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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 2011 to 31 December 2011

REPORT No. 2012-1252

REVISION No. 01



DET NORSKE VERITAS



## VERIFICATION REPORT

Date of first issue: 18 May 2012	Project No.: PRJC-349051-2011-CCS-NOR
Approved by Ole A. Flagstad	Organisational unit: DNV KEMA Energy & Sustainability Accredited Climate Change Services
Client: Danish Energy Agency	Client ref.: 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 2011 to 31 December 2011.

In our opinion, the GHG emission reductions reported for the project in the monitoring report (Version 02) of DD 13 September 2012 are fairly stated and are accurate and free of material errors, omissions, or misstatements.

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 and 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 2011 to 31 December 2011 amount to 46 588 tonnes of CO<sub>2</sub> equivalent.

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Work carried out by: Zuzana Andrtová	
Work verified by: Ole A. Flagstad	
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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 2011 to 31 December 2011. 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 2011 to 31 December 2011.

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 errors, omissions, or 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 in Romania
ITL Project ID:	RO1000020
Project Participants:	Romanian Ministry of Environment and Water Management 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 in Romania




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

Period verified in this verification: 1 January 2011 to 31 December 2011

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 /14/. This information about the crediting period is confirmed in new version of PDD /15/ and Monitoring plan /16/. This verification is inside of the first Kyoto II-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 greenhouse 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 /17/.

#### 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:

$$ERUI = Q \times \eta \times 3.6 \times EF_{fuel}$$

Where:

<i>ERUI</i>	emission reduction for methodology I
<i>Q</i>	net heat energy
<i>η</i>	efficiency of new biomass boiler
3.6	conversion factor from MWh to GJ
<i>EF<sub>fuel</sub></i>	emission factor of relevant fuel (natural gas or oil)

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




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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

DNV has assessed and determined that the implementation and operation of the project activity, and the steps taken to report emission reductions comply with JI criteria and relevant guidance provided by the JI Supervisory Committee.

The assessment involved a desk review of relevant documentation as well as an on-site visit(s).

### *Verification team*

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

### *Duration of verification*

Preparations: From 1 May 2012

On-site verification: From 15 May 2012 to 16 May 2012

Reporting, calculation checks and QA/QC: From 30 May 2012 to 11 October 2012

### 2.1 Review of Documentation

The main documents as Project design document /15/, Baseline study /16//17/ and Monitoring plan /16/ together with Monitoring reports /2/ dated 23 April 2012 were reviewed in desk review phase. Simultaneously were reviewed Determination report /18/ and verification report from previous period /1/ as well as Romanian JI Track I procedure /19/.




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Primary records, calibration certificates /3//4/, EPA reports /6//8//10/ and documents related to internal quality management system /11/~//13/ as well as training records /5//7//9/ were reviewed during the site visit.

The requested corrections of errors were provided in updated versions of the Monitoring reports of individual cities dated 13 September 2012 /2/ (see CAR1 in Appendix A).

## 2.2 Site Visits

Intorsura Buzaului, Vlahita and Vatra Dornei heat plants were visited on 15 and 16 May 2012 by Zuzana Andrtová of DNV. The visit included the heating system for 3 of the 5 towns involved in the project. The Gheorgheni was not visited due to no operation during the monitoring period. Huedin was visited in the previous verification and DNV consider that his 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 /15/, Baseline study /17/ and Monitoring plan /16/ is available on JI UNFCCC webpage).

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
Thomasss Bosse	Grue + Hornstrup A/S, consultant	Monitoring report preparation, QA/QC of the project
Mr. Daniel Neagoe	plant manager in Intorsura	operation in Intorsura
Mr. Maris Ionel	plant operator in Intorsura	operation in Intorsura
Mr. Tödóu Lajos	Plant operator in Vlahita	Operation in Vlahita



### 2.3 Closing out of verification findings

The objective of this phase of the verification was to resolve any issues which needed be clarified prior to DNV's conclusion that i) the project activity has been implemented and operated in accordance with the PDD, ii) the monitoring plan complies with the monitoring methodology and the actual monitoring complies with the monitoring plan and iii) the data and calculation of GHG emission reductions are correct.

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.

*Two CARs related to human and over typo errors and related to delay of calibration on Intorsura site. One CL related to EPA participation was identified during the site visit. CARs and CL were properly addressed as reaction on verification findings.*



### 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 2011 to 31 December 2011.

#### 3.1 Remaining issues, CARs, FARs from previous verification

No remaining issues from previous verification were identified

#### 3.2 Project implementation

This is the eight verification period of the project (fourth JI-verification period) and the project is fully implemented and established according to description in PDD /15/.

The project implementation was confirmed by visiting of three heat plants in Intorsura Buzaului, Vlahita and Vatra Dornei, which represents about 92% of total project emission reduction. All plants have adequate provision for sawdust stocking and processes correspond with information/directions described in PDD /15/, Baseline study /17/ and Monitoring plan /16/. The EPA visits has been realized according to legal /19/ and Monitoring plan /16/ requirements except situation in Vatra Dornei, where local responsible person was changed twice in 2010 further changes on MoEW has been realized in 2011 and thus the second visit in 2011 was not realized again. The situation was explained by project participant and the review of relevant period by local EPA has been realized on 12 June 2012 /6/ (see CL1).

The Gheorghieni monitoring report is not issued as the installation was not in operation during 2011 year.

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 Compliance with monitoring plan

The monitoring has been carried out in accordance with the monitoring plan /16/.

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 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




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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 /16/ and used tables are controlled documents now.

The heat production efficiency of the boiler system is considered to be 85% ex-ante /16//17/. 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 /16/.

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 /16/ 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 /19/).

The calibration of individual measurement devices are properly realized (see details in the tables below) as it requested by Monitoring plan /16/ and local regulatory except delay in calibration of heat meter in Intorsura (see CAR2). This delay has been correctly reflected in the updated monitoring report as deduction of measured values about maximal possible error of the measurement, i.e. 5% due to period, when the calibration of the heat meter was not valid.

The below tables describe for each parameter, which is to be measured according to the monitoring plan, how DNV has verified that i) the actual monitoring complies with the monitoring plan and that ii) data have been assessed to correctly support the emission reductions being claimed.

	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 (accuracy is not set in The PDD). Calibration certificate for Vatra Dornei heat meters (0300117/03, 0300122/03, 0300123/03) and calculator



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	(4502801/2003, 4502802/2003, 4502803/2003) - 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 /3/ Calibration certificate for Vlahita heat meter (0300120/03) and calculator (4502797/2003) dated 23 August 2007, the next certificates are dated June 2011 for heat meter and 4 July 2011 for the calculator Calibration certificate for Intorsura Buzaului heat meter (1221570/03) and calculator (4502800/2003) dated 11 May 2007 and the next is dated 11 April 2012 (about 8 month delay) /3/ Calibration certificate for Huedin heat meter (1221571/03) and calculator (4502805/2003) dated 13 April 2009 /3/.
<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, which is shorter period than it is requested in the Monitoring Plan /16/.
<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. All calibrations /3/, except Intorsura, were valid for whole monitoring period. The Intorsura calibration was solved as described in CAR2 by deduction of measured values about maximal possible error of device (i.e. 5%) from measured values in period from the end of validity of previous calibration till new calibration of the meter.
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?	Kitchen scales are used for weighing sawdust. The accuracy is as stated in the PDD. The scales have accuracy 1 g and they are used for differential weighting, which excluded eventual problems with errors of weighting. Types are different (Philips, OBH Nordica, Mom RT, Well)
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/1 l 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 Assessment of Data and Calculation of emission reductions

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 /16/. 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 46 588 tonnes of CO<sub>2</sub> equivalent. The PDD supposed 53 210 tonnes of CO<sub>2</sub> equivalent, which is higher value than is real calculation. The difference represents 12% of supposed result in the Baseline study /17/. As the Baseline study was calculated in 2003, energy demand was proposed based on average data from 1997 till 2001 and the power plant in Georghieni was not in operation for whole verified period, 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 is requested in Romanian Track I procedures /19/. This request was not fully realized in Vatra Dornei, where the checking of second period was realized with delay (see CL1). The situation is not under control of project participant; however this requirement is directly in the legislation /19/. DNV assessed the situation also in previous verification period and found that the project has sufficient internal QA/QC procedures and also it is not fully managed by project owner. Thus conclusion is that situation has no significant effect if it is related to one plant only.

Small incorrectness in emission reduction calculations were solved in second version of monitoring report (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 monthly data management and QA/QC review, which is recorded to checklist /11/~13/. Further every plant is controlled twice in year by local EPA in accordance with local regulatory requirements /6//8//10/. 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 /5//7//9/. 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 and previous verification period (CL1). However the situation happened in case of one site and other elements QA/QC as monthly review of the site data flow and procedures by checklist and yearly review of every site by technical project manager sufficiently kept the good level of the project management. Thus DNV can confirm that the management and operational system covers the responsibilities and authorities for monitoring and reporting in accordance with the responsibilities and authorities stated in the monitoring plan.



#### 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 2011 to 31 December 2011.

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.

DNV conducted the verification on the basis of JI Specific approach in accordance with Determination and Verification Manual and Romanian JI Track I procedure and the monitoring plan version 4 of January 2005, the registered Project Design Document of 5 January 2005 and the monitoring report (Version 02) dated DD 13 September 2012. 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 2011 to 31 December 2011 are fairly stated in the monitoring report (Version 02) dated DD 13 September 2012 and are accurate and free of material errors, omissions, or misstatements.

The GHG emission reductions were calculated correctly on the basis of the 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 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 2011 to 31 December 2011 amount to 46 588 tonnes of CO<sub>2</sub> equivalent.

City and Oslo, 11 October 2012

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DNV Prague, Czech Republic

Ole A. Flagstad  
Approver,  
DNV Climate Change AS





## 5 REFERENCES

### 5.1.1 Documentation provided by the project participants

- /1/ DNV: Periodic verification report for 1 January 2010 to 31 December 2010 - Report number 2011-0786 – version 01 – issued 1 July 2011
- /2/ Monitoring reports for individual sites as excel files:  
Monitoring Plan 2011 Vatra Dornei excel spreadsheet dated 13 September 2012  
Monitoring Plan 2011 Intorsura excel spreadsheet dated dated 13 September 2012  
Monitoring Plan 2011 Vlahita excel spreadsheet dated dated 13 September 2012  
Monitoring Plan 2011 Huedin - excel spreadsheet dated dated 13 September 2012 (previous versions from 23 April 2012)
- /3/ Documents related to plants visited during the verification:  
Calibration certificates for Vatra Dornei heat meters and calculators (included also for diesel generator) dated 11 September 2010, 15 May 2010 and 17 May 2010  
Calibration certificate for Intorsura heat meter and calculator dated 11 April 2012 and previous certificate dated 11 August 2007  
Calibration certificate for Vlahita heat meter dated June 2011 and for calculator 4 July 2011 and previous for heat meter and calculator dated 23 August 2007
- /4/ 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 Huedin heat meter and calculator dated 13 April 2009
- /5/ Training records from 11 April 2011 (operators of Vatra Dornei)
- /6/ EPA's inspection records (checklist) for Vatra Dornei from 1 September 2011 and from 12 June 2012
- /7/ Training records from 28 October 2011 (plant manager), 9 March 2011 (operators in Intorsura)
- /8/ EPA's inspection records (checklist) for Intorsura 8 September 2011 for first semester and 28 February 2012 for second semester
- /9/ Training records from 9 March 2011 (operators in Vlahita)
- /10/ EPA's inspection records (checklist) for Vlahita 11 August 2011 for first semester and 16 January 2012 for second semester
- /11/ QA/QC monthly records for Vatra Dornei dated 31 January 2011, 25 February 2011, 28 March 2011, 29 April 2011, 26 May 2011, 30 June 2011, 30 August 2011 (provided for July and August), 28 September 2011, 31 October 2011, 29 November 2011 and 30 December 2011
- /12/ QA/QC monthly records for Intorsura dated 31 January 2011, 28 February 2011, 31 March 2011, 30 April 2011, 31 May 2011, 30 June 2011, 30 July 2011, 31 August 2011, 30 September 2011, 28 October 2011, 29 November 2011 and 27 December



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- /13/ QA/QC monthly records for Vlahita dated 4 February 2011, 7 March 2011, 1 April 2011, 6 May 2011, 3 June 2011, 7 July 2011, 5 August 2011, 2 September 2011, 7 October 2011, 4 November 2011, 6 December 2011 and 30 December 2011
- /14/ 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

**5.1.2 Other project documents or documents used by DNV to verify the information provided by the project participants**

- /15/ SAWDUST 2000 Project Design Document - Version 3 – issued 2005-01-05  
<http://ji.unfccc.int/JIITLProject/DB/YVNY1K95HNNREFBNUYC8MGJD04HCCT/details>
- /16/ SAWDUST 2000 Guidelines for Monitoring Plan – Version 4 – issued 2005-01-05  
<http://ji.unfccc.int/JIITLProject/DB/YVNY1K95HNNREFBNUYC8MGJD04HCCT/details>
- /17/ SAWDUST 2000 Baseline Study – Version 3 – issued 2005-01-05  
<http://ji.unfccc.int/JIITLProject/DB/YVNY1K95HNNREFBNUYC8MGJD04HCCT/details>
- /18/ SGS Determination report: Determination of the SAWDUST 2000 Project dated 16 February 2005
- /19/ 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>

**5.1.3 Methodologies, tools and other guidance by the JI Supervisory Committee**

- /20/ JI Supervisory Committee, Determination and verification manual, version 01 adopted at JISC 19
- /21/ JI Supervisory Committee, Guidance on criteria for baseline setting and monitoring, version 02 adopted at JISC18
- /22/ JI Supervisory Committee , Standard for applying the concept of materiality in verifications, version 01 adopted at JISC 22
- /23/

**5.1.4 Persons interviewed during the verification**

- /24/ Mihai Brasoveanu, DEA representative
- /25/ Thomas Bosse, Grue + Hornstrup A/S, consultant
- /26/ Dragan Alexandru, Operation Supervisor, Vatra Dornei boiler plant
- /27/ Neagoie Daniel, Intosura boiler plant
- /28/ Ionel Maris, Intosura boiler plant
- /29/ Tódóv Lojas. Vlahita boiler plant

## **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	<p>The Monitoring reports/spreadsheets for Vatra Dornei, Intorsura Buzaului, Vlahita and Huedin should be updated in columns related to NCV and Weight dry Sawdust in accordance with the NCV table and primary records.</p>	<p>MR have been revised accordingly</p>	<p>The updated versions of individual Monitoring reports are correct.  <b>The CAR is closed.</b></p>
CAR 2	<p>The calibration of the heat meter and relevant calculator in Intorsura was not realized at time requested by calibration periodicity. The calibration is valid for 4 years and calibrations for Intorsura were realized on 23 August 2007 and next calibration certificate is from 11 April 2012, which corresponds with 7 months and 19 day delay.</p>	<p>The heat meter has an uncertainty level of 95%. During the period where the heat meter was operated without valid calibration 5% equal to the metering error was deducted from the quantity of biomass utilized (this is equal to deducting the error at the back end of the calculations (heat produced), however in light of the MR seemed to be the easier approach.</p>	<p>The updated version of the Monitoring report of Intorsura correctly applied deduction of 5% as the maximal possible error of heat meter as the conservative approach  <b>The CAR is closed.</b></p>

**Clarification requests**

<b>CL 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 again one time only and not twice as it is requested in the Monitoring plan.	Second half of the year 2011 and first half of the year 2012 was a period with several changes at the level of the Romanian Ministry of Environment and Forests (in this period 4 Ministers and 3 directors of Climate Change Unit etc...) and consequently there have been delays at the level of Local EPA ToRs and tasks in terms of JI QA activities; thus the Local EPA Suceava in charge with the QA in Vatra Dorney performed the second Semianual QA check in June 12, 2012 finalized with the report attached to this document).	The EPA's review of the project site is not possible to manage by project participant. The legal requirement /19/ does not exactly mentioned time except, that the project should be checked twice in year and thus the visit realized later but reviewed relevant period /6/ is acceptable.  <b>The CL is closed.</b>

**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	NA		

**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		