JOINT IMPLEMENTATION PROJECT

for «Realisation of a complex of energy saving activities at the Ferrexpo Poltava Mining»

Position of the head of organization, institution or establishment compiling the document

Managing Partner of
"Climate Protection Bureau LLP"

31.10.2011 (date) _____ (signature) V. Khalabuzar (full name of person)

(Seal place)

Position of the head of economic entity owning the source to be used as the basis for the Joint Implementation Project

Chairman of the Board
of Ferrexpo Poltava Mining

31.10.2011 (date) _____ (signature) V.V. Lotous (full name of person)

(Seal place)

The city of Komsomolsk

October 2011

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

CONTENTS

Annexes

SECTION A. General description of the project

A.1. Title of the project:

"Realization of a complex of energy saving activities at Ferrexpo Poltava Mining"

Sectoral Scope[1]: 1 Energy industries

Version: 07.

Date: November 01, 2011

A.2. Description of the project:

Ferrexpo Poltava Mining commenced its production in 1970. The company has a full technological cycle beginning from iron ore mining and ending up with production of iron ore pellets – already finished product for the steel plants. Today Ferrexpo Poltava Mining is one of the largest mining enterprises in Ukraine. About 44% of iron ore pellets in Ukraine are produced by Ferrexpo Poltava Mining, and they are exported (about 88%) not only abroad (in Austria, Poland, Romania, Slovakia, the Czech Republic, Bulgaria, Serbia, Italy, Turkey, Japan, China, etc), but also supplied to domestic steel plants. According to the requirements of international standards ISO 9001, OHSAS 18001, ISO 14001, the following management systems were introduced and efficiently operated: Quality Management System, Health and Safety, and Environment.

The industrial complex of Ferrexpo Poltava Mining occupies the area of more than 5400 hectares, consists of 31 production departments and shops with the total employees number of about 8000 people. Annually the volume of production capacities is: 32 million tons of ore mining, 11 million tones of concentrate production, and 12 million tones of pellets production.

Great attention is paid to the environmental projects. About UAH 50-60 mil. are spent for the project implementation annually.

Introduced in 2007 environment management system, that meets international standard requirements, allowed to increase the efficiency of environment measures significantly.

Company environment activity is highly rated by public organizations. In 2005 Ferrexpo Poltava Mining received the diploma of Ukraine Nature Conservation Society. In 2006 the company was awarded diploma of the Komsomolsk City Zelenyi Svit (Green World) Ecological Association for its excellent environment activity. In 2007 the company took part in the Ukrainian Ecological Quality and Safety Contest, organized by the Ministry of Environmental Protection of Ukraine, the Ukrainian Chamber of Commerce and Industry and the Ukrainian Living Planet civic organization. Company won the nomination "Ecological quality" and was awarded commemorative token and diploma.

[1] http://cdm.unfccc.int/DOE/scopes.html

Код поля изменен

In 2008 the Ukrainian State Environmental Inspectorate performed the integrated inspection of meeting the environmental legislation requirements at the company. According to the results of inspection, the performance of the Ferrexpo Poltava Mining environmental service was appraised as the best one among the mining enterprises of Ukraine.

Inspection, done by the Poltava Region State Environmental Inspectorate in 2009, appraised environment performance of Ferrexpo Poltava Mining Corporation as the best one among large enterprises of the region.

The project history starts when on the technical meeting under the direction of the Pelletizing Plant chief engineer (Meeting protocol dated 10/01/2000) and on the Ferrexpo Poltava Mining scientific and technical board (Meeting protocol #8 dated 09/02/2000) the decisions on the beginning of the ore pellet and concentrate production modernization were taken.

Based on the results of the measures stated above, the following actions were implemented:
- reconstruction of the sealing of the loading part of the tube furnaces ##1-4 by establishing of the SUPERDEAL seal, which lead to the reduction of energy and natural gas consumption during the pellets production;
- replacement of КМДТ crushers by Hydrocone H-4000 and Hydrocone H-6800 crushers, replacement of КСДТ crushers by Superior S-4000 crushers, which lead to the reduction of energy consumption during the iron ore concentrate production.

The realization of activities mentioned above allowed to reduce specific consumption of electric power in the process of pellets and iron ore concentrate production, allowing to reduce its consumption from UETG and to reduce natural gas specific consumption in the process of pellets production, leading to the natural gas consumption reduction. The reduction of energy consumption allows to reduce its consumption from UETG, leading to reduction in fuel consumption for the electric power production and, correspondingly, to the decrease in greenhouse emissions by power plants of Ukraine. Reduction in volumes of natural gas consumption during the pellets production will lead to decrease in greenhouse gas emissions.

JI project "Realization of a complex of energy saving activities at Ferrexpo Poltava Mining" implementation was initiated in 2000, taking into account the possibility of Kyoto mechanisms funds involvement.

Without joint implementation project activity, the baseline for Ferrexpo Poltava Mining would be maintenance of the existing in the beginning of 2000 technological equipment and heavy dump trucks in a due condition, at the same time the power resources consumption for mining rock transportation and for iron ore concentrate and pellets production and, as the result, greenhouse gases emissions to the atmosphere would stay equal to consumptions and emissions in 1999.

Project activities are aimed at improvement in power efficiency of the plant by the implementation of 3 subprojects:

1. Reduction of diesel fuel specific consumption during mining rock transportation – aimed at the reduction in diesel fuel burnt by dump trucks which transport mining rock. Diesel fuel specific consumption reduction may be achieved due to the replacement of present heavy dump trucks by new dump trucks with more efficient engines. During the project activity it is planned to replace about 150 dump trucks. Reduction in fuel consumption during transportation of mining rock will result in reduction of greenhouse gas emissions.

2. Modernization of iron ore concentrate production – aimed at establishing of high-efficient equipment and optimization of technological processes, which will allow reducing the consumption of electric energy during the production of iron ore concentrate. Reduction in electric energy consumption will allow to reduce energy consumption from UETG, which will result in decrease in fuel consumption for energy production and, correspondingly, reduction in greenhouse gas emissions at the power plants of Ukraine.

3. Modernization of pellets production – the aim of modernization is the establishment of high-efficient equipment and optimization of technological processes, which will allow to reduce consumption in electric power and natural gas during the pellets production. Reduction in electricity consumption will allow to reduce its consumption from UETG leading to reduction in fuel consumption for the electric power production and, correspondingly, to the decrease in greenhouse emissions by power plants of Ukraine. Reduction in volumes of natural gas consumption during the pellets production will lead to decrease in greenhouse gas emissions.

The fulfillment of scheduled activities on decrease in energy efficiency of the production at Ferrexpo Poltava Mining will result in reduction in volumes of natural gas consumption for pellets, decrease in electric energy consumption in production of iron ore concentrate and pellets, reduction in diesel fuel consumption during mining rock transportation which will decrease green house gas emissions into the air.

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)	• Ferrexpo Poltava Mining	No
Great Britain	• Climate Protection Bureau LLP	No
*Please indicate if the Party involved is a host Party.		

A.4. Technical description of the project:

A.4.1. Location of the project:

The project is located on the territory of Ferrexpo Poltava Mining. Ferrexpo Poltava Mining is located in the Poltava region in Komsomolsk city. Geographic location of the project is indicated in the figure 1.

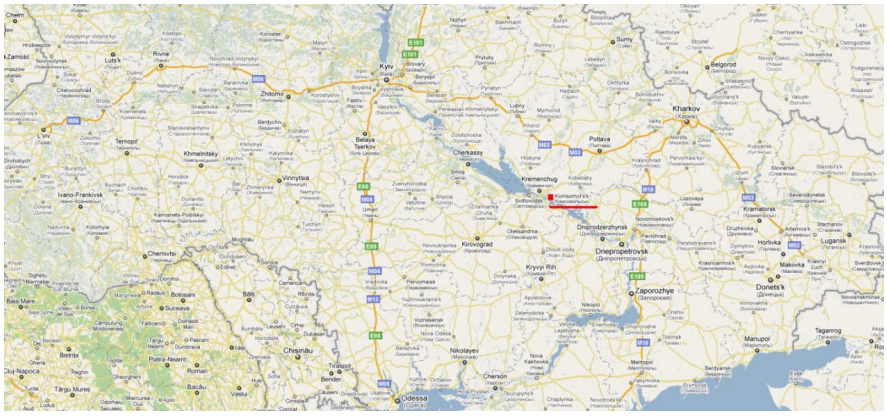

Figure 1 – Geographic location of the project

A.4.1.1. Host Party(ies):

Ukraine

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

Poltava region

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

Komsomolsk City

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

The project is located on the territory of Ferrexpo Poltava Mining. Ferrexpo Poltava Mining is located in the Poltava region in Komsomolsk city. The population of Komsomolsk totals approximately 54 th. people. Komsomolsk keeps holding leading positions in reforming of local self-government, education, medical and housing services. It should be noted that citizens participate in solving of important problems of the town life and implementation of various international innovation programs.

Raw material base of Ferrexpo Poltava Mining consists of Horyshne-Plavnynske and Lavrykovske deposits of ferruginous quartzites.

Geographic coordinates of Ferrexpo Poltava Mining location:
- 49º 00' 16" North latitude;
- 33º 39' 58" East longitude.

The area of Ferrexpo Poltava Mining production is shown on the figure 2.

Figure 2 – Area of Ferrexpo Poltava Mining production

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

Reduction in greenhouse gas emissions may be achieved as a result of improvement in power efficiency of the plant by the implementation of 3 subprojects. The fulfillment of scheduled activities of decrease in energy efficiency of the production at Ferrexpo Poltava Mining will result in reduction in volumes of natural gas consumption for pellets, decrease in electric energy consumption in production of iron ore concentrate and pellets, reduction in diesel fuel consumption during mining rock transportation which will decrease green house gas emissions into the air.

1. Reduction of specific consumption of diesel fuel during mining rock transportation

Mining rock transportation at open pit by technological vehicles is an integral part of the enterprise technological cycle. The proposed subproject will allow to reduce the specific consumption of diesel fuel during mining rock transportation by implementing the following modernization activities:

- modernization of dump-trucks fleet operating in mining rock transportation.

Modernization of dump-trucks fleet envisages the purchase of new dump-trucks with progressive technical characteristics (Euro-5 and Euro-8 standards engines) in comparison to those that were used in baseline – Euro-2 and Euro-3.

The GHG emissions reduction is calculated based on the decrease of the specific consumption of diesel fuel during mining rock transportation by implementing the planned activities.
The estimated reduction of the specific consumption of diesel fuel during mining rock transportation in the result of implementation of the planned activities makes 26 g/tone-kilometer.

The photographic images of the new dump-trucks are shown on figures 3 and 4.

Figure 3 - Caterpillar 785C

Figure 4 - Hitachi EH 3500ACII

The schedule of this subproject implementation is shown below:

Name of the phase	Beginning of work	End of work
The modernization of dump-trucks fleet operating in mining rock transportation	18/06/2002	25/12/2012

Purchased dump-trucks are listed in the table below:

Name	Quantity, units	Registration year	Fabrication #	Technological #
1	2	3	4	5
HD-785-5 Komatsu	22	2003	4395	331
			4396	333
			4397	335
			4398	337
			4399	339
			4400	341
			4401	343
		2005	4665	303
			4666	305
			4690	307
			4691	309
			4692	311
			4729	315
			4730	317
			4747	319
			4571	321
			4572	323
			4573	325
			4574	327
			4575	329
		2006	4958	345
			4959	347
БелАЗ-75145	6	2004	1491	138
			1490	158
			1489	160
			1501	140
			1504	168
		2005	1512	170

1	2	3	4	5
CATERPILLAR-777D	12	2005	AGC01630	401
			AGC01636	402
			AGC01645	403
			AGC02037	404
			AGC02068	405
		2006	AGC02278	429
			AGC02279	430
			AGC02352	431
			AGC02362	432
			AGC02277	408
			AGC02112	407
			AGC02110	406
CATERPILLAR-785C	25	2007	APX01091	101
			APX01092	102
			APX01093	103
			APX01131	104
			APX01132	105
			APX01133	106
		2008	APX01248	107
			APX01249	108
			APX01294	109
			APX01296	110
			APX01298	111
			APX01292	112
			APX01459	122
			APX01397	114
			APX01398	115
			APX01455	116
			APX01457	117
			APX01461	118
			APX01463	119
			APX01469	120
			APX01467	121
			APX01465	123
		2011	APX01799	124
			APX01801	126
			APX01800	125

1	2	3	4	5
БелАЗ-7513	4	2008	Y3B7513A80000984	422
			Y3B7513H80000986	423
			Y3B7513P80001013	424
			Y3B7513K80001028	425
Hitachi EH-3500	5	2011	HCM8R800C00010034	440
			HCM8R800T00010035	441
			HCM8R800P00010036	442
			HCM8R800C00010039	443
			HCM8R800K00010040	444

2. Modernization of iron ore concentrate production

According to the technological scheme, iron ore concentrate production requires considerable amounts of electric energy supplied by UETG.

For iron ore concentrate production the raw iron ore is transported to crushing plant from the open pit. The Crushing plant consists of:

- primary crushing shops with two KKD-1500/180 crushers where the initial ore is supplied with the limit lump size of 1200 mm in two measurements and with the final product size of 250-0 mm;
- two identical shops of secondary and fine crushing with 14 sections equipped with Superior – 4000 and КСДТ-2200Т secondary crushers with the final product size of 75-0 mm and КМДТ-2200Т, Hydrocone-4000 and Hydrocone-6800 fine crushers with the final product size of 20-0 mm;
- two dry magnetic separation shops with 7 sections equipped with high-effective magnetic separators carrying out dry beneficiation of the ore. There are also Barmac B-9100 high-speed impact rotary crushers for additional crushing before ore is supplied to parabolic bins of the Concentrating Plant.

The Concentrated Plant consists of 15 processing sections located in two buildings. Cummingtonite and magnetite quartzites with the total Fe content 29-30% are processed at 8 processing sections in the building No 1, and magnetite quartzites with the total Fe content 34-35% are processed at 7 process sections in the building No 2. The ore grinding is carried out in two stages using wet grinding. The complex of units consists of rod mills and ball mills, one- and two spiral classifiers and hydrocyclones. Wet magnetic concentration is performed in two stages by ПБМ-150/200ПП and ПБМ-90/250ПП 8-polar and 14-polar magnetic separators. Desliming of the magnetic substance is performed in three steps in МГС-5 and МГС-9 magnetic and hydraulic separators.

The proposed subproject will allow to reduce the specific consumption of electric energy per ton of produced iron ore concentrate through the performance of the following modernization activities:

- replacement of КМДТ crushers by Hydrocone H-4000 and Hydrocone H-6800 crushers;
- replacement of КСДТ crushers by Superior S-4000 crushers (the photographic image of Superior S-4000 crushers is shown on figure 5);
- the change of the technological scheme of iron ore concentrate production from 3-stage crushing process into 2-stage crushing process by installation of Barmac B-9100 crushers (the photographic image of Barmac B-9100 crushers is shown on figure 6);

- implementation of the automatic control system of Barmac B-9100 crushers loading;
- replacement of ТК-15 apron feeders by PF 12,5/20-45 vibrating feeders with less power of electric drive;
- stabilizing of 8ГрК pumps operation by installation of FR-F740 thyristor frequency converters;
- replacement of ГИТ-51Н single-deck screens by SKH6.08*2K double-deck screens;
- replacement of DS1224-65 separators by СБаМ-0,9/2,5П and СБСМ-1,2/2,5П separators;
- implementation of automated system for КМДТ and КСДТ crushers loading;
- replacement of 12Гр pumps by Metso company XR350 and MR350 pumps;
- a complex automation of crushed iron ore grinding sections #10-15 using ACS TP on the basis of Mitsubishi company equipment;
- modernization of Д6300/80 pumping units at ОНС-1 water recycling stations by installing new pump impellers;
- change in technology of industrial water supply to the concentrating mills #1 and #2;
- modernization of Д6300/80 pumping units at ОНС-2 water recycling stations by installing new pump impellers;
- reconstruction of crushed iron ore grinding sections #1-8 by the replacement of present МСЦ3.6*5.5 and МШР4*5 mills by МСЦ3.85*5.5 and МШР4.43*5.01 mills (the photographic image of МСЦ3.85*5.5 and МШР4.43*5.01 mills is shown on figures 7 and 8 correspondingly);
- establishment of thickeners on the pumping lines of the pulp from the pulp-pumping stations number 1 and number 2.

Figure 5 – Superior S-4000 crusher

Figure 6 – Barmac B-9100 crusher

Figure 7 – МСЦ3.85*5.5 mill

Figure 8 – МШР4.43*5.01 mill

The expected reduction in specific electric energy consumption for production of 1 ton of iron ore concentrate after the fulfillment of the mentioned modernization activities is 18 kWh per 1 ton of iron ore concentrate.

The proposed subproject will allow to reduce the amount of electric energy consumption from UETG, that will let to reduce the amount of fossil fuels combustion needed for electric energy production at Ukrainian power engineering plants.

Schedule of this subproject implementation is shown below:

Name of the phase	Beginning of work	End of work
Replacement of КМДТ crushers by Hydrocone H-4000 and Hydrocone H-6800 crushers	09/02/2000	10/01/2005
Replacement of КСДТ crushers by Superior S-4000 crushers	09/02/2000	22/03/2002
The change of the technological scheme of iron ore concentrate production from 3-stage crushing process into 2-stage crushing process by installation of Barmac B-9100 crushers	18/02/2000	15/07/2009
Implementation of the automatic control system of Barmac B-9100 crushers loading	12/03/2001	17/12/2010
Replacement of ТК-15 apron feeders by PF 12,5/20-45 vibrating feeders with less power of electric drive	15/03/2002	11/02/2008
Stabilizing of 8ГрК pumps operation by installation of FR-F740 thyristor frequency converter	13/08/2005	10/01/2006
Replacement of ГИТ-51Н single-deck screens by SKH6.08*2K double-deck screens	14/01/2004	24/03/2008
Replacement of DS1224-65 separators by СБаМ-0,9/2,5П and СБСМ-1,2/2,5П separators	14/01/2004	15/07/2009
Implementation of automated system for КМДТ and КСДТ crushers loading	22/11/2005	15/12/2008
Replacement of 12Гр pumps by Metso company XR350 and MR350 pumps	21/11/2006	15/07/2009
A complex automation of crushed iron ore grinding sections #10-15 using ACS TP on the basis of Mitsubishi company equipment	20/09/2006	01/11/2014
Modernization of Д6300/80 pumping units at ОНС-1 water recycling stations by installing new pump impellers	10/07/2008	02/07/2009
Change in technology of industrial water supply to the concentrating mills #1 and #2	25/06/2008	31/03/2012
Modernization of Д6300/80 pumping units at ОНС-2 water recycling stations by installing new pump impellers	27/07/2007	07/04/2008
Reconstruction of crushed iron ore grinding sections #1-8 by the replacement of present МСЦ3.6*5.5 and МШР4*5 mills by МСЦ3.85*5.5 and МШР4.43*5.01 mills	16/08/2008	20/03/2010
Establishment of thickeners on the pumping lines of the pulp from the pulp-pumping stations number 1 and number 2	01/07/2009	25/12/2016

The expected reductions in specific electric energy consumption on iron ore concentrate production under the project activity in relation to the baseline scenario are presented in the following schedule (figure 9).

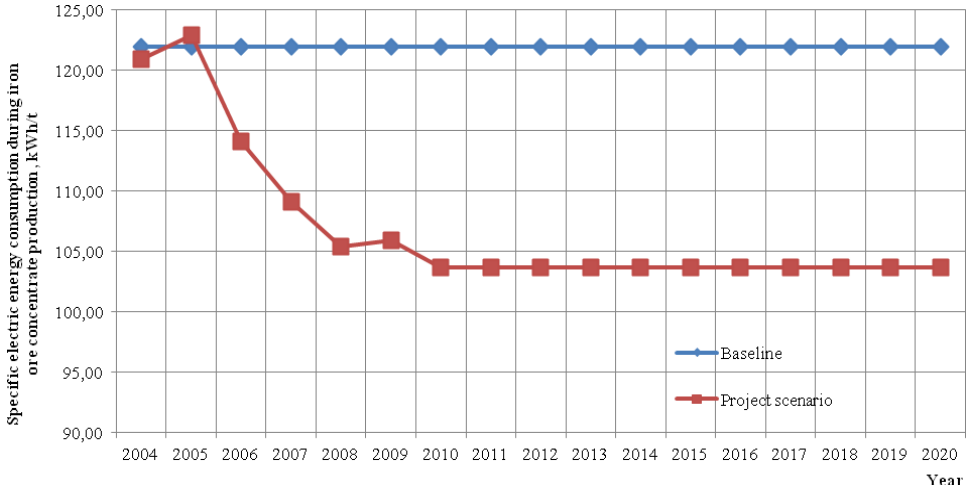

Figure 9 – Schedule of the expected reductions in specific electric energy consumption on iron ore concentrate production

3. Modernization of pellets production

According to the technological scheme pellets production requires considerable amounts of electric energy, delivered from UETG, and volumes of natural gas delivered from Ukrainian Gas Transmission system.

Pelletizing Plant consists of 4 technological lines. The Plant applies the "grate-rotary kiln-ring cooler" technology of American ALLIS CHALMERS company. For pellet production the following components are used: concentration plant magnetic and flotation concentrate, purchased concentrate, dolomitic limestone, bentonite clay, peat. Natural gas is used as a fuel. The concentrate in the form of pulp is supplied by the pipelines, thickened in radial thickeners and through pulp dividers distributed to vacuum filters. Purchased concentrate can be used as an additional resource, it is unloaded by the car tippler, supplied to resources' stockpile where it undergoes repulping and further processing together with the pulp from Concentrating plant. Preparation of additives for pelletizing is made by means of crushing, drying in drum drier and grinding in ball mills. Concentrate, limestone and bentonite from bins are fed through dosaging devices to rotary mixers for mixing. The mixture of materials undergoes balling in drum pelletizers which operate in closed cycle with roller screens. With the help of reciprocal conveyor and roller stacker raw pellets are loaded on the travelling fire grate (B = 4597 mm, L = 43967 mm) where they are dried and preheated up to 1000 centigrade. The pellets are roasted in the rotary kiln at 1240-1260 centigrade. Kiln dimensions: diameter - 6705 mm, length - 45720 mm. The pellets are cooled to 100-120 centigrade in the ring cooler with diameter 20m.

The proposed subproject will allow to reduce the specific consumption of electric energy and specific consumption of natural gas per ton of produced pellets by performance of the following modernization activities:

- reconstruction of the seal of the tube furnace #2 loading part by establishing the SUPERDEAL seal;
- reconstruction of the seal of the tube furnace #3 loading part by establishing the SUPERDEAL seal;
- reconstruction of seal of the tube furnace #4 loading part by establishing the SUPERDEAL seal;
- reconstruction of the seal of the tube furnace #1 loading part by establishing the SUPERDEAL seal;
- reconstruction of roller screens at the technological lines ##1-4 pelletizing section;
- reconstruction of the seal of the tube furnaces ##1-4 unloading part by establishing the SUPERDEAL seal;
- modernization of the tube furnaces ##1-4 fuel system by change of present gas burner into Unitherm Cemcon company (Austria) gas burner.

The photographic image of the tube furnace is shown on figure 10.

Figure 10

The expected reduction in electric energy consumption needed for production of 1 ton of pellets after the fulfillment of the mentioned modernization activities is 8 kWh per 1 ton of pellets

The expected reduction in natural gas consumption for production of 1 ton of pellets after the fulfillment of the mentioned modernization activities is 12 cu. m. per 1 ton of pellets.

Schedule of this subproject implementation is shown below:

Name of the phase	Beginning of work	End of work
1	2	3
Reconstruction of the seal of the tube furnace #2 loading part by establishing the SUPERDEAL seal	10/01/2000	30/05/2000
Reconstruction of the seal of the tube furnace #3 loading part by establishing the SUPERDEAL seal	10/01/2000	29/08/2003

1	2	3
Reconstruction of seal of the tube furnace #4 loading part by establishing the SUPERDEAL seal	10/01/2000	16/11/2005
Reconstruction of the seal of the tube furnace #1 loading part by establishing the SUPERDEAL seal	10/01/2000	17/08/2006
Reconstruction of roller screens at the technological lines ##1-4 pelletizing section	11/10/2006	22/06/2009
Reconstruction of the seal of the tube furnaces ##1-4 unloading part by establishing the SUPERDEAL seal	09/01/2007	25/12/2014
Modernization of the tube furnaces ##1-4 fuel system by change of present gas burner into Unitherm Cemcon company (Austria) gas burner	05/08/2009	25/12/2013

The expected reductions in specific electric energy and natural gas consumption on pellets production under the project activity in relation to the baseline scenario are presented in the schedules below. The data on specific electric energy consumption are presented on the figure 11 and the data on natural gas consumption are presented on the figure 12.

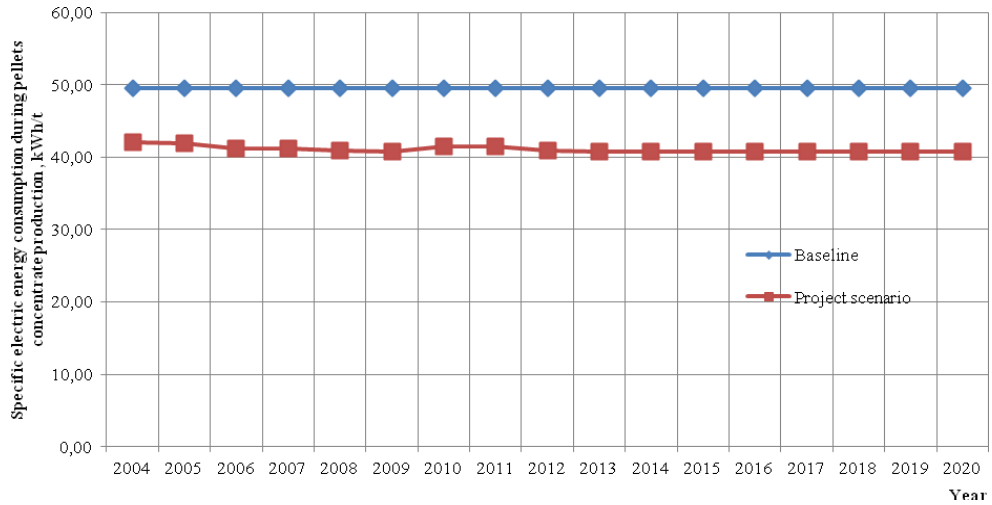

Figure 11 – The expected schedule of reductions in specific electric energy consumption on pellets production

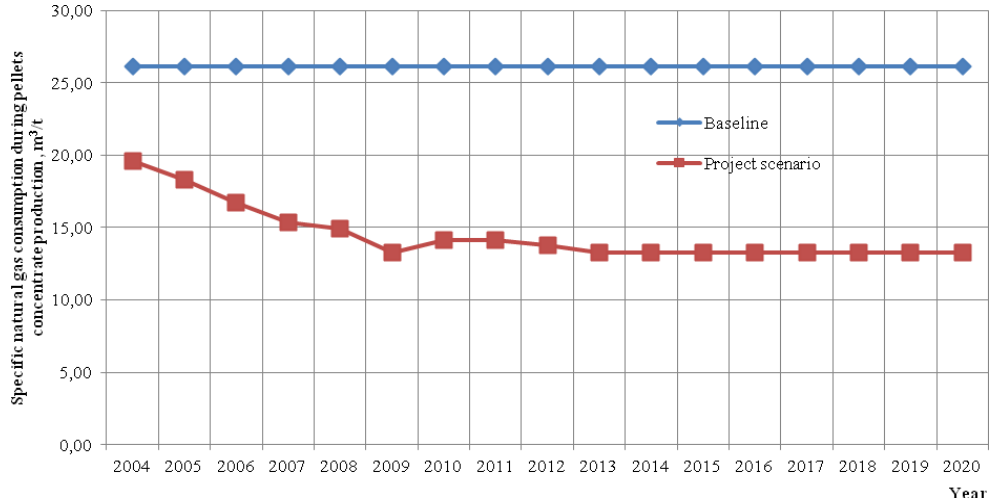

Figure 12 – The expected schedule of reductions in natural gas consumption on pellets production

The project envisages the implementation of new, technically complicated equipment, which demands high level of qualification from maintenance staff in order to reach the estimated energy efficiency figures.

Specialists both from leading world companies and Ukrainian enterprises were involved in consulting and development of the modernization projects.

To minimize potential problems related to the lack of experience, specialists of the company regularly take extension training courses, participate in industry seminars and conferences.

High level of qualification of Ferrexpo Poltava Mining personnel and the company management interest in the implementation of specified project are the guarantee for successful realization of the project.

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:

The major activity of Ferrexpo Poltava Mining is a production of crude ore concentrate and pellets. The company provides a full technological cycle starting with iron ore mining and ending up with production of iron ore pellets.

The emissions reduction will occur due to the implementation of 3 subprojects:

1. Reduction of diesel fuel specific consumption during mining rock transportation

Reduction in greenhouse gas emissions is estimated on the basis of reduction in specific consumption of diesel fuel during mining rock transportation. The reduction of specific diesel fuel consumption will decrease the quantity of diesel fuel combustion during the mining rock transportation. The decrease in quantity of diesel fuel combustion will allow to reduce the GHG emissions into the atmosphere.

2. Modernization of iron ore concentrate production

The proposed subproject will allow to reduce the specific consumption of electric energy per ton of produced iron ore concentrate. Energy consumption reduction will allow to decrease the amount of energy consumption out of UETG, this will allow to reduce the fossil fuel combustion needed for energy production at Ukrainian energy enterprises.

3. Modernization of pellets production

The proposed subproject will allow to reduce the specific consumption of electric energy and specific consumption of natural gas per ton of produced pellets. Energy consumption reduction will allow to decrease the amount of energy consumption out of UETG, this will lead to the reduction of fuel consumption needed for energy production thus causing the GHG emissions reduction at Ukrainian energy enterprises. The decrease in quantity of natural gas combustion needed for pellets production will let to reduce the GHG emissions.

Environmental legislation is not yet perfect in Ukraine, so far it is not fully adapted to the current requirements of international environmental bodies and European Union standards. There is no targeted state policy in Ukraine requiring to reduce greenhouse emissions by the mining industry enterprises.

Significant financial resources are required for implementation of all activities scheduled according to the project. Project-related costs are planned to be partly compensated at the expense of reduction in energy recourses and thus, leading to the decrease of production cost. However this mechanism of investments reimbursement does not allow to fulfill all the measures within the enterprise modernization project framework.

To implement the planned energy-saving measures in full, both own funds of the Company and credit resources are used. The latter source has being disadvantageous because of high interest rates. The possibility to attract investments using mechanism of joint implementation allows the Company management to perform measures which could not be implemented without funds that Ferrexpo Poltava Mining plans to receive from selling emission reduction units.

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

Beginning of crediting period starts in 2004. From the beginning of crediting period till the end of 2007, the assigned amount units (AAUs) will be generated.

	Years
Duration of the crediting period	4
Year	Number of the assigned amount units, t $CO_{2\,e}$
2004	172 619
2005	192 304
2006	313 592
2007	410 084
Total emission reduction during the crediting period (t $CO_{2\,e}$)	1 088 599
Average annual emission reduction during the crediting period (t $CO_{2\,e}$)	272 150

The first commitment period under the Kyoto Protocol is from 2008 till 2012.

	Years
Duration of the crediting period	5
Year	Number of the emission reduction units, t $CO_{2\,e}$
2008	500 956
2009	535 643
2010	592 748
2011	610 726
2012	622 841
Total emission reduction during the crediting period (t $CO_{2\,e}$)	2 862 914
Average annual emission reduction during the crediting period (t $CO_{2\,e}$)	572 583

In case if after the first commitment period under the Kyoto Protocol, it will be prolonged, the crediting period may be extended till the finalization of expected project operational lifetime.

	Years
Duration of the crediting period	8
Year	Number of the emission reduction units, t $CO_{2\,e}$
2013	634 141
2014	634 702
2015	634 702
2016	634 702
2017	634 702
2018	634 702
2019	634 702
2020	634 702
Total emission reduction during the crediting period (t $CO_{2\,e}$)	5 077 055
Average annual emission reduction during the crediting period (t $CO_{2\,e}$)	634 632

A.5. Project approval by the Parties involved:

Justification materials for the potential joint implementation project, intending to obtain a letter of endorsement by the owner of the source, were sent to the State Environmental Investment Agency of Ukraine. The State Environmental Investment Agency of Ukraine issued for this purpose a Letter of Endorsement #1774/23/7 dated 07/07/2011.

After the procedure of project determination, the final version of documentation and the determination report will be submitted to the State Environmental Investment Agency of Ukraine in order to obtain a Letter of Approval.

SECTION B. Baseline

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

The baseline for this project was chosen according to "Guidance on criteria for baseline setting and monitoring" (version 03)[1]. Correspondingly to the document, the selection of the baseline can be stated on a certain approach that is used only for a specific JI project, or on a standard approach with the use of methodologies including small-scaled that are approved by the Joint Implementation Supervisory Committee.

Since this project consists of several subprojects that are aimed at different key factors allowing to reduce greenhouse gas emission, the baseline was identified on the basis of certain approach. According to "Guidance on criteria for baseline setting and monitoring" (version 03) for such projects, based on the certain approach, specific methodological parts can be included into the baseline setting, that are approved by the Joint Implementation Supervisory Committee. The methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality" (version 03.0.0) [2] was chosen for the project baseline setting.

Baseline setting based on identification of the most plausible among the alternative scenarios, that are able to secure output production quality, without reducing the volume of production, and meet the requirements of the acting legislation in Ukraine.

GHG emission reduction is not obligatory according to the active legislation of Ukraine. Law #2707-XII of Ukraine "On air protection"[3] dated 16/10/1992 regulates the national policy of Ukraine on hazardous emissions into the air. This Law doesn't include any requirements concerning GHG emissions by the industry. Requirements concerning permissible air pollution are envisaged by the Order #309 dated 27/06/2006 on "On approving the maximum permissible dose of stationary sources pollutants"[4].

Baseline of this project was selected by the following steps:
1. Identification of realistic and effective alternatives;
2. Rejection of alternatives that do not comply with active legislations and regulations;
3. Rejection of alternatives that include barriers for their achievement.

Step 1. Identification of realistic and effective alternatives

To determine the baseline, two the most probable alternatives were selected for the project activity.

Alternative 1.1	Continuation of current situation at the plant without activities improving power efficiency
Alternative 1.2	Performance of project activities without joint implementation mechanisms

[1] http://ji.unfccc.int/Ref/Documents/Baseline_setting_and_monitoring.pdf
[2] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v3.0.0.pdf
[3] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=2707-12
[4] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=z0912-06

1.1 Continuation of current situation at the plant without activities improving power efficiency

According to this alternative, the enterprise will not implement any modernization of enterprise production capacity and technological vehicles.

1.2 Performance of project activities without joint implementation mechanisms

This alternative presumes to implement all the modernization activities at the plant, without using joint implementation mechanisms.

Step 2. Rejection of alternatives that do not comply with active legislations and regulations

All the above mentioned alternatives comply with the active legislation requests and corresponding regulations.

Step 3. Rejection of alternatives that include barriers for their achievement

Substep 3a. Financial barriers

Alternative 1.1 does not include significant financial issues, the plant does not require modernizations and can continue to purchase the diesel fuel, natural gas and electric power for production and heating needs of the plant.

Alternative 1.2 is not financially attractive without engaging the joint implementation mechanisms. Introduction of this alternative requires significant plant modernization and financial investments that are possible to obtain by joint implementation project implementation.

Substep 3b. Technological barriers

Alternative 1.1 does not include technological barriers, the plant does not require modernization and can continue to use its production facilities and technological vehicles, following the corresponding exploitation instructions and planned maintenance and repair works.

Alternative 1.2 requires significant plant modernization. The project presumes the installation of a new, technically complicated, equipment which demands high level of qualification from maintenance staff in order to reach the estimated energy efficiency figures.

Selection of baseline

After the fulfilling the three steps, only one realistic scenario was chosen, i.e. continuation of the current situation at the plant without modernization envisaged by the project (alternative 1.1), and, thus, it is the baseline of the joint implementation project. The alternative 1.2 was set aside at step 3, as there are too many barriers (technical and financial) for its implementation.

The key parameters for setting the baseline are presented in the tables below.

Data/Parameter	$SFC_{diesel,BC}$
Data unit	g/tkm
Description	Baseline specific diesel fuel consumption during the mining rock transportation
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	A fixed value is based on the chronological data on mining rock transportation during 3 years before the subproject implementation, i. e. from 1999 till 2001
Value of data applied (for ex ante calculations/determinations)	128,54
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	FT_y
Data unit	th. tkm
Description	Vehicles freight turnover during the baseline mining rock transportation for the year *y*
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Report on materials consumption standard performance
Value of data applied (for ex ante calculations/determinations)	The expected freight turnover is calculated based on the estimated data on goods production by the enterprise

Year	th. tkm
2004	162 276,5
2005	187 143,9
2006	206 773,6
2007	257 108,1
2008	304 686,7
2009	351 915,6
2010	346 943,4
2011	345 000,0
2012	345 000,0
2013	345 000,0
2014	345 000,0
2015	345 000,0
2016	345 000,0
2017	345 000,0
2018	345 000,0
2019	345 000,0
2020	345 000,0

Justification of the choice of data or description of measurement methods and procedures (to be) applied	The measurement of the mining rock transportation amount and transportation distance is made by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to the periodic state calibration
Any comment	-

Data/Parameter	NCV_{diesel}
Data unit	TJ/th. tons
Description	Diesel fuel net calorific value
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	2004-2007 years – "Reviewed IPCC Guidelines for National Greenhouse Gas Inventories", 1996[1], after 2008 – "National Inventory Report of Anthropogenic Emissions by Sources and Removals by Sinks of Greenhouse Gases in Ukraine for 1990-2009" dated 06/07/2011[2] (hereafter – The National Inventory of Ukraine)
Value of data applied (for ex ante calculations/determinations)	43,33 – 2004-2007 years; 42,20 – 2008 year; 42,40 – after 2009 year
Justification of the choice of data or description of measurement methods and procedures (to be) applied	"Reviewed IPCC Guidelines for National Greenhouse Gas Inventories", 1996 and The National Inventory of Ukraine are subject to periodic revision and relevant corrective data amendments
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-

Data/Parameter	$OXID_{diesel}$
Data unit	mass or volume unit
Description	Factor of carbon oxidation during diesel fuel combustion
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The National Inventory of Ukraine
Value of data applied (for ex ante calculations/determinations)	0,99
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data
QA/QC procedures (to be) applied	-
Any comment	-

[1] http://www.ipcc-nggip.iges.or.jp/public/gl/russian.html
[2] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2011-nir-08jun.zip

Data/Parameter	W_{diesel}
Data unit	t C/TJ
Description	The amount of carbon in diesel fuel
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The National Inventory of Ukraine
Value of data applied (for ex ante calculations/determinations)	20,2
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-

Data/Parameter	$SEC_{iron\ ore}$
Data unit	kWh/t
Description	Baseline specific electric energy consumption during iron ore concentrate production
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The fixed value for this parameter is based on the chronological data on iron ore concentrate production within 3 years before subproject activity implementation, i. e. from 1997 till 1999
Value of data applied (for ex ante calculations/determinations)	121,99
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$P_{iron\ ore,\ y}$
Data unit	ton
Description	The amount of baseline iron ore concentrate produced for the year *y*
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Fact sheet on goods turnover
Value of data applied (for ex ante calculations/determinations)	The expected amount of produced iron ore concentrate is calculated on the estimated production data of the enterprise
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The calculation of the produced iron ore concentrate amount is made according to the "Instructions on compiling the average monthly goods turnover balance of the metal in the mining and iron ore processing processes"
QA/QC procedures (to be) applied	-
Any comment	-

Year	ton
2004	7 909 400
2005	8 313 900
2006	9 695 200
2007	10 651 600
2008	10 458 800
2009	10 564 600
2010	11 225 500
2011	11 293 000
2012	11 293 000
2013	11 293 000
2014	11 293 000
2015	11 293 000
2016	11 293 000
2017	11 293 000
2018	11 293 000
2019	11 293 000
2020	11 293 000

Data/Parameter	$EF_{co2,elec}$
Data unit	t CO_2 e/MWh
Description	Emission factor for UETG
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	2004-2005 – "Operational Guidelines for Project Design Documents of Joint Implementation Projects. Volume 1: General guidelines" (Version 2.3)[1]; 2006-2007– Study "Standardized emission factors for the Ukrainian electricity grid" (Version 5)[2]; 2008 – The order #62 dated 15/04/2011, issued by the National Environmental Investment Agency of Ukraine[3]; 2009 – The order #63 dated 15/04/2011, issued by the National Environmental Investment Agency of Ukraine[4]; 2010 –The order #43 dated 28/03/2011, issued by the National Environmental Investment Agency of Ukraine[5]; 2011-2020 – The order #75dated 12/05/2011, issued by the National Environmental Investment Agency of Ukraine[6]
Value of data applied (for ex ante calculations/determinations)	0,916 – year 2004; 0,896 – years 2005-2007; 1,082 – year 2008; 1,096 – year 2009; 1,093 – year 2010; 1,090 – 2011-2020
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Studies to determine this factor for 2004-2005 was held by the Ministry of Economic Affairs of the Netherlands, for 2006-2007 was held by the Global Carbon B.V. company and determined by the TUEV SUED company, the further research was held under the control of the National Environmental Investment Agency of Ukraine
QA/QC procedures (to be) applied	-
Any comment	-

[1] ji.unfccc.int/CallForInputs/BaselineSettingMonitoring/ERUPT/GuidVol1.doc
[2] http://ji.unfccc.int/UserManagement/FileStorage/46JW2KL36KM0GEMI0PHDTQF6DVI514
[3] http://www.neia.gov.ua/nature/doccatalog/document?id=127171
[4] http://www.neia.gov.ua/nature/doccatalog/document?id=127172
[5] http://www.neia.gov.ua/nature/doccatalog/document?id=126006
[6] http://www.neia.gov.ua/nature/doccatalog/document?id=127498

Код поля изменен
Код поля изменен
Код поля изменен
Код поля изменен

Data/Parameter	$SFC_{pellets,NG,BC}$
Data unit	m^3/t
Description	Natural gas specific consumption during baseline pellets production
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The fixed value for this parameter is based on the chronological data on pellets production within 3 years before subproject activity implementation, i. e. from 1997 till 1999
Value of data applied (for ex ante calculations/determinations)	26,13
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$SEC_{pellets,elec,BC}$
Data unit	kWh/t
Description	Electric energy specific consumption during baseline pellets production
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The fixed value for this parameter is based on the chronological data on pellets production within 3 years before subproject activity implementation, i. e. from 1997 till 1999
Value of data applied (for ex ante calculations/determinations)	49,48
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$P_{pellets,y}$
Data unit	ton
Description	The baseline amount of pellets produced for the year *y*
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Fact sheet on goods turnover
Value of data applied (for ex ante calculations/determinations)	The expected amount of produced pellets is calculated on the estimated production data of the enterprise
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The measurement of the produced pellets amount is made by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to periodic calibration
Any comment	-

Year	ton
2004	7 367 000
2005	7 756 900
2006	8 550 200
2007	9 072 300
2008	9 035 100
2009	8 766 600
2010	10 031 100
2011	10 300 000
2012	10 300 000
2013	10 300 000
2014	10 300 000
2015	10 300 000
2016	10 300 000
2017	10 300 000
2018	10 300 000
2019	10 300 000
2020	10 300 000

Data/Parameter	$NCV_{NG, BC}$
Data unit	Gcal/mil. m^3
Description	Natural gas net calorific value in baseline
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Certificate on natural gas quality physical and chemical characteristics
Value of data applied (for ex ante calculations/determinations)	8 612
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The fixed value for this parameter is based on the chronological data on natural gas net calorific value for 1998-1999 according to the Certificates on natural gas quality physical and chemical characteristics that were presented by the natural gas supplier
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-

Data/Parameter	$OXID_{NG}$
Data unit	mass or volume unit
Description	Factor of carbon oxidation during natural gas combustion
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The National Inventory of Ukraine
Value of data applied (for ex ante calculations/determinations)	0,995
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	W_{NG}		
Data unit	t C/TJ		
Description	The amount of carbon in natural gas		
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units		
Source of data (to be) used	The National Inventory of Ukraine		
Value of data applied (for ex ante calculations/determinations)		Year	t C/TJ
		2004	15,13
		2005	15,14
		2006	15,18
		2007	15,11
		2008	15,12
		2009	15,11
		2010	15,11
		2011	15,11
		2012	15,11
		2013	15,11
		2014	15,11
		2015	15,11
		2016	15,11
		2017	15,11
		2018	15,11
		2019	15,11
		2020	15,11
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data		
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values		
Any comment	-		

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

Emission sources of this project were determined separately for each subproject. Sources of greenhouse gases emissions are:

1. Reduction of diesel fuel specific consumption during mining rock transportation – the sources of project and baseline emissions are vehicles that provide mining rock transportation. The emissions are caused by the diesel fuel combustion in vehicles engines. Reduction in greenhouse gas emissions will be achieved due to the reduction in specific consumption of diesel fuel during mining rock transportation. The reduction of specific diesel fuel consumption will decrease the emissions caused by diesel fuel combustion during the mining rock transportation. The decrease in quantity of diesel fuel consumption will allow to reduce the GHG emissions into the atmosphere;

2. Modernization of iron ore concentrate production – the baseline and project emission sources caused by energy consumption from Ukrainian Electricity Transmission Grid are energy enterprises which generate energy for UETG. Emissions reduction will be achieved by the reduction in the specific consumption of electric energy needed for iron ore concentrate production. Energy consumption reduction will allow to decrease the amount of energy consumption out of UETG, this will allow to

reduce the fuel consumption needed for energy production and, thus, GHG emission reduction at Ukrainian energy enterprises.

3. Modernization of pellets production – the baseline and project emission sources caused by natural gas consumption are technological equipment of the pellets production, and emissions caused by energy consumption from Ukrainian Electricity Transmission Grid are energy enterprises which generate energy for UETG. The reduction in the specific consumption of electric energy and specific consumption of natural gas during pellets production will lead to the reduction of GHG emissions into the atmosphere. Energy consumption reduction will allow to decrease the amount of energy consumption out of UETG, this will lead to the reduction of fuel consumption needed for energy production thus causing the GHG emissions reduction at Ukrainian energy enterprises.

It is important to note that the implementation of measures mentioned above will allow to reduce greenhouse gas emissions into the atmosphere, that cannot be achieved if this project will not be introduced. Ferrexpo Poltava Mining has no financial benefits from the reduction of greenhouse emissions into the atmosphere. Therefore any reduction of harmful emissions to the atmosphere achieved within the range of joint implementation project will be additional.

The additionality of proposed joint implementation project was estimated according to the "Tool for the demonstration and assessment of additionality" (version 05.2)[1]. This tool presumes a step-by-step estimation of project additionality.

Step 1. Identification of alternative activities within the project that comply with Ukrainian active legislation

Sub-step 1a. Determination of alternative activities within the project:

As mentioned in section B.1, two more activities were determined besides the joint implementation project:
1 To continue current situation without implementation of energy-saving measures;
2 Implementation of project activities without joint implementation mechanisms.

Sub-step 1b. Conformity to the active legislation:

All the alternatives mentioned above conform the active legislation and relevant regulations.

[1] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v5.2.pdf

Код поля изменен

According to the Ukrainian law in force the reduction of GHG emissions into the atmosphere is not obligatory. The national policy concerning this subject is determined by the Ukrainian law "On the air protection"[1] #2707-XII dated 16/10/1992. This law does not implement exact requirements concerning industrial emissions of greenhouse gases. The requirements concerning permitted emissions into the atmosphere are regulated by the Order #309 dated 27/06/2006 "On adoption of standards for permitted stationary sources air pollutants"[2], issued by the Ministry of Environmental Protection of Ukraine.

Step 2.Investment analysis

Sub- step 2a. The choice of appropriate analysis method.

"Tool for the demonstration and assessment of additionality" (version 05.2) provides three options of investment analysis:
Option I. Application of simple cost analysis;
Option II. Application of comparative investment analysis;
Option III. Application of benchmark analysis.

The proposed project gives also other advantages besides income from the realization of emission reduction units according to the joint implementation mechanisms, so the option I is not applied for this project.

The accepted baseline "To continue current situation at the plant without implementation of energy efficiency measures" does not suppose investment, so the option II is not applied for this project.

Regarding the abovementioned, the option III was chosen as appropriate.

Sub-step 2b.Option I. Application of simple cost analysis

Not applied.

Sub-step 2b. Option II. Application of comparative investment analysis

Not applied.

Sub-step 2b. Option III. Application of benchmark analysis.

For all modernization activities according to the project, investments of 363,363 million Euros are necessary, including:

[1] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=2707-12 Код поля изменен
[2] http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=z0912-06 Код поля изменен

Name of the phase	Value million. EUR
1	2
Subproject "Reduction of diesel fuel specific consumption during mining rock transportation"	
Modernization of dump-trucks fleet operating in mining rock transportation	174,393
Subproject "Modernization of iron ore concentrate production"	
Replacement of КМДТ crushers by Hydrocone H-4000 and Hydrocone H-6800 crushers	8,349
Replacement of КСДТ crushers by Superior S-4000 crushers	8,812
The change of the technological scheme of iron ore concentrate production from 3-stage crushing process into 2-stage crushing process by installation of Barmac B-9100 crushers	30,313
Implementation of the automatic control system of Barmac B-9100 crushers loading	0,298
Replacement of ТК-15 apron feeders by PF 12,5/20-45 vibrating feeders with less power of electric drive	4,384
Stabilizing of 8ГрК pumps operation by installation of FR-F740 thyristor frequency converter	1,159
Replacement of ГИТ-51Н single-deck screens by SKH6.08*2K double-deck screens	1,747
Replacement of DS1224-65 separators by СБаМ-0,9/2,5П and СБСМ-1,2/2,5П separators	1,925
Implementation of automated system for КМДТ and КСДТ crushers loading	0,239
Replacement of 12Гр pumps by Metso company XR350 and MR350 pumps	18,440
A complex automation of crushed iron ore grinding sections #10-15 using ACS TP on the basis of Mitsubishi company equipment	35,782
Modernization of Д6300/80 pumping units at ОНС-1 water recycling stations by installing new pump impellers	0,589
Change in technology of industrial water supply to the concentrating mills #1 and #2	14,363
Modernization of Д6300/80 pumping units at ОНС-2 water recycling stations by installing new pump impellers	0,462
Reconstruction of crushed iron ore grinding sections #1-8 by the replacement of present МСЦ3.6*5.5 and МШР4*5 mills by МСЦ3.85*5.5 and МШР4.43*5.01 mills	9,263
Establishment of thickeners on the pumping lines of the pulp from the pulp-pumping stations number 1 and number 2	40,639
Subproject "Modernization of pellets production"	
Reconstruction of the seal of the tube furnace #2 loading part by establishing the SUPERDEAL seal	0,961
Reconstruction of the seal of the tube furnace #3 loading part by establishing the SUPERDEAL seal	0,898
Reconstruction of seal of the tube furnace #4 loading part by establishing the SUPERDEAL seal	0,757
Reconstruction of the seal of the tube furnace #1 loading part by establishing the SUPERDEAL seal	0,769
Reconstruction of roller screens at the technological lines ##1-4 pelletizing section	4,243
Reconstruction of the seal of the tube furnaces ##1-4 unloading part by establishing the SUPERDEAL seal	3,423

1	2
Modernization of the tube furnaces ##1-4 fuel system by change of present gas burner into Unitherm Cemcon company (Austria) gas burner	1,153
TOTAL	**363,363**

The implementation of all modernization activities will allow to reduce the consumption of following energy resources:
- diesel fuel;
- electric energy;
- natural gas.

Due to the realization of subproject "Reduction of diesel fuel specific consumption during mining rock transportation" the amount of diesel fuel economy is estimated starting from 3,4 th. t per year at the first stages of project implementation up to 10,5 th. t per year after the realization of all the planned dump-truck fleet modernization activities. According to the Ferrexpo Poltava Mining financial documents the diesel fuel cost during the crediting period fluctuated from 240 to 660 EUR per diesel fuel ton. The expected Ferrexpo Poltava Mining income from diesel fuel economy will equal to 3,16 mil. EUR per year at the first stages of project implementation up to 57 mil. EUR per year after the realization of all the planned dump-truck fleet modernization activities.

Due to the realization of subprojects "Modernization of iron ore concentrate production" and "Modernization of pellets production" the amount of electric power economy is estimated starting from 37 th. MWh per year at the first stages of project implementation up to 290 th. MWh per year after the realization of all the enterprise modernization activities. According to the Ferrexpo Poltava Mining financial documents the electric energy cost during the crediting period fluctuated from 29 to 52 EUR per MWh of electricity. The expected Ferrexpo Poltava Mining income from electric power economy will equal to 3,92 mil. EUR per year at the first stages of project implementation up to 125 mil. EUR per year after the realization of enterprise modernization activities.

Due to the realization of subproject "Modernization of pellets production" the amount of natural gas economy is estimated starting from 21 mil. m^3 per year at the first stages of project implementation up to 130 mil. m^3 per year after the realization of all the enterprise modernization activities. According to the Ferrexpo Poltava Mining financial documents the natural gas cost during the crediting period fluctuated from 65 to 250 EUR per th. m^3 of natural gas. The expected Ferrexpo Poltava Mining income from natural gas economy will equal to 5,14 mil. EUR per year at the first stages of project implementation up to 275 mil. EUR per year after the realization of enterprise modernization activities.

The herein costs, rates and investments are listed without value added tax.

As the benchmark the interest rate of Ukrainian banks in foreign currency was chosen according to the reports of National Bank of Ukraine. Statistical average annual rate for crediting period in foreign currency per month acting in the moment of PDD design makes up 10.5%[1].

Отформатировано: Английский (США)

[1] http://www.bank.gov.ua/

Код поля изменен

On the basis of data mentioned above the internal rate of return (IRR) for the project was calculated for expected crediting period. It made up 9,1%. So the project benchmark is lower than the benchmark chosen. It indicates that the project is not financially attractive.

Отформатировано: Английский (США)

Отформатировано: Английский (США)

During the calculation of internal rate of return a project assets value was taken into account when developing a flow of financial expenses during the last project year.

To predict the value of energy resources in future a forecasted inflation rates were used based on retrospective data of the past years. The model was calculated in Euro, hence the forecasted inflation rates based on the past years for Eurozone were used. Average inflation rate for 1998-2010 made up 2,0%[1], therefore the prices on energy resources are modified by 2% for each year.

Sub-step 2c.Calculation and comparison of financial indexes (applied only for options II and III)

Financial indices, Net Present Value (NPV) and Internal Rate of Return (IRR), were calculated for two options: with and without joint implementation mechanisms.

Discount rate of 10.5% was used for calculation. It corresponds to integral interest rate of Ukrainian banks for the foreign currency according to the reports of National Bank of Ukraine. The financial indexes were calculated for the expected crediting period.

The expected income from emission reduction units sale with the price of 7.5 euro per 1 ton of CO_{2e} was calculated to count financial indexes for project activities with application of joint implementation mechanism advantages.

Due to the JI project activities implementation off-scheduled shutout of pellets and iron ore concentrate production equipment took place, that led to unplanned reduction of pellets and iron ore concentrate production. The lost profit was taken into account as costs while calculating financial indexes. Without JI project the pellets and iron ore concentrate production equipment would be in full operation without any standstills.

Simple pay-back period without application of joint implementation mechanisms is 15 years, with their application it makes up 13 years.

The calculations of NPV and IRR for both variants are given in the following table.

	Without application of joint implementation mechanisms	With implementation of joint implementation mechanisms
NPV, million euro	-8,960	7,088
IRR, %	9,1	11,5

[1] http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=en&pcode=tsieb060&tableSelection=1&footnotes=yes&labeling=labels&plugin=1

Код поля изменен

As calculation shows, the project is not financially attractive without application of joint implementation mechanisms, however their application makes the project more attractive for investment. So we can conclude that the project is additional.

Sub-step 2d. Sensitivity analysis (applied only for options II and III)

Profitability of the suggested project mainly depends on the cost of energy sources in Ukraine thus the sensitivity of the project basically depends on varying of energy sources prices in Ukraine. For the project profitability without application of joint implementation mechanisms to reach the same level with application of such mechanisms the cost of energy sources must increase greatly. But increase of natural gas cost is not profitable for the Ferrexpo Poltava Mining, because it will result in an increase of production cost. Possible increase of energy sources cost was considered in calculation of financial indices.

Project sensitivity was estimated at range of ±10% of energy resources value changes

	-10%	0%	+10%
NPV, mil. EUR	-17,630	-8,960	-0,290
IRR, %	7,7	9,1	10,5

As the estimation shows the project does not become attractive for investments even if the energy resources price increase in future. So we can conclude that the project is additional.

Step 3. Barrier analysis

Sub-step 3a. Identification of barriers impeding the realization of joint implementation project.

1. Financial barriers

The project activities are not financially attractive without application of joint implementation mechanisms. The realization of this project requires considerable modernization of the plant and financial investments, which can be obtained only through the realization of the joint implementation project.

2. Technological barriers

The project activities require considerable modernization of the plant. The project presumes the installation of new, technically complex equipment having which, in order to achieve planned goals on power efficiency, requires the high qualification of maintenance personnel.

Sub-step 3b. Inquiring if revealed barriers will not prevent the implementation of any scenarios (except the proposed project)

Neither financial nor technological barriers will prevent the baseline. The Ferrexpo Poltava Mining will not need investments for modernization, it can continue to buy natural gas and electric power from the state for production needs. According to the baseline the plant does not need modernization and can continue to use its technical equipment following operational instructions and maintenance processes.

Joint implementation mechanisms allow to obtain funds for planned project modernization, which allows to eliminate the financial restrictions for the proposed project. Many high-qualified specialists from leading foreign and Ukrainian companies are involved in the realization of the project. It allows to minimize technological barriers mentioned.

Step 4. Common practice analysis

Sub-step 4a.Analysis of other projects similar to the proposed joint implementation project.

In Ukraine there were no projects on energy efficient activities at mining enterprises.

Sub-step 4b. Discussion of other similar active projects

Other similar projects are not being realized.

Conclusion: the realization of the project will allow to reduce greenhouse gas emissions into the atmosphere, that cannot be achieved otherwise. Any reduction of harmful emissions into the atmosphere achieved within the range of joint implementation project will be additional

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

The project boundary was defined for each subproject separately.

1. Reduction of diesel fuel specific consumption during mining rock transportation

These subproject boundaries within the project and baseline encompass emissions that refer to diesel fuel combustion by technological vehicles during mining rock transportation.

2. Modernization of iron ore concentrate production

These subproject boundaries within the project and baseline encompass emissions that refer to electric energy consumption from UETG.

3. Modernization of pellets production

These subproject boundaries within the project and baseline encompass:
- emissions that refer to natural gas combustion by technological equipment during pellets production;
- emissions that refer to electric energy consumption from UETG.

Geographical boundaries of the project encompass physical (geographic) location of the emissions source. Project boundaries coincide with the physical boundaries of Ferrexpo Poltava Mining and energy enterprise that generates electric energy for Ferrexpo Poltava Mining production needs. Electric energy supplier for Ferrexpo Poltava Mining is Enerhorynok State Enterprise out of Poltava Mainline Power Grid of Ukrainian Northern Electric Power System that is transported by the Poltavaoblenerho OJSC distributing electricity networks. The project boundaries concern the region where the enterprise is located.

Technological vehicles and production equipment of Ferrexpo Poltava Mining are emission sources of this JI project, this means that all the emission sources are under the control of project participants.

GHG emissions are connected with fossil fuel combustion for production needs of the enterprise. The main emissions caused by fossil fuel combustion are CO_2 emissions; CH_4 and N_2O emissions are insufficient and are not included.

	Source	Gas	Included?	Justification/Explanation
Subproject "Reduction of diesel fuel specific consumption during mining rock transportation"				
Baseline	Diesel fuel combustion during mining rock transportation	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
Subproject "Modernization of iron ore concentrate production"				
Baseline	Electric energy consumption during iron ore concentrate production	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
Subproject "Modernization of pellets production"				
Baseline	Natural gas consumption during pellets production	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
	Electric energy consumption during pellets production	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
Subproject "Reduction of diesel fuel specific consumption during mining rock transportation"				
Project scenario	Diesel fuel combustion during mining rock transportation	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
Subproject "Modernization of iron ore concentrate production"				
Project scenario	Electric energy consumption during iron ore production	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
Subproject "Modernization of pellets production"				
Project scenario	Natural gas consumption during pellets production	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions
	Electric energy consumption during pellets production	CO_2	Yes	Main source of emissions
		CH_4	No	Insufficient emissions
		N_2O	No	Insufficient emissions

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: 07/07/2011.

Persons setting the baseline:

Name of company:	The Climate Protection Bureau LLP Company - project participant
Address:	Suite 2, 23-24 Great James Street
City:	London
Country:	UK
Contact person:	Oleksandr Chalenko
Position:	Expert in JI Projects
Telephone:	+380 44 2941495
Fax:	+380 68 9532672
e-mail:	rozrobnik@mail.ru

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

The proposed joint implementation project consists of 3 subprojects, every subproject includes several stages.

Starting date of the joint implementation project is 10 January 2000.

C.2. Expected operational lifetime of the project:

Expected operational lifetime of the project is at least 20 years (240 months).

C.3. Length of the crediting period:

17 (seventeen) years, that is 204 (two hundred and four) months.

Beginning of the crediting period is 01 January 2004. During the period from 01 January 2004 till 31 December 2007 the assigned amount units (AAUs) will be generated, the duration of the period is 4 years (48 months).

Emission reduction units (ERU) are referred to the first commitment period under Kyoto Protocol that is 5 years (60 months), from 01 January 2008 till 31 December 2012

In case if after the first commitment period under Kyoto Protocol it will be prolonged, the crediting period may be extended till the finalization of expected project operational lifetime.

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

The monitoring plan for this project was chosen according to the"Guidance on criteria for baseline setting and monitoring" (version 03). In accordance with the requirements of this document, the choice of the monitoring plan was based on the specific approach, applied only for this particular joint implementation project, as it consists of several subprojects aimed at different key factors allowing greenhouse emissions reduction.

The monitoring plan, accepted for this joint implementation project, is aimed to ensure all data necessary for the determination of emission level according to the baseline and project scenario, and corresponding to the scope of emissions reduction due to this joint implementation project. The information about this project is set above.

The following documentations were used to establish the monitoring plan and emission level according to the baseline and project scenario:
- subproject "Reduction of diesel fuel specific consumption during mining rock transportation" – "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02)[1];
- subproject "Modernization of iron ore concentrate production" – "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01)[2];
- subproject "Modernization of pellets production" – "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02), concerning the part on reduction of natural gas specific consumption during the pellets production, and "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01), concerning the part on reduction of electric energy specific consumption during the pellets production.

Measuring equipment listed in the Ukrainian State Register of Measuring Equipment is used for the monitoring of the data that are needed to be measured. This equipment is subject to the periodic calibration.

---

[1] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf
[2] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v1.pdf

Код поля изменен
Код поля изменен

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	Portion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1	2	3	4	5	6	7	8	9
1. $FC_{diesel,PC,y}$	quantity of diesel fuel combustion in mining rock transportation during the year	Report on materials consumption standard performance	th. t	m	monthly	1	electronic/paper	Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
2. NCV_{diesel}	diesel fuel net calorific value	The National Inventory of Ukraine	TJ/th. tons	e	annually	1	electronic/paper	The same
3. $OXID_{diesel}$	factor of carbon oxidation during diesel fuel combustion	The National Inventory of Ukraine	mass or volume unit	e	annually	1	electronic/paper	The same
4. W_{diesel}	the amount of carbon in diesel fuel	The National Inventory of Ukraine	t /TJ	e	annually	1	electronic/paper	The same

1	2	3	4	5	6	7	8	9
5. $EC_{iron\ ore,PC,y}$	the amount of electric energy consumption in the process of iron ore concentrate production during the year	Report on energy consumption	MWh	m	monthly	1	electronic/paper	The same
6. $EF_{co2,elec}$	emission factor for UETG	Study "Standardized emission factors for the Ukrainian electricity grid" (Version 5) and the orders issued by the National Environmental Investment Agency of Ukraine	t CO_{2e}/ MWh	e	annually	1	electronic/paper	The same
7. $FC_{NG,PC,y}$	quantity of natural gas combustion in the process of pellets production during the year	Report on natural gas consumption	mil. m^3	m	monthly	1	electronic/paper	The same
8. $NCV_{NG,y}$	natural gas net calorific value in the project scenario	Certificate on natural gas quality physical and chemical characteristics	Tcal/mil. m^3	c	monthly	1	electronic/paper	The same
9. $OXID_{NG}$	factor of carbon oxidation during natural gas combustion	The National Inventory of Ukraine	mass or volume unit	e	annually	1	electronic/paper	The same

1	2	3	4	5	6	7	8	9
10. W_{NG}	the amount of carbon in natural gas	The National Inventory of Ukraine	t /TJ	e	annually	1	electronic/paper	The same
11. $EC_{pellets,PC,y}$	quantity of electric energy consumption used for pellets production during the year	Report on energy consumption	MWh	m	monthly	1	electronic/paper	The same

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

The project scenario emissions will be estimated according to the following formula:

$$PE_y = PE_{diesel,y} + PE_{iron\ ore,y} + PE_{pellets,y}, \quad (1)$$

where:
PE_y – total emission levels during a year according to the project scenario, t CO_{2e};
$PE_{diesel,y}$ – emissions, caused by the diesel fuel consumption during mining rock transportation (subproject "Reduction of diesel fuel specific consumption during mining rock transportation"), t CO_{2e};
$PE_{iron\ ore,y}$ – emissions, caused by the energy consumption in the process of iron ore concentrate production (subproject "Modernization of iron ore concentrate production"), t CO_{2e};
$PE_{pellets,y}$ – emissions, caused by the natural gas consumption in the process of pellets production (subproject "Modernization of pellets production"), t CO_{2e}.

Emissions will be calculated separately for each proposed subproject.

The formulas provided in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02) are used for calculation of the project emissions under the subproject "Reduction of diesel fuel specific consumption during mining rock transportation".

$$PE_{diesel,y} = FC_{diesel,PC,y} \cdot NCV_{diesel} \cdot EF_{co2,diesel}, \quad (1.1)$$

where:
$PE_{diesel,y}$ – CO_2 emissions from diesel fuel combustion in process of mining rock transportation, t CO_{2e};
$FC_{diesel,PC,y}$ – the quantity of diesel fuel combusted in process of mining rock transportation during the year, th. t;
NCV_{diesel} – diesel fuel net calorific value, TJ/th. t;
$EF_{co2,diesel}$ – CO_2 emission coefficient of diesel fuel, t CO_{2e}/TJ.

$$EF_{co2,diesel} = OXID_{diesel} \cdot W_{diesel} \cdot 44/12, \quad (1.1.1)$$

where:
$OXID_{diesel}$ –factor of carbon oxidation during diesel fuel combustion, mass or volume unit;
W_{diesel} – average mass fraction of carbon in diesel fuel, t/TJ;
44/12 – stechiometric ratio between molecular weight of CO_2 and carbon.

The formulas provided in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) are used for calculation of the project emissions under the subproject "Modernization of iron ore concentrate production".

$$PE_{iron\ ore,y} = EC_{iron\ ore,PC,y} \cdot EF_{co2,elec}, \quad (1.2)$$

where:
$PE_{iron\ ore,y}$ – CO_2 emissions from energy consumption in process of iron ore concentrate production, t CO_{2e} ;
$EC_{iron\ ore,PC,y}$ – quantity of electricity consumed in process of iron ore concentrate production per year, MWh;
$EF_{co2,elec}$ – emission factor for UETG, t CO_{2e}/MWh.

Concerning natural gas combustion in process of pellets production the formulas provided in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02) are used for calculation of the project emissions under the subproject "Modernization of pellets production". In some parts of the calculations concerning electricity consumption in process of pellets production the formulas provided in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) are used.

$$PE_{pellets,y} = PE_{pellets,NG} + PE_{pellets,elec}, \quad (1.3)$$

where:
$PE_{pellets,y}$ – CO_2 emissions from natural gas combustion and electricity consumption in process of pellets production, t CO_{2e};
$PE_{pellets,NG}$ – CO_2 emissions from natural gas combustion in process of pellets production, t CO_{2e};
$PE_{pellets,elec}$ – CO_2 emissions from electricity consumption in process of pellets production, t CO_{2e}.

$$PE_{pellets,NG} = FC_{NG,PC,y} \cdot 4,1868 \cdot NCV_{NG,y} \cdot EF_{co2,NG}, \quad (1.3.1)$$

where:
$FC_{NG,PC,y}$ – quantity of natural gas consumed in process of pellets production during the year, mil.m^3;
$NCV_{NG,y}$ – natural gas net calorific value in the project scenario, Tcal/mil.m^3;
$EF_{co2,NG}$ – emission factor from natural gas combustion, t CO_{2e}/TJ;
4,1868 – standardized coefficient for Tcal recalculation into TJ, TJ/Tcal.

$$EF_{co2,NG} = OXID_{NG} \cdot W_{NG} \cdot 44/12, \quad (1.3.1.1)$$

where:
$OXID_{NG}$ – factor of carbon oxidation during natural gas combustion, mass or volume unit;
W_{NG} – average mass fraction of carbon in natural gas, t/TJ;
44/12 – stechiometric ratio between molecular weight of CO_2 and carbon.

$$PE_{pellets,elec} = EC_{pellets,PC,y} \cdot EF_{co2,elec}, \quad (1.3.2)$$

where:
$EC_{pellets,PC,y}$ – quantity of electricity consumed in process of pellets production per year, MWh;
$EF_{co2,elec}$ – emission factor for UETG, t CO_{2e}/MWh.

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 *(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	Portion of data to be monitored	How will the data be archived? (electronic / paper)	Comment
1	2	3	4	5	6	7	8	9
1. NCV_{diesel}	diesel fuel net calorific value	The National Inventory of Ukraine	TJ/th. tons	e	annually	1	electronic/paper	Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
2. $SFC_{diesel,BC}$	baseline specific diesel fuel consumption during the mining rock transportation	fixed value based on the chronological data	t/tkm	c	fixed data	1	electronic/paper	The same
3. FT_y	vehicles freight turnover during the project scenario mining rock transportation for the year *y*	Report on materials consumption standard performance	tkm	c	monthly	1	electronic/paper	The same

1	2	3	4	5	6	7	8	9
4. $OXID_{diesel}$	factor of carbon oxidation during diesel fuel combustion	The National Inventory of Ukraine	mass or volume unit	e	annually	1	electronic/paper	The same
5. W_{diesel}	amount of carbon in diesel fuel	The National Inventory of Ukraine	t/TJ	e	annually	1	electronic/paper	The same
6. $EF_{co2,elec}$	emission factor for UETG	"Operational Guidelines for Project Design Documents of Joint Implementation Projects. Volume 1: General guidelines" (Version 2.3), Study "Standardized emission factors for the Ukrainian electricity grid" (Version 5) and the orders issued by the National Environmental Investment Agency of Ukraine	t CO2 e/MWh	e	annually	1	electronic/paper	The same

1	2	3	4	5	6	7	8	9
7. $SEC_{iron\ ore}$	specific electric energy consumption during iron ore concentrate production	fixed value based on the chronological data	MWh/t	c	fixed data	1	electronic/paper	The same
8. $P_{iron\ ore,\ y}$	the amount of iron ore concentrate produced for the year *y*	fact sheet on goods turnover	t	c	monthly	1	electronic/paper	The same
9. $NCV_{NG,\ BC}$	natural gas net calorific value in baseline	fixed value based on the chronological data	Tcal/mil. m^3	c	fixed data	1	electronic/paper	The same
10. $SFC_{pellets,NG,BC}$	natural gas baseline specific consumption during pellets production	fixed value based on the chronological data	mil. m^3/t	c	fixed data	1	electronic/paper	The same
11. $P_{pellets,y}$	amount of pellets produced for the year *y* in project scenario	fact sheet on goods turnover	t	c	monthly	1	electronic/paper	The same

1	2	3	4	5	6	7	8	9
12. $OXID_{NG}$	factor of carbon oxidation during natural gas combustion	The National Inventory of Ukraine	mass or volume unit	e	annually	1	electronic/paper	The same
13. W_{NG}	the amount of carbon in natural gas	The National Inventory of Ukraine	t /TJ	e	annually	1	electronic/paper	The same
14. $SEC_{pellets,elec,BC}$	electric energy specific consumption during baseline pellets production	fixed value based on the chronological data	MWh/t	c	fixed data	1	electronic/paper	The same

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 emissions will be estimated according the following formula:

$$BE_y = BE_{diesel,y} + BE_{iron\ ore,y} + BE_{pellets,y}, \quad (2)$$

where:
BE_y – total emission levels during a year according to the baseline scenario, t CO_{2e};
$BE_{diesel,y}$ – emissions, caused by the diesel fuel consumption during mining rock transportation (subproject "Reduction of diesel fuel specific consumption during mining rock transportation"), t CO_{2e};
$BE_{iron\ ore,y}$ – emissions, caused by the energy consumption in the process of iron ore concentrate production (subproject "Modernization of iron ore concentrate production"), t CO_{2e};
$BE_{pellets,y}$ – emissions, caused by the natural gas consumption in the process of pellets production (subproject "Modernization of pellets production"), t CO_{2e}.

Emissions will be calculated separately for each proposed subproject.

The formulas provided in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02) are used for calculation of the baseline emissions under the subproject "Reduction of diesel fuel specific consumption during mining rock transportation".

$$BE_{diesel,y} = FC_{diesel,BC} \cdot NCV_{diesel} \cdot EF_{co2,diesel}, \quad (2.1)$$

where:
$BE_{diesel,y}$ – CO_2 emissions from diesel fuel combustion in process of mining rock transportation, t CO_{2e};
$FC_{diesel,BC}$ – the quantity of diesel fuel combusted in process of mining rock transportation during the year, th. t;
NCV_{diesel} – diesel fuel net calorific value, TJ/th. t;
$EF_{co2,diesel}$ – CO_2 emission coefficient of diesel fuel, t CO_{2e}/TJ.

$$FC_{diesel,BC} = SFC_{diesel,BC} \cdot FT_y, \quad (2.1.2)$$

where:
$SFC_{diesel,BC}$ – baseline specific diesel fuel consumption during the mining rock transportation, t/tkm;
FT_y – vehicles freight turnover during the project scenario mining rock transportation for the year *y*, tkm.

$$EF_{co2,diesel} = OXID_{diesel} \cdot W_{diesel} \cdot 44/12, \quad (2.1.2)$$

where:
$OXID_{diesel}$ – factor of carbon oxidation during diesel fuel combustion, mass or volume unit;
W_{diesel} – average mass fraction of carbon in diesel fuel, t/TJ;
44/12 – stechiometric ratio between molecular weight of CO_2 and carbon.

The formulas provided in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) are used for calculation of the baseline emissions under the subproject "Modernization of iron ore concentrate production".

$$BE_{iron\ ore,y} = EC_{iron\ ore,BC} \cdot EF_{co2,elec}, \quad (2.2)$$

where:
$BE_{iron\ ore,y}$ – CO_2 emissions from energy consumption in process of iron ore concentrate production, t CO_{2e};
$EC_{iron\ ore,BC}$ – quantity of electricity consumed in process of iron ore concentrate production in baseline, MWh;

$EF_{co2,elec}$ – emission factor for UETG, t CO_{2e}/MWh.

$$EC_{iron\ ore,BC} = SEC_{iron\ ore} \cdot P_{iron\ ore,\ y}, \quad (2.2.1)$$

where:
$SEC_{iron\ ore}$ – specific electric energy consumption during iron ore concentrate production, MWh/t;
$P_{iron\ ore,\ y}$ – the amount of iron ore concentrate produced for the year *y*, t.

Concerning natural gas combustion in process of pellets production the formulas provided in the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 02) are used for calculation of the baseline emissions under the subproject "Modernization of pellets production". In some parts of the calculations concerning electricity consumption in process of pellets production the formulas provided in the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 01) are used.

$$BE_{pellets,y} = BE_{pellets,NG} + BE_{pellets,elec}, \quad (2.3)$$

where:
$BE_{pellets,y}$ – CO_2 emissions from natural gas combustion and electricity consumption in process of pellets production, t CO_{2e};
$BE_{pellets,NG}$ – CO_2 emissions from natural gas combustion in process of pellets production, t CO_{2e};
$BE_{pellets,elec}$ – CO_2 emissions from electricity consumption in process of pellets production, t CO_{2e}.

$$BE_{pellets,NG} = FC_{NG,BC} \cdot 4{,}1868 \cdot NCV_{NG,BC} \cdot EF_{co2,NG}, \quad (2.3.1)$$

where:
$FC_{NG,BC}$ – quantity of natural gas consumed in process of pellets production during the year, mil.m^3;
$NCV_{NG,BC}$ – natural gas net calorific value in baseline, Tcal/mil.m^3;
$EF_{co2,NG}$ – emission factor from natural gas combustion, t CO_{2e}/TJ;
4,1868 – standardized coefficient for Tcal recalculation into TJ, TJ/Tcal.

$$FC_{NG,BC} = SFC_{pellets,NG,BC} \cdot P_{pellets,y}, \quad (2.3.1.1)$$

where:
$SFC_{pellets,NG,BC}$ – natural gas baseline specific consumption during pellets production, mil. m^3/t;
$P_{pellets,y}$ – amount of pellets produced for the year *y* in project scenario, t.

$EF_{co2,NG} = OXID_{NG} \cdot W_{NG} \cdot 44/12$, (2.3.1.2)

where:
$OXID_{NG}$ – factor of carbon oxidation during natural gas combustion, mass or volume unit;
W_{NG} – average mass fraction of carbon in natural gas, t/TJ;
44/12 – stechiometric ratio between molecular weight of CO_2 and carbon.

$BE_{pellets,elec} = EC_{pellets,BC} \cdot EF_{co2,elec}$, (2.3.2)

where:
$EC_{pellets,BC}$ – quantity of electricity consumed in process of pellets production in baseline, MWh
$EF_{co2,elec}$ – emission factor for UETG, t CO_{2e}/MWh.
$EC_{pellets,BC} = SEC_{pellets,elec,BC} \cdot P_{pellets,y}$, (2.3.2.1)

where:
$SEC_{pellets,elec,BC}$ – electric energy specific consumption during baseline pellets production, MWh/t;
$P_{pellets,y}$ – amount of pellets produced for the year *y* in project scenario, t.

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 indicating unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/paper)	Comment

Not applied to this project.

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):

Not applied to this project.

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

Not applied to this project. No leakage is expected since energy sources consumption is decreasing under the project activities, according to the baseline. The leakage from gas-transport system of Ukraine is expected to reduce during the implementation of the project. According to the requirements of the "Guidance on criteria for baseline setting and monitoring" (version 03) conservative approach is used for this project, where the leakage reduction is not applied for emission calculation.

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

Not applied to this project.

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):

Annual emission reduction for the project will be estimated according to the following formula:

$$ER_y = BE_y – PE_y, \quad (3)$$

where:
ER_y – emissions reduction during a year due to project activities, t $CO_{2\,e}$;
PE_y – emissions during a year according to the project scenario, t $CO_{2\,e}$;
BE_y – emissions during a year according to the baseline, t $CO_{2\,e}$.

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:

This project will facilitate the reduction of energy sources consumption for the Ferrexpo Poltava Mining production, namely: diesel fuel during mining rock transportation, natural gas for pellets production, electric energy for iron ore concentrate and pellets production. The scheme of energy resources, fuel and oil materials at different technological stages envisaged by the project is presented at picture 13. The decrease in energy sources consumption will allow to reduce greenhouse gas emissions. Thus general environmental impact of the project is positive. According to the requirements of relevant state services, the Ferrexpo Poltava Mining reports on ecological characteristics on periodic basis. It reports on NOx, SOx and dust emissions.

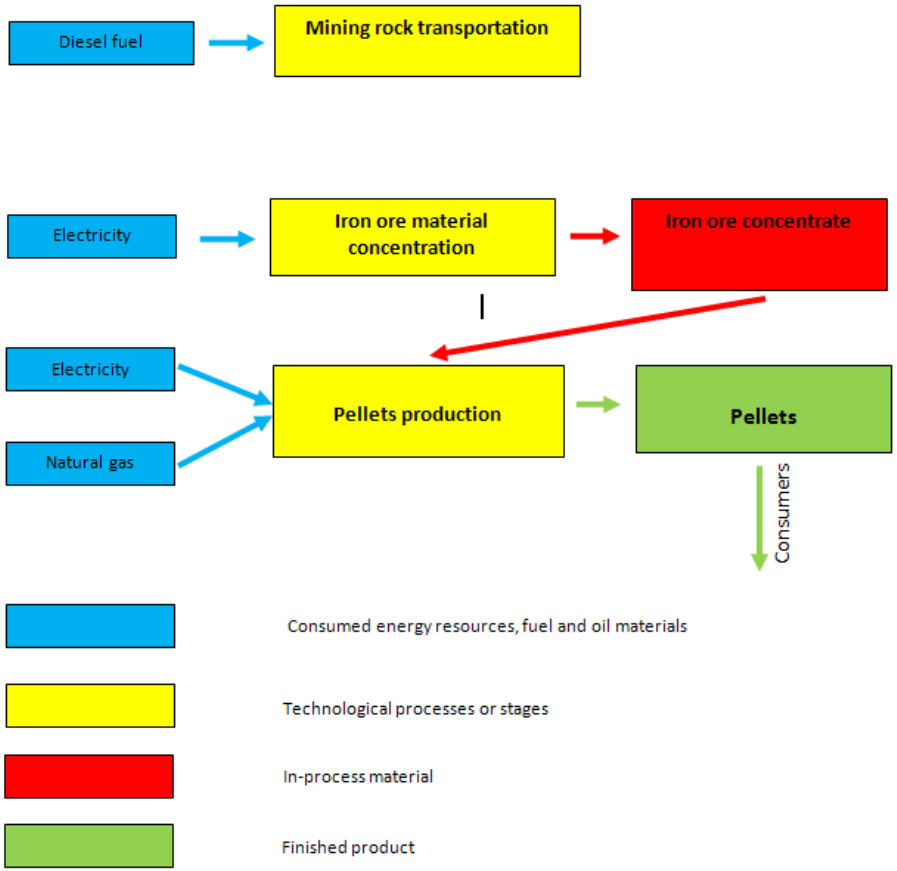

Figure 13 – The scheme of energy resources, fuel and oil materials at different technological stages envisaged by the project

Under the order of Ministry for environmental protection of Ukraine #108 dated 09/03/2006[1] the Administration of ecological resources in Poltava region issues the permit for emissions after the amount of pollutant emissions is justified according to the instructions approved by the order. The development of such documents, where amounts of emissions are justified, is made by institutions, organizations and agencies granted for such work and registered in relevant list of Ministry of Environmental Protection of Ukraine.

The relevant documentation and permits on pollutant emissions are archived and stored in the Environmental safety department of Ferrexpo Poltava Mining; the copies of this documentation are archived and stored at monitoring team.

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.
1	2	3
$FC_{diesel,PC,y}$ (D.1.1.1 – 1)	low	The quantity of diesel fuel combustion in mining rock transportation during the year is identified by the means of direct measurement, made by the relevant measurement equipment. Measuring equipment used for measurements is subject to the periodic calibration[2]. Data are registered in the "Report on materials consumption standard performance".
NCV_{diesel} (D.1.1.1 – 2, D.1.1.3 – 1)	low	Diesel fuel net calorific value is identified according to the National Inventory of Ukraine data. This document is subject to periodic revision and relevant corrective data amendments.
$OXID_{diesel}$ (D.1.1.1 – 3, D.1.1.3 – 4)	low	Factor of carbon oxidation during diesel fuel combustion is identified according to the National Inventory of Ukraine data. This document is subject to periodic revision and relevant corrective data amendments.
W_{diesel} (D.1.1.1 – 4, D.1.1.3 – 5)	low	The amount of carbon in diesel fuel is identified according to the National Inventory of Ukraine data. This document is subject to periodic revision and relevant corrective data amendments.
$EC_{iron\ ore,PC,y}$ (D.1.1.1 – 5)	low	Quantity of electric energy consumption in the process of iron ore concentrate production during the year is identified by the means of direct measurement, made by the electricity metering units. The electricity metering units used for measurements are a subject to the periodic calibration. Data are registered in the "Report on electricity consumption".

[1] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=z0341-06
[2] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=113%2F98-%E2%F0

Код поля изменен
Код поля изменен

1	2	3
$EF_{co2,elec}$ (D.1.1.1 – 6, D.1.1.3 – 6)	low	Emission factor for UETG is identified according to the "Operational Guidelines for Project Design Documents of Joint Implementation Projects. Volume 1: General guidelines" (Version 2.3), study "Standardized emission factors for the Ukrainian electricity grid" (Version 5) and relevant orders, issued by the National Environmental Investment Agency of Ukraine. The research on defining the factor is held every year and the results are finalized in the corresponding orders.
$FC_{NG,PC,y}$ (D.1.1.1 – 7)	low	Quantity of natural gas combustion in the process of pellets production during the year is identified by the means of direct measurement, made by the gas metering units. The gas metering units used for measurements are a subject to the periodic calibration. Data are registered in the "Report on natural gas consumption".
$NCV_{NG,y}$ (D.1.1.1 – 8, D.1.1.3 – 9)	low	Natural gas net calorific value in the project scenario is identified according to the data presented by the natural gas supplier in the "Certificates on natural gas quality physical and chemical characteristics".
$OXID_{NG}$ (D.1.1.1 – 9, D.1.1.3 – 12)	low	Factor of carbon oxidation during natural gas combustion is identified according to the National Inventory of Ukraine data. This document is subject to periodic revision and relevant corrective data amendments.
W_{NG} (D.1.1.1 – 10, D.1.1.3 – 13)	low	The amount of carbon in natural gas is identified according to the National Inventory of Ukraine data. This document is subject to periodic revision and relevant corrective data amendments.
$EC_{pellets,PC,y}$ (D.1.1.1 – 11)	low	Quantity of electric energy consumption in the process of pellets production during the year is identified by the means of direct measurement, made by the electricity metering units. The electricity metering units used for measurements are a subject to the periodic calibration. Data are registered in the "Report on electricity consumption".
$SFC_{diesel,BC}$ (D.1.1.3 – 2)	low	The quantity of diesel fuel combustion in mining rock transportation in baseline is a fixed value and is based on the chronological data on mining rock transportation during 3 years before the subproject implementation
FT_y (D.1.1.3 – 3)	low	Vehicles freight turnover during the baseline mining rock transportation for the year y is identified based on the "Report on materials consumption standard performance" data.
$SEC_{iron\ ore}$ (D.1.1.3 – 7)	low	Baseline specific electric energy consumption during iron ore concentrate production is a fixed value and is based on the chronological data on iron ore concentrate production during 3 years before the subproject implementation

1	2	3
$P_{iron\ ore,\ y}$ (D.1.1.3 – 8)	low	The amount of baseline iron ore concentrate produced for the year y, The calculation of the produced iron ore concentrate amount is made according to the "Instructions on compiling the average monthly goods turnover balance of the metal in the mining and iron ore processing processes". The data are registered in the "Fact sheet on goods turnover"
$NCV_{NG,BC}$ (D.1.1.3 – 9)	low	Natural gas net calorific value in the baseline scenario is a fixed value, identified according to the chronological data presented in the "Certificates on natural gas quality physical and chemical characteristics" for 1998-1999.
$SFC_{pellets,NG,BC}$ (D.1.1.3 – 10)	low	Natural gas specific consumption during baseline pellets production in the baseline is a fixed value and is based on the chronological data on pellets production during 3 years before the subproject implementation.
$P_{pellets,y}$ (D.1.1.3 – 11)	low	The amount of pellets produced for the year y in the project scenario is identified by the means of direct measurement, made by the relevant measuring equipment. The measuring equipment used for measurements of produced pellets amount are a subject to the periodic calibration. The data are registered in the "Fact sheet on finished products turnover".
$SEC_{pellets,elec,BC}$ (D.1.1.3 – 14)	low	Electric energy specific consumption during baseline pellets production is a fixed value and is based on the chronological data on pellets production during 3 years before the subproject implementation.

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

The monitoring of data determined in the previous section will be performed within the framework of general operation of the project on energy-saving measures at the Ferrexpo Poltava Mining.

Technical personnel read the monitored data which are subject to measurements from metering units of particular energy source and make relevant notes in the technological registers; the monitoring data are registered automatically in electric form, where the automatic means of registration available. General data on energy resources consumption during a month is given in monthly reports according to the section D. 2 ("Report on materials consumption standard performance", "Report on electricity consumption", "Report on natural gas consumption", "Certificates on natural gas quality physical and chemical characteristics", "Fact sheet on finished products turnover") which are the documents of official accounting. Monthly reports are archived in electronic and paper forms at thereof monitoring group.

Location scheme of gas and electric power metering units included in the project activity are shown on the figures 14, 15, 16 correspondently.

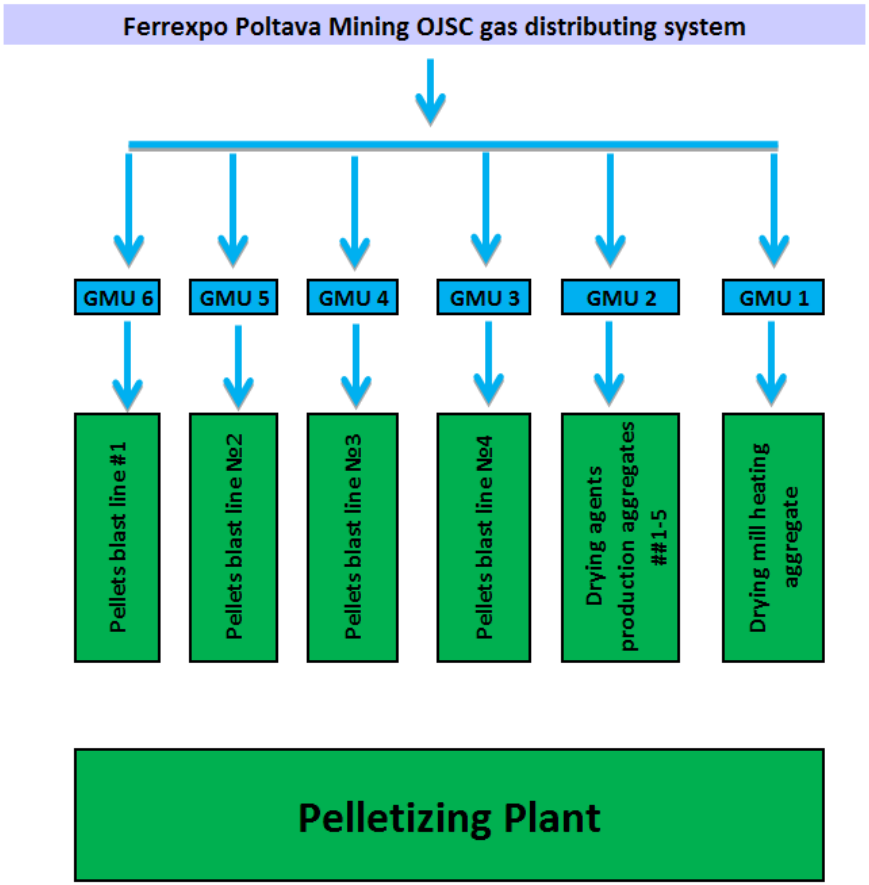

Figure 14 – Location scheme of the gas metering units (GMU) included in the project activity.

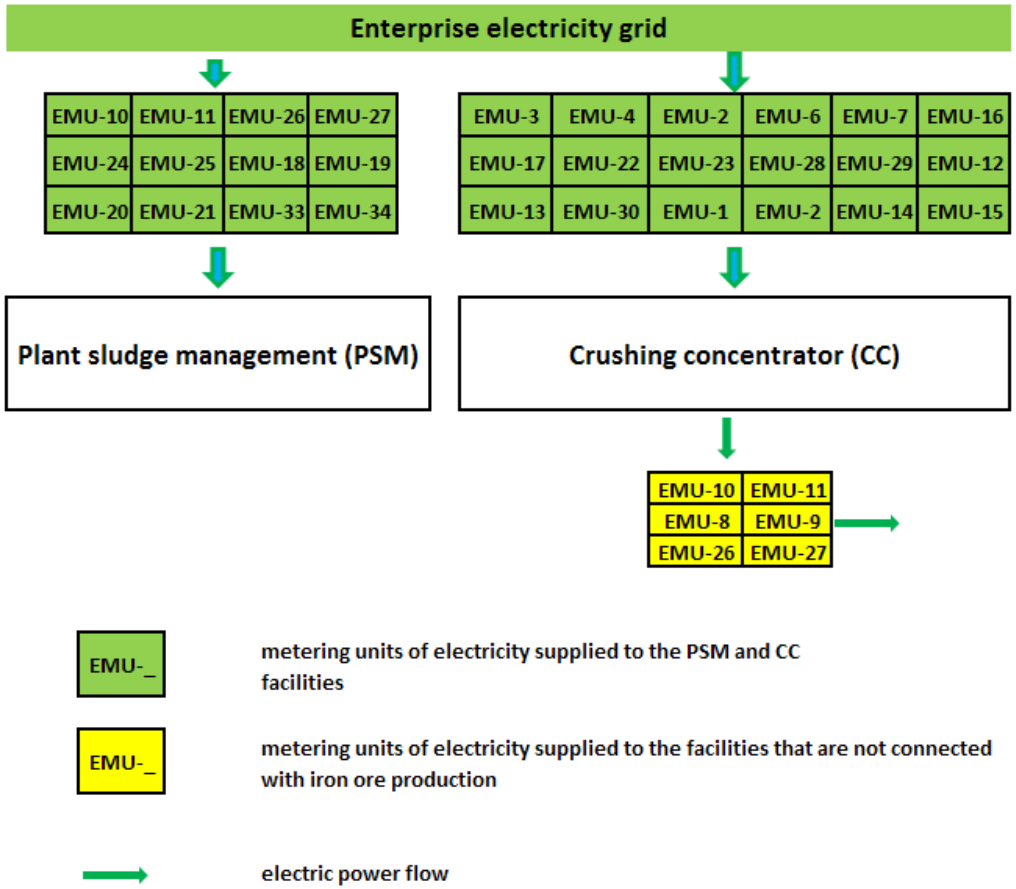

Figure 15 – Location scheme of electric power metering units (EMU) included in the project activity during iron ore concentrate production

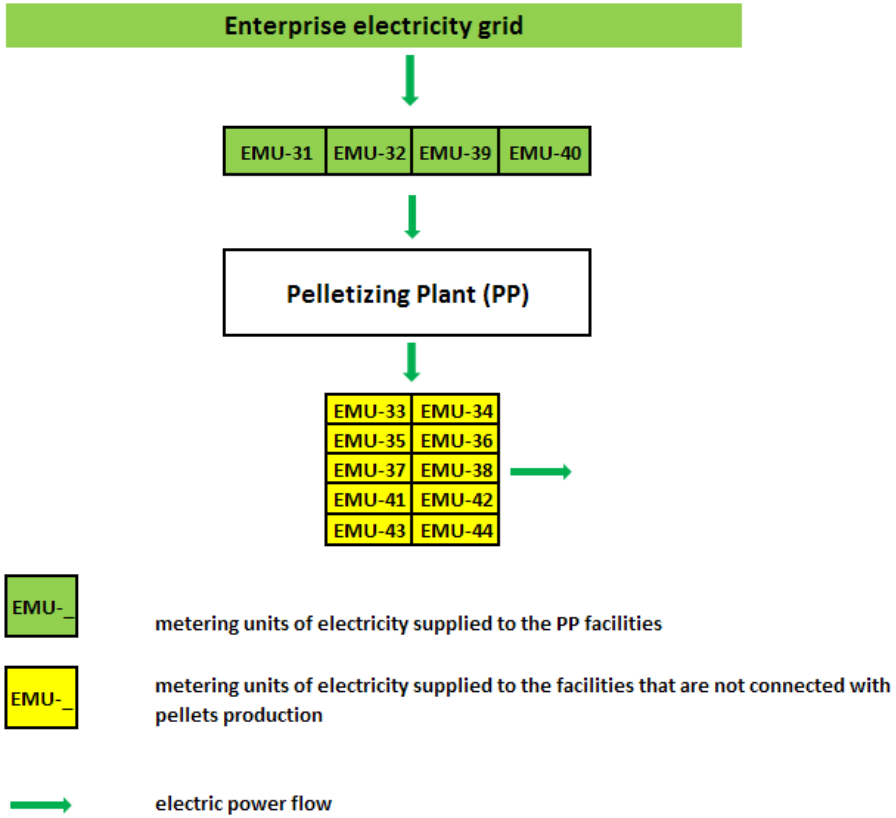

Figure 16 – Location scheme of electric power metering units (EMU) included in the project activity during pellets production.

The Chairman of the Board of the Ferrexpo Poltava Mining appoints personnel responsible for operation and maintenance of technical equipment needed for the project. Their responsibilities also include registration of all data necessary for monitoring. The head of the monitoring group will be engineer of technical department of the Ferrexpo Poltava Mining. The monitoring will be conducted in close collaboration with technical personnel and will include the monitoring itself and also analysis and archiving of all data indicated in the previous section. The responsibilities of the monitoring group will also include work coordination to estimate emissions reduction level. Under the order of the Head of the monitoring group, estimation of emission reduction shall be performed by the developer of Joint implementation project. Periodic data on energy resources consumption will be compared with relevant registered data taken from the technical personnel to approve data credibility. In case of inconsistency of these data the cause of its appearance must be found in collaboration with the technical personnel. If the discrepancy of monitoring data is found, monitoring system of relevant data must be corrected.

All information about monitoring and corrective measures must be archived for future verification of emissions reduction level. The head of the monitoring group is responsible for preparation and archiving of monitoring reports. The Chairman of the Board analyses general monitoring data and relevant documentation on periodic basis. The developer of the joint implementation project will assist in organization of the monitoring if the need arises.

The Ferrexpo Poltava Mining chief metrologist is responsible for acceptance of measurement equipment devices (energy resources metering units) in working condition and for their timely repair and calibration.

While main measuring equipment being repaired, monitoring data are taken by additional (back-up) measuring devices. The risk of needed for calculation monitoring data absence can be eliminated due to additional (back-up) measuring devices.

The monitoring management structure is shown in figure 17.

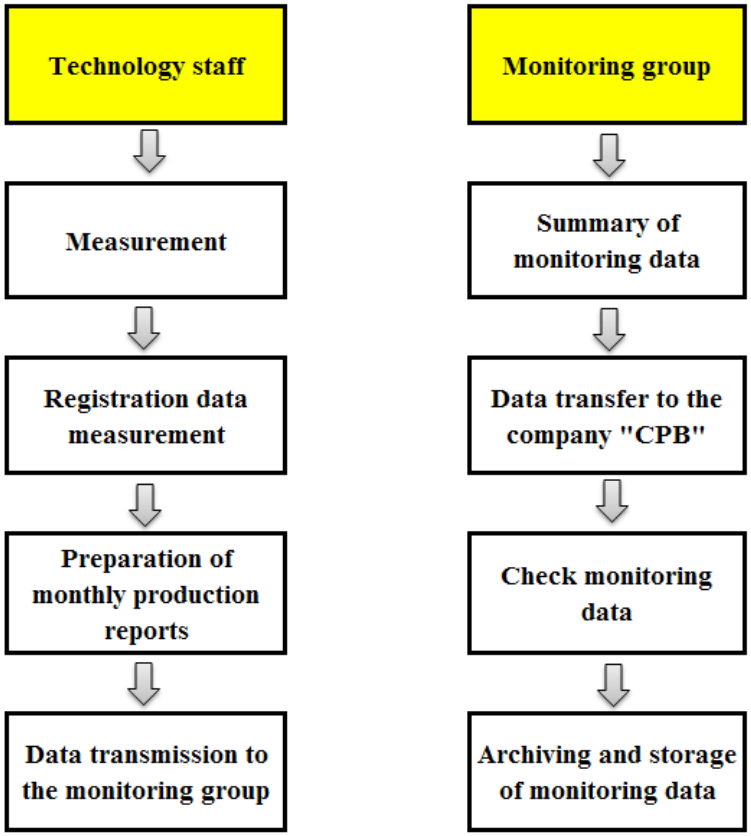

Figure 17 – The monitoring management structure

The results measuring and archiving are responsibility of the technical personnel. Technical personnel submit the results of measurements to the monitoring group for work coordination to estimate greenhouse gases emissions reduction. Under the order of the Head of the monitoring group, estimation of emission reduction shall be performed by the developer of Joint implementation project. The functions of the monitoring group also include collection of non-measured data which are also subject to the monitoring. The monitoring group must make back-up copy of monitoring data which should be stored apart from the main data to avoid their loss in case of force majeure.

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

Persons establishing the monitoring plan:

Name of company:	"Climate Protection Bureau LLP" Company - project participant
Address:	Suite 2, 23-24 Great James Street
City:	London
Country:	UK
Contact person:	Oleksandr Chalenko
Position:	Expert in JI Projects
Telephone:	+380 44 2941495
Fax:	+380 68 9532672
e-mail:	rozrobnik@mail.ru

SECTION E. Estimation of greenhouse gas emissions reduction

E.1. Estimated project emissions:

Project emissions are estimated according to the formula described in D.1.1.2.

Year	Estimated project emissions ($t CO_{2e}$)
2004	1 494 507
2005	1 540 432
2006	1 655 771
2007	1 732 580
2008	1 954 013
2009	1 948 224
2010	2 106 148
2011	2 119 241
2012	2 107 126
2013	2 095 826
2014	2 095 265
2015	2 095 265
2016	2 095 265
2017	2 095 265
2018	2 095 265
2019	2 095 265
2020	2 095 265

E.2. Estimated leakage:

Not applied to this project.

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

The sum of E.1. and E.2. is equal to E.1.

E.4. Estimated baseline emissions:

Baseline emissions are estimated according to the formula described in D.1.1.4.

Year	Estimated baseline emissions ($t CO_{2e}$)
1	2
2004	1 667 126
2005	1 732 736
2006	1 969 363
2007	2 142 664
2008	2 454 969
2009	2 483 867
2010	2 698 896
2011	2 729 967
2012	2 729 967

1	2
2013	2 729 967
2014	2 729 967
2015	2 729 967
2016	2 729 967
2017	2 729 967
2018	2 729 967
2019	2 729 967
2020	2 729 967

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

Year	Estimated emission reductions ($t CO_{2e}$)
2004	172 619
2005	192 304
2006	313 592
2007	410 084
2008	500 956
2009	535 643
2010	592 748
2011	610 726
2012	622 841
2013	634 141
2014	634 702
2015	634 702
2016	634 702
2017	634 702
2018	634 702
2019	634 702
2020	634 702

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

Year	Estimated project emissions ($t CO_{2e}$)	Estimated leakage ($t CO_{2e}$)	Estimated baseline emissions ($t CO_{2e}$)	Estimated emission reductions ($t CO_{2e}$)
1	2	3	4	5
2004	1 494 507	0	1 667 126	172 619
2005	1 540 432	0	1 732 736	192 304
2006	1 655 771	0	1 969 363	313 592
2007	1 732 580	0	2 142 664	410 084
2008	1 954 013	0	2 454 969	500 956
2009	1 948 224	0	2 483 867	535 643
2010	2 106 148	0	2 698 896	592 748
2011	2 119 241	0	2 729 967	610 726
2012	2 107 126	0	2 729 967	622 841
2013	2 095 826	0	2 729 967	634 141

1	2	3	4	5
2014	2 095 265	0	2 729 967	634 702
2015	2 095 265	0	2 729 967	634 702
2016	2 095 265	0	2 729 967	634 702
2017	2 095 265	0	2 729 967	634 702
2018	2 095 265	0	2 729 967	634 702
2019	2 095 265	0	2 729 967	634 702
2020	2 095 265	0	2 729 967	634 702
Total (t $CO_{2\,e}$)	33 420 723	0	42 449 291	9 028 568

SECTION F. Environmental impact

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:

The proposed JI project will make positive environmental impact due to the reduction of energy resources consumption for the production needs of Ferrexpo Poltava Mining which will result in the decrease of greenhouse emissions into the atmosphere.

Emissions reduction will take place due to this project realization, namely:

- subproject "Reduction of diesel fuel specific consumption during mining rock transportation" will allow to reduce the specific diesel fuel consumption during mining rock transportation. The decrease in specific diesel fuel consumption will lead to the decrease in quantity of diesel fuel combustion by the engines of technological vehicles during mining rock transportation, leading to the reduction of the GHG emissions into the atmosphere;
- subproject "Modernization of iron ore concentrate production" will allow to reduce the electricity consumption needed for ton of iron ore concentrate production. Energy specific consumption reduction will allow to decrease the amount of energy consumption out of UETG, this will allow to reduce the fossil fuel combustion needed for energy production at Ukrainian energy enterprises;
- subproject "Modernization of pellets production" will allow to reduce the specific consumption of electric energy and specific consumption of natural gas per ton of produced pellets. The decrease in quantity of natural gas combustion needed for pellets production will let to reduce the GHG emissions. Energy consumption reduction will allow to decrease the amount of energy consumption out of UETG, this will lead to the reduction of fuel consumption needed for energy production thus causing the GHG emissions reduction at Ukrainian energy enterprises.

Emissions reduction achieved due to this project implementation will have an impact on the environment of Ukraine but does not influence greenhouse gases emissions abroad.

The enterprise periodically reports on ecological figures in the framework of procedures conducted on the relevant state services demand. According to the Order #108 dated 09/03/2006 issued by the Ministry of Natural Resources of Ukraine the State Office of Environmental Resources in Poltava region issued to the enterprise the permit on pollutant emissions after justifying the amount of pollutants estimated according to the instructions approved by this order.

Ferrexpo Poltava Mining received the following permits on emissions:
- Permit #5310200000-58 on stationary sources air pollution;
- Permit #5310200000-59 on stationary sources air pollution;
- Permit #5310200000-60 on stationary sources air pollution;
- Permit #5310200000-74 on stationary sources air pollution.

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:

According to the requirements of relevant state services, the Ferrexpo Poltava Mining reports on ecological characteristics on periodic basis. Under the order of Ministry for environmental protection of Ukraine #108 dated 09.03.2006 the Administration of ecological resources in Poltava region issued to the Ferrexpo Poltava Mining the permit for emissions after the scope of pollutant emissions was justified according to the instructions approved by this order.

The realization of this project has facilitated the reduction of pollutant emissions from stationary sources. According to the issued permit of the Administration of ecological resources in Poltava region the environmental impact is not sufficient, but generally positive.

According to the requirements of the Ukrainian legislation in force, namely the law of Ukraine "On environmental protection" #1264-XII[1] dated 25.06.1991 and ДБН А.2.2-1[2], the implementation of this project does not demand ecological assessment.

[1] http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?page=1&nreg=1264-12

Код поля изменен

[2] ДБН А.2.2-1-2003 "Structure and contents of the environmental impact assessment (EIA) materials during design and construction of enterprises, buildings and facilities"

SECTION G. Stakeholders' comments

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

The host Party does not require consultations with stakeholders for joint implementation projects.

Stakeholders' comments will be collected during publishing of the project within the determination procedure.

Annex 1

CONTACT INFORMATION ON THE PROJECT PARTICIPANTS

Organisation:	Ferrexpo Poltava Mining
Street/P.O.Box:	Budivelnykiv
Building:	16
City:	Komsomolsk
State/Region:	Poltava
Postal code:	39802
Country:	Ukraine
Phone:	+38 05348 74309
Fax:	+38 05348 21670
E-mail:	pgok@ferrexpo.poltava.ua
URL:	www.ferrexpo.poltava.ua
Represented by:	
Title:	Engineer
Salutation:	Mr.
Last name:	Kirnosov
Middle name:	Anatoliiovych
First name:	Oleksandr
Department:	Technical
Phone (direct):	+38 05348 75888
Fax (direct):	+38 05348 75888
Mobile:	+38 067 5328748
Personal e-mail:	Aleksandr.Kirnosov@ferrexpo.poltava.ua

Organisation:	"Climate Protection Bureau LLP" Company
Street/P.O.Box:	Suite 2, 23-24 Great James Street
Building:	
City:	London
State/Region:	
Postal code:	
Country:	UK
Phone:	+44 20 8144 1311
Fax:	
E-mail:	
URL:	www.climate-pb.com
Represented by:	
Title:	Managing Partner
Salutation:	Mr
Last name:	Khalabuzar
Middle name:	Valentinovitch
First name:	Viktor
Department:	
Phone (direct):	+38 067 4090881
Fax (direct):	+38 044 2941495
Mobile:	+38 067 4090881
Personal e-mail:	fin@climate-pb.com

Annex 2

BASELINE INFORMATION

The baseline for this project was chosen according to the "Guidance on criteria for baseline setting and monitoring" (version 03), the choice of the baseline was founded on the specific approach, applied only for this particular joint implementation project. The description and justification of the baseline scenario are given in the section B.1 of this document.

The current situation at Ferrexpo Poltava Mining was taken as the baseline without any modernization activity according to the project.

Main baseline emissions are CO_2 emissions, resulting from:

- diesel fuel combustion by the technological vehicles during mining rock transportation;
- electric power consumption from UETG for pellets and iron ore concentrate production;
- natural gas consumption for pellets production.

Under the baseline chosen, emissions were calculated according to the formula, given in the section D.1.1.4 of this document.

Annex 3

MONITORING PLAN

The monitoring plan for this project was chosen according to the "Guidance on criteria for baseline setting and monitoring" (version 03). The choice of the monitoring plan was based on the specific approach, applied only for this particular joint implementation project.

The monitoring plan is determined in the section D of this document.

Data (parameters) that are subject to monitoring is given in the following table.

Data/Parameter	$SFC_{diesel,BC}$
Data unit	g/tkm
Description	Baseline specific diesel fuel consumption during the mining rock transportation
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	A fixed value is based on the chronological data on mining rock transportation during 3 years before the subproject implementation, i. e. from 1999 till 2001
Value of data applied (for ex ante calculations/determinations)	128,54
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	FT_y
Data unit	th. tkm
Description	Vehicles freight turnover during the baseline mining rock transportation for the year *y*
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Report on materials consumption standard performance
Value of data applied (for ex ante calculations/determinations)	The expected freight turnover is calculated based on the estimated data on goods production by the enterprise

Year	th. tkm
2004	162 276,5
2005	187 143,9
2006	206 773,6
2007	257 108,1
2008	304 686,7
2009	351 915,6
2010	346 943,4
2011	345 000,0
2012	345 000,0
2013	345 000,0
2014	345 000,0
2015	345 000,0
2016	345 000,0
2017	345 000,0
2018	345 000,0
2019	345 000,0
2020	345 000,0

Justification of the choice of data or description of measurement methods and procedures (to be) applied	The measurement of the mining rock transportation amount and transportation distance is made by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to the periodic state calibration
Any comment	-

Data/Parameter	NCV_{diesel}
Data unit	TJ/th. tons
Description	Diesel fuel net calorific value
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	2004-2007 years – "Reviewed IPCC Guidelines for National Greenhouse Gas Inventories", 1996, after 2008 – "National Inventory Report of Anthropogenic Emissions by Sources and Removals by Sinks of Greenhouse Gases in Ukraine for 1990-2009" (hereafter – The National Inventory of Ukraine)
Value of data applied (for ex ante calculations/determinations)	43,33 – 2004-2007 years; 42,20 – 2008 year; 42,40 – after 2009 year
Justification of the choice of data or description of measurement methods and procedures (to be) applied	"Reviewed IPCC Guidelines for National Greenhouse Gas Inventories", 1996 and The National Inventory of Ukraine are subjects to periodic revision and relevant corrective data amendments
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-

Data/Parameter	$OXID_{diesel}$
Data unit	mass or volume unit
Description	Factor of carbon oxidation during diesel fuel combustion
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The National Inventory of Ukraine
Value of data applied (for ex ante calculations/determinations)	0,99
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	W_{diesel}
Data unit	t C/TJ
Description	The amount of carbon in diesel fuel
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The National Inventory of Ukraine
Value of data applied (for ex ante calculations/determinations)	20,2
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-

Data/Parameter	$SEC_{iron\ ore}$
Data unit	kWh/t
Description	Baseline specific electric energy consumption during iron ore concentrate production
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The fixed value for this parameter is based on the chronological data on iron ore concentrate production within 3 years before subproject activity implementation, i. e. from 1997 till 1999
Value of data applied (for ex ante calculations/determinations)	121,99
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$P_{iron\ ore,\ y}$
Data unit	ton
Description	The amount of baseline iron ore concentrate produced for the year *y*
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Fact sheet on goods turnover
Value of data applied (for ex ante calculations/determinations)	The expected amount of produced iron ore concentrate is calculated on the estimated production data of the enterprise
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The calculation of the produced iron ore concentrate amount is made according to the "Instructions on compiling the average monthly goods turnover balance of the metal in the mining and iron ore processing processes"
QA/QC procedures (to be) applied	-
Any comment	-

Year	ton
2004	7 909 400
2005	8 313 900
2006	9 695 200
2007	10 651 600
2008	10 458 800
2009	10 564 600
2010	11 225 500
2011	11 293 000
2012	11 293 000
2013	11 293 000
2014	11 293 000
2015	11 293 000
2016	11 293 000
2017	11 293 000
2018	11 293 000
2019	11 293 000
2020	11 293 000

Data/Parameter	$EF_{co2,elec}$
Data unit	t CO_2 e/MWh
Description	Emission factor for UETG
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	2004-2005 – "Operational Guidelines for Project Design Documents of Joint Implementation Projects. Volume 1: General guidelines" (Version 2.3)[1]; 2006-2007– Study "Standardized emission factors for the Ukrainian electricity grid" (Version 5)[2]; 2008 – The order #62 dated 15/04/2011, issued by the National Environmental Investment Agency of Ukraine[3]; 2009 – The order #63 dated 15/04/2011, issued by the National Environmental Investment Agency of Ukraine[4]; 2010 –The order #43 dated 28/03/2011, issued by the National Environmental Investment Agency of Ukraine[5]; 2011-2020 – The order #75dated 12/05/2011, issued by the National Environmental Investment Agency of Ukraine[6]
Value of data applied (for ex ante calculations/determinations)	0,916 – year 2004; 0,896 – years 2005-2007; 1,082 – year 2008; 1,096 – year 2009; 1,093 – year 2010; 1,090 – 2011-2020
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Studies to determine this factor for 2004-2005 was held by the Ministry of Economic Affairs of the Netherlands, for 2006-2007 was held by the Global Carbon B.V. company and determined by the TUEV SUED company, the further research was held under the control of the National Environmental Investment Agency of Ukraine
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$SFC_{pellets,NG,BC}$
Data unit	m^3/t
Description	Natural gas specific consumption during baseline pellets production
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The fixed value for this parameter is based on the chronological data on pellets production within 3 years before subproject activity implementation, i. e. from 1997 till 1999
Value of data applied (for ex ante calculations/determinations)	26,13
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$SEC_{pellets,elec,BC}$
Data unit	kWh/t
Description	Electric energy specific consumption during baseline pellets production
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The fixed value for this parameter is based on the chronological data on pellets production within 3 years before subproject activity implementation, i. e. from 1997 till 1999
Value of data applied (for ex ante calculations/determinations)	49,48
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Fixed data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	$P_{pellets,y}$
Data unit	ton
Description	The baseline amount of pellets produced for the year *y*
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Fact sheet on goods turnover
Value of data applied (for ex ante calculations/determinations)	The expected amount of produced pellets is calculated on the estimated production data of the enterprise
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The measurement of the produced pellets amount is made by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to periodic calibration
Any comment	-

Year	ton
2004	7 367 000
2005	7 756 900
2006	8 550 200
2007	9 072 300
2008	9 035 100
2009	8 766 600
2010	10 031 100
2011	10 300 000
2012	10 300 000
2013	10 300 000
2014	10 300 000
2015	10 300 000
2016	10 300 000
2017	10 300 000
2018	10 300 000
2019	10 300 000
2020	10 300 000

Data/Parameter	$NCV_{NG, BC}$
Data unit	Gcal/mil. m^3
Description	Natural gas net calorific value in baseline
Time of determination/monitoring	Fixed data. It must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Certificate on natural gas quality physical and chemical characteristics
Value of data applied (for ex ante calculations/determinations)	8 612
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The fixed value for this parameter is based on the chronological data on natural gas net calorific value for 1998-1999 according to the Certificates on natural gas quality physical and chemical characteristics that were presented by the natural gas supplier
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-

Data/Parameter	$OXID_{NG}$
Data unit	mass or volume unit
Description	Factor of carbon oxidation during natural gas combustion
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	The National Inventory of Ukraine
Value of data applied (for ex ante calculations/determinations)	0,995
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data
QA/QC procedures (to be) applied	-
Any comment	-

Data/Parameter	W_{NG}		
Data unit	t C/TJ		
Description	The amount of carbon in natural gas		
Time of determination/monitoring	Annually. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units		
Source of data (to be) used	The National Inventory of Ukraine		
Value of data applied (for ex ante calculations/determinations)		Year	t C/TJ
		2004	15,13
		2005	15,14
		2006	15,18
		2007	15,11
		2008	15,12
		2009	15,11
		2010	15,11
		2011	15,11
		2012	15,11
		2013	15,11
		2014	15,11
		2015	15,11
		2016	15,11
		2017	15,11
		2018	15,11
		2019	15,11
		2020	15,11
Justification of the choice of data or description of measurement methods and procedures (to be) applied	The National Inventory of Ukraine is subject to periodic revision and submission of relevant corrective data		
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values		
Any comment	-		

Data/Parameter	$FC_{diesel,PC,y}$
Data unit	th.t
Description	Quantity of diesel fuel combustion in mining rock transportation during the year
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Report on materials consumption standard performance
Value of data applied (for ex ante calculations/determinations)	The expected quantity of diesel fuel combustion in mining rock transportation is calculated on the estimated production data of the enterprise

Year	th.t
2004	17,458854
2005	19,590773
2006	21,516164
2007	26,323321
2008	31,120083
2009	34,224839
2010	33,997500
2011	33,800000
2012	33,800000
2013	33,800000
2014	33,800000
2015	33,800000
2016	33,800000
2017	33,800000
2018	33,800000
2019	33,800000
2020	33,800000

Justification of the choice of data or description of measurement methods and procedures (to be) applied	The measurement of the quantity of diesel fuel combustion in mining rock transportation is made by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to periodic calibration
Any comment	-

Data/Parameter	$EC_{iron\ ore,PC,y}$
Data unit	MWh
Description	The amount of electric energy consumption in the process of iron ore concentrate production during the year
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Report on energy consumption
Value of data applied (for ex ante calculations/determinations)	Expected amount of electric energy is calculated according to estimated production data of the enterprise
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Amount of electric energy is measured by relevant the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to periodic calibration
Any comment	-

Year	MWh
2004	956 385,474
2005	1 021 976,124
2006	1 106 445,718
2007	1 161 883,533
2008	1 102 757,795
2009	1 119 352,323
2010	1 164 044,052
2011	1 171 043,560
2012	1 171 043,560
2013	1 171 043,560
2014	1 171 043,560
2015	1 171 043,560
2016	1 171 043,560
2017	1 171 043,560
2018	1 171 043,560
2019	1 171 043,560
2020	1 171 043,560

Data/Parameter	$FC_{NG,PC,y}$
Data unit	million m^3
Description	Quantity of natural gas combustion in the process of pellets production during the year
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Report on natural gas consumption
Value of data applied (for ex ante calculations/determinations)	Expected amount of natural gas is calculated according to estimated production data of the enterprise
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Amount of natural gas consumed is measured by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to periodic calibration
Any comment	-

Year	million m^3
2004	144,527330
2005	141,722431
2006	142,988632
2007	139,554476
2008	134,962177
2009	116,355568
2010	141,804733
2011	145,606000
2012	142,140000
2013	136,710000
2014	136,710000
2015	136,710000
2016	136,710000
2017	136,710000
2018	136,710000
2019	136,710000
2020	136,710000

Data/Parameter	$EC_{pellets,PC,y}$
Data unit	MWh
Description	Quantity of electric energy consumption used for pellets production during the year
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Report on energy consumption
Value of data applied (for ex ante calculations/determinations)	Expected amount of electric power is calculated according to estimated production data of the enterprise

Year	MWh
2004	309 880,740
2005	325 058,068
2006	351 761,864
2007	373 256,220
2008	369 417,425
2009	357 739,865
2010	415 291,256
2011	426 423,816
2012	421 270,000
2013	420 240,000
2014	419 725,000
2015	419 725,000
2016	419 725,000
2017	419 725,000
2018	419 725,000
2019	419 725,000
2020	419 725,000

Justification of the choice of data or description of measurement methods and procedures (to be) applied	Amount of electric power is measured by the relevant measurement equipment
QA/QC procedures (to be) applied	Measuring equipment used for measurements is subject to periodic calibration
Any comment	-

Data/Parameter	$NCV_{NG,y}$
Data unit	Gcal/mil. m^3
Description	Natural gas net calorific value in the project scenario
Time of determination/monitoring	Monthly. Data must be stored during the whole crediting period and 2 years after the last transfer of emission reduction units
Source of data (to be) used	Certificate on natural gas quality physical and chemical characteristics
Value of data applied (for ex ante calculations/determinations)	

Pік	Gcal/mil. m^3
2004	8 357
2005	8 276
2006	8 471
2007	8 490
2008	8 496
2009	8 301
2010	8 379
2011	8 121
2012	8 121
2013	8 121
2014	8 121
2015	8 121
2016	8 121
2017	8 121
2018	8 121
2019	8 121
2020	8 121

Justification of the choice of data or description of measurement methods and procedures (to be) applied	Certificate on natural gas quality physical and chemical characteristics that is presented by the natural gas supplier
QA/QC procedures (to be) applied	This parameter is within the range of ambiguity by default IPCC values
Any comment	-