JOINT IMPLEMENTATION PROJECT

"Implementation of the energy efficiency measures and reduction of greenhouse gas emissions into the atmosphere at State Enterprise "Selidovugol"

Position of the head of the organization, institution, body, which prepared the document

Director
CEP Carbon Emissions Partners S.A. (position) — (signature) PS — **Fabian Knodel** (name and patronymic, last name)

Position of the economic entity – owner of the source, where the Joint Implementation Project is planned to be carried out

General director of SE "Selidovugol" (position) — (signature) — **M.G. Nykytiuk** (name and patronymic, last name)

PS

___________ 2012

JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM (JI PDD)
Version 01 - in effect as of: 15 June 2006

CONTENTS

Annexes

SECTION A. General description of the project

A.1. Title of the project:

Implementation of the energy efficiency measures and reduction of greenhouse gas emissions into the atmosphere at State Enterprise "Selidovugol"

Sectoral scope:
Sector 8. Mining/mineral production
Sector 3. Energy demand

PDD Version: 02.

Date: 28/08/2012

A.2. Description of the project:

Aims of the project activities
The joint implementation (JI) project aims to reduce man-made emissions of green house gases (GHG) through: modernising technological equipment used in the process of coal mining, as well as measures, aimed at waste heap extinction, which tend to self-ignite and smoulder. The project will result in lowering the consumption of fossil fuel and electric energy for the enterprise's own technological needs and reducing greenhouse gas (GHG) emissions from the mine's waste heap combustion, which will lead to a notable reduction of the overall GHG emissions amount against the current practice.

Situation prior to the project.

The Ukrainian coal mining industry is a complex business system which consolidates more than 167 operating coal mines and 3 coal pits, mines which are being removed from service, as well as coal processing plants, transport and other enterprises. Ukraine is the largest coal mining region in Europe and one of the eight largest coal miners globally.

SE "Selidovugol" is the initiator of the JI project. Its main production field is mineral coal mining. Obsolete traditional technologies and coal mining systems which were accompanied by constant wearing down of equipment and increase of energy resources consumption in the course of their operation. Improvement of the equipment performance is possible only by means of its full-scale modernisation, as partial implementation of the measures will not yield any tangible results. This is supported by the many governmental initiatives aimed at the modernisation of the mining industry and raising its effeciency, which were directed at particular aspects of the mines' operation and at particular elements of technical processes, which each time gave overtly negative results.

The above is also true for SE "Selidovugol", as prior to the JI project implementation, modernisation and equipment replacements were largely lacking, which is due to crisis developments in the Ukrainian mining industry and, consequently, lack of funds for the enterprise, lack of effective mechanisms to overcome the crisis and stabilise the situation in the industry, on the country level. Thus, the condition of production equipment was continuously worsening, and its performance was continuously going down.

Since, in Donetsk region, the coal production is based on mining, in Ukraine, there is a common practice to pile the rejects separated from coal into huge waste heaps, which make vast spaces of ground unfit for almost any practical use. The coal separation process has historically been low-effective. Moreover, over a long period, it was considered economically unreasonable to extract 100% of coal from the rock raised.

As a result, waste heaps in Donbas contain a great amount of coal, which eventually make them inclined to self-ignition and smouldering. According to various estimates, rock raised contains up to 65-70% of coal, the remainder is rejects. Up to 60% of these rejects end up in waste heaps[1]. The heaps which are presently smouldering or running the risk of ignition are sources of uncontrolled emissions of green house gases and hazardous substances. The latter include sulphur trioxide, which further on converts to sulphuric acid and causes acid rains, hydrogen sulphide and carbon oxide. Continuous erosion may cause the full disintegration of a heap and its turning into a massive heave, which is dangerous both in the context of direct peril to people and property, and of significant emissions of solids and hazardous substances into the atmosphere. Erosion also accelerates the spontaneous ignition process. Coal smouldering in heaps is a prolonged process, which can last up to 15 years[2]. Despite the danger caused by waste heap combustion, their extinction is not a customary practice in Donbas. Owners responsible for waste heaps are obliged to pay rather small penalties for environmental pollution. Thus, they have no major incentive to solve this issue and burning waste heaps may not be extinguished.
That means that, due to relatively small fines for environment pollution, owners which have waste heaps on their asset registers are not interested in any measures to reduce the emissions of hazardous substances into the atmosphere, including GHG, as that would entail additional costs

Baseline scenario

The baseline scenario provides for the continuation of the existing equipment operation and scheduled repair and restoration works without any significant investment, which complies with the requirements of national standards and Ukrainian legislation. Specific energy resourses spend for the electric energy and heat supply for the support of technical processes remain set or even increase, which add to the emissions of green house gases (hereinafter: GHG) into the atmosphere. Provision is made for the continuation of the current practice, with monitoring the condition of the waste heap and, in case of emergence of fire sources, taking measures to extinguish them, based on the NPAOP 10.0-5.21-04 Manual on self-ignition prevention, extinction and demolition of waste heaps. However, we can conclude that these measures are ineffective, which conclusion is supported by the temperature surveys conducted annually and regularly registered repeated ignition sources at the heap. Whereas the heap contains 10-15% of coal, its combustion is accompanied by a great amount of emissions of GHG and other hazardous substances into the atmosphere. A detailed baseline scenario justification is given in Section B.

Project scenario

Main project activities aimed at the reduction of greenhouse gas (hereinafter: GHG) emissions into the atmosphere are:

1. Full-scale modernisation of technological equipment involved in coal mining process.
2. Extinction of SE "Selidovugol" waste heaps.
3. Implementation of permanent waste heap monitoring system and waste heap extinction technology at SE "Selidovugol" mines.

The implementation of energy-efficient and energy-saving equipment and technologies, covered by the full-scale modernisation within the framework of the JI project, will lead to the increase of productive performance and, as a result, to the reduction of energy resources consumption in the course of coal mining.

The project also provides for taking measures to extinguish waste heaps, by way of isolating fire sources and barring the access of oxygen to the burning rejects. As a result, the process of combustion is

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

[2]. http://www.nbuv.gov.ua/portal/natural/Pb/2010_17/Statti/10.pdf

discontinued and the possibility of a repeated ignition is minimised. The implementation of an instrumental waste heap condition monitoring programme, which should provide for monthly monitoring of the waste heap condition, as well as, in case of an emergency (waste heap control points temperature increase in excess of the acceptable value), for prompt extinguishing actions. Based upon the principles of conservatism, GHG emissions resulting from waste heap combustion in case of repeated ignition, during the development of the project activities, will be accounted for in GHG emission reduction calculations.

Measures to be implemented in the course of the project (ref. to Section A.4.2 below), as well as implementation and carrying out of the constant monitoring, will allow a significant reduction of electric energy and fossil fuel spend used for the production technical processes (coal mining), as well as ceasing of waste heaps combustion at the mines of SE "Selidovugol", which, taken as a whole, will lead to a tangible reduction of GHG emissions into the atmosphere.

SE "Selidovugol" has every licence and permit necessary for the implementation of the project.

Key contracts for the procurement of raw materials (electric energy and coal) are already executed and, in compliance with the current practice, are renewed annually. The necessary equipment for the project is intended to be procured from leading Ukrainian and European companies, by tenders.

The project was initiated in 2005:

07/06/2005 - the starting date of the project "Implementation of the energy efficiency measures and reduction of greenhouse gas emissions into the atmosphere at State Enterprise "Selidovugol".The starting date of the project is the date when project activities began.

05/07/2012 - Letter of Endorsement No.2364/23/7 was issued for the JI project on 28/08/2012 by the State Environmental Investment Agency of Ukraine.

A.3. Project participants

Party involved*	Legal entity project participant (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Ukraine (HOST PARTY)	• SE "Selidovugol"	No
Switzerland	• CEP Carbon Emissions Partners S.A.	No
*Please indicate if the Party involved is a host Party.		

State Enterprise «Selidovugol» is an organization that implements the project (Applicant, Supplier). Code in the Unified State Register of Enterprises and Organizations of Ukraine 33426253. Type of activity: 05.10 Stone coal mining; 35.30 Supply of steam, hot water and air conditioning; 47.11 Retail sale in non-specialized stores mainly food, beverages and tobacco; 49.39 Other passenger land transport road transport; 49.41 Road transport; 56.29 The main activity of the company is the production of coal. The company has all licenses and permits required under the Ukrainian law to produce coal. SE «Selidovugol» is responsible for design, construction and installation work performed by its own staff or through contractors. The enterprise finances the project and does not receive profit.

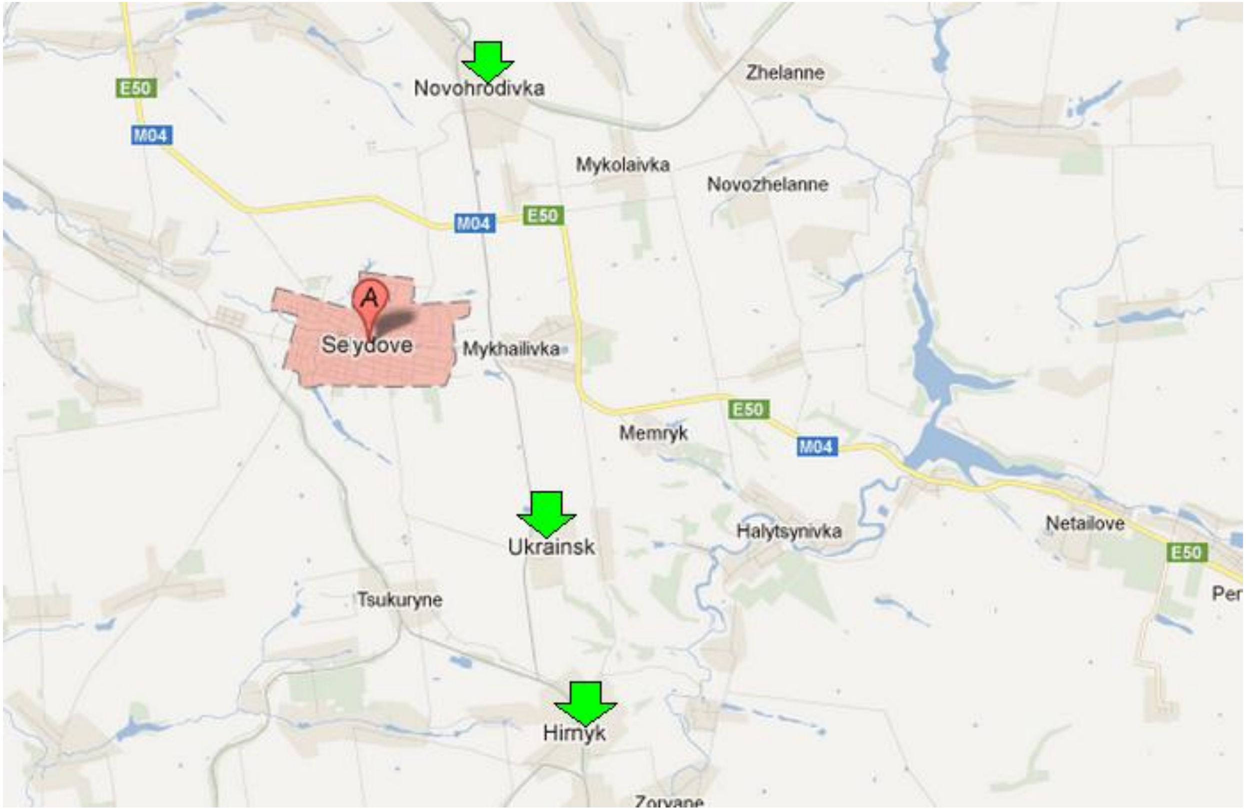
CEP Carbon Emissions Partners S.A. is a research and engineering organization. It is responsible for the development of project design documents for the joint implementation project. Besides, it will participate in determination, monitoring and verification of the project.

A.4. Technical description of the project:

A.4.1. Location of the project:

The project is located in the territory of Donetsk region, Ukraine (Figure A.4.1.1).

Figure A.4.1.1.Location of the facilities on the map of Ukraine



FigureA.4.1.2.Location of the facilities on the map of Ukraine

A.4.1.1. Host Party(ies):

The project is located in the territory of Ukraine.
Ukraine is an Eastern European country that ratified the Kyoto Protocol to the UN Framework Convention on Climate Change on February 4, 2004[3]. It is listed in Annex 1 and meets the requirements of participation in Joint Implementation projects[4].

A.4.1.2. Region/State/Province etc.:

The project is located in the territory of Donetsk region, Ukraine.

A.4.1.3. City/Town/Community etc.:

Selidove, Novohrodivka, Ukrainsk, Hirnyk.

A.4.1.4. Detail of physical location, including information allowing the unique identification of the project (maximum one page):

Geographical coordinates of the towns where the facilities are located:

Novohrodivka
48° 11' 38" N 37°

[3] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=1430-15
[4] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?page=1&nreg=995_801

19' 18" E

Ukrainsk
48° 06' 01" N
37° 21' 09" E

Hirnyk
48° 02' 50" N
37° 21' 55" E

Selidove

48° 08' 41" N
37° 17' 53" E

Donetsk region is located in southeastern Ukraine within the Donetsk Upland, the Azov Upland and partly the Dnipro Lowland. The oblast borders the Dnipropetrovsk and Zaporizhia regions on the southwest, the Luhansk region on the northeast, the Rostov Oblast in Russia on the east, and with the Sea of Azov on the south.
Donetsk region is the most densely populated region of Ukraine, with its population consisting about 9% of the total population of the country. The region is an industrial part of Donbas with urban population prevailing.
Heavy industry is crucial for the economy of Donetsk region. The region covers one-fifth of Ukraine's total industrial production, being the country's leader in strategic industrial production and exports. The region hosts over 2000 industrial enterprises engaged in mining, steelmaking, chemical, energy, heavy engineering, construction materials; around 300 mineral deposits are in operation.

A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project:

Main activities withing the boundary of the project "Implementation of the energy efficiency measures and reduction of greenhouse gas emissions into the atmosphere at State Enterprise "Selidovugol" are:

- implementation of PO,84-15-12-4-2 plate water boilers and MGDR-PMTs-SA dynamic magnetic resonators;
- installation of scale prevention system at boilers;
- installation of smooth start system at 2LU-120 belt conveyer;
- installation of unified supervisory monitoring and automatic control telecommunications system at mining equipment and technological complexes (UTAS);
- improvement of ventilation systems (reduction of air influx by headframe pressurization);
- improvement of water drainage (cleaning of water collectors and inner pipeline surfaces, replacement of pumps);
- improvement of underground trasportation systems (reduction of conveyer operation time by using pockets);
- improvement of power supply systems at mines (application of KU reactive-power compensator at a mine transformer substation);
- improvement of power consumption control telecommunications systems (commissioning of the Automatic Commercial Power Consumption Control System (ACPCCS));
- extinction of burning waste heaps;
- tuning up of the waste heap monitoring system;

- implementation of the waste heap extinction technology in line with NPAOP 10.0-5.21-04 Manual on self-ignition prevention, extinction and demolition of waste heaps[5] using modern antipyrogenous materials;
- modernization and installation of new conveyer equipment;
- purchase of cutting-edge mechanical complexes and tunneling machines.

Brief summary and specifications of equipment to be installed under the project are provided below:

1. Dynamic magnetic resonators and plate boilers.

Figure A.4.2.1. MGDR-PMTs-SA dynamic magnetic resonator.

A dynamic magnetic resonator is designed for reagentless scale removal and prevention. The operation of the device is based on physical principles ans also enables reagentless intensification of anufacturing processes. The resonator may be equipped with a self-adaptation system, which enables self-cleaning of its flow path from low-coercitivity materials, control of operation efficiency using color indicators and necessary automatic adjustment to an operational mode.

Figure A.4.2.2. Construction of a plate heat exchanger
1. A fixed plate with junction pipes. 2. A rear clamshell. 3. Heat exchanger plates with sealing gaskets. 4. An upper guide. 5. A lower guide. 6. A rear pillar. 7. A thread stud set.

The plate heat exchanger is a device that transfers heat from a hot carrier to cold (heated) environment via corrugated stainless steel plates installed in a frame and drawn together tight.
Heat carriers may be liquid, steam, or gas. Depending on the purpose, plate heat exchangers may be used both as heaters and as coolers.

[5] http://dnop.com.ua/dnaop/act2799.htm

This construction ensures efficient configuration of heat exchange surface and, respectively, small size of the device.
Working principle:
The plate set consists of same-sized plates located at 180° to each other, so that when the set is tightened up, the plates create channels for liquids taking part in the heat exchange process. This configuration ensures interchange of hot and cold channels.

Figure A.4.2.3. A working scheme of the heat exchanger.

During the heat exchange liquids flow in reverse directions. Possible migration spots are equipped with either a steel plate or a double gum sealant, which practically eliminates the possibility of liquid merger.
The type of plate corrugation and the number of plates in a frame depend on the operational requirements.

2. Belt conveyer

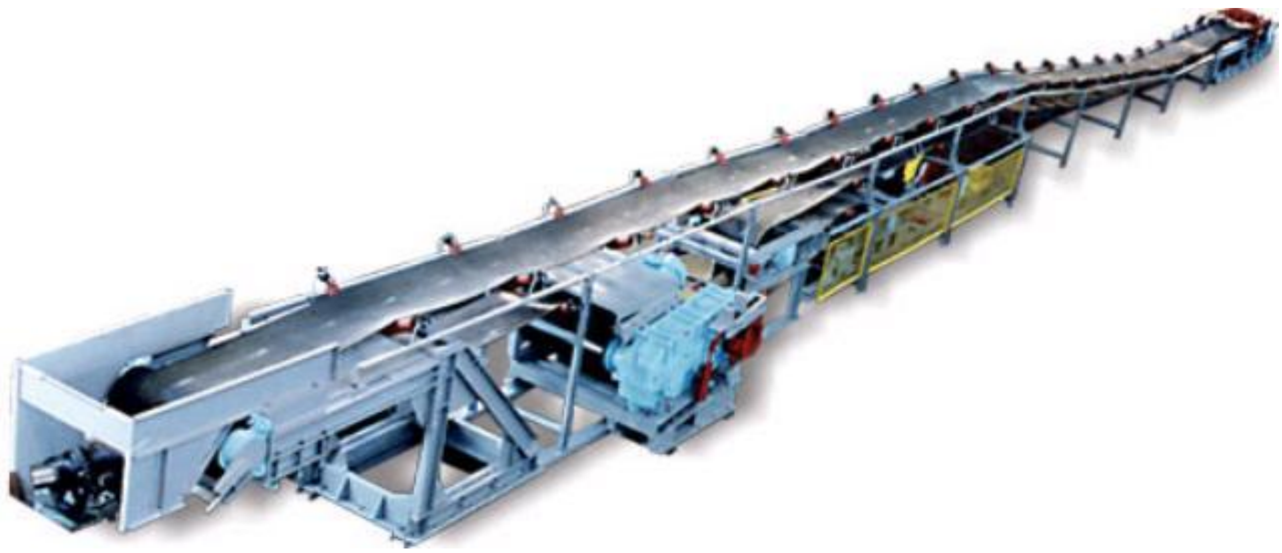


Figure A.4.2.4. An underground belt conveyer.

Specifications of 2LU-120 underground belt conveyer:

Transportation distance at maximum efficiency of a horizontal unit:	650 1200

Total drive capacity, kW:	2x250/ 4x250
Voltage in power grid, V:	660 1200
Fraction of rocks, mm, max:	300
Pulley/roller diameter, mm:	152
Receiving capacity, m^3/min:	630/815
Belt speed, m/s:	2.0/3.15
Belt width, mm:	1200
Trhoughput, t/h:	850/1100

GHG emission reduction is achieved due to modernization of old equipment and installation of new units, which lowers the consumption of fossil fuel (coal) and electricity.

3. ACPCCS installation

Automatic Commercial Power Consumption Control System (ACPCCS) is a set of consumption control devices, data transfer channels and devices for data receiving, processing, mapping and registering.

Local Data Collection and Processing Devices (LDCPD) is a set of consumption control devices (or one device) installed for electricity billing purposes, which ensure measurement, collection, accumulation, processing of measurement results by corresponding time periods (formation of primary measurement information) on amount and parameters of electricity flows and power consumed in specified measurement sites, and which have a data transfer interface to operate as part of the Automatic Commercial Power Consumption Control System;
Thus, consumer's ACPCCS includes meters (along with measurement transformers and control areas), data transfer channels to deliver data to the consumer and a power supplier, as well as data transfer devices (i.e. modems).

Data can be transferred to power supplier in two ways:

- ACPCCS of the power supplier directly reads consumer's meters (i.e. ACPCCS of the power supplier interacts with consumer's LDCPD)
- ACPCCS of the power supplier obtains meter readings from consumer's PC (via file transfer or direct access to the database)

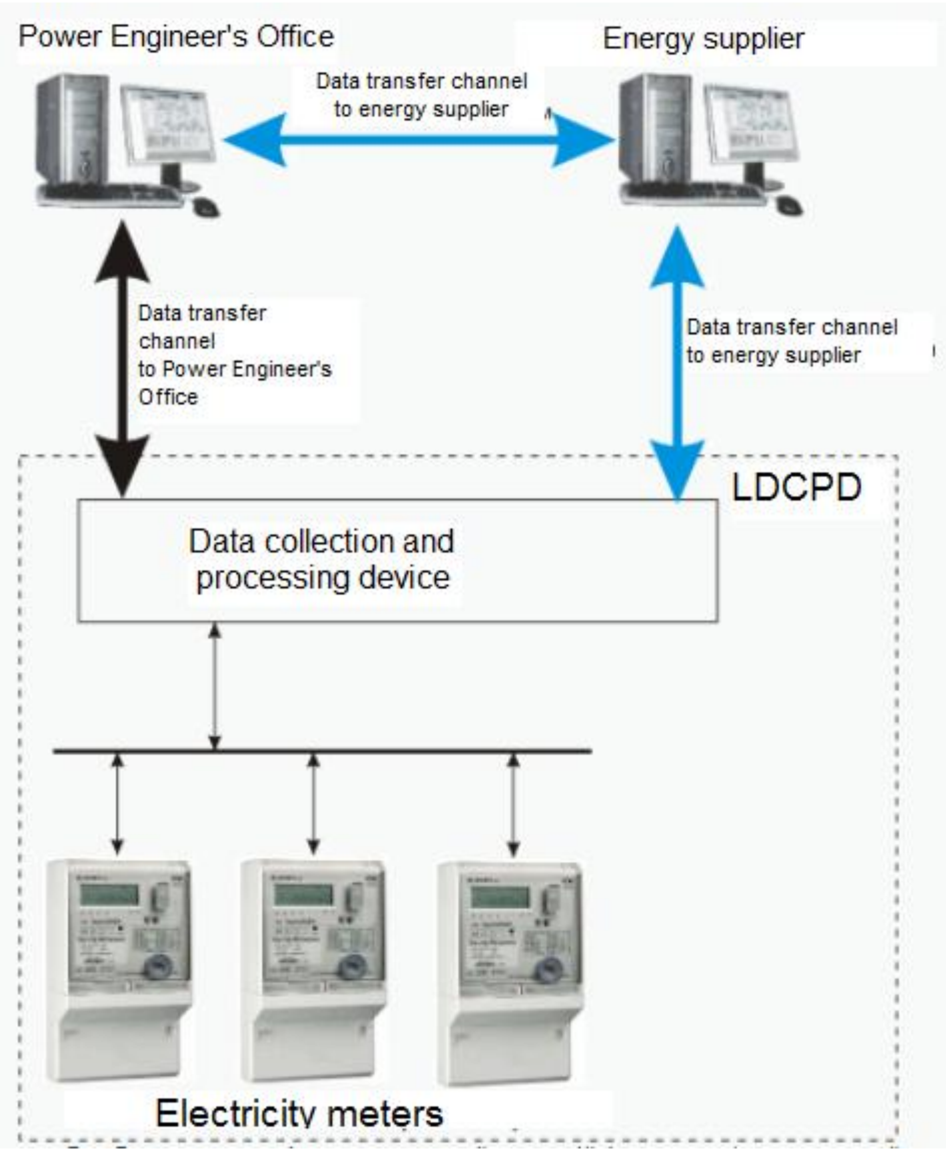


Figure A.4.2.5. ACPCCS working scheme.

Data collection and processing device is a microprocessor device (controller) designed to request, receive and process meter readings, transfer of these readings via communication channels to the upper level, as well as separation of access of consumer's ACPCCS and power supplier's ACPCCS to the meters. Commissioning of ACPCCS will simplify the process of receiving of electricity consumption data and improve the data reliability.

4. UTAS systems.

UTAS systems ensure total control over environmental parameters at all sites of the facility, management of working equipment taking account of the value of these parameters, and transfer of these data to an operator and administrators of the facility.

UTAS systems

Magnetic contactless sensor

Magnet

Temperature sensors

Heat probes

Carbon dioxide sensor

Methane sensor

Oxygen sensor

Display

Vibration sensor

Pressure sensors

Audiovisual alarm system

Intelligent controller

Deviation sensor

Figure A.4.2.6. UTAS system elements.

UTAS system will enable fuller control over the manufacturing.

5. Implementation of waste heap extinction technology at SE “Selidovugol”, which will lead to GHG emission reduction, provides for the following steps:

The project provides for stabilization of waste heaps accompanied by the application of expensive extinction technology with the use of vermiculite.

Description of waste heap stabilization technology:
Prior to extinction activities pathways and working sites are formed from nonflammable material (burned-out rock, boiler slag) to create access for the machinery to the waste heap. While carrying out these activities, wind direction is taken into account and the following equipment is used:

- Concrete pump trucks

Figure A.4.2.7. SP-8800[6] concrete pump

The concrete pump pumps vermiculite under pressure into a burning spot of a waste heap. Vermiculite is a hydrated mica phyllosilicate, which expands by 15-30 times when heated to 300-1000 ^{o}C. Air layers in vermiculite structure ensure heat and sound insulation.

The concrete pump pumps vermiculite under pressure into a burning spot of a waste heap. Vermiculite is a hydrated mica phyllosilicate, which expands by 10-15 times when heated to 300-1000 ^{o}C. Air layers in vermiculite structure ensure heat and sound insulation.

- Underground rig

Figure A.4.2.8. Waste heap burning and NKR100MPA underground rig [7]

The underground rig is designed for drilling blastholes through which vermiculite is pumped.
The rear and frontal part of waste heap channels are treated with vermiculite mud powder, by means of replacement of automatic concrete pump and mixer.[8]. Vermiculite expands by 15-30 times when heated

[6] http://www.schwingstetter.ru/product/staczionarnyie-betononasosyi/sp-8800

[7] http://www.oaokmo.ru/ru/catalogue/underground-equipment/stanki-podzemnyie/7294.html

to 300-1000 °C. Air layers in vermiculite structure ensure low density and great heat and sound insulation. Apart from vermiculite, clay-based grout mixtures can be used to create the surface layer over the hot spots by pumping the mixtures through up to 2.0-meter-deep wells.

The mixture is supplied via a hinged concrete carrier of a concrete pump truck in several stages. The mixture is applied in the areas with burning rock, heated rock and rock that is not burning, including slopes. After it stops steaming and the temperature falls in the burning areas of the waste heap, works to estimate how deep the hot spots are located are to be done so that the height of heap lowering can be known which is needed for the operation safety and effective extinction.

To this end, drilling works are carried out and clay-based grout mixtures (vermiculite) are applied. Drilling works are aimed to reach the hottest spots.

One third of the length of the well (pipe column) is measured, and there casing pipes are perforated.

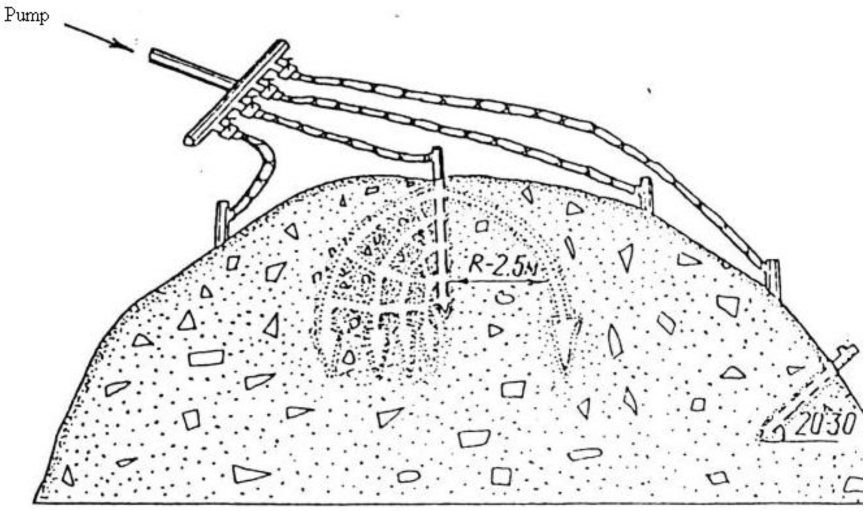


Figure A.4.2.9. Scheme of antipyrogen pumping with use of several perforated pipes.

To prevent antipyrogen emission along the outer walls of the casing pipe, equipment that seals the top of the well is used. Radiation levels are reduced in the heap by digging trenches with bulldozers; filling the trenches with antipyrogen so that it can freely filter into the heap until the rock absorbs it all.

The last phase is to seed perennial cereals and legumes. Per 1 hectare of land, 20-30% more seeds are planted than normal for the zone.

Thus, waste heap hot spots extinction will reduce greenhouse gases emissions and improve environmental situation in Donbas.

[8] http://en.wikipedia.org/wiki/Vermiculite

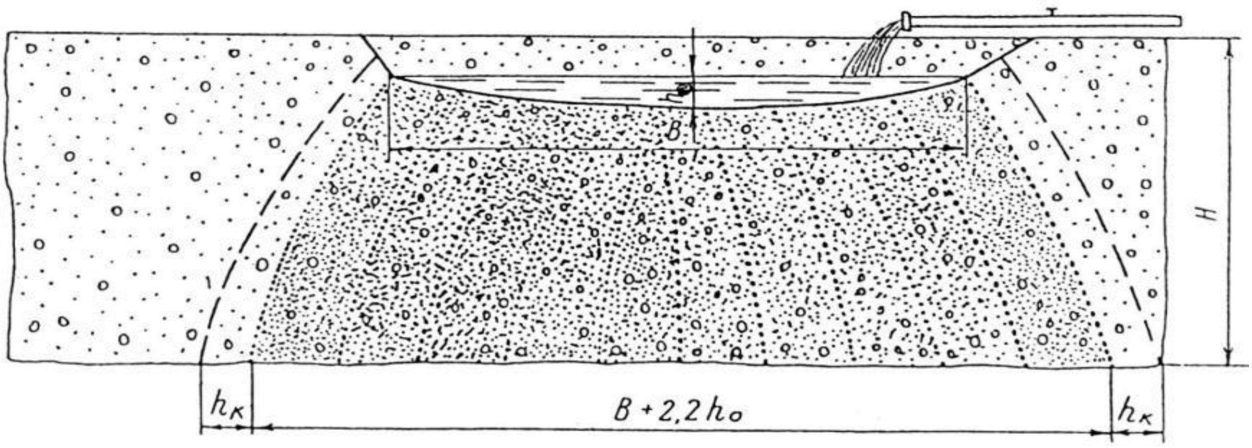


Figure A.4.2.10. Scheme of hydrating heaps with antipyrogen filtering freely.

The bulldozer pushes the cooled rock layer into crest splits with extra antipyrogen hydrating (the spraying method), increasing the density to the level at which air is as permeable as to exclude the possibility of ignition. In case rock amount is not enough to fill the space between the crests, trenches are dug and filled with antipyrogen repeatedly until a horizontal site is created.
The site, which covers the three waste heap channels, is made denser after antipyrogen is sprayed.

The last phase is to seed perennial cereals and legumes. Per 1 hectare of land, 20-30% more seeds are planted than normal for the zone.

Most of equipment under the project, such as trucks, excavators, bulldozers, is standard industrial machinery used worldwide. For the works under the project to be carried out, no equipment needs to be ordered individually.
There is no intensive preliminary training the project calls for. As many staff members as needed can undergo basic training on the site where the project is carried out. The staff, particularly heavy equipment operators, truck and excavator drivers, mechanics and electricians, work on the site of the project implementation. Local resources are used to meet the project needs for maintenance: the company's workers who service its equipment as well as repair contractors. The project provides that practical courses are done. All staff members must be certificated to do the work, regularly be given instructions on safety norms, and take examinations. Locally, in Donetsk region, it is possible to get education in any professional area required for the project.

The project schedule is provided below.

#	Activity	2005		2006				2007				2008				2009				2010				2011				2012			
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Rosia Mine																														
2	Waste heap extinction	■	■																												
3	Adjustment and maintenance of waste heap monitoring system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
4	Implementation and maintenance of urgent extinction and self-ignition prevention system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
5	1/3 Novohrodivska Mine																														
6	Waste heap extinction	■	■																												
7	Adjustment and maintenance of waste heap monitoring system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
8	Implementation and maintenance of urgent extinction and self-ignition prevention system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
9	Implementation of measures to increase energy efficiency of coal mining																			■	■	■	■	■	■	■	■	■	■	■	■
10	Kurakhivska Mine																														
11	Waste heap extinction	■	■																												
12	Adjustment and maintenance of waste heap monitoring system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
13	Implementation and maintenance of urgent extinction and self-ignition prevention system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
14	Implementation of measures to increase energy efficiency of coal mining																			■	■	■	■	■	■	■	■	■	■	■	■
15	Ukraina Mine																														
16	Waste heap extinction	■	■																												
17	Adjustment and maintenance of waste heap monitoring system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
18	Implementation and maintenance of urgent extinction and self-ignition prevention system	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
19	Implementation of measures to increase energy efficiency of coal mining																			■	■	■	■	■	■	■	■	■	■	■	■

A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances:

Pre-project condition of the manufacturing at SE "Selidovugol" was rather unsatisfactory. Most equipment was obsolete and worn-out because it was installed back in Soviet times. Thus, it was low-efficient and consumed a lot of energy resources per unit of output. Taking into account the current practice, such equipment is capable of operation for another 20 years with timely repairs. Limited financing and a lack of long-term industry development plan made the modernization of technological processes economically not feasible and risky. Legislatively, operations at SE "Selidovugol" meet the requirements of the state standards. Ukraine has not developed any system of dotations or incentives for GHG eission reduction to encourage the producers to implement similar project activities.

Thus, without the JI project, modernization of technological equipment and prevention of waste heap from burning would be unlikely, which would cause high energy resource consumption and high GHG emissions into the atmosphere.

Project activity is aimed at the reduction of energy consumption by modernization of technological equipment involved in the manufacturing of products measured in tonnes, by implementation of innovative energy-efficient and energy-saving equipment and technologies.

The project is unlikely to be implemented without the JI mechanism, which is a strong additional incentive. This is caused by the following:
– GHG emission restrictions are absent and not expected to be implemented until 2012 at the earliest;
– Implementation of the project activity requires considerable investments into the mining industry, which is associated with financial risks and risks due to application of new technology. The project is not attractive enough in terms of investment without the income from sales of emission reduction units (ERUs).

The project scenario provides for the completion of all waste heap extinction activities and adjustment of waste heap monitoring system by the end of 2005. Therefore, GHG emission reductions are estimated for the period starting January 1, 2006.

A.4.3.1. Estimated amount of emission reductions over the crediting period:

In the course of Project implementation the following emission reductions will be achieved at each Project stage:

Table 1. Estimated emission reductions for the period preceding the first commitment period (2006-2007)

	Years
Length before the crediting period	4
Years	Estimate of annual emission reductions in tonnes of CO_2 equivalent
2006	696 908
2007	696 908
Total estimated emission reductions before the crediting period (tonnes of CO_2 equivalent)	**1 393 816**
Annual average of estimated emission reductions before the crediting period (tonnes of CO_2 equivalent)	**696 908**

Table 2. Estimated emission reductions for the first commitment period (2008-2012)

	Years
Length of the crediting period	5
Years	Estimate of annual emission reductions in tonnes of CO_2 equivalent
2008	696 908
2009	696 908
2010	739 127
2011	776 511
2012	776 511
Total estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	**3 685 965**
Annual average of estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	**737 193**

Table 3. Estimated emission reductions for the period following the first commitment period (2013-2020)

	Years
Length after the crediting period	8
Years	Estimate of annual emission reductions in tonnes of CO_2 equivalent
2013	776 511
2014	776 511
2015	776 511
2016	776 511
2017	776 511
2018	776 511
2019	776 511
2020	776 511
Total estimated emission reductions after the crediting period (tonnes of CO_2 equivalent)	**6 212 088**
Annual average of estimated emission reductions after the crediting period (tonnes of CO_2 equivalent)	**776 511**

For more details refer to Supporting Document 1.

For the description of the formulae used for calculation of emission reductions see Section D.1.4.

A.5. Project approval by the Parties involved:

The project has been supported by a Ukrainian Government representative, namely the State Environmental Investment Agency of Ukraine that issued Letter of Endorsement No. 2364/23/7 dated 28/08/2012 for the Joint Implementation project. Thus, organizational risks are minimal.

Upon receiving of the Determination Report from an Accredited Independent Entity, the project design document (PDD) and the Determination Report will be submitted to the State Environmental Investment Agency of Ukraine and to an authorized entity of the country where another project participant is registered to obtain Letters of Approval.

SECTION B. Baseline scenario

B.1. Description and justification of the baseline chosen:

None of the existing methodologies can be applied for the proposed project aimed at the reduction of energy consumption and the implementation of waste heap condition monitoring and prompt extinction programmes and, as a result, at the reduction of greenhouse gases emissions, at SE "Selidovugol". The project participant has chosen a JI-specific approach in accordance with paragraph 9 (a) of the "Guidance on criteria for baseline setting and monitoring", Version 03.

The baseline provides for the continuation of the popular practice of waste dumping into heaps which burn and cause GHG emissions into the atmosphere. Specific energy consumption for technological needs would remain stable, which would cause the same level of GHG emissions as in the pre-project period. The baseline envisages the continuation of the existing practice on waste heaps monitoring and extinction if burning spots are detected, in accordance with NPAOP 10.0-5.21-04 "Manual on self-ignition prevention, extinction and demolition of waste heaps". However, these activities proved to be ineffective, which is evidenced by annual temperature surveys detecting recurrent hot spots in a waste heap. Since waste heaps consist of coal (10-15%), its combustion is accompanied by a great amount of emissions of GHGs and other pollutants into the atmosphere.

Studying of the baseline shall be performed for each year in which emission reductions were traded, in order to adjust the ratios influencing the baseline. The detailed information is presented in Section D.

A stepwise approach was chosen to describe and justify the baseline:

Step 1. Identification and description of the approach chosen to establish the baseline.

The proposed project applies a JI-specific approach based on the JI Guidance on criteria for baseline setting and monitoring, Version 03[9], which meets with the requirements of Decision 9/CMP.1, Appendix B of the "Criteria for baseline setting and monitoring".

The baseline is established by selecting the most plausible scenario from the list and description of plausible future scenarios based on conservative assumptions.

The following steps were made to determine the most plausible baseline scenario:
1. Identification of plausible alternatives that could be the baseline scenario
2. Justification of exclusion from consideration of alternatives, which are unlikely to take place from a technical and / or economic point of view.

To set the baseline scenario and further development of additionality justification in Section B.2. the following was taken into account:
- State policy and applicable law in the mining sector;
- Economic situation in the mining sector of Ukraine and demand forecast for its products;
- Technical aspects of the enterprise's equipment managing and operation;
- Availability of capital (including investment barriers);
- Local availability of technology / equipment;
- Price and availability of fuel.

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[9] http://ji.unfccc.int/Ref/Documents/Baseline_setting_and_monitoring.pdf

In addition, uncertaintly of ERU generation possibility due to lower activity beyond the project boundary or due to force-majeure circumstances is also taken into account, using conservative assumptions.

Step 2. Application of the approach chosen.
The choice of the plausible baseline scenario is based on assessment of coal mining technology alternatives, which potentially could occur.
These alternatives are the following:

Alternative 1.1: Continuation of the current situation, without the JI project implementation.
Alternative 1.2: Proposed project activity without the use of the JI mechanism.
Alternative 1.3: Partial project activities (some of the project activities are implemented) without the use of the Joint Implementation Mechanism.
The detailed analysis of each alternative follows.
All of these *Alternatives* comply with the requirements of the legislation of Ukraine.

Alternative 1.1
Continuation of the existing practice with minimum repairs against the general worsening of technological complex.
Condition of the mining industry in Ukraine.
The condition and development trends of Ukraine's mining industry are rather unsatisfactory.
The technological level of Ukrainian mines is very poor, which makes the coal quality low and its production costs high, leading to low competitiveness of the product in global markets and causing high energy consumption per unit of output.
Since Ukraine became independent, the energy industry in general and coal mining in particular are in a state of crisis. The Government of Ukraine elaborated the "Development program for coal industry and social sphere of mining regions till 2005" (the program "Coal" approved by the Decree of the Cabinet of Ministers in March 1994[10]) in order to fight the crisis in the industry. The program envisaged an expansion of production capacity at a number of mines; implementation of innovative technologies, general technological upgrade in coal mining industry, social improvements in mining regions and higher coal production. The program failed almost in every line. That was mainly because the program did not take account of a complex approach to coal industry restructuring and modernization, as well as peculiarities of transitive stage in economy and market system of that time, which lead to an obvious failure. Regional mining output dropped by a quarter, and coal production lost 40%. Another attempt to make it work was made in 1996 by the President of Ukraine who issued the Decree "On restructuring of coal industry" [11] intended to liquidate coal production companies with no prospects, to give stronger financial support to the industry, to ensure social security for the workers who retire, to allow coal mine privatisation and high competitiveness of coal market. In fact, only mines were liquidated, with other targets not achieved because of fund diversion schemes. Before the program "Coal" was completed, the Cabinet of Ministers approved the next one in September 2001. The new program, "Ukrainian coal" [12], stipulated a rise in the quality of miners' output, growth of production capacity, decrease in production costs and other moves meant to upgrade coal production equipment. Some of the previous mistakes were repeated though. Specifically, the approach to the industry modernization was again incomprehensive,

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[10] http://zakon2.rada.gov.ua/laws/show/141-94-%D0%BF/page

[11] http://search.ligazakon.ua/l_doc2.nsf/link1/U116_96.html

[12] http://zakon2.rada.gov.ua/laws/show/1205-2001-п

which made the program unsuccessful. Particularly, coal production was 30% below the expected level, the material's ash content was 7 points higher than planned, production costs – 87.6% higher, price – 80% higher, and losses increased by a factor of three. During the following ten years, the Ukrainian government was trying to find an acceptable solution for backing the loss-making mines. In August 2003, the Cabinet of Ministers approved the procedure of providing financial support to coal miners by allocating budget funds for covering part of production costs and for construction and upgrade of coal production facilities. The funds were to be used for lowering production costs and improving performance. The support procedure was repeatedly revised, but its basic principle – allocation of funds to cover part of production costs commensurately with mines' losses – was not changed. The effect was that coal producers aimed to retain their right for getting money from the government by staying unprofitable, rather than to look for reserves, develop production facilities through modernization, innovative technologies, or daring management and organizational decisions. Several bills have been passed and programs launched since then, but the industry is still suffering the crisis that started the year when Ukraine achieved independence.

SE "Selidovugol" faces the same situation as the whole coal industry does. Up to 80% of technological equipment currently in operation at the plant is obsolete and worn-out, being over 30 years old. However, the long payback period and high value make equipment modernization and introduction of new technologies at SE "Selidovugol" an unattractive investment, as the miner's economic position is weak. The experience suggests that, if repaired regularly, the existing facilities can run for 15-20 more years, even though the efficiency is low. The above shows that Ukraine has created no effective lawful tools to prompt modernization of technological and technical state of the industry, which means companies do not pay much attention to such matters as energy efficiency, production upgrade and reduction of environmental pollution.

The Ukrainian government has adopted no effective action to develop coal industry by now, but it is probable that in the short term, as against the period the project has been carried out for, the country will not produce less coal than planned, considering that coal industry has always been taken as a guarantee that the country will not depend on foreign energy resources. If the output declines, which is unlikely though, ERU generation might drop at the company due to the factors that are beyond the project boundary. In case of a force majeure, Ukraine will primarily focus on minimizing its impact on local coal industry.

There are measures that, while carrying out its usual operations, SE "Selidovugol" can take to avoid declaring a force majeure and thus suspending production, as well as measures to eliminate the effect of a probable force majeure.

This Alternative is the most plausible baseline scenario because it:

- ensures the production volume is large enough due to the increased use of relatively available energy resources;
- requires no investment into new technological equipment.

Consequently, *Alternative 1.1* can be considered the most plausible baseline.

Alternative 1.2

Proposed project activity without the use of the JI mechanism.

There are two obstacles in this case: investment (for more details see Section B.2), as this scenario implies additional serious financing, a very long payback period and high risks, and thus is unattractive; the second is technology, as the use of new modern equipment calls for additional staff re-training, which is also money spent. Equipment modernization aimed at improving energy efficiency at mining companies, particularly those extracting coal, is not a usual practice in Ukraine.

This Alternative is the least plausible baseline scenario, as it needs investments made into new technological equipment and means there is no skilled staff to service the equipment, so *Alternative 1.2* cannot be seen as a plausible baseline.

The choice of the plausible baseline scenario is based on assessment of coal mining alternatives, which potentially could occur as of early 2005.

Alternative 1.3: Partial implementation of the project (only some of project activities implemented) without the use of the JI mechanism.
This alternative provides for the exclusion of some project implementation measures from the project boundary such as modernization of air ventilation system, boiler equipment, etc. Being a complex system, the new technology requires a complex approach to modernization, since partial implementation would not ensure good energy efficiency results and a major decrease in fuel consumption. Besides, *Alternative 1.3* requires investments into new technological equipment and is characterized by a lack of qualified servicing personnel, therefore *Alternative 1.3* cannot be considered a plausible baseline.

The analysis of the above alternatives shows that *Alternative 1.1* is the most plausible one.

The results of the investment analysis in Section B.2. show that *Alternative 1.2* and *Alternative 1.3* cannot be seen as the most attractive one as regards financing. The analysis carried out in accordance with the "Tool for the demonstration and assessment of additionality" (Version 06.0.0) [13] in Section B.2. shows that the project is additional.

Baseline scenario description
The baseline scenario provides for the continuation of the current practice with minimum repairs against general worsening of the technological manufacturing complex. Waste heaps (2 units) would continue burning due to ineffective monitoring and extinction, which would entail big amounts of GHG emissions into the atmosphere.
To develop the baseline scenario stipulating at the enterprise if no project activity is undertaken, the data on coal volumes produced was used, as well as that on consumption of electricity and mineral fuel during the historical period. The pre-project efficiency rate was calculated as the average specific electricity and fossil fuel consumption per unit of manufacture over the three years of the above historical period. The calculation of the pre-project efficiency coefficient for three years is used for conservatism reasons, in order to rule out accidental downturns or upturns in efficiency caused by external factors in one particular year of the period. Applying the pre-project efficiency coefficient, GHG volumes emitted (which can happen if the project is not implemented) during production are calculated for each particular monitoring year.
To work out the baseline scenario stipulating that no project activity is done at waste heaps, passport data on the heap was used, particularly apparent density and volume as well as the data on coal part in the heap by weight. If no project activity is undertaken, the waste heaps would continue burning, which would entail big amounts of GHG emissions into the atmosphere.

For detailed algorithm of baseline emissions calculation see below and in Section D.

Greenhouse gases emissions in the Baseline scenario

[13] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.0.0.pdf

Description of formulae to calculate GHG emissions in the baseline scenario is provided below:

Greenhouse gas emissions in the baseline scenario according to a JI specific approach are calculated according to the formula:

$$BE_y = \sum_i (BE^b_{en,i,y} + BE^b_{dump,i,y}) \qquad \text{(B1)}$$

BE_y	-	total GHG emissions in monitoring period *y*, t CO_2eq;
$BE^b_{en,i,y}$	-	baseline GHG emissions from energy carrier consumption in the course of technological procedures of coal mining at mine *i* in monitoring period *y* of the baseline scenario, t CO_2eq;
$BE^b_{dump,i,y}$	-	baseline GHG emissions from waste heap burning at mines *i* in monitoring period *y* of the baseline scenario, t CO_2eq;
$[en]$	-	index for energy carrier consumption during coal mining procedures at SE "Selidovugol";
$[i]$	-	index for particular mine;
$[dump]$	-	index for waste heaps;
$[y]$	-	index for monitoring period;
$[b]$	-	index for baseline scenario.

$$BE^b_{en,i,y} = P_{i,y} \cdot SEF^b_{i,j} \qquad \text{(B2)}$$

$P_{i,y}$	-	total coal production at mine *i* in monitoring period *y*, t;
$SEF^b_{i,j}$	-	pre-project GHG emissions from energy carrier consumption in the course of coal mining at mine *i*, t CO_2eq/t;
$[en]$	-	index for energy carrier consumption during coal mining procedures at SE "Selidovugol";
$[i]$	-	index for particular mine;
$[j]$	-	index for historical period;
$[y]$	-	index for monitoring period;
$[b]$	-	index for baseline scenario.

$$SEF^b_{i,j} = \frac{\sum_j BE^b_{i,j} / P^b_{i,j}}{3} \qquad \text{(B3)}$$

$BE^b_{i,j}$	-	total GHG emissions in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, t CO_2eq;
$P^b_{i,j}$	-	total coal production at mine *i* in historical period *j* of the baseline scenario, t;
3	-	number of years in the historical period;
$[i]$	-	index for particular mine;
$[j]$	-	index for historical period;
$[b]$		index for baseline scenario.

$$BE^{b}_{i,j} = BE^{b}_{elec,i,j} + BE^{b}_{coal,i,j} \quad \text{(B4)}$$

$BE^{b}_{elec,i,j}$ - GHG emissions from electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, tCO_2eq;

$BE^{b}_{coal,i,j}$ - GHG emissions from coal consumption at mine *i* in historical period *j* of the baseline scenario, tCO_2eq;

$[elec]$ - index for electricity consumption;

$[coal]$ - index for coal consumption;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$BE^{b}_{elec,i,j} = EC^{b}_{i,j} \cdot EF^{b}_{CO2,elec,j} \quad \text{(B5)}$$

$EC^{b}_{i,j}$ - electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, MWh;

$EF^{b}_{CO2,elec,j}$ - carbon dioxide emission factor for electricity consumption by consumers in historical period *j* of the baseline scenario, t CO_2/MWh;

$[CO2]$ - index for carbon dioxide;

$[elec]$ - index for electricity consumption;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$BE^{b}_{coal,i,j} = FC^{b}_{coal,i,j} \cdot NCV^{b}_{coal,j} \cdot EF^{b}_{CO2,coal,j} / 1000 \quad \text{(B6)}$$

$FC^{b}_{coal,i,j}$ - total coal consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, t;

$NCV^{b}_{coal,j}$ - net calorific value of coal in historical period *j* of the baseline scenario, TJ/ths t;

$EF^{b}_{CO_2,coal,j}$ - - default carbon dioxide emission factor for stationary coal combustion in historical period *j* of the baseline scenario, t CO_2/TJ;

$[coal]$ - index for coal consumption;

$[CO2]$ - index for carbon dioxide;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$EF^{b}_{CO2,coal,j} = EF^{b}_{C,coal,j} \cdot OXID^{b}_{coal,j} \cdot 44/12, \quad \text{(B7)}$$

$EF^{b}_{C,coal,j}$ - carbon emission factor for coal combustion in historical period *j* of the baseline scenario, t CO_2/TJ;

$OXID^{b}_{coal,j}$	-	carbon oxidation factor for coal combustion in historical period *j* of the baseline scenario, relative units;
$44/12$	-	stoichiometric ratio of carbon dioxide and carbon molecular weight, t CO_2/t C;
$[coal]$	-	index for coal consumption;
$[CO2]$	-	index for carbon dioxide;
$[C]$	-	index for carbon;
$[j]$	-	index for historical period;
$[b]$	-	index for baseline scenario.

$$BE^{b}_{dump,i,y} = \sum_{m=1}^{12} \frac{FC_{coal,dump,i} \cdot NCV_{coal,dump,y} \cdot k^{b}_{m,i,y} \cdot EF_{CO2,coal,dump,y}}{180*1000} \quad (B8)$$

$FC_{coal,dump,i}$	-	total amount of coal in a waste heap as of the beginning of extinction works at mine *i*, t;
$NCV_{coal,dump,y}$	-	net calorific value of coal in monitoring period *y* of the baseline scenario, TJ/ths t;
$EF_{CO2,coal,dump,y}$	-	default carbon dioxide emission factor for stationary coal combustion in monitoring period *y* of the baseline scenario, t CO_2/TJ;
$k^{b}_{m,i,y}$	-	waste heap combustion factor at mine *i* for month m of year y (if waste heap combustion was detected in the reporting month, it is assumed that k=1, if the combustion was not detected, as provided by the project, it is assumed that k=0. Since the waste heap continues to burn under the baseline scenario, k=1 for all months of the monitoring period);
$[dump]$	-	index for waste heap;
$[CO2]$	-	index for carbon dioxide;
$[i]$	-	index for particular mine;
$[coal]$		index for coal.
$[m]$		index for the sequence number of month, year *y*.
$[y]$	-	index for monitoring period;
$[b]$	-	index for baseline scenario.

$$FC_{coal,dump,i} = V_i \cdot \rho_i \cdot c \; ; \quad (B9)$$

$FC_{coal,dump,i}$	-	total amount of coal in a waste heap at mine *i* as of the beginning of extinction works, t;
V_i	-	waste heap volume at mine *i*, m^3;
c	-	coal content in a waste heap, %;
ρ_i	-	waste heap density at mine *i*,t/m^3;
$[dump]$	-	index for waste heap;
$[i]$	-	index for particular mine;
$[coal]$		index for coal.

or:

$$FC_{coal,dump,i} = m_i \cdot c\ ; \qquad (B10)$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap at mine *i* as of the beginning of extinction works, t;

m_i - waste heap mass at mine *i*, t;

c - coal content in a waste heap, %;

$[dump]$ - index for waste heap;

$[i]$ - index for particular mine;

$[coal]$ index for coal.

Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$P_{i,y}$
Data unit	t
Description	total coal production total coal production at mine *i* in monitoring period *y*
Time of determination/monitoring	Information on coal production is daily collected from mines and these data form a basis for the annual report
Source of data (to be) used	Daily run-of-mine coal production logs
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Coal production is measured in accordance with the “Manual on measurement of run-of-mine coal production” No.466 dated 17/09/1996.
QA/QC procedures (to be) applied	Coal production is measured in accordance with the requirements of the current legislation and industry regulations
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$EC^b_{i,j}$
Data unit	MWh
Description	electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario
Time of determination/monitoring	Based on the monthly report, the annual electricity consumption report is drawn up
Source of data (to be) used	Meter readings from each mine
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Measurements are performed with meters subject to regular verification in accordance with the current legislation
QA/QC procedures (to be) applied	Meter readings are under the permanent control since they are used in electricity billing transactions.

Comments	Data will be archived in paper and electronic format.

Data / Parameter	$FC^{b}_{coal,i,j}$
Data unit	t
Description	total coal consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario
Time of determination/monitoring	Monthly
Source of data (to be) used	Company data
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data based on coal purchase amount
QA/QC procedures (to be) applied	Data are under the permanent control since they are used in coal billing transactions.
Comments	Data will be archived in paper format.

Data / Parameter	$P^{b}_{i,j}$
Data unit	t
Description	total coal production at mine *i* in historical period *j* of the baseline scenario
Time of determination/monitoring	Information on coal production is daily collected from mines and these data form a basis for the annual report
Source of data (to be) used	Daily run-of-mine coal production logs
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Coal production is measured in accordance with the "Manual on measurement of run-of-mine coal production" No.466 dated 17/09/1996.
QA/QC procedures (to be) applied	Coal production is measured in accordance with the requirements of the current legislation and industry regulations
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$EF^{b}_{CO2,elec,j}$
Data unit	t CO_2eq/MWh
Description	carbon dioxide emission factor for electricity consumption by consumers in historical period *j* of the baseline scenario
Time of determination/monitoring	Throughout the crediting period
Source of data (to be) used	Carbon dioxide emission factors for electricity consumption by

	consumers for the period before 2005 are sourced from the Operational Guidelines for Project Design Documents of Joint Implementation Projects, Volume 1: General guidelines (ERUPT);[14]
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data selected in accordance with IPCC recommendations
QA/QC procedures (to be) applied	If other carbon dioxide emission factors are adopted for Ukraine, the baseline will be recalculated in accordance with the monitoring plan.
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$NCV^{b}_{coal,j}$
Data unit	TJ/ths t
Description	net calorific value of coal in historical period *j* of the baseline scenario
Time of determination/monitoring	Monthly
Source of data (to be) used	"National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010"[15]
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data selected in accordance with IPCC recommendations
QA/QC procedures (to be) applied	All measurements are conducted in accordance with the current legislation.
Comments	Data will be archived in paper format.

Data / Parameter	$NCV_{coal,dump,y}$
Data unit	TJ/ths t
Description	net calorific value of coal in monitoring period *y* of the baseline scenario
Time of determination/monitoring	Throughout the crediting period
Source of data (to be) used	"National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010"[16]

[14] http://ji.unfccc.int/CallForInputs/BaselineSettingMonitoring/ERUPT/index.html

[15] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data selected in accordance with IPCC recommendations
QA/QC procedures (to be) applied	In accordance with IPCC recommendations
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$EF_{CO2,coal,dump,y}$
Data unit	t CO_2/TJ
Description	CO_2 emission factor for coal combustion in monitoring period *y* of the baseline scenario
Time of determination/monitoring	Throughout the crediting period
Source of data (to be) used	"National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010"[17]
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data selected in accordance with IPCC recommendations
QA/QC procedures (to be) applied	In accordance with IPCC recommendations
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$EF^{b}_{C,coal,j}$
Data unit	t C/TJ
Description	carbon emission factor for coal combustion in historical period *j* of the baseline scenario
Time of determination/monitoring	Throughout the crediting period
Source of data (to be) used	"National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010"[18]

[16] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[17] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data selected in accordance with IPCC recommendations
QA/QC procedures (to be) applied	In accordance with IPCC recommendations
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	$OXID^{b}_{coal,j}$
Data unit	Relative units
Description	carbon oxidation factor for coal combustion in historical period *j* of the baseline scenario
Time of determination/monitoring	Throughout the crediting period
Source of data (to be) used	"National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010"[19]
Value of data applied (for ex ante calculations/determinations)	See Supporting Document 1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data selected in accordance with IPCC recommendations
QA/QC procedures (to be) applied	In accordance with IPCC recommendations
Comments	Data and parameters used for GHG emission calculation in the baseline scenario:

Data / Parameter	m_i
Data unit	t
Description	waste heap mass at mine *i*
Time of determination/monitoring	Once at the beginning of the project
Source of data (to be) used	Inventory of production waste
Value of data applied (for ex ante calculations/determinations)	The value differs for each waste heap at each mine

[18] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[19] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data were collected by the scheme in effect within the company
QA/QC procedures (to be) applied	Controlled by the Technical Control Department
Comments	In order to ensure conservativeness of emission calculations we can assume that the mass of waste heap does not increase during the project, but stays at the level when project started. If there are no data on the waste heap, the calculation is based on volume and density

Data / Parameter	V_i
Data unit	m^3
Description	waste heap volume at mine *i*
Time of determination/monitoring	Once at the beginning of the project
Source of data (to be) used	Waste heap passport
Value of data applied (for ex ante calculations/determinations)	The value differs for each waste heap at each mine
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data were collected by the scheme in effect within the company
QA/QC procedures (to be) applied	Controlled by the Technical Control Department
Comments	In order to ensure conservativeness of emission calculations we can assume that the volume of waste heap does not increase during the project, but stays at the level when project started.

Data / Parameter	*c*
Data unit	Relative units
Description	coal content in a waste heap
Time of determination/monitoring	Once at the beginning of the project
Source of data (to be) used	ENVSEC: GRID Arendal "Risk Assessment Considerations in the Donetsk Basin" [20]
Value of data applied (for ex ante calculations/determinations)	0.1
Justification of the choice of data or description of measurement methods and	The data were applied in the determined UA1000317 JI project[21]

[20] http://www.envsec.org/publications/Risk%20Assessment%20Considerations%20in%20the%20Donetsk%20Basin%20Report_RUS.pdf

[21] http://ji.unfccc.int/JIITLProject/DB/0RQXGLUAS7ETAGMUQZWFQPJLN1SIAW/details

procedures (to be) applied	
QA/QC procedures (to be) applied	N/A
Comments	The data are used in calculation of coal in waste heap an further calculation of GHG emissions during waste heap burning in th baseline scenario

Data / Parameter	ρ_i
Data unit	t/m^3
Description	waste heap density at mine *i*
Time of determination/monitoring	Once at the beginning of the project
Source of data (to be) used	Waste heap passport
Value of data applied (for ex ante calculations/determinations)	The value differs for each waste heap at each mine
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data were collected by the scheme in effect within the company
QA/QC procedures (to be) applied	Controlled by the Technical Control Department
Comments	In order to ensure conservativeness of emission calculations we can assume that the density of waste heap does not increase during the project, but stays at the level when project started.

Data / Parameter	$k^{b}_{m,i,y}$
Data unit	N/A
Description	waste heap combustion factor at mine *i* in month *m* year *y*
Time of determination/monitoring	Monthly
Source of data (to be) used	Waste heap passport
Value of data applied (for ex ante calculations/determinations)	1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Data on waste heap condition based on pre-project temperature surveys
QA/QC procedures (to be) applied	Temperature surveys were conducted in line with NPAOP 10.0-5.21-04 Manual on self-ignition prevention, extinction and demolition of waste heaps using modern antipyrogenous materials[22]
Comments	Current practice shows that activities carried out in Donetsk mines to prevent waste heap self-ignition and to extinguish hot

[22] http://dnop.com.ua/dnaop/act2799.htm

	spots are ineffective due to a lack of incentives and financial resources.

B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced in regard to those that would have occurred in the absence of the JI project:

Anthropogenic greenhouse gas emissions in the project scenario will decrease due to complex modernization of operations, implementation of energy-efficient and energy-saving equipment, implementation of permanent waste heap monitoring and extinction technologies at SE "Selidovugol" mines.
Implementation of these activities will considerably reduce fuel and energy resources consumption during production, entailing a reduction of greenhouse gas emissions into the atmosphere.

Additionality of the project

Additionality of the project activity is demonstrated and assessed below using the "Tools for the demonstration and assessment of additionality"[23] (Version 06.0.0). This tool was originally developed for CDM projects but it is also applicable to JI projects.

Step 1. Identification of alternatives to the project activity and their consistency with current laws and regulations

Sub-step 1a. Definition of alternatives to the project activity

There are three alternatives to this project (which have already been discussed in Section B.1 above):

Alternative 1. Continuation of the current situation, without the JI project implementation.

Alternative 2: Proposed project activity without the use of the JI mechanism.

Alternative 3. Partial project activities (some of the project activities are implemented) without the use of the Joint Implementation Mechanism.

Sub-Step 1b. Consistency of the alternatives with mandatory laws and regulations

Pursuant to the Law of Ukraine "On approval of safety rules in coal mines", [24]waste heaps are considered potential pollutant sources. In a general case, ignited waste heaps should be extinguished and future ignition prevention measures should be taken, as stated in the Coal Mines Safety Rules. The document has weak effectiveness, so the relationship is in most cases regulated by the Code of Administrative Offences of Ukraine providing for mere insignificant penalties[25]. However, taking account of the large number of waste heaps and their large sizes, combined with limited financial resources of their owners, the latter usually do not even carry out the necessary waste heap monitoring. Even when a hot spot is detected, the owners prefer paying a penalty for atmospheric pollution rather than taking extinction measures. Burning waste heaps are rather common occurrences and the situation is unlikely to improve in the near future. The experts believe the permanent lack of financing made the waste heap monitoring system in Ukraine totally ineffective.

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23 http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v 06.0.0.pdf

24 http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=z0398-10

25 http://zakon2.rada.gov.ua/laws/show/80731-10

Under such circumstances, it is obvious that the identified alternatives are consistent with the current legislation and standards of Ukraine.

Alternative 1: Continuation of the existing practice with minimum repairs against the general worsening of technological complex is the most realistic and plausible alternative to Project implementation, being associated with minimum financial investments.

Alternative 2: Proposed project activity without the use of the JI mechanism.

SE "Selidovugol" did not conduct major activities on modernization of energy-consuming equipment and waste heap extinction technology. Moreover, SE "Selidovugol" has neither incentives nor means of implementation of activities provided for by the JI project, other than income within the mechanism established by p.6 of the Kyoto Protocol to the UN Framework Convention on Climate Change, so *Alternative 2* cannot be considered a plausible baseline.

Alternative 3: Partial implementation of the project (only some of project activities implemented) without the use of the JI mechanism.

Alternative 3 provides for the exclusion of some project implementation measures from the project boundary. Being a complex system, coal mining requires a complex approach to modernization, since partial implementation would not ensure a major decrease in fuel and energy consumption. Besides, *Alternative 3* requires investments into new technological equipment and is characterized by a lack of qualified servicing personnel; therefore *Alternative 3* cannot be considered a plausible baseline. At the same time, implementation of the waste heap monitoring and urgent extinction programs brings no profit to the company, but calls for heavy expenditure. Without the JI mechanism, project implementation is unprofitable for SE "Selidovugol" and therefore unlikely. Thus, *Alternative 3* cannot be considered a plausible baseline.

Outcome of Sub-step 1b. Under such circumstances, it is believed that all the scenarios are consistent with current laws and regulatory acts.

Therefore, Step 1 is satisfied.

According to the "Tool for the demonstration and assessment of additionality"[26] (Version 06.0.0), further justification of additionality shall be performed by means of investment analysis.

Step 2 – Investment analysis.
The main purpose of investment analysis is to determine whether the proposed project:

(a) is the most economically or financially attractive, or
(b) is economically or financially feasible without income from the sale of emission reduction units (ERUs) related to the JI project.

Sub-step 2a - Determination of appropriate analysis method.
There are three methods used for investment analysis:

- a simple cost analysis (Option I);
- an investment comparison analysis (Option II); and
- a benchmark analysis (Option III).

[26] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v 06.0.0.pdf

If the project activities and alternatives identified in Step 1 generate no financial or economic benefits other than JI related income, then the simple cost analysis (Option I) is applied. Otherwise, the investment comparison analysis (Option II) or the benchmark analysis (Option III) are used.
Additionality guidelines can perform comparative investment analysis, which compares the relevant financial performance for the most realistic and viable investment alternatives (Option II), or analyzes using baseline (Option III). Based on the key areas of project activities to reduce GHG emissions in the atmosphere for this project will correctly apply different methods of analysis, namely:

a) Analysis of investments in the company using baselines another version III, in accordance with the instructions of the "Tool for the demonstration and assessment of additionality", which takes into account the comprehensive modernization of technological equipment (subproject A).
b) Analysis of investments in the company using the simple cost analysis Alternates I, in accordance with the instructions of the "Tool for the demonstration and assessment of additionality", which takes into account stewing waste heaps SE "Selidovugol" (subproject B).
c) Analysis of investments in the company using the simple cost analysis Alternates I, in accordance with the instructions of the "Tool for the demonstration and assessment of additionality", which takes into account the implementation of continuous monitoring and technology stewing waste heaps SE "Selidovugol" (subproject C).

Enterprise in sub B and C receives no other financial or economic benefits other than income associated with JI.

Sub-step 2b – Benchmark analysis

The proposed project “Implementation of the energy efficiency measures and reduction of greenhouse gas emissions into the atmosphere at State Enterprise “Selidovugol” will be implemented by the project participant SE “Selidovugol”. The approach proposed in paragraph 6 (a) of the Additionality guidelines provides for using a discount rate that is determined by considering the weighted average cost of capital (WACC). WACC is calculated as a weighted average cost of own and debt capital. Since details on financing structure are not available, the structure of capital is taken in the form of 50% of own and 50% of debt capital, in accordance with paragraph 18 of the "Guidelines on the assessment of investment analysis” ver. 05[27], the cost of own capital is calculated as the sum of risk-free rate (3%)[28], the risk premium on investment in own capital (6.5%)[29] and country risk (6.75%)[30]. Thus, the cost of own capital is 16.25%. The cost of own capital is estimated at the average cost of credit in foreign currency as of 2004 according to the NBU, which was 12.2%[31]. The nominal discount rate (WACC) equals to 14.2%. Cash flow is adjusted by inflation index for eurozone (2.1%)[32]. The project requires investment of more than 3.65 million EUR (NBU rate) [33], including:

- Sub-project A requires investment of more than 2.612 million EUR.
- Sub-project B requires investment of more than 209 thousand EUR.

[27] http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf

[28] http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf

[29] http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf

[30] http://pages.stern.nyu.edu/~adamodar/pc/archives/ctryprem04.xls

[31] http://www.bank.gov.ua/doccatalog/document?id=36525

[32] http://www.finfacts.ie/inflation.htm

[33] http://www.bank.gov.ua/control/uk/curmetal/currency/search?formType=searchPeriodForm&time_step=daily&currency=196&periodStartTime=01.06.2005&periodEndTime=31.06.2005&outer=table&execute=%D0%92%D0%B8%D0%BA%D0%BE%D0%BD%D0%B0%D1%82%D0%B8

• Sub-project C requires investment of more than 829 thousand EUR.

Sub-projects B and C require investment costs that do not affect income. So the program of implementation of monitoring and operational extinction of waste heaps brings no economic benefit to the company, but in turn requires large costs unnecessary from a financial point of view. In accordance with the "Tool for the demonstration and assessment of additionality"[34] (Version 06.0.0) common practice analysis is used for sub-projects B and C.

Sub-step 2c – Calculation and comparison of financial indicators.

Financial analysis refers to the time of making investment decisions. The following assumptions were used based on information provided by the company.

The project requires investment of over EUR 3.65 mln. (at the NBU exchange rate)[35];

1. The project lifetime is 15 years 7 months;
2. The residual value is calculated as the result of multiplication of unused resource by initial expenses.

Analysis of cash flow takes into account the cash outflow connected with investment and operating costs[36] and cash inflow associated with the receipt of revenues from the services provided by the enterprise.

Financial indicators of the project are shown in Table 4 below.

Table 4. Financial indicators of the project

Revenues without VAT (ths EUR)	Cash flow (ths EUR)	dr (discount rate)	NPV (ths EUR)	IRR (%)	Residual value (ths EUR)
2 675.813	-1 966.635	14,2%	-204.151	9.76%	1 933.241

The source data on the revenues and expenses of SE “Selidovugol” is information provided by the company. Revenue is calculated as the difference between the cost of the electrical energy that is consumed before the introduction of energy-efficient equipment (based upon 2004- 2009) and the one after installing of equipment. When analysing the cash flow the IRR shows below the established limit level and amounts to 9.76%. As a result, the net present value (NPV) is negative. Therefore the project cannot be considered financially attractive.

Sub-step 2d: Sensitivity analysis

The sensitivity analysis is conducted to confirm whether the conclusions on the financial / economic attractiveness are stable enough for different reasoned variants of the change of baseline conditions.

The account of the following two key factors was taken in the sensitivity analysis: investment and operational costs. According to the Additionality guidelines (Paragraph 17) the sensitivity analysis should be made for key indicators in the range of variation ± 10%.

Revenues from sales of products

	-10%	0%	10%
Operational costs (EUR)	0	0	0

[34] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v06.0.0.pdf

[35] http://www.bank.gov.ua/control/uk/curmetal/currency/search?formType=searchPeriodForm&time_step=daily&currency=196&periodStartTime=01.06.2005&periodEndTime=31.06.2005&outer=table&execute=%D0%92%D0%B8%D0%BA%D0%BE%D0%BD%D0%B0%D1%82%D0%B8

[36] Supporting Document 2

Investment costs of the company (EUR)	2 612 419	2 612 419	2 612 419
Company profit (EUR)	2 408 232	2 675 813	2 943 394
NPV (EUR)	-266 545	-204 151	-141 757
IRR (%)	8.4%	9.8%	11.1%

Investment and operational costs

	-10%	0%	10%
Operational costs (EUR)	0	0	0
Investment costs of the company (EUR)	2 873 661	2 612 419	2 351 177
Company profit (EUR)	2 675 813	2 675 813	2 675 813
NPV (EUR)	-121 342	-204 151	-286 960
IRR (%)	11.3%	9.8%	8.5%

Sensitivity analysis was used to assess the sensitivity of the project to changes that may occur during the project implementation and operation of the integrated coal mining complex. Analysis of changes in revenues for coal mining between -10% and +10% demonstrated that the IRR has a value from 8.4% to 11.1%. Analysis of changes of investment and operational costs between -10% and +10% demonstrated that the IRR has a value from 8.5% to 11.3%. Expenditures that are considered in the framework of the project are high, and their increase will result in a negative NPV. Even the expected price of the investment and the income from the sale of ERUs are unable to make the project viable and it will not bring enough profit even in case of loan financing of the project and even if the aforementioned changes in investment costs occur.

Outcome of Step 2: Sensitivity analysis consistently supports (for a realistic range of assumptions) the conclusion that the project is unlikely to be financially / economically attractive.

Step 3: Barrier analysis
According to the Additionality guidelines, the barrier analysis was not conducted.

Step 4: Common practice analysis

Sub-step 4a. Analysis of other activities similar to the proposed project activity

Analysis of similar activities demonstrated the absence of similar projects in Ukraine, which would be implemented without the JI mechanism.

The existing practice of operation of the existing facilities presented in the baseline option chosen for this Project is the common one for Ukraine. Due to the current practice all the modernization activities and measures to upgrade technological equipment operated in the course of coal production through implementation of more efficient production technologies shall be borne by the enterprise, and SE “Selidovugol” does not have any incentive to implement new equipment and technologies.

Outcome of Sub-step 4a: Since there are no similar projects in Ukraine, there is no need to conduct the analysis of similar project activity.

According to the “Tool for the demonstration and assessment of additionality” [37] (Version 06.0.0), all steps are satisfied although there are some obstacles.

[37] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.0.0.pdf

One of them is additional expenses for the JI project implementation to modernize operations;

The obstacle is associated with the structure of the existing tariffs for products manufactured at SE “Selidovugol”, which does not consider investment in improvement of coal mining complex by creating appropriate conditions for the reduction of GHG emissions. This causes permanent lack of funding and impossibility to conduct timely overhauls, ensure stable operation of equipment and invest into mining industry modernization and development.

We may conclude that the above-mentioned factors might hamper the implementation of the proposed project as well as other alternatives - Partial implementation of the project (only some of project activities implemented) without the use of the JI mechanism.

However, one of the alternatives is continuation of "business as usual" scenario. Since the barriers identified above are directly related to investment in coal mining industry technology upgrade, SE “Selidovugol” has no obstacles for further operation of old coal mining equipment at the previous level. Therefore, the identified obstacles cannot prevent the introduction of at least one alternative scenario - "business as usual."

Conclusion

Based on the above analysis it can be concluded that the project is additional.

B.3. Description of how the definition of the project boundary is applied to the project:

Project implementation will take place at mines and waste heaps in official disposition of SE “Selidovugol”.

There are several greenhouse gases emission sources at the mine:
- non-controlled methane emissions due to mine operation
- CO_2 emissions from electricity consumption at the mine
- CO_2 emissions from coal consumption at the mine

CO_2 emissions from consumption of electricity generated by fossil fuel combustion at Ukrainian ower plants are indirect emissions.

The project boundary includes technological equipment, which is in lawful disposal of SE "Selidovugol" at Rosia Mine, 1/3 Novohrodivska Mine, Kurakhivska Mine, Ukraina Mine and is involved into technological procedures of coal mining and waste heap extinction. It also encompasses the waste heap of Rosia Mine, waste heap No.1 of 1/3 Novohrodivska Mine, waste heap No.3 of 1/3 Novohrodivska Mine, the waste heap of Kurakhivska Mine, and the waste heap of Ukraina Mine, whose parameters are evidenced by passports..

The list of main energy-consuming equipment of Ukraina Mine, Rosia Mine, 1/3 Novohrodivska Mine and Kurakhivska Mine in an amount of 38, 19, 56 and 35 units respectively, as well as the 5 waste heaps, is provided in the "Registry of title documents of SE "Selidovugol" as of 01/06/2012 of the joint implementation Project".

Table B.3.1 provides an overview of all emission sources under the baseline and the project scenario. The project boundary is depicted in accordance with Paragraphs 14, 16, 17 of JISC Guidelines.

Table B.3.1.

	Source	Gas	Included /	Substantiation /explanation

			excluded	
Baseline scenario	Electricity consumption for coal mining	CO_2	**Included**	Indirect emissions. Primary source of emissions
	Electricity consumption for mine operation	CO_2	**Included**	Primary source of emissions
	Methane emissions due to mine operation	CH_4	**Excluded**	Primary source of emissions Project activity is not aimed at reduction of methane emissions from mine gas drainage and, as a result, difference between project and baseline methane emissions will equal to zero, so this source is excluded from calculations.
	Waste heap combustion	CO_2	**Included**	Primary source of emissions
Project scenario	Electricity consumption for coal mining	CO_2	**Included**	Indirect emissions. Primary source of emissions
	Electricity consumption for mine operation	CO_2	**Included**	Primary source of emissions
	Methane emissions due to mine operation	CH_4	**Excluded**	Primary source of emissions Project activity is not aimed at reduction of methane emissions from mine gas drainage and, as a result, difference between project and baseline methane emissions will equal to zero, so this source is excluded from calculations.
	Waste heap combustion	CO_2	**Included**	The project scenario does not provide for emissions from waste heap combustion, but they will be included into the calculation of emission reductions if they occur.

Project boundary for the baseline scenario are represented in a black rectangle in Figure B.3.1.

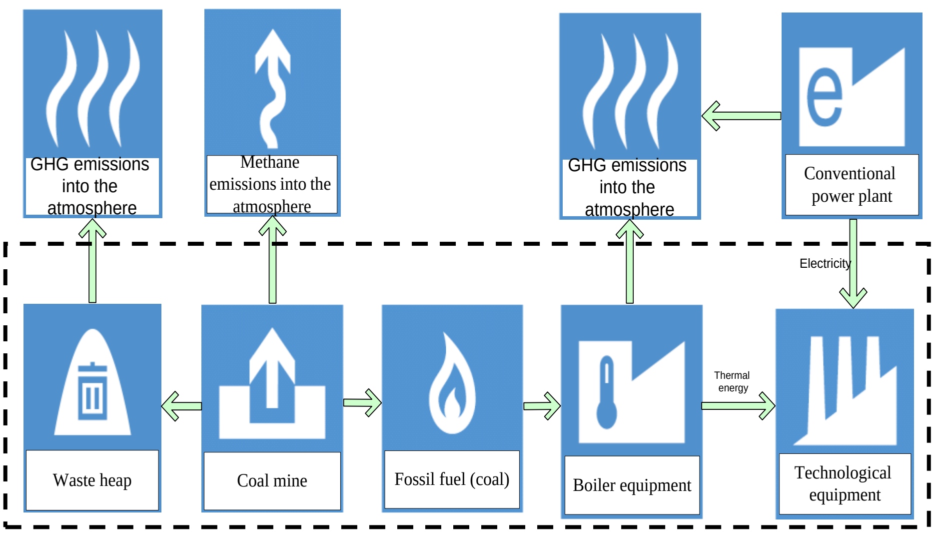

Figure B.3.1.Project boundary for the baseline scenario at SE "Selidovugol"

Project boundary for the project scenario are represented in a black rectangle in Figure B.3.2.

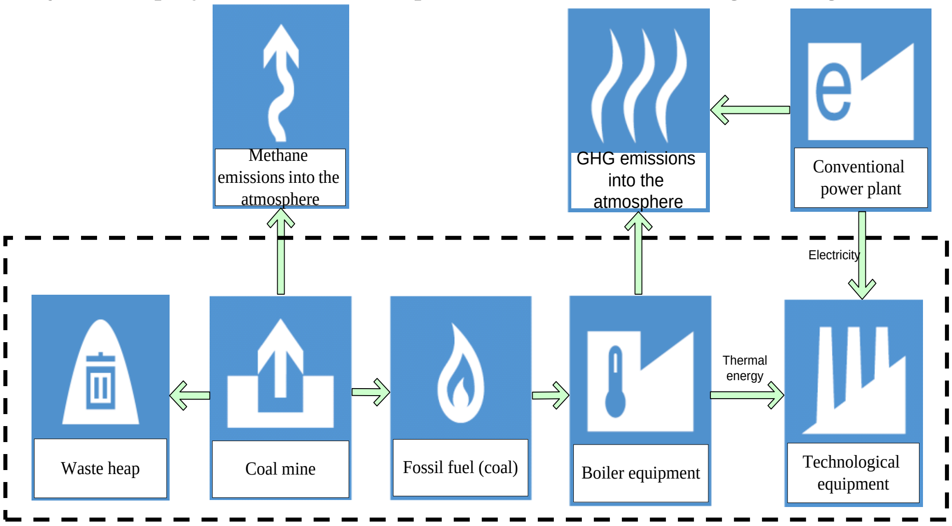

Figure B.3.2.Project boundary for the baseline scenario at SE "Selidovugol"

B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline:

Date of baseline setting: 17/07/2012
The baseline was set by CEP Carbon Emissions Partners S.A. and SE "Selidovugol"

State Enterprise "Selidovugol"
41 Karl Marx St., Selidove, 85400, Donetsk region, Ukraine
Phone: (06237)2-36-80,
Fax:(06237)2-35-09
Director: Nykytiuk Mykola Georgievich
SE "Selidovugol" is a project participant (stated in Annex 1).

CEP CarbonEmissionsPartners S.A.
52 RoutedeThonon, Geneva, Casepostale 170 CH-1222 Vésenaz, Switzerland
Phone: +41 (76) 3461157
Fabian Knodel, Director
E-mail: 0709bp@gmail.com
CEP CarbonEmissionsPartners S.A. is a project participant (stated in Annex 1).

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

The starting date of the project activity is 07/06/2005; the starting date of the project is the date when project implementation began.

C.2. Expected operational lifetime of the project:

The waste heap monitoring and urgent extinction programmes implemented within the project framework have no lifetime limitations. The baseline takes account of an assumption that unless effective extinction measures are taken, all of the coal contained in the waste heap will burn down in 15 years (starting the moment of extinction finish). Operational life of the equipment implemented or modernized as part of the project exceeds this period. Taking into account the aforementioned and the conservative principle, the expected operational lifetime of the project in years and months is estimated at 15 years and 7 months / 187 months: from 07/06/2005 to 31/12/2020.

C.3. Length of the crediting period:

The total crediting period will be 15 years and 7 months (187 months), including:

- 07/06/2005 – 31/12/2007 – early crediting period (the project will apply for early quota offset under Article 17 of the Kyoto Protocol;
- 01/01/2008-31/12/2012 – crediting period (commitment period);
- 01/01/2013-01/01/2020 – status of emission reduction or increase of net removals generated by JI projects after the end of the first commitment period under the Kyoto Protocol (continuation of the crediting period after 2012) can be determined in line with the corresponding settlements and procedures within the UNFCCC framework and the Host party.

The ERU generation crediting period starts at the beginning of 2008 and will continue during the whole project life. The starting date of the crediting period is June 7, 2005. The end date is December 31, 2020.

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

The proposed project applies a JI-specific approach based on the JI Guidance on criteria for baseline setting and monitoring, Version 03[38] , which meets the requirements of Decision 9/CMP.1, Appendix B of the "Criteria for baseline setting and monitoring".
The monitoring plan for this project was developed based on the temperature surveys of waste heaps, as well as on the "Tool to calculate project emissions of CO_2 from fossil fuel combustion" Version 02[39].
The key variables subject to monitoring are coal production, energy resources consumption, coal mine methane recovery results and waste heap condition.
After separation from rock and then from waste materials, coal is dehydrated. The obtained material is loaded on railroad cars and weighed together with the cars on VT-200 scales. Operators enter the volume of produced coal in the corresponding books, and the figures are every day submitted according to the B2S form "Data on raw coal production at the mine" to the Sectoral information-computing centre and form the basis for reported data in monthly reports in conformity with "Instruction on keeping a record of coal volumes produced and processed at mines, open pits and preparation plants of the Ministry of Coal Industry of Ukraine" approved by the Decree of the Ministry of Coal Industry of Ukraine" as of 17.09.1996 No. 466 and SOU 10.1.00186080.002-2006 "Rules about conducting underground survey and calculating production volumes according to its results" [40]. The data is then entered in yearly Reports according to the 1P-NPP form (Report on industrial production), which are submitted to the State Statistics Service of Ukraine.
The number o energy consumed: the amount of electricity consumed, the amount of coal burnt to produce thermal power, the volume of coal mine methane utilized are measured by meters that are regularly calibrated. Every month, operators take readings each meter shows and submit them further to the calculating department of the company and entered in Reports according to the 11-MTP form.
All key parameters required for calculation of GHG emission volumes are taken the same way as they used to at SE "Selidovugol", for measuring fuel, energy, waste materials and environmental impact. Monitoring under the project does not require changes in existing data accounting and collection system. All data is calculated and recorded in any case. All leakage was considered and taken into account using the conservative approach and seen as insignificant. Refer to section E.2. Monitoring plan data should be stored for at least 2 years after the crediting period.
The project scenario provides for the completion of all waste heap extinction activities and adjustment of waste heap monitoring system by the end of 2005. Therefore, GHG emission reductions are estimated for the period starting January 1, 2006. At the monitoring stage this date will be reconsidered. If activities under the project are complete ahead of the schedule, calculations will still take into account the period starting the beginning of 2006, to ensure the conservativeness. If the activities planned are complete later than scheduled, GHG emission reductions will be recalculated.

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[38] http://ji.unfccc.int/Ref/Documents/Baseline_setting_and_monitoring.pdf

[39] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf

[40] http://www.uazakon.com/document/fpart02/idx02256.htm

Data and parameters that are not monitored throughout the crediting period, but are determined only once and that are available already at the stage of PDD development:

Index	Parameter	Data unit
m_i	Waste heap mass as of the moment of extinction under the project activity at mine *i*	t
V_i	Waste heap volume as of the moment of extinction under the project activity at mine *i*	m^3
ρ_i	Rock density in waste heap at mine *i*	t/m^3
c	Coal content in waste heap	dimensionless
$EC^b_{i,j}$	electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario	MWh
$FC^b_{coal,i,j}$	total coal consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario,	t;
$P^b_{i,j}$	total coal production at mine *i* in historical period *j* of the baseline scenario	t
$EF^b_{CO2,elec,j}$	carbon dioxide emission factor for electricity consumption by consumers in historical period *j* of the baseline scenario	t CO_2eq/MWh
$NCV^b_{coal,j}$	net calorific value of coal in historical period *j* of the baseline scenario	TJ/ths t
$EF^b_{C,coal,j}$	carbon emission factor for coal combustion in historical period *j* of the baseline scenario	t C/TJ
$OXID^b_{coal,j}$	carbon oxidation factor for coal combustion in historical period *j* of the baseline scenario	Relative units

Data and parameters that are not monitored throughout the crediting period, but are determined only once but that are not available already at the stage of PDD development: none

Data and parameters that are monitored throughout the crediting period:

Index	Parameter	Data unit
$P_{i,y}$	total coal production at mine *i* in monitoring period *y*	t
$EC^p_{i,y}$	electricity consumption in the course of coal mining at mine *i* in monitoring period *y* of the project scenario	MWh

$FC^{p}_{coal,i,y}$	total coal consumption in the course of coal mining at mine *i* in monitoring period *y* of the project scenario	t
$EF_{CO2,elec,y}$	carbon dioxide emission factor for electricity consumption by consumers, in monitoring period *y*	t CO_2eq/MWh
$NCV_{coal,y}$	net calorific value of coal in monitoring period *y*	TJ/ths t
$NCV_{coal,dump,y}$	net calorific value of coal in monitoring period *y*	TJ/ths t
$EF_{CO2,coal,dump,y}$	CO_2 emission factor for coal combustion in monitoring period *y*	t CO_2/TJ
$EF_{C,coal,y}$	carbon emission factor for coal combustion in monitoring period *y*	t C/TJ
$OXID_{coal,y}$	carbon oxidation factor for coal combustion in monitoring period *y*	Relative units

$[i]$ - index for particular mine;

$[y]$ - index for monitoring period;

$[p]$ - index for project scenario;

$[coal]$ - index for coal consumption;

$[CO2]$ - index for carbon dioxide;

$[C]$ - index for carbon;

$[elec]$ - index for electricity consumption;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

D.1.1. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario:

D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comments
1. $EC_{i,y}^{p}$	Electricity consumption in the course of coal mining at mine *i* in monitoring period *y* of the project scenario	*Meter readings from each mine*	*MWh*	*m*	*Annually*	*100 %*	*Electronic / paper*	Based on the monthly report, the annual electricity consumption report is drawn up
2. $FC_{coal,i,y}^{p}$	Total coal consumption in the course of coal mining at mine *i* in monitoring period *y* of the project scenario	*Company data*	*t*	*e*	*Monthly*	*100 %*	*Electronic / paper*	Data based on coal purchase figures
3. $EF_{CO2,elec,y}$	Carbon dioxide emission factor for electricity consumption by consumers, in monitoring period *y*	*Carbon dioxide emission factors for 2004-2005 are sourced from the Operational Guidelines for Project Design Documents of Joint Implementation Projects, Volume 1: General guidelines (ERUPT) Carbon dioxide emission factors for the period prior to 2005 are sourced*	*t CO_2eq/ MWh*	*e*	*Annually*	*100 %*	*Electronic / paper*	Data selected in accordance with IPCC recommendations. If other carbon dioxide emission factors are adopted for Ukraine, new data will be

		from "Ukraine - Assessment of new calculation of CEF", approved by TUV SUD on 17/08/2007; *Carbon dioxide emission factors for 2007-2007 are sourced from the research conducted by Global Carbon;* *Carbon dioxide emission factors for 2008 are sourced from Decree No.62 of the National Environmental Investment Agency of Ukraine (hereinafter NEIAU) dated 15/04/2011 "On approval of carbon dioxide emission factors for 2008";* *Carbon dioxide emission factors for 2009 are sourced from NEIAU Decree No.63 dated 15/04/2011 "On approval of carbon dioxide emission factors for 2009";* *Carbon dioxide emission factors for 2010 are sourced from NEIAU Decree No.43 of*						used at the monitoring stage.

		28/03/2011 " On approval of carbon dioxide emission factors for 2010" Carbon dioxide emission factors for 2011 are sourced from NEIAU Decree No.75 of 12/05/2011 " On approval of carbon dioxide emission factors for 2011"						
4. m_i	Waste heap mass at mine *i*	*Industrial waste inventarization form*	*t*	*m*	*Once*	*100 %*	*Electronic / paper*	In order to ensure conservativeness of emission calculations we can assume that the mass of waste heap does not increase during the project, but stays at the level when project started. If there are no data on the waste heap, the

								calculation is based on volume and density
5. ρ_i	Waste heap density as of the moment of its extinction and stabilization	*Waste heap passport*	*t/m³*	*e*	*Once*	*100 %*	*Electronic / paper*	In order to ensure conservativeness of emission calculations we can assume that the density of waste heap does not increase during the project, but stays at the level when project started.
6. $k^{p}_{m,i,y}$	Waste heap combustion factor at mine *i* in month *m* year *y*	*Waste heap temperature survey results*	-	*m*	*Monthly*	*100 %*	*Electronic / paper*	If waste heap combustion was detected in the reporting month, it is assumed that k=1, if the combustion was not detected, as provided by the project, it is assumed that

								k=0.
7. $OXID_{coal,y}$	Carbon oxidation factor for coal combustion in monitoring period *y* of the project scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[41]	*relative units*	*e*	*Annually*	*100 %*	*Electronic / paper*	Data selected in accordance with IPCC recommendations. If other carbon oxidation factors are adopted for Ukraine, new data will be used at the monitoring stage.
8. V_i	Waste heap volume as of the moment of its extinction and stabilization	*Waste heap passport*	*m^3*	*e*	*Once*	*100 %*	*Electronic / paper*	In order to ensure conservativeness of emission calculations we can assume that the volume of waste heap does not increase during the project, but stays at the

[41] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

								level when project started.
9. c	Coal content in a waste heap	*ENVSEC: GRID Arendal "Risk Assessment Considerations in the Donetsk Basin"*[42]	*%*	*e*	*Once*	*100 %*	*Electronic / paper*	The data were applied in the determined UA1000317 JI project[43]
10. $NCV_{coal,y}$	Net calorific value of coal in monitoring period *y* of the project scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[44]	*TJ/ths t*	*e*	*Annually*	*100%*	*Electronic / paper*	Data selected in accordance with IPCC recommendat ions. If other net calorific values are adopted for

[42] http://www.envsec.org/publications/Risk%20Assessment%20Considerations%20in%20the%20Donetsk%20Basin%20Report_RUS.pdf

[43] http://ji.unfccc.int/JIITLProject/DB/0RQXGLUAS7ETAGMUQZWFQPJLN1SIAW/details

[44] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

								Ukraine, new data will be used at the monitoring stage.
11. $NCV_{coal,dump,y}$	Net calorific value of coal in monitoring period *y* of the project scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[45]	*TJ/ths t*	*e*	*Annually*	*100%*	*Electronic / paper*	Data selected in accordance with IPCC recommendations. If other net calorific values are adopted for Ukraine, new data will be used at the monitoring stage.
12. $EF_{CO2,coal,dump,y}$	CO_2 emission factor for coal combustion in monitoring period *y* of the project scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[46]	*t* CO_2*/TJ*	*c*	*Annually*	*100%*	*Electronic / paper*	Data selected in accordance with IPCC recommendations
13. $EF_{C,coal,y}$	Carbon emission factor for coal combustion in monitoring period *y*	*Reference value. National inventory report of anthropogenic emissions by sources and removals*	*t C/TJ*	*e*	*Annually*	*100%*	*Electronic / paper*	Data selected in accordance with IPCC recommendat

[45] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[46] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

		by sinks of greenhouse gases in Ukraine for 1990-2010»[47]						ions. If other carbon emission factors are adopted for Ukraine, new data will be used at the monitoring stage.
14. $FC_{coal,dump,i}$	Total coal amount in a waste heap at mine *i* as of the moment of the start of extinction works	*Company data*	*t*	*c*	*Once*	*100%*	*Electronic / paper*	
15. $EF_{CO2,coal,y}$	Carbon dioxide emission factor for coal combustion by consumers in monitoring period *y* of the project scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[48]	*t CO_2/TJ*	*c*	*Annually*	*100%*	*Electronic / paper*	Data selected in accordance with IPCC recommendations

D.1.1.2. Description of formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

[47] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[48] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

Project GHG emissions are calculated by the following formulae:

$$PE_y = \sum_i (PE^p_{en,i,y} + PE^p_{dump,i,y}) \quad \text{(D1)}$$

PE_y	-	total GHG emissions in monitoring period y, t CO_2eq;
$PE^p_{en,i,y}$	-	GHG emissions from energy carrier consumption in the course of technological procedures of coal mining at mine *i* in monitoring period *y* of the project scenario, t CO_2eq;
$PE^p_{dump,i,y}$	-	GHG emissions from waste heap burning at mine *i* in monitoring period *y* of the project scenario, t CO_2eq;
$[en]$	-	index for energy carrier consumption during coal mining procedures at SE “Selidovugol”;
$[i]$	-	index for particular mine;
$[dump]$	-	index for waste heaps;
$[y]$	-	index for monitoring period;
$[p]$	-	index for project scenario.

$$PE^p_{en,i,y} = PE^p_{elec,i,y} + PE^p_{coal,i,y} \quad \text{(D2)}$$

$PE^p_{elec,i,y}$	-	GHG emissions from energy carrier consumption in the course of technological procedures of coal mining at mine *i* in monitoring period *y* of the project scenario, t CO_2eq;
$PE^p_{coal,i,y}$	-	GHG emissions from coal consumption in the course of technological procedures of coal mining at mine *i* in monitoring period *y* of the project scenario, t CO_2eq;
$[elec]$	-	index for electricity consumption;
$[coal]$	-	index for coal consumption;
$[i]$	-	index for particular mine;
$[y]$	-	index for monitoring period;
$[p]$	-	index for project scenario.

$$PE^{p}_{elec,i,y} = EC^{p}_{i,y} \cdot EF_{CO2,elec,y} \quad \text{(D3)}$$

$EC^{p}_{i,y}$ - electricity consumption in the course of coal mining at mine *i* in monitoring period *y* of the project scenario, MWh;

$EF_{CO2,elec,y}$ - carbon dioxide emission factor for electricity consumption by consumers, in monitoring period *y* of the project scenario, t CO_2/MWh;

$[CO2]$ - index for carbon dioxide;

$[elec]$ - index for electricity consumption;

$[i]$ - index for particular mine;

$[y]$ - index for monitoring period;

$[p]$ - index for project scenario.

$$PE^{p}_{coal,i,y} = FC^{p}_{coal,i,y} \cdot NCV_{coal,y} \cdot EF_{CO2,coal,y} / 1000 \quad \text{(D4)}$$

$FC^{p}_{coal,i,y}$ - total coal consumption in the course of coal mining at mine *i* in monitoring period *y* of the project scenario, t;

$NCV_{coal,y}$ - net calorific value of coal in monitoring period *y* of the project scenario, TJ/Gg;

$EF_{CO2,coal,y}$ - default carbon dioxide emission factor for stationary coal combustion in monitoring period *y* of the project scenario, t CO_2/TJ;

$[coal]$ - index for coal consumption;

$[CO2]$ - index for carbon dioxide;

$[i]$ - index for particular mine;

$[y]$ - index for monitoring period;

$[p]$ - index for project scenario.

$$EF_{CO2,coal,y} = EF_{C,coal,y} \cdot OXID_{coal,y} \cdot 44/12, \qquad (D5)$$

$EF_{C,coal,y}$ - carbon emission factor for coal combustion in monitoring period *y* of the project scenario, t C /TJ;

$OXID_{coal,y}$ - carbon oxidation factor for coal combustion in monitoring period *y* of the project scenario, relative units;

$44/12$ - stoichiometric ratio of carbon dioxide and carbon molecular weight, t CO_2/t C;

$[coal]$ - index for coal consumption;

$[CO2]$ - index for carbon dioxide;

$[C]$ - index for carbon;

$[y]$ - index for monitoring period.

$$PE^{p}_{dump,i,y} = \sum_{m=1}^{12} \frac{FC_{coal,dump,i} \cdot NCV_{coal,dump,y} \cdot k^{p}_{m,i,y} \cdot EF_{CO2,dump,coal,y}}{180*1000} \qquad (D6)$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap as of the beginning of extinction works at mine *i*, t;

$NCV_{coal,dump,y}$ - net calorific value of coal in monitoring period *y* of the project scenario, TJ/ths t;

$EF_{CO2,coal,dump,y}$ - default carbon dioxide emission factor for stationary coal combustion in monitoring period *y* of the project scenario, t CO_2/TJ;

$k^{p}_{m,i,y}$ - waste heap combustion factor at mine *i* for month *m* of year *y* (if waste heap combustion was detected in the reporting month, it is assumed that k=1, if the combustion was not detected, as provided by the project, it is assumed that k=0. Since the waste heap does not burn under the baseline scenario, k=0 for all months of the monitoring period).

$[dump]$ - index for waste heap;

$[CO2]$ - index for carbon dioxide;

$[i]$ - index for particular mine;

$[coal]$ - index for coal.

$[m]$ - index for the sequence number of month, year *y*.

$[y]$ - index for monitoring period;

$[p]$ - index for project scenario.

$$FC_{coal,dump,i} = V_i \cdot \rho_i \cdot c \;; \qquad \text{(D7)}$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap at mine *i* as of the beginning of extinction works, t;

V_i - waste heap volume at mine *i*, m^3;

c - coal content in a waste heap, %;

ρ_i - waste heap density at mine *i*, t/m^3

$[dump]$ - index for waste heap;

$[i]$ - index for particular mine;

$[coal]$ - index for coal.

or:

$$FC_{coal,dump,i} = m_i \cdot c \;; \qquad \text{(D8)}$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap at mine *i* as of the beginning of extinction works, t;

m_i - waste heap mass at mine *i*, t;

c - coal content in a waste heap, %;

$[dump]$ - index for waste heap;

$[i]$ - index for particular mine;

$[coal]$ - index for coal.

D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:

ID number	Data variable	Source of data	Data unit	Measured	Recording	Proportio	How will the	Comments

(Please use numbers to ease cross-referencing to D.2.)				(m), calculated (c), estimated (e)	frequency	n of data to be monitored	data be archived? (electronic/ paper)	
16. $P_{i,y}$	Total coal production at mine *i* in monitoring period *y*	*Daily run-of-mine coal production logs*	*t*	*m*	*Daily*	*100 %*	*Electronic / paper*	Coal production is measured in accordance with the "Manual on measurement of run-of-mine coal production" No.466 dated 17/09/1996.
17. $EC^{b}_{i,j}$	Electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario	*Meter readings from each mine*	*MWh*	*m*	*Once*	*100 %*	*Electronic / paper*	Based on the monthly report, the annual electricity consumption report is drawn up
18. $FC^{b}_{coal,i,j}$	Total coal consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario	*Company data*	*t*	*e*	*Once*	*100 %*	*Electronic / paper*	Data based on coal purchase amount
19. $P^{b}_{i,j}$	Total coal production at mine *i* in historical period *j* of the baseline scenario	*Daily run-of-mine coal production logs*	*t*	*m*	*Once*	*100 %*	*Electronic / paper*	Coal production is measured in accordance with the "Manual on measurement of

								run-of-mine coal production" No.466 dated 17/09/1996.
20. $EF^{b}_{CO2,elec,j}$	Carbon dioxide emission factor for electricity consumption by consumers in historical period *j* of the baseline scenario	*Carbon dioxide emission factors for the period till 2005 are sourced from the Operational Guidelines for Project Design Documents of Joint Implementation Projects, Volume 1: General guidelines (ERUPT)*[49]	*t CO_2eq/MWh*	*e*	*Once*	*100 %*	*Electronic / paper*	Data selected in accordance with IPCC recommendations. If other carbon dioxide emission factors are adopted for Ukraine, new data will be used at the monitoring stage.
21. $NCV^{b}_{coal,j}$	Net calorific value of coal in historical period *j* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[50]	*TJ/ths t*	*e*	*Once*	*100 %*	*Electronic / paper*	Data selected in accordance with IPCC recommendation s
22. $NCV_{coal,dump,y}$	Net calorific value of coal in monitoring period *y* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse*	*TJ/ths t*	*e*	*Annually*	*100 %*	Electronic / paper	Data selected in accordance with IPCC recommendation s. If other net

[49] http://ji.unfccc.int/CallForInputs/BaselineSettingMonitoring/ERUPT/index.html

[50] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

		gases in Ukraine for 1990-2010»[51]							calorific values are adopted for Ukraine, new data will be used at the monitoring stage.
23. $EF_{CO2,coal,dump,y}$	CO_2 emission factor for coal combustion in monitoring period *y* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[52]	$t\ CO_2/TJ$	*c*	*Annually*	*100%*	Electronic / paper	Data selected in accordance with IPCC recommendation s
24. $EF^{b}_{C,coal,j}$	Carbon emission factor for coal combustion in historical period *j* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[53]	t C/TJ	*e*	*Annually*	*100%*	Electronic / paper	Data selected in accordance with IPCC recommendation s. If other carbon emission factors for coal combustion are adopted for Ukraine, new data will be used at the monitoring stage.

[51] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[52] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[53] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

25. $OXID^{b}_{coal,j}$	Carbon oxidation factor for coal combustion in historical period *j* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[54]	relative units	*e*	*Annually*	*100%*	Electronic / paper	Data selected in accordance with IPCC recommendations. If other carbon oxidation factors for coal combustion are adopted for Ukraine, new data will be used at the monitoring stage.

[54] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

26. m_i	Waste heap mass at mine *i*	*Industrial waste inventarization form*	*t*	*m*	*Once*	*100 %*	Electronic / paper	In order to ensure conservativeness of emission calculations we can assume that the mass of waste heap does not increase during the project, but stays at the level when project started. If there are no data on the waste heap, the calculation is based on volume and density
27. ρ_i	Waste heap density as of the moment of its extinction and stabilization	*Waste heap passport*	*t/m^3*	*e*	*Once*	*100 %*	Electronic / paper	In order to ensure conservativeness of emission calculations we can assume that the density of waste heap does not increase during the project, but stays at the level when

								project started.
28. V_i	Waste heap volume as of the moment of its extinction and stabilization	*Waste heap passport*	m^3	*e*	*Once*	*100 %*	Electronic / paper	In order to ensure conservativeness of emission calculations we can assume that the volume of waste heap does not increase during the project, but stays at the level when project started.
29. *c*	Coal content in a waste heap	ENVSEC: GRID Arendal "Risk Assessment Considerations in the Donetsk Basin"[55]	*%*	*e*	*Once*	*100 %*	Electronic / paper	The data were applied in the determined UA1000317 JI project[56]
30. ρ_i	Waste heap density as of the moment of its extinction and stabilization	*Waste heap passport*	t/m^3	*e*	*Once*	*100 %*	Electronic / paper	In order to ensure conservativeness of emission calculations we can assume that the density of waste heap does not increase during the

[55] http://www.envsec.org/publications/Risk%20Assessment%20Considerations%20in%20the%20Donetsk%20Basin%20Report_RUS.pdf

[56] http://ji.unfccc.int/JIITLProject/DB/0RQXGLUAS7ETAGMUQZWFQPJLN1SIAW/details

								project, but stays at the level when project started.
31. $NCV_{coal,y}$	Net calorific value of coal in monitoring period *y* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[57]	*TJ/ths t*	*e*	*Annually*	*100%*	Electronic / paper	Data selected in accordance with IPCC recommendation s. If other net calorific values are adopted for Ukraine, new data will be used at the monitoring stage.
32. $EF_{C,coal,y}$	Carbon emission factor for coal combustion in monitoring period *y* of the baseline scenario	*Reference value. National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[58]	*t C/TJ*	*e*	*Annually*	*100%*	Electronic / paper	Data selected in accordance with IPCC recommendation s. If other carbon emission factors are adopted for Ukraine, new data will be used at the monitoring stage.
33. $OXID_{coal,y}$	Carbon oxidation factor for coal	*Reference value. National inventory report of*	*relative units*	*e*	*Annually*	*100 %*	Electronic / paper	Data selected in accordance with

[57] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

[58] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

	combustion in monitoring period *y* of the baseline scenario	*anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010»*[59]						IPCC recommendations. If other carbon dioxide oxidation factors are adopted for Ukraine, new data will be used at the monitoring stage.
34. $k^{b}_{m,i,y}$	Waste heap combustion factor at mine *i* in month *m* year *y*	*Waste heap passport*	-	*m*	*Monthly*	*100 %*	Electronic / paper	В разі якщо горіння породного відвалу було виявлене за звітний місяць приймається рівним k=1, якщо горіння виявлене не було, як це і передбачено проектом, приймається k=0

D.1.1.4. Description of formulae used to estimate baseline emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

Baseline GHG emissions are calculated by the following formulae:

[59] http:// unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2012-nir-13apr.zip

$$BE_y = \sum_i (BE^b_{en,i,y} + BE^b_{dump,i,y}) \quad \text{(D9)}$$

BE_y - total GHG emissions in monitoring period *y*, t CO_2eq;

$BE^b_{en,i,y}$ - baseline GHG emissions from energy carrier consumption in the course of technological procedures of coal mining at mine *i* in monitoring period *y* of the baseline scenario, t CO_2eq;

$BE^b_{dump,i,y}$ - baseline GHG emissions from waste heap burning at mine *i* in monitoring period *y* of the baseline scenario, t CO_2eq;

$[en]$ - index for energy carrier consumption during coal mining procedures at SE “Selidovugol”;

$[i]$ - index for particular mine;

$[dump]$ - index for waste heaps;

$[y]$ - index for monitoring period;

$[b]$ - index for baseline scenario.

$$BE^b_{en,i,y} = P_{i,y} \cdot SEF^b_{i,j} \quad \text{(D10)}$$

$P_{i,y}$ - total coal production at mine *i* in monitoring period *y*, t;

$SEF^b_{i,j}$ - pre-project GHG emissions from energy carrier consumption in the course of coal mining at mine *i*, t CO_2eq/t;

$[en]$ - index for energy carrier consumption during coal mining procedures at SE “Selidovugol”;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[y]$ - index for monitoring period;

$[b]$ - index for baseline scenario.

$$SEF_{i,j}^{b} = \frac{\sum_{j} BE_{i,j}^{b} / P_{i,j}^{b}}{3} \qquad \text{(D11)}$$

$BE_{i,j}^{b}$ - total GHG emissions in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, t CO_2eq;

$P_{i,j}^{b}$ - total coal production at mine *i* in historical period *j* of the baseline scenario, t;

3 - number of years in the historical period;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$BE_{i,j}^{b} = BE_{elec,i,j}^{b} + BE_{coal,i,j}^{b} \qquad \text{(D12)}$$

$BE_{elec,i,j}^{b}$ - GHG emissions from electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, tCO_2eq;

$BE_{coal,i,j}^{b}$ - GHG emissions from coal consumption at mine *i* in historical period *j* of the baseline scenario, tCO_2eq;

$[elec]$ - index for electricity consumption;

$[coal]$ - index for coal consumption;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$BE_{elec,i,j}^{b} = EC_{i,j}^{b} \cdot EF_{CO2,elec,j}^{b} \qquad \text{(D13)}$$

$EC_{i,j}^{b}$ - electricity consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, MWh;

$EF^{b}_{CO2,elec,j}$ - carbon dioxide emission factor for electricity consumption by consumers in historical period *j* of the baseline scenario, t CO_2/MWh;

$[CO2]$ - index for carbon dioxide;

$[elec]$ - index for electricity consumption;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$BE^{b}_{coal,i,j} = FC^{b}_{coal,i,j} \cdot NCV^{b}_{coal,j} \cdot EF^{b}_{CO2,coal,j} / 1000 \quad \text{(D14)}$$

$FC^{b}_{coal,i,j}$ - total coal consumption in the course of coal mining at mine *i* in historical period *j* of the baseline scenario, t;

$NCV^{b}_{coal,j}$ - net calorific value of coal in historical period *j* of the baseline scenario, TJ/ths t;

$EF^{b}_{CO_2,coal,j}$ - default carbon dioxide emission factor for stationary coal combustion in historical period *j* of the baseline scenario, t CO_2/TJ;

$[coal]$ - index for coal consumption;

$[CO2]$ - index for carbon dioxide;

$[i]$ - index for particular mine;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$EF^{b}_{CO2,coal,j} = EF^{b}_{C,coal,j} \cdot OXID^{b}_{coal,j} \cdot 44/12, \quad \text{(D15)}$$

$EF^{b}_{C,coal,j}$ - carbon emission factor for coal combustion in historical period *j* of the baseline scenario, t CO_2/TJ;

$OXID^{b}_{coal,j}$ - carbon oxidation factor for coal combustion in historical period *j* of the baseline scenario, relative units;

$44/12$ - stoichiometric ratio of carbon dioxide and carbon molecular weight, t CO_2/t C;

$[coal]$ - index for coal consumption;

$[CO2]$ - index for carbon dioxide;

$[C]$ - index for carbon;

$[j]$ - index for historical period;

$[b]$ - index for baseline scenario.

$$BE^{b}_{dump,i,y} = \sum_{m=1}^{12} \frac{FC_{coal,dump,i} \cdot NCV_{coal,dump,y} \cdot k^{b}_{m,i,y} \cdot EF_{CO2,coal,dump,y}}{180*1000} \quad \text{(D16)}$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap as of the beginning of extinction works at mine *i*, t;

$NCV_{coal,dump,y}$ - net calorific value of coal in monitoring period *y* of the baseline scenario, TJ/ths t;

$EF_{CO2,coal,dump,y}$ - default carbon dioxide emission factor for stationary coal combustion in monitoring period *y* of the baseline scenario, t CO_2/TJ;

$k^{b}_{m,i,y}$ - waste heap combustion factor at mine *i* for month *m* of year *y* (if waste heap combustion was detected in the reporting month, it is assumed that k=1, if the combustion was not detected, as provided by the project, it is assumed that k=0. Since the waste heap continues to burn under the baseline scenario, k=1 for all months of the monitoring period);

$[dump]$ - index for waste heap;

$[CO2]$ - index for carbon dioxide;

$[i]$ - index for particular mine;

$[coal]$ - index for coal.

$[m]$ - index for the sequence number of month, year *y*.

$[y]$ - index for monitoring period;

$[b]$ - index for baseline scenario.

$$FC_{coal,dump,i} = V_i \cdot \rho_i \cdot c \;; \qquad \text{(D17)}$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap at mine i as of the beginning of extinction works, t;

V_i - waste heap volume at mine i, m^3;

c - coal content in a waste heap, %;

ρ_i - waste heap density at mine i, t/m^3

$[dump]$ - index for waste heap;

$[i]$ - index for particular mine;

$[coal]$ - index for coal.

or:

$$FC_{coal,dump,i} = m_i \cdot c \;; \qquad \text{(D18)}$$

$FC_{coal,dump,i}$ - total amount of coal in a waste heap at mine i as of the beginning of extinction works, t;

m_i - waste heap mass at mine i, t;

c - coal content in a waste heap, %;

$[dump]$ - index for waste heap;

$[i]$ - index for particular mine;

$[coal]$ - index for coal.

D. 1.2. Option 2 – Direct monitoring of emission reductions from the project (values should be consistent with those in section E.):

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

Direct monitoring of GHG emission reductions is not applied.

D.1.2.2. Description of formulae used to calculate emission reductions from the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

Direct monitoring of GHG emission reductions is not applied.

D.1.3. Treatment of leakage in the monitoring plan:

D.1.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

In accordance with the JI-specific approach in accordance with paragraph 9 (a) of the "Guidance on criteria for baseline setting and monitoring", Version 03, no leakage is expected.

D.1.3.2. Description of formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO_2 equivalent):

No leakage is expected.

D.1.4. Description of formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

GHG emission reductions are calculated under the formula that follows:

$$ER_y = BE_y - PE_y \qquad (D19)$$

ER_y - greenhouse gas emission reductions in period y, t CO_2eq;
BE_y - greenhouse gas emissions in period y of the baseline scenario, t CO_2eq;
PE_y - greenhouse gas emissions in period y of the project scenario, t CO_2eq;
$[y]$ - index for monitoring period.

D.1.5. Where applicable, in accordance with procedures as required by the host Party, information on the collection and archiving of information on the environmental impacts of the project:

The main legislative acts of Ukraine concerning commercial enterprises' environmental impact monitoring are the following:

- Law of Ukraine No.1264-XII "On environmental protection" dated 25/06/1991[60];
- Law of Ukraine No.2707-XII "On atmospheric air protection" dated 16/10/1992[61];
- "Standards of maximum permissible emissions of pollutants from stationary sources" approved by the Ministry of Environmental Protection of Ukraine dated 27/06/2006, No.309[62] and registered in the Ministry of Justice of Ukraine dated 01/09/2006, No.912/12786.

In the framework of the procedures under the Law of Ukraine "On state statistics", the company reports on its environmental indicators on a periodic basis, i.e. environmental department of SE "Selidovugol" quarterly draws up forms No.2-TP (air), No.2-TP (water facilities), No.1-environmental expenses (annual) to be submitted to the State Statistics.

D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:

Data *(Indicate table and ID number)*	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
6. $k^{p}_{m,i,y}$	Low	Waste heap monitoring is carried out in accordance with manuals, approved methodologies, as well as the state standards of Ukraine. Monitoring is performed by qualified workers and is subject to control from the company administration.

[60] http://zakon2.rada.gov.ua/laws/show/1264-12

[61] http://zakon2.rada.gov.ua/laws/show/2707-12

[62] http://www.budinfo.org.ua/doc/1815297.jsp

11;22. $NCV_{coal,dump,y}$	Low	Net calorific value of coal is sourced from the "National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine", issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.
10;21. $NCV_{coal,y}$, $NCV^{b}_{coal,j}$	Low	Net calorific value of coal is sourced from the "National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine", issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.
13;32. $EF_{C,coal,y}$	Low	Carbon emission factor for coal combustion is sourced from the "National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010", issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.
24. $EF^{b}_{C,coal,j}$	Low	Carbon emission factor for coal combustion is sourced from the "National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010", issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.
25. $OXID^{b}_{coal,j}$	Low	Carbon oxidation factor for coal combustion is sourced from the "National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010", issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.
7;33. $OXID_{coal,y}$	Low	Carbon oxidation factor for coal combustion is sourced from the "National inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases in Ukraine for 1990-2010", issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.
16;19. $P_{i,y}$, $P^{b}_{i,j}$	Low	Total coal production at a mine. Measured according to the "Guidance on measurement of run-of-mine coal output" No.466 of 17/09/1996.
1;17. $EC^{b}_{i,j}$, $EC^{p}_{i,y}$	Low	Electricity consumption during coal mining process. The information is read from electricity meters calibrated under the current legislation.
20;3. $EF^{b}_{CO2,elec,j}$, $EF_{CO2,elec,y}$	Low	Carbon dioxide emission factor for electricity consumption from the national grid of Ukraine. Issued by the State Environmental Investment Agency of Ukraine This document is subject to periodic revision and updating.

2;18. $FC^{p}_{coal,i,y}$, $FC^{b}_{coal,i,j}$	Low	Total coal consumption during coal mining process at a mine. Accounting data will be used.

D.3. Operational and management structure that the project operator will apply in implementing the monitoring plan:

Since the monitoring plan is designed for accurate and clear measurement and calculation of greenhouse gas emissions, data necessary to calculate GHG emission reductions generated by the project are collected in accordance with the practice established at SE "Selidovugol".
The operational structure of the company envisages data collection, compilation and cross-verification, as part of monitoring plan preparation, as demonstrated in a figure below:
The management structure includes the Director of SE "Selidovugol" and CEP Carbon Emissions Partners S.A. project developers.
Detailed operational structure and data collection scheme for the project activity are provided in Figure D.3.1.

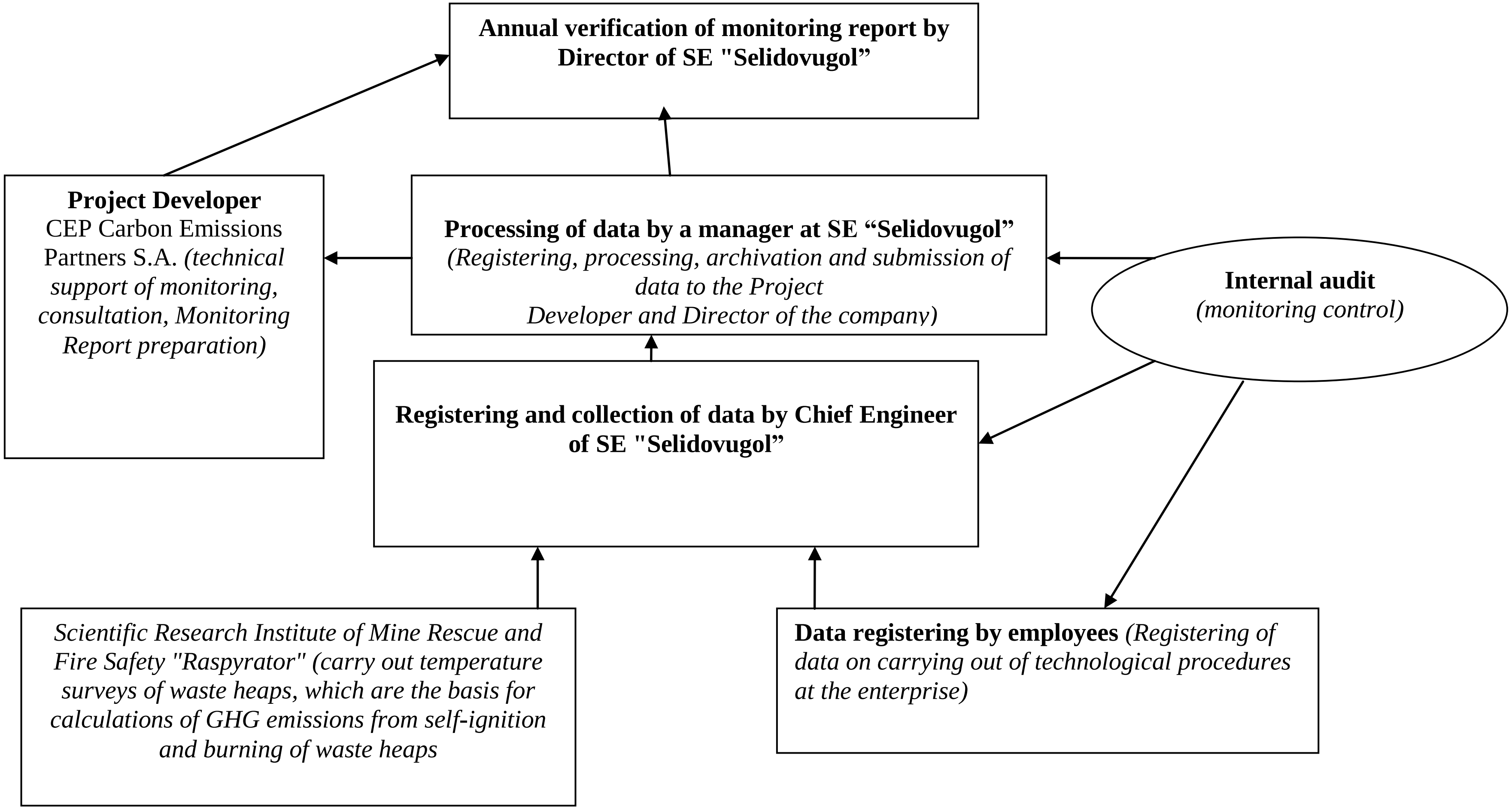

Figure D.3.1. Operational structure and data collection scheme for the project monitoring

D.4. Name of person(s)/entity(ies) establishing the monitoring plan:

The monitoring plan is established by SE "Selidovugol" and CEP Carbon Emissions Partners S.A.

State Enterprise "Selidovugol"
41 Karl Marx St., Selidove, 85400, Donetsk region, Ukraine
Phone: (06237)2-36-80,
Fax:(06237)2-35-09
Director: Nykytiuk Mykola Georgievich
SE "Selidovugol" is a project participant (stated in Annex 1).

CEP CarbonEmissionsPartners S.A.
52 RoutedeThonon, Geneva, Casepostale 170 CH-1222 Vésenaz, Switzerland
Phone: +41 (76) 3461157
Fabian Knodel, Director
E-mail: 0709bp@gmail.com
CEP CarbonEmissionsPartners S.A. is a project participant (stated in Annex 1).

SECTION E. Estimation of greenhouse gas emission reductions

E.1. Estimated project emissions:

Project emissions were estimated based on data from the monitoring plan presented in Section D.1.1. and Annex 3. The calculation results are provided in Tables E.1.1:

Table E.1.1. Estimated project emissions:

Year	Estimated project emissions ($t\ CO_2eq$)
2006	0
2007	0
Total 2006-2007	**0**
2008	0
2009	0
2010	153 174
2011	152 399
2012	152 399
Total 2008-2012	**457 972**
2013	152 399
2014	152 399
2015	152 399
2016	152 399
2017	152 399
2018	152 399
2019	152 399
2020	152 399
Total 2013-2020	**1 219 192**
Total ($t\ CO_2eq$)	**1 677 164**

E.2. Estimated leakage:

All emissions from diesel fuel combustion are included into potential project emissions, not into leakage, because diesel fuel is combusted on the site and is encompassed by the project boundary.
No leakage is expected.

E.3. The sum of E.1. and E.2.:

Since no leakage is expected, the sum of E.1 and E.2 equals E.1.

E.4. Estimated baseline emissions:

Similar to project emissions, baseline emissions were estimated using formulae in Section D.1.1.4. The results are provided in Table E.4.1.

Table E.4.1. Estimated baseline emissions.

Year	Estimated baseline emissions (t CO_2eq)
2006	696 908
2007	696 908
Total 2006-2007	**1 393 816**
2008	696 908
2009	696 908
2010	892 301
2011	928 910
2012	928 910
Total 2008-2012	**4 143 937**
2013	928 910
2014	928 910
2015	928 910
2016	928 910
2017	928 910
2018	928 910
2019	928 910
2020	928 910
Total 2013-2020	**7 431 280**
Total (t CO_2eq)	**12 969 033**

E.5. Difference between E.4. and E.3. representing the emission reductions of the project:

Annual GHG emission reductions in the project are calculated under the formula that follows:

Estimated emission reductions = Estimated baseline emissions - (Estimated project emissions + Estimated leakage)

The results of emission reductions calculation are provided in Table 7 below.

E.6. Table providing values obtained when applying formulae above:

Table E.6.1. Estimated CO_2 emission reductions

Year	Estimated project emissions (t CO_2 equivalent)	Estimated leakage (t CO_2 equivalent)	Estimated baseline emissions (t CO_2 equivalent)	Estimated emission reductions (t CO_2 equivalent)

2006	0	0	696 908	696 908
2007	0	0	696 908	696 908
Total 2006-2007 (t CO_2eq)	**0**	**0**	**1 393 816**	**1 393 816**
2008	0	0	696 908	696 908
2009	0	0	696 908	696 908
2010	153 174	0	892 301	739 127
2011	152 399	0	928 910	776 511
2012	152 399	0	928 910	776 511
Total 2008-2012 (t CO_2eq)	**457 972**	**0**	**4 143 937**	**3 685 965**
2013	152 399	0	928 910	776 511
2014	152 399	0	928 910	776 511
2015	152 399	0	928 910	776 511
2016	152 399	0	928 910	776 511
2017	152 399	0	928 910	776 511
2018	152 399		928 910	776 511
2019	152 399		928 910	776 511
2020	152 399		928 910	776 511
Total 2013-2020 (t CO_2eq)	**1 219 192**	**0**	**7 431 280**	**6 212 088**
Total (t CO_2eq)	**1 677 164**	**0**	**12 969 033**	**11 291 869**

GHG emissions on a source-by-source basis (coal and electricity consumption for technological needs; waste heaps) are provided in Supporting Document 1 to the PDD.

SECTION F. Environmental impacts

F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party:

According to Law of Ukraine "On environmental protection"[63] and the State Building Norms A.2.2-1-2003, "Structure and content of environmental impact assessment (EIA) in the process of design and construction of plants, buildings and structures"[64] SE "Selidovugol" is not obliged to carry out EIA for this type of project.

Both global and local ecological effects from project implementation are positive as a result of greenhouse gas emission reductions. Transboundary impacts from the project activity, according to their definition in the text of "Convention on long-range transboundary pollution" ratified by Ukraine, will not take place.

F.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

As mentioned above, the environmental impact assessment has proved that the project has a positive impact on the environment.

Impact on water medium
The impact on water medium is absent.

Impact on air environment
Permanent, insignificant.
Harmful emissions will decrease due to waste heap extinction and modernization of technological equipment.

Impact on land use
The project will have a positive impact on land use, because due to modernization and replacement of technological equipment mine performance and workers' safety will be at a high level, waste heap extinction will allow to use waste heaps again and eliminate the need to search new territories for rock accumulation.

[63] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=1264-12

[64] http://www.budinfo.com.ua/dbn/8.htm

SECTION G. Stakeholders' comments

G.1. Information on stakeholders' comments on the project, as appropriate:

SE "Selidovugol" informed the community through mass media. All comments relating to the project implementation were positive. No negative comments were received.

Annex 1

CONTACT INFORMATION ON PROJECT PARTICIPANTS

Owner of the project

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URL:	-
Represented by:	-
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Salutation:	-
Last name:	Nykytiuk
Middle name:	Georgievich
First name:	Mykola
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Project participant:

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Phone (direct):	-
Fax (direct):	-
Mobile:	-
Personal e-mail:	-

Annex 2

BASELINE INFORMATION

Baseline was set according to the JI specific approach, based on the "Guidance on criteria for baseline setting and monitoring" (Version 3) of the JI Supervisory Committee. For more information, please refer to the section B in this PDD.

Annex 3

MONITORING PLAN

For monitoring plan see Section D of the PDD.