INITIAL AND FIRST PERIODIC ANNUAL JI MONITORING REPORT

Version 4.0

4th of November 2011

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SECTION A. General project activity and monitoring information

A.1 Title of the project activity:

"Processing of waste heaps at Monolith-Ukraine".

Sectoral scope: 8. Mining/mineral production

A.2. JI registration number:

0246

A.3. Short description of the project activity:

This Project is aimed at coal extraction from the mine's waste heaps near the Klenoviy village, Sverdlovsk district, Luhansk 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 the installation of coal extraction units and the grading of the extracted coal. Extracted coal is then sold for 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. Therefore, in the project scenario the coal extracted from the waste heaps will partly substitute the coal from the minei, decreasing fugitive methane emissions, and reduce emissions GHG emissions due to waste heap combustion by extracting all of the combustible material from the waste heaps.

A.4. Monitoring period:

- Monitoring period starting date: 01/01/2010.
- Monitoring period closing date: 31/10/2011[1]

A.5. Methodology applied to the project activity (incl. version number):

The JI specific approach is used for the monitoring of emission reductions in accordance with the JI Guidance on Criteria for Baseline Setting and Monitoring, Version 02.

A.5.1. Baseline methodology:

The proposed project is aimed at the extraction of coal from the waste heaps of underground coal mines. Waste heaps are frequently spontaneously igniting and burning, causing emissions of hazardous substances and green-house gases. The fraction of coal in the waste heaps can be as high as 28-32%[2], so the risk of spontaneous self-heating and burning is very high. The survey[3] shows that 69% of waste heaps in the Luhansk Region are, or have been burning at some point in time. If a waste heap has started burning, even if the fire is extinguished, it will continue burning after a while unless the fire is extinguished regularly. Burning waste heaps in Ukraine are very often not taken care of properly, especially when there is no immediate danger to population and property, i.e. if the waste heap is located at a considerable distance from a populated area, or is at the early stages of self-heating. The monitoring of the waste heaps condition is not done on a systematic and timely basis and information is frequently missing. The only way to prevent a waste heap from burning is to extract all the combustible matter, which is generally residual coal from the mining process. This project will reduce the emissions by extracting coal from the waste heap matter and using the remaining rock for land engineering.

Coal extracted from the waste heaps will substitute the coal from the mines and will be used mainly for energy production purposes at coal-fired power plants. Coal mining is a source of the methane fugitive emissions. Therefore, the project activity will reduce methane emissions by reducing the amount of coal required to be mined.

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[1] Both days included.

[2] *Geology of Coal Fires: Case Studies from Around the World,* Glenn B. Stracher, Geological Society of America, 2007, p. 47

[3] *Analysis on the fire risk of Luhansk Region's waste heaps*, Scientific Research Institute "Respirator", Donetsk, 2010

Baseline emissions come from two 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. This emission source is also present in the project scenario and the emissions are assumed to be equal in both project and baseline scenario. Therefore, this emission source is not included into consideration both in the project and the baseline scenario.

2) 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, and the waste heaps in question are at risk of burning it is assumed that actual burning will occur. The correction factor is applied in order to address the uncertainty of the waste heaps burning process. This factor is defined on the basis of the survey of all the waste heaps in the area that provides a ratio of waste heaps that are or have been burning at any point in time to all existing waste heaps.

Leakage is the net change of anthropogenic emissions by sources and/or removals by sinks of GHGs which occurs outside the project boundary, and that can be measured and is directly attributable to the JI project.

This project will result in a net change in fugitive methane emissions due to the mining activities. As coal in the baseline scenario is only coming from mines 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 (which is the same as the amount of coal that would have been mined in the baseline scenario.

As reliable and accurate national data on fugitive CH_4 emissions associated with the production of coal are available, project participants used this data to calculate the amount of fugitive CH_4 emission.

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, Version 02. 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;
- Negative leakage from the 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[4] 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 15th of January 2009 with the construction of the coal extraction plant. The Table 1 below shows the implementation of different stages of the project.

Activity	Date in the PDD	Actual Date
Project design and planning	2008	2008
Construction start of the coal extraction plant	15/01/2009	15/01/2009
Operation start of the coal extraction plant	01/01/2010	31/12/2009

Table 1: Implementation plan.

Letters of Approval were issued by both Parties involved mentioned in the PDD:
Letter of Approval from SEIA of Ukraine #2276/23/7 from 26/08/2011
Letter of Approval from NL Agency Ministry of Economic Affairs, Agriculture and Innovation of the Netherlands #2011JI24 from 04/07/2011.

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

There are no deviations to the 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/JI_Projects/DB/IPT7L3CLGIZTGGX27T2101W7XCUCWW/PublicPDD/7Z9FSMMY4DIFLHB7TGFLQ0B5YF3987/view.html.

The actual emission reductions in the monitoring report are different from the forecast in the registered PDD:

Values:	Data in the PDD	Data in this report
Emission reductions in 2010, tCO_2e	133 649	104 115
Emission reductions in 2011, tCO_2e	188 984[5]	115 589

Table 2: Emission reduction comparison.

The differences are due to the fact that estimates in the PDD were based on forecasted data for coal content in the waste heap matter and other parameters. Another factor was the necessity to run equipment in the commissioning mode during the initial operation period. As the result the emission reductions are lower than expected which is conservative.

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

[4] GOST 305-82 Diesel Fuel. Specifications. 0.85 kg/l is taken as an average between data for two suggested types of diesel: summer and winter (data from table #2). Arctic type of diesel fuel was not taken into account. Measurement units were converted from kg/m^3 to kg/l. http://elarum.ru/info/standards/gost-305-82/

[5] Extrapolated for the period from 01/01/2011 to 31/10/2011

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)*[6]. 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 2008, 2009, 2010 and 2011 estimate are available[7]. 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_2/ MWh	Description: CO2 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 3.0. dated 31st of August 2011. Time of determination/verification: Fixed ex-ante. Values of data applied: 0.896 tCO_2/MWh.	$EF_{CO2,EL,y}$	tCO_2/MWh	Description: CO_2 emission factor for 2nd voltage class grid connected power consumption in year *y* for JI project consuming electricity 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: 2010 – 1.225 tCO_2/MWh (NEIA Order #43 28/03/2011); 2011 – 1.227 tCO_2/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 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-	GWP_{CH4}	tCO_2e/tCH_4	Description: Global Warming Potential of Methane Source of data (to be) used: IPCC Second Assessment Report http://www.ipcc.ch/ipccreports/sar/wg_I/ipcc_sar_wg_I_full_report.pdf Page 22 Time of determination/verification: Fixed ex-ante. Values of data applied: 21

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

[7] http://neia.gov.ua/nature/control/uk/publish/category;jsessionid=FE36697EAC52DD187E792363BB3FDE46?cat_id=111922

		en.pdf. 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·m^{-3} to t/m^3. Time of determination/verification: Fixed ex-ante. Values of data applied: 0.00067 t/m^3
$OXID_{Diesel}$	ratio	Description: Carbon Oxidation factor of diesel fuel Source of data (to be) used: Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, Energy, p. 1-8 Time of determination/verification: Fixed ex-ante. Values of data applied: 0.99	$OXID_{Diesel}$	ratio	Description: Carbon Oxidation factor of diesel fuel Source of data (to be) used: Value for Oil and Oil Products from Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, Energy, p. 1.8 Time of determination/verification: Fixed ex-ante. Values of data applied: 0.99
k^C_{Coal}	tC/TJ	Description: Carbon content of coal Source of data (to be) used: National Inventory Report of Ukraine 1990-2008, p. 265 Time of determination/verification: Fixed ex-ante. Values of data applied: 26.8 tC/TJ.	k^C_{Coal}	tC/TJ	Description: Carbon content of coal Source of data (to be) used: Value for Bituminous Coal from National Inventory Report of Ukraine 1990-2008, p. 264 Time of determination/verification: Fixed ex-ante. Values of data applied: 26.8 tC/TJ.

Table 3: Changes to the monitoring plan.

A.9. Changes since last verification:

Not applicable.

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

MONOLITH-UKRAINE LTD:

- Yuliya Olifirova, Financial Director.

Global Carbon B.V.:

- Denis Prusakov, Senior JI consultant.

SECTION B. Key monitoring activities

(According to the monitoring plan for the monitoring period stated in A.4.)

For 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 with a specialized electricity meter "EPQS 122.09.04" which is a multifunction device for measurement of electric energy. The meter is installed in the substation building close to the project site. This meter registers all electric energy consumed by the project activity as it is 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.

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. Write-off certificates and other commercial documents are used in order to confirm the amount of fuel consumed. Accounting documents always provide separate information on stocks, inputs and actual usage. Only actual usage will be taken into account.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 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. Only actual 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 DVA-80. Regular cross-checks with the customers are performed. The monthly and annual reports are based on these production data.

B.1. Monitoring equipment types

1. Electricity meter "EPQS 122.09.04"
2. Automobile scales "DVA-80"

B.1.2. Table providing information on the equipment used (incl. manufacturer, type, serial number, date of installation, information to specific uncertainty, need for changes and replacements):

ID	Parameter	Measuring instrument	Unit	Manufacturer	Type	Serial number	Accuracy class	Date of installation or manufacturing
EL	Electricity consumed	Electricity meter EPQS 122.09.04	kWh	Elgama-Elektronika[8]	Electronic multifunctional electricity meter	291479	0,5s	2009
W	Coal amount	Automobile scales DVA-80	t	Diskret[9]	Electronic Car Scales	112	±20 kg (2 t to 40 t) ±40 kg (40 t to 80 t)	2009

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 "**EPQS 122.09.04**" (ID EL) calibration/verification during the monitoring period has been performed:

- Last calibration has been done by the manufacturer on 09/08/2006. The calibration interval exceeds the monitoring period (see section B.1.3).
- Next calibration to be performed not later than 09/08/2012.

For the Automobile scales "**DVA-80**" (ID W) calibration/verification during the monitoring period has been performed:

- 25/02/2010 - The verification confirmed that the measurements provided by the device are valid.
- 01/07/2011 - The verification confirmed that the measurements provided by the device are valid.
- Next calibration to be performed not later than 01/07/2012.

B.1.3. Calibration procedures:

For electricity meters:

QA/QC procedures	Body responsible for calibration and certification
Calibration interval for the electricity meters is: For "EPQS 122.09.04"– six years. Regular cross-checks with the electricity supply company.	Calibration will be performed by the authorized representatives of the State Metrological System of Ukraine[10]

Table 5: Calibration procedures for electricity meter

For scales:

QA/QC procedures	Body responsible for calibration and certification
Calibration interval for scales is: For Automobile scales "DVA-80" – one year Regular cross-checks with the customers.	Calibration will be performed by the authorized representatives of the State Metrological System of Ukraine[11]

Table 6: Calibration procedures for scales

B.1.4. Involvement of Third Parties:

State Enterprise "Luhansk Regional Scientific Industrial Center for Standardization, Metrology and Certification" – calibration/verification of the metering equipment.

[8] http://www.elgama.eu/en/products_solutions/electricity_meters/epqs

[9] http://www.diskret.com.ua/v/vs.html

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

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

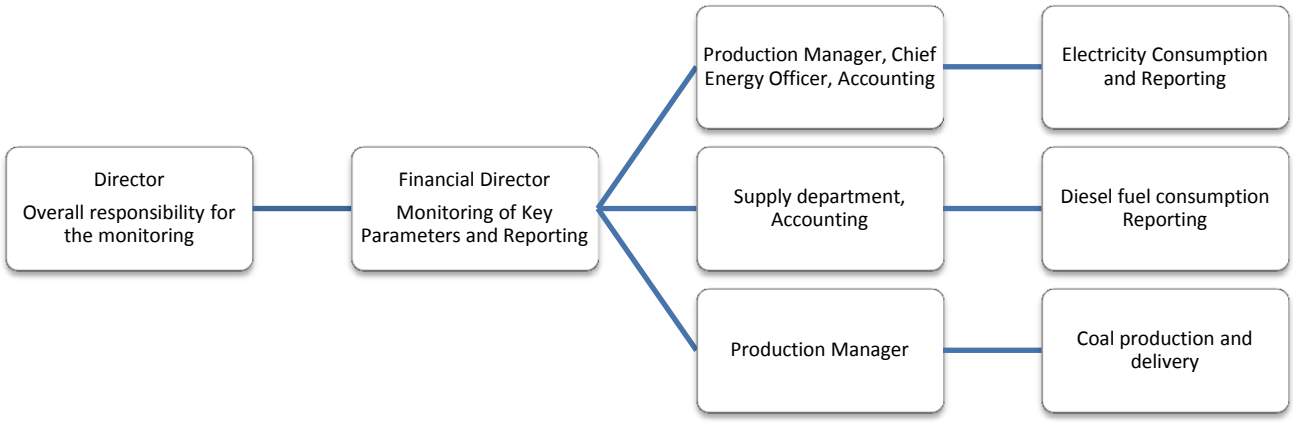


Figure 1: Data collection .

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[11]	21	Low
ρ_{CH4}	t/m^3	Methane density	IPCC 2006[12]	0.00067	Low
NCV_{Coal}	TJ/kt	Net Calorific Value of coal	National Inventory Report of Ukraine 1990-2008[13], p. 258	21.59	Low
NCV_{Diesel}	TJ/kt	Net Calorific Value of diesel fuel	National Inventory Report of Ukraine 1990-2008, p. 258	42.17	Low
$OXID_{Coal}$	ratio	Carbon Oxidation factor of coal	National Inventory Report of Ukraine 1990-2008, p. 265	0.98	Low
$OXID_{Diesel}$	ratio	Carbon Oxidation factor of diesel fuel	Value for Oil and Oil Products from Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, Energy, p. 1.8	0.99	Low
k^{C}_{Diesel}	tC/TJ	Carbon content of diesel fuel	National Inventory Report of Ukraine 1990-2008, p. 264	20.2	Low

[11] http://www.ipcc.ch/ipccreports/sar/wg_I/ipcc_sar_wg_I_full_report.pdf Page 22

[12] 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.

[13] http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php

k_{Coal}^{C}	tC/TJ	Carbon content of coal	Value for Bituminous Coal from National Inventory Report of Ukraine 1990-2008, p. 264	26.8	Low
$EF_{CH_4,CM}$	m^3/t	Emission factor for fugitive methane emissions from coal mining	National Inventory Report of Ukraine 1990-2008, p.74	25.67	Low
p_{WHB}	ratio	Correction factor for the uncertainty of the waste heaps burning process	Scientific study - *Analysis on the fire risk of Luhansk Region's waste heaps*, Scientific Research Institute "Respirator", Donetsk, 2010	0.69	Low

Table 7: Fixed parameters

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.-1	$EC_{PJ,y}$ - 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.	EL[14]	Data are aggregated monthly. Annual reports are prepared.
D.1.1.1.-2	$FC_{PJ,Diesel,y}$ - 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 adding up the consumption figures. Direct input from company records.	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.
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_2/ MWh	The data will be archived and kept for two years after the last transfer of ERUs from the project.	-	Data are aggregated every year by collecting the publicly available information

Table 8: Monitored project emissions variables

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

ID (from PDD)	Parameter	Calculation method (Measured/Calculated)	Unit	Comment	Meters used (as per B.1.2)	Data aggregation frequency
D.1.1.3-3	$FC_{BE,Coal,y}$ - 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	(M/C) Measured in individual shipments then summarized by calculation. Direct input from company records, scales	t	For the metering of this parameter the technical reports 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.	W	Data are aggregated daily and monthly and annual reports are prepared

Table 9: Monitored baseline emissions variables

B2.3. Data concerning GHG emissions by sources of the project activity:

Variable	Description	Units	Values	
			2010	2011[15]
$EC_{PJ,y}$	Additional electricity consumed in year y as a result of the implementation of the project activity	MWh	1215.737	1402.848
$FC_{PJ,Diesel,y}$	Amount of diesel fuel that has been used for the project activity in the year y[16]	t	458.9626	344.7651
$EF_{CO2,EL,y}$	CO_2 emission factor for 2nd voltage class grid connected power consumption in year *y* for JI project consuming electricity	tCO_2/MWh	1.225	1.227

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	
			2010	2011[16]
$FC_{BE,Coal,y}$	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	59597	65919

Table 11: Data that were collected in the baseline scenario

[15] Period from 01/01/2010 till 31/10/2011

[16] 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. Data taken from GOST 305-82 Diesel Fuel. Specifications. 0.85 kg/l is taken as an average between two suggested types of diesel: summer and winter http://elarum.ru/info/standards/gost-305-82/

B.2.5. Data concerning leakage:

Leakage is the net change of anthropogenic emissions by sources and/or removals by sinks of GHGs which occurs outside the project boundary, and that can be measured and is directly attributable to the JI project.

This project will result in a net change in fugitive methane emissions due to the mining activities. As coal in the baseline scenario is only coming from mines 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 (which is the same as the amount of coal that would have been mined in the baseline scenario.

As reliable and accurate national data on fugitive CH_4 emissions associated with the production of coal are available, project participants used this data to calculate the amount of fugitive CH_4 emission as described below in Section D.1.

This leakage is measurable: the same approach as used in the national GHG inventories is used as amount of coal can be multiplied by the emission factor for fugitive methane emissions from coal mining providing the fugitive CH_4 emissions.

This leakage is directly attributable to the project: under the assumption that the coal delivered by the project will substitute the amount of coal that otherwise would have been produced by the underground mines of the region.

This leakage is significant and is included in the calculation of the project emission reductions. Procedure for calculation of leakage is provided below in Section D.1.

B.2.6. Data concerning environmental impacts:

The full scope EIA in accordance with the Ukrainian legislation has been conducted for the proposed project in 2008 by the local developer PJSC "LUHANSKGIPROSHAKHT". Key findings of this EIA are summarized below:

- Impact on air is the main environmental impact of the project activity. Dust emissions due to the erosion and project activity such as loading and offloading operations of input rock and processed coal will be limited. Also emissions from transport will be present during the project operation stage. The impact will not exceed maximum allowable concentration at the edge of the sanitary zone;
- Impact on water is minor. The project activity will use water in a closed cycle without discharge of waste water. The possible discharge of the processed water will not have negative impact on the quality of water in the surface reservoirs;
- Impacts on flora and fauna are insignificant. The design documentation demands re-cultivation of the landscape. Grass and trees will be planted on the re-cultivated areas in order to prevent flora and fauna degradation. 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. Fertile soil will be used to re-cultivate the land lot;
- 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.

The list of available EIA documentation includes:

1) *Project of the mining rock processing and coal beneficiation complex at the site of former mine #6 "Daryevskaya". Volume I: Explanatory Note. Book 3 Environmental Impact Assessment. P7221-3-P3, PJSC "LUHANSKGIPROSHAKHT", Luhansk 2008*

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

All data will be archived electronic and paper. 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. 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 (as per 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.**

   Consumption and write-off certificates (in the absence - invoices, consumption reports 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 binded 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 binded as a reference into the same folder with the original documents. At the same time the responsible person (as per 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.**

   Technical reports (in the absence - weighting logbook, receipts, invoices and acceptance certificates) are used in order to confirm the amount of coal extracted. The documents are collected for every production batch or shipment or for the group of shipments by the responsible person. The documents obtained are collected by the management of the company via accounting and economics department on a monthly basis. The paper originals are binded 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 binded as a reference into the same folder with the original documents. At the same time the responsible person (as per 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 monitoring management is implemented by the Director of the company Monolith-Ukraine Ltd. through the supervision and coordination of the activities of his subordinates, such as the Chief Energy Officer; Production Manager and Accountant. Compilation of the data for monitoring report is performed by the Financial Director of the company. 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:

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

Documents and reports on the data that are monitored will be archived and stored by the project participants. The following documents will be stored: primary documents for the accounting of monitored parameters in paper form; intermediate reports, orders and other monitoring documents in paper and electronic form; documents on measurement devices in paper and electronic form. These documents and other data monitored and required for determination and verification, as well as any other data that are relevant to the operation of the project will be kept for at least two years after the last transfer of ERUs.

C.1.2. Trainings:

The project is utilizing technology that requires skills and knowledge in heavy machinery operation, coal washing technology operation, electric equipment operation etc. This kind of skills and knowledge is available locally through the system of vocational training and education. This system is state-supervised in Ukraine. Professionals who graduate from vocational schools receive a standard certificate in the field of their professional study. Only workers with proper training can be allowed to operate industrial equipment like. Management of the project host ensures that personnel of the project have received proper training and are eligible to work with the prescribed equipment.

Training on safety issues is mandatory and must be provided to all personnel of the project as required by local regulations. Procedure for safety trainings includes the scope of the trainings, training intervals, forms of training, knowledge checks etc. The project host management maintains records for such trainings and periodic knowledge check-ups.

Activities that are directly related to the monitoring do not require specific training other than provided by the professional education. However, monitoring personnel will receive training on monitoring procedures and requirements. Personnel of the project host management will receive necessary training and consultations on Kyoto Protocol, JI projects and monitoring from the project participant – Global Carbon B.V..

C.2. Involvement of Third Parties:

State Enterprise "Luhansk Regional Scientific Industrial Center for 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.

In cases if any errors, fraud or inconsistencies will be identified during the monitoring process special commission will be appointed by project host management that will conduct a review of such case and issue an order that must also include provisions for necessary corrective actions to be implemented that will ensure such situations are avoided in future.

The project host management also established a communication channel that makes it possible to submit suggestions, improvement proposals and project ideas for more accurate future monitoring for every person involved in the monitoring activities. Such communications will be delivered to the project host management who is required to review these communications and in case it is found appropriate implement necessary corrective actions and improvements. Project participant – Global Carbon B.V. – will conduct periodic review of the monitoring plan and procedures and if necessary propose improvements to the project participants.

SECTION D. Calculation of GHG emission reductions

D.1. Table providing the formulas used:

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

Table 12: Calculation formulas

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

The coefficient 44/12 in the equations above is the ratio of the molecular weight of CO_2 (44) and the molecular weight of C (12) and is used to convert carbon emissions into carbon dioxide emissions.

Additionally in the formulas:

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*
LE_y	tCO_2e	Leakages in year y
$LE_{CH_4,y}$	tCO_2e	Leakages 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*
$PE_{EL,y}$	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 formulas

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	2010	2011[17]	Total
Project emissions	tCO_2e	2 908	2 787	5 695

Table 14: Project emissions.

D.3.2. Baseline emissions:

Parameter	Unit	2010	2011[18]	Total
Baseline emissions	tCO_2e	85 498	94 568	180 066

Table 15: Baseline emissions.

D.3.3. Leakage:

Parameter	Unit	2010	2011[18]	Total
Leakages	tCO_2e	-21 525	-23 808	-45 333

Table 16: Leakages.

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

Parameter	Unit	2010	2011[18]	Total
Emission reductions	tCO_2e	104 115	115 589	219 704

Table 17: Emission reductions.

[17] Period from 01/01/2010 till 31/10/2011

Annex 1

Definitions and acronyms

Acronyms and Abbreviations

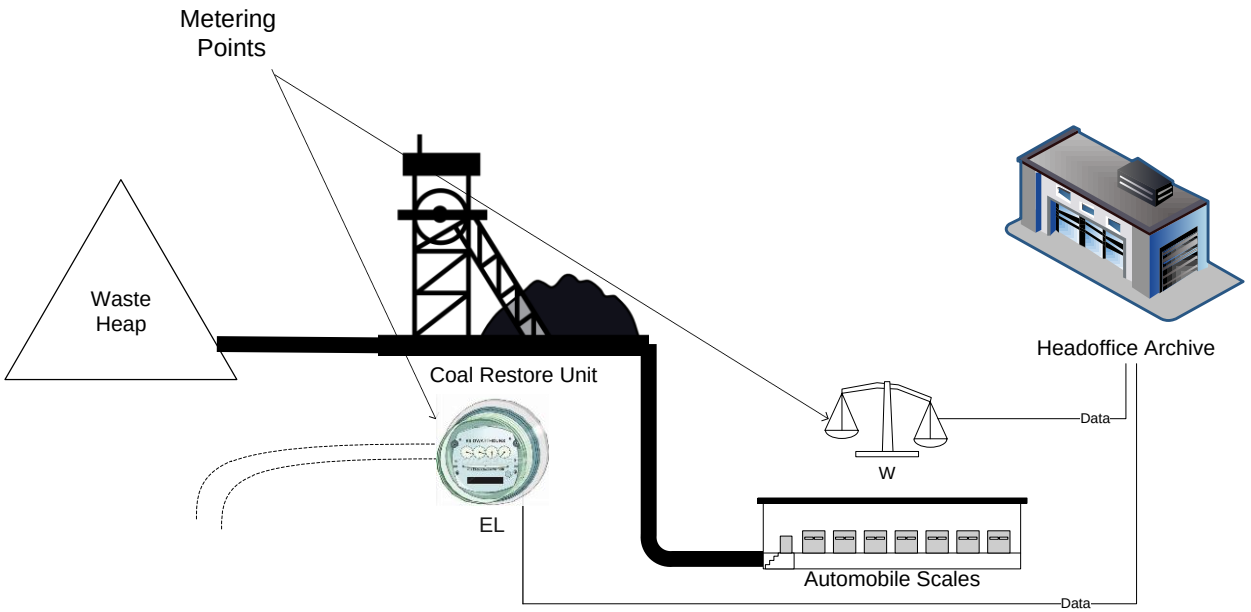
CH_4	METHANE
CO_2	CARBON DIOXIDE
GHG	GREENHOUSE GASES
GWP	GLOBAL WARMING POTENTIAL
IPCC	INTERGOVERMENTAL PANEL ON CLIMATE CHANGE
PDD	PROJECT DESIGN DOCUMENT

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 (SF6).
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



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Annex 3

Measurement Devices

Figure 1 Electricity meter EPQS

Figure 2 Automobile scales "DVA-80"