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# VERIFICATION REPORT

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## SAWDUST 2000 JOINT IMPLEMENTATION PROJECT IN ROMANIA

(ITL Project ID: RO1000020)

Monitoring Period:  
1 January 2010 to 31 December 2010

REPORT No. 2011-0786

REVISION No. 01



DET NORSKE VERITAS



# VERIFICATION REPORT

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Recommended for approval Ole A. Flagstad	Approved by Ole A. Flagstad	Organisational unit: Climate Change and Environmental Services
Client: Danish Energy Agency		Client ref.: Inge Gerhardt-Pedersen, Mihai Brasoveanu

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**Summary:**  
 DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions reported for the "SAWDUST 2000 Joint Implementation Project in Romania" (ITL Project ID RO1000020) for the period 1 January 2010 to 31 December 2010.  
 In our opinion, the GHG emission reductions reported for the project in the 5 monitoring reports (Version 02) of 31 May 2011 are fairly stated.  
 The GHG emission reductions were calculated correctly on the basis of JI Specific approach in accordance with Determination and Verification Manual and Romanian JI Track I procedure, the Monitoring plan version 4 of January 2005 and the Project Design Document of 5 January 2005.  
 DNV Climate Change AS is able to verify that the emission reductions from the "SAWDUST 2000 Joint Implementation Project in Romania" during the period 1 January 2010 to 31 December 2010 amount to 55 594 tonnes of CO<sub>2</sub> equivalent.

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Report title: SAWDUST 2000 Joint Implementation Project in Romania		
Work carried out by: Zuzana Andrtová		
Work verified by: Ole Andreas Flagstad, Peter Molin		
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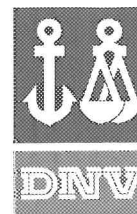
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***Abbreviations***

BAU	Business As Usual
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
CO <sub>2e</sub>	Carbon dioxide equivalent
DEA	Danish Energy Agency
DNV	Det Norske Veritas
DNA	Designated National Authority
EPA	Environmental Protection Agency
ERU	Emission Reduction Units(s)
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N <sub>2</sub> O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PCF	Prototype Carbon Fund of the World Bank
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
GWP	Global Warming Potential



## 1 INTRODUCTION

Danish Energy Agency has commissioned DNV Climate Change Services AS (DNV) to carry out the verification of the emission reductions reported for the “SAWDUST 2000 Joint Implementation Project in Romania” (the project) in the period 1 January 2010 to 31 December 2010. This report contains the findings from the verification and a verification statement for the certified emission reductions.

### 1.1 Objective

Verification is the periodic independent review and *ex post* determination by an Accredited Independent Entity (AIE) of the monitored reductions in GHG emissions that have occurred as a result of a Joint Implementation (JI) project activity during a defined monitoring period.

The objective of this verification was to verify the emission reductions reported for the “SAWDUST 2000 Joint Implementation Project in Romania” for the period 1 January 2010 to 31 December 2010.

DNV is an Independent Entity accredited by the Joint Implementation Supervisory Committee (JISC) for all sectoral scopes.

### 1.2 Scope

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that reported emission reductions are complete and accurate in order to be certified.

### 1.3 Description of the Project Activity

Project Parties:	Romania and Denmark
Title of project activity:	SAWDUST 2000 Joint Implementation Project
ITL Project ID:	RO1000020
Project Entities:	Romanian Ministry of Environment and Forests Danish Energy Agency, Amaliegade 44 DK - 1256 Copenhagen K
Location of the project activity:	The project covers 5 cities in Romania, i.e. Huedin, Gheorgheni, Intorsura Buzaului, Vatra Dornei and Vlahita




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Project's crediting period: 1 January 2004 to 31 December 2017

Period verified in this verification: 1 January 2010 to 31 December 2010

The crediting period of the project is from January 2004 to December 2017, established according to an agreement between the Romanian Ministry of Environment and Water Management (Romanian Ministry of Environment and Forests presently) and the Danish Energy Agency /15/. This information about the crediting period is confirmed in new version of PDD /1/ and Monitoring plan /2/. This verification is inside of the JI-crediting period 2008-2012.

The SAWDUST 2000 Joint Implementation Project upgraded and developed the district heating system of five towns (listed above) in Romania. The project substituted previously used fossil fuel (natural gas and liquid oil) with biomass, primarily with sawdust. The project is based on the experiences from a previous pilot project in another Romanian town, Tasca in the Neamt County. The key components of the present project are listed below:

- Use of renewable energy resources
- Reduction of the environmental impacts caused by the illegal dumping of wood waste from the sawmill and the wood processing industry
- Improvement of the social standard in Romania
- Stable heat energy price for consumers that are not being affected by the changes to the fuel prices on the world market

The project generates reductions of green house gas emissions, mainly carbon dioxide through replacement of fossil fuel usage and methane from decomposition of dumped wood waste.

The calculations are based on the fact that 78% of the greenhouse gas emission reductions relate to reductions from anaerobic digestion of wood waste dumped /3/.

#### 1.4 Methodology for Determining Emission Reductions

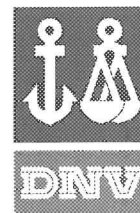
The provided methodology calculated emission reduction from two sources: Emission reduction from fuel switch from previous used fossil fuels to emission neutral biomass and Emission reduction from avoiding methane emissions due to reduction quantity of stockpiles of wood residues in nature.

The methodology I covers emission reduction equal emissions from fossil fuel in baseline scenario. This is calculated as produced net heat energy recalculated to energy entering the new biomass boiler system and transferred to GJ multiplied by emission factor of relevant fossil fuel (natural gas or oil) according to equation:

$$ERU I = Q \times \eta \times 3.6 \times EF_{fuel}$$

Where:

$ERU I$	emission reduction for methodology I
$Q$	net heat energy
$\eta$	efficiency of new biomass boiler
3.6	conversion factor from MWh to GJ
$EF_{fuel}$	emission factor of relevant fuel (natural gas or oil)



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The methodology II covers emissions from anaerobic digestion of wood stockpiles. This shall be divided into CH<sub>4</sub> emission reduction connected to the BAU scenario and CH<sub>4</sub> emission reduction generated by increasing fuel consumption (sawdust) used to reach the comfort level in buildings (as was observed in Tasca – model city used for assumption in scenario). It is based on calculation of sawdust quantity from generated heat energy and water content in the sawdust and the data are included to Spreadsheet model developed by BTG biomass technology group B.V. based on the report: "Methane and Nitrous Oxide Emissions from Biomass Waste Stockpiles", World Bank PCFplus research, August 2002.

I.e. the monitored parameters in every city are produced heat energy and content of water in sawdust. The information about water content is transferred by equivalent tabular Net calorific values (NCVs) to sawdust quantity.

Parameters determined ex-ante are tabular values of NCV for individual types of sawdust and water content and emission factors for natural gas and oil.

## 2 METHODOLOGY

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- i) Records related to measuring quantity of heat ;
- ii) Emission factors issued PDD /1/ and Baseline methodology /3/;
- iii) Records on validation and/or calibration of the used measuring equipment and calculation software /6//7/
- iv) Requirements included in national procedure for using Joint Implementation (JI) under Track I (National JI Track procedure for Romania) /18/

### Verification team

Role	Last Name	First Name	Country	Type of involvement					
				Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA1.2 competence
Team leader (Verifier)	Andrtová	Zuzana	Czech Republic	✓	✓	✓	✓		✓
Technical reviewer	Flagstad	Ole A.	Norway					✓	
TA input to TR	Molin	Peter	Norway						✓

### Duration of verification

Preparations:

11 May 2011




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On-site verification: *From 17 May 2011 to 18 May 2011*

Reporting, calculation checks and QA/QC: *From 18 May 2011 to 1 July 2011*

## 2.1 Review of Documentation

The main documents as Project design document /1/, Baseline study /3/ and Monitoring plan /2/ together with Monitoring reports /5/ dated 31 March 2011 were reviewed in desk review phase. Simultaneously were reviewed Determination report /12/ and verification report from previous period /4/ as well as Romanian JI Track I procedure /18/.

Primary records, calibration certificates /6//7/, EPA reports /9//11/ and documents related to internal quality management system /13//14/ as well as training records /8//10/ were reviewed during the site visit.

The requested correction of errors were provided in updated versions of the Monitoring reports of individual cities dated 31 May 2011 /5/(see CAR1 in Appendix A)

## 2.2 Site Visits

Huedin and Vatra Dornei heat plants were visited on 17 and 18 May 2011 by Zuzana Andrtová of DNV. The visit included the heating system for 2 of the 5 towns involved in the project. The remaining 3 cities, Gheorgheni, Intorsura Buzaului and Vlahita, were visited in the previous verification and DNV consider that this is an acceptable coverage of the different towns in the project activity.

The operators of individual plants and technical manager responsible for the project were interviewed in terms of technical and operational details. The project consultant and representative of DEA were audited in terms of application tools for emission reduction calculation, training needs and communication with EPA and MoEF.

The project is fully implemented long period and no deviation against registered document was found (the latest version of PDD, Baseline study and Monitoring plan is available on JI UNFCCC webpage as reaction on FAR from previous verification).

The records related to measurement devices were confirmed by the real situation on individual heat plants. The heat consumption was verified by cross-checking with primary records from the plant operational logbooks. Requirements from Monitoring plan /2/ were compared with operational practices in all visited sites. Additionally inspection records were assessed from local EPAs (branch offices under the MoEF). The other supporting documents presented by Technical manager of the project and DEA representative confirmed QA/QC processes of this project.

The personnel interviewed are summarized in the table below:

Name	Organization and position	Topic of interview
Mihai Brasoveanu	DEA, Task Manager for Climate Change within DEA Romania	Implementation of the project, Project coordination
Alexandru Cristian Dragan	Coordinator of DEA Romania projects for monitoring, technical manager of the project, Vatra Dornei plant	Monitoring report preparation, QA/QC of the project, operation in Vatra Dornei



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Thomass Bosse  
Borges  
Mr. Shinco Zoltan

Grue + Hornstrup A/S,  
consultant  
plant manager in Huedin

Monitoring report preparation,  
QA/QC of the project  
operation in Huedin

## 2.2.1 Audit Programme

### 17 May 2011

14:00 Opening meeting

14:15 Site visit – Huedin Plant (Huedin manager, plant operators)

- Review of site
- Data management
- Measuring devices
- Technology employed

15:30 Review of emission reduction calculation (Huedin manager, person responsible for data)

- Review of records related metrology requirements for measurement devices
- Review calculation of Monitoring report – raw data, data transportation
- Suppliers
- Training requirements

18:00 Close meeting – 1st day summary

### 18 May 2011

08:30 Information about project (JI project manager)

- changes from PDD
- status of implementation
- environmental impact monitoring (EPA reports)

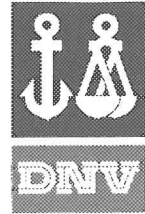
9:00 Site visit – Vatra Dornei Plant (Vatra Dornei manager, plant operators)

- Review of site
- Data management
- Measuring devices
- Technology employed

11:00 Review of emission reduction calculation (Vatra Dornei manager, person responsible for data)

- Review of records related metrology requirements for measurement devices
- Review calculation of Monitoring report – raw data, data transportation
- Suppliers
- Training requirements

Lunch approx 13:00



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14:00 Review of rest Monitoring reports (Vlahita, Gheorgheni, Intorsura Buzaului), findings related to calculation, review of the calibration records for the same plant (JI project manager)

16:00 QA/QC of the project (JI project manager)

- Assessment of Management system and Quality assurance, authority and responsibility, internal audit
- Procedures for the calculation of emission reductions and the preparation of monitoring report
- Storage of data
- Routines for handling, archiving and securing of all required data
- Procedures for training of monitoring personnel
- Procedures to handle unexpected problems and access to data

17:30 Close meeting – Summing up.

### **2.3 Reporting of Findings**

A corrective action request (CAR) is issued, where:

- i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- ii. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- iii. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

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

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

*One CAR related to human and over typo errors and one CL related to EPA participation were identified during the site visit. CAR and CL were properly addressed as reaction on verification findings.*



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### **3 VERIFICATION FINDINGS**

This section summarises the findings from the verification of the emission reductions reported for the “SAWDUST 2000 Joint Implementation Project in Romania” for the period 1 January 2010 to 31 December 2010.

#### **3.1 Remaining Issues, CARs, FARs from Previous Validation or Verification**

One FAR from previous verification has been open only. The FAR asked update all relevant documents presented on JI UNFCCC webpage. The fulfilling of this requirement was confirmed during the desk review and the FAR was closed. For details, please see Appendix A of this report.

#### **3.2 Project Implementation**

This is the seventh verification period of the project (third JI-verification period) and the project is fully implemented and established according to description in PDD /1/.

The project implementation was confirmed by visiting of two heat plants in Vatra Dornei and Huedin, which represents about 64% of total project emission reduction. Both of plants have adequate provision for sawdust stocking and processes correspond with information/directions described in PDD /1/, Baseline study /3/ and Monitoring plan /2/. The EPA visits has been realized according to legal /18/ and Monitoring plan /2/ requirements except situation in Vatra Dornei, where local responsible person was changed twice in 2010 and thus the second visit in 2010 was not realized. The situation was explained by project participant and evidence about normalization of status was provided /9/ (see CL1).

The Gheorghieni monitoring report does not still claim emission reduction from methodology II due to using woodchips for whole period 2010. Bio-fuel in Gheorghieni boiler plant was switched from the sawdust to the woodchips on 16 Dec. 2008 with respect to market circumstances as has been confirmed during the previous verification /4/.

The project implementation and QA/QC processes improvement is observed by every annual verification especially in the transfer data to emission reduction calculation because project implementation has been realized long ago.

#### **3.3 Completeness of Monitoring**

The monitoring plan includes two methodologies for monitoring and estimation of the GHG emission reductions of the project, i.e. reduction of carbon dioxide CO<sub>2</sub> emissions and avoidance of methane CH<sub>4</sub> emission.

Methodology one, comprises the calculation of the annual CO<sub>2</sub> emission reduction originating from the substitution of fossil fuels with wood residues. The CO<sub>2</sub> emission reductions are equal to the annual quantity of CO<sub>2</sub> emission estimated in the BAU scenario. The specific type of the fossil fuel, the calorific value of the oil and natural gas has been determined or monitored by the project operator contacting the relevant supplier of oil and natural gas to




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obtain precise and reliable data. The CO<sub>2</sub> emission factors for the oil or the natural gas are available. Hence, taking into consideration the heat supply to each town the corresponding CO<sub>2</sub> emissions can be calculated.

Methodology two comprises the calculation of the CH<sub>4</sub> emission avoidance resulting from reducing the quantities of stockpiles of wood residues that are left for decay. Information/type about the wood residues loaded into the new boiler system and the water content of the wood residues combusted and the heat produced by the biomass boiler system are recorded with daily frequency. The identification of the calorific value of the wood residue entering the boilers according to the wood species and water content is calculated by use of the table with this information. The table is included in the Guidelines for the Monitoring Plan Version 4 /2/ and used tables are controlled documents now.

Bio-fuel in Gheorgheni boiler plant was switched from the sawdust to the woodchips on 16 Dec. 2008 with respect to market circumstances /4/. Therefore the methane emission reduction (methodology II) was excluded from overall emission reduction calculation for the period 1 January 2010 to 31 December 2010 respectively.

The heat production efficiency of the boiler system is considered to be 85% ex-ante /2//3/. By using this estimated efficiency value the gross total heat energy amount and biomass quantity loaded into the boiler system may be calculated. The methane emission reductions are calculated on the amount of the sawdust by using the PCF plus model given in the Guidelines for the Monitoring Plan /2/.

The basic data for the calculation of the emission reductions are the weight and water content of the wood residue combusted, and the gross heat energy produced in the boiler system. This information is collected with daily frequency and recorded in monitoring report forms in accordance with the requirements of the Guidelines for the Monitoring Plan /2/ on each site. The respective EPAs, using their own staff to verify once per semester the permanent monitoring performed by the project participants in accordance with the PDD of the project, as well as the accuracy of the registered data under the permanent monitoring.” (Romanian National Procedures fir Track I / CHAPTER IV – Monitoring, determination and issuance of ERUs /18/).

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Heat production
Measuring frequency: constantly	
Reporting frequency: daily	
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
Type of monitoring equipment:	
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Ultrasonic heat meters with internal calculator are used. The accuracy is correct and ensured through calibrations. Calibration certificate for Huedin heat meter (1221571/03) and calculator (4502805/2003) dated 13 April 2009. Calibration certificate for Vatra Dornei heat meters (0300117/03, 0300122/03, 0300123/03) and calculator



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	<p>(4502801/2003, 4502802/2003, 4502803/2003) dated 20 September 2006 and Calibration certificate for all heat meters (protocols 0059445 and 0059505) dated 15 and 17 May 2010 and calculator (0069549, 0069548 and 4502802/03) dated 11 September 2010</p> <p>Calibration certificate for Gheorgheni bio-boiler heat meters (0300120/03) dated 26. August 2008 and calculator (SN 4502798/2003) dated 13 August 2008, Natural Gas boiler heat meters (0300119/03) dated 16. September 2008 and calculator (4502799/2003) dated 14 August 2008</p> <p>Calibration certificate for Vlahita heat meter (0300120/03) and calculator (4502797/2003) dated 23 August 2007</p> <p>Calibration certificate for Intorsura Buzaului heat meter (1221570/03) and calculator (4502800/2003) dated 11 May 2007</p> <p>Calibration certificate for Vatra Dornei heat meters (0300117/03, 0300122/03, 0300123/03) and calculator (4502801/2003, 4502802/2003, 4502803/2003) dated 20 September 2006</p>
<b>Calibration frequency /interval:</b>	
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The frequency of the re-calibration is every <b>four years</b> according to Romanian legislation. All calibration protocols were valid.
<b>Company performing the calibration:</b>	
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is(are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	Verbally, asking operators what is the practice of daily records handling. Cross checking primary data in hand book at the operation with official records in the Monitoring report.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data handling and recording into the Excel spreadsheet calculation template for calculation purposes has been done without any materiality mistakes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA



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	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Water content in biomass
Measuring frequency: daily	
Reporting frequency: daily	
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
Type of monitoring equipment:	
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	<p>Kitchen scales are used for weighing sawdust. The accuracy is as stated in the PDD.</p> <p>The scales have accuracy 1 g and they are used for differential weighting, which excluded eventual problems with errors of weighting.</p> <p>Types are different (Philips, OBH Nordica, Mom RT)</p>
Calibration frequency /interval:	
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The frequency of the checking procedure is provided every month with 500 ml of water. The procedure is sufficient according to DNV opinion.
Company performing the calibration:	
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is(are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	Verbally, asking operators what is the practice of daily records handling. Cross checking primary data in hand book at the operation with official records in the Monitoring report.
Does the data management (from monitoring equipment to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Data handling and recording into the Excel spreadsheet calculation template for calculation purposes has been done without any materiality mistakes
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA



### 3.4 Accuracy of Emission Reduction Calculations

The calculation is based on direct measurement of gross heat energy on every sites and quantity of water residue in the sawdust. The gross heat energy is measured by ultrasonic heat meters with regular calibration documented by calibration certificates and checked on sites. The calibration interval is 4 years and it is in accordance with Romanian legislation.

The water content in sawdust is based on difference of weight between original and dried sample of sawdust. Based on this difference and sawdust type is applied corresponding NCV of sawdust form table included in the Guidelines for the Monitoring Plan Version 4 /2/. The weight is based on differential weighting and thus applied accuracy of the weights 1g is sufficient.

The data transformation from primary records to monitoring reports' excel sheets were verified for gross heat 100% and for 3 months of daily records of water content by visited plants. The NCV values were checked for 100% of data for every plant. It was found minor incorrectness in NCV values and average calculation, which were corrected in second version of monitoring reports (see CAR1 and its conclusion). The excel sheets calculation template was applied correctly for every plant.

The emission reduction for monitoring period is 55 594 tonnes of CO<sub>2</sub> equivalent. The PDD supposed 53 210 tonnes of CO<sub>2</sub> equivalent, which is lower value than is real calculation. The difference represents 4.48% of supposed result in the Baseline study /2/. As the Baseline study was calculated in 2003 and energy demand was proposed based on average data from 1997 till 2001, the difference is acceptable.

Overall emission reductions amount was adjusted accordingly.

### 3.5 Quality of Evidence to Determine Emission Reductions

The basic data for the calculation of the emission reductions are the weight and water content of the wood residue combusted, and the gross heat energy produced in the boiler system. This information is collected with daily frequency and recorded in the monitoring report forms in accordance with the requirements of the monitoring plan of each site.

Every plant manager is responsible for plant reporting, i.e. for transportation primary data to the monitoring report excel sheet of plant. The transmission of data is verified in regular interval by technical manager of the project, who is Plant manager of Vatra Dornei boiler house. Further is the whole project system regularly checked by local EPA as it its requested in Romanian Track I procedures /18/. This request was not fully realized in Vatra Dornei, where local EPA's responsible person was changed in this period. The explanation was provided by EPA (see CL1). As the project has sufficient internal QA/QC procedures and this situation was related to one plant only and further the situation is not fully managed by project owner, the explanation was accepted by DNV.

Small incorrectness in emission reduction calculations were solved in second version of monitoring reports (CAR1) and final result of emission reduction is verified by DNV as correct.



### 3.6 Management System and Quality Assurance

The management system of the project covers several levels of QA/QC. Every plant manager is responsible for data management and QA/QC review, which is recorded to monthly checklist /13//14/. Further every plant is controlled twice in year by local EPA /9//11/. And finally once per year is the monitoring reports checked by technical manager of the project.

Training needs are sufficiently fulfilled by yearly trainings, where participate project manager, technical project manager, operational staff as well as local EPA's representatives. All trainings are prepared together with project consultant.

The management system described above ensures sufficient control of all aspects of emission reduction calculation and monitored parameters. As the part of the control is independent on staff involved in monitoring and data management, the system contains sufficient independent assurance. On the other side, this part is not fully managed by project staff and it is possible that the frequency is different than it is requested in the monitoring plant. This situation happened in Vatra Dornei in this verification period (CL1). However the situation is extraordinary and other elements QA/QC as monthly review of the site data flow and procedures by checklist and yearly review of every sites by technical project manager sufficiently kept the good level of the project management.





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#### 4 VERIFICATION STATEMENT

DNV Climate Change AS (DNV) has performed the verification of the emission reductions that have been reported for the “SAWDUST 2000 Joint Implementation Project in Romania” (UNFCCC Registration Reference No. RO1000020) for the period 1 January 2010 to 31 December 2010.

The project participants are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project.

It is DNV’s responsibility to express an independent verification statement on the reported GHG emission reductions from the project. DNV does not express any opinion on the selected baseline scenario or on the validated and registered PDD.

The verification was carried out in accordance with the JI Determination and Verification Manual /16/ and Romanian JI Track I procedure /18/. DNV conducted the verification on the basis of the monitoring plan contained in the registered Project Design Document of 5 January 2005 and the monitoring report (Version 02) dated 31 May 2011. The verification included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

DNV’s verification approach draws on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. DNV planned and performed the verification by obtaining evidence and other information and explanations that DNV considers necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions of the “SAWDUST 2000 Joint Implementation Project in Romania” (ITL project ID RO1000020) for the period 1 January 2010 to 31 December 2010 are fairly stated in the monitoring report (Version 02) dated 31 May 2011.

The GHG emission reductions were calculated correctly on the basis of the monitoring plan contained in the registered PDD of 5 January 2005.

DNV Climate Change AS is able to verify that the emission reductions from the “SAWDUST 2000 Joint Implementation Project in Romania” during the period 1 January 2010 to 31 December 2010 amount to 55 594 tonnes of CO<sub>2</sub> equivalent.

Prague and Oslo, 1 July 2011

Zuzana Andrtová

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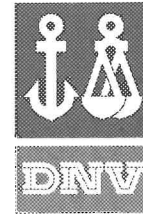


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## 5 REFERENCES

*Documents provided by the Project Participants that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the periodic verification conclusions, and are usually further checked through interviews with key personnel.*

- /1/ SAWDUST 2000 Project Design Document - Version 3 – issued 2005-01-05  
<http://ji.unfccc.int/JIITLProject/DB/YVNY1K95HNNREFBNUYC8MGJD04HCCT/details>
- /2/ SAWDUST 2000 Guidelines for Monitoring Plan – Version 4 – issued 2005-01-05  
<http://ji.unfccc.int/JIITLProject/DB/YVNY1K95HNNREFBNUYC8MGJD04HCCT/details>
- /3/ SAWDUST 2000 Baseline Study – Version 3 – issued 2005-01-05  
<http://ji.unfccc.int/JIITLProject/DB/YVNY1K95HNNREFBNUYC8MGJD04HCCT/details>
- /4/ DNV: Periodic verification report for 1 January 2009 to 31 December 2009 - Report number 2010-1041 – version 01 – issued 27 October 2010
- /5/ Monitoring reports for individual sites as excel files:  
Monitoring Plan Vatra Dornei 2010 v2 excel spreadsheet dated 31 May 2011  
Monitoring Plan Huedin - 2010 v2 excel spreadsheet dated 31 May 2011  
Monitoring Plan Gheorgheni - 2010 v2 excel spreadsheet dated 31 May 2011  
Monitoring Plan Intorsura Buzaului 2010 v2 excel spreadsheet dated 31 May 2011  
Monitoring Plan Vlahita 2010 v2 excel spreadsheet dated 31 May 2011  
(previous versions from 31 March 2011)
- /6/ Plant visited during the verification:  
  
Calibration certificates for Vatra Dornei heat meters and calculators (included also for diesel generator) dated 20 September 2006 and 11 September 2010, 15 May 2010 and 17 May 2010  
  
Calibration certificate for Huedin heat meter and calculator dated 13 April 2009
- /7/ Other plants:  
  
Calibration certificate for Gheorgheni bio-boiler heat meters dated 26 August 2008 and calculator dated 13 August 2008, Natural Gas boiler flow meters dated 16. September 2008 and calculator dated 14 August 2008  
  
Calibration certificate for Vlahita heat meter and calculator dated 23 August 2007  
  
Calibration certificate for Intorsura Buzaului heat meter and calculator dated 11 May 2007
- /8/ Training records from 9 March 2010 (operators of Vatra Dornei)
- /9/ EPA's inspection records (checklist) for Vatra Dornei from 16 July 2010 and 30 May 2011
- /10/ Training records from 8 March 2010 (operators, EPA employee in Huedin)
- /11/ EPA's inspection records (checklist) for Huedin from I "semest"2010 and II "sesmest! 2010 and annual 2010

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- /12/ SGS Determination report: DETERMINATION OF THE SAWDUST 2000 PROJECT dated 16 February 2005
- /13/ QA/QC monthly records for Vatra Dornei dated 28 January 2010, 16 February 2010, 30 March 2010, 28 April 2010, 31 May 2010, 29 June 2010, 30 July 2010, 31 August 2010, 27 September 2010, 29 October 2010, 29 November 2010 and 29 December 2010
- /14/ QA/QC monthly records for Huedin dated 31 January 2010, 28 February 2010, 31 March 2010, 30 April 2010, 31 May 2010, 30 June 2010, 31 July 2010, 30 August 2010, 30 September 2010, 30 October 2010, 30 November 2010 and 31 December 2010
- /15/ Project agreement between Ministry of Environment of the Kingdom of Denmark and the Ministry of Waters and Environmental Protection of Romania regarding the "Sawdust 2000" Joint Implementation Project, signed 7 March 2003

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

- /16/ JI Supervisory Committee, Determination and verification manual, version 01 adopted at JISC 19
- /17/ JI Supervisory Committee, Guidance on criteria for baseline setting and monitoring, version 02 adopted at JISC18
- /18/ Romanian Ministry of Environment and Forests (RMEF), *National procedure for using Joint Implementation (JI) mechanism under Track I (National JI Track I Procedure)* (Romanian JI Track I Procedure)  
<http://ji.unfccc.int/UserManagement/FileStorage/AWBVICCKC5KW215L28BETVJZ1YHUN6>

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## **APPENDIX A**

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### **CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS**

**Corrective action requests**

<b>CAR ID</b>	<b>Corrective action request</b>	<b>Response by Project Participants</b>	<b>DNV's assessment of response by Project Participants</b>
CAR 1	The Monitoring reports/spreadsheets for Vatra Dornei, Huedin, Intorsura Buzaului and Vlahita should be updated in columns related to NCV and Weight dry Sawdust.	Respective updates and revisions have been made to the Monitoring Report spreadsheets for Vatra Dornei, Huedin, Intorsura Buzaului, and Vlahita. Please find the MRs attached.	The updated versions of the reports were verified as correct.  The CAR is closed

**Clarification requests**

<b>CAR ID</b>	<b>Corrective action request</b>	<b>Response by Project Participants</b>	<b>DNV's assessment of response by Project Participants</b>
CL 1	It should be officially clarify, why EPA's visited Vatra Dornei only one time and not twice as it is requested in the Monitoring plan. The clarification should contain information about preventive actions for future.	Due to changes of staff at the local EPA in Suceava, responsible for visiting the Boiler plant in Vatra Dornei twice a year, the semi annual quality assurance checks for the second half of 2010, has not been performed in time. This however has been carried out in 2011 for the second half of 2010 instead. (Please find both EPA reports for the year 2010 attached).	The explanation from EPA as well as protocols has been received. As the project participants has not possibility to change EPA's internal procedures, the CL has been closed.

**Forward action requests from previous verification**

<b>FAR ID</b>	<b>Forward action request</b>	<b>Summary of how FAR has been addressed in this reporting period</b>	<b>Assessment of how FAR has been addressed</b>
FAR 1	The update versions of PDD, Baseline study and Guideline for Monitoring plans should be public available on UNFCCC /JI website.	DEA responsible person discussed with the Romanian DFP this issue. DFP updated the documents.	The updated versions of the PDD (version 3 dated 5 January 2005), Baseline study (version 3 dated 5 January 20085) and Monitoring Plan (version 4 dated 5 January 2005) are presented on JI_UNFCCC website.  The FAR is closed.

**Forward action requests from this verification**

<b>FAR ID</b>	<b>Forward action request</b>	<b>Response by Project Participants</b>	<b>DNV's assessment of response by Project Participants</b>
FAR 1	NA		