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:

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Introduction of energy-saving measures with utilization of biomass for production of energy resources at the business units of LLC "MEZ Yug Rusi"

The sectoral scope(s): (1) Energy industries (renewable/non-renewable sources)
PDD Version: 06
Date: 24.04.2012

A.2. Description of the project:

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Project objective

The project is the production of thermal energy by burning husks of sunflower seeds at the sites of branches of LLC «MEZ[1] Yug Rusi».

This project is based on the principles of sustainable development, with reduced adverse effects on the environment. The use of sunflower seed husks for energy purposes leads to a reduction in emissions of carbon dioxide (CO2), which reduces the greenhouse effect.

Project

The project is implemented at facilities of 4 manufacturing facilities of LLC «MEZ Yug Rusi» including «Annynskiy oil-extraction plant», «Kropotkinskiy oil-extraction plant», «Krasnodarskiy fat-oil-extraction plant» and «Labinskiy oil-extraction plant».

«Annynskiy oil-extraction plant» branch of LLC «MEZ Yug Rusi».

The branch is the Oil Extraction Plant and engaged in the production of sunflower oil. The branch has its own boiler house, which meets the needs of oil extraction in the production of heat.

Prior to implementation of the project in 2008, the boiler house was equipped with 3 steam boilers: 2 gas-KE 25-14-270 GM and 1 husk boiler «Age-Moor».

According to the project the conversion of the existing gas boiler KE-25-14-270 GM to the husk in 2009 was implemented. A reserve fuel natural is the natural gas.

«Kropotkinskiy oil-extraction plant» branch of LLC «MEZ Yug Rusi».

The branch is the Oil Extraction Plant and engaged in the production of sunflower oil. The branch has its own boiler house, which meets the needs of oil extraction in the production of heat.

Prior to implementation of the project in 2004, the boiler house was equipped with 2 steam boilers: 2 gas boilers Babcock & Wilcox and DE-25-14-225GM.

According to the project the husk boiler E-12-1,4-250DT was put in operation in 2004. A reserve fuel is the natural gas.

«Labinskiy oil-extraction plant» branch of LLC «MEZ Yug Rusi».

The branch is the Oil Extraction Plant and engaged in the production of sunflower oil. The branch has its own boiler house, which meets the needs of oil extraction in the production of heat.

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[1] Oil extraction plant

Prior to implementation of the project in 2000, the boiler house was equipped with 3 steam boilers: 2 Keller 5,3/2,1-370 husk boilers and 1 DKVR 10/13-250gas boiler.
According to the project 2 husk boilers of E-16-21-350 GNDV and KE-18-24-GDV types were put in operation in 2003 and in 2004. A reserve fuel is the natural gas.

«Krasnodarskiy fat-oil-extraction plant» branch of LLC «MEZ Yug Rusi».
The branch is the Fat-oil-extraction plant and engaged in the production of sunflower oil.
The branch has its own thermal power plant, which meets the needs of oil extraction in the production of heat. Prior to implementation of the project in 2005, boiler house was equipped with 3 steam gas boilers of GM-50-1; E-50-3,9-440GM and BG-35/39P types. It is redundant and delivered part of the heat in heat pipeline
According to the project the E-13-3,9DT husk boiler was put in operation in 2005. A reserve fuel is the natural gas.

Baseline scenario
Prior to the implementation of project activities on the branches of LLC «MEZ Yug Rusi» the heat energy for industrial purposes was produced by husk boilers, which were installed a long ago (in 1960ies) along with gas boilers (installed in the late 1990's). Husks were used for energy purposes in some branches, but in small quantities, while the main volume of husk was utilized as a fertilizer and was taken away to the fields.
From 2001 until 2009 the conversion of old gas boilers to ones that use sunflower seed husk was done at these branches , as well as buying new husk boilers.
One of the main reasons for having introduced this project was the possibility of its realization in the framework of the Kyoto Protocol in order to minimize the cost of renovations, as feeding the boiler with seed husk requires in addition to the basic cost for the purchase of husk boilers, the additional cost of setting up filing husks in boilers and the purchasing of various non-conventional boiler auxiliary equipment. This fact is reflected in the letters of technical specialists of companies (the main power engineers, engineers) to the management of their respective companies[2].
The project is not financially attractive. However, the additional revenues from the sale of emission reduction units (ERUs) will help LLC «MEZ Yug Rusi» overcome in the implementation of the project as JI.

Emission reductions
As a result of project activities the efficient utilization of sunflower seed husks will be carried out t, which otherwise were used as a fertilizer. This action will reduce the production, transportation and distribution and consumption of carbon-intensive fuel (natural gas), which will lead to CO2 emission reductions.
Estimated GHG emission reductions amounts to 253418 tonnes of CO2-equivalent in the period 2008-2012.

Project History
LLC «MEZ Yug Rusi» was established in 2006. It consists of the following oil extraction plants: Annynskiy, Labinskiy Kropotkinskiy, Liskinsky and Krasnodarskiy.
Prior to joining the Company "MEZ Yug Rusi", these were independent companies with the form ownership (OJSC). Since the installation of some boilers has happened long before the affiliation

[2] letters can be provided on request

with «MEZ Yug Rusi», the history of some boilers will be related to the history of the relevant company (at that time).

On the below table the schedule of project implementation at these companies is provided. The table A.1. The schedule of project implementation

Branch	Letter of Intent of the project under the Kyoto Protocol	Date of assignment of project work	Date of project work	Date of installation	Date of commissioning	Date of power start
Annynskiy MEZ	20.03.2007	Technical specifications at 15.05.2007 on the design project for the boiler KE-25-14-270 GM	2008 NPP Ekoenergomash Biysk	28.05.2009	01.06.2009-30.06.2009	31.08.2009
Kropotkinskiy MEZ	04.03.2003	Technical specifications №119 at 08.07.2003 on the design project for the boiler E-12-1,4-250DT	31.07.03 LLC Belenergomash	31.07.2003	03.12.2003-01.11.2004	Permission № 112 at 16.12.2004
Labinskiy MEZ	25.10.2000	Technical specifications at 17.02.98 on the design project for the boiler E-16-21-350 Technical specifications at 24.01.03 on the design project for the boiler	Contract.№6-98, at 25.02.98 PO Biyskenergomash", JSC"AKMN" Contract №108-02, at 28.01.2003 Biyskenergo	1999 20.12.2003	24.11.2003 13.01.04–16.01.04	24.11.2003 05.10.2004

		KE-18-24-GDV	mash			
Krasnodarskiy MEZ	05.03.2002	Technical specifications at 27.03.2002 on the design project for the E-13-3,9-440	04.2002 OAO LLC Belenergomash (boiler project), 09.03.03. Pischeprompproekt (installation)	02.2004	16.02.2004	07.04.2005

A.3. Project participants:

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Please list project participants and Parties involved in this section and provide contact information in annex 1. Information shall be provided in the following tabular format.

Party involved*	Legal entity project participant (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Party A - Russian Federation (Host Party)	LLC «MEZ Yug Rusi»	No
Party B – no	-	-

*Please indicate if the Party involved is a host Party.

Group of companies "Yug Rusi" was founded in 1992.

The group of companies includes more than 20 agricultural enterprises in Rostov, Volgograd, Krasnodar region, the total area of cultivated lands is 200 thousand hectares.
The group of companies "Yug Rusi" includes companies engaged in the cultivation of crops, livestock breeding, purchase, storage and processing of grain elevators, feed production, the elaboration of raw vegetable oil and feed protein meal, refining and packaging of oils, the production of corrugated packaging and products, distribution of products through a sales network.

In 2006, the "Yug Rusi" includes five oil-extraction plants located in Krasnodar and Voronezh region (Annynskiy MEZ, Kropotkinskiy MEZ, Liskinskiy MEZ, Krasnodarskiy MEZ, Labinskiy MEZ).

Today fat-oil complex "Yug Rusi" is the biggest on vegetable oil market, not only in Russia but also in Europe. Yug Rusi produces the famous «Golden seed», sunflower oil № 1 in Russia, which is also exported to Europe and the Middle East.

A.4. Technical description of the project:

A.4.1. Location of the project:

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A.4.1.1. Host Party(ies):

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Russian Federation

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

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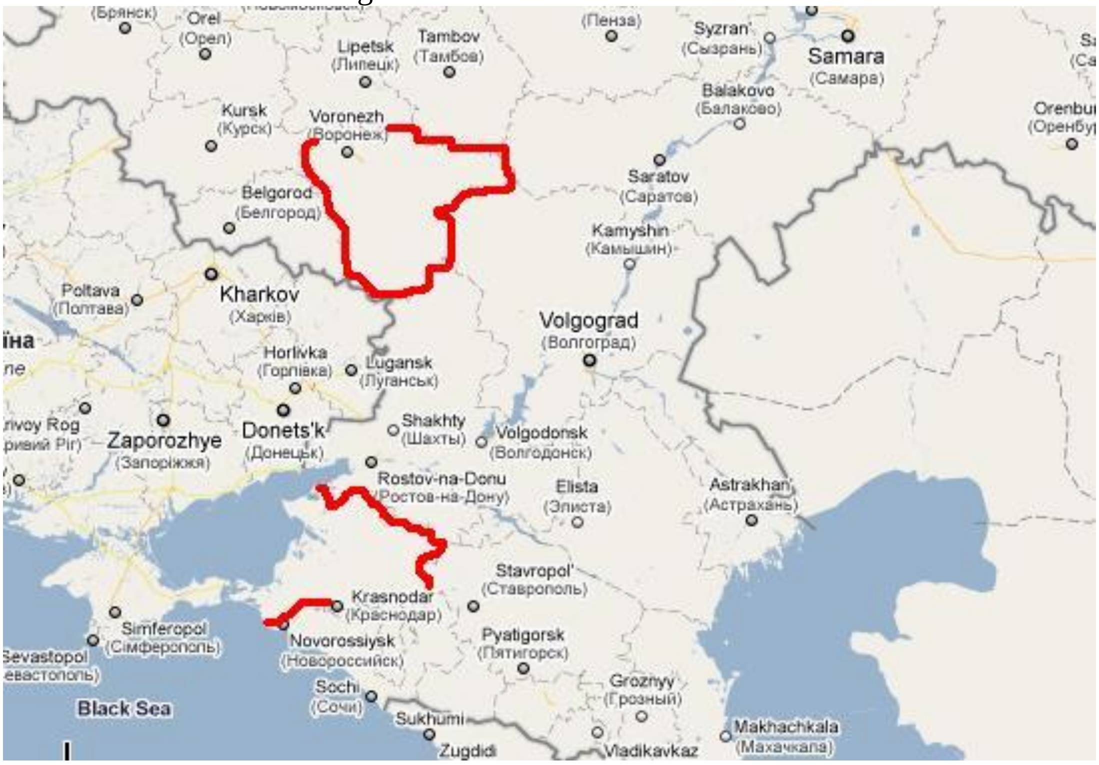
Krasnodar and Voronezh regions



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

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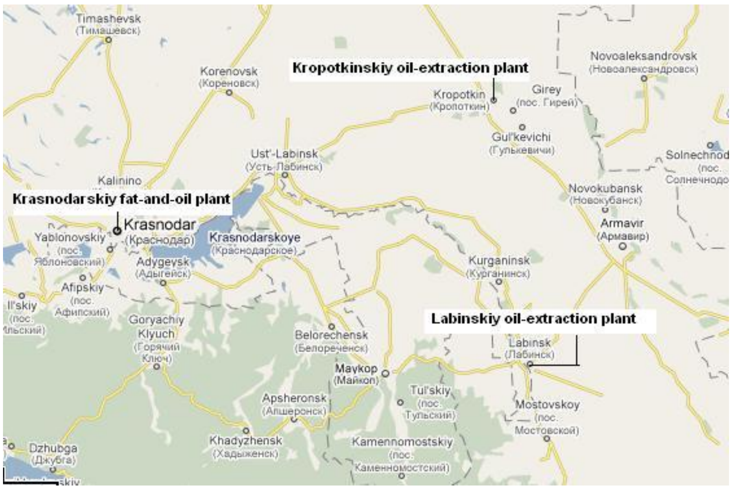

The project is implemented at facilities of 4 industrial complexes of LLC «MEZ Yug Rusi» including «Annynskiy oil-extraction plant», «Kropotkinskiy oil-extraction plant», «Krasnodarskiy fat-oil-extraction plant» and «Labinskiy oil-extraction plant».

These plants are located nearby the following cities Krasnodar
Labinsk
Anna
Kropotkin

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

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Krasnodar - a city in southern Russia, the administrative center of Krasnodar Krai.
Population of 710,686 people (2009).
A major economic and cultural center of Northern Caucasus and the Southern Federal District. The city is located on the right of the Kuban River, 1350 km from Moscow, on the border of Adygea.
Geographical coordinates: 45°05' / 39°03'.
Krasnodar oil-fat plant – Krasnodar city, Tickhoretskaya street 5, post index 350059

Kropotkin - a town in the Krasnodar region of Russia. The administrative center of the Caucasus region. The population of 80,5 thousand people (2008). The city is located on the right of the Kuban River, 136 km north-east of Krasnodar. Geographical coordinates : 45°26′00″/ 40°34′00″ .
The city is a major railway junction (the intersection of lines of Rostov-on-Don - Baku -Stavropol - Krasnodar) as well as the center of the food industry: oil extraction, canning, dairy.
Kropotkinskiy oil plant - Krasnodar krai, Kropotkin town, Krasna street 1, Post index 352380

Labinsk – a town in Russia, administrative center Labinskiy District, Krasnodar krai. The population of the city - 61,1 thousand people (2008).
The city is located on the right of the river Laba River (Kuban), 180 km from Krasnodar. Food industry is represented by: canning, sugar, oil extraction plant. Geographical coordinates: 45°13′00″ /39°40′00″.
Labinskiy oil plant - Krasnodar krai, Labinsk town, Krasnay street 100, Post index 352500.

Anna - an urban village, the administrative center Annynskiy District, Voronezh Oblast of Russia.

Population - 19,3 thousand people (2009). Located near the river Bityug River (Don), 100 km east of Voronezh. Geographical coordinates: 51°29′00″/40°25′00″.
Anna oil plant - Voronezh Oblast, Annynskiy District, Anna village, Lenina street 1, Post index 396250

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

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The main characteristics of project equipment.

Annynskiy MEZ
According to the project the conversion the existing KE 25-14-270 GM gas boiler to the husk burning was carried out in 2009 .
The main characteristics of KE 25-14-270 GM

Index	Fuel	Steam capacity, t/h	Steam pressure, MPa	Steam temperature °C	Project efficiency %	Efficiency on gas %
KE-25-14-270 GM	waste wood, gas, seed husk, fuel oil	25	1.4 (14)	270	82.4	82.4

Kropotkinskiy MEZ
According to the project the new husk boiler E-12-1,4-250DT was put in operation in 2004.

Index	Fuel	Steam capacity, t/h	Steam pressure, MPa	Steam temperature °C	Project efficiency %	Efficiency on gas %
E-12-1,4-250DT	Seed husk, gas	12	1.4 (14)	250	81,8	91,9

Labinskiy MEZ
According to the project 2 new husk boilers E-16-21-350 and KE-18-24-GDV were put in operation in 2000 and 2004

Index	Fuel	Steam capacity, t/h	Steam pressure, MPa	Steam temperature °C	Project efficiency %	Efficiency on gas %
E-16-21-350	Seed husk, gas	16	21	350	82	90

Index	Fuel	Steam capacity, t/h	Steam pressure, MPa	Steam temperature °C	Project efficiency %	Efficiency on gas %
KE-18-24GDV.	Seed husk, gas	18	24	250	84	91

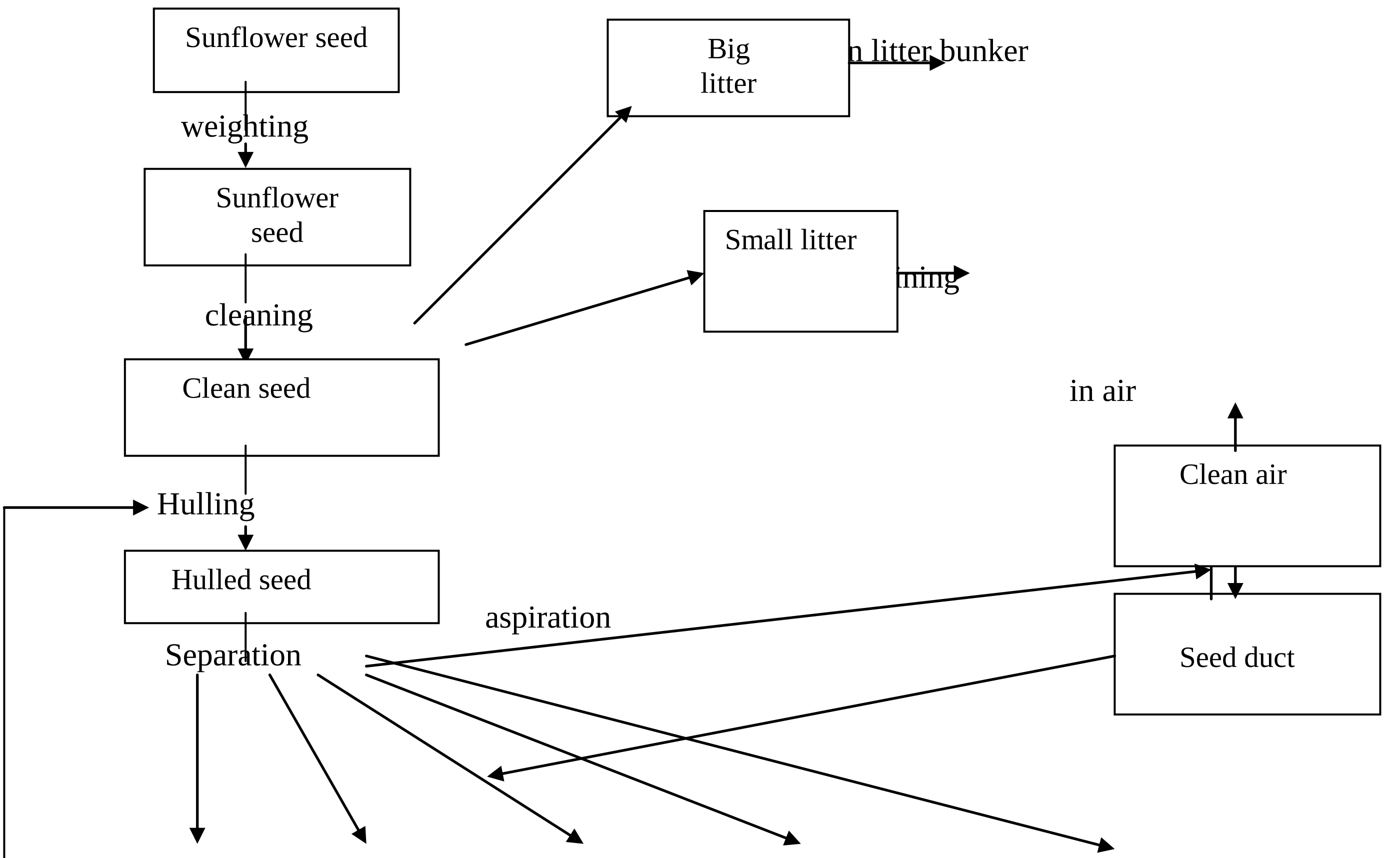
Krasnodarskiy MEZ
According to the project the new husk boiler E-13-3,9 440DT in 2005 was put in operation .

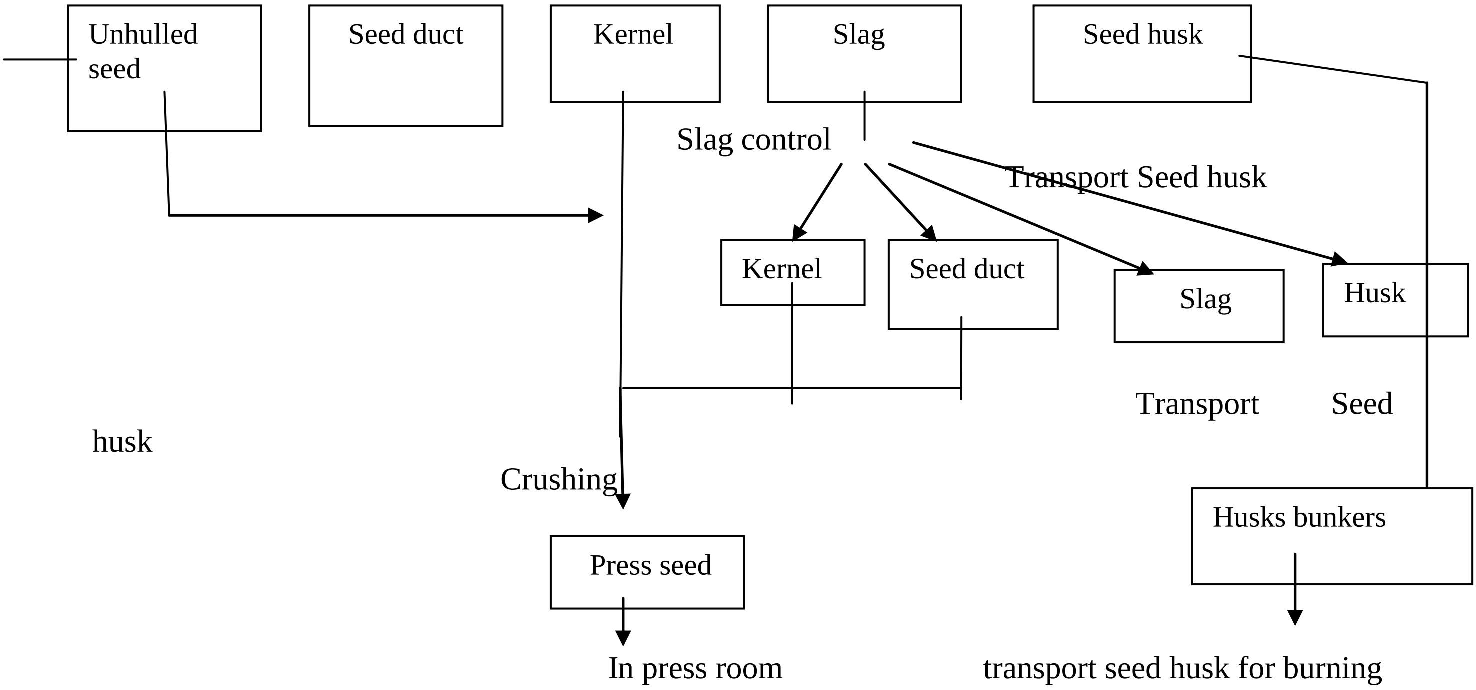
Index	Fuel	Steam capacity, t/h	Steam pressure, MPa	Steam temperature °C	Project efficiency %	Efficiency on gas %
E-13-3,9 440DT	Seed husk, gas	13	3,9	440	78.1	88.5

When the conversion of boiler equipment company encountered some problems with the fact that for husk boilers need to buy, build, build the following accessories:

1. Construction boiler house.
2. Construction of a chimney with a gas ducts
3. Manufacture and installation of husk production line from production to storage bunker.
4. Manufacturing, assembly and installation of husks bunkers coming out of production. To create a reserve for the suspension of production husk
5. Manufacture and installation of husk production line from storage bunker to the boilers.
6. Installation of cast husk bunkers on the boiler
7. Installation and setup storage bunker with a surplus of production or suspension of the boiler
8. Installing filters (multicyclone) to capture unburned fractions, with the possibility of unloading and removal.
9. Containers for disposal of ash in the periodic cleaning of the boiler, with the ability to upload and export.

The scheme of material flow in the processing of sunflower seeds





Description of the technological scheme.

From bucket elevator, the sunflower seeds are distributed into 2 chain conveyors. From chain conveyor, the sunflower seeds are fed to the hoppers over the huller.
From hoppers, the seeds are fed to the seed hullers where the sunflower seeds are hulled, the shells are destructed for their subsequent separation from the kernels. This is done because the shells contain substances (waxes etc) that are undesirable in the oil. The hulled seeds are fed to the seed purifiers (aspirators)) via hoippers over them, where the hulled seeds are separated into fractions as follows:
- unhulled seeds are fed from seed purifiers to the hullers for rehulling by means of the chain conveyor, bucket elevator, hopper chain conveyor.
-the broken kernel fraction is collected by the chain conveyor and fed via the bucket elevator to the seed purifiers foe broken kernel fraction control.
- the husk from the purifiers is collected by the chain conveyor and comes via the bucket elevator to husk air transport and further to the assembling hopper and transported to the husk burners of the boiler equipment.

Table the schedule of project implementation

Branch	Letter of Intent of the project under the Kyoto Protocol	Date of assignment of project work	Date of project work	Date of installation	Date of commissioning	Date of power start
Annynskiy MEZ	20.03.2007	Technical specificati	2008 NPP	28.05.2009	01.06.2009 -	31.08.2009

		ons at 15.05.2007 on the design project for the boiler KE-25-14-270 GM	Ekoenergomash Biysk		30.06.2009	
Kropotkinskiy MEZ	04.03.2003	Technical specifications №119 at 08.07.2003 on the design project for the boiler E-12-1,4-250DT	31.07.03 LLC Belenergomash	31.07.2003	03.12.2003 - 01.11.2004	Permission № 112 at 16.12.2004
Labinskiy MEZ	25.10.2000	Technical specifications at 17.02.98 on the design project for the boiler E-16-21-350 Technical specifications at 24.01.03 on the design project for the boiler KE-18-24-GDV	Contract. №6-98, at 25.02.98 PO Biyskenergomash", JSC"AKMN" Contract №108-02, at 28.01.2003 Biyskenergomash	1999 20.12.2003	24.11.2003 13.01.04–16.01.04	24.11.2003 05.10.2004
Krasnodarskiy MEZ	05.03.2002	Technical specifications at 27.03.2002 on the design project for	04.2002 OAO LLC Belenergomash (boiler project), 09.03.03.	02.2004	16.02.2004	07.04.2005

		the E-13-3,9-440	Pischepromproekt (installation)			

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:

Heat produced at oil and fat factories in Russia usually due to burning fossil fuels because:
The main reasons for a wide application of fossil fuel technologies are:

- These are tested technologies which are highly efficient (efficiency gas boilers is about 90%)
  -There are versatile proven technology solutions
  -There are reliable and historically well-known suppliers
  - No serial production of boilers designed for burning sunflower seed husk
  - Inefficiency of husk boilers (husks boilers can work satisfactorily only at two-threefold reduced steam capacity [3])
  - Does not exist any state regulation of innovative projects in the renewable energy sector, as well as the legislative framework enabling the development of such projects[4].

The fact that the use of seed husk for burning in boilers for thermal power and steam generation is not a common practice, is associated with more technologically complex scheme that underlies in the inefficiency of old husk boilers[5], in a problem related to feeding husk in the boiler, as well as in significantly more investments in comparison with the historically proven heat production technology based on the use of fossil fuel or import of the heat from the thermal municipal networks.
The projects of sunflower seed husk utilization for energy purposes is a unique practice for companies engaged in the production of vegetable oils, in particular, and for Russia as a whole.
The share of biomass utilization in Russia does not exceed 3%[6], proving thus that the current government policy in regulating the use of renewable energy, as well as low natural gas prices and the ease of fossil fuels technology use are not the incentives for implementing biomass projects (in particular husk utilization) for thermal and power generation.

Baseline scenario
Under the baseline scenario the practice of fossil fuels (natural gas) use for heat production would continue at all branches of "Yug Rusi", whereas husks obtained after oil extraction would be removed to the fields as fertilizer. The cost of heat obtained by burning natural gas under the baseline is below the cost of heat produced by husk burning under the project.

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[3] According to research «Scientific Production Association for Research and Design of Power Equipment Polzunova» and Biysk Boiler Plant

[4] http://minenergo.gov.ru/activity/vie/

[5] According to research «Scientific Production Association for Research and Design of Power Equipment Polzunova» and Biysk Boiler Plant, the available types of boilers are not suitable for burning sunflower husks. The reconstructed boilers burning sunflower husks are easily damaged, because boiler economizer beam and quickly clogged solid ash deposits.

[6] http://minenergo.gov.ru/activity/vie/

Thus, the following facts prove in favor of the baseline scenario:
• Lack of sufficient incentives for the project: low level of gas prices , the availability of current gas infrastructure, and the ease of use of standard technology for heat generation do not motivate the company to invest significant funds in construction of new facilities for utilization of useful waste (husk) and to reduce GHG emissions.
• Lack of investment attractiveness of projects of this kind, as indicators of economic efficiency of this project are incomparably lower than those come from traditional energy production based on fossil fuel use.
• Lack of legal framework for JI projects in the Russian Federation at the time of this project.

Project
In the project activity practically all sunflower seed husks of all branches are usefully utilizied in the husk boilers to generate heat.
Thus, the project will lead to a significant reduction in consumption of fossil fuels (natural gas), and, consequently, to prevention of the carbon dioxide emissions and the potential methane emissions from leaks in the extraction, refining, transportation and distribution of fossil fuels (natural gas).
In the absence of the project activity it would be impossible to achieve these emission reductions, because using natural gas as primary fuel and the increasing need of some branches in the heat would have led to an increase in greenhouse gas emissions due to increased consumption of natural gas.
All the above facts, and studies are listed in Section B, indicate that the company "Yug Rusi" would not reduce GHG emissions, except it were in the Project activities.

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

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	Years
Length of the crediting period:	5
Year	Estimate of annual emission reductions in tonnes of CO_2equivalent
2008	18840
2009	44509
2010	61893
2011	61316
2012	61315
Total estimated emission reductions over the crediting period (tonnes of CO_2 equivalent)	247873
Annual average of emission reductions over the crediting period (tonnes of CO_2 equivalent)	49575

A.5. Project approval by the Parties involved:

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On September 15, 2011 the Chairman of the Russian Federation Government signed Resolution 780 “On measures for realization of Article 6 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change”. This document depicts a JI-project approval procedure in the Russian Federation.

According to item 4 of the Provision the approval of projects will be carried out by the Ministry of Economic Development of the Russian Federation based on consideration of submitted project proposals. Competitive selection of demands is carried out by the operator of carbon units (Sberbank of RF) according to the item 10 of the Government Decree of the Russian Federation № 780.
According to item 7 of the Provision the application structure includes «the positive expert opinion on the project design documentation prepared according to the international requirements by the accredited independent entity chosen by the applicant».

Thus, according to the legislation of the Russian Federation in the field of JI projects realization, the Project approval is possible after reception of the positive determination opinion from AIE.

SECTION B. Baseline

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

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To describe and explain the chosen baseline, we use JI specific approach" with the sentence "To describe and explain the chosen baseline we used the approach (a) set out in paragraph 44 of Annex I to the "Guidance on criteria for baseline setting and monitoring", namely provision of traceable and transparent information showing that the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to reductions of anthropogenic emissions by sources.

Step. 1. Indication and description of the approach chosen regarding the baseline setting.

Step. 2. Application of the approach chosen.

The following is a detailed presentation of the two steps:

Step. 1. Indication and Description of the Approach Chosen Regarding the Baseline Setting

The baseline is determined through considerations of various alternative scenarios with regard to the proposed project activity. As criteria for choosing the baseline scenario the key factors will be determined. All alternatives will be considered in terms of influence on them of these factors. The most probable baseline scenario will be an alternative that is influenced by the factors at the least. Therefore, the following stages of determining the baseline scenarios are envisaged:

a) *Description of alternative scenarios.*
b) *Description of the key factors.*
c) *Analysis of the influence of the key factors on the alternatives.*
d) *Choosing the most probable alternative scenario.*

Step. 2. Application of the Scenario Chosen

At this step the definition of alternative scenarios and test them for compliance with applicable law.

As alternative scenarios for heat generation at the branches of "Yug Rusi" the following scenarios are considered:

Alternative scenario 1. Continuation of the current situation, i.e. heat generation in the old boilers and construction of the new gas boilers.

Alternative scenario 2. The project itself without being registered as a JI activity (the use of sunflower seed husks for energy generation purposes).

Alternative scenario 3. Using the old gas boiler with installation of new coal boilers for heat generation

Alternative Scenario 4. Using the old gas boiler with installation of new fuel oil boilers for heat generation

Alternative Scenario 5. Use of heat energy from external sources, for example the import of the heat energy from the nearby TPP

As alternate scenarios for husk utilization the following scenarios are considered:

Alternative Scenario 1. Continuation of the current situation in the absence of project activities, i.e. transportation of husks to the fields as a fertilizer.

Alternative scenario 2. The project itself without being registered as a JI activity), i.e. Storage of husk at the plant for energy purposes (the use of sunflower seed husks for energy purposes).

Alternative Scenario 3. Transportation of husk to the landfill for disposal

Alternative Scenario 4. The use of husk as a raw material for various purposes (e.g, in the pulp and paper industry)

***Sale of husk is not considered as an alternative for husk utilization because amount of seed husk for sale was insignificant*.**

Compliance of the chosen alternatives with the current legislation and regulations

Scenarios related to boiler equipment construction and burning fossil fuel and biomass **for energy production** comply with the current legislation.

Conclusion: None of the alternatives contradict the current legislation and may be discussed in the further analysis.

Identification of obstacles that would impede the realization of alternative scenarios.

This step includes the identification of obstacles that could hinder the implementation of alternative scenarios identified in the previous step, and analyzes the influence of these obstacles on the implementation of alternatives. An analysis of obstacles concludes feasibility of each alternative. As a result of the above two steps is to determine the most likely alternatives, implementation of which did not preclude consideration obstacles.

In this section the impact of technological obstacles to the above-mentioned alternatives is analyzed. These obstacles include:

- *Technical feasibility*. Under this obstacle the possibility of realization of the alternative is analyzed from technical and economic viewpoints, taking into account the remoteness of facilities, investment costs, the availability and development of infrastructure.
- *Husk utilization method.*

If any of the above alternatives does not overcome these obstacles, it will not be considered in further analysis.

Technological obstacle: technical feasibility

Alternative scenario 1. Continuation of the current situation, i.e. heat generation in the old boilers and construction of the new gas boilers.

Annynskiy MEZ
Under continuation of the current situation, the existing gas boiler KE 25-14-270 GM would continue to work on natural gas but it would be necessary to install new gas boiler exchange for obsolescent husk boiler «Age-Moor».
This alternative scenario for **Annynskiy MEZ** is seen as feasible because the existing gas boilers KE 25-14-270 GM were installed in the late 90's and have not yet exhausted their service life, even by half. Further work of these boilers on gas does not entail malfunctions and stop production but purchase (investment) of new gas boiler and its work on gas are associated with minimal risk because the technology are highly efficient (efficiency gas boilers is about 90%), fully scrutinized and tested, there are many standard equipments with all technical parameters, as well known and reliable suppliers. In addition, this technology does not require personnel’s training, so it can say that heat production using new gas boilers is the most common practice in Russia.

Kropotkonskiy MEZ
Under continuation of the current situation, it would be necessary to install 2 gas boilers.
This alternative scenario for **Kropotkonskiy MEZ** purchase (investment) of new gas boilers and their work on gas are associated with minimal risk because the technology are highly efficient (efficiency gas boilers is about 90%), fully scrutinized and tested, there are many standard equipments with all technical parameters, as well known and reliable suppliers. In addition, this technology does not require personnel’s training, so it can say that heat production using new gas boilers is the most common practice in Russia.

Labinskiy MEZ
Under continuation of the current situation it would be necessary to install two new gas boilers to cover increased heat requirements .

This alternative scenario for **Labinskiy MEZ** purchase (investment) of new gas boilers and their work on gas are associated with minimal risk because the technology are highly efficient (efficiency gas boilers is about 90%), fully scrutinized and tested, there are many standard equipments with all technical parameters, as well known and reliable suppliers. In addition, this technology does not require personnel's training, so it can say that heat production using new gas boilers is the most common practice in Russia.

Krasnodarskiy MEZ
Under continuation of the current situation, heat production would be carried out in the old boilers. This alternative scenario for **Krasnodarskiy MEZ** is seen as feasible because the existing gas boilers were installed in the late 90's and have not yet exhausted their service life, even by half. Further work of these boilers on gas does not entail malfunctions and stop production.

Thus, this alternative is quite technically feasible.

Alternative scenario 2. The project itself (without being registered as a JI activity), i.e. the use of sunflower seed husks for energy purposes.

The implementation of project activities will allow branches of LLC «MEZ Yug Rusi» to switch to sunflower husks for heat production, which consequently would reduce the consumption of fossil fuels and reduce costs for the purchase of fossil fuels.
However, the project involves **a significant investments** and technological and operational hurdles. This is due to the novelty of technology using biomass for energy purposes that is relevant not only for this project, but for Russia as a whole (the share of biomass utilization in Russia is no higher than 3%).
Prior to making decision on using husk in boiler equipment, the following problems must be addressed :
- No serial production of boilers designed for burning sunflower seed husk
- Inefficiency of husk boilers (husks boilers can work satisfactorily only at two-threefold reduced steam capacity [7])
-

- **Much higher investments** compared with the historically proven technology for heat production in boiler equipment operating on fossil fuel , as boiler feed husk required besides the basic cost for the purchase of boilers, the additional cost of setting up feeding husks in boilers and the purchasing of various non-conventional boiler auxiliary equipment[8]

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[7] According to research «Scientific Production Association for Research and Design of Power Equipment Polzunova» and Biysk Boiler Plant
[8] 1. Construction boiler house.
2. Construction of a chimney with a gas ducts
3. Manufacture and installation of husk production line from production to storage bunker.
4. Manufacturing, assembly and installation of husks bunkers coming out of production. To create a reserve for the suspension of production husk
5. Manufacture and installation of husk production line from storage bunker to the boilers.
6. Installation of cast husk bunkers on the boiler
7. Installation and setup storage bunker with a surplus of production or suspension of the boiler
8. Installing filters (multicyclone) to capture unburned fractions, with the possibility of unloading and removal.
9. Containers for disposal of ash in the periodic cleaning of the boiler, with the ability to upload and export.

- Increased fire risk (it occurs as experience in chimneys and ash collectors boiler plant noncombustible grains. Due to removal of the sparks from the chimneys and contacting the hot flue, in periods of burning them, there is a real danger of fire)
Similar circumstances are described in the approved project Sberbank[9] «Utilization of biomass for steam production at JSC "EFCO" B1 and Section B2. At the same husk utilization technology, it is once again confirms the applicability of and rationale presented in this section factors.
All mentioned above is a real investment and technological risk for companies operating converted gas –to- husk boilers. In addition, this project required additional training for maintenance and operation of husk boilers.
Thus, the impact obstacle on alternative 2 is significant.

Based on the foregoing, it is unlikely that without additional investment this alternative would be implemented. Nevertheless this alternative will be considered in the further investment analysis.

Alternative scenario 3. Using the old gas boiler with installation of new coal boilers for heat generation
Use of coal boilers to replace new gas ones is not a rational solution for branches, as enterprises are already working with gas boilers connected to the gas distribution network. Moreover, coal boilers would require:
-Arranging conditions for consumption, distribution, storage of coal
-Solution of the problem related to disposal of ash and slag from waste come out from coal combustion
Besides, harmful atmospheric emissions from coal burning impose a limitation on this alternative due to the fact that all the oil extraction plant branches of LLC «MEZ Yug Rusi» are located in the city and urban settlements.

All mentioned above, one way or another, are the risk for the company what also significantly increases the cost of investment required to implement this alternative.

The possibility to implement this alternative scenario is unlikely from technical viewpoint.

Alternative Scenario 4. Using the old gas boiler with installation of new fuel oil boilers for heat generation

Use of fuel oil boilers to replace the new gas boilers is not a rational solution for branches, because Yug Rusi already working with gas boilers connected to the gas distribution network. The alternative would require:
-Arranging conditions for supply and storage of fuel oil in necessary quantity (construction of the tank park)
-Solution of the problem of harmful emissions produced by fuel oil burning.

This imposes a restriction on this alternative due to the fact that all the oil extraction plant LLC of «MEZ Yug Rusi» are located in the city and urban settlements.
Fuel oil is an emergency fuel, but even with having the fuel oil emergency reserve at some branches, this alternative scenario is not cost effective, given the cost of fuel and capital investment to expand fuel oil infrastructure (construction of the tank park for fuel oil storage).

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[9] http://www.sbrf.ru/common/img/uploaded/files/CO2/Energetika/35__EFKO.pdf

All mentioned above is not only a risk for the company, but also significantly increases the cost of investment required to implement this alternative.

The possibility to implement this alternative scenario is unlikely from technical viewpoint.

Alternative Scenario 5. Use of external heat energy sources, for example the heat energy of the nearby TPP

This alternative generally is irrational for the branches of LLC «MEZ Yug Rusi», with the exception of the Krasnodarskiy MEZ.
Annynskiy, Labinskiy and Kropotkinskiy branches has already their own internal system of steam feeding from the boiler equipment. Connection to external heat sources is impossible because these branches are far enough geographically distant from the nearest sources of technological steam of required parameters.
Investments in building many kilometres steam pipeline of necessary parameters are disproportionately higher and technically difficult compared with other alternatives.
Krasnodarskiy MEZ has its own local TPP, while giving excess heat to the district energy system. Heat consumption from the district energy system is impossible due to lack of steam with desired technological parameters. This will also lead to an increased in the purchase costs of heat from external sources. Besides, these costs will tend to increase because of growth of thermal energy prices.
Besides, the MEZ will become energy dependent, that given the power shortages in the Krasnodar krai[10], jeopardizes the reliability of heat supply to the MEZ.

The possibility to implement this alternative scenario is unlikely from technical point of view.

The result of the influence obstacle on the technical feasibility of heat supply

Alternatives for heat supply	likely	unlikely
Alternative1	■	
Alternative 2		■
Alternative 3		■
Alternative4		■
Alternative 5		■

Technological obstacle: husk utilization method.

The following alternative scenarios are considered in the analysis of the impact of this obstacle:

Alternative Scenario 1. Continuation of the current situation in the absence of project activities, i.e. transportation of husks in the fields as a fertilizer.
Historically, LLC «MEZ Yug Rusi» is engaged in transportation of husk in the fields for using it as a fertilizer. These operations t introduced in the MEZ budget, in addition, it leads to financial savings

[10] http://www.ecoatominf.ru/publishs/VAES/VAES_7.htm

on the purchase of fertilizers.

Realization of this scenario is likely from a technical point of view.

Alternative scenario 2. The project itself without being registered as a JI activity), i.e. the use of sunflower seed husks for energy purposes.
The use of sunflower seed husks for energy purposes requires from the LLC «MEZ Yug Rusi» the long-term investments for the construction of supply systems, transport, storage of husk (at branches of LLC «MEZ Yug Rusi» there are no opportunities for storing husk in factories, as this would require the organization of specialized storehouses, which are not a rational decision, because they require additional financial cost related to construction of reservoirs. In addition, storing the husk on the plant's territory is fire-hazardous and requires special permissions associated with labour safety and ecology requirements).
In addition, the company will need to buy fertilizers, which leading into additional expenses.

Implementing this alternative scenario is strongly influenced by the considered obstacle.

Alternative Scenario 3. Transportation husk to the landfill for disposal
Transportation husk to the landfill involves additional expenses on its disposal. In addition, the company loses fertilizers, and will be forced to bear additional financial costs related to the purchase of fertilizers.

The possibility to implement this alternative scenario is unlikely.

Alternative Scenario 4. The use of husk as raw material for various purposes (eg, in the pulp and paper industry)
Sale of sunflower seed husks as raw materials to other companies may bring LLC «MEZ Yug Rusi» extra income.
However, in the region there are no companies of desired profile (such as the pulp and paper mills), who would be willing to buy husk for use in industrial purposes.
Thus, considering the husk shipping cost far beyond the region, the implementation of this alternative is not commercially effective.

The possibility to implement this alternative scenario is unlikely.

The result of the influence obstacles on the technical feasibility of husk utilization

Alternatives for heat supply	likely	unlikely
Alternative1	■	
Alternative 2		■
Alternative 3		■
Alternative4		■
Alternative 5		■

Step 3. Selecting the alternative scenario, which is not influenced by technological obstacles.

Based on the conducted analysis it is clear that the Alternative 1 is the least influenced by the obstacles, therefore this Alternative is **the baseline scenario**.

The key information and data used to establish the baseline is provided in the following tables:

Data/Parameter	Quantity of the sunflower seed on production
Data unit	t, kg
Description	Quantity of the sunflower seed on production needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Auto scale VAT-60-16-3-2M, VK 002E-30-10 VK 001E-60-20, Mettler Toledo 760DC Bunker scale DN-500 №58, VP-100-1
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the sunflower seed on production needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Quantity of the oil fodder
Data unit	t, kg
Description	Quantity of the oil fodder needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Bunker scale VDE 400, VP-200-1 Auto scale VK 002E-30-10, VK 001E-60-20 VDE -100.150 EP Scale Mettler Toledo 0978
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.

Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the oil fodder needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Quantity of the litter
Data unit	t, kg
Description	Quantity of the litter needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Auto scale VAT-60-16-3-2M, VA-M-30, VK 002E-30-10, VK 001E-60-20, Mettler Toledo 760DC, M8200A
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the litter needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Quantity of the sunflower oil
Data unit	t, kg, l
Description	Quantity of the sunflower oil needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Liquid meter PPO-40-0,6 CU UCC Portion scale RP-500 Mass flowmeter-Krohne Corimass MEM 4085, Mass flowmeter MASS 3000 Bunker scale DWT100 -8000, PPO 40-0,6CU
Value of data applied (for exante	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.

calculations/determinations)	
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the sunflower oil needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Quantity of the phosphatidic concentrate
Data unit	t, kg, l
Description	Quantity of the phosphatidic concentrate needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Liquid meter PPO-40-0,6 CU UCC Portion scale RP-500 Mass flowmeter-Krohne Corimass MEM 4085, Mass flowmeter MASS 3000 Bunker scale DWT100 -8000
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the phosphatidic concentrate needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Quantity of the phosphatidic emulsion
Data unit	t, kg, l
Description	Quantity of the phosphatidic emulsion needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Liquid meter PPO-40-0,6 CU UCC Portion scale RP-500 Mass flowmeter-Krohne Corimass MEM 4085, Mass flowmeter

	MASS 3000 Bunker scale DWT100 -8000
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the phosphatidic emulsion needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Quantity of the sunflower seed husk for sale
Data unit	t
Description	Quantity of the sunflower seed husk for sale needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	Constantly
Source of data (to be) used	Auto scale VAT-60-16-3-2M, VA-M-30
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Quantity of the sunflower seed husk for sale needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Humidity of the sunflower seed
Data unit	%
Description	Humidity of the sunflower seed needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	constantly
Source of data (to be) used	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55»

	Hygrometer «Sartorius» VD115 BINDER
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Humidity of the sunflower seed needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Humidity of the sunflower oil
Data unit	%
Description	Humidity of the sunflower oil needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	constantly
Source of data (to be) used	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale "OHAUS" Hygrometer «Wille-55» Hygrometer «Sartorius» VD115 BINDER
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Humidity of the sunflower oil needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Humidity of the oil fodder
Data unit	%
Description	Humidity of the oil fodder needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of	constantly

determination/monitoring	
Source of data (to be) used	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» Hygrometer «Sartorius» VD115 BINDER
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Humidity of the oil fodder needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Humidity of the sunflower seed husk
Data unit	%
Description	Humidity of the sunflower seed husk needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	constantly
Source of data (to be) used	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» Hygrometer «Sartorius» VD115 BINDER
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Humidity of the sunflower seed husk needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Humidity of the phosphatidic concentrate
Data unit	%

Description	Humidity of the phosphatidic concentrate needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	constantly
Source of data (to be) used	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» Hygrometer «Sartorius» VD115 BINDER
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Humidity of the phosphatidic concentrate needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Humidity of the phosphatidic emulsion
Data unit	%
Description	Humidity of the phosphatidic emulsion needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
Time of determination/monitoring	constantly
Source of data (to be) used	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» Hygrometer «Sartorius» VD115 BINDER
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Humidity of the phosphatidic emulsion needed to calculate the amount of fuel husk, as is the amount of husk is calculated parameter defined as the difference between all the raw indicators, both quantitative and qualitative.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in

	accordance with established regulations.
Any comment	-

Data/Parameter	Natural gas emission factor
Data unit	tCO2/TJ
Description	Emission factor is required to calculate GHG emissions from the gas boilers.
Time of determination/monitoring	Fixed parameter
Source of data (to be) used	IPCC 2006, Volume 2 fuel combustion, chapter 2, p. 2.18, tab. 2.2
Value of data applied (for exante calculations/determinations)	56.1
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Emission factor is required to calculate GHG emissions from the gas boilers.
QC/QA procedures (to be) applied	-
Any comment	-

Data/Parameter	Natural gas consumption in husk boilers
Data unit	n.m3
Description	Natural gas consumption in husk boilers is needed to calculate the GHG emissions during emergency situations.
Time of determination/monitoring	Constantly
Source of data (to be) used	Flowmeter VKG-2; SPG-761
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Natural gas consumption in husk boilers is needed to calculate the GHG emissions during emergency situations.
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Electricity consumption in husk boilers
Data unit	kWh
Description	Electricity consumption in husk boilers is needed to calculate the GHG emissions during project activity

Time of determination/monitoring	Constant
Source of data (to be) used	Electricity supply meter
Value of data applied (for exante calculations/determinations)	Data are not shown because of the large number of derived values obtained monthly monitoring of 4 branches.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Electricity consumption in husk boilers is needed to calculate the GHG emissions during project activity
QC/QA procedures (to be) applied	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.
Any comment	-

Data/Parameter	Grid emission factor
Data unit	tCO2/MWh
Description	Electricity grid emission factor
Time of determination/monitoring	Constant
Source of data (to be) used	Approved project documentation "Installation GTPP-400 at the Surgut GRES-2, OGK-4, Tyumen region, Russia", version 04, Annex 2
Value of data applied (for exante calculations/determinations)	0,606 for period 2008-2012
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Needed for emissions calculation from Electricity consumption in husk boilers
QC/QA procedures (to be) applied	Reference data
Any comment	-

Data/Parameter	ρ_{CH4}
Data unit	kg/m^3
Description	Density of methane at standard conditions
Time of determination/monitoring	Determined once during the preparation of project design document
Source of data (to be) used	Thermal calculation of boilers (Normative method), NPO CKTI, St. Petersburg, 1998
Value of data applied (for ex-ante calculations/determinations)	0.667
Justification of the choice of data or description of measurement	-

methods and procedures (to be) applied	
QC/QA procedures (to be) applied	Determined on the basis of the reference data
Any comment	

The calculation of GHG emission reductions at the branches LLC «MEZ Yug Rusi» *(Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy) ER:*

$$\mathbf{ER} = ((FCsh*NCVsh*4{,}1868*\eta_{\text{husk boiler}} / \eta_{\text{gas boiler}})*EFng - ((FCsh*NCVsh*EF_{CH4}*GWP_{CH4}) + (FCsh*NCVsh*EF_{N2O}*GWP\ N20)+(EC*EFelec)) - (FCng*NCVng*\rho_{CH4}*EFng) \quad (1)$$

FCsh=(Qseed*(1-Hseed) - Qoil fodder*(1-Hoil fodder) – Q litter*(1-Hseed) - Qsunflower oil*(1-Hsunflower oil) - Qphosphatidic concentrate *(1-Hphosphatidic concentrate)- Qphosphatidic emulsion*(1-Hphosphatidic emulsion)* (1-Hseed husk)-Qseed husk for sale, annual
ρ_{CH4} – the density of methane CH4 under standard conditions, equals to 0.667 kg/m3
FCsh – husk consumption for the burning in the project boundaries, t[11] annual
FCng – emergency natural gas consumption for the burning in the husk boilers in the project boundaries, n.m3, annual
NCVsh – sunflower seed husk NCV, kcal/kg; reference value equal to 3685 (Kasatkin "reference manual for heat engineering industry")
NCVng – natural gas NCV, equal to 0.048 TJ/t (IPCC 2006, Volume 2 Energy, chapter 1, p. 1.20, tab 1.2)
4,1868 – conversion factor from cal to joules, 1cal=4,1868J
EFng – natural gas emission factor, tCO2/TJ, equal 56,1 (IPCC 2006, Volume 2 fuel combustion, chapter 2, p. 2.18, tab. 2.2)
Qseed – Quantity of the sunflower seed on production in the project boundaries, t, annual
Qoil fodder – Quantity of the oil fodder in the project boundaries, t, annual
Qlitter– Quantity of the litter in the project boundaries, t, annual
Qsunflower oil – Quantity of the sunflower oil in the project boundaries, t, annual
Qphosphatidic concentrate – Quantity of the phosphatidic concentrate in the project boundaries, t, annual
Qphosphatidic emulsion – Quantity of the phosphatidic emulsion in the project boundaries, t, annual
Qseed husk for sale – Quantity of the sunflower seed husk for sale in the project boundaries, t , annual
Hseed – Humidity of the sunflower seed in the project boundaries, %
Hsunflower oil – Humidity of the sunflower oil in the project boundaries, %
Hoil fodder – Humidity of the oil fodder in the project boundaries, %
Hseed husk – Humidity of the sunflower seed husk in the project boundaries, %
Hphosphatidic concentrate – Humidity of the phosphatidic concentrate in the project boundaries, %
Hphosphatidic emulsion – Humidity of the phosphatidic emulsion in the project boundaries, %
$\eta_{\text{husk iboiler}}$ - project boiler efficiency, constant
$\eta_{\text{gas iboiler}}$ - gas boiler efficiency, constant

[11] Recalculate the amount of mass in accordance with the formula: M = r x V; where M - mass in kg; r – coeff 0.92 (kg/l density conversion); V - volume in liters.

GWP ch4- global warming potential of CH4, constant=21 tCO2/tCH4
EFCH4- CH4 emission factor from IPCC 2006, constant =0,03 tCH4/TJ (Reference on IPCC coefficients (IPCC 2006, Volume 2, chapter 2, table 2.2, p. 2.18)
GWP N20- global warming potential of N20, constant=310 tCO2/tN20
EFN20- N20 emission factor from IPCC 2006, constant =0,0040 tN20/TJ
EC- electricity consumption at seed husk transport operations, kw*h per year
EFelec- CO2 grid emission factor, tCO2/MWh

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:

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The analysis provided in Section B.1. proves that the proposed project is not the baseline scenario. To demonstrate the project additionality the JI specific approach was chosen.

For this purpose we used the approach (a) set out in paragraph 44 of Annex I to the “Guidance on criteria for baseline setting and monitoring”, namely provision of traceable and transparent information showing that the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to reductions of anthropogenic emissions by sources.

Demonstration and assessment of additionality is a sequential analysis, and includes 4 steps. If the investment analysis shows that the project activity is not an alternative, the most attractive in terms of financial indicators, from step 2 should proceed to step 4.

Step 1. Identification of alternatives
Step 2. Investment analysis of alternatives, and (or)
Step 3. Analysis of barriers
Step 4. Analysis of common practice.

Application of the approach chosen.

Step 1. Identification of alternatives

For the following analysis of selected alternative identified in section B.1.

Alternative scenario 1. Continuation of the current situation, i.e. heat generation in the old boilers and construction of the new gas boilers.

Alternative scenario 2. The project itself (without being registered as a JI activity), i.e. sunflower seed husk utilization for energy purposes

Step 2. Investment Analysis

A JI-specific approach is based on an explanation that the project activity would not have occurred anyway due to existence of the «financial barrier ..it means that the project is not financially attractive» and through the analysis of common practice.

At this step, is determined by:
– is a project alternative, the most attractive financially or economically;
– economically or financially feasible without the proceeds from the sale of ERUs.

Substep 2: Determination of the appropriate analysis method

The most suitable financial indicator for investment analysis of alternative scenarios of the project Sunflower seed husk utilization for energy purposes at facilities LLC «MEZ Yug Rusi»is the unit cost of heat generated (the levelised cost of heat).
It would therefore be a comparative analysis of costs per unit of heat produced and the results of the comparative investment analysis[12] are in Table B.2.1.

Analysis of economic efficiency is carried out for the alternative scenarios, which correspond to the technical regulation and accessible to project participants:

Alternative scenario 1. Continuation of the current situation, i.e. heat generation in the old boilers and construction of the new gas boilers.

Alternative scenario 2. The project itself (without being registered as a JI activity), i.e. sunflower seed husk utilization for energy purposes

Table B.2 1. Cost of heat production.

№	Index	*Alternative Scenario* 1	*Alternative Scenario* 2
Annynskiy MEZ			
1.	Investments, th.rubles	3 830	11907
2.	Operating costs, rubles per year	15 647	29 610
3.	Heat production, Gcal / year	83 192	83 192
4.	Unit cost of heat, rub / Gcal	**410**	**783**
Kropotkinskiy MEZ			
1.	Investments, th.rubles	11 719	14 648,7
2.	Operating costs, rubles per year	9942	20382
3.	Heat production, Gcal / year	51 515	51 515

12 Calculation of economic efficiency of the project is in excel format

4.	Unit cost of heat, rub / Gcal	**497**	**995**
Labinskiy MEZ			
1.	Investments, th.rubles	9 720	7 290,00
2.	Operating costs, rubles per year	16 809	30 244
3.	Heat production, Gcal / year	86 400	86 400
4.	Unit cost of heat, rub / Gcal	**486**	**866**
Krasnodarskiy MEZ			
1.	Investments, th.rubles	-	50 471,8
2.	Operating costs, rubles per year	36581	77806
3.	Heat production, Gcal / year	190 168	190 168
4.	Unit cost of heat, rub / Gcal	**564**	**1234**

Thus, from the Table B.2.1.clearly shows that the alternative scenario 1 is more profitable for financial indicators than the alternative scenario 2: the cost of heat production in the alternative scenario 1 is substantially less than the alternative scenario 2.

Sensitivity analysis.

The results of sensitivity analysis, confirming the conclusions of the investment analysis are presented in tables B.2.2.

Table B.2 2. Sensitivity analysis for investment and operating costs

№	Index	*Alternative Scenario* 1		*Alternative Scenario* 2	
Annynskiy MEZ					
1.	Changes of investments	- 10%	+ 10%	- 10%	+ 10%
2.	Investments, th.rubles	3 447	4 213	10 716,3	13 097,7

3.	Operating costs, rubles per year	14 082,3	17 211,7	26 649	32 571
4.	Heat production, Gcal /year	83 192	83 192	83 192	83 192
5.	Unit cost of heat in changes of investments , rub / Gcal	**380,1**	**381,7**	**727,9**	**732,7**
6.	Unit cost of heat in changes of operating costs , rub / Gcal	**343,6**	**418,2**	**659,7**	**800,9**
Kropotkinskiy MEZ					
1.	Changes of investments	- 10%	+ 10%	- 10%	+ 10%
2.	Investments, th.rubles	10 547,1	12 890,9	13 183	16 113,6
3.	Operating costs, rubles per year	14 010	17 123,3	20485,3	25037,6
4.	Heat production, Gcal /year	51 515	51 515	51 515	51 515
5.	Unit cost of heat in changes of investments , rub / Gcal	**707,5**	**715,1**	**2 682,9**	**2 692,5**
6.	Unit cost of heat in changes of operating costs , rub / Gcal	**644**	**778,6**	**933,5**	**1130,3**
Labinskiy MEZ					
1.	Changes of investments	- 10%	+ 10%	- 10%	+ 10%
2.	Investments, th.rubles	8 748	10 692	6 561,0	8 019,0
3.	Operating costs, rubles per year	15 128,1	18 489,9	27 219,6	33 268,4
4.	Heat production, Gcal /year	86 400	86 400	86 400	86 400
5.	Unit cost of heat in changes of investments , rub / Gcal	**9 672,1**	**9 676,7**	**17 380,7**	**17 384,0**
6.	Unit cost of heat in changes of operating costs , rub / Gcal	**8 709,3**	**15 645,8**	**10 639,6**	**19 118,9**
Krasnodarskiy MEZ					
1.	Changes of investments	- 10%	+ 10%	- 10%	+ 10%

2.	Investments, th.rubles	-	-	45 424,6	55 519
3.	Operating costs, rubles per year	66 175,2	80 880,8	93 627,7	114 433,8
4.	Heat production, Gcal /year	190 168	190 168	190 168	190 168
5.	Unit cost of heat in changes of investments , rub / Gcal	**1041,3**	**1041,3**	**1513,6**	**1522,5**
6.	Unit cost of heat in changes of operating costs , rub / Gcal	**937,2**	**1145,5**	**1370,7**	**1665,4**

The sensitivity analysis shows that the change in investment and operating costs within ± 10% does not affect the attractiveness of alternative scenarios.

Conclusion:

Comparative analysis of costs per unit of heat produced show that *Alternative scenario 1- (Continuation of the current situation, i.e. heat generation in the old boilers and construction of the new gas boilers, removal of husks in the fields as fertilizer)* offers far lower unit costs for heat production.

Stage 4. Common practice analysis

This stage complements the research carried out in the previous stages with an analysis on the extent of the popularity of technology used in the Project in its related sector (fat&oil industry), as well as presents a criterion of *additionality* for the Project.

Current situation in the sector
Heat production on oil and fat factories in Russia is usually due to burning fossil fuels because:

-Tested technologies are highly efficient (efficiency gas boilers is about 90%)
-There are versatile proven technology solutions
-There are reliable and historically well-known suppliers
- Not mass-produced boilers for burning sunflower seed husk
- The inability to work effectively husk boilers (boilers burning sunflower seed husks can work satisfactorily only with a decrease in steam output by 2-3 times[13])
- Does not exist any state regulation of innovative projects in the renewable energy sector, as well as the legislative framework enabling the development of such projects[14].

The fact that the use of seed husk for burning in boilers for thermal power and steam generation is not common practice, is associated with more technologically complex scheme that underlies the

[13] According to research «Scientific Production Association for Research and Design of Power Equipment Polzunova» and Biysk Boiler Plant

[14] http://minenergo.gov.ru/activity/vie/

inability to work effectively on the husks of old boilers[15], a problem submitting husk in the boiler, as well as significantly more investment than using the historically proven technology for heat to boiler equipment operating on fossil fuel or getting out of the thermal power from the power grid.
The projects of sunflower seed husk utilization for energy purposes is a unique practice for companies engaged in the production of vegetable oils, in particular, and for Russia as a whole.
The share of biomass in Russia is no more than 3%[16], it says that that the current government policy in regulating the use of renewable energy, as well as low natural gas prices and ease of technology use of fossil fuels are not the incentive for implementing projects on the use of biomass (in particular husk) to generate thermal power generation.

This project, in its scale, given the productivity LLC «MEZ Yug Rusi» is the first of its kind, this practice is not in any of the Krasnodar krai, nor in the Voronezh region. Completed similar projects "ASTON" and "EFKO" use the Kyoto mechanisms, and therefore cannot be regarded as common practice, in addition, they are in other areas and less on production volumes.

Conclusion: The existing facts indicate that:

- From the moment the decision was made and the Project was launched, the activities related to the Project are not common practice in the fat&oil sector of Russia.

Thus, the Project activity may not be classified as *common practice,* which is evidence of additionality of the given Project.

Thus, the reduction of greenhouse gas emissions is identified as follows:

Baseline GHG emissions
Under the baseline scenario at all branches LLC "MEZ Yug Rusi" will continue the practice of obtaining heat energy from fossil fuels (natural gas), obtained in the production of oil, husks was exported to the fields as fertilizer.
Baseline emissions will occur from the production, transport, distribution and combustion of carbon-intensive fuels (natural gas). Emissions from the placement of husk on the fields will not occur, because there will be no process of anaerobic decomposition of methane because of insignificant thickness husk cover.

GHG emissions from the Project activity
In the project activity sunflower seed husks from all branches useful utilization, by filing to the husk boilers to generate heat.
Thus, the project will lead to a significant reduction in consumption of fossil fuels (natural gas), and, consequently, to prevent the carbon dioxide released by burning it and the potential methane emissions from leaks in the extraction, refining, transportation and distribution of fossil fuels (natural

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[15] According to research «Scientific Production Association for Research and Design of Power Equipment Polzunova» and Biysk Boiler Plant, the available types of boilers are not suitable for burning sunflower husks. The reconstructed boilers burning sunflower husks are easily damaged, because boiler economizer beam and quickly clogged solid ash deposits.

[16] http://minenergo.gov.ru/activity/vie/

gas).
At the project activities CO2 emissions will occur from electricity consumption at husk transport operations.

GHG emission reductions
As a result of project activities will net utilization of sunflower seed husks for energy proposed (combustion in boilers to steam generated), which otherwise was used as a fertilizer. Thus, this action will lead to a significant reduction in consumption of fossil fuels (natural gas), and, consequently, to prevent the carbon dioxide released by burning it and the potential methane emissions from leaks in the extraction, refining, transportation and distribution of fossil fuels (natural gas).

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

>>
The project boundary embraces GHG emission sources attributed to the project activity. It is only those sources are taken into account emissions from which are above 1% in the overall quantity of GHG emissions. In the following table the emission sources and GHG types are considered as to including them in the baseline or project boundary.

Table B 3.1. GHG emission sources

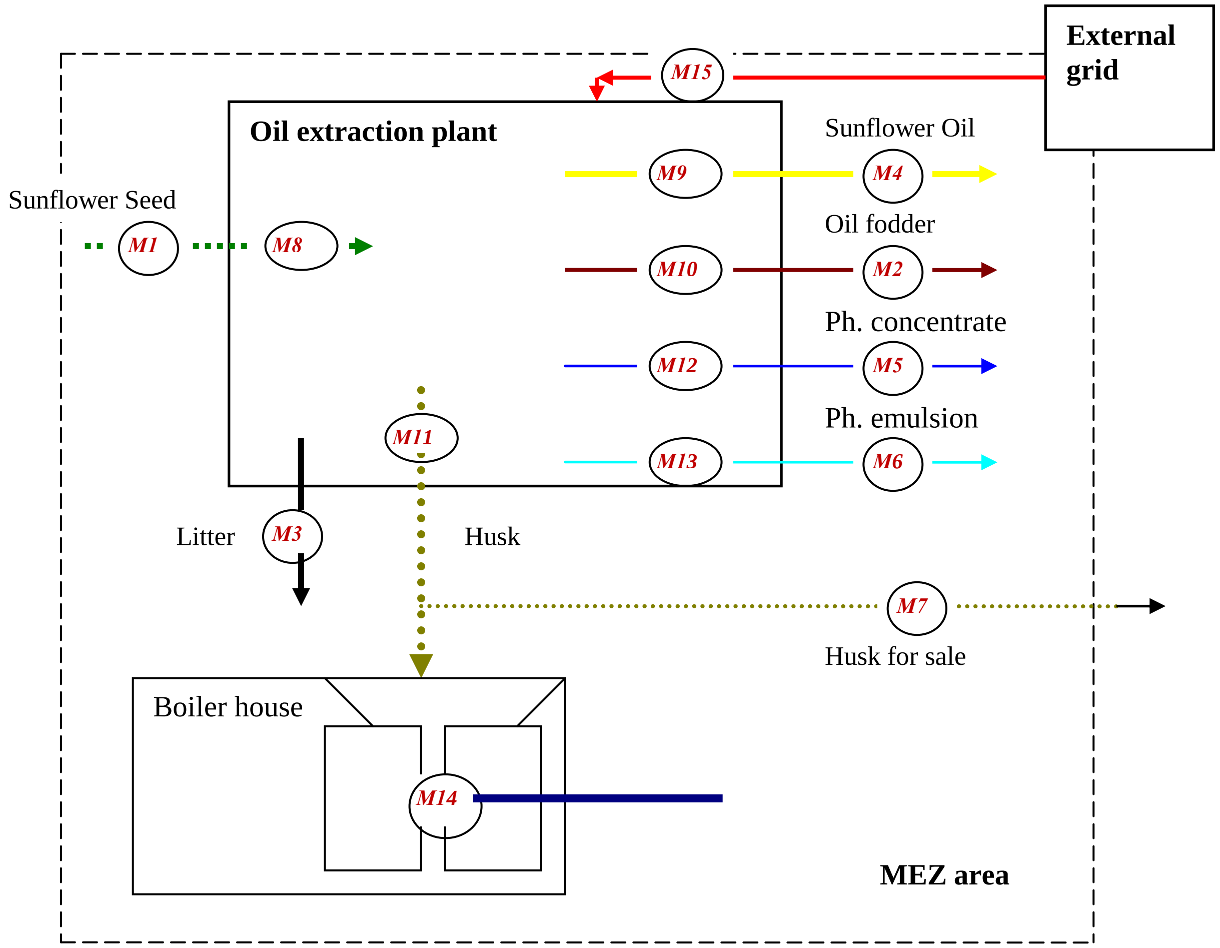
Scenario	Source	GHG type	Include/Do not include	Comment
Baseline	Natural gas production and transportation	CH4	Do not include	In the project boundary are not considered emissions of CH4, because their emissions in the baseline scenario are negligibly small.
	Natural gas combustion in the boilers	CO_2	Include	Main baseline emission source
		N2O	Do not include	In the project boundary are not considered emissions of N2O, because their emissions in the baseline scenario are negligibly small. Quantifying emissions of N2O is attached in Excel form.
		CH_4	Do not include	In the project boundary are not considered emissions of CH4, because their emissions in the baseline scenario are negligibly small. Quantifying emissions of CH4 is attached in Excel form.
Project activity	Seed husk combustion in the project husk boilers	CO_2	Exclude	CO2 emissions will not occur because emissions from combustion of biofuel (husk) are climatically neutral.

		N2O	Include	In the project boundary considered emissions of N2O, because their emissions in the project scenario are significant. Quantifying emissions of N2O is attached in Excel form.
		CH_4	Include	In the project boundary considered emissions of CH4, because their emissions in the project scenario are significant. Quantifying emissions of CH4 is attached in Excel form.
Project activity	Electricity consumption at husk transport operations	CO_2	Include	Main project emission source
		N2O	Do not include	In the project boundary are not considered emissions of N2O, because their emissions in the project scenario are negligibly small.
		CH_4	Do not include	In the project boundary are not considered emissions of CH4, because their emissions in the project scenario are negligibly small.

The project boundaries covers a territory with an oil extraction plant, and only project boilers.

In this way, the Project boundaries are graphically illustrated in the following figure.

Fig. B.3.1. Project Boundaries



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

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Date of baseline setting: 02.08.2010

The baseline has been designed by:
National Carbon Sequestration Foundation – (NCSF, Moscow);

Contact persons:
Timofey Besedovskiy,
Lead expert of Project Development Department;
Tel +7 499 788 78 35 ext. 108
Fax +7 499 788 78 35 ext. 107
E-mail: BesedovskiyTN@ncsf.ru

National Carbon Sequestration Foundation is not a participant of the Project.

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

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The project's starting date is 25.10.2000 (Date of Minutes of meeting of Labinsk branch is from October 25, 2000.)

C.2. Expected operational lifetime of the project:

>>

Expected operational lifetime of the project is 20 years or 240 months: from 25 October 2000 till 25 October 2020.

C.3. Length of the crediting period:

>>

Crediting period is determined within the budget period of Kyoto Protocol from 01 January 2008 till 31 December 2012 and making 5 years or 60 months: 01.01.2008 - 31.12.2012

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

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For description and justification of the monitoring plan it is a JI specific approach is used for this project. This approach is based on the provisions of the Section D (Monitoring Plan) of JI guidelines on baseline setting and monitoring version 02 and includes the following steps:

Step 1. Indication and description of the approach chosen regarding monitoring

Step 2. Application of the approach chosen

Below the approach chosen is provided in a greater detailed.

Step 1. Indication and description of the approach chosen regarding monitoring

The monitoring will involve only the project husk boilers, and, accordingly, will monitoring only the fuel consumption those boilers. The remaining boilers are installed in branches and generate heat, are outside the scope of the project boundary.

In the baseline scenario for the heat production in the boiler equipment on the branches LLC «MEZ Yug Rusi» will use natural gas, which would lead to CO2 emissions. Part of the husk is used to set previously old boilers, and the remainder would be exported to the fields or sold as fertilizer.

To estimate emissions of the baseline scenario will be used emission factors of natural gas, according to the IPCC Guidelines 2006. Calorific value of husk is used as the constant (reference value), because it greatly vary from time to time, and suppliers, in addition constant monitoring of this parameter is quite problematic for some branches.

In the project scenario for the heat production in the boiler equipment on the branches LLC «MEZ Yug Rusi» will use additional quantity of electricity from the external grid, which would lead to CO2 emissions provided in Operational Guidelines for Project Design Documents of Joint Implementation Projects and proposed by Ministry of Economic Affairs of the Netherlands, May 2004:

-emission factors from Netherlands study (table 2):
2008 – 0.565 tCO2/MWh
2009 - 0,557 tCO2/MWh

2010 – 0.550 tCO_2/MWh
2011 – 0.542 tCO_2/MWh
2012 – 0.534 tCO_2/MWh

Emission reductions resulting from project activities will be defined as a product fuel consumption (husk) multiplied on the net calorific value multiplied on the project efficiency to the efficiency of the baseline boiler and the emission factor of the natural gas. There will also be taken into account the possible back-consumption of natural gas project boilers.

In all branches of accounting husk calculated, as there is no possibility of direct measurement, this parameter is calculated as the difference between all commodity rates.

Thus, to determine the emission reductions will need to monitoring the following parameters:

M1. Quantity of the sunflower seed on production
M2. Quantity of the oil fodder
M3. Quantity of the litter
M4. Quantity of the sunflower oil
M5. Quantity of the phosphatidic concentrate
M6. Quantity of the phosphatidic emulsion
M7. Quantity of the sunflower seed husk for sale
M8. Humidity of the sunflower seed
M9. Humidity of the sunflower oil
M10. Humidity of the oil fodder
M11. Humidity of the sunflower seed husk
M12. Humidity of the phosphatidic concentrate
M13. Humidity of the phosphatidic emulsion
M14.Natural gas consumption
M15.Electricity consumption

Figure D.1.1. Monitoring points

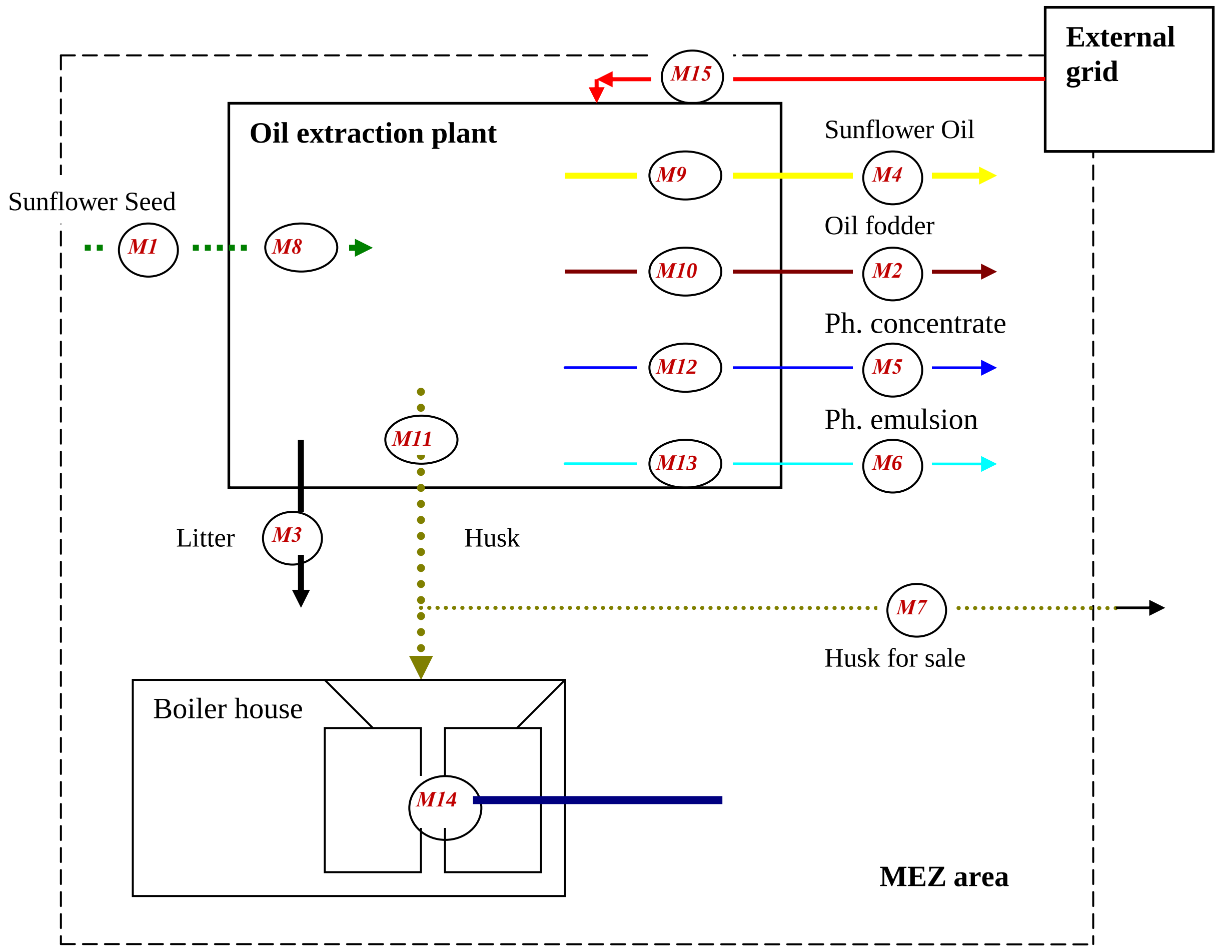


Table of symbols

Mn	Monitoring points
MEZ	Oil extraction plant
Boiler house	Oil extraction plant boiler house where produce heat energy for technology proposes.

	Sunflower seed on production
	Sunflower oil
	Oil fodder
	Husk
	Litter
	Husk for sale
	phosphatidic concentrate
	phosphatidic emulsion
	Natural gas
	Electricity from grid

Description of the monitoring points.

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Quantity of the sunflower seed on production in the project boundaries	Quantity of the oil fodder in the project boundaries	Quantity of the litter in the project boundaries	Quantity of the sunflower oil in the project boundaries	Quantity of the phosphatidic concentrate in the project boundaries	Quantity of the phosphatidic emulsion in the project boundaries	Quantity of the sunflower seed husk for sale in the project boundaries	Humidity of the sunflower seed in the project boundaries	Humidity of the sunflower oil in the project boundaries	Humidity of the oil fodder in the project boundaries	Humidity of the sunflower seed husk in the project boundaries	Humidity of the phosphatidic concentrate in the project boundaries

Step 2. Application of the approach chosen

See the following subsections.

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

Not applicable

D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived:								
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

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

Left blank on purpose

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	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

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

Left blank on purpose

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

>>

To determine the emission reductions resulting from implementation of project activities using direct monitoring, as project emissions will occur from the electricity consumption at husk operations, the definition of emissions will be to ensure that the monitor baseline emissions through the project parameters. Baseline emissions will occur from the combustion of carbon-intensive fuels (natural gas). Emissions from the placement of husk on the fields will not occur, because there will be no process of anaerobic decomposition of methane because of insignificant thickness husk cover.

The formula for calculating emission reductions for the 4 branches (Annynsky, Labinskiy, Krasnodarskiy, Kropotkinskiy) will be one and the same.

As a key indicator (consumption of fuel (husk)) needed to calculate the payment reductions, but not measured, it is necessary to monitoring all raw key indicators, both quantitative and qualitative.
Since each branch of their types of devices, then the table of monitoring will include all the devices for the respective branch.

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:								
ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
M1. Q seed	Quantity of the sunflower seed on production	Auto scale VAT-60-16-3-2M, VK 002E-30-10 VK 001E-60-20, Mettler Toledo 760DC Bunker scale DN-500 №58, VP-100-1	t, кg	m	constantly	100%	*electronic*	

M2. Q oil fodder	Quantity of the oil fodder	Bunker scale VDE 400, VP-200-1 Auto scale VK 002E-30-10, VK 001E-60-20 VDE - 100.150 EP Scale Mettler Toledo 0978	t, кg	m	constantly	100%	*electronic*	
M3. Q litter	Quantity of the litter	Auto scale VAT-60-16-3-2M, VA-M-30, VK 002E-30-10, VK 001E-60-20, Mettler Toledo 760DC, M8200A	t, кg	m	constantly	100%	*electronic*	

M4. Q sunflower oil	Quantity of the sunflower oil	Liquid meter PPO-40-0,6 CU UCC Portion scale RP-500 Mass flowmeter -Krohne Corimass MEM 4085, Mass Flowmeter MASS 3000 Bunker scale DWT100 - 8000, PPO 40-0,6CU	t, кg, l	m	constantly	100%	*electronic*	

M5. Q phosphatidic concentrate	Quantity of the phosphatidic concentrate	Liquid meter PPO-40-0,6 CU UCC Portion scale RP-500 Mass flowmeter -Krohne Corimass MEM 4085, Massflo Flowmeter MASS 3000 Bunker scale DWT100 - 8000	t, кg, l	m	constantly	100%	*electronic*	

M6. Q phosphatidic emulsion	Quantity of the phosphatidic emulsion	Liquid meter PPO-40-0,6 CU UCC Portion scale RP-500 Mass flowmeter -Krohne Corimass MEM 4085, Massflo Flowmeter MASS 3000 Bunker scale DWT100 - 8000	t, кg, l	m	constantly	100%	*electronic*	
M7. Q seed husk for sale	Quantity of the sunflower seed husk for sale	Auto scale VAT-60-16-3-2M, VA-M-30	t	m	constantly	100%	*electronic*	

M8. H seed	Humidity of the sunflower seed	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale "OHAUS" Hygrometer «Wille-55» hygrometer «Sartorius» VD115 BINDER	%	m	constantly	100%	*electronic*	

M9. H sunflower oil	Humidity of the sunflower oil	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» hygrometer «Sartorius» VD115 BINDER	%	m	constantly	100%	*electronic*	

M10. H oil fodder	Humidity of the oil fodder	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» hygrometer «Sartorius» VD115 BINDER	%	m	constantly	100%	*electronic*	

M11. H seed husk	Humidity of the sunflower seed husk	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale "OHAUS" Hygrometer «Wille-55» hygrometer «Sartorius» VD115 BINDER	%	m	constantly	100%	*electronic*	

M12. H phosphatidic concentrate	Humidity of the phosphatidic concentrate	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale “OHAUS” Hygrometer «Wille-55» hygrometer «Sartorius» VD115 BINDER	%	m	constantly	100%	*electronic*	

M13. H phosphatidic emulsion	Humidity of the phosphatidic emulsion	Humidity analyser Mettler Toledo HR73/A, Humidity analyser CESH-3M Scale "OHAUS" Hygrometer «Wille-55» hygrometer «Sartorius» VD115 BINDER	%	m	constantly	100%	*electronic*	
M14. FCng	Emergency Natural gas consumption in husk boilers	FlowmeterVK G-2 SPG-761	m3	m	constantly	100%	*electronic*	

M15. EC	Electricity consumption at seed husk transport operations	Electricity control device	kwh	m	constantly	100%	*electronic*	

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):

>>

*The calculation of GHG emission reductions at the branch*es LLC «MEZ Yug Rusi» *(Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy) ER*

$$\mathbf{ER} = ((FCsh*NCVsh*4,1868*\eta_{husk\ boiler} / \eta_{gas\ boiler})*EFng - \mathbf{(}(FCsh*NCVsh*EFCH4*GWP\ ch4) + (FCsh*NCVsh*EF_{N2O}*GWP\ N20)+(EC*EFelec)\mathbf{)} - (FCng*NCVng*\rho_{CH4}*EFng) \quad (1)$$

FCsh=(Qseed*(1-Hseed) - Qoil fodder*(1-Hoil fodder) – Q litter*(1-Hseed) - Qsunflower oil*(1-Hsunflower oil) - Qphosphatidic concentrate *(1-Hphosphatidic concentrate)- Qphosphatidic emulsion*(1-Hphosphatidic emulsion)* (1-Hseed husk)-Qseed husk for sale, annual

$\boldsymbol{\rho_{CH4}}$ – the density of methane CH4 under standard conditions, equals to 0.667 kg/m3

FCsh – husk consumption for the burning in the project boundaries, t[17] annual

FCng – emergency natural gas consumption for the burning in the husk boilers in the project boundaries, n.m3, annual

NCVsh – sunflower seed husk NCV, kcal/kg; reference value equal to 3685 (Kasatkin "reference manual for heat engineering industry")

NCVng – natural gas NCV, equal to 0.048 TJ/t (IPCC 2006, Volume 2 Energy, chapter 1, p. 1.20, tab 1.2)

4,1868 – conversion factor from cal to joules, 1cal=4,1868J

EFng – natural gas emission factor, tCO2/TJ, equal 56,1 (IPCC 2006, Volume 2 fuel combustion, chapter 2, p. 2.18, tab. 2.2)

Qseed – Quantity of the sunflower seed on production in the project boundaries, t, annual

Qoil fodder – Quantity of the oil fodder in the project boundaries, t, annual

Qlitter– Quantity of the litter in the project boundaries, t, annual

Qsunflower oil – Quantity of the sunflower oil in the project boundaries, t, annual

[17] Recalculate the amount of mass in accordance with the formula: M = r x V; where M - mass in kg; r – coeff 0.92 (kg/l density conversion); V - volume in liters.

Qphosphatidic concentrate – Quantity of the phosphatidic concentrate in the project boundaries, t, annual
Qphosphatidic emulsion – Quantity of the phosphatidic emulsion in the project boundaries, t, annual
Qseed husk for sale – Quantity of the sunflower seed husk for sale in the project boundaries, t , annual
Hseed – Humidity of the sunflower seed in the project boundaries, %
Hsunflower oil – Humidity of the sunflower oil in the project boundaries, %
Hoil fodder – Humidity of the oil fodder in the project boundaries, %
Hseed husk – Humidity of the sunflower seed husk in the project boundaries, %
Hphosphatidic concentrate – Humidity of the phosphatidic concentrate in the project boundaries, %
Hphosphatidic emulsion – Humidity of the phosphatidic emulsion in the project boundaries, %
$\eta_{husk\ iboiler}$ - project boiler efficiency, constant
$\eta_{gas\ iboiler}$ - gas boiler efficiency, constant
GWP ch4- global warming potential of CH4, constant=21 tCO2/tCH4
EFCH4- CH4 emission factor from IPCC 2006, constant =0,03 tCH4/TJ (Reference on IPCC coefficients (IPCC 2006, Volume 2, chapter 2, table 2.2, p. 2.18)
GWP N20- global warming potential of N20, constant=310 tCO2/tN20
EFN20- N20 emission factor from IPCC 2006, constant =0,0040 tN20/TJ
EC- electricity consumption at seed husk transport operations, kw*h per year
EFelec- CO2 grid emission factor, tCO2/MWh

Branch	Project efficiency	Efficiency on gas
Annynskiy MEZ	82.4	82.4
Kropotkinskiy MEZ	81.8	91.9
Krasnodarskiy MEZ	78.1	88.5
Labinskiy MEZ: (E-16)	82	90
(KE-18)	84	91

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

Project activity as directed on the savings of fossil fuels, then, respectively, in its implementation will be saving carbon-intensive fuels (natural gas) and, accordingly, will be less than the emissions from processing, distribution and transportation of fuel.
In this project there are no leaks as such.
This option is not used.

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

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

Left blank on purpose

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):

Left blank on purpose

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:

>>

Information on concerning the environmental impact will be presented according to Russian legislation[18].

All measurements are guaranteed by compliance with the Federal Law No.102-FZ dated 26.06.2008 "On Ensuring the Uniformity of Measurements" and ORDER N 115 from 24.03.2003 of «APPROVAL OF RULES THERMAL POWER PLANTS TECHNICAL MANUAL» and approval MDK 4-

[18] THE FEDERAL LAW "ABOUT PROTECTION OF ATMOSPHERIC AIR" (ON MAY, 4TH 1999 Г N 96-FZ)

05.2004 «METHODS of DETERMINING NEED FOR FUEL, ELECTRICITY AND WATER IN THE PRODUCTION AND TRANSFER OF HEAT and coolant in the District Heating System».

According to environmental protection legislation, companies should control the emission of pollutants, the discharge of sewage, organize and manage production and consumer wastes. In addition, they are obliged to report to the authorized state authorities (the Federal Service for Ecological, Technological and Atomic Supervision). In the project boiler houses environmental protection is organized by the Chief Engineer's Office. At a stated time a person in charge at the Chief Engineer's Office service together with the economic department prepares and submits official statistic reports and forms[19] that include among others:

LLC «MEZ Yug Rusi» in stipulated dates provides official statistical reports and forms to legal state bodies including:

- 2-TP (air) – data on air protection including the information on number of captured and neutralized pollutants, detailed information on particular emissions of pollutants, number of emission sources, measures on emission reductions in atmosphere and emissions of separate groups of emission sources;
- 2-TP (water resources) – data on water usage including the information on water consumption from natural sources, waste water releases and concentration of pollutants in water, water capacity etc. waste water treatment facilities;
- 2-TP (wastes) – data on originating, usage, deactivation, transport and storage of wastes, including annual balance of wastes separated according their types and classes of danger.

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
M1, M2, M3,M4,M5,M6,M7,M8,M9,M10,M11,M12,M13, M14,M15 Table D.1.2.1	low	Main monitoring devices are verified and calibrated Krasnodar and Voronezh Center of Standardization and Metrology, in accordance with established regulations.

[19] http://www.ecology.ru/index.php?area=1&p=static&page=formy

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

>>

The operational and management structure for the monitoring of emission reductions for the project is fully consistent with the existing management structure and transfer of information on branches LLC «MEZ Yug Rusi».

Necessary for the calculation of greenhouse gas emission reductions data are collected as is usually done at the subsidiaries LLC «MEZ Yug Rusi», so monitoring does not require any other additional information compared with already collected.

All quantitative data are under observation, which is a common, everyday practice: data from sensors monitoring the checkpoint, but losses are transferred to automated metering devices at the same time are automatically recorded in an electronic database.

All qualitative data are displayed in the laboratories that are certified for such work and provides the necessary accuracy class.

Based on daily statistics generated monthly operating reports (form 23).

Calculation of GHG emission reductions is carried out on the basis of monthly production reports (Form 23) according to the activity of affiliates LLC «MEZ Yug Rusi», as well as on the basis of reference data on the calorific value of the husk.

The completed and signed by the monthly production reports, reflecting the monthly values specified in the monitoring data provided by affiliates in electronic form in the Technology Department Head Office LLC «MEZ Yug Rusi». The department conducts internal audits of the data for the wrong formulation and errors. Once released into the IT department of the monthly production reports, after an internal audit procedures, in electronic form, automatically linked with the monthly model for calculating emission reductions, and a fully automatic mode there is a monthly calculation of emission reductions.

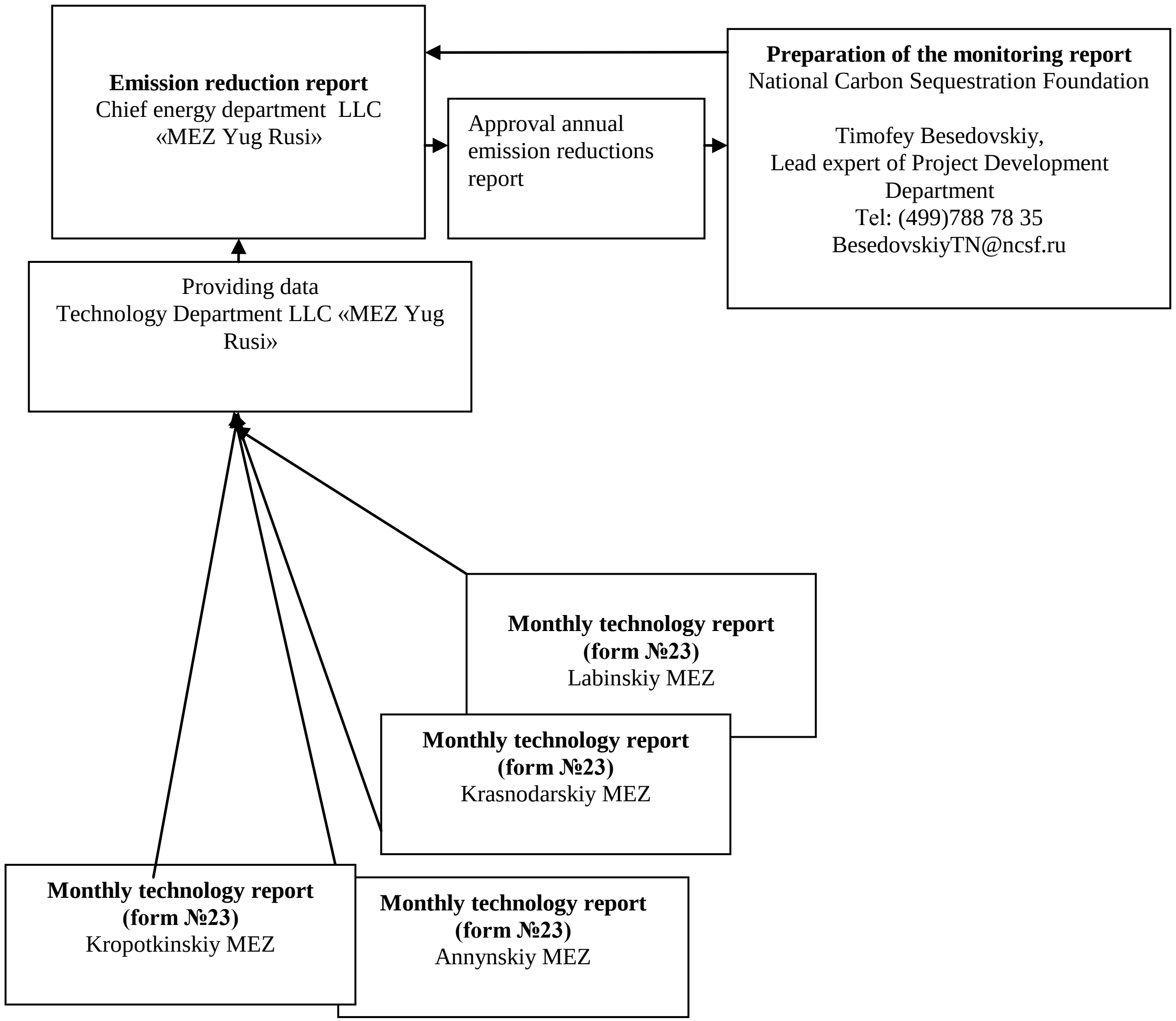
Monthly Technology Department LLC «MEZ Yug Rusi» provides to the chief power department filled calculation model with production reports in Excel form.

Based on monthly calculations of emission reductions generated annual reports on the reduction of greenhouse gases in the form of tables Excel, which approved the general director of MEZ LLC «MEZ Yug Rusi» and stored in electronic form on a computer in the chief power department within 10 years.

Approved the annual report of GHG emissions reductions are sent via e-mail at National Carbon Sequestration Foundation to produce a report on monitoring with subsequent annual verification of emission reductions achieved by an independent expert.

This project required additional training of technical personnel management, maintenance of boiler equipment working on the husk on each branch. Training for calculating emission reductions and maintain monthly / annual monitoring was conducted by the specialist company National Carbon Sequestration Foundation with the experts of the energy department as well as technological department LLC «MEZ Yug Rusi».

Scheme D3. The operational and management structure for the monitoring of emission reductions for the project


Emission reduction report
Chief energy department LLC «MEZ Yug Rusi»
Approval annual emission reductions report
Preparation of the monitoring report
National Carbon Sequestration Foundation
Timofey Besedovskiy,
Lead expert of Project Development Department
Tel: (499)788 78 35
BesedovskiyTN@ncsf.ru
Providing data
Technology Department LLC «MEZ Yug Rusi»
Monthly technology report (form №23) Labinskiy MEZ
Monthly technology report (form №23) Krasnodarskiy MEZ
Monthly technology report (form №23) Kropotkinskiy MEZ
Monthly technology report (form №23) Annynskiy MEZ

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

>>

The monitoring plan was established by National Carbon Sequestration Foundation – (NCSF, Moscow);

Contact persons:

Timofey Besedovskiy,
Lead expert of Project Development Department;
Tel +7 499 788 78 35 ext. 108
Fax +7 499 788 78 35 ext. 107
E-mail: BesedovskiyTN@ncsf.ru

National Carbon Sequestration Foundation is not a participant of the Project.

SECTION E. Estimation of greenhouse gas emission reductions

To determine the emission reductions resulting from implementation of project activities using direct monitoring, as project emissions are considered to be climatically neutral (equal to 0), the definition of emissions will be to ensure that the monitor baseline emissions through the design parameters. Baseline emissions will occur from the production, processing, transport&distribution and combustion the natural gas to the energy propose at the branches of LLC «MEZ Yug Rusi». Our approach assume that emissions from the placement of husk on the fields will not occur, because there will be no process of anaerobic decomposition of methane, because of insignificant thickness husk cover.

E.1. Estimated project emissions:

Project emissions on the branches LLC «MEZ Yug Rusi» there would be at the expense of burning seed husk in the boiler equipment. Because of this, emissions of methane and nitrous oxide are significant.

Project emissions on the branches LLC «MEZ Yug Rusi» also would be at the expense of consumption of the electricity in project boiler equipment (for the seed husk transport operations).

$$\mathbf{PE} = (\sum FCsh*4{,}1868*NCVsh*EF_{CH4}*GWPch4) + (\sum FCsh*4{,}1868*NCVsh*EF_{N2O}*GWP_{N20}) + (\sum EC*EFelec) + (FCng*NCVng*\rho_{CH4}*EFng) \quad (1)$$

FCsh=(Qseed*(1-Hseed) - Qoil fodder*(1-Hoil fodder) – Q litter*(1-Hseed) - Qsunflower oil*(1-Hsunflower oil) - Qphosphatidic concentrate *(1-Hphosphatidic concentrate)- Qphosphatidic emulsion*(1-Hphosphatidic emulsion)* (1-Hseed husk)-Qseed husk for sale, annual

∑FCsh – husk consumption for the burning in the project boundaries at the branches LLC «MEZ Yug Rusi» (Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy), t[20] annual

∑FCng – emergency natural gas consumption for the burning in the husk boilers in the project boundaries at the branches LLC «MEZ Yug Rusi» (Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy), m3, annual

NCVsh – sunflower seed husk NCV, kcal/kg; reference value equal to 3685 (Kasatkin "reference manual for heat engineering industry")

4,1868 – conversion factor from cal to joules, 1cal=4,1868J

Qseed – Quantity of the sunflower seed on production in the project boundaries, t, annual

Qoil fodder – Quantity of the oil fodder in the project boundaries, t, annual

Qlitter– Quantity of the litter in the project boundaries, t, annual

Qsunflower oil – Quantity of the sunflower oil in the project boundaries, t, annual

Qphosphatidic concentrate – Quantity of the phosphatidic concentrate in the project boundaries, t, annual

Qphosphatidic emulsion – Quantity of the phosphatidic emulsion in the project boundaries, t, annual

Qseed husk for sale – Quantity of the sunflower seed husk for sale in the project boundaries, t , annual

Hseed – Humidity of the sunflower seed in the project boundaries, %

Hsunflower oil – Humidity of the sunflower oil in the project boundaries, %

Hoil fodder – Humidity of the oil fodder in the project boundaries, %

Hseed husk – Humidity of the sunflower seed husk in the project boundaries, %

[20] Recalculate the amount of mass in accordance with the formula: M = r x V; where M - mass in kg; r – approved at the branches LLC «MEZ Yug Rusi» coeff 0.92; V - volume in liters.

Hphosphatidic concentrate – Humidity of the phosphatidic concentrate in the project boundaries, %
Hphosphatidic emulsion – Humidity of the phosphatidic emulsion in the project boundaries, %
$\eta_{husk\ iboiler}$ - project boiler efficiency, constant
$\eta_{gas\ iboiler}$ - gas boiler efficiency, constant
GWP ch4- global warming potential of CH4, constant=21 tCO2/tCH4
EFCH4- CH4 emission factor from IPCC 2006, constant =0,03 tCH4/TJ (Reference on IPCC coefficients (IPCC 2006, Volume 2, chapter 2, table 2.2, p. 2.18)
GWP N20- global warming potential of N2O, constant=310 tCO2/tN2O
EFN20- N2O emission factor from IPCC 2006, constant =0,0040 tN2O/TJ
∑EC- electricity consumption at seed husk transport operations at the branches LLC «MEZ Yug Rusi» (Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy) , kw*h per year
EFelec- approved CO2 grid emission factor, tCO2/MWh (0.606)

Table E 1. Project emissions from the burning of seed husk in boiler equipment on the branches LLC «MEZ Yug Rusi» and electricity consumption

	Emission	2008	2009	2010	2011	2012
Project emissions from the burning of seed husk in boiler equipment	tCO2e	771	1 689	2 332	2 945	2 945
Project emissions from the electricity consumption	tCO2	1 318	1 242	1 282	1 246	1 246
All project emissions at MEZ (inc Anninskiy, Kropotkinskiy, Krasnodarskiy, Labinskiy)	tCO2	2 088	2 932	3 614	4 191	4 192

E.2. Estimated leakage:

>>
Do not complete because the project activities aimed at saving fossil fuels, then for its implementation will be saving carbon-intensive fuels (natural gas) and, accordingly, will have less leakage during extraction, processing, distribution and transportation fuels data. Accordingly that the leakage in the project activities are absent.

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

>>
Amount does not change because emissions from leakage is not significant

E.4. Estimated baseline emissions:

>>
Baseline emissions on the branches LLC «MEZ Yug Rusi» there would be at the expense of production, transport, distribution and burning carbon-intensive fuels (natural gas) in the boiler equipment. Our approach assume that emissions from the placement of the husk on the fields will not occur, because there will be no process of anaerobic decomposition of methane, because of insignificant thickness husk cover.

*The calculation of GHG emissions from natural gas production, transport, distribution and combustion in boilers at the branch*es LLC MEZ «Yug Rusi» *(Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy).*

BE = (∑FCsh*NCVsh*4,1868*$\eta_{husk\ boiler}$ / $\eta_{gas\ boiler}$)*EFng (2)

FCsh=(Qseed*(1-Hseed) - Qoil fodder*(1-Hoil fodder) – Q litter*(1-Hseed) - Qsunflower oil*(1-Hsunflower oil) - Qphosphatidic concentrate *(1-Hphosphatidic concentrate)- Qphosphatidic emulsion*(1-Hphosphatidic emulsion)* (1-Hseed husk)-Qseed husk for sale, annual
∑FCsh – husk consumption for the burning in the project boundaries at the branches LLC «MEZ Yug Rusi» (Annynskiy, Labinskiy, Krasnodarskiy, Kropotkinskiy), t[21] annual
NCVsh – sunflower seed husk NCV, kcal/kg; reference value equal to 3685 (Kasatkin "reference manual for heat engineering industry")
NCVng – natural gas NCV, equal to 0.048 TJ/t (IPCC 2006, Volume 2 Energy, chapter 1, p. 1.20, tab 1.2)
4,1868 – conversion factor from cal to joules, 1cal=4,1868J
EFng – natural gas emission factor, tCO2/TJ, equal 56,1 (IPCC 2006, Volume 2 fuel combustion, chapter 2, p. 2.18, tab. 2.2)
Qseed – Quantity of the sunflower seed on production in the project boundaries, t, annual
Qoil fodder – Quantity of the oil fodder in the project boundaries, t, annual
Qlitter– Quantity of the litter in the project boundaries, t, annual
Qsunflower oil – Quantity of the sunflower oil in the project boundaries, t, annual
Qphosphatidic concentrate – Quantity of the phosphatidic concentrate in the project boundaries, t, annual
Qphosphatidic emulsion – Quantity of the phosphatidic emulsion in the project boundaries, t, annual
Qseed husk for sale – Quantity of the sunflower seed husk for sale in the project boundaries, t , annual
Hseed – Humidity of the sunflower seed in the project boundaries, %
Hsunflower oil – Humidity of the sunflower oil in the project boundaries, %
Hoil fodder – Humidity of the oil fodder in the project boundaries, %
Hseed husk – Humidity of the sunflower seed husk in the project boundaries, %
Hphosphatidic concentrate – Humidity of the phosphatidic concentrate in the project boundaries, %
Hphosphatidic emulsion – Humidity of the phosphatidic emulsion in the project boundaries, %
$\eta_{husk\ iboiler}$ - project boiler efficiency, constant
$\eta_{gas\ iboiler}$ - gas boiler efficiency, constant
GWP ch4- global warming potential of CH4, constant=21 tCO2/tCH4

Table E 4. Baseline emissions from natural gas production, transport, distribution and combustion in boiler equipment on the branches LLC «MEZ Yug Rusi».

	Emission	2008	2009	2010	2011	2012

[21] Recalculate the amount of mass in accordance with the formula: M = r x V; where M - mass in kg; r – coeff 0.92; V - volume in liters.

Baseline emissions from the combustion of natural gas in boiler equipment	tCO2e	20929	47440	65507	65507	65507

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

>>

$$ER = BE - PE \quad (3)$$

where:

ER – emission reduction, tonnes of CO_2
BE – baseline emissions, tonnes CO_2
PE – project emissions, tonnes of CO_2

Numeric values are given in section E.6.

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

>>

Year	Estimated project emissions (tonnes of CO_2 equivalent)	Estimated leakage (tonnes of CO_2 equivalent)	Estimated baseline emissions (tonnes of CO_2 equivalent)	Estimated emission reductions (tonnes of CO2 equivalent)
2008	2088	-	20929	18840
2009	2932	-	47440	44509
2010	3614	-	65507	61893
2011	4191	-	65507	61316
2012	4192	-	65507	61315
Total (tonnes of CO_2 equivalent)	17016	-	264889	247873

SECTION F. Environmental impacts

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

>>

Russian Regional Environmental Centre "Petrohimtehnologiya" and "Ekoinzhenerservis" ECC "PromTehnoEkspert" is designed for branch LLC «MEZ Yug Rusi» draft standards of maximum permissible emissions (hereinafter - MPE), which sets emission standards for each source, as well as permit on the emission of pollutants into the atmosphere. Monitoring compliance with standards MPE is through measurements for each source, in accordance with the approved volume of MPE schedule. Reports of emissions control measuring are available. Exceeding the set standards is not revealed.

The project has permits for emissions and expertise:
Krasnodarskiy MEZ
- opinion of 01.01.2009 № B5/25 (during the period 01.01.2009 - 01.01.2010) on emissions of pollutants into the air, issued by Rostechnadzor.
-positive conclusion of examination of ecology and industrial safety #ЭК-01/754 for boiler E-13-3,9-440 dated 31.03.06
-positive conclusion of examination of sanitary and epidemiological expertise#23.KK.03.000.T.003143.12.09 for Krasnodarskiy MEZ dated 16.12.09

Labinskiy MEZ
- opinion of 30.12.2008 № B8/309 (during the period 01.11.2008 - 01.11.2009) on emissions of pollutants into the air, issued by Rostechnadzor.
-positive conclusion of examination of industrial safety #00041 for boiler KE-18-24 GDV dated 2003
-positive conclusion of examination of sanitary and epidemiological expertise#23.KK.04.000.T.001239.05.07 for Labinskiy MEZ dated 24.05.07

Kropotkinskiy MEZ
- opinion of 01.10.2008 № B8/236 (during the period 14.08.2008 - 14.08.2011) on the emissions of pollutants into the air, issued by Rostekhnadzor.
-positive conclusion of examination of industrial safety #238 for boiler E-25-14 GM dated 15.07.2010

Annynskiy MEZ
- opinion № 54 of 01.05.2008 (during the period 01.05.2008 - 01.11.2012) on the emissions of pollutants into the air, issued by Rostechnadzor.
-positive conclusion of examination of industrial safety #63-PF-01592-2008 for boiler KE-25-14-270 dated 05.08.08
-positive conclusion of examination of sanitary and epidemiological expertise#36.ВЦ.21.000.T.004385.08.07 for Annynskiy MEZ dated 06.08.07

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:

>>
Impact on the environment under project does not exceed the allowable. Project directed on the savings of fossil fuels, then, respectively, in its implementation will be saving carbon-intensive fuels (natural gas) and, accordingly, will be less than the emissions from extraction, processing,

distribution and transportation of fuel, that automatically reduces the harmful effects on the environment.
Emissions of ash from the husk boiler equipment on the branches LLC «MEZ Yug Rusi» meet the standards MPE owing to the established ash recovery multi-system

SECTION G. Stakeholders' comments

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

>>
The project has not been any stakeholders' comments.

Annex 1

CONTACT INFORMATION ON PROJECT PARTICIPANTS

Organisation:	LLC «MEZ Yug Rusi»
Street/P.O.Box:	Square Tolstoy
Building:	8
City:	Rostov-on-Don
State/Region:	
Postal code:	344 037
Country:	Russian Federation
Phone:	(863) 262-28-01
Fax:	
E-mail:	contact@grain.ru
URL:	www.grain.ru
Represented by:	
Title:	Senior expert
Form of addressing:	Mr.
Last name:	Savenko
Middle name:	
First name:	Valeriy
Department:	Service Chief Power Technical Department
Phone (direct):	(863) 261-88-38 ext.56-21
Fax (direct):	
Mobile:	+7 (928)105-36-11
Personal e-mail:	savenko_vv@grain.ru

NCSF is not the project participant

Annex 2

BASELINE INFORMATION

№	Data	Description	Source
1.	M1. Q seed	Quantity of the sunflower seed on production in the project boundaries	Calculated on the basis of actual data and forecasts.
2.	M2. Q oil fodder	Quantity of the oil fodder in the project boundaries	Calculated on the basis of actual data and forecasts.
3.	M3. Q litter	Quantity of the litter in the project boundaries	Calculated on the basis of actual data and forecasts.
4.	M4. Q sunflower oil	Quantity of the sunflower oil in the project boundaries	Calculated on the basis of actual data and forecasts.
5.	M5. Q phosphatidic concentrate	Quantity of the phosphatidic concentrate in the project boundaries	Calculated on the basis of actual data and forecasts.
6.	M6. Q phosphatidic emulsion	Quantity of the phosphatidic emulsion in the project boundaries	Calculated on the basis of actual data and forecasts.
7.	M7. Q seed husk for sale	Quantity of the sunflower seed husk for sale in the project boundaries	Calculated on the basis of actual data and forecasts.
8.	M8. H seed	Humidity of the sunflower seed in the project boundaries	Calculated on the basis of actual data and forecasts.
9.	M9. H sunflower oil	Humidity of the sunflower oil in the project boundaries	Calculated on the basis of actual data and forecasts.
10.	M10. H oil fodder	Humidity of the oil fodder in the project boundaries	Calculated on the basis of actual data and forecasts.
11.	M11. H seed husk	Humidity of the sunflower seed husk in the project boundaries	Calculated on the basis of actual data and forecasts.
12.	M12. H phosphatidic concentrate	Humidity of the phosphatidic concentrate in the project boundaries	Calculated on the basis of actual data and forecasts.
13.	M13. H phosphatidic emulsion	Humidity of the phosphatidic emulsion in the project boundaries	Calculated on the basis of actual data and forecasts.
14.	M14. FCng	Natural gas consumption on the boilers	Calculated on the basis of actual data and forecasts.

Annex 3

MONITORING PLAN