THIRD PERIODIC ANNUAL JI MONITORING REPORT

Version 2.0

17th of April 2012

CONTENTS

SECTION A. General project activity and monitoring information

A.1 Title of the project activity:

«Waste heaps dismantling with the aim of decreasing the greenhouse gases emissions into the atmosphere».

Sectoral scope: 8. Mining/mineral production

A.2. JI registration number:

Reference number: 0214
ITL project ID UA2000020

A.3. Short description of the project activity:

This Project is aimed at coal extraction from the mine waste heaps near the town of Snizhne, Donetsk Region, Ukraine. This will prevent greenhouse gas emissions into the atmosphere during combustion of the heaps and will contribute an additional amount of coal, without the need for mining. The Project includes installation of coal extraction units and grading of the extracted coal. Extracted coal is then sold for demands of heat and power production.

In the baseline scenario it is assumed that the existing common practice will continue and waste heaps will be burning and emitting GHG into the atmosphere until the coal is consumed. Whereas using improved extraction techniques, proposed in this project, the residual coal can be extracted from the waste heaps and the coal can be used to for the energy needs of local consumers. The reclaimed coal will replace coal that would have otherwise been mined, causing fugitive emissions of methane during the mining process.

A.4. Monitoring period:

- Monitoring period starting date: 01.03.2011.
- Monitoring period closing date: 29.02.2012[1].

A.5. Methodology applied to the project activity:

The JI specific approach is used for the monitoring of emission reductions.

A.5.1. Baseline methodology:

Baseline emissions come from three major sources:

1. Carbon dioxide emissions that occur during combustion of energy coal. These are calculated as stationery combustion emissions from coal in the equivalent of the amount of coal that is extracted from the waste heaps in the project scenario.
2. Fugitive methane emissions due to the mining activities. As coal in the baseline scenario is only coming from mines where it causes fugitive emissions of methane. These are calculated as standard country specific emission factor applied to the amount of coal that is extracted from the waste heaps in the project scenario.
3. Carbon dioxide emissions from burning waste heaps. These are calculated as stationery combustion emissions from coal in the equivalent of the amount of coal that is extracted from the waste heaps in the project scenario, adjusted by the probability of a waste heap burning at any point in time. As the baseline suggests that the current situation is preserved regarding the waste heaps burning, it is assumed that for any given waste heap, actual burning will occur in some point in time. This ratio of burning is established by the study[2] that assessed the status of all existing waste heaps in Donetsk Region historically. Based on the gathered data it is concluded that 78% of all waste heaps in the Donetsk Region have been, or are now, on fire.

[1] Both days included.

[2] *Report on the fire risk of Donetsk Region's waste heaps,* Scientific Research Institute «Respirator», Donetsk, 2009.

A.5.2. Monitoring methodology:

A JI-specific monitoring approach was developed for this project in line with the JI Guidance on Criteria for Baseline Setting and Monitoring. The resulting Monitoring Plan was determined as part of the determination process.

Emission reductions due to the implementation of this project will come from two major sources:

- Removing the source of green-house gas emissions from the combustion of waste heaps by the extraction of coal from the waste-heaps;
- Reduced fugitive emissions of methane due to the replacement of coal that would have been mined, by the project.

The following parameters are monitored:

- **Additional electricity consumed in the relevant period as a result of the implementation of the project activity**

  This parameter is registered with a specialized electricity meters. The meter is situated next to the current transformers on the substation close to the site of the project activity. This meter registers all electric energy consumed by the project activity as they are located on the only electrical input available on site. Readings are used in the commercial dealings with the energy supply company. Monthly bills for electricity are available. Regular cross-checks with the energy supply company are performed. The monthly and annual reports are based on the monthly bills data.

- **Amount of diesel fuel that has been used for the project activity in the relevant period.**

  For the metering of this parameter the commercial data of the company are used. Write-off certificates and other accounting data are used in order to confirm the amount of fuel consumed. All fuel consumption is taken into account and is attributed to the project activity. If the data in the commercial documents mentioned are provided in litres rather than in tonnes the data in litres are converted into tonnes using the density[3] of 0.85 kg/l. Regular cross-checks with the suppliers are performed. The monthly and annual reports are based on these data.

- **Amount of coal that has been extracted from the waste heaps and combusted for energy use in the project activity in the relevant period which is equal to the amount of coal that has been mined in the baseline scenario and combusted for energy use.**

  For the metering of this parameter the technical reporting data of the company with cross-checks with commercial data of the company are used. Reports of the production department and weighting station as well as receipts and acceptance certificates from the customers are used in order to confirm the amount of coal restored. Produced coal is taken into account and is attributed to the project activity. Weighting of the coal is done on site by the special automobile scales. Regular cross-checks with the customers are performed. The monthly and annual reports are based on these production data.

A.6. Status of implementation including time table for major project parts:

The project has started on the 1st of January 2005.
Letters of Approval were issued by both parties:
Letter of Approval from the DFP of Ukraine #882/23/7 from 24.06.2010
Letter of Approval from NL Agency Ministry of Economic Affairs of Netherlands #2010JI10 from 22.04.2010

[3] DSTU 3868-99 Diesel Fuel. Technical Requirements. Density of 0.85 kg/l is taken as an average between data for two suggested types of diesel: summer and winter (data from table #1). Measurement units were converted from kg/m^3 to kg/l.

Table 1 below shows the implementation of different stages of the project.

Activity	Date in the PDD	Actual Date
Start of the «Snizhnyanska-1» unit construction	2004	September-December 2004
Start-up of the «Snizhnyanska-1» unit	2005	01.01.2005
Start of the 1st stage of «Snizhnyanska-2» unit construction	2010	28.10.2010
Start-up of the 1st stage of «Snizhnyanska-2» unit	2010	17.12.2010
Start of the 2nd stage of «Snizhnyanska-2» unit construction	2010	17.01.2012
Start-up of the 2nd stage of «Snizhnyanska-2» unit	2010	Planned on summer 2012

Table 1: Implementation plan

Causes of deviation from the schedule of implementation of project stages are presented in section A.7.

A.7. Intended deviations or revisions to the registered PDD:

Implementation of the waste heaps processing complex «Snizhnyanska-2» was postponed compared with the date planned in PDD due to the following reasons:

- Financing barriers that were caused by the first wave of the global financial crisis that resulted in a rapid decrease of available capital;
- Governmental regulation on the coal market forced has been introduced pushing the profitability margins down.

Amid these factors, management of the enterprise decided to modernize the waste heaps processing complex «Snizhnyanska-1» in order to maintain its efficiency, and also decided to accumulate extra equity required to put «Snizhnyanska-2» into operation. Total amount of capital directed to were directed to modernization of the facility equaled to 20 495 828.92 UAH. This sum is reflected in the acceptance certificates. Commissioning of this equipment has been planned for the summer of 2012.

Monitored amount of emissions reductions (ER) differs from the one expected in PDD for the respective period stated in A.4. As shown in the table below:

Year	2011*	2012**
ER in this report in tonnes of CO_2 equivalent	270394	67214
ER in determined PDD in tonnes of CO_2 equivalent ***	104496	19343

Table 2: Monitored amount of ERUs and expected in PDD

* Period from 01.03.2011 till 31.12.2012. Hereinafter in this report in tables values for 2011 are referring to this period

** Period from 01.01.2012 till 29.02.2012. Hereinafter in this report in tables values for 2012 are referring to this period

*** Recalculated for respective monitoring period in this report.

The differences are considered significant and can be explained by the following factors:

- The estimates in the PDD were based on forecasted data for coal content in the waste heap matter for the group of waste heaps that were processed at that time and the average coal content was expected to be not more than 8%. The actual average coal content of the waste heaps processed during the monitoring period has been as high as 16.5% which is confirmed by analysis. Some parts of the waste heaps being processed can have even higher coal content that also influenced the result.
- The extraction process at the facility has been fine-tuned and intensified that also allowed for more waste heap matter to be processed at the same time. This led to higher than expected emission reductions.

There are no other deviations to the registered PDD.

This JI project was made publicly available on the UNFCCC website. The full text of PDD could be found at http://ji.unfccc.int/UserManagement/FileStorage/IE7LK2SZF1NOXRVB4CYG65WQPJMHA3

A.8. Intended deviations or revisions to the monitoring plan:

According to the selected approach, the CO_2 emission factor for electricity consumed by the project activity in every year of the monitoring period has been fixed ex-ante based on the best available study at the time of PDD preparation. In the meantime the new study has become available - *Specific carbon emission factors for the production of electricity, National Environmental Investment Agency of Ukraine (NEIA), 2011, (Designated Focal Point (DFP) Baseline)*[4]. This methodology and the resulting carbon emission factor have been developed by the NEIA - DFP of Ukraine - for the application in JI projects. Carbon emission factors for the years 2009, 2010, 2011 and 2012 estimate are available[5]. It is established that actual ex-post emission factors will be calculated and published every year for the previous year before the 1st of March. As these data are more recent and detailed it is proposed to utilize it for the purpose of the monitoring. The new emission factors are higher than the one used in the PDD and they influence project emissions. Proposed approach is, therefore, conservative. The proposed change is detailed in a table below:

Approved monitoring plan			Revised monitoring plan		
Value	**Unit**	**Method of monitoring**	**Value**	**Unit**	**Method of monitoring**
$EF_{CO2,EL,y}$	tCO_2e/ MWh	Description: CO_2 emission factor for electricity consumed by the project activity in year *y* equal to emission factor of Ukrainian grid for reducing projects. Source of data (to be) used: Annex 2 of the PDD Version 2.7.0. Dated 8th of July 2010. Time of determination/verification: Fixed ex-ante. Values of data applied: 0.896 tCO_2/MWh.	$EF_{CO2,EL,y}$	tCO_2e/ MWh	Description: CO_2 emission factor for electricity consumed by the project activity in period y equal to the indirect specific carbon dioxide emissions from electricity consumption by the 2nd class electricity consumers according to the Procedure for determining the class of consumers, approved by the National Electricity Regulatory Commission of Ukraine from August 13, 1998 # 1052 Source of data (to be) used: Provided by the DFP on the annual basis. If in a given year or part of the year the emission factor is not available for this year the value of the previous year is used. Time of determination/verification: Ex-post according to the publicly available data Values of data applied: Provided by the DFP on the annual basis. The following data are available: 2011 – 1.227 tCO_2e/MWh (NEIA Order #75 12.05.2011). Units in the Orders of NEIA for these are $kgCO_2$/kWh. These units were converted into tCO_2/MWh.
GWP_{CH4}		Description: Global Warming Potential of Methane	GWP_{CH4}	tCO_2e/ tCH_4	Description: Global Warming Potential of Methane

[4] http://www.neia.gov.ua/nature/doccatalog/document?id=125381
[5] http://www.neia.gov.ua/nature/doccatalog/document?id=127498

		Source of data (to be) used: IPCC Second Assessment Report «*IPCC Second Assessment: Climate Change 1995. A Report of the Intergovernmental Panel on Climate Change*». Bolin, B. *et al. (1995). IPCC website*. http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf. Time of determination/verification: Fixed ex-ante. Values of data applied: 21			Source of data (to be) used: IPCC Second Assessment Report[6] Time of determination/verification: Fixed ex-ante. Values of data applied: 21
ρ_{CH4}	t/m^3	Description: Methane density Source of data (to be) used: Standard (at room temperature 20˚C and 1 ATM) Time of determination/verification: Fixed ex-ante. Values of data applied: 0.00067 t/m^3	ρ_{CH4}	t/m^3	Description: Methane density Source of data (to be) used: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy, Chapter 4: Fugitive Emissions, Page 4.12. Measurement units have been converted from $Gg \cdot m^{-3}$ to t/m^3. Time of determination/verification: Fixed ex-ante. Values of data applied: 0.00067 t/m^3

Table 3: Changes to the monitoring plan.

A.9. Deviations since last verification.

As «Snizhnyanska-2» unit was partially put into operation, it does not produce coal. Only sorting equipment is installed at «Snizhnyanska-2»; after the sorting raw material is being transported to «Snizhnyanska-1» unit where coal is being separated from the rock. Key monitoring values (electricity consumed for sorting and diesel consumed for transport needs) of «Snizhnyanska-2» unit operation were taken into account while calculating emission reduction units.

A.10. Person(s) responsible for the preparation and submission of the monitoring report:

Limited Liability Company «Anthracite».

- Dmytro Medyantsev, Director;
- Andrii Savenko, Chief Specialist.

Global Carbon B.V.

- Dmytro Kosolukin, Junior JI Consultant.

[6] http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf

SECTION B. Key monitoring activities

According to the monitoring period stated in A.4. the following parameters have to be collected and registered:

1. **Additional electricity consumed in the relevant period as a result of the implementation of the project activity.**

   This parameter is metered by specialized electricity meters «NIK 2303 ARK1» and «NIK 2303 ART2T» during the monitoring period (for more information please see Table 3). Meter «NIK 2303 ARK1» is situated next to the current transformers. It registers all electric energy consumed by the project activity at «Snizhnyanska-1» unit as it is located on the only electrical input available on «Snizhnyanska-1» site. Meter «NIK 2303 ART2T» is situated at the distribution substation of electricity supplier and it registers all electric energy consumed by the project activity at «Snizhnyanska-2» unit. Readings are used in the commercial dealings with the energy supply company. Monthly bills for electricity are available. Regular cross-checks with the energy supply company are performed. The monthly and annual reports are based on the monthly bills data.

2. **Amount of diesel fuel that has been used for the project activity in the relevant period.**

   For the metering of this parameter the commercial data of the company are used. Receipts and acceptance certificates are used in order to confirm the amount of fuel consumed. All fuel consumption is taken into account and is attributed to the project activity. If the data in the commercial documents mentioned are provided in litres rather than in tonnes the data in litres are converted into tonnes using the density of 0.85 kg/l. Regular cross-checks with the suppliers are performed. The monthly and annual reports are based on these data.

3. **Amount of coal that has been extracted from the waste heaps and combusted for energy use in the project activity in the relevant period which is equal to the amount of coal that has been mined in the baseline scenario and combusted for energy use.**

   For the metering of this parameter the commercial data of the company are used. Receipt and acceptance certificates from the customers, certificates of coal from laboratory, weighting documents are used in order to confirm the amount of coal restored. Only shipped coal is taken into account and is attributed to the project activity. Weighting of the coal is performed by the automobile scales. Regular cross-checks with the customers are performed. The monthly and annual reports are based on these shipment data.

B.1. Monitoring equipment types

1. Electricity meter «NIK 2303 ARK1»;
2. Electricity meter «NIK 2303 ART2T»;
3. Automobile scales «VBA-40-12»;
4. Automobile scales «VTA-60»;
5. Automobile scales «VTA-60»;
6. Automobile scales «VBA-60-12(4)»;
7. Automobile scales «VAT-40».

B.1.2. Table providing information on the equipment used (incl. manufacturer, type, serial number, date of installation, date of last calibration):

ID	Parameter	Measuring instrument	Unit	Manufacturer	Type	Serial number	Accuracy class	Date of installation	Date of last calibration
EL1	Electricity consumed	«NIK 2303 ARK1»	kWh	«NIK-Electronica», Ukraine	Electronic Electricity Meter	0028148	±1%	07.08.2009	20.05.2009
EL2	Electricity consumed	«NIK 2303 ART2T»	kWh	«NIK-Electronica», Ukraine[7]	Electronic Electricity Meter	0057199	±1%	17.12.2010	10.06.2010
W1	Amount of coal	Automobile scales «VBA-40-12»	t	«Intertehnoves», Ukraine[8]	Automobile scales	125	±0.04 t	18.07.2008	20.07.2010
W2	Amount of coal	Automobile scales «VTA-60»	t	«Ukrestmarkivest»[9]	Automobile scales	100200184	±20 kg (0.4 till 10 t) ±40 kg (from 10 till 40 t) ±60 kg (from 40 t)	01.07.2010	10.02.2012
W3	Amount of coal	Automobile scales «VTA-60»	t	«Ukrestmarkivest»	Automobile scales	00710744	±20 kg (0.4 till 10 t) ±40 kg (from 10 till 40 t) ±60 kg (from 40 t)	15.02.2011	10.02.2012
W4	Amount of coal	Automobile scales «VBA-60-12(4)»	t	«Intertehnoves», Ukraine	Automobile scales	125	±20 kg (0.4 till 10 t) ±20kg(from 10 till 40 t) ±40 kg (from 40 t)	31.01.2012	31.01.2012
W5	Amount of coal	Automobile scales «VAT-40»	t	«Centrovesplus»[10]	Automobile scales	4039	±10 kg (0.2 till 10 t) ±20 kg (from 10 till 20 t) ±30 kg (from 20 t)	23.12.2010	10.02.2012

Table 4: Equipment used for monitoring activities

Basic chart of metering points is provided in Annex 2.

Calibration of the metering devices and equipment has been conducted on a periodic basis according to the procedures of the Host Party.

For the electricity meter «**NIK 2303 ARK1**» (ID EL1) calibration during the monitoring period has been done:

- Last calibration has been done 20/05/2009. The calibration interval exceeds the monitoring period (see section B.1.3).

[7] http://elektro-baza.com.ua/pribori_ugeta_izmereniya/stgetgikienergii/schetchik_26
[8] http://intertechnoves.com/avtomobilnye-vesy/
[9] http://vesi.dn.ua/2011/11/весы-серии-вта-60/
[10] http://www.centroves.com.ua/ru/avto/2011-03-10-13-40-17/139.html

For the electricity meter «**NIK 2303 ART2T**» (ID EL2) calibration during the monitoring period has been done:

- Last calibration has been done 10.06.2010. The calibration interval exceeds the monitoring period (see section B.1.3).

For the automobile scales «**VBA-40-12**» (ID W1) calibration during the monitoring period has not been done. Weighting on this scales was held before July 2011, i. e. before the end of calibration interval

For the automobile scales **«VTA-60»** (ID W2) calibration during the monitoring period has been done:

- 10.02.2012 - The verification confirmed that the measurements provided by the device are valid.

Next calibration is to be performed not later than February, 2013.

For the automobile scales **«VTA-60»** (ID W3) during the monitoring period has been done:

- 10.02.2012 - The verification confirmed that the measurements provided by the device are valid.

Next calibration is to be performed not later than February, 2013.

For the automobile scales **«VBA-60-12(4)»** (ID W4) during the monitoring period has been done:

- 31.01.2012 - The verification confirmed that the measurements provided by the device are valid.

Next calibration is to be performed not later than January, 2013.

For the automobile scales **«VAT-40»** (ID W5) during the monitoring period has been done:

- 10.02.2012 - The verification confirmed that the measurements provided by the device are valid.

Next calibration is to be performed not later than February, 2013.

Calibration of equipment will be done in accordance with the Host Party legislation - State Standard of Ukraine DSTU 2708:2006 «Metrology. Calibration of measuring instruments. The organization and procedure»[11].

B.1.3. Calibration procedures:

For electricity meters:

QA/QC procedures	Body responsible for calibration and certification
Calibration interval for electricity meter «**NIK 2303 ARK1**» is 6 years	Calibration will be performed by the authorized representatives of the State Metrological System of Ukraine[12]
Calibration interval for electricity meter «**NIK 2303 ART2T**» is 6 years	

Table 5: Calibration procedures for electricity meters

For scales:

QA/QC procedures	Body responsible for calibration and certification
Calibration interval for scales «**VTA-60»** is one year	Calibration will be performed by the authorized representatives of the State Metrological System of Ukraine
Calibration interval for scales «**VTA-60»** is one year	
Calibration interval for scales «**VBA-60-12(4)»** is one year	
Calibration interval for scales «**VAT-40»** is one year	

Table 6: Calibration procedures for scales

[11] http://www.metrology.in.ua/downloads/gost/DSTU2708_2006.pdf

[12] http://www.dssu.gov.ua/control/en/publish/article/main?art_id=87456&cat_id=87455

B.1.4. Involvement of Third Parties:

«SE «Donetsk Research and Production Center of Standardization, Metrology and Certification». This third part is the authorized representatives of the State Metrological System of Ukraine and has performed calibration of the metering equipment.

B.2. Data collection (accumulated data for the whole monitoring period):

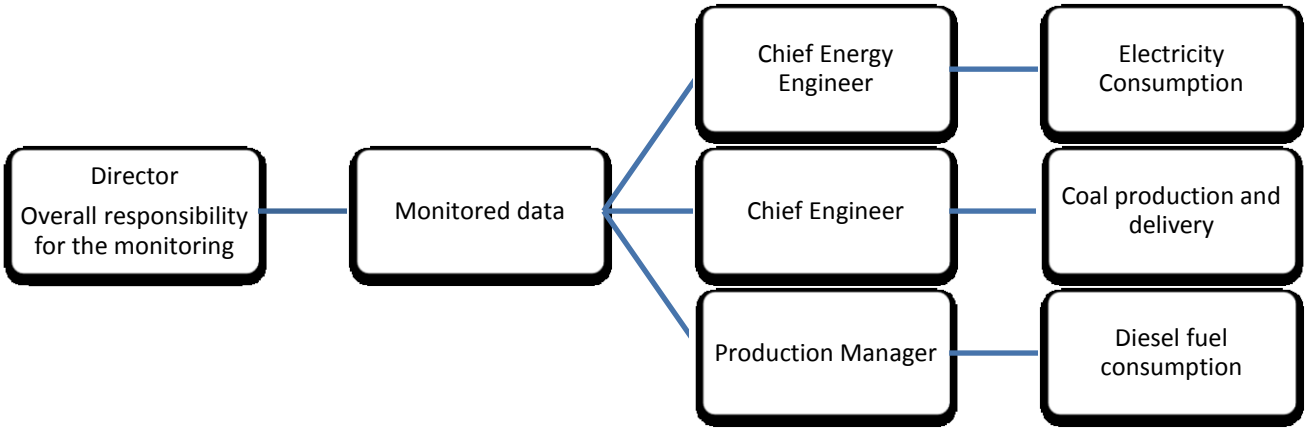

Figure 1: Data collection

B.2.1. List of fixed default values and ex-ante emission factors:

Data / Parameter	*Data unit*	*Description*	*Data Source*	*Value*	*Uncertainty level of data*
GWP_{CH4}	tCO_2e/tCH_4	Global Warming Potential of Methane	IPCC Second Assessment Report[13]	21	Low
ρ_{CH4}	t/m^3	Methane density	IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy, Chapter 4: Fugitive Emissions, Page 4.12. Measurement units have been converted from $Gg \cdot m^{-3}$ to t/m^3	0.00067	Low
NCV_{Coal}	TJ/kt	Net Calorific Value of coal	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	21.95	Low
NCV_{Diesel}	TJ/kt	Net Calorific Value of diesel fuel	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	42.44	Low
$OXID_{Coal}$	ratio	Carbon Oxidation factor of coal	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	0.98	Low
$OXID_{Diesel}$	ratio	Carbon Oxidation factor of diesel fuel	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	0.99	Low
k^C_{Diesel}	tC/TJ	Carbon content of diesel fuel	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	20.2	Low
k^C_{Coal}	tC/TJ	Carbon content of coal	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	26.8	Low
$EF_{CH_4,CM}$	m^3/t	Emission factor for fugitive methane emissions from coal mining	Section D.1., table 9 of the PDD Version 2.7. dated 8th of July 2010.	25.67	Low
p_{WHB}	ratio	Probability of waste heap burning	Scientific study - Analysis on the fire risk of Donetsk Region's waste heaps, Scientific Research Institute "Respirator", Donetsk, 2009.	0.78	Low

Table 7: Fixed parameters

[13] http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf.

B.2.2. List of variables:

Project emissions variables to be monitored:

ID (from PDD)	*Parameter*	*Calculation method (Measured/Calculated)*	*Unit*	*Comment*	*Meters used (as per B.1.2)*	*Data aggregation frequency*
D.1.1.1.-5	$FC_{PJ,Coal,y}$ - Amount of coal that has been extracted from the waste heaps and combusted for energy use in the project activity in the year y	(M/C) Measured in individual shipments then summarized by calculation. Direct input from company records, scales	t	Equal to $FC_{BE,Coal,y}$. The data will be archived and kept for two years after the last transfer of ERUs from the project.	W_{1-5}	Data are aggregated daily and monthly and annual reports are prepared
N/A	$EF_{CO2,EL,y}$ - CO_2 emission factor for 2nd voltage class grid connected power consumption in year *y* for JI project consuming electricity	(C) Calculated by the DFP on the annual basis	tCO_2e/MWh	If in a given year or part of the year the emission factor is not available for this year the value of the previous year is used.	-	Data are aggregated every year by collecting the publicly available information
D.1.1.1.-6	$EC_{PJ,y}$ - Additional electricity consumed in year *y* as a result of the implementation of the project activity	(M/C) Measured continuously by the specialised meter. Summarized monthly by calculation. Direct input from company record, electricity meters	MWh	The data will be archived and kept for two years after the last transfer of ERUs from the project.	EL1, EL2[14]	Data are aggregated monthly. Annual reports are prepared.
D.1.1.1.-7	$FC_{PJ,Diesel,y}$ - Amount of diesel fuel that has been used for the project activity in the year *y*	(C) Calculated from the raw documents on fuel usage by summation. Direct input from company record	t	The data will be archived and kept for two years after the last transfer of ERUs from the project.	-	Data are aggregated monthly. Annual reports are prepared.

Table 8: Monitored project emissions variables

ID (from PDD)	*Parameter*	*Calculation method (Measured/Calculated)*	*Unit*	*Comment*	*Meters used (as per B.1.2)*	*Data aggregation frequency*
D.1.1.3-5	$FC_{BE,Coal,y}$ - Amount of coal that has been mined in the baseline scenario and	(M/C) Measured in individual shipments then summarized by	t	For the metering of this parameter the technical reports	W_{1-5}	Data are aggregated daily and monthly and

[14] Data from the meter and documents of energy supply-company provided in kWh are converted into MWh for the monitoring purposes.

	combusted for energy use, equivalent to the amount of coal extracted from the waste heaps in the project activity in the year *y*	calculation. Direct input from company records, scales		and commercial data of the company are used. Receipts and acceptance certificates from the customers are used in order to confirm the amount of coal restored. The data will be archived and kept for two years after the last transfer of ERUs from the project.		annual reports are prepared

Table 9: Monitored baseline emissions variables

B.2.3. Data concerning GHG emissions by sources of the project activity:

Variable	***Description***	***Units***	***Values***	
			2011	**2012**
$FC_{PJ,Coal,y}$	Amount of coal that has been extracted from the waste heaps and combusted for energy use in the project activity in the year y	t	136475.44	33642
$EF_{CO2,EL,y}$	CO_2 emission factor for 2nd voltage class grid connected power consumption in year *y* for JI project consuming electricity	tCO_2e/MWh	1.227	1.227
$EC_{PJ,y}$	Additional electricity consumed in year *y* as a result of the implementation of the project activity	MWh	1726.4	223.78
$FC_{PJ,Diesel,y}$	Amount of diesel fuel that has been used for the project activity in the year *y*[15]	t	577.46	41.68

Table 10: Data that were collected in the project scenario

B.2.4.Data concerning GHG emissions by sources of the baseline:

Variable	***Description***	***Units***	***Values***	
			2011	**2012**
$FC_{BE,Coal,y}$	Amount of coal that has been mined in the baseline scenario and combusted for energy use, equivalent to the amount of coal extracted from the waste heaps in the project activity in the year *y*	t	136475.44	33642

Table 11: Data that were collected in the baseline scenario

[15] In the internal company reports the amount of diesel fuel is reported in litres. To convert this amount into the tones the following formula is used: ***Diesel Fuel in Tones = (0.85* Diesel Fuel in Litres)/1000*** Where 0.85 stands for the density of diesel fuel in kg/l.

B.2.5.Data concerning leakage:

According to the PDD, the project activity does not result in a leakage or the net change of anthropogenic emissions by sources and/or removals by sinks of GHGs which occurs outside the project boundary, and that is measurable and attributable to the JI project.

The possible source of the leakage is the energy required to replenish the water which is used in a closed cycle of the facility. External water supply is organized through the water refill from a nearby coal mine. Coal mine pumps the mine water and discharges it into the ground reservoirs in the course of its normal activities. The project activity only uses some of the mine water for replenishing operational water. Mine water is channeled into the installation by a control valve and is transported by gravitation.

No extra energy is used to replenish the water as the mine would have pumped the water in the course of its normal activities both in the baseline and in the project scenario. In the project scenario no additional energy is used to transport the water to the facility as this is done by gravitation. Therefore, no change of anthropogenic emissions by sources and/or removals by sinks of GHGs.

B.2.6.Data concerning environmental impacts:

The full scope EIA in accordance with the Ukrainian legislation[16] has been conducted for the proposed project in 2004-2005 by the local developer PE «Agency of environmental management and audit». For the construction of «Snizhnyanska-2» unit full scope EIA in accordance with the Ukrainian legislation has been conducted in 2010 by the local developer Project-design Bureau «Donprombiznes». Key findings of these EIA are summarized below:

- Impact on air is the main environmental impact of the project activity. Due to the project activity additional amount of coal dust and coal concentrate dust will be emitted into the atmosphere. However, the study of emission levels and disbursement patterns of the contaminators show that maximum concentration limits will not be exceeded throughout the project lifetime. Also, uncontrolled dust and hazardous substances emissions from the waste heap will be avoided;
- Impact on water is minor. The project activity will use water in a closed cycle without discharge of waste water. To feed the water cycle the drainage water from the nearby mine will be used. This will reduce the discharge of this water (treated with chlorine) into the environment;
- Impacts on flora and fauna are mixed. Due to the project activity the existing landscape will be changed but the overall resulting impact is positive. Grass and trees will be planted on the re-cultivated areas. No rare or endangered species will be impacted. Project activity is not located in the vicinity of national parks or protected areas;
- Noise impact is limited. Main source of noise will be located at the minimum required distance from residential areas, mobile noise sources (automobile transport) will be in compliance with local standards;
- Impacts on land use are positive. Significant portions of land will be freed from the waste heaps and will be available for development;
- Transboundary impacts are not observed. There are no impacts that manifest within the area of any other country and that are caused by a proposed project activity which wholly physically originates within the area of Ukraine.

[16] *State Construction Standard DBN A.2.2.-1-2003 : «Structure and Contents of the Environmental Impact Assessment Report (EIR) for Designing and Construction of Production Facilities, Buildings and Structures»* State Committee Of Ukraine On Construction And Architecture, 2004

B.3.Data processing and archiving (incl. software used):

All data will be archived in electronic and paper form. Data acquisition and processing procedure for each parameter monitored:

1. **Additional electricity consumed in the relevant period as a result of the implementation of the project activity**

   This parameter is documented in the monthly invoices for the electric energy, internal technical reports. The documents are collected every month by the responsible person. The documents obtained are collected by the accounting and economics department on a monthly basis. The paper originals are bound into the special folder. Data on the electricity and identification parameter of each individual document are logged into the electronic register that is maintained at the head office of the company. The IT and data storage system containing this information at the head office has back-ups and allows for reliable data storage with virtually no chance of data loss. This log is printed and bound as a reference into the same folder with the original documents. At the same time the responsible person (see section C.1.1) maintains an independent account of the monitoring data. At the end of the month the summarizing report is prepared containing the information on the monthly monitored data. This report is signed by the responsible person and is submitted to the director of the company. At the end of the year the annual summarizing report is prepared for all monitoring parameters containing monthly and annual figures. This report is submitted to the director of the company. These reports are kept in electronic form in the IT system of the company and in paper form with signatures of the responsible persons.

2. **Amount of diesel fuel that has been used for the project activity in the relevant period.**

   Receipts, invoices and acceptance certificates are used in order to confirm the amount of fuel consumed. The documents obtained are collected by the accounting and economics department on a monthly basis. The paper originals are bound into the special folder. Data on fuel usage and identification parameter of each individual document are logged into the electronic register that is maintained at the head office of the company. The IT and data storage system containing this information at the head office has back-ups and allows for reliable data storage with virtually no chance of data loss. This log is printed and bound as a reference into the same folder with the original documents. At the same time the responsible person (see section C.1.1) maintains an independent account of the monitoring data. At the end of the month the summarizing report is prepared containing the information on the monthly monitored data. This report is signed by the responsible person and is submitted to the director of the company. At the end of the year the annual summarizing report is prepared for all monitoring parameters containing monthly and annual figures. This report is submitted to the director of the company. These reports are kept in electronic form in the IT system of the company and in paper form with signatures of the responsible persons.

3. **Amount of coal that has been extracted from the waste heaps and combusted for energy use in the project activity in the relevant period which is equal to the amount of coal that has been mined in the baseline scenario and combusted for energy use.**

   The bills of laden, receipts, invoices and acceptance certificates are used in order to confirm the amount of coal extracted. The documents are collected for every shipment or for the group of shipments by the responsible person. The documents obtained are collected by the accounting and economics department on a monthly basis. The paper originals are bound into the special folder. Data on the quantity of coal and identification parameter of each individual document are logged into the electronic register that is maintained at the head office of the company. The IT and data storage system containing this information at the head office has back-ups and allows for reliable data storage with virtually no chance of data loss. This log is printed and bound as a reference into the same folder with the original documents. At the same time the responsible person (see section C.1.1) maintains an independent account of the monitoring data. At the end of the month the summarizing report is prepared containing the information on the monthly monitored data. This report is signed by the responsible person and is submitted to the director of the company. At the end of the year the annual summarizing report is prepared for all monitoring parameters containing monthly and annual figures. This report is submitted to the director of the company. These

reports are kept in electronic form in the IT system of the company and in paper form with signatures of the responsible persons.

B.4. Special event log:

All special and exceptional events (critical equipment failures, reconstruction works, emergencies etc.) are documented by the special notes to the management of the company. No such events were observed during the monitoring period.

The nature of the project and underlying operations does not foresee any factors that can cause unintended emissions due to emergencies. Possible emergencies can have impact on the continuation of operations (shutdowns) which will lead to a decreased number of ERUs which is, in turn, conservative.

SECTION C. Quality assurance and quality control measures

C.1. Documented procedures and management plan:

C.1.1. Roles and responsibilities:

The general project management is implemented by the Director of the Limited Liability Company «Anthracite» through the supervision and coordination of the activities of his subordinates, such as the Chief Energy Officer; Production Manager and Chief Engineer. On-site day-to-day management is implemented by the Production Manager and Chief Engineer. Chief Energy Officer is responsible for maintaining the energy equipment, electrical meters and transformers. A specialised technician teams are responsible for preventive measures and maintenance of all technological equipment. The raw reporting documents are collected and compiled on-site. Data are entered into the computer system, and raw documents are transferred to the company archive.

Main responsibilities are divided as follows:

- Chief Engineer is responsible for acquiring data on coal shipments, raw documents and reports on coal shipped. He transfers original documents on coal into the archive and prepares monthly reports on restored coal;
- Chief Energy Engineer is responsible for acquiring data on electricity consumption, check-up of the electricity meters and cross-checks with energy supply companies. He transfers original documents on electricity into the archive and prepares monthly reports on electricity consumption;
- Production Manager is responsible for acquiring data on fuel consumption, raw documents and reports on fuel consumed. He transfers original documents on fuel into the archive and prepares monthly reports on fuel consumption.

The information is stored in the archive of the company in both electronic and paper form. Original documents are stored in the archive in paper form. Monthly and yearly summary reports are prepared for every parameter.

C.1.2. Trainings:

All technical staff of the company has yearly training according to safety requirements. Employees of the project company get regular safety briefings and trainings. Training includes safety instructions, fire protection, electric equipment safety, specific safety on coal enrichment facilities, and technology of operations. All those who had the trainings are required to pass an exam. Trainings and testing are provided either by the external training facility or in-house.

C.2. Involvement of Third Parties:

«SE «Donetsk Research and Production Center of Standardization, Metrology and Certification» is a Third Party involved.

C.3. Internal audits and control measures:

Internal cross-checks and audits are performed for all of the data monitored as the raw documents used for monitoring are also used in the commercial dealings of the company. Director of the company reviews monthly and yearly reports and conducts selective cross-checks with the raw documents.
For the fixed data and ex-ante parameters and factors the quality assurance requires to check that the data were acquired from the reliable (i.e. recognised and/or based on research), verifiable (data are open for access, or are available for the project participants) sources. For the external data that are used for the monitoring (as amount of diesel fuel that has been used for the project activity in the year y – when the fuel was used by the third party) the following quality assurance procedure is established: the raw data on fuel usage are available as supplements or are directly mentioned in the invoices of the third party, the data are received by the accounting office of the company and are checked against the time sheets of the equipment that has been operating, the figures in the reports of the third party are checked against the invoices of this third party, periodical on-site checks are conducted by the management of the company to verify the amount of time and quantity of the equipment that was operating. If inconsistencies are found the dispute can be open between two parties and a thorough check of underlying work-orders, receipts and other documentation of the third party can follow.

C.4. Troubleshooting procedures:

All exceptional and troubleshooting events are documented by internal notes. As the data monitored to calculate emission reductions are also used in the commercial dealings of the company and correlate to the coal restored during the operation of the facility no emission reductions can be earned if the unit is not in operation.

SECTION D. Calculation of GHG emission reductions

D.1. Table providing the formulae used:

Formula number from PDD	*Formula*	*Formula description*
Equation 13	$ER_y = BE_y - PE_y$	Calculation of emission reductions
Equation 9	$BE_y = BE_{Coal,y} + BE_{CH_4,y} + BE_{WHB,y}$	Baseline emissions calculation
Equation 10	$BE_{Coal,y} = \frac{FC_{BE,Coal,y}}{1000} \cdot NCV_{Coal} \cdot OXID_{Coal} \cdot k^C_{Coal} \cdot 44/12$	Baseline Emissions due to combustion of coal for energy needs in the baseline scenario in the year *y*
Equation 11	$BE_{CH_4,y} = FC_{BE,Coal,y} \cdot EF_{CH_4,CM} \cdot \rho_{CH_4} \cdot GWP_{CH_4}$	Baseline Emissions due to fugitive emissions of methane in the mining activities in the year *y*
Equation 12	$BE_{WHB} = \frac{FC_{BE,Coal,y}}{1000} \cdot p_{WHB} \cdot NCV_{Coal} \cdot OXID_{Coal} \cdot k^C_{Coal} \cdot 44/12$	Baseline Emissions due to burning of the waste heaps in the year *y*
Equation 5	$PE_y = PE_{Coal,y} + PE_{EL,y} + PE_{Diesel,y}$	Project Emissions due to project activity in the year *y*
Equation 6	$PE_{Coal,y} = \frac{FC_{PJ,Coal,y}}{1000} \cdot NCV_{Coal} \cdot OXID_{Coal} \cdot k^C_{Coal} \cdot 44/12$	Project Emissions due to combustion of coal for energy needs in the project activity in the year *y*
Equation 7	$PE_{EL,y} = EC_{PJ,y} \cdot EF_{CO2,EL,y}$	Project Emissions due to consumption of electricity from the grid by the project activity in the year *y*
Equation 8	$PE_{Diesel,y} = \frac{FC_{PJ,Diesel,y}}{1000} \cdot NCV_{Diesel} \cdot OXID_{Diesel} \cdot k^C_{Diesel} \cdot 44/12$	Project Emissions due to consumption of diesel fuel by the project activity in the year *y*

Table 12: Calculation formulae

Parameters in the formulae are as per Sections B.2.1 and B.2.2 of this report.

Additionally in the formulae:

Parameter	***Data unit***	***Description***
ER_y	tCO_2e	Emissions reductions of the JI project in year *y*
BE_y	tCO_2e	Baseline Emission in year *y*
PE_y	tCO_2e	Project Emissions due to project activity in the year *y*
$BE_{Coal,y}$	tCO_2e	Baseline Emissions due to combustion of coal for energy needs in the baseline scenario in the year *y*
$BE_{CH_4,y}$	tCO_2e	Baseline Emissions due to fugitive emissions of methane in the mining activities in the year *y*
$BE_{WHB,y}$	tCO_2e	Baseline Emissions due to burning of the waste heaps in the year *y*
$PE_{Coal,y}$	tCO_2e	Project Emissions due to combustion of coal for energy needs in the project activity in the year *y*
$PE_{EL,y}$	tCO_2e	Project Emissions due to consumption of electricity from the grid by the project activity in the year *y*
$PE_{Diesel,y}$	tCO_2e	Project Emissions due to consumption of diesel fuel by the project activity in the year *y*

Table 13: Parameters in formulae

Results of the emissions calculations above are presented in metric tons of carbon dioxide equivalent (tCO_2e). The metric ton of carbon dioxide equivalent is equal to the metric ton of carbon dioxide (tCO_2). Therefore 1 tCO_2e = 1 tCO_2.

D.2. Description and consideration of measurement uncertainties and error propagation:

All measurement uncertainties and error propagation of the measured parameters are according to the manuals of equipment manufacturers. Uncertainty level of the fixed values and external data is low as they are taken from reliable and publicly available, verifiable sources.

D.3. GHG emission reductions (referring to B.2. of this document):

D.3.1. Project emissions:

Parameter	Unit	**2011**	**2012**	**Total**
Project emissions	tCO_2e	292399	71518	363917

Table 14: Project emissions

D.3.2. Baseline emissions:

Parameter	Unit	**2011**	**2012**	**Total**
Baseline emissions	tCO_2e	562793	138732	701525

Table 15: Baseline emissions

D.3.3. Leakage:

Not Applicable

D.3.4. Summary of the emissions reductions during the monitoring period:

Parameter	Unit	**2011**	**2012**	**Total**
Emission reductions	tCO_2e	270394	67214	337608

Table 16: Emission reductions

Annex 1

Definitions and acronyms

Abbreviations and acronyms:

CH4	Methane
CO2	Carbon Dioxide
GHG	Greenhouse gases
GWP	Global Warming Potential
IPCC	Intergovernmental panel on climate change
PDD	Project design document
ERU	Emission reduction units

Definitions:

Baseline	The scenario that reasonably represents what would have happened to greenhouse gases in the absence of the proposed project, and covers emissions from all gases, sectors and source categories listed in Annex A of the Protocol and anthropogenic Removals by sinks, within the project boundary.
Emissions reductions	Emissions reductions generated by a JI project that have not undergone a verification or determination process as specified under the JI guidelines, but are contracted for purchase.
Global Warming Potential (GWP)	An index that compares the ability of greenhouse gases to absorb heat in the atmosphere in comparison to carbon dioxide. The index was established by the Intergovernmental Panel of Climate Change.
Greenhouse gas (GHG)	A gas that contributes to climate change. The greenhouse gases included in the Kyoto Protocol are: carbon dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Hydrofluorcarbons (HFCs), Perfluorcarbons (PFCs) and Sulphurhexafluoride (SF_6).
Joint Implementation (JI)	Mechanism established under Article 6 of the Kyoto Protocol. JI provides Annex I countries or their companies the ability to jointly implement greenhouse gas emissions reduction or sequestration projects that generate Emissions Reduction Units.
Monitoring plan	Plan describing how monitoring of emission reductions will be undertaken. The monitoring plan forms a part of the Project Design Document (PDD).

Annex 2

Location of measurement points and devices

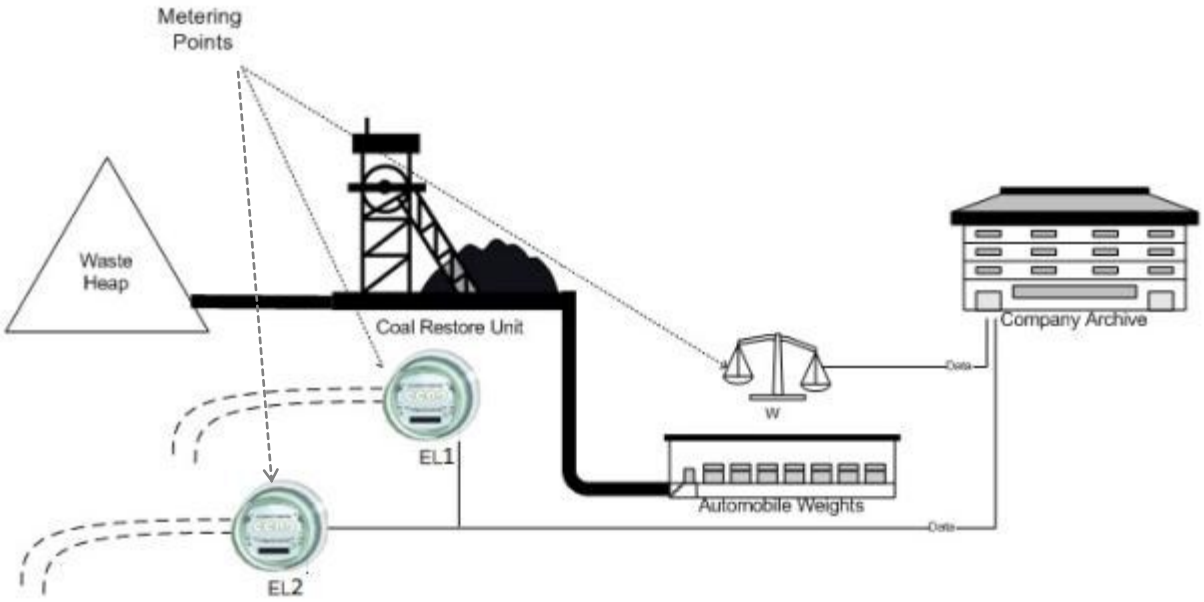

Figure 2: Location of measurement points and devices

Annex 3

Measurement devices

Figure 3: Automobile scale «VBA-40-12»

Figure 4: Automobile scale «VAT-40»

Figure 5: Automobile scale «VBA-60-12»

Figure 6: Automobile scale «VTA-60»

Figure 7: Automobile scale «VTA-60»

Figure 8 Electricity meter «NIK 2303ARK1»

Figure 9 Electricity meter «NIK 2303ART2T»