants /9/.

The monitoring methodology takes into account baseline emissions, project emissions and leakage effects due to the use of steam and power by the thermal decomposition facility and due to the substitution of steam currently generated from natural gas with steam generated from high temperature flue gas from the thermal decomposition facility.

Details of the data to be collected, the frequency of the data recording, its certainty, format and locations to be filed are described and deemed appropriate.

The responsibilities and authorities for project management, procedures for monitoring and reporting, and QA/QC procedures are described.

3.5 GHG Emission Accounting

Emission reduction calculations are correct and transparently documented using the formulas established by AM0021. Appropriate assumptions have been used to forecast emission reductions.

3.6 Environmental Impacts

The environmental impacts of the proposed project are low as the project does not generate any solid or liquid wastes of significance. Rhodia Poliamida e Especialidades Ltda. presented on 28 June 2005 a Technical Request nº 37001493 to the State Environment Agency (CETESB), which describes the plant for N_2O destruction and the positive environmental impacts. The positive environmental impacts include the reduction of N_2O emission, with continued compliance with the 300 ppm NO_x emission regulation according to the Public Attorney Agreement (TAC). NO_x emissions are expected to be reduced to around 200 ppm. The environment impacts of the unit were evaluated and communicated to CETESB.

3.7 Comments by Local Stakeholders

Rhodia sent letters to several local stakeholders according to the Resolution 1 of the Brazilian DNA. They received feedback from 6 stakeholders (Paulínia City hall, Environment Municipal Secretary, Campinas University, Paulínia Neighbours Associations – Vila Holandia, Santa Terezinha, Vila Bressani). These local stakeholders support the project and no modifications to the project design were necessary.

As the project in not expected to have considerable social and environmental impacts, the local stakeholder consultation process carried out for the project is deemed sufficient.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the validation of CDM projects, the validator shall make publicly available the PDD and receive, within 30 days, comments on the validation requirements from Parties, stakeholders and UNFCCC accredited Non-governmental Organisations (NGOs) and make them publicly available.

The PDD of 19 July 2005 has been published on DNV's Climate Change website[*]. Parties, stakeholders and NGOs were through the UNFCCC CDM website invited to provide comments on the validation requirement during a period of 30 days from 19 July to 18 August 2005. No comments were received.

[*] http://www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId=207

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "N_2O Emission Reduction in Paulínia, SP, Brazil" at Paulínia; São Paulo State, Brazil (hereafter called "the project"). The validation was performed on the basis of UNFCCC criteria for CDM project activities, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board.

The project participants are Rhodia Energy Brazil Ltda, Rhodia Energy SAS of France, Rhodia Energy GHG SAS of France and Rhodia Japan Ltd. The participating Parties –Brazil as host Party and France and Japan as Annex I Parties - meet all relevant participation requirements.

The project consists of the installation of a facility to thermally decompose nitrous oxide (N_2O) from an adipic acid production plant located in Paulínia, Brazil.

The project correctly applies the approved baseline and monitoring methodology AM0021 titled "Decomposition of N_2O from existing adipic acid production plants". The determination of the baseline is well elaborated, transparent and sufficiently supported with facts. The selected baseline scenario, i.e. the continued non-utilization and atmospheric release of N_20 emissions, is reasonable for the first 7 years crediting period of 2007-2012. Moreover, an analysis of the economic attractiveness of the project alternative without the revenue from carbon credits demonstrates that the project is not a likely baseline scenario.

By collection and combustion of N_2O captured at the adipic acid production plant, the project results in the reduction of N_2O emissions that are real, measurable and give long-term benefits and that are additional to what would have occurred in the absence of the project.

The GHG emission calculations are documented in a complete and transparent manner. The algorithm and methodologies for accounting GHG emissions are appropriate and emission factors are deemed to be of sufficient accuracy.

Detailed responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have been developed.

Local stakeholder comments were invited according to the Brazilian DNA Resolution 1. Six comments were received, all supporting the project.

In summary, it is the validation team's opinion that the "N_2O Emission Reduction in Paulínia, SP, Brazil" project, as described in the project design documentation of 20 July 2005, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology AM0021. Hence, DNV will request the registration of the "N_2O Emission Reduction in Paulínia, SP, Brazil" project as CDM project activity.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, France and Japan, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Rhodia Poliamida e Especialidades Ltda., Rhodia Energy and Perspectives Climate Change: *CDM-PDD - N_2O Emission Reduction in Paulínia, SP, Brazil*. Version 2 of 19 July 2005 and version 3 of 20 July 2005..

/2/ Rhodia Poliamida e Especialidades Ltda. (Brazil) and Perspectives Climate Change: M*onitoring Plan for the N_2O Emission Reduction Project in Paulínia, Federative Republic of Brazil*. 5 July 2005.

/3/ Letters sent to local stakeholders

/4/ Technical opinion request to State Environment Agency - CETESB

/5/ Public Attorney Agreement with respect NO_x control and periodical compliance report

/6/ Financial proposal of N_2O destruction unit

/7/ ONS energy production datasheet

Background documents related to the design and/or methodologies employed in the design or other reference documents:

/8/ Approved baseline methodology AM0021: *Baseline Methodology for decomposition of N_2O from existing adipic acid production plants*. Version 01, 25 February 2005

/9/ Approved monitoring methodology AM0021: *Monitoring Methodology for decomposition of N_2O from existing adipic acid production plants*. Version 01, 25 February 2005.

/10/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/11/ IPCC: *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*.

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

/12/ Sergio Damore Filho – Chief Engineer RHODIA Paulínia

/13/ João Luiz Alves da Costa – Process Manager RHODIA Paulínia

/14/ Thiago Vieira Alves – Chemical Engineer CETESB

/15/ Augusto Melo - CFI

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1 The PDD identifies Rhodia Energy SAS of (France), Rhodia Energy GHG SAS (France) and Rhodia Japan Ltd (Japan) as Annex I project participants.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a		Table 2, Section A.3 Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written confirmation by the DNA of Brazil that the project assists in achieving sustainable development.
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a		Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, France and Japan.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2

Requirement	Reference	Conclusion	Cross Reference / Comment
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	OK	Project does not involve public funding.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	Brazil : Comissão Interministerial de Mudança Global do Clima. France: Mission Interministérielle de l'Effet de Serre. Japan: The Liaison Committee for the Utilization of the Kyoto Mechanisms.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	Brazil ratified the protocol on 23 August 2002, France ratified the protocol on 31 May 2002 and Japan ratified the protocol on 4 June 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	France's assigned amount is 92% of the emissions in 1990. Japan's assigned amount is 94% of the emissions in 1990..
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	OK	Both France & Japan have in place national registries.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F

Requirement	Reference	Conclusion	Cross Reference / Comment
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	OK	The PDD has been published on DNV's Climate Change website. Parties, stakeholders and NGOs were through the UNFCCC CDM website invited to provide comments on the validation requirement during a period of 30 days from 21 July to 19 August 2005. No comments were received
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	PDD is in line with UNFCCC CDM-PDD format (version 02).

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The adipic acid manufacturing facility of Rhodia Poliamida e Especialidades Ltda. in Paulínia , Brazil confines the project's spatial boundaries		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The project's system boundaries are clearly defined. The components and facilities used to mitigate GHGs are the installation of a decomposition facility to convert nitrous oxide into nitrogen and thereby reduce its release to the atmosphere. For the determination of emissions related to the use of electricity, the S-SE-CO grid is used.		OK
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes, the decomposition facility technology inclusive of the post waste heat recovery & SCR		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
		I	DeNOX removal system are all sound and proven. The project design represents good practice.		
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR I	The project will use a technology aimed at >99% N_2O destruction. The option of post $DeNO_x$ for controlling the NO_X levels will be considered at the time of choosing the equipment supplier. The post $DeNO_x$ system will be based on Selective Catalytic Reduction (SCR) & the NO_x concentration will be reduced by injection of ammonia-water solution.	~~CL4~~	OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR I	The proposed decomposition technology will not likely be substituted by other more efficient technologies.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	The necessary provisions related to maintenance are established in the MP.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	Training provisions related to the new technology are addressed in the MP.		OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	The project is line with relevant Brazilian legislation		OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	Comments by local stakeholders were invited in accordance with Resolution 1.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR/I	The project is in line with current sustainable development priorities in Brazil.		OK
A.3.4. Will the project create other environmental	/1/	DR	The project will also involve installation of a boiler		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
or social benefits than GHG emission reductions?			to produce super-heated steam from the high temperature flue gas from the thermal decomposition facility. This steam will reduce the steam production from existing boilers at the plant.		
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/ /8/	DR	Yes. The project applies one of the approved baseline methodologies (AM0021) for decomposition of N_2O from existing adipic acid production plants.		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR I	Yes it is project specific.		OK
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	The application of the baseline methodology and the determination of the chosen baseline is	~~CL 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			transparent and conservative. The baseline meets the applicability criteria as mentioned in the Approved baseline methodology AM0021. However one of the applicability criteria for installed capacity (measured in terms of tonnes of adipic acid per year) that exists by the year 2004 has not been specifically stated in the PDD. The installed capacity at the end of 2004 should be explicitly stated.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	Baseline scenario has been defined as the continuation of N_2O emissions that would have been released without the implementation of the project activity and the CO_2 emissions that would be released due to on site fossil burning for steam production in case the project activity is not implemented. The algorithms, formulae & stoichometric calculations as mentioned in the approved methodology AM0021 have been used.		OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR I	The currently operated adipic acid plant has not installed any N_2O abatement technology. Hence the project activity consisting of installation of a dedicated decomposition facility & baselines established are relevant to this plant project activity.		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR I	In Brazil this is the only adipic acid manufacturing plant & in Asian non Annex I countries there are two in China and one in Singapore. In Brazil there is currently no regulation that requires abatement of N_2O & the relevant air pollution control legislations pertain only to NO_x levels in stacks.		OK
B.2.5. Is the baseline determination compatible	/1/	DR	Yes, baseline emissions will be calculated on an		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
with the available data?		I	ex-post basis from the adipic acid production. The emission rate will also be capped by an emission factor of 0.27 t N_2O /t adipic acid.		
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	The only baseline scenario discussed is the continuation of the existing N_2O emissions without any abatement facility.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR I	The project's additionality is being determined using the additionality test specified in AM 0021, which consists of three conditions: Condition 1: There is currently no existing regulation for N_2O abatement in Brazil . Condition 2: The project activity is not common practice in the relevant region. As per the reported data, only the plant in Singapore has gone for a N_2O abatement facility as a voluntary initiative and the other two plants in China have so far not put up any abatement facility. At the plant at Korea, a similar CDM project is being proposed. Condition 3 of the additionality requirements in AM0021 mentions that the project activity should not be commercially viable even taking into account the market value of byproducts of decomposition. Justifications & back up documents to support figures in the PDD need to be provided to enable DNV to verify the NPV analysis.	~~CL 2~~	OK
B.2.8. Have the major risks to the baseline been identified?	/1/	DR I	The methodology also takes into account the possible risk of changing regulation with proper adjustments to the baseline N_2O decomposition rates.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2.9. Is all literature and sources clearly referenced?	/1/	DR I	Yes all data has been verified.		OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR I	The start date of the project activity indicated in the PDD is 01/07/2005. The operational lifetime of the project is estimated as 30 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR	A renewable crediting period of seven years has been chosen, with the starting date of the crediting period as 01/01/2007.		OK
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/ /9/	DR	Yes, an approved monitoring methodology AM0021 is being used.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	Yes, the project involves decomposition of N_2O from adipic acid manufacturing.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	Yes, the use of online monitoring for key parameters variables like volume of gas, N_2O concentration, % on line etc. is envisaged.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes		OK
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ /2/	DR	The monitoring plan envisages measurement of volume & N_2O concentration in exit gas, % on line running of plant, quantity of natural gas burnt. Other data like emission factors, natural gas composition have also been taken into consideration based on the monitoring methodology AM0021. However the monitoring plan does not include for how long the archived data will be kept as required by the monitoring methodology AM0021	~~CL 3~~	OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/ /2/	DR	Yes		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/ /2/	DR	Yes		OK
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/1/ /2/	DR	Yes		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/ /2/	DR	Yes		OK
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /2/	DR	The leakage emissions consist of the emissions associated with the energy sources used to generate steam and electricity used by the decomposition plant. The quantity of electricity & steam will be measured. The electricity emission factors will be calculated using the electricity generation & fuel consumption data from ONS & Brazilian Ministry of Mines & Energy. The steam emission factor will be determined based on the amount of natural gas required for producing one tonne of steam in the three natural gas boilers taking into account the lower heating value (LHV) of the natural gas, the characteristics of the feed-water and the steam as well as the boiler efficiency.		OK
D.3.2. Have relevant indicators for GHG leakage been included?	/1/ /2/	DR	Yes		OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /2/	DR	Relevant data will be archived in the electronic form		OK
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	/1/ /2/	DR	Yes		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/ /2/	DR	Yes, monitoring plan envisages measurement of the production of adipic acid, calculation of N_2O/AdOH annually with a cap of 0.27.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/ /2/	DR	Yes		OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/ /2/	DR	Yes		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	Environmental impacts are monitored as part of existing operation. Neither the monitoring methodology AM0021 nor the DNA of Brazil require the monitoring of sustainable development indicators.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/ /2/	DR I	The MP includes a description of the authorities and responsibilities for monitoring and reporting.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/ /2/	DR I	Yes, they have been defined in MP.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/ /2/	DR I	Training of monitoring personnel and a preparation of overall training plan has also been mentioned in MP.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/ /2/	DR I	Yes, they have been identified in MP		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/ /2/	DR I	The preparation of a calibration protocol has been mentioned in the MP		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/ /2/	DR	The preparation of a maintenance protocol has been mentioned in the MP		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/ /2/	DR I	Yes, they have been identified in MP.		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/ /2/	DR	Yes, they have been identified in MP.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and	/1/	DR	Yes, they have been identified in MP.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
uncertainties?	/2/	I			
D.6.10. Are procedures identified for review of reported results/data?	/1/ /2/	DR I	Yes, they have been identified in MP.		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/ /2/	DR I	The monitoring plan talks of only data review,.		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/ /2/	DR I	Yes they have been identified in MP.		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/ /2/	DR I	Yes they have been provided & company plans to link it up as part of its existing ISO System procedures.		OK
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Predicted Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	Details of direct and indirect emissions have been considered. The N_2O emissions within the boundary and relevant CO_2 emissions outside the project boundary related to power & steam have		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			been suitably considered.		
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes.		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	Yes, where applicable		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	Yes		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	Yes		OK
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR I	Yes, the emission sources associated with energy sources used to generate steam and electricity used by the decomposition plants. The calculation of the emission factor for grid electricity is not the highest of the average operating margin and the build margin calculated according to ACM0002 as required by AM0021. However, the figures used to calculate the electricity emission factor for ex-ante forecasting leakage effects were provided by ONS. The calculation considers the fuel consumed for electricity generation (coal, gas, diesel and fuel oil) in the S-SE-CO grid of Brazil during 2003. Since		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			hydropower generation is not considered in the build margin, the selected operating margin emission factor is conservative and thus appropriate. However, if more detailed data becomes available in the future, this emission factor should be calculated ex-post in accordance with ACM0002.		
E.2.2. Have these leakage effects been properly accounted for in calculations?	/1/	DR	Yes		OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	/1/	DR	Yes, the requirements under the approved methodology have been adhered to.		OK
E.2.4. Are the calculations documented in a complete and transparent manner?	/1/	DR	Yes		
E.2.5. Have conservative assumptions been used when calculating leakage?	/1/	DR	Yes		OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/1/	DR	Yes, wherever applicable		OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR I	Refer to comments under B.2.1		
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR I	Yes they have been defined according to AM0021.		OK
E.3.3. Are the GHG calculations documented in a	/1/	DR	Yes (refer E3.1)		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
complete and transparent manner?		I			
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR I	Yes		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/ /11/	DR I	The N_2O destruction efficiencies for thermal decomposition used in the PDD are >99% based on data obtained from a similar operating plant in France. However, the N_2O destruction efficiencies for thermal decomposition reported in the IPPC Good Practice Guidelines are in the range 98-99% and a destruction efficiency of >99% does thus not necessarily represent a conservative assumption.		OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR I	Yes		OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	Yes		OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental	/1/	DR	The project is not expected to cause any		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
impacts of the project activity been sufficiently described?			significant environmental impacts. The potential impacts are sufficiently analysed.		
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR I	An EIA is not formally required as per Brazilan law.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	The project is not likely to create any adverse effects.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	The project is not likely to cause transboundary environmental impacts.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	Yes. They have been sufficiently addressed.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR I	Yes, the project will meet the stack emission standards prescribed by Brazilian law.		OK
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR I	The local communities & relevant government authorities have been consulted according to Resolution 1 of the DNA of Brazil. Records of the same were verified during the site visit.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR I	Newspaper advertisements & direct consultations have been adopted. Letters have been sent to local stakeholders in line with Resolution 1. These letters were verified during follow up interviews.		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host	/1/	DR	See G.1.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?		I			
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR I	Yes, none of the interested parties have raised any specific objections to the project.		OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR I	Since no negative comments were received, no action has been taken.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 1 As the installed capacity at the end of 2004 caps the future application of the methodology, the installed capacity at the end of 2004 should be explicitly stated.	B.2.1	The installed yearly capacity is the best daily production during 3 days continuous (BDP) times 365 days times OI% (availability). The BDP that has been operationally proven by the site (level achieved on 02 June 2003 according message of Industrial Executive Manager Mr. Patrick Lermusiaux) is 260 tons/day. The OI% (availability) of the plant was 92% on average of 2004 and first six months of 2005. Hence, the installed yearly capacity at the end of 2004 is: Hence, the installed yearly capacity at the end of 2004 was: 260 x 365 x 0.92= 87 308 tons/year. The OI% (availability) of the plant represent the time with no production due to: • Plant shutdowns for maintenance; • Trip shutdowns (unexpected failures); The actual yearly production is lower than this value, mainly due to: Production slowdown for business reasons.	OK. The provided details sufficiently address DNV's request for clarification.
CL 2 Justifications & Back up documents related to the figures mentioned in the PDD need to be provided to enable DNV to verify the NPV analysis.	B.2.7	1) <u>Installation costs</u> Installation costs include : • The NOxIDIZER provided by John Zink and KevGmbH Energy	OK: The provided additional details sufficiently address DNV's request for clarification and enabled DNV to verify the NPV analysis.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		• Additional equipments such as heat exchangers • Civil works • Structural steel • Piping and valves • Electrical, instruments and control systems • General engineering studies (internal and contractor) • Field supervision. The total capital expenditure is 7,800,000 €. Please note that this figure is very conservative, since some items are not included, such as : • The cost of the plant project team: in charge of implementing the new facility on site (operator's training and start-up). • The start-up costs. 2) <u>Operational costs</u> The operational cost include operation and maintenance cost calculated as 4% of investment, considered conservative compared with other similar chemical plants. Also include the cost of natural gas, on consumption volume times the price of natural gas stated in the actual contract signed with local gas company CONGAS. = <u>1 085 600 €/year.</u>	

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		3) Revenue from steam generation The production of steam with new plant is calculated based on 128 000 t/year. The price of steam considering a boiler consuming the same natural gas used above is 11,50 €/t. 128 000 x 11,50= 1 472 000 €/year The NPV of the project is negative and IRR is negative too, and without the CDM mechanism, the project would have no economical rationale. Indeed, if more steam is produced, it means that a larger amount of natural gas is consumed. Please find in an update of the NPV calculation based on gas consumption and steam production. The NPV is still negative and the project is still additional, even with very optimistic values for the steam output and a NPV calculated with a low discount rate value and over 30 years, which is far beyond the length that would be selected by a private company.	
CL 3 The monitoring plan does not include for how long the archived data will be kept as required by the monitoring methodology AM0021.	D2.1	The data required by the Monitoring Plan will be archived for a period of 10 years which corresponds to the expected operational lifetime of the of the first credit period, as mentioned on PDD section D.4 - 3.	OK. The provided details sufficiently address DNV's request for clarification.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 4 The project will use a technology aimed at >99% N_2O destruction. The PDD mentions the option of post $DeNO_x$ for controlling the NO_X levels will be considered at the time of choosing equipment supplier. This needs to be critically reviewed as the emission norms as per TAC is 300ppm for NO_x & whether the existing thermal decomposition technology can achieve this norm without post $DeNO_x$ system.	A.2.2	The agreement signed between Rhodia Paulínia and Public Attorney on 15/07/98 for Adipic Acid Plant establish a maximum emission of 300 ppm of NO_x (as NO_2). On 21 Quarterly Report sent to State Environment Agency, the emission of 2005 and half 2005 was 247 ppm on average. In order to guarantee this agreement, the specification of N_2O destruction unit is 200 ppm, and the proposal of KevGmbH Energy guarantee emission less 200 ppm. To assure this level, it is foreseen install a complementary unit of spray of ammonia solution on exhaust gas flow.	OK. The provided details sufficiently address DNV's request for clarification.

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