# DETERMINATION REPORT
# GLOBAL CARBON B.V.

# DETERMINATION OF THE SLAG USAGE AND SWITCH FROM WET TO DRY PROCESS AT YUGCEMENT, UKRAINE

REPORT NO. UKRAINE/0005/2008

REVISION NO. 03

BUREAU VERITAS CERTIFICATION

**DETERMINATION REPORT**

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| Date of first issue:<br>09/06/2010 | Organizational unit:<br>Bureau Veritas Certification Holding SAS |
| Client:<br>Global Carbon B.V. | Client ref.:<br>Lenard de Klerk |

Summary:

Bureau Veritas Certification has made the determination of the "Slag usage and switch from wet to dry process at Yugcement, Ukraine" project of OJSC "Yugcement" located in Mykolaiv region (Olshanske village), Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Executive Board, as well as the host country criteria.

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the determination process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the JI specific approach and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

| | | |
|---|---|---|
| Report No.:<br>UKRAINE/0005/2008 | Subject Group:<br>JI | |
| Project title:<br>Slag usage and switch from wet to dry process at Yugcement, Ukraine | | |
| Work approved by:<br>Flavio Gomes – Global Product Manager | | |
| Work carried out by:<br>Ivan Sokolov – Climate Change Lead verifier<br>Kateryna Zinevych – Climate Change Verifier<br>Olena Manziuk - Climate Change Verifier Trainee<br>Denis Pischalov – Financial specialist | | |
| Work verified by:<br>Leonid Yaskin – Internal Technical Reviewer | | |
| Date of this revision:<br>23/09/2010 | Rev. No.:<br>03 | Number of pages:<br>79 |

**Indexing terms**

| |
|---|
| Climate Change, Kyoto Protocol, JI, Emission Reductions, Verification |
| |

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## Abbreviations

| | |
|---|---|
| AIE | Accredited Independent Entity |
| CAR | Corrective Action Request |
| JI | Joint Implementation |
| ERU | Emission Reduction Unit |
| CL | Clarification Request |
| $CO_2$ | Carbon Dioxide |
| GHG | Green House Gas(es) |
| I | Interview |
| IETA | International Emissions Trading Association |
| MoV | Means of Verification |
| NGO | Non Government Organization |
| PCF | Prototype Carbon Fund |
| PDD | Project Design Document |
| UNFCCC | United Nations Framework Convention for Climate Change |
| BFS | Blast Furnace Slag |

## *Table of Contents* *Page*

# 1 INTRODUCTION

OJSC "Yugcement" has commissioned Bureau Veritas Certification to determinate its JI project "Slag usage and switch from wet to dry process at Yugcement, Ukraine" (hereafter called "the project") at Olshanske village, Mykolaiv region, Ukraine.

This report summarizes the findings of the determination of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

## 1.1 Objective

The determination serves as project design verification and is a requirement of all projects. The determination is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are determined in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Determination is a requirement for all JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Executive Board, as well as the host country criteria.

## 1.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The determination is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

## 1.3 GHG Project Description

In general, cement production is a highly energy intensive process that generates significant emissions of greenhouse gases, in particular $CO_2$. There are three main sources of $CO_2$ emissions in the cement production process. The first source is fossil fuel combustion and the second source is the chemical decomposition of the limestone into calcium oxide and carbon dioxide. The third source, less significant as to compare with the

first two, is the grid emissions due to electricity consumption of plants motor drives (e.g. kiln rotation, pumping, fans) and other power consumers.

Considered project aims to significantly decrease the emissions of the first two sources (fossil fuel combustion and calcination) at Yugcement plant factory in Ukraine.

As stated in the PDD, Yugcement is the largest plant of the building materials industry in the south of Ukraine with design production capacity more than 1.25 million tons of cement per year. It uses a wet process and runs two kilns. It was commissioned in the beginning of 1970-s and traditionally serves the southern Ukrainian regions (Mykolaiv, Kherson, Crimea, Odessa). For instance, there are installed kilns #1 and # 2 with wet process and have the clinker capacity 72 t/h each.

This JI project foresees the adoption of blast furnace slag (BFS) as decarbonised raw material in the raw meal fed to the kilns. According to the plan, BFS will be added starting from 1 January 2009 on. It is foreseen that the slag addition would be implemented in two steps. Under the fist step some 4% of unground BFS will be added. The second step will follow when all technical issues related to slag adoption will be solved and foresees addition of ground (milled) BFS and increase it's proportion to some 15%. Addition of slag reduces both, the emission due to the calcinations (or decarbonisation) process and fuel consumption. Moreover, before the project start slag has not been added to the raw materials for the kilns.

Furthermore, according to the JI project, it is planned to build a new dry kiln and switch from wet to dry process from beginning of 2012. But in the documents is stated that a principle decision on switch from wet to dry is still to be made. So only the slag addition is the subject of the PDD of this project.

Effect of slag addition occurs due to the following:

- Less $CO_2$ is emitted during calcination process in the kiln as slag contains less $CaCO_3$ which decomposes to CaO and $CO_2$ at high temperature.
- Less heat and subsequently less kiln fuel is required for decomposition of limestone in the kiln. Therefore, less $CO_2$ emissions from fuel combustion occurs.
- Slag reduces the overall moisture content of the slurry therefore less kiln fuel is consumed to evaporate moisture from it. Less $CO_2$ is emitted from fuel combustion.

## 1.4 Determination team

The determination team consists of the following personnel:

Ivan Sokolov
Bureau Veritas Certification, Team Leader, Climate Change Lead Verifier

Kateryna Zinevych
Bureau Veritas Certification, Team member, Climate Change Verifier

Olena Manziuk
Bureau Veritas Certification, Team member, Climate Change Verifier

Denis Pischalov
Bureau Veritas Certification, Team member Financial Specialist

Leonid Yaskin
Bureau Veritas Certification, Internal Technical Reviewer

# 2 METHODOLOGY

The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a determination protocol was customized for the project, according to the Determination and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from determining the identified criteria. The determination protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent determination process where the determinator will document how a particular requirement has been determined and the result of the determination.

The determination protocol consists of five tables. The different columns in these tables are described in Figure 1.

The completed determination protocol is enclosed in Appendix A to this report.

| Determination Protocol Table 1: Mandatory Requirements | | | |
|---|---|---|---|
| **Requirement** | **Reference** | **Conclusion** | **Cross reference** |
| The requirements the project must meet. | Gives reference to the legislation or agreement where the requirement is found. | This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** or a **Clarification Request (CL)** of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Determination Report. | Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is determined. This is to ensure a transparent determination process. |

| Determination Protocol Table 2: Requirements checklist | | | | |
|---|---|---|---|---|
| **Checklist Question** | **Reference** | **Means of verification (MoV)** | **Comment** | **Draft and/or Final Conclusion** |
| The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question. | Gives reference to documents where the answer to the checklist question or item is found. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification. |

| Determination Protocol Table 3: Baseline and Monitoring Methodologies | | | | |
|---|---|---|---|---|
| **Checklist Question** | **Reference** | **Means of verification (MoV)** | **Comment** | **Draft and/or Final Conclusion** |
| The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question. | Gives reference to documents where the answer to the checklist question or item is found. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification. |

| Determination Protocol Table 4: Legal requirements | | | | |
|---|---|---|---|---|
| **Checklist Question** | **Reference** | **Means of verification (MoV)** | **Comment** | **Draft and/or Final Conclusion** |
| The national legal requirements the project must meet. | Gives reference to documents where the answer to the checklist question or item is found. | Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable. | The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. | This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification. |

| Determination Protocol Table 5: Resolution of Corrective Action and Clarification Requests | | | |
|---|---|---|---|
| **Report clarifications and corrective action requests** | **Ref. to checklist question in tables 2/3** | **Summary of project owner response** | **Determination conclusion** |
| If the conclusions from the Determination are either a Corrective Action Request or a Clarification Request, these should be listed in this section. | Reference to the checklist question number in Tables 2, 3 where the Corrective Action Request or Clarification Request is explained. | The responses given by the Client or other project participants during the communications with the determination team should be summarized in this section. | This section should summarize the determination team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion". |

**Figure 1 Determination protocol tables**

## 2.1 Review of Documents

The Project Design Document (PDD) submitted by Global Carbon BV and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (JI-PDD), Approved methodology, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Global Carbon B.V. revised the PDD and resubmitted it on 25/05/2010.

After issuance of the Letter of Approval from Ukrainian side PDD was transformed into the version 5.0 dated 20.09.2010.

The determination findings presented in this report relate to the project as described in the PDD version 3.1 dated 25/05/2010.

## 2.2 Follow-up Interviews

On 10/04/2008 and 16/07/2009 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of OJSC "Yugcement" were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

| Interviewed organization | Interview topics |
|---|---|
| OJSC "Yugcement", Global Carbon BV | ➢ Additionality of the project,<br>➢ Emission factor of the project,<br>➢ EIA and its approval,<br>➢ Project design,<br>➢ Consulting process for stakeholder's comments,<br>➢ Approval status by the host country,<br>➢ Applicability of methodology,<br>➢ Monitoring Plan,<br>➢ QA issues,<br>➢ Baseline calculations. |

## 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

To guarantee the transparency of the determination process, the concerns raised are documented in more detail in the determination protocol in Appendix A.

# 3 DETERMINATION FINDINGS

In the following sections, the findings of the determination are stated. The determination findings for each determination subject are presented as follows:

1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Determination Protocol in Appendix A.

2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Appendix A. The determination of the Project resulted in 20 Corrective Action Requests and 13 Clarification Requests.
3) The conclusions for determination subject are presented.

## 3.1 Project Design

The project is expected to be in line with host-country specific JI requirements because it is aimed at significantly decrease of the emissions originating from fossil fuel combustion and calcination at Yugcement plant factory in Ukraine

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Emissions Reductions Units (ERUs) under the JI, based on the analysis, presented by the PDD, of investment, technological, barriers, and sensitivity, and common practice.

The project design is sound and the geographical (Mykolaiv region, Ukraine) and temporal boundaries of the project are clearly defined.

Additional revenue from JI has been taken into account from the very beginning of the project development activities.

The identified areas of concern as to Project Design, PP's response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR01, CAR14, CAR15, CAR16, CAR17, CAR18,CL01, CL02, CL03, CL11).

The project has no approvals by the Parties involved, therefore CAR 01 remains pending.

## 3.2 Baseline and Additionality

Any baseline for a JI project is set in accordance with all requirements of the Joint Implementation Supervisory Committee (JISC).

In the PDD it is stated that for the cement industry exist four approved methodologies: ACM0003, ACM0005, AM0024 and "Consolidated baseline and monitoring methodology for project activities using alternative raw materials that do not contain carbonates for clinker manufacturing in cement kilns" ACM0015.

Nevertheless, developers indicated that none of these methodologies can be applied directly to the project, but there was used JI specific approach, which takes into consideration the main principles of the approved methodologies. In general, this specific approach is based on selected elements of the ACM0015.

Moreover, the most recent "Tool for the demonstration and assessment of additionality (version 05.2)" was applied for proving the additionality of the project.
1
A JI specific approach regarding baseline setting has been developed in accordance with JISC Guidance on criteria for baseline setting and monitoring (Version 02). It applies two steps: 1- Indication and description of the theoretical approach chosen regarding baseline setting and 2 - Application of the approach chosen. Under step 1, several approaches are identified for the baseline selection, all in compliance with mandatory applicable legal and regulatory requirements. Under step 2, five alternatives are stated. As a result, only two alternatives (the first and fifth) are identified as realistic and credible: production of clinker without slag addition and using existing wet process and production of clinker adding 15% of ground slag to the raw material mix. The former is identified the first alternative as the most realistic and credible alternative with the lowest emissions because the latter is proven by the benchmark analysis to be not economically/financially feasible. Chosen alternative is also identified as the baseline scenario.

Investment analysis was conducted using the benchmark analysis and the sensitivity analysis and its results were presented in the PDD. Investment analysis was reviewed by the financial specialist of Bureau Veritas Certification.
According to the common practice analysis, the impact of the proposed JI project activity will alleviate financial risks of alternative material component price increase and will alleviate technological barriers and risks to the project. Common practice analysis was checked by the specialist of AIE. This JI project provides a reduction in emissions that is additional to any that would otherwise occur.

The identified areas of concern as to the baseline and additionality, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR02, CAR03, CAR04, CAR05, CAR06, CAR07, CAR08, CAR09, CAR10, CAR11, CAR12, CAR13, CAR19, CL04, CL05, CL06, CL07, CL08, CL10, CL12, CL13).

## 3.3 Monitoring Plan

The monitoring plan is established in accordance with JISC's Guidance on criteria for baseline setting and monitoring, Part B (Version 02).

All categories of data to be collected in order to monitor project and baseline emissions as well as formulae for processing the collected data and calculation of GHG emissions are described in required details.

In the appropriate section of the PDD there is described in details operational and management structure. Thus, three departments of Yugcement will be responsible for collecting the information for monitoring purposes such as the laboratory of Yugcement, energy department, financial department. Apart of internal departments of Yugcement, three independent external organizations will be contracted to provide the data necessary for monitoring plan implementation: the laboratory of the Mykolaiv regional gas distribution system, independent certification body, and Independent surveying company.

More detailed information related to the monitoring plan is presented in section D of the PDD.

The identified areas of concern as to the monitoring plan, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CAR20).

## 3.4 Calculation of GHG Emissions

As per JI specific approach, the baseline emission sources considered are the following:

1. Emission sources in the baseline are: calcination; combustion of fuel in the kiln; consumption of electricity for raw mill preparation, kiln operation, fuel preparation and feeding; consumption of additional fuel for drying of raw meal or fuel drying (e.g. if coal is used);
2. The baseline emission due to the kiln fuel combustion is based on a three years average kiln efficiency and the carbon emission factor of the (or mix of) fuel used in the project scenario. This approach is identical to the approach used in the project JI0001 "Switch from wet-to-dry process at Podilsky Cement" which determination was made final;
3. Similarly to the approach used in the project JI0001, baseline setting of AMC percentage and non-carbonated CaO and MgO contents in the raw mill and clinker by fixing the average content of these oxides in slurry (raw mix) and clinker;
4. Clinker and raw mix volumes were set in a similar way to ACM0015;
5. The baseline emissions of the grid are established using the Ukrainian standardized grid factor as mentioned in Annex 2;

As required under JI specific approach, the baseline emissions are calculated by the appropriate formula that presented below.

$$BE_y = BE_{Calcin} + BE_{FC} + BE_{EL,} + BE_{Coal,y}$$

Where:

| | |
|---|---|
| $BE_y$ | is the baseline emissions for the year y ($tCO_2$) |
| $BE_{Calcin}$ | is the baseline $CO_2$ emissions from calcinations of calcium carbonate and magnesium carbonate contained in the raw materials during burning in the clinker kiln ($tCO_2$) |
| $BE_{FC}$ | is the baseline emissions due to kiln fuel combustion ($tCO_2$) |
| $BE_{dry}$ | is the baseline emissions due to additional fuel consumption for raw materials or fuel drying, ($tCO_2$) |
| $BE_{EL\_grid}$ | is the baseline emissions due to grid electricity consumption ($tCO_2$) |

The detailed algorithms are described later under sections D of the PDD.

With reference to used methodology, project does not lead to any leakage.

In the documents of this JI project stated that for estimation project emissions is used the following formula:

$$PE_y = PE_{calc,y} + PE_{kiln,y} + PE_{El,y} + PE_{coal,y} + PE_{slag,y}$$

Where:

| | |
|---|---|
| $PE_y$ | Project emission in year y ($tCO_2$) |
| $PE_{calc,y}$ | Project emission due to calcinations in year y ($tCO_2$) |
| $PE_{kiln,y}$ | Project emission from combustion of kiln fuels in year y ($tCO_2$) |
| $PE_{EL,y}$ | Project emission due to fuel and electricity consumption for raw meal preparation (drying, milling, handling) and kiln electricity consumption ($tCO_2$) |
| $PE_{coal,y}$ | Project emission due to kiln fuel (coal) preparation (grinding, drying, conveying) in year y ($tCO_2$) |
| $PE_{slag,y}$ | Project emission due to slag preparation in year y ($tCO_2$) |

Detailed formulae for each component are described in the PDD version 3.1 (see section B and section D in the PDD).

According to the information, the financial department of is responsible for accounting, controlling and planning. It will hold the overall responsibility for calculation the emission reductions and other duties.

The estimated annual average of approximately 157,974 tCO2e over the crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.

## 3.5 Environmental Impacts

Cement production at the OJSC "Yugcement" has certain impact on the local environment. In Ukraine emission levels in industry are regulated by operating licenses issued by regional offices of the Ministry for Environmental Protection on the individual basis for every enterprise that has significant impact on the environment. The current levels of the emissions of the main pollutants of this project (e.g. dust, sulphur oxides and nitrogen oxides) are in compliance with the requirements of the plant's operational license.

This project foresees introduction of modern auxiliary equipment, designed to meet the strongest pollution restrictions. New burners to be installed having modern control systems will allow to better maintain optimal combustion mode thus contributing to reduction of such pollutants (CO and $NO_x$).

According to the information, currently the design of the slag addition equipment has been started and will be followed by detailed assessment of environmental impact (OVNS in Ukrainian abbreviation) when complete.

As for dust emitted from cement production processes, it is not a toxic substance but is considered a nuisance. The main sources of dust from cement production are the raw materials mill, the kiln, clinker coolers and cement mills. Dust emissions from OJSC "Yugcement" are monitored on a regular basis in compliance with norms and regulations in force.

Furthermore, dust concentration in the exhaust gases is determined on the basis of changes in filter weight measured in a flow of a dust-laden gas for certain period of time. Dust is sampled by gravimetric method in accordance with the national "Methodology of dust concentration measurement in dust-laden process gases". Accuracy of the measurement is within +/-25%. Testing (calibration) of measurement equipment used to measure dust emissions is carried out once a year by an independent state body (State Organization for Standardization, Metrology and Certification).

According to presented project design document, dust emissions are expected not to be influenced by the slag addition project.

As for NOx, it is formed due to the inevitable oxidation reaction of the atmospheric nitrogen at high temperatures in the cement kiln. NOx is expected that after project commissioning the emissions will stay the requirements of the Ukrainian legislation and within the range the Best Available Technology levels of IPPC.

SOx emissions in cement production at OJSC "Yugcement" originate mainly from raw material and also from coal with sulphur content combustion. The sulphur content in the raw materials used at the plant is insignificant and SOx emissions are not observed and should not increase after the implementation of the project. However, the gas analyzing equipment of OJSC "Yugcement" will allow monitoring the gaseous emissions of sulphur oxide in case they will appear.

The identified areas of concern as to the environmental impacts, project participants response and BV Certification's conclusion are described in Appendix A Table 5 (refer to CL09).

## 3.6 Comments by Local Stakeholders

JI projects are not required to go through a (local) stakeholders' consultation. Addition of different types of slag into the raw materials from clinker manufacturing would not influence plant emissions.

# 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOs

According to the modalities for the Determination of JI projects, the AIE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the UNFCCC JI website (http://JI.unfccc.int) on 16/07/2009 and invited comments within 14/08/2009 by Parties, stakeholders and non-governmental organizations.

Comments were not received.

# 5 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the "Slag usage and switch from wet to dry process at Yugcement, Ukraine" JI Project in Ukraine. The determination was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The determination consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii)

follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final determination report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of technological and other barriers to determine that the project activity itself is not the baseline scenario.

By addition of alternative raw materials, the project is likely to result in reductions of GHG emissions from calcination. An analysis of the technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation, version 5.0 dated 20/09/2010 and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

The determination is based on the information made available to the determination team and the engagement conditions detailed in this report.

# 6 REFERENCES

**Category 1 Documents:**
Documents provided by Global Carbon BV that relate directly to the GHG components of the project.

/1/ PDD of JI project "Slag usage and switch from wet to dry process at Yugcement, Ukraine" version 1.0 dated 03/03/2008.

/2/ PDD of JI project "Slag usage and switch from wet to dry process at Yugcement, Ukraine" version 1.2 dated 18/03/2008.

/3/ PDD of JI project "Slag usage and switch from wet to dry process at Yugcement, Ukraine" version 3.1 dated 25/05/2010.

/4/ PDD of JI project "Slag usage and switch from wet to dry process at Yugcement, Ukraine" version 4.0 dated 24/06/2010.

/5/ PDD of JI project "Slag usage and switch from wet to dry process at Yugcement, Ukraine" version 5.0 dated 20/09/2010.

/6/ Letter of Endorsement # 12325/11/10-07 issued 05/12/2007.

/7/ Guidelines for Users of the Joint Implementation Project Design Document

Form/Version 04, JISC.

/8/ JISC Guidance on criteria for baseline setting and monitoring. Version 02.

/9/ Tool for the demonstration and assessment of additionality, Version 05.2.

/10/ Glossary of Joint Implementation Terms, Version 02.

/11/ Letter of Approval from the Netherlands 2009JI14 dated 7th of January 2010 issued by SenterNovem

/12/ Letter of Approval from Ukraine 1399/23/7 dated 16th of September 2010 issued by National Environmental Investment Agency of Ukraine

/13/ Letter of Approval from Germany dated 22nd of July 2010 issued by Federal Environment Agency, German Emissions Trading Authority

**Category 2 Documents:**

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/ Annex to the certificate of attestation dated 26/12/2006 #PH-0116. Area of attestation of the production laboratory OJSC "Yugcement" for measurement of distribution of the state metrological supervision

/2/ Cement and cement materials. Methods for chemical analysis ГОСТ 5282-91.

/3/ Certificate #16 of attestation МВИ dated 20/04/2004.

/4/ Certificate #19 of attestation МВИ dated 21/04/2004.

/5/ Certificate of attestation #PH-0116 dated 26/12/2006. It is valid to 26/12/2009.

/6/ Instruction of management of the weigher SCHENCK.

/7/ License АБ #204751 dated 16.08.2005. It is valid from 16.08.2005 to 16.08.2010.

/8/ Log book of variables drivers of the rotating furnaces. Furnace #1. It is started 15/07/2010.

/9/ Log book of variables drivers of the rotating furnaces. Furnace #2. It is started 10/12/2009.

/10/ Metrology. Cement production. Measurement methods of the percentage of free calcium oxide in the cement and clinker of the cement production СТУ МВИ 23908222.024-04 dated 2004.

/11/ OJSC "Yugcement" "Transfer of rotating furnaces #1, 2 to the coal fuel". Working draft. Environmental impact assessment. Volume 2. Explanatory note 95-0358.ОВОС.ПЗ. Book 1 dated 2009.

/12/ OJSC "Yugcement" "Transfer of rotating furnaces #1, 2 to the coal fuel". Working draft. Environmental impact assessment. Volume 2. Statement of environmental effects 95-0358.ОВОС.ЗП. Book 2 dated 2009.

/13/ OJSC "Yugcement". Working draft of the supply of granulated slag from the cold part of the furnace #1. Volume II. Environmental impact assessment. Book 1. Explanatory note. Annex 1. Arch. #95-0285.ОВОС.ПЗ.ad.1 dated 2002.

/14/ OJSC "Yugcement". Working draft of the supply of granulated slag from the cold part of the furnace #1. Volume II. Environmental impact assessment. Book

1. Explanatory note. Arch. #95-0285.ОВОС.ПЗ dated 2002.

/15/ OJSC "Yugcement". Working draft of the supply of granulated slag from the cold part of the furnace #1. Volume II. Environmental impact assessment. Book 2. Statement of environmental effects. Arch. #95-0285.ОВОС.ЗП dated 2002.

/16/ Opinion of the state environmental expertise of the working draft "Supply of the granulated slag from the cold part of the furnace #1" at OJSC "Yugcement" dated 12/11/2002.

/17/ Quality guidelines of the production laboratory dated 2006.

/18/ Report of the inventory of pollutant emission sources of OJSC "Yugcement" #754 dated 31/08/2007.

/19/ Technical regulations: set of documents for the technical production process of cement and commercial portland cement clinker TP 0029303-1.1.08. Order #241a dated 04/07/2008.

/20/ Technical regulations: set of documents for the technical production process of cement and commercial portland cement clinker TP 0029303-4.7.08.

**Persons interviewed:**

List of persons interviewed during the determination or persons that contributed with other information that are not included in the documents listed above.

/1/ S. Boboshko – Financial director

/2/ A. Pogrebniak – Project and program manager

/3/ O. Kasjanov – Chief power engineer

/4/ A. Borsukevych – Chief technologist

/5/ A. Tkachuk – Head of ПЭО

/6/ A. Chornyy – Head of АСУ ТП

/7/ V. Bulakh – Lead technologist

/8/ V. Vegerynskyi – Chief executive officer

/9/ Karl-Heinz Kash – Technical director of "Dikerhof"

/10/ D. Artamonov – Chief mechanic

/11/ A. Doumik – Consultant of Global Carbon B.V.

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# APPENDIX A: COMPANY JI PROJECT DETERMINATION PROTOCOL

**Table 1 Mandatory Requirements for Joint Implementation (JI) Project Activities**

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| 1. The project shall have the approval of the Parties involved. | Kyoto Protocol Article 6.1 (a) | **CAR 01**. The project has no approval of the host Party.<br>Verifiers' Note: JISC Glossary of JI terms/Version 02 defines the following:<br>a) At least the written project approval(s) by the host Party(ies) should be provided to the AIE and made available to the secretariat by the AIE when submitting the determination report regarding the PDD for publication in accordance with paragraph 34 of the JI guidelines;<br>(b) At least one written project approval by a Party involved in the JI project, other than the host Party(ies), should be provided to the AIE and made available to the secretariat by the AIE when submitting the | Table 2 Section A.5. |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| | | first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest.<br>After finishing of project determination report, the PDD and Determination Report will be presented to National Environmental Agency of Ukraine for receiving the Letter of Approval. | |
| 2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur. | Kyoto Protocol Article 6.1 (b) | OK | Table 2, Section B.2 |
| 3. The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7. | Kyoto Protocol Article 6.1 (c) | OK | N/A |
| 4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3. | Kyoto Protocol Article 6.1 (d) | OK | N/A |
| 5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects. | Marrakech Accords,<br>JI Modalities, §20 | OK | Both countries have designated their Focal Points. National guidelines and procedures for approving JI projects have been published. |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| | | | Contact data in Ukraine:<br>**National Environmental Investment Agency of Ukraine**<br>35 Urytsky Str., Kyiv, P.O. 03035<br>Phone: +380 44 594 91 11<br>Fax: +380 44 5949115<br>Email: info.neia@gmail.com<br>National guidelines and procedures for the approval of JI projects are available (www.neia.gov.ua)<br>Contact data in the Netherlands:<br>**Ministry of Economic Affairs**<br>Catharijnesingel 59<br>P.O. Box 8242 |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| | | | 3503 RE Utrecht<br>Netherlands<br>Phone: +31 30 239 3413<br>Email: d.de.haan@sentern ovem.nl<br>National guidelines and procedures for the approving JI projects are available (http://ji.unfccc.int/UserManagement/FileStorage/XQ0CYFTBQDSELQJSZUKHKRMANMD6QD |
| 6. The host Party shall be a Party to the Kyoto Protocol. | Marrakech Accords, JI Modalities, §21(a)/24 | OK | The Ukraine is a Party (Annex I Party) to the Kyoto Protocol and has ratified the Kyoto Protocol at April 12th, 2004. |
| 7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts. | Marrakech Accords, JI Modalities, §21(b)/24 | OK | In the Initial Report submitted by Ukraine on 29. Dec. |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| | | | 2006 the AAUs are quantified with: 925 362 174.39 (x 5) = 4 626 810 872 tCO2-e |
| 8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4. | Marrakech Accords, JI Modalities, §21(d)/24 | OK | Ukraine national GHG registry has been outlined in the Initial Report. (http://unfccc.int/national_reports_under_the_kyoto_protocol/items/3765.php) |
| 9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination. | Marrakech Accords, JI Modalities, §31 | OK | Global Carbon BV has submitted the PDD to Bureau Veritas Certification, which contains all information needed for determination. |
| 10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments. | Marrakech Accords, JI Modalities, §32 | OK | PDD Version 1.2. dated 18/03/2008 was made publicly available for comments on UNFCCC JI website from 16 July 2009 till 14 August 2009. |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| 11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the host Party, an environmental impact assessment in accordance with procedures as required by the host Party shall be carried out. | Marrakech Accords, JI Modalities, §33(d) | OK | Table 2, Section F |
| 12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project. | Marrakech Accords, JI Modalities, Appendix B | OK | Table 2, Section A.2 |
| 13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances. | Marrakech Accords, JI Modalities, Appendix B | OK | Table 2, Section B.2 |
| 14. The baseline methodology shall exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure. | Marrakech Accords, JI Modalities, Appendix B | OK | Table 2, Section B.2 |
| 15. The project shall have an appropriate monitoring plan. | Marrakech Accords, JI Modalities, §33(c) | OK | Table 2, Section D |
| 16. A project participant is a legal entity authorized by a Party involved to participate in the JI project. | JISC "Modalities of communication of Project | Conclusion is pending a follow-up on CAR 01. Refer to Verifiers' Note in 1 above. | Table 2, Section A |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference to this protocol |
|---|---|---|---|
| | Participants with the JISC" Version 01, Clause A.3 | | |

**Table 2 Requirements Checklist**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| ***A. General Description of the project*** | | | | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **A.1 Title of the project** | | | | | |
| A.1.1. Is the title of the project activity presented? | /4/ | DR | Slag usage and switch from wet to dry process at Yugcement, Ukraine.<br>Corrective Action Request (CAR) 16<br>The title of the project is incorrect. PDD presented to ITR includes only consideration of slag addition. Switch from wet to dry process is not a subject of the PDD (e.g. it is directly stated in Section A.2 - "…only the slag addition is the subject of this PDD") and no connections with slag addition are provided. Please correct the title and descriptions throughout PDD accordingly. | CAR16 | OK |
| A.1.2. Is the current version number of the document presented? | /4/ | DR | PDD version 1.2 | | OK |
| A.1.3. Is the date when the document was completed presented? | /4/ | DR | 18 March 2008 | | OK |
| **A.2. Description of the project** | | | | | |
| A.2.1. Is the purpose of the project activity included? | /4/ | DR | The project aims to significantly decrease the emissions of the fossil fuel combustion and calcination at Yugcement plant factory in Ukraine. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| A.2.2. Is it explained how the proposed project activity reduces greenhouse gas emissions? | /4/ | DR | Effect of slag addition occurs due to the following:<br>- less CO2 is emitted during calcination process in the kiln as slag contains less CaCO3 which decomposes to CaO and CO2 at high temperature.<br>- less heat and subsequently less kiln fuel is required for decomposition of limestone in the kiln. Therefore, less CO2 emissions from fuel combustion occurs.<br>- Slag reduces the overall moisture content of the slurry therefore less kiln fuel is consumed to evaporate moisture from it. Less CO2 is emitted from fuel combustion.<br><u>Corrective Action Request (CAR) 17</u><br>Section A.2 does not provide a concise, summarizing explanation of the baseline scenario and history of the project including its JI component as per Guidelines for users of the PDD form, v.2. | CAR17 | OK |
| **A.3. Project participants** | | | | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| A.3.1. Are project participants and Party(ies) involved in the project listed? | /4/ | DR | Please, refer to point A.3 of PDD. | | OK |
| A.3.2. The data of the project participants are presented in tabular format? | /4/ | DR | Please, refer to point A.3 of PDD. | | OK |
| A.3.3. Is contact information provided in annex 1 of the PDD? | /4/ | DR | Please, refer to Annex 1 of PDD. | | OK |
| A.3.4. Is it indicated, if it is the case, if the Party involved is a host Party? | /4/ | DR | Please, refer to point A.3 of PDD. | | OK |
| **A.4. Technical description of the project** | | | | | |
| A.4.1. Location of the project activity | | | | | |
| A.4.1.1. Host Party(ies) | /4/ | DR | Ukraine | | OK |
| A.4.1.2. Region/State/Province etc. | /4/ | DR | Mykolaiv oblast (region) in the south of Ukraine | | OK |
| A.4.1.3. City/Town/Community etc. | /4/ | DR | Village of Olshanskoye is located about 35 km north-west from Mykolaiv, one of regional centres of Southern Ukraine | | OK |
| A.4.1.4. Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page) | /4/ | DR | Physical location is divided into two parts, one of which is given before A.4.1.1. | | OK |
| A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project | | | | | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| A.4.2.1. Does the project design engineering reflect current good practices? | /4/ | DR | Corrective Action Request (CAR) 18<br>Section A.4.2 does not contain relevant technical data of equipment installed under the project.<br>Clarification Request (CL) 01<br>No information available. Please provide<br>Clarification Request (CL) 11<br>It is simultaneously stated throughout PDD that slag is added and, at the same time, not added to slurry (for example in Section A.4.3 – "The project foresees the adoption of blast furnace slag (BFS) as decarbonised raw material in the raw meal fed to the kilns." and in Section A.4.2 "de-carbonated materials, like slag is not added to the slurry."). Please clarify if slag is added to slurry and use only one description throughout PDD. | CAR18<br>CL01<br>CL11 | OK |
| A.4.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country? | /4/ | DR | Clarification Request (CL) 02<br>No information available. Please provide | CL2 | OK |
| A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period? | /4/ | DR | Clarification Request (CL) 03<br>Please, clarify if the project technology is likely to be substituted by other or | CL3 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | more efficient technologies within the project period. | | |
| A.4.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? | /4/ | DR | Training will be provided by suppliers of equipment once it is installed during and after commissioning. The chosen supplier of the equipment will also be contracted by Dyckerhoff AG to provide additional on-site assistance. | | OK |
| A.4.2.5. Does the project make provisions for meeting training and maintenance needs? | /4/ | DR | Routine maintenance work is done by the qualified personnel of Yugcement. In the case maintenance procedures cannot be done internally, an external company is contracted to do the maintenance work. | | OK |
| 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 | | | | | |
| A.4.3.1. Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page) | /4/ | DR | The project will allow to reduce the emissions of CO2 due to less raw material to be calcinated in the kiln and reduction of kiln fuel consumption as | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | effects of slag addition to the raw mill | | |
| A.4.3.2. Is it provided the estimation of emission reductions over the crediting period? | /4/ | DR | Please refer to point A.4.3.1. of PDD | | OK |
| A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in $tCO_2e$? | /4/ | DR | Please refer to point A.4.3.1. of PDD | | OK |
| A.4.3.4. Are the data from questions A.4.3.2 to A.4.3.4 above presented in tabular format? | /4/ | DR | Yes, it's table 4 at point A.4.3.1. of PDD | | OK |
| **A.5. Project approval by the Parties involved** | | | | | |
| A.5.1. Are written project approvals by the Parties involved attached? | /4/ | DR | Positive Letter of Endorsement # 12325/11/10-07 was issued 5 December 2007.<br>Corrective Action Request (CAR) 01<br>There is no evidence of written project approvals by the Parties involved. | CAR01 | OK |
| ***B. Baseline*** | | | | | |
| **B.1. Description and justification of the baseline chosen** | | | | | |
| B.1.1. Is the chosen baseline described? | /4/ | DR | Production of clinker without slag addition<br>This scenario constitutes of continuation of the current situation at Yugcement | | OK |
| B.1.2. Is it justified the choice of the applicable baseline for the project category? | /4/ | DR | Only Alternatives 1 and 5 are realistic and credible alternatives. In accordance | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| B.1.3. Is it described how the methodology is applied in the context of the project? | /4/ | DR | with many CDM methodologies, "when more than one credible and plausible alternative remains, as a conservative consumption, use the alternative baseline scenario that results in the lowest baseline emissions as the most likely baseline scenario" Alternative 1 is the remaining realistic and credible alternative with the lowest emissions and is identified as the baseline scenario.<br>The baseline emissions of alternative 1 are elaborated in section D<br>For the cement industry four approved methodologies exist being ACM0003, ACM0005, AM0024 and "Consolidated baseline and monitoring methodology for project activities using alternative raw materials that do not contain carbonates for clinker manufacturing in cement kilns" ACM0015.<br>None of these methodologies can be applied directly to the project, but these methodologies have been carefully studied to identify the main principles underlying the approach to baseline | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | setting, additionality and monitoring.<br>Furthermore the approach for baseline setting in the JI project JI0001 "Switch from wet-to-dry process at Podilsky Cement, Ukraine", for which the determination has been made final, has been applied over the existing capacity.<br>Finally, for proving the additionality of the project the "Tool for the demonstration and assessment of additionality (version 04)" has been applied. Please refer to section B.2.<br>While identifying the baseline and project emissions, the general principles of appendix B of the JI guidelines (in particular: project-specific approach, taking conservative assumption, and taking into account relevant policies) have been adhered to.<br><u>Corrective Action Request (CAR) 02</u><br>The latest version of "Tool for the demonstration and assessment of additionality" is 5.2., while version 4 is used in the PDD. Please provide appropriate corrections. | CAR02 | |
| B.1.4. Are the basic assumptions of the baseline | /4/ | DR | <u>Clarification Request (CL) 04</u> | CL04 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| methodology in the context of the project activity presented (See Annex 2)? | | | Basic assumptions are not summarized | | |
| B.1.5. Is all literature and sources clearly referenced? | /4/ | DR | Yes, it is clear. | | OK |
| **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** | | | | | |
| B.2.1. Is the proposed project activity additional? | /4/ | DR | The "Tool for demonstration and assessment of additionality (version 04)" has been applied to show that the anthropogenic emissions of the greenhouse gases are reduced below those that would have occurred in the absence of the JI project.<br>The registration of the proposed JI activity will:<br>• Allow for one of the largest single investment in the Ukrainian cement industry since it's<br>independence to be made;<br>• Give the Yugcement access to the necessary modern technology and experience. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | Conclusion: the impact of the proposed JI project activity will alleviate the economic/financial hurdle and will alleviate barriers to the project. The project is additional.<br>Corrective Action Request (CAR) 03<br>According to the latest version of "Tool for the demonstration and assessment of additionality" the completion of sub-step 3b is necessary in order to proceed to the step 4. Please include it to the PDD.<br>Corrective Action Request (CAR) 04<br>According to the latest version of "Tool for the demonstration and assessment of additionality" step 4 must be divided into sub-steps 4a and 4b. Please provide appropriate corrections in the PDD.<br>Corrective Action Request (CAR) 05<br>Please indicate IRR and NPV with direct numbers.<br>Corrective Action Request (CAR) 06<br>Please provide calculation of payback | CAR03<br>CAR04<br>CAR05<br>CAR06 | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | period in the SD1. Also SD1 does not show IRR numbers showing mistake signs instead.<br>Clarification Request (CL) 05<br>A company's benchmark can be used for the projects when the project activity upgrades existing process but the developer shall demonstrate that this benchmark has been consistently used in the past (at least for 3 years). Please provide relevant justification.<br>Corrective Action Request (CAR) 07<br>Guidance for the Assessment of Investment analysis article 4 requires the fair value of the assets at the end of the end of assessment period to be included in the cash flow for the final year. In our case the liquidation value of the assets is not included in cash flow calculations contradicting with the Guidance article 4. Please provide appropriate corrections.<br>Corrective Action Request (CAR) 08<br>Calculations in files Yugcement SD_1_ER.xls and | CL05<br>CAR07<br>CAR08 | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | Yugcement_SD_2__cashflow.xls are based on different annual production capacity 1000kt and 930kt (actually 930 tons indicated) of clinker respectively. Please correct whichever is wrong.<br>Corrective Action Request (CAR) 09<br>Financial calculations in the file Yugcement_SD_2__cashflow.xls are made not for the project scenario but for two different alternatives identified in Step 1. Please note that for the benchmark analysis calculations for the project scenario which in this particular case is the combination for two scenarios (4% slag and 15% slag addition) shall be provided. Following stated above please correct table on the page 15 of the PDD.<br>Corrective Action Request (CAR) 10<br>According to the Methodological tool for demonstration and assessment of additionality investment analysis shall refer to all crucial techno-economic parameters and assumptions such as capital costs, fuel prices, lifetimes... | CAR09<br>CAR10 | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | Some of the input values are missing preventing the user from reproducing your calculations results, for example the reference to the elements that cause slag cost increase, caolin and coal costs change, ERU price, emission reductions etc. Please amend the file Yugcement_SD_2__cashflow.xls accordingly.<br>Corrective Action Request (CAR) 11<br>Project emissions in the file Yugcement SD_1_ER.xls are different from those indicated in PDD on page 39. Thereby the emission reductions are different as well. Please correct the discrepancy.<br>Clarification Request (CL) 6<br>On the page 18 of PDD the developer indicates that the project foresees some change in electricity consumption. At the same time file Yugcement_SD_2__cashflow.xls does not contain any calculations regarding electrical energy savings. Please clarify.<br>Corrective Action Request (CAR) 12<br>Sensitivity analysis provides reasonable | CAR11<br>CL06 | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | review of possible price variations in lines with recommendations of the Guidance but it refers to two alternatives not the actual project scenario. Please correct. | CAR12 | |
| | | | <u>Corrective Action Request (CAR) 19</u><br>In the investment analysis and emission reduction calculation, for the year 2009 and 2010 only coal savings (consumption) are taken into account. According to the PDD natural gas will be also used in 2009 and 2010 (Section A.4.2 – "…the use of coal instead of gas is planned in the nearest future (scheduled from April 2010 onwards"). | CAR19 | |
| | | | <u>Clarification Request (CL) 12</u><br>In the investment analysis kaolin is included as expenditure, but no mention of kaolin is found in the PDD. Please clarify how it is connected with slag addition. | CL12 | |
| | | | <u>Clarification Request (CL) 13</u><br>Please clarify sources of information for investment analysis input data as follows: | CL13 | |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | 1. The cost of slag on the Ukrainian market is about 40 UAH per tonne (http://prom.ua/p298570-shlak-domennyj-granulirovannyj-gost-3476-74.html ; http://www.ua.all-biz.info/g440298 ). In the investment analysis the price 150 UAH per tonne is used. Please clarify why the slag used in the project is 4 time more expensive than on the market;<br>2. Please provide transparent calculation of coal savings coefficient (coefficients applied in the investment analysis are not in compliance with those in emission reduction calculation);<br>Please provide transparent calculation of the slurried raw material cost and provide sufficient evidences that raw materials savings coefficients pertains to slurried raw materials. | | |
| B.2.2. Is the baseline scenario described? | /4/ | DR | Production of clinker without slag addition | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | This scenario constitutes of continuation of the current situation at Yugcement | | |
| B.2.3. Is the project scenario described? | /4/ | DR | BFS will be added to the raw material to replace part of limestone. At first stage the BFS will be dried before addition. Gas fired dryer, conveying and feeding equipment will be installed to allow of addition of some 4% of unground slag. At second stage the slag mill and auxiliaries will be installed to grind the slag before addition and slag percentage will be increased to approximately 15%. | | OK |
| B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario including? | /4/ | DR | See clause A.4.3.1. | | OK |
| B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario? | /4/ | DR | Addition of BFS would lead to reduction of kiln fuel consumption to some 1480 kcal/kg of clinker after the first stage is implemented and further reduced to some 1270 kcal/kg of clinker at second stage. Due to this, CO2 emissions from kiln fuel combustion would decrease. Additional significant decrease of CO2 emission will be reached due to less calcinations if raw materials in the kiln. It | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | is expected, that addition of BFS would reduce CO2 from 0.525 to 0.504 after first stage and to 0.44625 tCO2 per ton of clinker after second stage. Electricity consumption is expected to increase due to additional milling and handling of slag. | | |
| B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized? | /4/ | DR | Clarification Request (CL) 07<br>Please provide the summary of national policies and circumstances relevant to the baseline of the proposed project activity | CL07 | OK |
| **B.3. Description of how the definition of the project boundary is applied to the project activity** | | | | | |
| B.3.1. Are the project's spatial (geographical) boundaries clearly defined? | /4/ | DR | There are three different sources of GHG emissions while producing cement:<br>• Fuel combustion;<br>• Geogenic emission from the calcination (decarbonisation) process;<br>• GHG emission in the Ukrainian Power grid as a result of electricity consumption. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | The following approach has been used in determining whether emissions have been included in the project boundary:<br>• All sources of emissions that are not influenced by the project have been excluded;<br>• All sources of emissions that are influenced by the project have been included. (See table 8 in section B.3.)<br>Clarification Request (CL) 08<br>The identification of sources of emissions must be clarified. Changes in grid electricity in the raw material transport should be defined concretely by the types of that stuff.<br>Milling preparation may cause increasing of electricity consumption by the milling and drying of slag | CL08 | |
| **B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline** | | | | | |
| B.4.1. Is the date of the baseline setting presented (in DD/MM/YYYY)? | /4/ | DR | Corrective Action Request (CAR) 13<br>Please, adjust the date of the completing baselines to the format DD/MM/YYYY | CAR13 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| B.4.2. Is the contact information provided? | /4/ | DR | Global Carbon BV<br>See annex 1 for detailed contact information. | | OK |
| B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD? | /4/ | DR | Yes | | OK |
| ***C. Duration of the small-scale project and crediting period*** | | | | | |
| **C.1. Starting date of the project** | | | | | |
| C.1.1. Is the project's starting date clearly defined? | /4/ | DR | 1 July 2008 for increase of slag addition as raw material | | OK |
| **C.2. Expected operational lifetime of the project** | | | | | |
| C.2.1. Is the project's operational lifetime clearly defined in years and months? | /4/ | DR | At least 25 years<br>Corrective Action Request (CAR) 14<br>Please provide operational lifetime in months. | CAR14 | OK |
| **C.3. Length of the crediting period** | | | | | |
| C.3.1. Is the length of the crediting period specified in years and months? | /4/ | DR | Within the first commitment period:<br>• Four and a half years (1/7/2008 – 31/12/2012)<br>Within any relevant agreement under the UNFCCC from 2013 onwards: | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | • For the duration of the agreement but not more than the remaining operational lifetime of the project (twenty six years)<br>Corrective Action Request (CAR) 15<br>Please provide the length of the crediting period in years and months. | CAR15 | |
| ***D. Monitoring Plan*** | | | | | |
| **D.1. Description of monitoring plan chosen** | | | | | |
| D.1.1. Is the monitoring plan defined? | /4/ | DR | It is clearly stated what data are to be collected in order to monitor project emissions, baseline emissions and emissions reductions. See item D.1.<br>Corrective Action Request (CAR) 20<br>It is not indicated in PDD, Section D.1 which of the approaches defined in JI Guidelines is used to establish the monitoring plan. | CAR20 | OK |
| D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario. | /4/ | DR | Refer to D.1.1.1 (Table 11: Data to be collected in order to monitor emissions from the project) | | OK |
| D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived. | /4/ | DR | Refer to D.1.1.1 (Table 11: Data to be collected in order to monitor emissions from the project) | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| D.1.4. Description of the formulae used to estimate project emissions (for each gas, source etc,; emissions in units of CO2 equivalent). | /4/ | DR | Refer to D.1.1.2 | | OK |
| D.1.5. 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. | /4/ | DR | Refer to D.1.1.3 (Table 12: Relevant data necessary for determining the baseline of anthropogenic emissions by sources of GHGs within the project boundary) | | OK |
| D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc,; emissions in units of CO2 equivalent). | /4/ | DR | Refer to D.1.1.4 | | OK |
| D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E) | /4/ | DR | Not applicable. | | - |
| D.1.8. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived. | /4/ | DR | Not applicable. | | - |
| D.1.9. Description of the formulae used to calculate emission reductions from the project (for each gas, source etc,; emissions/emission reductions in units of CO2 equivalent). | /4/ | DR | Not applicable. | | - |
| D.1.10. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project. | /4/ | DR | Not applicable. | | - |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc., emissions in units of CO2 equivalent). | /4/ | DR | Due to reduced coal consumption, fewer emissions will occur in the coal mining and the transport to the plant. This leakage has not been taken into account for simplicity and to be conservative. Other leakages were not identified. | | OK |
| D.1.12. Description of the formulae used to estimate emission reductions for the project (for each gas, source etc,; emissions in units of CO2 equivalent). | /4/ | DR | Refer to D.1.4. | | OK |
| D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided? | /4/ | DR, I | Atmospheric emissions are the only important source of pollution at Yugcement that has an impact on the local environment. As of November 2007 the environmental laboratory of Yugcement is making measurements of the following emissions:<br>Gaseous pollutants (NOx & SOx)<br>Dust emissions | | OK |
| D.1.14. Is reference to the relevant host Party regulation(s) provided? | /4/ | DR, I | National requirements states for atmospheric emissions have to be measured by making samples on the quarterly basis. | | OK |
| D.1.15. If not applicable, is it stated so? | /4/ | DR, I | See point above. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored** | | | | | |
| D.2.1. Are there quality control and quality assurance procedures to be used in the monitoring of the measured data established? | /4/ | DR | Refer to D.2. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **D.3. Please describe of the operational and management structure that the project operator will apply in implementing the monitoring plan** | | | | | |
| D.3.1. Is it described briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project activity | /4/ | DR | Refer to D.3. | | OK |
| **D.4. Name of person(s)/entity(ies) establishing the monitoring plan** | | | | | |
| D.4.1. Is the contact information provided? | /4/ | DR | • JSC Yugcement<br>• Global Carbon B.V.<br><br>For contact details refer to annex 1 | | OK |
| D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD? | /4/ | DR | Yes | | OK |
| ***E. Estimation of greenhouse gases emission reductions*** | | | | | |
| **E.1.Estimated project emissions** | | | | | |
| E.1.1. Are described the formulae used to estimate anthropogenic emissions by source of GHGs due the project? | /4/ | DR | Refer to section D.1. In section E.1. there is estimated emissions reductions provided. There are no calculations in this section. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| E.1.2. Is there a description of calculation of GHG project emissions in accordance with the formula specified in for the applicable project category? | /4/ | DR | Refer to E.1. | | OK |
| E.1.3. Have conservative assumptions been used to calculate project GHG emissions? | /4/ | DR | • The emissions at the quarry are not influenced by the project;<br>• The type of fuel combusted in the kiln is not influenced by the project;<br>• The technical life time of the existing kiln extends to at least the end of the crediting period;<br>• Under the baseline scenario all existing wet kilns will be operating and will produce at maximum technical capacity;<br>• No energy efficiency measures will be implemented on the existing wet kilns until the end of the crediting period. | | OK |
| **E.2.Estimated leakage** | | | | | |
| E.2.1. Are described the formulae used to estimate leakage due to the project activity where required? | /4/ | DR | Not applicable | | - |
| E.2.2. Is there a description of calculation of leakage in accordance with the formula | /4/ | DR | Not applicable | | - |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| specified in for the applicable project category? | | | | | |
| E.2.3. Have conservative assumptions been used to calculate leakage? | /4/ | DR | Not applicable | | - |
| **E.3.The sum of E.1 and E.2.** | | | | | |
| E.3.1. Does the sum of E.1. and E.2. represent the small-scale project activity emissions? | /4/ | DR | Yes | | OK |
| **E.4.Estimated baseline emissions** | | | | | |
| E.4.1. Are described the formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category? | /4/ | DR | Refer to section D.1. | | OK |
| E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category? | /4/ | DR | Refer to E.4. | | OK |
| E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions? | /4/ | DR | Refer to the item B.3. of PDD. | | OK |
| **E.5.Difference between E.4. and E.3. representing the emission reductions of the project** | | | | | |
| E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the project during a given period? | /4/ | DR | Yes | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **E.6. Table providing values obtained when applying formulae above** | | | | | |
| E.6.1. Is there a table providing values of total $CO_2$ abated? | /4/ | DR | Refer to E.6. | | OK |
| ***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** | | | | | |
| F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described? | /4/ | DR, I | Cement production has certain impact on the local environment. The current levels of the emissions of the main pollutants (dust, sulphur oxides and nitrogen oxides), are in compliance with the requirements of the plant's operational license.<br>Dust emissions are expected not to be influenced by the slag addition project.<br>Expected that after project commissioning the emissions of NOx will stay the requirements of the Ukrainian legislation and within the range the Best Available Technology18 levels of IPPC. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | The sulphur content in the raw materials used at Yugcement is insignificant and SOx emissions are not observed and should not increase after the implementation of the project. | | |
| F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is and EIA approved? | /4/ | DR, I | An Environmental Impact Assessment is not necessary at this stage of project development. The environmental impacts will be assessed before obtaining a construction permit. According to the national legislation in force, every project or new activity that can be potentially harmful for the environment, must evaluate the environmental impact. | | OK |
| F.1.3. Are the requirements of the National Focal Point being met? | /4/ | DR, I | The National Focal Point issued letter of endorsement. Letter of approval needs to be received (see CAR1). | | OK |
| F.1.4. Will the project create any adverse environmental effects? | /4/ | DR, I | The working project of the AIE states that there will be no adverse environmental effects. | | OK |
| F.1.5. Are transboundary environmental considered in the analysis? | /4/ | DR, I | Clarification Request (CL) 09 Transboundary environmental are not | CL09 | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | considered in the analysis. Please include. | | |
| F.1.6. Have identified environmental impacts been addressed in the project design? | /4/ | DR, I | Yes | | OK |
| ***G.* Stakeholders' comments** | | | | | |
| **G.1. Information on stakeholders' comments on the project, as appropriate** | | | | | |
| G.1.1. Is there a list of stakeholders from whom comments on the project have been received? | /4/ | DR | JI projects are not required to go through a (local) stakeholders' consultation. However, Yugcement and Dyckerhoff are planning to present the project to the regional authorities at a later stage. In the course of obtaining the construction permit, Yugcement will actively publish information about the project to stakeholders | | OK |
| G.1.2. The nature of comments is provided? | /4/ | DR | Not applicable | | - |
| G.1.3. Has due account been taken of any stakeholder comments received? | /4/ | DR | Not applicable | | - |

**Table 3 Baseline and Monitoring Methodologies: Own format**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1. Baseline Methodology | | | | | |
| 1. 1. General | | | | | |
| 1.1.1. Does the baseline cover emissions from all gases, sectors and source categories listed in Annex A, and anthropogenic removals by sinks, within the project boundary? | /4/ | DR I | Section B.3 of the PDD establishes project boundaries. All sources that are influenced by the project are included so change in fuel consumption at the quarry and raw material transport and change in grid electricity consumption at the quarry are excluded due to the decrease of the fossil fuel and electricity consumption respectively. | | OK |
| 1.1.2. Is baseline established on a project-specific basis and/or using a multi-project emission factor? | /4/ | DR I | A multi-project emission factor is used for baseline establishing. | | OK |
| 1.1.3 Is baseline established in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors? | /4/ | DR I | The baseline is established in a transparent manner. Choice of approach was described, assumptions, methodologies, parameters, data sources are clearly indicated (Sections B.1. and B.2. of the PDD) | | OK |
| 1.1.4 Is baseline established taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector? | /4/ | DR | See CL05. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| 1.1.5 Is baseline established in such a way that ERUs cannot be earned for decreases in activity levels outside the project activity or due to *force majeure?* | /4/ | DR I | Baseline does not envisage earning ERUs for activity level decrease outside the project or due to *force majeure.* | | OK |
| 1.1.6 Is baseline established taking account of uncertainties and using conservative assumptions? | /4/ | DR I | Conservative assumptions are taken into account (Section B of the PDD). While the level of taking account of uncertainty is not clearly defined.<br>Clarification Request (CL) 10<br>Please clarify how uncertainty is taken into account. | CL10 | OK |
| 1.2. Additionality | | | | | |
| 1.2.1. Was the additionality of the project activity demonstrated and assessed? | /4/ | DR | Project is additional on the basis of justification and assessment. | | OK |
| 2. Monitoring Methodology | | | | | |
| 2.1. Monitoring plan | | | | | |
| 2.1.1. Is a monitoring plan included? | /4/ | DR I | Yes, monitoring plan is included. | | OK |
| 2.1.2. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources and/or anthropogenic removals by sinks of greenhouse gases occurring within the project boundary during | /4/ | DR I | Monitoring plan provides for the collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources of greenhouse gases occurring within the project boundary during the crediting period (see section D.1.1.1. of the | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| the crediting period? | | | PDD). | | |
| 2.1.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining the baseline of anthropogenic emissions by sources and/or anthropogenic removals by sinks of greenhouse gases within the project boundary during the crediting period? | /4/ | DRI | Monitoring plan provides for the collection and archiving of all relevant data necessary for determining the baseline of anthropogenic emissions by sources of greenhouse gases within the project boundary during the crediting period (see section D.1.1.3. of the PDD). | | OK |
| 2.1.4. Does the monitoring plan provide for the identification of all potential sources of, and the collection and archiving of data on increased anthropogenic emissions by sources and/or reduced anthropogenic removals by sinks of greenhouse gases outside the project boundary that are significant and reasonably attributable to the project during the crediting period? | /4/ | DR | Increase of anthropogenic emissions outside the project boundary that are significant and reasonably attributable to the project during the crediting period is not anticipated. | | OK |
| 2.1.5. Does the project boundary encompass all anthropogenic emissions by sources and/or removals by sinks of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the JI project? | /4/ | DR | All sources that are influenced by the project are included so change in fuel consumption at the quarry and raw material transport and change in grid electricity consumption at the quarry are excluded due to the decrease of the fossil fuel and electricity consumption respectively. | | OK |
| 2.1.6. Does the monitoring plan provide for the collection and archiving of information on environmental impacts, in accordance with | /4/ | DR | No adverse environmental impacts are foreseen. Validated onsite. | | OK |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| procedures as required by the host Party, where applicable? | | | | | |
| 2.1.7. Does the monitoring plan provide for quality assurance and control procedures for the monitoring process? | /4/ | DR | Quality assurance is planned, see section D.2. of the PDD, that was validated onsite. | | OK |
| 2.1.8. Does the monitoring plan provide for procedures for the periodic calculation of the reductions of anthropogenic emissions by sources and/or enhancements of anthropogenic removals by sinks by the proposed JI project, and for leakage effects, if any? | /4/ | DR I | The monitoring plan provides formulae for the periodic calculation of the reductions of anthropogenic emissions (see section D.1.1.2.). Leakage is not applicable. | | OK |
| 2.1.9. Does the monitoring plan provide for documentation of all steps involved in the calculations? | /4/ | DR I | The monitoring plan provides for documentation of all steps involved in the calculations. See section D. | | OK |
| 2.2. Quality Control (QC) and Quality Assurance (QA) Procedures | | | | | |
| 2.2.1. Did all measurements use calibrated measurement equipment that is regularly checked for its functioning? | /4/ | DR I | Since the project is just being implemented (verified onsite) checking for functioning and calibration of equipment is not relevant yet. | | OK |
| 2.2.2 Is frequency of monitoring the parameters defined? | /4/ | DR I | Frequency of monitoring the parameters is defined. | | OK |

Table 4 Legal requirements

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| ***1.* Legal requirements** | | | | | |
| 1.1. Is the project activity environmentally licensed by the competent authority? | /4/ | DR, I | The environmental impacts will be assessed before obtaining a construction permit. | | OK |
| 1.2. Are there conditions of the environmental permit? In case of yes, are they already being met? | /4/ | DR, I | The general principles of evaluating the environmental impact (OVNS, which is the Ukrainian abbreviation) procedure in Ukraine are described by the national laws "On the environmental protection" and "On the environmental expertise". | | OK |
| 1.3. Is the project in line with relevant legislation and plans in the host country? | /4/ | DR, I | Yes, the project is in line with legislation of the host Party. See References. | | OK |

**Table 5 Resolution of Corrective Action and Clarification Requests**

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| Clarification Request (CL) 01:<br>There is no description of current good practices and its reflection in project design engineering | A.4.2.1. | "The proposed project foresees application of modern good practice engineering solutions. It would allow usage of slag as raw material and produce clinker of high quality." The clarification has been added into section A.4.2 in PDD ver. 3.1. | The issue is closed based on clarification and correction provided. |
| Clarification Request (CL) 02:<br>It isn't clearly defined if project technology could result in a significantly better performance than any commonly used technologies in the host country | A.4.2.2. | "The project technology will result in better performance of clinker production process will reduce the consumption of natural raw materials due to substitution of them by blast furnace slag." The clarification has been added into section A.4.2 in PDD ver. 3.1. | The clarification is accepted. The issue is closed. |
| Corrective Action Request (CAR) 01<br>Letters of approval by the parties involved are absent | A.5.1 | After finishing project determination report, the PDD and Determination Report will be presented to National Environmental Investments Agency of Ukraine for receiving the Letter of | All the LoAs were issued and provided to the determination team (please see reference). Issue is closed. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| | | Approval. The Letter of Approval from the country - investor will be provided after approval of project by Ukraine.<br>All the LoAs are issued and presented to the determination team. | |
| Clarification Request (CL) 03<br>Please, clarify if the project technology is likely to be substituted by other or more efficient technologies within the project period. | A.4.2.3. | "It is not foreseen to substitute the production equipment with the new one or equipment employing new production process." The clarification has been added into section A.4.2 in PDD ver. 3.1. | The issue is closed based on corrections made. |
| Clarification Request (CL) 04<br>Basic assumptions are not summarized | B.1.4. | "The baseline emissions are established as follows:<br>1. Emission sources in the baseline are: calcination; combustion of fuel in the kiln; consumption of electricity for raw mill preparation, kiln operation, fuel preparation and feeding; consumption of additional fuel for drying of raw meal or fuel drying (e.g. if coal is used);<br>2. The baseline emission due to the kiln fuel combustion is based on a three years average kiln efficiency | The issue is closed based on correction provided. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| | | and the carbon emission factor of the (or mix of) fuel used in the project scenario. This approach is identical to the approach used in the project JI0001 "Switch from wet-to-dry process at Podilsky Cement" which determination was made final;<br>3. Similarly to the approach used in the project JI0001, baseline setting of AMC percentage and non-carbonated CaO and MgO contents in the raw mill and clinker by fixing the average content of these oxides in slurry (raw mix) and clinker;<br>4. Clinker and raw mix volumes were set in a similar way to ACM0015;<br>5. The baseline emissions of the grid are established using the Ukrainian standardized grid factor as mentioned in Annex 2;<br><br>The following assumptions were made in | |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| | | order to elaborate the baseline:<br>• The emissions at the quarry would remain the same. Actually, substitution of quarried raw materials by AMC would lead to fewer raw materials quarried. Not taking this reduction into account is conservative;<br>• The technical life time of the existing kiln extends to at least the end of the crediting period" Clarifications have been added in PDD ver3.1. | |
| Clarification Request (CL) 07<br>Please provide the summary of national policies and circumstances relevant to the baseline of the proposed project activity | B.2.6. | "Existing Ukrainian laws and regulations do not force or require the usage of AMC in clinker manufacturing. No industrial policy exists which regulates usage of slag as raw material for cement manufacture." Summary has been included in Section B.1 of PDD ver3.1. | The issue is closed based on amendments made to the PDD. |
| Corrective Action Request (CAR) 02<br>The latest version of "Tool for the demonstration and assessment of additionality" is 5.2., while version 4 is | B.1.3. | Corrected in PDD ver3.0. The "Tool for the demonstration and assessment of additionality" of version 5.2 is used in PDD ver3.1. | The issue is closed based on correction provided. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| used in the PDD. Please provide appropriate corrections. | | | |
| Corrective Action Request (CAR) 03<br>According to the latest version of "Tool for the demonstration and assessment of additionality" the completion of sub-step 3b is necessary in order to proceed to the step 4. Please include it to the PDD. | B.2.1. | Step 3: Barrier analysis is optional and is not applied in PDD ver3.1. | The issue is closed based on correction provided. |
| Corrective Action Request (CAR) 04<br>According to the latest version of "Tool for the demonstration and assessment of additionality" step 4 must be divided into sub-steps 4a and 4b. Please provide appropriate corrections in the PDD. | B.2.1. | Step 4: Common practice analysis uses two steps in PDD ver3.1. | Issue is closed due to amendments made in the project design documents. |
| Corrective Action Request (CAR) 05<br>Please indicate IRR and NPV with direct numbers. | B.2.1. | Section B.2 has been fully revised in PDD ver3.1. | Issue is closed based on corrections provided in the section B of the project design documents. |
| Corrective Action Request (CAR) 06<br>Please provide calculation of payback period in the SD1. Also SD1 does not show IRR numbers showing mistake | B.2.1. | Section B.2 has been fully revised in PDD ver3.1. | *Conclusion:*<br>Actual IRR values for project activity and deviation scenarios are still missing. If Excel can |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| signs instead. | | | not resolve negative inputs just indicate that IRR has negative value. Please correct.<br>*Final conclusion:*<br>Issue is closed based on amendments provided in the PDD. |
| Clarification Request (CL) 08<br>The identification of sources of emissions must be clarified. Changes in grid electricity in the raw material transport should be defined concretely by the types of that stuff.<br>Milling preparation may cause increasing of electricity consumption by the milling and drying of slag | B.3.1. | The project boundary includes the whole cement plant (excluding the cement production from clinker and quarrying of raw materials). Indirect emissions due to consumption of grid electricity used for raw material handling within the plant are included. | The issue is closed based on clarification and correction provided. |
| Corrective Action Request (CAR)13<br>Please, adjust the date of the completing baselines to the format DD/MM/YYYY | B.4.1. | Adjusted in PDD ver3.1. | Issue is closed based on corrections provided in the PDD version 3.1. |
| Corrective Action Request (CAR) 14<br>Please provide operational lifetime in months. | C.2.1. | Provided in PDD ver3.1. | Issue is closed based on corrections made in the PDD version 3.1. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| Corrective Action Request (CAR)15<br>Please provide the length of the crediting period in years and months. | C.3.1. | Provided in PDD ver3.1. | Issue is closed based on amendments provided in the appropriate section of the PDD version 3.1. |
| Clarification Request (CL) 09<br>Transboundary environmental are not considered in the analysis. Please include. | F.1.5. | Transboundary effects are addressed in section F.2 of PDD ver3.1. | Issue is closed due to the corrections presented in the section F of the PDD. |
| Clarification Request (CL) 10<br>Please clarify how uncertainty is taken into account. | 1.1.6 | Uncertainty was taking into account by using IPCC CEF for fuels and standardised grid emission factor in PDD ver3.1. | Issue is closed. |
| Clarification Request (CL) 05<br>A company's benchmark can be used for the projects when the project activity upgrades existing process but the developer shall demonstrate that this benchmark has been consistently used in the past (at least for 3 years). Please provide relevant justification. | B.2.1. | Section B.2 has been fully revised in PDD ver3.0.<br>The analysis uses NPV as a benchmark. IRR is not used at all therefore IRR is not applicable. | Now benchmark is derived using average loan interest rates as of the project decision date. Issue is closed. |
| Corrective Action Request (CAR) 07 | B.2.1. | *Response 1:* | *Conclusion:* |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
|---|---|---|---|
| Guidance for the Assessment of Investment analysis article 4 requires the fair value of the assets at the end of the end of assessment period to be included in the cash flow for the final year. In our case the liquidation value of the assets is not included in cash flow calculations contradicting with the Guidance article 4. Please provide appropriate corrections. | | Fair value of assets at the end of the period has been introduced in B.2 PDD ver3.1.<br>*Response 2:*<br>The cash flow analysis still includes 10 years. First year (2008) is the year of start of investment. Since no slag is added in 2008, no influence of slag addition on the resulting cash flow occurs. | Please note that the model period has been reduced by one year compared with previous version. Now it includes 9 years of operation instead of 10. Please correct.<br>*Final conclusion:*<br>The liquidating value is OK. Issue is closed. |
| <u>Corrective Action Request (CAR) 08</u><br>Calculations in files Yugcement SD_1_ER.xls and Yugcement_SD_2__cashflow.xls are based on different annual production capacity 1000kt and 930kt (actually 930 tons indicated) of clinker respectively. Please correct whichever is wrong. | B.2.1. | Discrepancy has been corrected in PDD ver.3.1 and supporting documents: SD1 ER ver3.1 and SD2 CF ver2.0. | Now 500kt production capacity is foreseen for 2009-2017 in both cases. Issue is closed based on appropriate corrections. |
| <u>Corrective Action Request (CAR) 09</u><br>Financial calculations in the file Yugcement_SD_2__cashflow.xls are made not for the project scenario but for two different alternatives identified in Step | B.2.1. | Supporting document SD2 cashflow calculations has been revised for PDD version 3.1. Refer to SD2 CF ver2.0 | OK. Cash flow calculations now apply for single project scenario. Issue is closed based on corrections made in the PDD version 3.1. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| 1. Please note that for the benchmark analysis calculations for the project scenario which in this particular case is the combination for two scenarios (4% slag and 15% slag addition) shall be provided. Following stated above please correct table on the page 15 of the PDD. | | | |
| Corrective Action Request (CAR) 10<br>According to the Methodological tool for demonstration and assessment of additionality investment analysis shall refer to all crucial techno-economic parameters and assumptions such as capital costs, fuel prices, lifetimes... Some of the input values are missing preventing the user from reproducing your calculations results, for example the reference to the elements that cause slag cost increase, caolin and coal costs change, ERU price, emission reductions etc. Please amend the file Yugcement_SD_2__cashflow.xls accordingly. | B.2.1. | Supporting document SD2 cashflow calculations has been revised for PDD version 3.1. See the SD2 CF ver2.0. | Ok. Now model includes references to the parameters required. Issue is closed. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| Corrective Action Request (CAR) 11<br>Project emissions in the file Yugcement SD_1_ER.xls are different from those indicated in PDD on page 39. Thereby the emission reductions are different as well. Please correct the discrepancy. | B.2.1. | Discrepancy corrected in PDD ver.3.1 and supporting document. | Issue is closed based on amendments made in the PDD and supporting documents. |
| Clarification Request (CL) 06<br>On the page 18 of PDD the developer indicates that the project foresees some change in electricity consumption. At the same time file Yugcement_SD_2__cashflow.xls does not contain any calculations regarding electrical energy savings. Please clarify. | B.2.1. | *Response 1:*<br>The mentioned power consumption decrease in raw material preparation will decrease due to decrease of amount of raw materials used being partially substituted by slag. Preparation of slag (grinding, drying) will require additional electricity and fuel which is accounted for in the monitoring plan of PDD ver3.1.<br>*Response 2:*<br>True, it is expected that the power consumption for raw materials preparation will be decreased due to replacement of part of them by slag.<br>Of total specific power consumption for wet cement production, which includes: | *Conclusion:*<br>Please add company's economy associated with lower power consumption for raw materials preparation to the cash flow. Your model accounts for additional power consumption for slug preparation so you should account for power saving coming from lower raw materials consumption as well.<br>*Final conclusion:*<br>Issue is closed based on corrections and clarifications provided in the PDD. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| | | raw materials preparation, operation of kiln, grinding of clinker and cement handling, which is about 100 kWh/t cement, only small portion (<10 kWh/t) are consumed for raw material preparation. This decrease in consumption will be compensated by increased power consumption for slag as raw material grinding This is accounted for in cash flow calculation using increase in power consumption of some 50 kWh/t slag. | |
| Corrective Action Request (CAR) 12<br>Sensitivity analysis provides reasonable review of possible price variations in lines with recommendations of the Guidance but it refers to two alternatives not the actual project scenario. Please correct. | B.2.1. | *Response 1:*<br>Section B.2 including the sensitivity analysis has been revised in PDD ver3.1. See the SD CF ver.2.0<br>*Response 2:*<br>SD CF was corrected, see new version 3.0. | *Conclusion:*<br>Sensitivity analysis provides good review of project parameters variations now. Unfortunately calculations in scenarios 1-3 contain mistakes in input values for slag percentage use during 2009-2010 when compared with project scenario. Please correct. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| | | | *Final conclusion:*<br>Issue is closed based on corrections made in the project design document version 3.1. |
| <u>Corrective Action Request (CAR) 16</u><br>The title of the project is incorrect. PDD presented to ITR includes only consideration of slag addition. Switch from wet to dry process is not a subject of the PDD (e.g. it is directly stated in Section A.2 - "…only the slag addition is the subject of this PDD") and no connections with slag addition are provided. Please correct the title and descriptions throughout PDD accordingly. | A.1.1 | The PP proposes to keep the project title as it is. Reasons for this are:<br><br>1) PDD has been already published at UNFCC website and the LoE Ukraine has been issued.<br><br>2) The relevant text in PDD section A.2 has been amended to better explain the situation with new kiln which is not cancelled: "Further on, it is planned to build a new dry kiln and switch from wet to dry process from beginning of 2012. A principle decision on switch from wet to dry, however, is still to be made. So only the slag addition is the subject of this PDD. Should the decision to construct the new kiln to be finalized prior to the end of 2012, the Monitoring Plan will be | The issue is closed based on correction provided. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| | | amended to include the new data and will be re-determined." | |
| Corrective Action Request (CAR) 17<br>Section A.2 does not provide a concise, summarizing explanation of the baseline scenario and history of the project including its JI component as per Guidelines for users of the PDD form, v.2. | A.2.2 | A concise explanation of the baseline scenario and the project history, including its JI component has been included in Section A.2 of PDD rev3.2. | The issue is closed based on made amendments in the PDD. |
| Corrective Action Request (CAR) 18<br>Section A.4.2 does not contain relevant technical data of equipment installed under the project. | A.4.2.1 | Section "Technology to be employed for project implementation" has been added to PDD ver4.0 section A.4.2 which contains technical description of equipment used for 4% and 15% slag addition. | The issue is closed due to corrections provided in the PDD. |
| Clarification Request (CL) 11<br>It is simultaneously stated throughout PDD that slag is added and, at the same time, not added to slurry (for example in Section A.4.3 – "The project foresees the adoption of blast furnace slag (BFS) as decarbonised raw material in the raw meal fed to the kilns." and in Section | A.4.2.1 | Quote from A.4.2 refer to the situation before the project implementation when slag is not being added as raw material (sub-section "Current process layout" in A.4.2). The text in A.4.2 has been amended for clarity in new PDD version 4.0. | The issue is closed. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| A.4.2 "de-carbonated materials, like slag is not added to the slurry."). Please clarify if slag is added to slurry and use only one description throughout PDD. | | | |
| Corrective Action Request (CAR) 19<br>In the investment analysis and emission reduction calculation, for the year 2009 and 2010 only coal savings (consumption) are taken into account. According to the PDD natural gas will be also used in 2009 and 2010 (Section A.4.2 – "…the use of coal instead of gas is planned in the nearest future (scheduled from April 2010 onwards"). | B.2.1 | Remarks have been taken into account. The cash flow version 4.0 contains corrected calculation of savings, the usage of gas instead of coal in 2009 is taken into account.<br>However the results still strongly support our opinion that the project is additional. For the simplicity reason, gas usage during first three months of 2010 until switch to coal to take place in April 2010 is not taken into account. It is conservative, as savings are higher if coal is used. | The issue is closed based on correction provided. |
| Clarification Request (CL) 12<br>In the investment analysis kaolin is included as expenditure, but no mention of kaolin is found in the PDD. Please clarify how it is connected with slag addition. | B.2.1 | Addition of slag also requires changes in raw mill composition (proportion of other components, like clay, iron oxide, kaolin and loam will be changed, although not so significant as for limestone). Clarification has been added into PDD | Issue is closed due to appropriate amendments. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| | | version 4.0 Section A.4.2, p.7. | |
| Clarification Request (CL) 13<br>Please clarify sources of information for investment analysis input data as follows:<br>3. The cost of slag on the Ukrainian market is about 40 UAH per tonne (http://prom.ua/p298570-shlak-domennyj-granulirovannyj-gost-3476-74.html ; http://www.ua.all-biz.info/g440298 ). In the investment analysis the price 150 UAH per tonne is used. Please clarify why the slag used in the project is 4 time more expensive than on the market;<br>4. Please provide transparent calculation of coal savings coefficient (coefficients applied in the investment analysis are not in compliance with those in emission reduction calculation);<br>Please provide transparent calculation of the slurried raw material cost and provide | B.2.1 | Slag prices<br>The start of PDD preparation was December 2007, therefore all the indicators and prices for investment analysis were taken as of 1 January 2008. Though current slag prices are lower, as you indicated providing links to commercial offers dated beginning of 2010, since the second half of 2007 until mid 2008 blast furnace slag price in Ukraine experienced sharp increase up to some 100-110 UAH/t Ex Works (over 10 times by the end of 2007). With transportation cost added, the price could exceed 150 UAH/ton. After the slowdown in construction and iron industries, which began in autumn 2008, the slag prices quickly went down to current levels. Therefore we consider that the expectation of slag price of 150 UAH/ton at kiln was correct.<br>Coal and gas savings | The issue is closed based on clarification and correction provided. |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| sufficient evidences that raw materials savings coefficients pertains to slurried raw materials. | | The coal saving from 15% slag has been corrected from 0.02 to 0.029 t coal/t clinker.<br>Calculations of the emissions reduction was done using estimate of fuel saving of approximately 11 kcal/kg clinker per each 1% of slag added in the raw RM which results similar fuel saving (0.0292 t coal/ton of clinker). The actual change in kiln efficiency and in the resulting fuel emission reduction will be calculated in the course of monitoring.<br><br>The Excel file 20071210 SD_Yug Slag_ Justification containing calculations of fuel (coal and gas) as well as quarried raw materials saving has been provided for evidence. This file contains thermal and chemical calculation of the process of pyro-processing of the raw materials into the kiln. It accounts for chemical compositions of the RM constituents, their proportion, type, moisture and NCV of fuel and allow variation of them to see, for | |

| Draft report clarifications and corrective action requests by determination team | Ref. to checklist question in tables 2, 3 and 4 | Summary of project owner response | Determination team conclusion |
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| | | instance, the change in fuel consumption per ton of clinker produced in a kiln or to see the changes in RM composition in function of slag amount added. The input data and factors for the file were taken for site specifics of Yugcement<br>RM or slurry saving<br>See the Excel file 20071210 SD_Yug Slag_ Justification as evidence. | |
| Corrective Action Request (CAR) 20<br>It is not indicated in PDD, Section D.1 which of the approaches defined in JI Guidelines is used to establish the monitoring plan. | D.1.1 | In PDD ver4.0, section D.1 an indication of usage of JI specific approach has been included. | Issue is closed due to the amendment that was done. |

APPENDIX B: DETERMINATION TEAM

The determination team consists of the following personnel:

**Ivan G. Sokolov, Dr.Sci (biology, microbiology)**

Bureau Veritas Certification Climate Change Lead Verifier, Local Climate Change Product Manager, Acting CEO Bureau Veritas Ukraine

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 130 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is/was involved in the validation of over 50 JI projects.

**Kateryna Zinevych, M.Sci. (environmental science)**

Climate Change Verifier

Bureau Veritas Ukraine Health, Safety and Environment Project Manager

Kateryna Zinevych has graduated from National University of Kyiv-Mohyla Academy with the Master Degree in Environmental Science. She has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. She has undergone a training course on Clean Development Mechanism /Joint Implementation and she is involved in the determination/verification of 26 JI projects.

**Olena Manziuk, M.Sci. (environmental science)**

Climate Change Verifier Trainee

Bureau Veritas Ukraine Health, Safety and Environment Department specialist

She has graduated from National University of "Kyiv-Mohyla Academy" with the Master Degree in Environmental Science. She has successfully completed IRCA registered Lead Auditor Training Course for Environment Management Systems and Quality Management Systems. Also, Olena has completed training intensive course on Clean Development Mechanism (CDM) /Joint Implementation (JI), and is involved in the verification of 5 JI projects.

**Denis Pishchalov**
Financial Specialist
Bureau Veritas Ukraine Specialist in economics
Master of foreign trade, he has more than five year of experience in foreign trade and procurement. In particular one year as foreign trade manager in the Engineering Corporation (manufacturer and contractor in the municipal sector) and one year in the NIKO publishing house, one year as sales manager in the ITALCOM srl. In addition Denis has spent four years working as procurement specialist in Ukrainian Energy Service Company and two years as chief product manager in the Altset JSC. At the moment Denis is deputy director for finance and economy in the SUD of UTEM JSC.

Determination report was reviewed by:

**Leonid Yaskin, PhD (thermal engineering)**
Internal Technical Reviewer.
Bureau Veritas Certification Rus General Director, Climate Change Local Manager, Lead Auditor, IRCA Lead Tutor, Climate change Lead Verifier

He has over 30 years of experience in heat and power R&D, engineering, and management, environmental science and investment analysis of projects. He worked in Krzhizhanovsky Power Engineering Institute, All-Russian Teploelectroproject Institute, JSC Energoperspectiva. He worked for 8 years on behalf of European Commission as a monitor of Technical Assistance Projects. He is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). He performed over 250 audits since 2002. Also he is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered OHSAS 18001 Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in the determination of over 50 JI projects.