VERIFICATION REPORT

SREDEN ISKAR CASCADE HPP PORTFOLIO PROJECT IN BULGARIA

(ITL Project ID: BG2000012/reference number 0063)

Verification Period:
1 January 2010 to 31 December 2010

REPORT NO. 2011-9067
REVISION NO. 01

DET NORSKE VERITAS

VERIFICATION REPORT

Date of first issue: 10 January 2011		Project No.: PRJC-286697-2011-CCS-CZE
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Client: Vez Svoghe AD		Client ref.: Patick Pauletto

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Summary:

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions reported for the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" (ITL Project ID BG2000012/reference number 0063) for the period 1 January 2010 to 31 December 2010.

In our opinion, the GHG emission reductions reported for the project in the monitoring report of 7 April 2011 are fairly stated.

The GHG emission reductions were calculated correctly on the basis of the approved CDM monitoring methodology ACM0002 (version 07) and the monitoring plan contained in the Project Design Document of 15 October 2007.

DNV Climate Change AS is able to verify that the emission reductions from the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" during the period 1 January 2010 to 31 December 2010 amount to **30 292** tonne7 of CO_2 equivalent.

Report No.: 2011-9067	Subject Group: Environment	
Report title: Sreden Iskar Cascade HPP Portfolio Project in Bulgaria		
Work carried out by: Zuzana Andrtová		
Work verified by: Ramesh Ramachandran		
Date of this revision: 8 April 2011	Rev. No.: 01	Number of pages: 15

Indexing terms

Key words: Climate Change; Kyoto Protocol; Validation; Clean Development Mechanism	Service Area: Verification
	Market Sector: Process Industry

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Abbreviations

AIE	Accredited Independent Entity
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CL	Clarification Request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
ERU	Emission Reduction Units(s)
FAR	Forward Action Request
GHG	Greenhouse gas(es)
HPP	Hydro Power Plant
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-governmental Organisation
NEK	National Elektricheska Kompania (National Electricity Company)
ODA	Official Development Assistance

1 INTRODUCTION

Vez Svoghe AD has commissioned DNV Climate Change Services AS (DNV) to carry out the verification of the emission reductions reported for the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" (the project) for 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 verification period.

The objective of this verification was to verify the emission reductions reported for the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" 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:	*Bulgaria (Host) and Netherlands (Sponsor Party)*
Title of project activity:	*Sreden Iskar Cascade HPP Portfolio Project in Bulgaria*
ITL Project ID:	*BG2000012/reference number 0063*
CDM baseline and monitoring methodology:	*ACM0002 (version 07)*
Project Entity:	*Vez Svoghe AD, 41 Christophor Columbus Blvd, 1592 Sofia, Bulgaria and EBRD, One Exchange Square London EC2A 2JN, United Kingdom*

Location of the project activity: *Individual planned stages are placed on the river Iskar near Sofia, Bulgaria*

Project's crediting period: *1 January 2008 to 31 December 2012*

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

The project involves the installation and commissioning of 9 small run-of-the-river hydro power plants on the river Iskar near the town of Sofia in Bulgaria. The total installed capacity of the project is 25.65 MW. The project is expected to generate 415.5 GWh of electricity over the entire crediting period starting from 1 January 2008 and extending to 31 December 2012 and it is estimated that the expected reduction is on average 74 194 t CO_2 emissions per year by displacing electricity produced by existing and upcoming fossil fuel fired power plants connected to the electrical grid.

Construction of the first two HPPs started in July 2006. The first HPP (Lakatnik) was commissioned on 2 July 2008 and the second HPP (Svhrazen) was commissioned in May 2009. The next two power plants (Tzetovo and Opletnia) are under construction and the construction of third power plant – Prokopanik will start soon. The scheduled sequence in the PDD has been changed and the same is presented in the table below:

Phase	HPP	Starting date of the operation	Planned starting date of operation
I.	Lakatnik	July 2008	January 2008
	Svrazhen	May 2009	January 2008
II.	Tzerovo	under construction – should be finish in 2012	July 2011
	Opletnia	under construction – should be finish in 2012	April 2010
	Prokopanik	construction should start in 2011 - should be finish in 2012	July 2011
III.	Gavrovnitsa	Commissioning is planned in 2015	April 2010
	Levitshe	Commissioning is planned in 2015	April 2010
	Bov-Sud	Commissioning is planned in 2015	July 2011
	Bov-Nord	Commissioning is planned in 2015	July 2011

1.4 Methodology for Determining Emission Reductions

The emission reductions are calculated as the difference between baseline emissions and project emissions and leakages. The baseline emissions are calculated as the product of the net electricity generation supplied to the Bulgarian grid and the emission factor for Bulgarian grid established by Ministry of Environment and Water of Bulgaria (MoEW). Hereinto, project emissions and leakages for the project are considered to be zero as per the methodology ACM0002 /23/.

The emission factor was calculated *ex-ante* by NEK for Bulgarian government and it was supposed in the registered PDD that the emission factor will be annually ex-post renewed by MoEW of Bulgaria. Bulgarian MoEW has not renewed the emission factor yet and MoEW confirms again validity of the old calculation for this period /13/. Thus the values presented in

Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System (NEK "Study") /14/ is still valid for this project.

The delivered electricity of the project is monitored continuously for each plant and sum of delivered amounts is total value of delivered electricity to the grid.

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 delivered electricity to grid /3/;

ii) Emission factor issued by NEK (0.908 tCO_2/MWh for 2010) /14/;

iii) Calculation of the baseline emissions based on the determined and validated baseline emission factor /3/;

iv) Records on validation and/or calibration of the used measuring equipment, and calculation software /5//6//15//16/.

Verification team

				Type of involvement						
Role	***Last Name***	***First Name***	***Country***	Administrative	Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	Expert input (TA1.2)
Project manager / Technical team leader / JI verifier	Andrtová	Zuzana	Czech Republic	✓	✓	✓	✓			✓
Technical reviewer	Ramesh	Ramachadran	India						✓	✓

Duration of verification

Preparations: *31 January 2011*

On-site verification: *From 3 February to 4 February 2011*

Reporting, calculation checks and QA/QC*: From 4 February to 8 April 2011*

2.1 Review of Documentation

The Monitoring report /3/ version 1 dated 21 January 2011 was main document for review during the desk review. This report included all invoices from HPPs Lakatnik and Svrazhen as well as Audit report from 10 May 2010 and confirmation e-mail from Kiril Bankov, junior expert of Climate Change Directorate of MoEW for emission factor for 2010 year /13/ and the "NEK Study" /14/.

The revised version 2 and 3 of the Monitoring report /3/ dated 4 February 2011 and 7 April 2011 were provided DNV as reaction to CAR found during the site visit.

Supporting documents that were checked included the PDD /1/ of the project dated 15 Octobe 2007, Monitoring procedures of Vez Svoghe for the project /2/, the "NEK study" for the calculation of emission factor /14/. The previous DNV reports /12//18/ (determination and verification reports from 1st and 2nd verification) were used for context during desk review too.

Operation records as logbooks/15//16/, calibration protocols /5//6/, training records /11/ and construction and other obligatory permits /7//8//9//10//19//20/ as well as power purchase agreement /4/ were provided during the site visit.

Information and formulas provided in the monitoring report were compared with PDD and electricity sales receipts. The comparison confirmed that used formulas and values are correctly applied.

2.2 Site Visits

The site visit was conducted by Zuzana Andrtová of DNV on 3 and 4 February 2011. All operating and constructing hydropower plants were visited as well as site prepared for construction of HPP Prokopanik. Final review of documents and procedures for archiving of data was done in central office of Vez Svoghe in Sofia. During this site visit, representative of DNV has interviewed key personnel of the plants Lakatnik and Svrazhen and verified that the status of operating plants and the plants in construction. as mentioned in chapter 1.3).

The key personnel interviewed are summarized in the table below:

Name	Organization and position	Topic of interview
Patrick Pauletto	Project Manager, Vez Svoghe AD, Bulgaria.	QA/QC of the project, Project management
Vassil Shumanov	Chief Engineer, Vez Svoghe AD, Bulgaria.	Operational reporting, logbooks, SCADA system, plants visit, monitoring equipments
Krestiyan Rolev	Legal Deparment, Vez Svoghe AD, Bulgaria.	Information about schedule of construction works, construction sites presentation, documentation of permits
Anton Milchev	Building department, Civil Engineer, Vez Svoghe AD, Bulgaria.	Data management, internal audit
Dario Dilucia La Perna	Project Manager, Technical Team Leader, MWH S.p.A, Italia.	QA/QC of the project, Project management, site visit

The other personnel who were interviewed as part of the site visit are listed at the end of report.

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 verification period.

During this verification, one CAR was identified. It was request to change of construction schedule in the Monitoring report /3/ to put it in accordance with real situation. The CAR was properly addressed and closed. The FAR from the past verification /12/ related to procedures during electricity meter breakdowns is still pending because there has been no response from the grid company (ČEZ). DNV has verified that there is no breakdown of meters during the crediting period. And therefore does not have any influence on emission reduction calculation. Moreover it is expected that in case of the eventual break downs of electricity meters it would be resolved in accordance with PPA /4/, which is in accordance with the Monitoring plan. However the FAR is still kept open to ensure that a formal system procedure for emission reduction calculations is clearly available in case of electricity breakdowns.

Verification findings

This section summarises the findings from the verification of the emission reductions reported for the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" for the period 1 January 2010 to 31 December 2010.

2.4 Remaining Issues, CARs, FARs from Previous Validation or Verification

One FAR was opened from second verification /12/ related to measurements in case of major electricity meter break-down. As the electricity meters are not owned by company but grid company CEZ, the discussion was not finished yet. The FAR is still open and the original statement from the PPA /4/ is still valid. (Refer to discussion under Chapter 2.3).

2.5 Project Implementation

The project has delay in schedule originally mentioned in the PDD /1/. Two power plants, Lakatnik and Svrazhen, are in operation only. Second phase started with construction of Tzerovo power plant on 8 June 2010. Opletnia started later in October 2010 and Prokopanik is not started yet. Third phase is expected to start in 2013.

The actual operation of the project activity is in line with the registered PDD /1/, however construction phases II and II are in delay against the PDD /1/. The details have also been earlier presented in Chapter 1.3

Electricity was generated and supplied to the Bulgarian grid. The net generated electricity of 33 362 MWh was supplied to the grid during the monitored period from 1 January 2010 to 31 December 2010.

Both hydropower plants generate electricity, however the request from the grid is lower than estimated in the PDD /1/. The total emission reductions reported for the period 1 January 2010 to 31 December 2010 was verified to be **30 292** tCO_2e. The emission reductions are lower than that the emission reduction of 66 729 tCO_2e predicted in the registered PDD /1/. The lower emission reductions for the verification period are attributed to the lower demand of the grid company as well as changes and delays of operational dates against PDD construction schedule.

The data presented in the monitoring report is in compliance with the information in the PDD /1/ except that the grid emission factor that was not determine *ex-post* as stated in PDD /1/. As stated in PDD on page 25, "the baseline grid emission factors will be monitored using the document "Baseline Study of Joint Implementation projects in the Bulgarian energy sector" performed annually by the NEK" /14/. However, DNV was able to confirm directly from the MoEW /13/ that this baseline study was not updated and is still valid for JI projects in Bulgaria. Hence, the emission factor of this study published on the web sites of the Ministry is the most recent baseline emission factor determined for Bulgaria. DNV was also able to confirm that the necessary data to recalculate the emission factor based on more recent data is not publicly available.

Project owner updated used version of methodology ACM0002 /23/ in its monitoring procedures /2/ and in the monitoring report /3/ to version 7 against version 6 used in the PDD /1/. As the registered PDD still refers to version 6 DNV has assessed difference from version 6 to version 7 /23/ and confirms that the provided documents following version 7 fulfills

requirements of version 6. The version update does not have any influence to emission reduction calculation. Emission factor calculation is still in the deviation, as is presented below. This deviation is based on confirmation of MoEW /13/ that NEK study /14/ is still valid.

2.6 Completeness of Monitoring

The monitoring procedure is described in monitoring report /3/ and it was verified during the site visit. The electricity meters owned by ČEZ and placed close by the hydropower plants are used for continuous measurement. The values are recorded on a monthly basis to protocols, which are provided by ČEZ employee together with responsible person from Vez Svoghe. The correctness of the quantity of electricity is confirmed in writing by both parties.

The values are compared with data provided by SCADA system, which stored electricity measurement from devices owned by Vez Svoghe. Electricity meters installed in hydropower plants are not included in the monitoring plan and they are used for internal crosschecking only. The delivered electricity was evidenced by invoices and the protocols, which are mentioned above.

The power purchase agreement /4/ contains a paragraph for the situation, when the electricity meter will be out of function. This situation was requested to be clarified (FAR1 from previous verification /12/) but the situation was not definitely clarified yet. As this decision does not depend on Vez Svoghe only, the FAR is still open, how was clarified in previous chapters.

The electricity meters owned by ČEZ are calibrated according to local legislation. The detailed information is provided in following tables. The laboratory that calibrated the devices has authorization for calibration /17/.

The emission factor did not change according to decision of Bulgarian MoEW /13/ as was presented in chapter above and thus it was not object of monitoring.

The metering system on both plants is owned by ČEZ and it meets requirements of the monitoring plan and it is in accordance with ACM0002 methodology version 7 /23/.

	Assessment/ Observation
Data / Parameter: (as in monitoring plan of PDD):	Electricity delivered to the grid - Lakatnik
Measuring frequency:	Continuously measured.
Reporting frequency:	Every month.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
Type of monitoring equipment:	Actaris SL761C071 (model SL 7000), serial No. 36039153.
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?	No meter accuracy is defined in the registered PDD. The accuracy of the meter is 0.5s, which represents a good monitoring practice and additionally it is according to local Commercial Code and metrology rules since it is invoicing

	measurement.
Calibration frequency /interval:	Every two years.
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?	No calibration frequency is defined in the registered PDD. The statement in the Monitoring plan is that calibration will be according to Metering legislation and this corresponds with information provided on site. The project owner is not owner of the metering device and access to monitoring device is mainly possible every month, when is in last day checked measurement amount of electricity. The calibration frequency of once per 2 years used by this project meets the requirement and represents a good monitoring practice in Bulgaria.
Company performing the calibration:	Otdel Merene – CEZ – authorized by State Agency for Metrology and Technical Supervision /17/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes.
Is (are) calibration(s) valid for the whole reporting period?	It is from 8 June 2009 /5/ and valid for 2 years.
If applicable, has the reported data been cross-checked with other available data?	The data are internally cross-checked with internal electricity meter.
How were the values in the monitoring report verified?	The values from the monthly electricity invoices were cross-checked with monthly protocols.
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?	No, it is not own electricity meter.
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.

	Assessment/ Observation

Data / Parameter: (as in monitoring plan of PDD):	Electricity delivered to the grid – Svrazhen.
Measuring frequency:	Continuously measured.
Reporting frequency:	Every month.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
Type of monitoring equipment:	Actaris SL761C071 (model SL 7000), Serial No.36039199.
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?	No meter accuracy is defined in the registered PDD. The accuracy of the meter is 0.5s, which represents a good monitoring practice and additionally it is according to local Commercial Code and metrology rules since it is invoicing measurement.
Calibration frequency /interval:	Every two years.
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?	No calibration frequency is defined in the registered PDD. The statement in the Monitoring plan is that calibration will be according to Metering legislation and this corresponds with information provided on site. The project owner is not owner of the metering device and access to monitoring device is mainly possible every month, when is in last day checked measurement amount of electricity. The calibration frequency of once per 2 years used by this project meets the requirement and represents a good monitoring practice in Bulgaria.
Company performing the calibration:	Otdel Merene – CEZ authorized by State Agency for Metrology and Technical Supervision /17/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes.
Is (are) calibration(s) valid for the whole reporting period?	It is from and from 9 June 2009 /6/, where was meter changed .
If applicable, has the reported data been cross-checked with other available data?	The data are internally cross-checked with internal electricity meter.
How were the values in the monitoring report verified?	The values from the monthly electricity invoices were cross-checked with monthly protocols.
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	No, it is not own electricity meter.

processes in place?	
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.

2.7 Accuracy of Emission Reduction Calculations

The emissions reduction was correctly calculated during the reporting period with the validated calculation formulae and baseline emission factors given in the PDD /1/.

The emission factor was derived from the "Baseline Study of Joint Implementation projects in the Bulgarian energy sector" issued in May 2005 /14/ by NEK. The study determined an operating margin emission factor by applying a model to forecast the emission factor based on a dispatch analysis applying actual generation and fuel consumption data from 2000-2004. The model takes into account new capacities.

It must be noted, as in previous DNV verification reports /12/, that the approach selected by NEK in the "Baseline Study of Joint Implementation projects in the Bulgarian energy sector" is not in full compliance with the requirements of ACM0002 to which the monitoring plan in the final PDD refers to /1/. The emission factor determined for the years 2006-2012 and thus the emission factor for 2010 selected by the project participants for this monitoring period i) is based on a model and not actual generation and fuel consumption data for these years and ii) represents the operating margin only although considering likely future capacities in the dispatch analysis model applied.

Nonetheless, the use of model data instead of actual generation and fuel consumption data is in DNV's opinion acceptable as the model uses conservative assumptions and the Bulgarian Ministry of Environment and Water confirmed again that the baseline study published in 2005 was not updated and is still valid for JI projects in Bulgaria /13/.

In the context of the project activity, DNV finds it also acceptable to not consider the build margin and only future capacity additions in the dispatch analysis model applied to estimate the operating margin emission factor. Due to the small generation of the project, it is reasonable to assume that the project will not have any effect on other power sector investments /24/ and thus the build margin. Moreover, in Bulgaria, like in many Eastern European countries, the number of new plants in recent years is also very low, given the decrease in electricity demand /24/.

The emission factor applied for 2010 year is 0.908 tCO_2/MWh.

The average load factor for this period is 63.47% for Lakatnik hydropower plant and 54.63% for Svrazhen hydropower plant. Plant load factor for individual months are listed bellows in the tables as well as electricity production and emission reductions.

DNV was able to confirm that the load factors varied for different months due to river water flow and machinery operation conditions. The power stations invoices from January 2010 to

December 2010 /3/ were checked and crosschecked by protocols /15//16/ during the on site visit.

Lakatnik hydropower plant:

Period	Max possible Power Generated (MWh)	Net Power Supplied (MWh)	Load Factor	Emission Reductions (tCO_2)
2010				
January 2010	2 157.60	1 719.51	79.70%	1 561.32
February 2010	1 948.80	920.06	47.21%	835.41
March 2010	2 157.60	1 138.20	52.75%	1 033.49
April 2010	2 088.00	1 857.27	88.95%	1 686.40
May 2010	2 157.60	1 932.78	89.58%	1 754.96
June 2010	2 088.00	1 804.72	86.43%	1 638.68
July 2010	2 157.60	1 535.31	71.16%	1 394.06
August 2010	2 157.60	755.12	35.00%	685.65
September 2010	2 088.00	522.10	25.00%	474.07
October 2010	2 157.60	1 236.33	57.30%	1 122.59
November 2010	2 088.00	1 079.50	51.70%	980.19
December 2010	2 157.60	1 823.60	75.25%	1 655.83
Total	**25 404.00**	**16 324.51**	**63.47%**	**14 822**

Svrazhen hydropower plant:

Period	Max possible Power Generated (MWh)	Net Power Supplied (MWh)	Load Factor	Emission Reductions (tCO_2)
2010				
January 2010	2 648.64	1 887.35	71.26%	1 713.71
February 2010	2 392.32	1 467.82	61.36%	1 332.78
March 2010	2 648.64	2 234.51	84.36%	2 028.93
April 2010	2 563.20	2 120.51	82.73%	1 925.42
May 2010	2 648.64	1 347.31	50.87%	1 223.36
June 2010	2 563.20	1 678.99	65.50%	1 525.43
July 2010	2 648.64	791.78	29.89%	718.94
August 2010	2 648.64	821.21	31.01%	745.66
September 2010	2 563.20	651.44	25.42%	591.51
October 2010	2 648.64	1 414.97	53.42%	1 284.79
November 2010	2 563.20	785.67	30.65%	713.39
December 2010	2 648.64	1 835.79	69.31%	1 666.90
Total	**31 185.60**	**17 037.36**	**54.63%**	**15 470**

Total emission reduction for the project is 30 292 t CO_2e, which represents 45.4% of total emission reductions estimated for 2010 year in the PDD /1/. Lakatik achieved 88.15% of

estimated ERU and Svrazhen achieved 81.56% of estimated value stated in the PDD /1/. The lower result of these individual plants is resulted by grid company demand.

The significant lower total result for the project is caused by PDD's presumption that several of the next plants ould be in operation in 2010 . The construction of these is delayed as described in table in chapter 1 and were not yet generating electricity in this monitoring period.

2.8 Quality of Evidence to Determine Emission Reductions

The calculation is based on the quantity of electricity supplied to the grid and the grid emission factor /14/. The quantity of electricity is measured and recorded into a protocol, which is signed by representatives both of parties (ČEZ and Vez Svoghe) and this is the base for the invoice. Invoices are official documents for quantity calculation and they are included in monitoring report for 2009 /3/.

2.9 Management System and Quality Assurance

Due to the relatively simple management system requirements for this project, all procedures related to management and operational system were described in the project owner's monitoring procedures /2//. The procedures are fully implemented now. Internal audit has been conducted; two internal auditors have been properly trained /11/. No changes in the management system from previous verifications.

3 VERIFICATION STATEMENT

DNV Climate Change Services AS (DNV) has performed the verification of the emission reductions that have been reported for the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" (ITL project ID BG2000012/reference number 0063) 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.

DNV conducted the verification on the basis of the CDM monitoring methodology ACM0002 (version 07), the monitoring plan contained in the registered Project Design Document of 15 October 2007 and the monitoring report dated 7 April 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 "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" (ITL project ID BG2000012/reference number 0063) for the period 1 January 2010 to 31 December 2010 are fairly stated in the monitoring report dated 7 April 2011.

The GHG emission reductions were calculated correctly on the basis of the approved CDM baseline and monitoring methodology ACM0002 (version 07) and the monitoring plan contained in the registered PDD of 15 October 2007.

DNV Climate Change AS is able to verify that the emission reductions from the "Sreden Iskar Cascade HPP Portfolio Project in Bulgaria" during the period 1 January 2010 to 31 December 2010 amount to 30 292 tonnes of CO_2 equivalent.

Prague and Oslo, 8 April 2011

Zuzana Andrtová
DNV Prague, Czech Republic

Ole A. Flagstad*JI Verifier Approver,*
DNV Climate Change AS

4 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/ MWH Global: PDD – Sreden Iskar Cascade HPPs portfolio Project Rev. 2 dated 15 October 2007.

/2/ MWH Global: Sreden Iskar Cascade Hydropower Plants Monitoring Procedures – Final version, 26 February 2010.

/3/ MWH Global: Monitoring report Sreden Iskar Cascade HPPs portfolio Project, version 3 dated 7 April 2011version 2 dated 4 February 2011 and version 1 dated 21 January 2011.

/4/ Agreement for purchase of electricity energy No.78 dated 14 July 2008 and its prolongation where is included Svrazhen dated 18 May 2009.

Automatically renewed because VEZ Svoghe has not requested for its termination.

/5/ Protocols for electricity measurement provided by ČEZ – Lakatnik:

No. 1000005960 from 8 June 2009

/6/ Protocols for electricity measurement provided by ČEZ – Svrazhen:

No. 1000005961 from 8 June 2009

/7/ Water Permit for Lakatnik – No. 100950 dated 16 May 2005 and prolongation by Decision No. 52/04.04.2007 dated 4 April 2007.

/8/ Water Permit for Svrazhen – No. 100949 dated 16 May 2005 and prolongation by Decision No. 51/04.04.2007 dated 4 April 2007.

/9/ Use Permit for Lakatnik No. CT-12-612 2008 of 2 July 2008.

/10/ Use Permit for Svrazhen No. CT-05-518 of 16 May 2009.

/11/ Certificate of training for internal audits of the monitoring plan of Sreden Iskar Cascade Hydro Power plants for Anton Milchev and Marina Dimitrova, dated 29 October 2008.

/12/ DNV: Verification report for Sreden Iskar Cascade HPP Portfolio Project in Bulgaria, Verification Period: 1 January 2008 - 31 December 2008 No. 2009-9059.

Verification report for Sreden Iskar Cascade HPP Portfolio Project in Bulgaria, Verification Period: 1 January 2009 - 31 December 2009 No. 2010-9054

/13/ E-mail from Kiril Bankov, Junior Expert in Climate Change Policy Department dated 29 December 2010 – confirmation that the EF for Bulgaria from NEK study is still valid for 2010 year.

/14/ Baseline Carbon Emission Factor of Bulgarian Electricity and Heat Power System (NEK "Study").

http://www.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf

/15/ Protocols from electricity meter reading – Lakatnik (from January to December 2010).

/16/ Protocols from electricity meter reading – Svrazhen (from January to December 2010).

/17/ Authorisation No. A-G-015 for CEZ LABORATORIES BULGARIA EOOD, issued by State Agency for Metrology and Technical Supervision on 7 March 2008, valid for 5

years.

/18/ DNV: Determination report for Sreden Iskar Cascade HPP Portfolio Project in Bulgaria No. 2006-1811, revision 3b dated 3 December 2007.

/19/ Svoghe Municipality: Building Permit for HPP Tserovo, No. 29, dated 8 June 2010

/20/ Svoghe Municipality: Building Permit for HPP Opletnia, No. 51, dated 16 September 2010

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

/21/ JI Supervisory Committee, Determination and verification manual, version 01 adopted at JISC 19

/22/ JI Supervisory Committee, Guidance on criteria for baseline setting and monitoring, version 02 adopted at JISC18

/23/ CDM Executive Board: ACM0002 “Consolidated baseline methodology for grid connected electricity generation from renewable sources”, version 6 of 19 May 2006 and version 7.

/24/ Organisation for Economic Co-operation and Development (OECD) and International Energy Agency (IEA), Practical baseline recommendations for greenhouse gas mitigation projects in the electric power sector. Information paper of 2002. (http://www.oecd.org/dataoecd/45/43/1943333.pdf)

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

/25/ Chiara Di Silvestro – Project Engineer, MWH S.p.A, Italia

/26/ Sergio Pomodoro – Senior Engineer, MWH S.p.A, Italia

/27/ Tsako Parvanov – Operator of HPP, Vez Svoghe AD, Bulgaria.

/28/ Andrean Petkov – Operator of HPP, Vez Svoghe AD, Bulgaria.

/29/ Tsvetan Parov – Operator of HPP, Vez Svoghe AD, Bulgaria.

/30/ Tsvetan Androv – Operator of HPP, Vez Svoghe AD, Bulgaria.

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APPENDIX A

CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Corrective action requests

CAR ID	Corrective action request	Response by Project Participants	DNV's assessment of response by Project Participants
CAR 1	The schedule of project's individual HPPs in section A.6 and A.7 of Monitoring report should be corrected in accordance with evidences. (i.e. real date for start constructions, etc…)	The requested changes were provided in second version of the Monitoring report, which was sent to DNV.	The second and third version of the Monitoring report issued 4 February 2011 and 7 April 2011 contain corrected schedules of project implementation. Thus the CAR is closed.

Clarification requests

CAR ID	Corrective action request	Response by Project Participants	DNV's assessment of response by Project Participants
CL 1	NA		

Forward action requests from previous verification

FAR ID	Forward action request	Summary of how FAR has been addressed in this reporting period	Assessment of how FAR has been addressed
FAR 1	Vez Svoghe should clarify with ČEZ, how delivered electricity from plants will be calculated if ČEZ electricity meters break down. The paragraph in PPA /4/does not contain the exact way of calculation. If the Vez Svoghe's meters will be used, the meters have to be calibrated (include calibration period setting).	The extract of par.V, art8 (3), (4) of PPA between Vez Svoghe and CEZ partially clarify the procedure in case of failure of meters (considered very improbable by CEZ): "If after the technical check-up there is wrong and/or inaccurate measuring and/or calculation of the quantities electrical energy, a report should be prepared for the quantities that were incorrectly measured and/or calculated electrical energy. No later than 5 days from the composition of the report under the previous paragraph Vez Svoghe shall issue debit (credit) notification for the difference between the recalculated and invoiced quantities electric energy on the basis of the findings of the electricity – distribution company, verified in the report which is integral part of the rectification document." Since the articles do not fully clarify the issue, Vez Svoghe has been pushing ČEZ to get a more proper clarification on that. However, Vez Svoghe is still waiting for an official answer from ČEZ.	As the final solution does not depend on Vez Svoghe only, the FAR is still open.

Forward action requests from this verification

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

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