DETERMINATION REPORT

SAAREMAA ANIMAL WASTE MANAGEMENT PROJECT, ESTONIA

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DET NORSKE VERITAS

DETERMINATION REPORT

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Summary:

Det Norske Veritas Certification Ltd (DNV) determined the *Saaremaa Animal Waste Management* Project in Estonia on the basis of UNFCCC and host Party criteria for JI projects, as well as criteria given to provide for consistent project operations, monitoring and reporting and UNFCCC criteria refer to Article 6 of the Kyoto Protocol.

The determination consisted of the following three phases:

i) a desk review of the project design and 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 view, that the Saaremaa Animal Waste Management Project, Estonia, meets all relevant UNFCCC requirements for the JI and all relevant host country criteria.

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Abbreviations

AAUs	Assigned Amount Units
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
ERU(s)	Emission Reduction Unit(s)
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NEFCO	Nordic Environment Finance Corporation
NGO	Non-governmental Organisation
PDD	Project Design Document
TGF	Testing Ground Facility
UNFCCC	United Nations Framework Convention for Climate Change
VS	Volatile Solids

1 INTRODUCTION

1.1 Objective

OÜ Saaremaa Economics has commissioned Det Norske Veritas Certification Ltd. (hereafter DNV) to make a determination of the Saaremaa Animal Waste Management Project in Estonia.

The purpose of the determination 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 for Joint Implementation (JI) projects are validated in order to confirm that the project design as documented is sound and meets the identified criteria.

In the absence of specific verification procedures for JI projects hosted by Estonia, the determination is being carried out in accordance with the verification procedure under the Article 6 supervisory committee (JI track II) described in the JI modalities and procedures, i.e. the Guidelines for the implementation of Article 6 of the Kyoto Protocol (Decision 16/CP. 7).

Determination is a requirement for JI projects following the verification procedures under the Article 6 supervisory committee and it is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of the emission reduction units (ERUs).

1.2 Scope

The determination scope is defined as an independent and objective review of the Project Design Document (PDD) and other relevant documents. The information contained in those documents is reviewed against the Kyoto Protocol requirements for JI projects, the guidelines for the implementation of Article 6 of the Kyoto Protocol (Decision 16/CP.7) as agreed in the Marrakech Accords, in particular the verification procedures under the Article 6 supervisory committee, and associated interpretations. DNV has, based on the recommendations in the Validation and Verification Manual /6/, employed a risk-based approach in the determination process, focusing on the identification of significant risks for project implementation and the generation of ERUs.

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

1.3 GHG Project Description

The project seeks to improve animal waste management practices through the treatment of swine manure and waste in an anaerobic digester. The biogas from the digester will be utilized for electricity generation. Treated manure and waste will eventually be used to produce a mineral enriched natural fertilizer. The project thus introduces more environmentally-friendly treatment of manure and organic waste compared to current treatment practises of land application of manure, open air composting of biosludge at the Kuressaare city wastwater treatment plant and treatment of slaugtherhouse waste by incineration.

The project is expected to reduce a total of 88 516 tCO2eq over the crediting period from 2006 until 2012.

2 METHODOLOGY

The determination consisted of the following three phases:

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

In order to ensure transparency, a determination protocol was customised for the project, according to the Validation and Verification Manual /6/. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

- It organises, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent determination process in that DNV documents how a particular requirement has been validated and the result of the determination.

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

The completed determination protocol is enclosed in Appendix A to this report. Findings established during the determination can either be seen as a non-fulfilment of determination protocol 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) determination protocol requirements have not been met; or
iii) there is a risk that the project would not be accepted as a JI project or that emission reductions will not be verified.

The term Clarification may be used where additional information is needed to fully clarify an issue.

Determination Protocol Table 1: Mandatory Requirements for Joint Implementation (JI) Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to COP decision where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*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 determination process.*

Determination 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 shall meet. The checklist is organised in six 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).*	*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 independent entity has identified a need for further clarification. N/A means not applicable.*

Determination Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Determination conclusion***
If the conclusions from the draft determination 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 project proponent or other project participants during the communications with the independent entity should be summarised in this section.*	*This section should summarise the independent entity's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Determination protocol tables

2.1 Review of Documents

The Project Design Documents, both the version that was published for public stakeholder comments and the final version, an Excel sheet detailing the emission calculations and a business plan to support the financial analysis /1/-/3/ were assessed during the determination.

The following changes have been made between the two PDD versions:

- Additional information about the TGF
- Additional information about the emissions generated during the project activity
- Additional information about electricity demand during the project activity
- Inclusion of the calculations on baseline transport emissions and transport sampling results
- The monitoring plan and protocols have been further detailed and
- Additional information about the management system has been provided.

2.2 Follow-up Interviews

In the period from 29 – 31 May 2005, DNV performed interviews with project stakeholders and site visits to confirm selected information and to resolve issues identified in the document review /14/-/16/. The interviewed organisations and main interview topics are summarized in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Econ Analysis A.S.	➢ Baseline and project emissions calculations ➢ Data quality and data sources
OÜ Saare Economics	➢ Technology implementation ➢ Baseline scenario analysis ➢ Investment analysis ➢ Permits ➢ Monitoring and maintenance
Estonian Focal Point	➢ Baseline scenario analysis ➢ Project approval procedure ➢ Regulatory requirements

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design.

The initial validation identified six *Corrective Action Requests* (CAR) and two requests for *Clarification* (CL). Econ Analysis A.S. decided to revise the documentation and resubmitted the project design documentation in September 2005. All CARs and CLs have been answered to DNV’s full satisfaction. The answers are documented in column three of the third table in

Appendix A to this report. This final determination report and opinion are based on the revised PDD and the answers provided by the project developers.

3 DETERMINATION FINDINGS

The findings of the determination are stated in the following sections. The determination criteria (requirements), the means of verification and the results from analysing the identified criteria are documented in more detail in the determination protocol in Appendix A. The determination findings relate to the project design as documented and described in the project design documents submitted to DNV in September 2005.

3.1 Project design

The project consists of the construction of a manure digester plant at the Jööri pig farm, one out of eight pig farms on the Saaremaa Island that plan to deliver their manure to this site in order to produce fertilizer. The preparation of the site has started and the plant is planned to be fully operational in January 2006. The project consists of the installation of

- Closed manure storage tanks with approximately 150 m^3 capacity at each of the other seven pig farms,
- Three reception tanks at the Jööri pig farm, one for pig manure, one for biosludge and slaughterhouse waste and one reception tank for mixing biosludge and manure,
- A heat exchanger, digester, biogas compressor, blower, boiler and electricity generator,
- Centrifuge and filter equipment,
- Well system and sewage pipes to discharge the wastewater to the Lõve River
- Transmission line to connect the electricity generator to the grid

The digester technology constitutes current best practice and is the first of its kind on the island. Training and maintenance is assured until May 2006 by the Belgian technology supplier N.V. Ecomat. The storage tanks at the 7 pig farms and the reception tank at the Jööri pig farm are hermetically closed and the transmission from the tank to the truck and then to the reception tank is done under hermetically closed conditions.

The manufacturer of the electricity generating combustion engine documents 100% methane combustion efficiency.

To assure complete combustion and hermetically closed reception tanks, maintenance according to the supplier's manual needs to be undertaken and documentation of this maintenance will need to be checked during verification of emission reductions.

The project site has a valid construction and operation permit.

The project activity is forecast to run for 15 years and to start reducing emissions as early as 1 January 2006.

The Estonian UNFCCC Focal Point approved the project and accepted the transfer of early credits from January 2006 to December 2007 in the form of AAUs.

The Nordic Environment Finance Corporation in its capacity as Fund Manager of the Baltic Testing Ground Facility has approved the project.

3.2 Baseline

The selected baseline scenario is the continuation of the current practise of collecting swine manure in storage tanks at each site and field application of the manure by tractors. This is deemed the most likely scenario in absence of the proposed project activity (see also chapter 3.3).

The project partly uses the baseline methodology AM0006 approved for CDM projects. The baseline emissions include the following:

- CH_4 emissions from animal barns and subsequent storage in open ponds for up to 10 months before the manure is distributed on the fields.

The CH_4 baseline emissions are calculated in the following way:

annual manure * VS rate * 0.11419 kg CH_4 /kg VS.

VS (=Volatile Solids) is assumed to be 11.2%, based on sample measurements of the manure in October 2004. VS, dry matter and nitrous content of manure will again be measured in case the food composition changes.

The methane content of 0.11419 kg CH_4 /kg VS is the sum of

- 0.01780 kg CH_4 /kg VS from the slurry channels and
- 0.09640 kg CH_4 /kg VS from the open storage tanks

Both values are derived from a study carried out by the Danish Institute of Agricultural Science on the GHG emissions from manure treatment in Denmark and were adjusted to Estonian circumstances /9/. The 0.09640 kg CH_4 /kg VS from the open storage tanks is arrived at by multiplying the value for Danish open tanks with a factor of 2.3. This is appropriate as the practise of emptying manure tanks in Estonia is different from the Danish practise and larger amounts of manure remain in the storage tank during summer time and because manure storage in tanks will increase from an average of 6 months to 10 months due to a change in regulatory requirements.

The values from the Danish model have been compared to the IPCC default values and DNV was able to confirm that the selected 0,11419 kg CH_4 /kg VS is more conservative than IPCC default values /12//13/.

- N_2O emissions from the disposal of the manure on the surrounding fields

These emissions are calculated in the following way:

$$N_2O = N_{disposed} * 1.25\% * 44/28$$

Where

$$N_{disposed} = DM * F_{am} * N/DM$$

Default IPCC factors and samples for dry matter (DM) and the nitrous content (N) of manure have been taken as a basis for these calculations, which represents current good practice.

The N_2O emissions from the open storage tanks have been deleted as these constituted double counting. The PDD has been revised accordingly. No emission reductions from improving the treatment practise of slaughterhouse waste and biosludge are claimed.

- Transport emissions from dispersing the manure on surrounding fields on Saaremaa Island by means of tractors

The project participants decided to also include the emissions from dispersing the manure on surrounding fields by tractors. Emissions from transporting the manure from the pig farms to the Jööri pig farm by trucks are also accounted for as project emissions.

The following default values have been adopted per TJ diesel according to the CORINAIR/COPERT values referred to in the 1996 revised IPCC guidelines (Reference Manual):

73 tCO_2, 0.004 tCH_4 and 0.03 tN_2O for the transport by tractors in the baseline

73 tCO_2, 0.006 tCH_4 and 0.003 tN_2O for the transport by trucks in the project scenario

Initially, 2.02 litres diesel were found to be needed to disperse 1 tonne of manure on the agricultural fields. After actual measurements, this value is now revised at 10 litres per tonne and is fixed ex-ante as baseline emission indicator, based on historic data for 2004. The average value of 10 litres per tonne of manure dispersed on the field is based on conservative assumptions and deemed statistically significant. The PDD has been revised accordingly.

- Emissions from grid electricity

For determining baseline emissions due to the displacement of grid electricity a CEF of 1.05 tCO_2 /MWh is adopted. This value has been validated by TÜV for the Esivere and Virtsu II wind power projects* and accepted by the Estonian Focal point for the period until 2012 /11/.

3.3 Additionality

The project applies the additionality tool for the CDM /8/. Several alternative scenarios are discussed with regards to their feasibility. It is demonstrated that these are all in line with legislative requirements. Based on an analysis of the cost of treatment per ton of manure, it is for the time being clearly demonstrated that the continued spreading of the manure on the surrounding fields is the cheapest option. Although concerns are raised due to odour nuisance during months with high tourism on the island, there is no alternative to the spreading on agricultural soils. The only regulatory change that has occurred for mitigation of this is a requirement to increase the storage tanks from a capacity of 6 to 10 months. No requirements from the EU affecting the current practise of treating waste are expected to enter into force in Estonia before 2012.

The underlying factors for the financial project appraisal, such as the Power Purchase Agreement, and the realism of the forecasted manure/biosludge/waste handling fees have been checked. Although the non-cost from not having to increase the tank storage capacity to 10

*www.netinform.de/KE/Wegweiser/Guide2E.aspx?Ebene1_ID=168

months has not been included in the initial assessment, the revised calculations still show an unfavourable financial performance of the project activity.

To date the project has only about 70% of its funding for implementation secured by an already agreed loan. The project thus faces an investment barrier. To cover the remaining gap between project costs and granted bank loan, the project has applied for two grants, one from the Estonian Environmental Investment Center and the other from the EU LIFE programme. To date, about 560 000 € have been granted from the EU LIFE programme and an additional 130 000 € from the Estonian Environmental Investment Center. These two amounts still do not cover the remaining need for funding.

A technological barrier and barrier due to common practice also exists as the project is the first of its kind on the island.

In summary, it is DNV's opinion that the project would not have been implemented in the absence of the possibility to get JI funding.

3.4 Monitoring Plan

The project will directly measure

- the manure delivered to the digester
- the diesel consumption of the trucks collecting the manure, and
- the net electricity supplied to the grid.
- In order to comply with environmental legislation in Estonia, the project also monitors the quality of the effluent water to the Lõve river and air pollutants.

The data handling and calibration of measurement instruments as described in the PDD is sufficient to measure actual emission reductions. Monitored data will be manually entered in an Excel sheet and data records will be kept until 2014. The monitoring management and responsibilities are clearly defined.

Diesel consumption is reliant on data provided from the transport subcontractor based on fuel invoices. It is crucial that all invoices are collected. The PDD has been improved to include internal audits and quality control measures.

It has been agreed that special emphasis will be put on the reporting of emissions in case of an emergency, when the system is shut down or when CH_4 needs to be flared. Records of such events will have to be checked during verification. The PDD has also been revised accordingly to address this matter.

3.5 Calculation of GHG Emissions

Emission reductions are equal baseline emissions minus the transport related emissions from delivering the manure to the project site.

Annual forecast CH_4 emissions from the current animal waste management system AWMS, N_2O from agricultural soil, CO_2 emissions from displacing grid electricity and net transport emissions add up to 88 516 tCO2eq during the period from 2006 to 2012.

Baseline emissions from producing fertilizer, which will be substituted by the fertilizer produced in the project activity are not accounted for, as this constitutes positive leakage. This is thus conservative.

Project emissions from the fertilizer applied to soils are considered to be 0 because this fertilizer will substitute other fertilizer and thus no significant change to the baseline scenario is likely to occur. This assumption is deemed reasonable.

With regard to transport emissions, 17 000 litres diesel per year are forecasted to be used for transport of 36 000 tonnes of manure for a distance of 40 000 km. These assumptions seem reasonable. The actual fuel consumption will be measured ex-post, based on fuel invoices from the subcontracted transport company.

3.6 Environmental Impacts

The Environmental Impact Assessment has been approved by the Saaremaa Environmental Authority in April 2005. The effluent to the Lõve river and air pollutants need to be measured in accordance with local standards.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND OBSERVERS

DNV published the project documents on its website on 2005-5-28 and invited through the Climate-L mail list Parties, stakeholders and accredited observers to comment on the project within a 30 day period from 2005-05-28 to 2005-06-27. No comment was received.

5 DETERMINATION OPINION

Det Norske Veritas Certification Ltd. (DNV Certification) has made a determination of the Saaremaa Animal Waste Management project (hereafter called "the project") in Saaremaa, Estonia. The determination was performed on the basis of UNFCCC criteria for Joint Implementation projects, in particular the verification procedure under the Article 6 supervisory committee (JI track II) described in the Guidelines for the implementation of Article 6 of the Kyoto Protocol, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project involves the installation of manure collection facilities and a biogas digester at animal farms on the Saaremaa Island. The project design is sound and biogas utilization is not common practise in Estonia. The project will thus introduce state of the art technology developed in Western Europe, resulting in technology and capacity transfer to Estonia.

The Estonian Focal Point has approved the project and agreed to the transfer of AAUs for emission reductions created in the period before January 2008.

The baseline is determined in a transparent manner and takes sufficiently into account likely future developments and policies for the animal waste treatment sector in Estonia. The avoidance of methane emissions attributable to the project is hence additional to any that would occur in the absence of the project activity.

The monitoring plan sufficiently specifies the monitoring requirements of the main project indicators. Detailed responsibilities and procedures for project management, operation & maintenance and monitoring & reporting are described and training of staff will be carried out as planned to ensure that identified procedures are properly implemented and that monitoring equipment will be correctly applied and maintained.

Potential environmental impacts have been thoroughly assessed. In general, the project is expected to have very few negative impacts.

In summary, it is DNV Certification's opinion that the Saaremaa Animal Waste Management project meets all relevant UNFCCC requirements for the JI and all relevant host country criteria.

The determination is based on the information made available to us and the engagement conditions detailed in this report. DNV Certification can not guarantee the accuracy or correctness of this information. Hence, DNV Certification can not be held liable by any party for decisions made or not made based on the determination opinion.

6 REFERENCES

Documents provided by the Project Participants that relate directly to the GHG components of the project.

/1/ Econ Analysis S.A., *Saaremaa Animal Waste Management Project*, PDD, Versions May and June 2005.

/2/ Econ Analysis S.A., *Supporting Excel spreadsheet on financial and emission calculations for the Saaremaa Animal Waste Management Project*, Versions May and June 2005.

/3/ OÜ Saare Economics, *Installation of organic waste utilisation equipment in Saaremaa*, Business Plan, May 2005.

/4/ Estonian Focal Point, *Approval Letter*, 20 December 2005.

/5/ TGF, Approval Letter, January 2006.

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

/6/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. www.vvmanual.info.

/7/ Approved Baseline and Monitoring Methodology AM0006: *"GHG emission reductions from manure management systems".* Version 01 of 14 June 2004.

/8/ CDM-EB, *Tool for the demonstration and assessment of additionality*, Annex 1 of the report of the EB's 16th meeting.

/9/ Sommer et al., *Reduktion af drivhusgasemission fra gylle og organisk affald ved biogasbehandling*, DJF report, 2001.

/10/ Danish Energy Agency, *Energy in Denmark 2003*, www.ens.dk, 2003.

/11/ TÜV Süd, *Determination of the "Esivere and Virtsu II Wind Power Developments" JI-Project, Estonia*, Report No. 592837, 2005.

/12/ IPCC, *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, 2001 at www.ipcc-nggip.iges.or.jp/public/gp/english/.

/13/ IPCC, *Reference Manual*, 1996 at www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm.

Persons interviewed:

/14/ Econ Analysis A.S., Marianne Ramlau, Project Manager and Hannu Lamp (Consultant)

/15/ OÜ Saare Economics, Margus Maasik, Managing Director and Raul Maripuu, Member of the Management Board

/16/ Estonian Focal Point, Heidi Hallik and Peeter Eek

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APPENDIX A

JI DETERMINATION PROTOCOL

Table 1 Mandatory Requirements for Joint Implementation (JI) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	~~CAR 1~~	The project has received approval of Estonia and the TGF.
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)	OK	Table 2, Section B.2
3. The sponsor Party shall not aquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7	Kyoto Protocol Article 6.1 (c)	OK	
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3	Kyoto Protocol Article 6.1 (d)	OK	
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects	Guidelines for the implementation of Art. 6 §20	OK	The Estonian Focal Point is shared between two Ministries. The Ministry of Economy is responsible for the approval of this project. NEFCO is authorized to issue LoAs on behalf of the TGF.
6. Parties participating in JI shall be a Party to the Kyoto Protocol	Guidelines for the implementation of Art. 6 §21a/24	OK	Estonia has ratified the Kyoto Protocol on 14 October 2002 All Parties participating in the TGF have ratified the Kyoto Protocol.

Requirement	Reference	Conclusion	Cross Reference / Comment
7. The participating Parties' assigned amount shall have been calculated and recorded	Guidelines for the implementation of Art. 6 §21b/24	OK	The assigned amounts have been calculated both for Estonia and all Parties participating in the TGF.
8. The sponsor Party shall have in place a national system for estimating GHG emissions and a national registry and has submitted annualy its most recent inventory in accordance with Kyoto Protocol Article 5 and 7	Guidelines for the implementation of Art. 6 §21c,d,e,f	OK	All Parties participating in the TGF have in place a national system for estimating GHG emissions. Further, all Parties annually submit their most recent inventory.
9. The host Party shall have in place a national registry in accordance with Article 5 of the Kyoto Protocol	Guidelines for the implementation of Art. 6 §21d/24	OK	Estonia submitted its GHG inventory to the UNFCCC in 2005.
10. ERUs shall not be issued as a result of project activities undertaken within the European Community that also lead to a reduction in, or limitation of, emissions from installations covered by Directive 2003/87/EC, unless an equal number of allowances is cancelled from the registry of the Member State of the ERUs' origin.	Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004	OK	The pig farm industry is not part of the EU ETS
11. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Guidelines for the implementation of Art. 6 §31	OK	
12. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Guidelines for the implementation of Art. 6 §32	OK	The PDD has been published on DNV's website and announced on climate-L and comments were invited from 28 May until 27 June 2005. No comment was received.

Requirement	Reference	Conclusion	Cross Reference / Comment
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party 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	Guidelines for the implementation of Art. 6 §33d	OK	Table 2, Section F
14. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Guidelines for the implementation of Art. 6, Appendix B	OK	Table 2, Section B.2
15. 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	Guidelines for the implementation of Art. 6, Appendix B_0	OK	Table 2, Section B.2
16. The baseline methodology shall exclude to earn EURs for decreases in activity levels outside the project activity or due to force majeure	Guidelines for the implementation of Art. 6, Appendix B_0	OK	Table 2, Section B.2
17. The project shall have an appropriate monitoring plan	Guidelines for the implementation of Art. 6 §33c	OK	Table 2, Section D

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, I	The project's spatial boundaries are given by the manure digester plant at the Jööri pig farm on the Saaremaa Island		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR, I	The system boundaries include - the eight pig farms that will deliver manure to the digester, - the national electricity grid parts of the electricity of which will be displaced by the project activity, - the fields on which the manure is spread in the baseline scenario. - the slaughter houses, where the animal waste which is normally burned but which now is disposed of at the digester. - The wastewater treatment plant at Kuressaare, from which biosludge of is normally disposed of at the surrounding field but that now can be disposed of at the digester.		OK

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

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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, I	Yes, the design is sound and represents current good practice		OK
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	Yes, the digester is imported from Belgium and represents currently best available technology		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	Not before 2012.		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, I	Yes, the project will require extensive training, as the maintenance effort is expected to be considerable.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR, I	Yes, the equipment supplier will train an adequate number of local people and follow up on the project implementation until May 2006.		OK
A.3. Compliance with host country requirements *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, I	Yes, the project has all relevant permits in place.		OK
A.3.2. Is the project in line with host-country specific JI requirements?	/1/	DR, I	Yes, the project meets the few procedural requirements there are in Estonia and this		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			has been confirmed during interviews with the Estonian UNFCCC Focal Point.		
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 discussion and selection of the baseline methodology transparent?	/1/, /2/, /3/	DR, I	However, the project clearly describes the methodology to calculate each baseline component.		OK
B.1.2. Does the baseline methodology specify data sources and assumptions?	/1/, /2/, /3/	DR, I	All data sources and assumptions are clearly specified. The data from the Danish Energy Agency for the diesel density has been verified. The fuel consumption per tonne of manure dispersed on the fields in the baseline scenario needs further justification. Alternatively, the monitoring plan should be amended to include monitoring of fuel consumption by tractors for spreading manure on fields prior to implementation of the project in order to establish a reliable baseline fuel consumption factor	~~CAR 2~~	OK
B.1.3. Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)	/1/, /2/, /3/, /7/	DR, I	The following baseline emissions are assessed: CH_4 and N_2O emissions from animal barns		

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
	/8/ - /11/		and subsequent storage in open ponds for up to 10 months before the manure is distributed on the fields. The **CH_4 baseline emissions** are calculated in the following way: annual manure * VS rate * 0.11419 kg CH_4 /kg VS. VS is assumed to be 11.2%, based on sample measurements in October 2004. The methane content of 0.11419 kg CH_4 /kg VS is the sum of - 0.01780 kg CH_4 /kg VS from the slurry channels (/9/) and - 0.09640 kg CH_4 /kg VS from the open storage tanks (/9/) Both values are derived from a study carried out by the Danish Institute of Agricultural Science on the GHG emissions from manure treatment in Denmark and were adjusted to Estonian circumstances /7/. The 0.09640 kg CH_4 /kg VS from the open storage tanks is arrived at by multiplying the value for Danish open tanks with a factor of 2.3 in order to account for the different degree-days in Estonia due to a different emptying cycle. This is appropriate as the practise of emptying manure tanks in Estonia is different from the Danish practise and larger amounts of manure remain in the		

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			storage tank during summer time. In addition will manure storage in tanks increase from an average of 6 months to 10 months due to a change in regulatory requirements. The values from the Danish model have been compared to the IPCC default values and DNV confirms that the selected 0,11419 kg CH_4 /kg VS is more conservative than IPCC default values. The methane emitted from the slurry channels constitutes only about 3% of the total methane potential. Nevertheless, it has been discounted from the VS base to calculate the methane from open storage. This is good and conservative practice. However, further information is required on the energy used to run the pumping equipment in the baseline and project scenario and whether changes in the energy consumption are material. **N_2O emissions** from the dispersion of the manure on agricultural fields are calculated in the following way: $N_2O = N_{disposed} * 1.25\% * 44/28$ Where $N_{disposed} = DM * F_{am} * N/DM$ 1.25% is the correction factor for F_{am} in kg N_2O-N /kg N (default IPCC factor)	~~**CAR 3**~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			44/28 = from N_2O-N to N_2O DM/Manure = 15.25% (from samples taken in October) F_{am} = 80% of $N_{disposed}$, accounting for volatized NH_2 and NO_x (default IPCC factor) N/DM = 0.057425 kg/kg DM (from samples taken in October). The N_2O emissions from the open storage tanks need to be removed as these constitute double counting.	~~CAR 4~~	OK
B.1.4. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	/1/, /2/, /3/	DR, I	Yes, all variables are clearly described		OK
B.1.5. Does the baseline methodology specify the spatial level of data (local, regional, national)?	/1/, /2/, /3/	DR, I	Yes.		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/, /2/, /3/	DR, I	Yes, all aspects are sufficiently addressed. Although some complaints have been received regarding odour, there is no real alternative that can be enforced by law at this point in time. It is thus reasonable to believe that the baseline is the continued storage of manure for several months		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			during the winter and then its spreading on the surrounding fields.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/, /2/, /3/	DR, I	Reduced emissions from - the slaughterhouses (forecasted to deliver about 1 000 m^3 waste per year, which currently is being shipped to the mainland and burned there) and - the wastewater treatment plant (forecasted to deliver about 3 000 m^3 biosludge per year, which currently is disposed on the field have not been taken into account, which is conservative.		
B.2.3. Has the baseline been established on a project-specific basis?	/1/, /2/, /3/	DR, I	Yes, the baseline is project-specific.		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/, /2/, /3/	DR, I	Yes. Regulatory requirements preventing the continuation of the spreading of manure on the surrounding fields is not likely to be implemented until 2012. Also, the grid-based electricity generation mix, mainly coal, is not anticipated to change significantly.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/, /2/, /3/	DR, I	The calculation of all aspects of the baseline emissions is based on default values, only the manure amount, diesel and electricity generation are directly measured. Default values such as the N_20-N value contain high uncertainties but as		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			default IPCC data are used this is considered to be appropriate.		
B.2.6. Is it demonstrated that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?	/1/, /2/, /3/	DR, I	Yes, the CDM additionality tool is applied. The assessment clearly shows an investment barrier due to lack of funding and a technological and common practice barrier due to lack of experience with the manure digester technology. All factors contributing to the financial appraisal via a NPV analysis have been checked and the project is clearly not financially attractive without JI funding or ERU revenues.		OK
B.2.7. Have the major risks to the baseline been identified?	/1/, /2/, /3/	DR, I	No, there are no risks to the baseline foreseeable at this point in time.		OK
B.2.8. Is all literature and sources clearly referenced?	/1/, /2/, /3/	DR, I	Yes, all sources are clearly referenced.		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	Yes, the project intends to start operation in January 2006. The digester equipment has a forecasted lifetime of 15 years.		OK
C.1.2. Is the project's crediting time clearly defined?	/1/	DR	Yes, the project intends to start claim ERUs from January 2006 onwards. However, the Estonian Focal Point has not	~~CAR 1~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			yet decided whether early credits will be granted for the period from January 2006 to December 2007. Also, the project has not yet received the approval from the TGF.		
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.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate baseline methodology.					
D.1.1. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	The project will directly measure - the manure delivered to the digester - the diesel consumption of the truck, - the net electricity supplied to the grid, and - the quality of the effluent water to the Lõve river and air pollutants This sufficiently allows for the determination of baseline and project emissions.		OK
D.1.2. Are the monitoring provisions in the monitoring methodology consistent with the project boundaries in the baseline study?	/1/	DR	Yes		OK
D.1.3.Does the monitoring methodology allow for	/1/	DR	The project intends to apply various		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
conservative, transparent, accurate and complete calculation of the ex post GHG emissions?			default factors from IPCC, a previously validated grid-coefficient study, a Danish Model for the emission factors per tonne of VS and factors from the manure sampling performed in October 2004. Better practice may be to repeat the manure sampling yearly and to measure the grid-coefficient ex-post. However, the planned monitoring is sufficient for this project activity.		
D.1.4. Is the monitoring methodology clear and user friendly?	/1/	DR	Yes. The monitoring consists of collecting invoices from electricity generation and manure deliveries at the site.		OK
D.1.5. Does the methodology mitigate possible monitoring errors or uncertainties addressed?	/1/	DR	Major uncertainties remain due to the application of default values for CH_4 and N_2O emissions per ton of manure produced. It is however not practicable to reduce these uncertainties.		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/	DR	The only project emissions are those from transportation of the manure and these will be measured via diesel purchase receipts. The project emissions from the operation of the digester stem from the plant's own energy production and therefore do not need to be measured.		OK
D.2.2. Are the choices of project GHG indicators	/1/	DR	Yes.		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
reasonable?					
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	The direct measurement of diesel used to transport the manure reduces the uncertainty as opposed to if the project had only applied the ex-ante defined diesel/manure coefficient.		OK
D.2.4. Will the indicators enable comparison of project data and performance over time?	/1/	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/	DR	No monitoring of leakage is necessary.		OK
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 the baseline emissions during the crediting period?	/1/	DR	Yes, collection of manure and electricity sales receipts is enough to monitor the baseline emissions.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes, with regards to the manure produced, no with regards to the electricity displaced from the grid and the transport emissions. However, good practice has been applied when calculating these indicators.		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5. Monitoring of 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 for the collection and archiving of relevant data on environmental impacts?	/1/	DR	The quality of the effluent water to the Lõve river and air pollutants will be monitored.		OK
D.5.2. Will it be possible to monitor the specified environmental impact indicators?	/1/	DR	Yes.		OK
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/	DR	Yes. Mr. Maasik from OÜ Saare Economics is responsible for all monitoring and data handling.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	*Idem*		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	Yes. Mr. Maasik has been trained and will train more staff.		OK
D.6.4. Are procedures identified for emergency preparedness where emergencies can result in unintended emissions?	/1/	DR	Emergency preparedness procedures are required by law and control of these procedures being in place is included in the commissioning permit, which the site got. Special emphasis needs to be put on the reporting of emissions in case of an emergency and when the system is shut	~~CAR 5~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			down or CH_4 needs to be flared or vented. Records of such events will have to be checked during verification.		
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Yes. Calibration will be done according to standards and laws.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	In order that project emissions can be considered to be zero, the project depends on perfect combustion efficiency and hermetically closed reception tanks. As combustion efficiency is difficult to establish with certainty and possible leakage from the reception tanks is difficult to detect, maintenance according to the supplier's manual is crucial Such maintenance thus needs to be documented and this documentation needs to be checked during verification.	~~CAR 5~~	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Yes.		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/	DR	The data handling and calibration of measurement instruments as described in the PDD is sufficient to measure actual emission reductions. The monitoring management and responsibilities are clearly defined.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	No internal audits and quality control is foreseen other than during verification. A minimum quality assurance such as double checking entries should be established. Further, diesel consumption is reliant on	~~CAR 6~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			data provided from the transport subcontractor and based on fuel invoices. It is crucial that all invoices are collected.		
D.6.10. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR, I	*Idem*	~~CAR 7~~	OK
D.6.11. Are procedures identified for project performance reviews?	/1/	DR, I	*Idem*	~~CAR 8~~	OK
D.6.12. Are procedures identified for corrective actions?	/1/	DR, I	*Idem*	~~CAR 9~~	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	It needs to be clarified whether unintended CH_4 emissions can occur in emergency situations and when CH_4 needs to be flared? It also needs to be clarified whether methane emissions from transferring manure from the storage tank to the truck can be material.	~~CL 1~~ ~~CL 2~~	OK OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	The methane from slurry channels is not included in the project scenario because		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the manure does not remain for long in the channels. These emissions are therefore not considered to be significant.		
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	Yes. The transport emissions are conservatively assessed.		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	No.	~~CAR 2 - CAR 6~~	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	Yes. N_2O, CH_4 and CO_2 emissions are assessed.		OK
E.2. Leakage Effect Emissions 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	Baseline emissions from producing fertilizer, which will be substituted by the fertilizer produced in the project activity are not accounted for. This constitutes positive leakage and omitting this is hence conservative. Project emissions from the fertilizer applied to soils are considered to be 0 because the fertilizer will substitute other fertilizer and thus no significant change to the baseline scenario is likely to occur. This assumption is deemed reasonable.		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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	Yes. Sample data, data from an earlier study and IPCC default data has been used.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	No.	~~CAR 2~~	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	No.	~~CAR 2~~	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	The biosludge and animal waste from slaughter houses is not taken into account in the forecasted baseline emissions. Annual treatment of 36 000 tonnes animal manure has been forecast although the current level is close to 40 000 m3. This reduction is due to the renovation of the barns; This will again cause drinking water not any longer to run into the manure and reduce or eliminate the use of sawdust for drainage. In 2006, only 34 000 tonnes of manure are forecast to be treated due to the plant starting up. The plant is forecast to produce 65 kWh/m^3 biomass processed.		OK
E.3.5. Are uncertainties in the GHG emission	/1/	DR	No.	~~CAR 2~~	OK

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

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
estimates properly addressed in the documentation?					
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Yes. The assumptions are conservative.		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 the project is forecast to reduce emissions by 88 516 tCO2eq over the crediting period from 2006 until 2012.		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 impacts of the project activity been sufficiently described?	/1/	DR	Yes.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	Yes. An EIA was undertaken in accordance with relevant Estonian and EU legislation. The Saaremaa Environmental Authority approved the EIA in April 2005.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Yes. Although the project reduces environmental impacts compared to the business as usual, the project will still create effluent to the river and emit emissions to the air. The power generator will create noise but within legal limits and		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			there are no surrounding houses that could be affected by the noise.		
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	Transboundary environmental impacts come from transport emissions but they are smaller than those in the baseline scenario where the tractors spread the manure on the surrounding fields. The increase of truck traffic on the roads is not considered to be a problem as Saaremaa Island is not facing and is not any time soon expected to face traffic constraints.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	Yes. The emissions to air and water are already minimized by the project activity and will be monitored according to the law.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
CAR 1 No host country approval has yet been received and it is unclear which parties are involved in the Testing Ground Facility and whether they have approved the project.	Table 1	JI Investor countries in this Agreement are the Kingdom of Denmark Kingdom of Sweden Kingdom of Norway Republic of Finland Republic of Iceland Federal Republic of Germany The Testing Ground Agreement is the overarching multilateral agreement for cooperation in the TGF. Further information on this document is available at http://www.cbss.st/basrec/documents/climatechange/dbaFile7128.html There is no requirement under the above agreements for the investor countries listed above to seek project specific approvals. Instead approval is given for all projects by these subscribing investors under the terms of the documents below.	OK. The project has received the approval from the TGF. The Operating Guidelines from the contract between the investors and the TGF. Para 5.1 states that the "the ERUs and AAUs are acquired by the TGF jointly on behalf of all the investors, which have a shared participation in the total portfolio of Projects." Moreover, article 4.4 Authorization. states "By entering into a Subscription Agreement, (i) each Investor that is entitled to authorize legal entities to participate, under its responsibility, in actions leading to the generation, transfer or acquisition of ERUs under Article 6 of the Kyoto Protocol, authorizes the Fund Manager to act on its behalf in this respect, and (ii) each such Investor approves the Projects for the purposes of Article 6 of the Kyoto Protocol." Each of the participating countries has signed a Subscription Agreement, authorising NEFCO "to act as Fund Manager on their behalf including actions leading to the transfer to the

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
			TGF of ERUs or AAUs.". This CAR is therefore closed.
CAR 2 The fuel consumption per tonne of manure dispersed on the fields in the baseline scenario needs further justification. Alternatively, the monitoring plan should be amended to include monitoring of fuel consumption by tractors for spreading manure on fields prior to implementation of the project in order to establish a reliable baseline fuel consumption factor.	B.1.2, E.1.4, E.3.2, E.3.3, E.3.5	A series of samples have been made to determine fuel consumption per tonne of manure spread on the fields in the baseline scenario. Samples were made during 9 days in August and September, 2005 at fields at three different locations. Fields to be included in the sampling were conservatively selected in regard to distance from manure tank (1.6 km; 3.7 km and; 6.5 km). Amount of manure dispersed on each field was 60 tonnes. On average fuel demand for transport and dispersing one tonne of manure was measured to be 10.4 litre of diesel oil. This is based on the handling of 180 tonnes manure and on 1864 tractor hours (hours of operating the tractors). This is assessed as a fairly large sample. The results seem to be quite robust as there is relatively little variation only, between different fields (10.0 to 10.6 litre diesel per tonnes manure) and across samples (from 9.9 litre diesel per tonne manure to 10.8 litre diesel per tonne manure). For the further baseline emission calculation 10 litres of diesel per tonne manure has been applied.	The sample is considered to be representative of the actual situation. The analysis shows that only one out of the 9 test runs gives a value lower than the 10 litres per tonne of manure dispersed, namely the first sample with the smallest distance; the value is 9.9 litres per tonne of manure dispersed. Even though the sample size is quite small, given the small covariance of only 2.8%, the mean of 10.355 is deemed significant. For conservativeness reasons, the value of 10 litre per tonne of manure dispersed has been adopted instead. The sample can be considered statistically significant as there are no significant differences amongst the fields at Saaree. Also, a tractor of type T-150 was used during the sampling. Other tractors that would have been used in the absence of the project are of similar type and origin (Belorussian) and it is therefore not likely that there is any significant difference in fuel economy between the tractors. This CAR is therefore closed.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
CAR 3 Further information is required on the energy used to run the pumping equipment in the baseline and project scenario and whether changes in the energy consumption are material.	B.1.3, E.1.4	In the baseline scenario manure is removed from slurry channels to open storage tanks placed on the ground. Manure is pumped to the storage tanks by use of electrical pumps. In the project activity modern electrical pumping equipment will be installed to remove manure from slurry channels to the new underground storage tanks. Amounts of manure to be handled is the same as in the baseline scenario, but distances between slurry channels and storage tanks are reduced in the project activity and the pumping equipment will be significantly more energy efficient compared to the baseline scenario. It is therefore believed that electricity demand for pumping manure will not increase in the project activity, in fact it is more likely that it will decrease. Conservatively estimated it will equal the baseline scenario and no material change is thus taken to occur.	This assessment is sound and the reduced transport distances in the project scenario have been confirmed during site visits. This CAR is therefore closed.
CAR 4 The N_2O emissions from the open storage tanks need to be taken out as they constitute double counting.	B.1.3, E.1.4	The methodology for calculating N_2O emissions from spreading manure on agricultural soil includes N_2O emissions from open storage tanks. In the recent revised PDD, open storage tanks have consequently been removed from the baseline emission calculations and from the monitoring plan.	OK. This CAR is therefore closed.
CAR 5: Special emphasis needs to be put on the reporting of emissions in case of an emergency and when the system is shut down or CH4 needs to be flared or vented. Records of such	D.6.4 and D.6.6, E.1.4	The monitoring plan has been amended to include reporting of emissions in case of an emergency or accident where methane theoretically could be vented for security reasons (no flaring devise is to be installed). Venting would only become necessary if other security	OK. It has been clarified that the revised monitoring methodology and procedures are sufficient to keep track of any sudden release of CH4 during to emergency events. It explicitly reads in the monitoring protocol that – in case

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
events will have to be checked during verification. In order that project emissions can be considered to be zero, the project depends on perfect combustion efficiency and hermetically closed reception tanks. As combustion efficiency and possible leaks from the reception tanks is difficult to detect, maintenance according to the supplier's manual is crucial. Such maintenance thus needs to be documented and this documentation needs to be checked during verification.		measures – most of which will incur automatically (such as automatic regulation of valves, controlling and eventually stopping supply of manure to reception tanks) – turns out to be insufficient to prevent overpressure in the tanks. The maximum amount of methane to be vented is 1m3. The monitoring plan has been amended to include also maintenance and preventive maintenance according to suppliers manual and other requirements. The relevant maintenance plans and manuals will be attached the monitoring report and so will service sheets and other documentation on maintenance carried out.	such emissions occur – these are to be calculated conservatively and be subject to independent verification. This CAR is therefore closed.
CAR 6 Internal audits are important to verify that all data is correctly logged in the Excel sheet and archived. Thus, the monitoring plan needs to include internal audits. Further, diesel consumption is reliant on data provided from the subcontractor based on fuel invoices. It is crucial that all invoices are collected.	D.6.9 – D.6.12, E.1.4	Following procedures for Quality Control of data entries is described in the monitoring plan: A member of the operational staff at Saare Economics will manually book the data on the monitoring protocols. The managing director of Saare Economics holding the overall responsibility of the Monitoring Report and its protocols will appoint a second staff member to perform Quality Control of the data entries and the archiving of data and supporting documents as described in the monitoring plan. This includes also invoices on external providers of transport services (transport of manure) to the biogasplant.	OK. It has been clarified that the revised monitoring management and procedures are sufficient to keep track of all parameters that require monitoring. This CAR is therefore closed.
CL 1 It needs to be clarified whether	E.1.1	This will be reported and included in the monitoring plan and in the operating manual.	OK. It is important not to miss any emissions from irregular project activity

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
unintended CH4 emissions can occur in emergency situations and when CH4 needs to be flared.			and the accounts of such events need to be checked during verification. This CL is therefore closed.
CL 2 It also needs to be clarified whether methane emissions from transferring manure from the storage tank to the truck can be material.	E.1.1.	It is assessed that methane emissions, if any, generated in the underground storage tanks at the farms, will not leak as the storage tanks are believed to be airtight (they are built of concrete with an iron cast cover and placed in the ground). Discharging of tanks is made through a whole in the cover closed by a lit which is opened when the suction devise is placed over the whole. The diameter of the suction device matches the diameter of whole and lit. In addition, it is believed to be unlikely that methane of any significant amount can be generated in the storage tanks i.a. due to low temperature and due to short staying time.	OK. It has been sufficiently clarified that the risk of CH_4 escape during transmission from the storage tank to the truck is minimal. This CL is therefore closed.

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