DETERMINATION REPORT

Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia

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DETERMINATION REPORT

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Client: JSC Ural Steel	Client ref.: Kamyshev Vladislav

Project Name: Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia
Country: Russia
GHG reducing Measure/Technology: Open-hearth-to-electric arc furnace plant steel production technology change and respective resource saving
ER estimate: 3 195 854 tonnes of CO_{2e} for 5 years crediting period of 2008-2012

Size:
☑ Large Scale
☐ Small Scale

Determination Phases:
☑ Desk Review
☑ Follow up interviews
☑ Resolution of outstanding issues

Determination Status
☑ Corrective Actions Requested
☑ Clarifications Requested
☐ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that, with the exception of the formal approval of the project activity by the focal point of Russia, the project Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia meets all relevant UNFCCC requirements for the JI and all relevant host country criteria.

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Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia

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Abbreviations

BOF	Basic Oxygen Furnace plant
CAR	Corrective Action Request
CCM	Continuous Casting Machine
CHP-SA	Combined Heat and Power and Steam-Air plant
CL	Clarification request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
EAFP	Electric Arch Furnace Plant
EIA	Environmental Impact Assessment
ERUPT	Programme of the emission reductions acquisition by the Ministry of Economic Affairs of the Netherlands
ERU(s)	Emission Reduction Unit(s)
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
JSC	Joint Stock Company
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
MP	Monitoring Plan
NGO	Non-governmental Organisation
NCSF	National Carbon Sequestration Foundation
OHP	Open-hearth Plant
PDD	Project Design Document
RAO UES	Russian Energy Company – United Energy System
UNFCCC	United Nations Framework Convention for Climate Change

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1 EXECUTIVE SUMMARY – DETERMINATION OPINION

DNV Certification AS (DNV) has performed a determination of the "Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia" JI project. The determination was performed on the basis of UNFCCC criteria for Joint Implementation projects, in particular the verification procedure under the Article 6 supervisory committee (JI track II) described in the Guidelines for the implementation of Article 6 of the Kyoto Protocol, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project envisages technical modernization and expansion of the electric arch furnace plant for steel production at the JSC Ural Steel. The designed measures will increase a relative share of the steel production at the electric arch furnace plant and accordingly reduce production at the open-hearth plant that lead to decrease of the steel scrap formation on site due to partial replacement of the more steel consuming technology and implementation of the continuous casting machines. The proposed measures will lead to resource saving because of reduced consumption of carbon-containing materials and fuels at all stages of the steel production cycle.

The project is proposed as a JI project between Russia and one of the European Union countries. However, the focal point of Russia have not yet provided approval letter to the project.

The project developer applied its own baseline and monitoring methodology for the project based on the JI guidance for baseline and monitoring setting, IPCC methodological approaches and own competence. It is sufficiently demonstrated that the project faces several relevant barriers and that the project is thus deemed to generate emission reductions that are additional to any that would have occurred in its absence.

The monitoring management system, including correct handling of measurement instruments and records, will be defined once the project is implemented.

The average annual emission reductions are 639 171 tonnes of CO_2eq during the 5 years crediting period (2008-2012). The underlying assumptions have been verified and it is deemed likely that the forecast amount is achieved.

Parties, stakeholders and NGOs were invited to provide comments on the project. No comments were received.

The project is expected to reduce the total environmental impact of JSC Ural Steel activity. The technical design documentation for the project has been submitted to environmental authorities and received positive endorsement.

In summary, it is DNV's opinion that, with the exception of the formal approval of the project activity by the focal point of Russia, the Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia project meets all relevant UNFCCC requirements for the JI and all relevant host country criteria.

2 INTRODUCTION

JSC Ural Steel has commissioned DNV Certification, International Climate Change Servicesto perform a determination of the Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia. This report summarises the findings of the determination of the project, performed 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 Guidelines for the implementation of Article 6 of the Kyoto Protocol and the subsequent decisions by the JI Supervisory Committee.

2.1 Objective

The purpose of the determination is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the 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).

2.2 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. DNV Certification, International Climate Change Services has based on the recommendations in the Validation and Verification Manual /3/ employed a risk-based approach in the determination, focusing on the identification of significant risks for project implementation and the generation of ERUs.

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.

3 METHODOLOGY

The determination consists of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final determination report and opinion.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the determination:

/1/ National Carbon Sequestration Foundation, Project Design Document for "Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia", version 01 of 2007-02-05, version 02 of 2007-06-05

/2/ National Carbon Sequestration Foundation, Excel file with calculations and balances for Project Design Document for "Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia", version 01 of 2007-02-05, version 02 of 2007-06-05

/3/ National Carbon Sequestration Foundation, Excel files with detailed calculation of the economic efficiency of the project and baseline scenario (IRR assessment), for Project Design Document for "Implementation of resource-saving technologies at JSC "Ural Steel", Novotroitsk, Russia", version 01 of 2007-02-05

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Determination and Verification Manual*. http://www.vvmanual.info

/5/ JISC, Guidance on Criteria for Baseline Setting and Monitoring, version 01.

/6/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories

/7/ Central Scientific Research Institute of Ferrous Metallurgy named after I.P. Bardin, Survey "Estimation of the condition of ferrous metallurgy of Russia for 1990-2005"

/8/ Russian business magazine "Expert", Article "Breakings from Metal Scrap", issue 42, November 13-19, 2006

http://www.expert.ru

/9/ JSC Ural Steel, Protocol of the meeting on the mechanisms of the Kyoto Protocol and the opportunity to attract the additional financing of emission reduction projects, 2005-03-22

/10/ JSC Ural Steel, Protocol of technical meeting "About the opportunity to attract additional carbon financing at the implementation of the investment project "Reconstruction of the electric arc-furnace shop", 2005-05-18

The main changes between the versions published for the 30 days stakeholder commenting period and the final version:

- The monitoring plan for baseline emissions has been completely revised as a response to a clarification request from DNV. The steel production at the OHF and EAF plants is determined through use of the *ex-ante* specific ratios that correspond to the rolled metals and steel production structure in the baseline scenario. The rolled metal output is monitored *ex-post.* The amounts of used carbon-containing materials, fuels, electricity and compressed air at each process stage in the baseline scenario are determined based on the specific consumption rates for each process output and monitored *ex-post* (the same values are applied for the project activity). An exception is made for the specific consumption rates applicable to activities (technological processes) of the EAF plant, these are determined *ex-ante.*
- The coal-tar pitch is added to the calculation model for the coke production;
- The monitoring plan has been clarified for all variables with regards to method of measurements, its frequency and source of date.

3.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/11/	2007-03-12	Shishkovets Serguey	JSC Ural Steel, Managing director	- Additionality of the project - Planes of technical development of the metallurgical works
/12/	2007-03-12	Kidyaev Serguey	JSC Ural Steel, Deputy director, Project coordinator	- Additionality of the project - Technical design and terms of the project implementation - Project management and coordination
/13/	2007-03-12	Kamyshev Vyacheslav	JSC Ural Steel, Environmental department chief, Project operational manager	- Baseline and project scenario confirmation - Assumptions and coefficients - ERUs estimates - Monitoring plan - Training - EIA
/14/	2007-03-12	Merkulin Oleg	JSC Ural Steel, Technical development department, Specialist	- Baseline and project scenario confirmation - Fix-ante coefficients - ERUs estimates - Monitoring plan

/15/	2007-03-13	Gutoreva Irina	JSC Ural Steel, Technical department, Specialist	- Baseline parameters values verification - Assumptions and coefficients
/16/	2007-03-13	Zyryanov Vladislav	JSC Ural Steel, Central laboratory, Chief	- Monitoring plan and methods of carbon content monitoring - QA/QC procedures for monitoring
/17/	2007-03-13	Sergeeva Elena	JSC Ural Steel, Laboratory of steel, Chief	- Monitoring plan and methods of carbon content monitoring for the steel production - Uncertainties
/18/	2007-03-13	Kalinushkin Viktor	JSC Ural Steel, Open-hearth furnace plant, Chief	- Baseline confirmation - Planes of technical development of the metallurgical works
/19/	2007-03-12-2007-03-13	Latypov Marat	NCSF, Head of the PDD development section, Project developer	- Baseline and project scenario confirmation - Assumptions and coefficients - ERUs estimates - Monitoring plan
/20/	2007-03-12-2007-03-13	Katinov Maxim	CAMCO International, Director, Business Development	- Additionality of the project - Project management and coordination - Monitoring plan

3.3 Resolution of Outstanding Issues

The objective of this phase of the determination is to resolve any outstanding issues which need be clarified prior to DNV Certification, International Climate Change Services positive conclusion on the project design. In order to ensure transparency a determination protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

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

The determination protocol consists of three tables. The different columns in these tables are described in the figure below. The completed determination protocol for the Implementation of resource-saving technologies at JSC “Ural Steel”, Novotroitsk, Russia project is enclosed in Appendix A to this report.

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Findings established during the determination can either be seen as a non-fulfilment of JI criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

i) mistakes have been made with a direct influence on project results;
ii) JI and/or methodology specific requirements have not been met; or
iii) there is a risk that the project would not be accepted as a JI project or that emission reductions will not be issued.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

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Determination Protocol Table 1: Mandatory Requirements for JI Project Activities		
Requirement	***Reference***	***Conclusion***
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)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*

Determination Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 01 - in effect as of: 15 June 2006. Each section is then further sub-divided.	*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 c**orrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the determination team has identified a need for further clarification.*

Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Determination conclusion***
If the conclusions from the draft Determination are either a CAR or a CL, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants during the communications with the determination team should be summarised in this section.*	*This section should summarise the determination team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Determination protocol tables

3.4 Internal Quality Control

The draft determination report including the initial determination findings underwent a technical review before being submitted to the project participants. The final determination report underwent another technical review before being forwarded to the JI Supervisory Committee. The technical review was performed by a technical reviewer qualified in accordance with DNV Certification's qualification scheme for JI determination and verification.

3.5 Determination Team

Role/Qualification	Last Name	First Name	Country
GHG auditor/JI validator	Myachin	Konstantin	Russia
Sector expert	Knut	Anderssen	Norway
Technical reviewer	Einar	Telnes	Norway

4 DETERMINATION FINDINGS

The findings of the determination are stated in the following sections. The determination criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the determination protocol in Appendix A.
The final determination findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

4.1 Participation Requirements

The project participants are Joint Stock Company (JSC) Ural Steel – project owner and private company "CAMCO Limited" – carbon asset developer.

The host Country is the Russian Federation. No sponsor country has been identified to date. The Russian Federation ratified the Kyoto Protocol on 2004-11-18, submitted the national GHG emissions registry to the UNFCCC and executed other actions to fulfil with the Kyoto protocol requirements. The formal approval by Russian Federation and the sponsor country have not yet been obtained.

4.2 Project Design

The project is implemented at the JSC Ural Steel located in Novotroitsk town, Orenburg region of Russia. The Ural Steel is a full-cycle metallurgical works that includes production of coke, sinter and iron, steel production in the open-heart furnaces and electric arch furnaces, casting and blooming-slabbing process, production of rolled metal.

The project envisages technical modernization and expansion of the electric arch furnace plant (EAFP) for steel production, including:

- Reconstruction of electric arc furnaces and supporting workshop facilities;
- Installation of the new ladle-furnaces;
- Installation of the combined continuous casting machines at electric arch furnaces.

The designed measures will increase a relative share of the steel production at EAF plant (up to 49% instead of current 30%) and accordingly reduce production at the open-hearth plant (OHP) that lead to decrease of the steel scrap formation on site due to partial replacement of the more steel consuming technology and implementation of the continuous casting machines. The proposed measures will lead to resource saving because of reduced consumption of the carbon-containing materials and fuels at all stages of the production steel cycle. At the same time the project considers the increase of the electricity consumption due to steel production expansion at the EAF plant.

The project design constitutes a good practice in Russia. Sufficient training to operate the EAF plant and provisions for monitoring and reporting will be administered to the personnel of JSC Ural Steel as confirmed during the follow-up interviews on-site.

The project activity started in February 2007 (reconstruction of the EAF plant) with an expected operational lifetime of 20 years. The crediting period constitutes five years starting from the 2008-01-01.

4.3 Baseline Determination

Based on the JI guidance /5/, IPCC methodological approaches and own competence the project developer applied his own methodology in selection and justification of the baseline. In the absence of any approved baseline methodologies for the considered JI project the use of the own-developed methodology is deemed appropriate.

The chosen baseline scenario is the continuation of the current practice of crude steel production at the OHF and EAF plants with no technical modernization. In the absence of the project activity the Ural Steel company would increase the rolled metal products output from 3 150 thousand tonnes (2008) up to 3 451 tonnes in 2012. The average annual production for the 5 years would be 3 386 thousand tonnes (considered the same for the project scenario). Further output increase is limited by the capacity of the existing plate and bar rolling mills. The EAF plant has no possibilities for augmentation (1093 tonnes/year) under the current practice. The crude steel production increase would take place through additional loading of the OHF plant and installation of two ladle furnaces there. These furnaces would allow enhancement of the quality of refined steel and expand the range of rolled products. It has been confirmed during follow-up interviews that Ural Steel works would not face restrictions from regional environmental authorities for the production increase based on the existing technologies and also would receive the necessary permits for this.

However the increased output of rolled metals requires producing more steel at the open-hearth furnaces that would lead to additional scrap metal during mould casting and operations at the blooming-slabbing plant (increasing up to 295 000 tonnes in 2009-2011).

The project boundary include following emission sources:

- Technological process of crude steel production (coke production, blast furnace plant, electric arch plant, open-hearth furnaces plant, blooming slabbing rolling plant);
- Own CHP-SA (combined heat and power – steam and air) plant;
- The electricity imported from the national grid system of RAO UES company;

- Utilization of the coke oven gas and blast-furnace gas at the Ural Steel facilities not included in the project (sinter production and hearthstone plants).

Only CO_2 emissions are included into project boundary. It should be noted that emissions from the bar rolling mill and two plate rolling mills that produce rolled metal are not included into the project boundary as the project has no influence on these. The CO_2 emissions for both the baseline and project scenario are the same from these mills.

The project implementation will reduce the original baseline emissions through resource savings and the influence on:

- Use of carbon-containing materials and fuels at basic stages of the steel production process from the coke-chemical plant until rolled metal production plants;
- Consumption of organic fuels (natural gas, coke oven gas, blast-furnace gas, power coal) by the own CHP-SA plant for generation of the electricity and compressed air;
- Consumption of organic fuels by the RAO UES power plants of the national grid of Russia for production of the electricity to be imported by the Ural Steel;
- The share between the coke oven gas and blast-furnace gas utilized in the process of steel production and by the Ural Steel CHP-SA and in other supporting industrial processes or flared.

The definition of the project boundary is deemed appropriate.

4.4 Additionality

Additionality of the project is assessed by using the step-by-step approach, proposed and elaborated by the project developer, based on the Guidance on criteria for baseline setting and monitoring, version 01 /5/.

Step 1. The identification of the probable alternatives to the project activity that can be a baseline scenario.

Four alternatives to the project activity were identified:

1. Continuation of the current situation in production of crude steel largely at the OHF plant and at the EAF plant with the use of old equipment and possibilities of the further steel output augmentation at the OHF plant;
2. Installation of basic oxygen furnace (BOF) plant;
3. Installation of the combined continuous casting machine at the OHF plant;
4. The project activity itself not considered as JI project that is modernization and expansion of the EAF plant combined with installation of the new continuous casting machines at the electric arch furnaces.

All proposed alternatives comply with the environmental and other legislation requirements. The alternatives represent common approaches for the metallurgical industry in the Russian Federation.

Step 2. Narrowing of baseline options excluding those alternatives that are not feasible in technical or economical terms

The analysis was performed to assess whether the proposed alternatives are technically feasible or economically attractive.

Alternative 1 is technically feasible for continuation in the foreseeable future, at least until 2012, based on regular maintenance that is representing common practice at the Ural Steel metallurgical works. Only incremental innovation will be required with installation of the two ladle furnaces at the OHF plan. These are designed to improve the quality of the steel and rolled metal. No change of the existing technological scheme of material and energy flows is required. The proposed alternative also does not conflict with the strategic interests of the JSC Ural Steel owner – holding company "Metalinvest" that has own metal ore fields and ore mining and enrichment plants.

Alternative 2 faces the significant technical and financial obstacles. It has been confirmed that costs of the BOF implementation are 3-4 times higher than alternative OHF extension or EAF plant modernization. In addition the BOF plant commission would require disassembling of the existing OHF plant and the installation of the new technology equipment that would make the substantial investment into OHF plant done in the recent years not worthwhile.

Alternative 3 is considered the least probable as the continuous casting machines (CCM) cannot be installed in the existing OHF plant due to space constraints. The CCMs installation would require complete reconstruction of the OHP plant and construction of the new building. This fact was confirmed during follow-up interviews.

Alternative 4, which is a project activity not considered as JI project, faces significant barriers identified and these are assessed in step 3.

Step 3. Definition, whether the proposed project scenario faces the significant barriers

Following barriers for the alternative proposed as project scenario without JI revenues have been described and proved:

- Strategic barrier

The JSC Ural Steel is a part of the Russian holding company "Metalinvest". Apart from the Ural Steel plant this holding company possess the own metal ore deposits and two mining and enrichment plants. The respective business interest of the company is to apply the own raw materials to make prime cost of steel production as low as possible. In 1991 Ural Steel started construction of the ladle furnaces for OHF plant that was suspended during the economic crisis in the 1990s. Thus, the proposed project activity faced the barrier of opposition to the strategic interests of the holding company "Metalinvest" and its shareholders concerned with increase of the own metal ore consumption. The strategic focus for the company has thus been the modernization of the steel plant and increase in quality steel output. The only justification of the JI related benefits for the Ural Steel supported to gain the positive decision of the holding company on the project implementation.

- Economic barrier

The production of steel in electric arch furnaces requires delivery of significant amounts of metal scrap. The new EAF plant at Ural Steel is designed for consumption of 40% of cast iron, however the remaining 60% of the raw material is metal scrap. Taking into account that project implementation will reduce the internal formation of scrap metal in the OHF plant, the company has to cover demand with scrap import. It is was confirmed that after project

implementation Ural Steel will need to spend €25 million annually to purchase scrap metal of desired quantity (180 thousand tonnes per €140 a ton, price of 2006).

- Metal scrap deficit barrier

The analysis of the international metal scrap market situation for the recent years demonstrate the emerged deficit of the scrap due to rapid increasing of the world's demand in that followed by the significant growth of the metallurgical industry in China and other developing countries. According to the Russian weekly business magazine "Expert" /8/, Russian was the largest metal scrap exporter in 2005 but the volume of the export is falling quickly because of growing demand on the domestic market. In 2006 more than 10 projects of the mini-metallurgical EAF plants have been already announced with use of the metal scrap as the only raw material. Simultaneously the general expansion of the EAF method in the steel production in the existing large metallurgical works in Russia has taken place since the end of the 1990s. The market forecast predict that Russia soon will became net importer of the raw material, which would make the Ural Steel more dependent on the foreign metal scrap market and expose the company to the volatile prices of the market. The emerging deficit of the metal scrap in Russia has been confirmed during follow-up interview with Ural Steel management. Ural Steel founded in the end of 2006 a special subsidiary for search of the scrap metal sources and its purchase to prepare the project implementation. The expected JI revenues provided grounds for funding of the subsidiary foundation and administrative and other costs of its activity.

Step 4. Investment Analysis

The project developer has applied an investment analysis to support the claim that the proposed project activity is less attractive than the baseline scenario chosen. An IRR analysis for alternative 1 and alternative 4 is carried out. An electronic table in Excel format with IRR calculations was submitted to DNV and has been verified.

Options	Required investments, million, USD	IRR without JI revenues
Alternative 1	210	37%
Alternative 4	408	37%

The proposed analysis demonstrates that despite alternative 4 is attractive for the investment in general terms and the IRR for that is high, the alternative 1 requires almost half the investment. Since the Ural Steel used borrowed funds for investment and had not enough collateral for the higher loan the risks associated with alternative 4 had been considered unreasonable initially. However the JI revenue from the project allows to obtain the additional income of around 13 million USD per year, that as it was confirmed during follow-up interview made a sound factor for the JSC "Ural Steel" stakeholders for decision in favor of the JI project activity. The stakeholder's decision was properly documented /9/, /10/.

A survey of the Russian metallurgical industry conducted by the Central Scientific Research Institute of Ferrous Metallurgy named after I.P. Bardin /7/ confirms the facts provided by the project developer in the additionality analysis. According to the survey, the proposed project does not reflect any common practice for the metallurgical enterprises like Ural Steel (grouped by size, financial assets and income). The survey indicates that for the enterprises in this group the general way of the development to date is the maintenance or mere modernization of the existing facilities including open-hearth furnaces with mould casting. The extended restriction with implementation of the modern technologies for the enterprises of this group is limited by the disposal of the funds and insufficient profit in comparison with the large metal smelters in Russia.

In conclusion, it is deemed sufficiently demonstrated that the proposed project is additional.

4.5 Monitoring

4.5.1 Parameters determined ex-ante

The project developer has applied its own monitoring methodology based on the JI guidance /5/, IPCC methodological approaches and own competence. In the absence of any approved monitoring methodologies for the considered JI project the use of the own-developed methodology is deemed appropriate.

The monitoring plan in the PDD makes provisions for the complete monitoring of the CO_2 emissions within the project boundary for each source of emission:

- The crude steel production process;
- Electricity and compressed air produced by own facilities (CHP-SA plant);
- Electricity imported from the national grid;
- Utilization of the residual blast-furnace and coke-oven gases that is not used in the steel production process and by the CHP-SA plant.

Different monitoring approaches for the emissions sources have been applied.

The ex-post CO_2 emissions (project emissions) from the steel production process are monitored through a carbon material balance method based on the complete monitoring and measurements of the carbon content for all carbon-containing inputs and outputs at each stage of the process influenced by the project activity. The difference between the carbon input (carbon-containing materials, i.e. coking coal, coke, pig iron etc. and fuels, i.e. natural gas, blast-furnace gas, coke-oven gas, fuel oil) and output (i.e. coke, pig iron, benzol, coal-tar pitch, steel) for each stage is equal to the carbon emitted into the atmosphere.

The ex-post CO_2 emissions from the CHP-SA plant of Ural Steel are defined through step-by-step determination of the carbon flows associated with fuel combustion:

1. Quantity of electricity and compressed air required for the crude steel production;
2. Total fuel consumption for the generation of the electricity and compressed air required for the steel production;
3. Monitoring of the actual fuel mix used;
4. Calculation of the respective CO_2 emissions for each fuel used and gross emissions from fuel combustion.

The ex-post CO_2 emissions from the electricity imported from the Russian national grid are defined through monitoring of the amount of electricity imported to the project activity multiplied by the carbon emission factor for electricity determined for Russia as issued by SenterNovem for the Dutch ERUPT programme.

The ex-post CO_2 emissions from utilization of residual blast-furnace and coke-oven gases are defined as the difference between monitored amounts of blast-furnace gas and coke-oven gas produced and the amount of these gases used in the steel production process. The respective net calorific values of the gases are also monitored.

For the monitoring of the baseline emissions the actual carbon content in the carbon-containing materials and fuels for material inputs and outputs at the each stage of the crude steel production technological process, the actual amounts of fuel used in CHP-SA and fuel share, the amount of blast-furnace and coke-oven gases utilized and their net calorific values are applied in the same way as for the project emissions. The amount of the carbon-containing materials and fuel used as well as material output from the process stages (coke, pig iron, benzol, coal-tar pitch, steel and other) and electricity consumption are fixed-ante for the years 2008-2012 based on the official projected balance of material and energy in the baseline scenario. This balance has been verified during the follow-up interviews, and provide for the conclusion that coefficients of consumptions of the included carbon-containing material, fuel and electricity per unit of output products from the steel production process or energy production are conservative.

Finally, the total output of the rolled metal (in tonnes) by the two plate rolling mills and bar rolling mills is monitored, which allows the specific CO_2 emissions per ton of rolled metal output in the baseline and project scenario to be calculated. However, this is used for cross-checking purposes only. The rolled metal output in the baseline scenario and in the project activity is assumed to be the same.

No leakage is considered under the project activity, which is deemed appropriate and in line with the applied baseline and monitoring methodology.

It has been clarified that the operation and maintenance manuals for the modernised EAF plant will be elaborated accordingly once the project is implemented completely. All monitoring and records handling responsibility will be clearly defined and respective procedures established as a part of the certified ISO 9001 quality management system at Ural Steel before the start of the project operation.

4.6 Estimate of GHG Emissions

The calculations of the baseline emissions and project emissions are based on the comprehensive material and energy balances in the baseline scenario and in the project scenario for years of 2008-2012 as prepared by the Ural Steel. The emission reductions are estimated as the difference between CO_2 emissions in the baseline and the project scenario in accordance with the balances mentioned. The ERUs will be calculated based on the actual rolled metal and crude steel production and specific values of the CO_2 emissions for each of emission sources.

The consumption coefficients of the certain carbon-containing material, fuel and electricity per unit of output of the components in the steel production process or energy production are verified to be conservative.

The carbon content in the carbon-containing materials and fuels used as inputs or outputs of the steel production technological process, the electricity generation at the own CHP-SA plant or blast-furnace and coke-oven gas utilisation are verified to be conservative and are based either on the monitoring in the laboratories of the Ural Steel (as, for instance, carbon content in the pig iron and steel produced) or monitored externally by the producer and regularly reported in supplier's documentation.

The IPCC 2006 /6/ oxidation factors for coal (0.98), fuel oil (0.99), and natural, blast-furnace and coke-oven gases (0.995) are used. Then the monitored carbon contents for materials and fuels are multiplied by their fixed-ante amounts, and the corresponding baseline emissions are calculated.

Uncertainties are properly taken into account as the monitoring standards used (most of them are State monitoring standards in Russia) incorporate uncertainties and thus the resulting calculations have no need for adjustment.

The formulas applied have been assessed and are found to provide complete and accurate reporting of baseline data, project performance and project emissions data.

The emission reduction forecast has been verified and it is deemed likely that the forecast amount of 3 195 854 tonnes of CO_{2e} is achieved during the crediting period.

4.7 Environmental Impacts

The project started in February 2007. During follow-up interviews on site it was confirmed that technical design documentation for the project, including the EIA has been submitted to the respective authorities and received positive endorsement from environmental authorities. Currently the Ural Steel has all necessary environmental permissions for the metal production.

As a result of the project implementation it has been demonstrated that during the project activity in 2008-2012 the gross emissions of the main atmospheric pollutants will be significantly reduced, for instance:

- Carbon oxide (3,001,200 tonnes);
- Nitric oxide (1,037,180 tonnes);
- Sulfur dioxide (1,539,900 tonnes);
- Particulate matter (970,130 tonnes).

4.8 Comments by Local Stakeholders

The JSC Ural Steel together with the project developer and consultant – National Carbon Sequestration Foundation (NCSF) informed the various stakeholders on the project design and corresponding JI opportunities bound with the project implementation.

The information about the project was published at the website of NSCF (www.ncsf.ru) and in the regional press, for example, the newspaper "Metallurgist" (Thursday, November 9,

2006 No 125 (5634) and newspaper “Orenburzhye” (Thursday, November 9, 2006 No 174 (3539)).

Meetings with with representatives of the regional bodies and non-government organizations have been conducted.

As it was clarified on the follow-up interviews all received comments were positive and local stakeholders supported implementation of the project.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD, version 1 of 2007-02-05 was made publicly available on JI UNFCCC’s official website[1] from 2007-02-14 to 2007-03-15 and Parties, stakeholders and NGOs were through the JI website invited to provide comments during a 30 days period.

No comments were received.

[1] http://ji.unfccc.int/JI_Projects/Verification/PDD

APPENDIX A

JI DETERMINATION PROTOCOL

DETERMINATION REPORT

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

Requirement	Reference	Conclusion
The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	**CAR 1**
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
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
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
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, JI Modalities, §20	~~**CAR 2**~~
The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	OK
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
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
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
The project desing document shall be made publicly available and Parties, stakeholders and	Marrakech Accords,	OK

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Requirement	Reference	Conclusion
UNFCCC accredited observers shall be invited to, within 30 days, provide comments	JI Modalities, §32	
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
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
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
The baseline methodology shall exclude to earn emission reductions for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	OK
The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	OK

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Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR	The project activity is located at the JSC Ural Steel metallurgical works in Novotroitsk town, Orenburg region of the Russian Federation.		OK
Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	The project boundary are clearly defined and include following emission sources: ▪ Technological process of the crude steel production (coke production, blast furnace plant, electric arch plant, open-hearth furnaces plant, blooming slabbing rolling plant); ▪ Own CHP-SA (combined heat and power – steam and air) plant; ▪ The electricity imported from the national grid system of RAO UES		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			company; ▪ Utilization of the coke oven gas and blast-furnace gas at the Ural Steel facilities not included in the project (sinter production and hearthstone plants). Only CO_2 emissions are included into project boundary. Emissions from the bar rolling mill and two plate rolling mills that produce rolled metal are not included into the project boundary as the project has no influence to them.		
Participation Requirements *Referring to Part A and Annex 1 of the PDD as well as the JI glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					
Which Parties and project participants are participating in the project?	/1/	DR	The legal entity project participant is JSC JSC Ural Steel, Russia. CI CAMCO Limited - is the project Carbon Asset Developer.		OK
Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been	/1/	DR	The Letter of Approval of the host country Russian Federation has not been submitted to	CAR 1 ~~CAR 2~~	

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
authorized by an involved Party?			DNV. The JI focal point of Russian Federation was officially designated on 28 May 2007.		
Technology to be employed *Determination of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The AIE should ensure that environmentally safe and sound technology and know-how is used.*					
Does the project design engineering reflect current good practices?	/1/	DR I	Yes. It has been confirmed that project design constitutes the good practice in the Russian Federation.		OK
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?	/1/	DR I	The increased steel production in the modernised electric arch furnace plant will result in significantly better performance than commonly used technology of the steel production in the open-hearth furnaces. The producer of the equipment is a German company SMS-EMAG, AG The increased use of EAF and reduced use of OHF in the steel production will reduce the environmental impact, improve the		OK

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			production efficiency and improve labour safety conditions.		
Does the project make provisions for meeting training and maintenance needs?	/1/	DR I	Yes. The operation of the modernised EAF plant will require high-competent staff. The producer of equipment will conduct necessary initial training for operational and management personnel. The Ural Steel has a developed training management system for personnel and certified by the ISO 9001:2000 international standard.		OK
B. Project Baseline *The determination of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
Is the discussion and selection of the baseline methodology transparent?	/1/ /5/	DR	Yes, the discussion and selection of the baseline methodology is transparent. All necessary information is provided in the PDD. The developer applied his own methodology		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			in selection and justification of the baseline based on the JI Guidance for baseline and monitoring setting, IPCC methodological approaches and own competence.		
Does the baseline methodology specify data sources and assumptions?	/1/	DR I	The source of the data used for the baseline was verified during the site visit. The main source of the date is the comprehensive official balances of material and energy in the baseline scenario for years of 2008-2012 prepared by Ural Steel.		OK
Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)	/1/	DR	The baseline methodology proposed describes the sources of baseline emissions and make grounds for their calculations via formulae used. The description consider: ▪ Use of carbon-containing materials and fuels at basic stages of the steel production technological process from the coke-chemical plant downstream to rolled metal production plants; ▪ Consumption of organic fuels (natural gas, coke oven gas, blast-furnace gas, power coal) by the own CHP-SA plant		OK

DETERMINATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			for generation of the electricity and compressed air; ▪ Consumption of fuels by the RAO UES power plants of the national grid of Russian Federation for production of electricity (grid factor) to be imported by the Ural Steel; ▪ The share between the coke oven gas and blast-furnace gas utilized at the stages of steel production, by the Ural Steel CHP-SA and in other industrial processes or flared. In the PDD the formation of the coal-tar pitch in the process of the coke production has not been included into consideration. However, this carbon-containing material is formed in significant amounts (almost 8 times more than benzol, by Ural Steel production data) and its absence makes applied algorithms of the baseline and project emissions calculations inadequate.	~~**CAR 3**~~	
Does the baseline methodology specify types of variables used	/1/	DR	Yes. The baseline methodology sufficiently		OK

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(e.g. fuels used, fuel consumption rates, etc)?			takes into account all types of variables used.		
Does the baseline methodology specify the spatial level of data (local, regional, national)?	/1/	DR I	The methodology comprises use of two levels of data source, local (Ural Steel data) and national (carbon emission factor for the Russian national grid).		OK
Baseline Scenario Determination *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*					
What is the baseline scenario?	/1/	DR I	The chosen baseline scenario is the continuation of the current practice of crude steel production at the OHF and EAF plants with no technical modernization. In the absence of the project activity the Ural Steel company would increase the rolled metal products output from 3 150 thousand tonnes (2008) up to 3 451 tonnes in 2012. The average annual production for the 5 years would be 3 386 thousand tonnes (considered the same for the project scenario). A further		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			output increase is limited by the capacity of the existing plate and bar rolling mills. As the production capacity of the currently used EAFP equipment (1093 tonnes/year) is reached, the perspective production plan will be achieved by the installation of two ladle furnaces at the OHF plant to provide enhancement of the produced steel quality alternative to the steel smelted in EAF.		
What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR	Several plausible alternatives for the baseline scenario have been identified: ▪ Installation of basic oxygen furnace plant; ▪ Installation of the combined continuous casting machine at the OHF plant; ▪ The project activity not considered as JI project that is modernization and expansion of the EAF plant combined with installation of the new continuous casting machines at the electric arch furnaces. These alternatives face different hurdles for		OK

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			the implementation. The respective assessment is given in the additionality discussion.		
Has the baseline scenario been determined according to the methodology?	/1/	DR	Yes. The methodology was developed specially for the project.		OK
Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR I	Yes. It has been confirmed during follow-up interviews that conservative assumptions were used for determination of the baseline scenario.		OK
Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /7/ /8/	DR	The baseline scenario determination takes into account the survey of the metallurgical industry in Russia prepared by the Central Scientific Research Institute of Ferrous Metallurgy named after I.P. Bardin and analysis of the metal scrap market situation. The conducted assessment is deemed sufficient.		OK
Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	The baseline scenario determination is compatible with the available data. The literature and sources are clearly referenced		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			in PDD.		
Have the major risks to the baseline been identified?	/1/	DR I	The major risks to the baseline haven't been identified in PDD. During the follow-up interview the only methodological risk has been identified for the baseline. The Ural Steel could additionally modernise the technological process of the steel production and/or increase the capacity of the rolled metal production that is a normal practice of investment as well as efficiency increase in the metallurgical industry. However, the monitoring of the baseline and project emissions in the PDD had no provisions to take the above mentioned changes into account. The developer will accordingly up-date the PDD.		OK
Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
What is the methodology selected to demonstrate additionality?	/1/	DR	The developer used the own methodology for		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/5/		the additionality demonstration using a step-by-step approach and taking into account economic attractiveness of alternative options, based on the Guidance on criteria for baseline setting and monitoring		
Is the project additionality assessed according to the methodology?	/1/ /9/ /10/	DR I	Yes. The additionality assessment has been made in several steps: *Step 1. The identification of the probable alternatives to the project activity that can be a baseline scenario.* Four alternatives of the baseline have been identified: 1. The continuation of the current practice of crude steel production at the OHF and EAF plants with no technical modernization; 2. Installation of a basic oxygen furnace plant; 3. Installation of the combined continuous casting machine at the OHF plant; 4. The project activity not considered as JI project, that is modernization and expansion of the EAF plant combined with installation		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			of the new continuous casting machines at the electric arch furnaces. *Step 2. Narrowing of baseline options excluding those alternatives that are not feasible in technical or economical terms* Alternative 1 is technically feasible for continuation in the foreseeable future, at least until 2012, and only incremental innovation will be required for installation of two ladle furnaces at the OHF plan to improve quality to the level of the EAF plant. Alternative 2 faces significant technical and financial obstacles: it has been clarified that costs of the BOF implementation are 3-4 times higher than alternative OHF extension or EAF plant modernization. The BOF plant commission would require disassembling of the existing OHF plant that would make senseless the substantial investing into OHF plant done in the recent years. Alternative 3 is least probable as the continuous casting machines cannot be installed in the existing OHF plant due to		

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			space limitations. The CCMs installation would require complete reconstruction of the OHP plant and construction of the new building. This fact was confirmed during follow-up interviews. Alternative 4 which is the project activity not considered as JI project faces significant barriers identified and assessed in step 3. *Step 3. Definition whether the proposed project scenario faces significant barriers* The following barriers for the alternative proposed as project scenario without JI revenues have been described and confirmed during follow-up interviews: ▪ Strategic barrier The JSC Ural Steel owner – holding company "Metalinvest" has own ore field and ore processing plants. The strategic interest of the company is to rely on the own sources of the raw materials to the highest possible extent. ▪ Economic barrier		

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			It has been confirmed that project implementation will significantly increase the demand in the metal scrap. Taking into account the prices for that, the Ural Steel will significantly increase the costs of the steel production. ▪ Metal scrap deficit barrier The metal scrap market survey, and forecasts, envisage a plausible scrap deficit in the Russian Federation. The same deficit is observed on the world scrap market and the project implementation will result in considerable dependence of metal scrap import for Ural Steel. *Step 4. Investment Analysis* The IRR analysis and necessary investments comparison for identified alternative 1 and alternative 4 was carried out. An electronic table in Excel format with IRR calculations was submitted to DNV. It has been demonstrated that the project and baseline scenario has a same IRR without JI revenues		

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			(37%), while the investment for the baseline scenario is half of that for the project scenario. The clarification is needed on how the exclusion of the alternative 4 has been made as the IRR for alternative 1 and alternative 4 is equal. The bigger investment would lead in this case to higher income. It is not clear whether the capital limitation for the larger investment existed.	~~CL 1~~	
Are all assumptions stated in a transparent and conservative manner?	/1/	DR I	Yes. The additionality assessment has been made in transparent and traceable matter. All assumptions used have been clarified and confirmed during the follow-up interview on site. The Excel file with sufficient IRR calculations for the baseline and project scenario has been prepared by the Ural Steel and submitted to DNV.		OK
Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /7/	DR	Yes. The necessary documented evidences of the Ural Steel have been provided. The external information sources:		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/8/		▪ The survey of the Russian metallurgical industry conducted by the Central Scientific Research Institute of Ferrous Metallurgy named after I.P. Bardin; ▪ The "Expert" weekly Russian business magazine, article "Breakings from Metal Scrap", issue 42, November 13-19, 2006 have been reviewed and they confirm the facts provided by the project developer in the additionality analysis.		
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR	The starting data of the project is February 2005. Expected operational lifetime of the project is 20 years.		OK
Is the start of the crediting period clearly defined and reasonable?	/1/	DR	The length of the crediting period is 5 from 2008-01-01 to 2012-12-31.		OK
D. Monitoring Methodology					

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
It is assessed whether the project applies an appropriate baseline methodology.					
Is the monitoring plan documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	The monitoring plan contains all necessary variables in accordance with developed monitoring methodology and description required by the JI PDD form. However the method of measurements, its frequency and reference to the used methodology or standard have not been presented.	~~**CAR 4**~~	OK
Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of ERUs, for this project activity, whichever occurs later?	/1/	DR	Yes, it has been confirmed during the site visit.		OK
Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	No. In the PDD the formation of the coal-tar pitch in the process of the coke production has not been included into consideration. However, this carbon-containing material is formed in significant amounts (almost 8 times more than benzol, by Ural Steel	~~CAR 3~~	OK

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			production data) and its absence makes applied algorithms of the baseline and project emissions calculations inadequate.		
Are the choices of project GHG indicators reasonable and conservative?	/1/	DR	Yes. The GHG indicators chosen make adequate provisions for the monitoring of all emission sources.		OK
Is the measurement *method* clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR	No. See previous comments.	~~CAR 4~~	OK
Is the measurement *equipment* described and deemed appropriate?	/1/	DR	Idem	~~CAR 4~~	OK
Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR I	Yes. It was confirmed that applied monitoring standards to be used for the carbon content definition by the Ural Steel laboratory of by the external suppliers are appropriate. The main part of them is the specially designed State monitoring standards.		OK
Is the measurement *interval* identified and deemed appropriate?	/1/	DR	No. See previous comments.	~~CAR 4~~	OK
Is the *registration*, *monitoring*, *measurement* and *reporting*	/1/	DR	During follow-up interviews on site it was		OK

DETERMINATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
procedure defined?			confirmed that monitoring and archiving of the required parameters is done currently as a part of the day-to-day production activity of the Ural Steel. However the special procedure for the project related data collection and reporting is expected to be developed soon in line with the enterprise's quality management system.		
Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR I	Yes. It was confirmed that applied monitoring standards to be used for the carbon content definition by the Ural Steel laboratory of by the external suppliers are appropriate. The main part of them is the specially designed state monitoring standards. It has been confirmed that necessary maintenance and periodic checking and calibration for the monitoring equipment is done.		OK
Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	During follow-up interviews on site it was confirmed that monitoring and archiving of the required parameters is done currently as a		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			part of the day-to-day production activity of the Ural Steel. However the special procedure for the project related data collection and reporting is expected to be developed soon in line with the enterprise's quality management system.		
Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR I	The monitoring plan contains all necessary variables in accordance with developed monitoring methodology and description required by the JI PDD form. However the method of measurements, its frequency and reference to the used methodology or standard have not been presented. As soon as during the crediting period the Ural Steel could additionally modernize its facilities, for instance augment the capacity of the bar rolled mill or plate rolled mill its influence to the carbon balance and resulting ERUs would be unpredictable.	~~CAR 4~~ ~~CL 2~~	OK

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			Thus, monitoring of the specific values of the carbon emissions per ton of rolled metal for each source of emissions in the baseline is more preferable and will allow to trace any changes in the carbon balance with regards to the ERUs generation. It's not clear why the project developer applies only final specific value of the CO_2 emissions per ton of the rolled metal because this value can be used only for cross-check purpose		
Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	The same as for the project emissions.		OK
Is the measurement *method* clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Idem.	~~CAR 4~~	OK
Is the measurement *equipment* described and deemed appropriate?	/1/	DR	Idem.	~~CAR 4~~	OK
Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Idem.		OK

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Is the measurement *interval* for baseline data identified and deemed appropriate?	/1/	DR	Idem.	~~CAR 4~~	OK
Is the *registration, monitoring, measurement* and *reporting* procedure defined?	/1/	DR	Idem.		OK
Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Idem.		OK
Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Idem.		OK
Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	The leakages are not considered under the project.		OK
Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are*					

DETERMINATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
addressed.					
Is the authority and responsibility of overall project management clearly described?	/1/	DR I	The project coordination is done by the Ural Steel deputy director. The operational management related to the project and project reporting will be done by the environmental protection department. The NCSF and CAMCO will provide methodological assistance to Ural Steel if needed. The special procedure for the project related data collection and reporting at the Ural Steel is expected to be developed soon in line with the enterprise's quality management system.		OK
Are procedures identified for training of monitoring personnel?	/1/	DR I	The training is provided in accordance with Ural Steel's procedures.		OK
Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	The emergency preparedness procedures for the project are the same as currently existing at Ural Steel.		OK
Are procedures identified for review of reported results/data?	/1/	DR I	See the previous comments.		OK
Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	See the previous comments.		OK

DETERMINATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
		I			
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/ /2/	DR I	Yes. All applied calculations were presented in the PDD or supporting Excel files and verified on-site. The consumption coefficients of certain carbon-containing material, fuel and electricity per unit of output of the components in the steel production process or energy production are verified to be conservative and used at the Ural Steel for monthly and annual planning.		OK

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The carbon content in the carbon-containing materials and fuels which are inputs or outputs of the steel production technological process, electricity generation at the own CHP-SA plant or blast-furnace and coke-oven gas utilisation are verified to be conservative and based either on the monitoring in the own laboratories of the Ural Steel or monitored externally by the producer and regularly reported in supplier's documentation. The IPCC 2006 /6/ oxidation factors for coal (0.98), fuel oil (0.99), and natural, blast-furnace and coke-oven gases (0.995) are used.		
Have conservative assumptions been used when calculating the project emissions?	/1/	DR I	Yes. It has been confirmed during follow-up interviews that conservative assumptions were used for determination of the baseline scenario.		OK
Are uncertainties in the project emission estimates properly addressed?	/1/	DR I	The uncertainties are properly taken into account as the monitoring standards used (most of them are State monitoring standards		OK

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			in Russia) incorporate uncertainties. Resulting calculations do not need to be adjusted.		
Calculation of GHG Emission Reductions – Baseline emissions *It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/ /2/	DR I	The same as for the project emissions.		OK
Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR I	The same as for the project emissions.		OK
Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR I	The same as for the project emissions.		OK
Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					

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Are the leakage calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	No leakage is considered under the project activity.		OK
Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes. The emission reduction forecast has been verified and is deemed likely that the forecast amount of 3 195 854 tonnes of CO_{2e} is achieved for the crediting period.		OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the AIE.*					
Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	Yes. The PDD consider main environmental impacts related to the project implementation and how the project complies with the environmental legislation.		OK
Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR I	During follow-up interviews on site it has been confirmed that technical design documentation for the project, including the		OK

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			EIA has been submitted to the respective expertise and got the positive endorsement from environmental authorities.		
Will the project create any adverse environmental effects?	/1/	DR I	No. The project will apply the much cleaner technology of the steel production that currently used. The gross emissions of the main atmospheric pollutants will be significantly reduced, for instance: ▪ Carbon oxide; ▪ Nitric oxide; ▪ Sulfur dioxide; ▪ Particulate matter. The same reduction is expected to take place in the water consumption. Less industrial wastes and waste water treatment sludge will be formed.		OK
Are transboundary environmental impacts considered in the analysis?	/1/	DR	Yes. The Ural Steel is located in the proximity of the Kazakhstan border.		OK
Have identified environmental impacts been addressed in the project design?	/1/	DR	See previous comments.		OK

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Does the project comply with environmental legislation in the host country?	/1/	DR	Yes. The Ural Steel currently has all necessary environmental permits and licences as were confirmed during the follow-up interview. The project designed has successfully passed the environmental expertise.		OK
G. Stakeholder Comments *If required by the host country, the AIE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					
Have relevant stakeholders been consulted?	/1/	DR	The JSC Ural Steel together with the project developer and consultant – National Carbon Sequestration Foundation (NCSF) organised informing of the various stakeholders on the project design and corresponding JI opportunities bound with the project implementation.		OK
Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	The information about the project was published at the website of NSCF (www.ncsf.ru) and in the regional press, for example, the newspaper "Metallurgist" (Thursday, November 9, 2006 No 125 (5634)		OK

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			and newspaper "Orenburzhye" (Thursday, November 9, 2006 No 174 (3539). Meetings with representatives of the regional bodies and non-government organizations have been conducted.		
If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	In accordance with the draft Russian national JI procedures; no special communication with the stakeholders, apart from required in accordance with environmental legislation, is needed.		OK
Is a summary of the stakeholder comments received provided?	/1/	DR I	As it was clarified on the follow-up interviews all received comments were positive and local stakeholders supported implementation of the project		OK
Has due account been taken of any stakeholder comments received?	/1/	DR	See the previous comments.		OK

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Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CAR 1 The Letter of Approval of the host country Russian Federation has not been submitted to DNV.	Section A.	According to recently adopted JI procedures in Russian Federation, the application for the issuance of the Letter of Approval will be submitted to the Russian Ministry of Economy and Trade (focal point coordinating JI registration procedure in Russia) once the Final Determination Report is issued.	

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CAR 2 The JI focal point of Russian Federation has not been yet officially designated.	Section A.		On 2007-05-28 the Government of the Russian Federation issues a Decree #332 that set up a national JI procedures and as part of which the Ministry of Economic Development and Trade has been officially designated as JI focal point of Russia. The CAR is therefore closed.
CAR 3 In the PDD the formation of the coal-tar pitch in the process of the coke production has not been included into consideration. However, this carbon-containing material is generatedin significant amounts (almost 8 times more than benzol, by Ural Steel production data) and its absence makes applied algorithms of the baseline and project emissions calculations inadequate.	Section B.	In response to this CAR, the estimation of coal-tar pitch (resin) formation has been included in the PDD and emission reduction calculation model. According to the Ural Steel expert's opinions about 20 000 tonnes of coal-tar resin a year would have been formed in case of the baseline scenario and 18 000 tonnes a year during the Project implementation. The mass carbon content of coal-tar resin is 92%[*]. The appropriate revisions in the Monitoring Plan with considerations on coal-tar resin formation have been made as well.	A revised monitoring plan and emission reduction estimates have been checked and found appropriate. The CAR is therefore closed.

[*] O.Pavlovich. Composition, properties and perspectives of processing of coal-tar resin. Page 3. Ural State Technical University. 2006

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CAR 4 The monitoring plan contains all necessary variables in accordance with developed monitoring methodology and description required by the JI PDD form. However the method of measurements, its frequency and reference to the used methodology or standard have not been presented.	Section D.	The monitoring plan of CO2 emissions at the Ural Steel Company is tightly linked to the monitoring system of metallurgical processes under the Quality Management System (QMS) adopted at the Works in compliance with ISO 9001:2000. The QMS includes 83 standards and norms, which cover the following aspects of production circle: ▪ *management of resources and infrastructure;* ▪ *management of processes of production life-span;* ▪ *management of measurements, analysis and improvement.* Thus, the methods of measurements, its frequency and reference to the used methodology or standard is described in those standards in detail. For example, the carbon content of iron and steel is determined under the state standards (GOSTs): *GOST 18895-97 (photoelectric and spectral analysis), GOST 22536.1-88 and GOST 12344-2003.*	The given clarifications and revision of the PDD are deemed adequate. The CAR is therefore closed.
CL1 A clarification is needed on how the exclusion of alternative 4 has been made as the IRR for alternative 1 and alternative 4 is equal. The bigger	Section B.	First of all , the bigger investment would lead to higher risks, which have dictated the exclusion of the alternative 4 from the baseline alternative list.	The presented arguments are deemed sufficiently to clarify the investment analysis issue. The arguments 2 and 3 have been

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
investment would lead in this case to higher income. It is not clear whether the capital limitation for the larger investment existed.		To successively implement this Project the Ural Steel Company will have to combat the following challenges: 1. The implementation of the alternative 4 (The project activity itself) will lead to substantial reduction of steel needed for producing of the rolled metal compared to the situation before the Project. It means that fewer workers needed in steel-making process at Open-Hearth Furnace Plant. Preliminary estimation of decreased labour force at OHF plant due to project implementation gives about 100 people (not taking into account redemption of workers employed at the Blast-Furnace plant and the Coke-Chemical plant). Thus, latent expenses of project will be increased by a sum needed for training or social rehabilitation of redundant staff. 2. The project will result in increased demand in scrap. About 180 000 tonnes of scrap is estimated to be imported annually for the project needs. For purchasing such an amount more than 25 million EURO is needed every year additionally. 3. The financing of the project is made from	confirmed during the follow-up interview with the JSC Ural Steel management in March 2007. The project developer given a sufficient clarification to DNV's satisfaction. The CL is therefore closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
		borrowed funds. Ural Steel had to borrow substantially more money to implement the project (compared to baseline scenario) which in turn leads to higher debt to equity ratio and thereby a higher borrowing cost. Moreover, Ural Steel had not enough collateral to secure the higher loan. In fact Ural Steel had to negotiate non-collateral loan with higher interest rate and with more tough terms (first of this type in Russia). It means that the Ural Steel Company will have to allocate every year a big sum of money to repay interest incurred on debt. Hence, the income may be substantially diminished by sums needed to cover additional expenses incurred by the above risks. In this case the Ural Steel Company would have had to choose between the investment in alternative 4 (the greater risks of the project) versus the comparatively modest investment of alternative 1 (the lesser risks of the baseline scenario) with equal IRR values of 37% for both alternatives. This circumstance would not favor the alternative 4 as the probable candidate for the baseline scenario, therefore it was excluded.	

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Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CL2 As soon as during the crediting period the Ural Steel could additionally modernize its facilities, for instance augment the capacity of the bar rolled mill or plate rolled mill its influence to the carbon balance and resulting ERUs would be unpredictable. Thus, monitoring of the specific values of the carbon emissions per ton of rolled metal for each source of emissions in the baseline is more preferable and will allow tracing any changes in the carbon balance with regards to the ERUs generation. It's not clear why the project developer applies only final specific value of the CO_2 emissions per ton of the rolled metal because this value can be used only for cross-check purpose.	Section D.	In response to this CL the total revision of the monitoring of the baseline emissions has been made. For reference see the relevant Subsections D 1.1.3 and D 1.1.4 of the PDD, version 2. The following method is applied for the monitoring of CO_2 baseline emissions: The yield of finished rolled metals under the baseline scenario is equal to that of the project scenario. The steel production at the Ural Steel Company in a whole and separately in terms of Open-Hearth Furnace and Electric-Arc Furnace plants are determined through the use of *ex-ante* specific ratios, which reflect rolled metals and steel production structure under the baseline scenario. The values of these ratios are taken from *The projected balance of material and energy for the baseline scenario for 2008-2012*[*] developed by the experts of the Ural Steel Company . The use of carbon-bearing materials, fuels, electricity and compressed air at each process stage under the Baseline scenario is calculated based on	The project developer has given a sufficient clarification to DNV's satisfaction. The revised monitoring plan and corresponding formulate have been checked and conclusion is made of its appropriateness to the project. The CL is therefore closed.

[*] For reference please see the Excel format model called *ER model_Ural Steel project*

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
		observing the specific consumption rates. These rates are mostly determined *ex-post* under the project realization activities and considered identical to those of being used under the baseline scenario. Exceptions are the specific consumption rates of parameters applicable to activities at electric-arc furnace (EAF) plant, which are determined *ex-ante*. Further calculations of CO_2 baseline emissions at sources are identical to those established for determining of project emissions.	