SGS

DETERMINATION REPORT

THE WORLD BANK GROUP

UKRHYDROENERGO (UHE)

HYDROPOWER REHABILITATION PROJECT IN UKRAINE

PROJECT NO. JI.VAL0040
DATE: 14-04-2010

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Summary:

SGS United Kingdom Ltd. has made a determination of the JI project activity "UkrHydroEnergo (UHE) hydropower rehabilitation project in Ukraine". The scope of determination is the independent and objective review of the project design document, baseline study and monitoring plan and other relevant document of the project. The project as described in the PDD ver.8 from February 4 2010 is in compliance with the the requirements of Decisions 16 and 17 CP7 of the Marrakech Accords and Article 6 of the Kyoto protocol and subsequent guidance from JI Supervisory Committee. The proposed JI project activity is envisaged by the project proponents to follow Track-1 procedure.

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

The first output of the determination process is a list of Corrective Actions Requests and New Information Requests (CAR and NIR), presented in Annex 3 with this document. Taking into account this output, the project proponent revised its project design document. The report is based on the findings of document reviews, the stakeholder consultation process and responses from the project participants to the findings raised in this report. This report should not be read without reference to the annexed Determination protocol, Findings overview and Local assessment checklist

All the CAR/ NIR raised have been closed satisfactorily and thus SGS is hereby issuing an unqualified determination opinion.

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JI Determination		
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Abbreviations

AAU	Assigned Amount Unit
AIE	Accredited Independent Entities
BAU	Business as usual
CAR	Corrective Action Request
CBH	Central Boiler House
EF	Emission Factor
EIA	Environmental Impact Assessment
ERU	Emission Reduction Unit
GHG	Greenhouse Gas
GTU	Gas Turbine Units
IZBH	Industrial Zone Boiler House
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
LoA	Letter of Approval
MP	Monitoring Plan
NGO	Non-governmental organization
NIR	New Information Request
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
RUB	Russian Currency
UHE	UkrHydroEnergo
WB	World Bank

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1 INTRODUCTION

1.1 Objective

The World Bank Group has commissioned SGS to make a determination of the project: "UkrHydroEnergo (UHE) hydropower rehabilitation project in Ukraine" with regard to the relevant requirements for JI project activities. The purpose of a determination is to have an independent third party assess 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 validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination 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 the Kyoto Protocol Article 6 criteria and the Guidelines for the implementation of Article 6 of the Kyoto Protocol as agreed in the Marrakech Accords.

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. SGS has 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.

Documents reviewed as Part of Scope

- Project Design Documents
- Monitoring Plan

1.3 GHG Project Description

The Project involves the rehabilitation of 46 hydro-units which are located at nine different sites on the Dnipro River and one site on the Dnister River. The project activities will entail the replacement of hydrolic power, electro-technical and hydro-mechanical equipment. The Project will increase the electricity generation capacity and efficiency of the rehabilitated hydropower plants. Additional power generated by the hydro-units during peak periods will displace that generated by the thermal plants.

2 METHODOLOGY

The determination may consist of the following three phases:

I A desk review of the project design documentation
II Site visit and follow-up interviews with project stakeholders
III The resolution of outstanding issues and the issuance of the final determination report and opinion.

2.1 Review of PDD and additional documentation

The determination is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a determination protocol.

The determination protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the determination of JI projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the determination.

The determination protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements are linked to checklist questions the project should meet.	*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 (Y), or a* ***Corrective Action Request (CAR)*** *due to non-compliance with the checklist question (See below).* ***New Information Request (NIR)*** *is used when the determination team has identified a need for further clarification.*

The completed determination protocol for this project is attached as Annex 2 to this report.

2.2 Site visit and follow-up interviews with project stakeholders

In general, a site visit might be required to verify assumptions in the baseline. Sometimes additional information is required to complete the determination, which may be obtained through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. In case of this project, a site visit and interviews have been conducted and the results are summarized in Annex 1 to this report.

2.3 Report of findings and use of type of findings

As an outcome of the determination process, the team can raise different types of findings.

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR is issued, where:

I. mistakes have been made with a direct influence on project results;

II. determination protocol 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 verified.

The determination process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification or determination actors. These have no impact upon the completion of the determination or verification activity.

Corrective Action Requests and New Information Requests are raised in the draft determination protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

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 summarised. A more detailed record of these findings can be found in the determination protocol in Annex 2.

2) Where SGS had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a New Information or Corrective Action Request, respectively, has been issued. The New Information and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in Annex 3. The determination of the project resulted in nine Corrective Action Requests and eleven New Information Requests.

3) Where New Information or Corrective Action Requests have been issued, the exchanges between the Client and SGS to resolve these Requests are summarised.

4) The conclusions of the determination are presented.

The final determination findings relate to the project design as documented and described in the revised and resubmitted project design documentation version 08 dated 4th February 2010.

3.1 Project design

As per decision of the JISC "at least one written project approval by a Party involved other than the host Party(ies) has to be provided to the accredited independent entity (AIE), additionally to that (those) of the host Party(ies), and made available to the secretariat by the AIE when submitting the determination report regarding the PDD for publication".

At the start of the validation process no evidence was provided that the project has the approvals of the Parties involved and CAR 01 was raised. Project proponent clarified that the LoA from host country will be available later on. The Letter of Approval by The Ukraine was released 18 May 2007, the Letter of Approval from the sponsor Party, The Netherlands was released 28 June, 2007. CAR 01 was closed out.

The Ukraine is the host country for the present JI project activity. It is Annex 1 participant to the project activity. According to the information available on web link http://ji.unfccc.int/JI_Parties/PartiesList.html#Ukraine host party involved in the project activity has identified the Designated Focal Point for the JI projects and detailed National guidelines and procedures for approving JI projects. It was verified from the above web-links that The Ukraine has ratified Kyoto protocol on 12 April 2004 while The Netherlands has ratified it on 31st May 2002.

National Communication of the countries can be found on the link http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/3625.php. National Registries of the Parties passed initialization stage in 2007 year.

In the PDD, the starting date of the crediting period was 01-01-2006. It was noted that in accordance with the decision 16/CP7 "ERUs shall only be issued for a crediting period starting after the beginning of the year 2008" (NIR 18). This was corrected in the revised PDD and 01-01-2008 is the accepted as corrected start date of the crediting period for the project activity. Thus NIR 18 was closed out.

The project start date is mentioed as 01-01-2006 and same is accepted against the UHE Project Appraisal Document which indicated project starting date to be as January 2006.

NIR 20 was raised to ask the PPs to amend PDD with technical details of rehabilitations envisaged within the project activity as well as planned load factors for each 46 hydro units in order to do cross check of electricity generation forecast.

Under NIR 20 discussion the PPs provided data on the technical details of the reabilitation of each power plant within the project activity. It was confirmed that all hydro units are of run-of-river type.

The PPs provided capacity of HPPs equal to 4247.8 MW and clarified that the power generation would increase by means of efficiency enhancement up to 6-19% not due to increase of the load factors which considered the same as before the rehabilitation.

Although the emission reduction estimation is based on actual measured data (measurements by UkrHydro Energo) and generation and water flow would be measured ex-post it was still not clear how the forecast for 2008-2012 electricity generation was defined. The PPs clarified that initially the forecast for the electricity generation increase was taken from the feasibility study (On Ukrhydroenergo rehabilitation project, Executive Summary, Book 1 ref.1350-1T01 prepared by "Ukrhydroproject Ltd", 2004) that indicated 239 GWh for 2012). However, the forecast was amended according to the final design and operational features of the HPPs as the rehabilitation process had been commenced in 2007 as shown in the PDD. Taking into account that the emission reduction will be estimated based on actual power generation and that the investment analysis operates with higher projected amount of power generation (up to 470 GWh vs 239GWh) it seems plausible as conservative approach.

The types of hydro units are run-of-river as per the PPs information that was cross-checked vs public available data and found appropriate.

Therefore, NIR 20 was closed out.

3.2 Baseline

The project is applying the elements of the CDM approved methodology ACM0002, v.7 with modifications to make this more applicable to the conditions found in Ukraine. The approach also takes into account the criteria for baseline setting included in Appendix B of *Guidelines for the implementation of article 6 of the Kyoto Protocol* and is in line with the recent guidance provided by the Joint Implementation Supervisory Committee.

There are 2 methodological deltas for the project activity. One is related to consideration of 100% OM approach and another is that the low-cost/must run resources constitute more than 50% of total grid generation at the time of PDD submission for validation.

The Operating Margin (OM) is deemed to best represent what would occur in the absence of the Project (details below). The approach is mainly related to the fact that the share of nuclear and hydro has been slightly above 50% at time of original PDD submission and therefore not meeting the typical requirements for simple operating margin (OM) calculation. The exclusion of these must run sources can, however, be substantiated based on two below described facts:

(i) In the methodology ACM0002, v.7, the baseline emission factor is calculated as a combined margin consisting of the combination of operating margin (OM) and build margin (BM). The JI specific approach used by the project had only calculated the OM and BM was excluded based on the argument that "*The Project will not affect the build margin due to the large excess installed (thermal) capacity of the Ukraine grid and the consumption of electricity is increasing and the share of must run sources are likely be below 50%.*". A CAR 03 was raised to request more information on this weighing. Further information was provided to show that the combined available capacity of thermal, nuclear and hydro power stations in Ukraine totals more than 55 GW, which far exceeds the current system peak demand of around 28 GW. The validator considered a recent paper for CDM on OM/BM weighting http://cdm.unfccc.int/Panels/meth/Meth17_repan12_BiewaldPaperOMBMMargins.pdf) and the feedback received from the local assessment and indicated that it is unlikely that for the period 2008-2012 'deferrable or avoidable capacity additions' can be expected. The project approach was therefore accepted.

100% OM approach could be appropriate in situations in which there are truly no deferrable or avoidable capacity additions expected during the crediting period but for the project. This could be the case, for example, if the system is drastically overbuilt with a surplus large enough that no new additions are required or expected to the system" during crediting period. Information provided and feedback from local assessment indicate that it is unlikely that for the period 2008-2012 'deferrable or avoidable capacity additions' can be expected. The 100% OM approach therefore seems acceptable. Based on further assessment of the information provided by UHE later on, mainly "Ukrainian Energy Strategy until 2030" it was concluded that the 100% OM approach is acceptable.

The CAR 03 was closed out but a NIR 17 on the choice of the simple OM was raised. This NIR was raised because in accordance with the approved CDM methodology, the Simple OM method can only be used where low-cost/must run resources constitute less than 50% of total grid generation. This didn't seem to be the case for Ukraine. The PDD was revised and reviewed.

It was accepted that although must run resources constitute slightly more than 50% in 2004, it can be expected that this will decrease in the future. PP demonstrated that must-run sources are never on the margin as thermal plants are always present, even during the minimum demand. This increased demand will be mainly met by thermal power plants, resulting in the portion of low-cost/must-run resources on the Ukraine grid is likely to decrease continuously. Therefore it can be concluded that a new hydro plant would never replace must-run sources. This found to be appropriate and hence is accepted.

(ii) *Based on 2006 and 2007 data, it is demonstrated that must-run sources are never on the margin of 50%. This demonstration is using the principles of the calculation of the Simple Adjusted OM emission factor for the grid. In fact, the λ parameter based on the requirements of Tool to calculate the emission factor for an electricity system would be equal to zero.*

OM is to be recalculated in monitoring report and will be determined *ex post* for the Project. Furthermore, calculation and evidence has been provided for 2006-2007 showing that must-run sources are never on the margin in Ukrainian case, therefore justifying the use of OM.

The NIR 17 was closed out.

The approach taken for selection of baseline by project developers was established according to the criteria for baseline setting included in Appendix B of JI Guidelines provided by the Joint Implementation Supervisory Committee.
The baseline selection was the result of analysis of the set of realistic and credible alternatives.

As the Project is a grid-connected zero-emission renewable power generation activity and is producing additional electricity that will displace the electricity generated by the marginal thermal power plants during the peak time, thus, the following alternatives were applicable:

Alternative #1: Additional electricity is supplied during peak time by new thermal plant(s) or by the expansion of existing thermal power plants.

Alternative #2: Continuation of the current situation means that existing thermal plants continue to supply electricity to the Ukraine grid during peak times.

Alternative #3: The proposed Project activity is implemented without JI component and rehabilitated hydro units produce an increased amount of electricity for sale to the Ukraine grid during peak times.

Comprehensive discussions arrived to the conclusion that Alternative #2 chosen is the only plausible and realistic alternative and represents the baseline scenario. In the absence of the Project, CO_2 emissions would occur unabated from outdated thermal power plants. Capacity additions have been very few in the past and, given the large excess capacity of thermal plants in the Ukranian grid a little are planned for the future, it is reasonable to conclude on probability of Alternative #2.

To support such outcome and prove that Alternative 2 is not financially attractive in the economical context in the power sector in Ukraine, the investment analysis was submitted in details.

Therefore, the additionality of the project is demonstrated based on an investment analysis using an IRR calculation and a benchmark analysis as step 1 and Common practice analysis as step 2. The project was requested to provide full details/ spreadsheet for this calculation in NIR 09.

The benchmark of 17.8 % used in the PDD v.2 was checked against the data available on the website of The National Bank of Ukraine, Feb-2005

http://www.bank.gov.ua/ENGL/Publication/Of_edit/Bulletin/2005/bull-02_05.pdf.

This quotation generated another question to the project participants with regards to calculation and comparison of financial indicators (See Table 1 PDD v 2) performed in USD against the national currency credit rates used. It was noted that correct comparison based on the USD credit rates should be submitted, moreover the type of project activity should be taken into account, since credit rates are different for different sectors, types and time of credits. Afterwards, It was clarified in the PDD, v.3 dated 15 December 2008 that the benchmark approach was changed by PP and more conservative calculations were done. The reviewed data showed that the sector specific average interest rate for electricity production was 16.4% in 2004. Meanwhile, for conservative approach, the benchmark of 12.3% is applicable as it corresponds to the average weighted annual rate of credits granted in foreign currency to electricity, gas and water production in Ukraine in 2004 (Bulletin of the National Bank of Ukraine, February, 2005, p. 58; pls. see also the table below). This average rate takes into account the specificity

of the sector and is appropriate for the UkrHydroEnergo JI project. It can be therefore concluded that the IRR of the project of 4.1% is below the selected average benchmark 12.3%. It was accepted.

NIR 19 was raised regarding variation of the IRR as outcome of variation in production (water flow and electricity generation, impact on efficiency).
Under NIR 19 the PPs provided excel spreadsheet with reproducible calculations (list "Cost", variation factors for power tariff, initial cost of equipment, power generation that are used in formulas at list "Project IRR"). The numbers are cross-verified with the variation factors. All numbers in sensitivity analysis results are reproducible. Sensitivity analysis indicates that no one scenario leads to IRR crossing the benchmark. Currency applied for the cash flow estimation is US dollars. In turn, this NIR 19 was closed out.

Further evidence was sought on the assumptions especially related to the initial investment required. The evidence was received, reviewed and it was concluded on the Project to be additional in terms of emission reductions. The additionality test was duly completed to demonstrate that the Project is not BAU by means of the investment analysis. The sensitivity analysis has been carried out for the power tariff, initial cost of equipment and O&M Savings with 15% variation and found that the project IRR is well below the selected benchmark for the project activity. The financial expert has analysed the financial calculations along with sensitivity analysis and found to be correct as follows:

- Sensitivity analysis of major cost components is covered in the PDD. Same has been cross checked by varying the parameter in the excel sheet and found acceptable.
- While the variation of electricity generation by 10% in the spreadsheet, the IRR reaches to 4.37 %. Hence additionality status is not affected.
- The price of energy and other data used in investment analysis sheet was checked by the local assessor during FO discussion and found them appropriate.
- The benchmark investment analysis is in compliance with the EB guidelines.

The NIR 09 was closed out.

Following the findings of the local assessor, a CAR 15 was raised on the question if the construction of the project would have continued anyway without the project being considered for carbon financing. The project argued that "the fact that the development plan of the project includes 66 units does not conclusively demonstrate that reconstruction would take place in any case. At the time of the preparation of the project as JI activity the financing plan was not complete as the World Bank loan was not yet approved for the project. Most importantly, as demonstrated in the PDD, the Project IRR is significantly below a reasonable IRR expectation in Ukraine. The PDD does not claim that no rehabilitation took place between 2002 and 2005. It simply states that the rehabilitation activities were not completed as planned". More details were requested on the details of the loan, especially if the loan was depending on the availability of carbon credits. It was argued that "the loan or its conditions were not connected to the ERUs expected from the project. However, the potential of carbon finance revenue was discussed in the Project Appraisal Document which is the main document on the basis of which the loan was approved". The arguments used by the project were accepted and the CAR 15 was closed out.

PPs have chosen to use a JI specific approach according to Appendix B of the JI Guidelines by means of application of some elements of ACM0002 methodology. As this approach was selected, the PPs could follow their own methodology with appropriate justification. The chosen approach is clarified and justified in Section B.1 of the PDD version 08 dated February 4, 2010. The data during 2002-2005 years were the only available data and the more representative data on water flow at the time of PDD development. Taking into account that the PDD applies a specific model for electricity production while the approved methodology uses an averaging approach, the four-year data are sufficient for the baseline establishment.

UHE is a fully state owned joint stock company which is involved in the generation of electricity using hydropower plants. The company owns and operates plants that generate approximately 99% of all hydropower generated electricity in the Ukraine. The same has been checked on the Internet and as per communication by UHE and same is found appropriate..

As per the letter from UHE (see Ref. 33) there is no normative for the technical lifetime for hydro units at UHE. Thus, the practices applicable for UHE are fully representative for overall national context. As it is demonstrated that the high level of operational availability (since year 2002) at the Dnipro and Kakhovka HPPs (87% and 92%), which were put into operation in 1950 and 1956, shows that UHE hydro units with the lifetime of more than 50 years continue to operate with high reliability as a result of regular capital repairs. This is the common practise in the hydro sector in Ukranine and is accepted.

The operational availability of HPPs with an age over 50 years indicates that the pre project scenario would have continued with lower efficiency for further more years with proper maintenance. In absence of proposed project activity, the existing HPPs would have continued to provide electricity to grid at historical average levels for the duration which is more than the crediting period.Thus it is concluded that the DATE baseline Retrofit will exceeds the crediting period. This is inline with methodolgy ACM 0002 version 07 and is accepted. The incremental electricity generations from the proposed project activity are the real and measurable emission reductions throughout the crediting period.
The approach followed and justification given by PP in terms of four years historical data and time line of DATE baseline retrofit is found appropriate and is accepted.

3.3 Monitoring Plan

The monitoring plan and methodology is a JI specific approach using elements of the CDM approved monitoring methodology ACM002 version 7.

More information was requested on the meters used by the project, calibration of the meters, data handling and quality control procedures (NIR 11). More detailed information was provided and the NIR 11 was closed out.

CAR 16 was raised during the site visit on absence of Monitoring Plan procedures translated in local language and lack of awareness and familiarity of the staff involved on its handling and reporting requirements. The monitoring plan provided was saying that a competent manager will be in charge of the project, well defined protocols and procedures are required and "Initial staff training must be provided before the project starts operating and generating ERUs." The project had indicated that 01/01/2006 would be the starting date however during the site visit it appeared that training and procedures were lacking. It was stated that "once the Determination Report is obtained, the Monitoring Plan is considered final, will be translated and relevant staff will be trained in its use. As all operational data needed for the Monitoring Plan is collected by UkrHydro Energo in any case as a part of its routine operations, the data sets will be complete even if JI Monitoring Plan training is provided somewhat after the start date of the Project". This was accepted and the CAR 16 was closed out.

3.4 Calculation of GHG Emissions

In the first version of the PDD, full reference to the data sources used was not provided and a CAR 02 was raised. Reference and spreadsheets with the calculations were provided. During review of these files it was found that the contribution from coke was excluded. Following a new revision to the PDD, the project opted to calculate the OM ex-post or if data are not available, use an ex-ante factor based on the most recent 3 years. This is in accordance with the methodology and makes the use of the 2000 data obsolete.

Further auditing steps resulted that the revised PDD version 02 already contained not only required base data regarding the calculation of OM emission factor of the grid based 2000-2004 year data but it included up-to-date values of the project performance. Local assessor was requested to check the data used for the calculations of emission reductions from the project activity.
The substantial data have been submitted and, in general, confirm the figures/values used for the calculation and calculated ones. The figures are not absolutely coinciding with the figures from tables 3 and 4 of PDD but in all probability 1-2% deviations are not intentional and not resulted in overestimation of the OM emission factor of the grid. The CAR 02 was closed out. The CAR was reopened on 22/05/2008 and the project participants were requested to substantiate 2005-2007 data sourced from the State Committee of Statistic of Ukraine (national Statistic form 11-MTP "Report of fuel, electricity and heat use") for aggregated fuel consumption/electricity generation for each generation type on the Ukraine grid. It was important to learn, specially, as the PP eventually declared application of ex-post option in the emission factor calculation as one of the EF calculation options.

It is supposed to outline that the data should be available to date for EF calculation. The auditing check found out that data after 2004 is available and used by PP in the calculation of the OM data. The details are provided in the revised PDD v.4 along with the spreadsheets with calculations presented in the file "Hydro Rehab Monitoring Workbook 2005 2006 revised" Thus CAR 02 was closed out.

CAR 04 was raised on application of the same Net Calorific values for each of fossil fuel types in the calculation of the OM, while the NCV used should be fuel specific. The PP replied that the fuel

consumption data for coal, natural gas and oil is in the same unit, millions tce (tonnes of coal equivalents). Therefore, the same NCV is used to convert the data to TJ for each of the different fossil fuels. A revised PDD was reviewed where the calculations had been changed. Although not reflected in the reply, this made the calculation much more clear. The CAR 04 was closed out.

A NIR 05 was raised on the table listing the electricity generated for the fossil fuel types not being complete and the units used. This was addressed in the revised PDD and the NIR 05 was closed out.

Project was requested to provide the full data underlying the calculations to allow for verification of the average baseline efficiency for HPP (CAR 06) and to provide all assumptions and calculations which have been used in estimating the increased power generation due to the project (CAR 07). A related NIR 08 was raised on the uncertainties and the expected increase in electricity generation. The water flow through the plant was one of the key parameters in the determination of the baseline. Further information was requested on how this water flow is being measured (NIR 10). During the review of the replies and following the site visit, some questions emerged on the calculation method for determining the total baseline and the relation between water flow and electricity generated (CAR 14). The PDD was revised and the project established a best fit trend-line of baseline generation at each flow for each plant. This was accepted as an appropriate approach. CAR 14 was closed out. Further information was also provided on the calculation method and NIR 10 was closed out. Based on the information provided in the response to CAR 14 as to the main variables in calculation of baseline efficiency for HPPs are head and waterflow and given that all the plants included in the Project are run-of-river, variation in head is limited and in any event incorporated in the revised PDD methodology through the calculation of a best fit trend-line of baseline generation at each flow using accumulated data points of 10-days periods for several years, CAR 06 was closed..

CAR 07 and NIR 8 were also closed out based on inclusion of the formulas and calculations in the revised PDD. The calculations are not based on any specific assumptions because the baseline efficiency factor is based on actual measured data (measurements by UkrHydro Energo) and generation and water flow will be measured ex post. Given that the water level metering equipment is checked every 10 days by HPP staff and, in addition, on annual basis calibrated by the State standardization and metrology center of Ukraine, the measurements are deemed accurate. An average of these data points is considered to represent the baseline efficiency accurately and it is based on actual measured data.

3.5 Environmental Impacts

The PDD stated that in accordance with WB policy an Environmental Management Plan (EMP) is required for the project. The PP were asked to provide an English copy/summary of this EMP (NIR 12). The EMP was provided and reviewed, all the compliance certificates for the project activity released by the concern authorities have been also submitted and found in comliance to National regulations and the NIR 12 was closed out.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

4.1 Description of how and when the PDD was made publicly available

In accordance with 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 observers and make them publicly available.

4.2 Description of how and when the PDD was made publicly available

The first version of the PDD and the monitoring plan for this project were made available on JI web site which was linked to the SGS website http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=22 and were open for comments from 02-08-2005 until 31-08-2005.

Comments were invited through the Climate-L mailing list on 02-08-2005

(refer to http://lists.iisd.ca:81/read/messages?id=26492).

The PDD version 2 aimed at passing determination using the revised JI-PDD format was not made publicly available through the EB secretariat on the JISC web page as required under Track 2, JI verification procedure. The reason for that is that the project proponents are considering Track 1 step that does not stipulate such publication. It is up to a host country DFP responsibility to make the project publicly available on either JISC or own resources.

4.3 Compilation of all comments received

According to the PDD, public consultations were held at each of the nine subproject sites.
A NIR 13 was raised to ask for more details on these consultations. The project participants conducted consultations as required by JI guidelines and in accordance with Ukrainian regulation and to World Bank guidelines. The project announced the public consultation opportunities and meetings in local newspapers, on the radio and at municipal buildings for easy access. The project furthermore issued invitations to local and national authorities, such as city executive councils and Ministry for Emergency Situation, Ministry for nature conservation, state committees on water management and fisheries. In the meetings various aspects of the project were explained and discussed, including improvements to dam safety and water quality. No negative comments were received in these consultations.

The list of web sites with media articles on the project was provided and found realiable information source. The NIR 13 was closed out.

One comment has been received on the first version of the PDD when it was web hosted through JI website link for international stakeholder consultations.

Comment number	Date received	Submitter	Comment
1	11-08-2005	NAME: Brijesh Ranilawala EMAIL: brijeshranilawa@yahoo.com ORGANISATION: P.B. Holotec India Pvt. Ltd. ORGANISATION TYPE: Other Party : CITY: Kolkata COUNTRY: India	*Dear,* *We dont have any problem with technology that they are using. We want to comment on the reduction of CO2. This power plant has replaced the CO2 by not firing coal or fosile fuel. It has also reduced the consumption of coal based eletricity. For e.g. in India general transmission losses are 4% to 5%. After setting up of this power plant in one of the rural area this will reduce the trnsmission losses of coal based elericity so the reduction of CO2 will be more. As one unit produced by this power plant and transmitted to distribution center will be equlant of 1.04 (asuming 4% as transmission loss) unit of coal based power plant. So the reduction benifits of saving of transmission losses should also be passed on to this company.* *One more thing we have to say that this company is stopping the exivation of coal from earth thus this company is stopping the coal partical and Coal from exposing to environment thus saving soil and air both from coal and CO2 with methane gas that some times comes out from coal mines mouth. This company is also protecting us and our envionment from the unwanted fires that get around mine areas due to negligency of human beings. So after getting a assesment of how much coal, CO2 and methane gas has been saved from exposure this compnay shoud get the benifits of the same.* *We strongly recommend that this should be considered and benifits should be relised by such environmental frendly projects.*

4.4 Explanation of how comments have been taken into account

While confirming receipt of the comment, it was found that the email address given did not exist. The PPs were informed of the comment but it was noted by the validator that the suggestions from the stakeholder would comprise a change in the methodology and under the JI this would be beyond the scope of the determination.

No further up action was requested from the PP.

5 DETERMINATION OPINION

SGS has performed a determination of the project 'UkrHydroEnergo (UHE) hydropower rehabilitation project in Ukraine". The determination was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. The proposed JI project activity is envisaged by the project proponents to follow Track-1 procedure.

Through rehabilitation and increase of the electricity generation capacity and efficiency of the rehabilitated hydropower plants, the project will displace electricity generated by thermal plants during peak periods. The project results in reductions of GHG emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment analysis 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 as designed, the project is likely to achieve the estimated amount of emission reductions 1,090,380 tonnes of CO_2 equivalent from 1st January 2008 to 31st December 2012.

The determination has revealed that the project has been able to prove Approvals of the Party involved. The Letter of Approval from The Ukraine being the Host party was released on 18th May 2007, the Letter of Approval from the sponsor Party, The Netherlands was released on 28th June, 2007.

On the basis of the CARs/NIRs closures by the end of the project determination process, this report provides the justification for the recommendation of an Unqualified Determination Opinion.

The determination is based on the information made available to SGS and the engagement conditions detailed in the report. The determination has been performed using a risk based approach as described above. The only purpose of this report is its use within the agreement between the World Bank and the project developers. Hence SGS can not be held liable by any party for decisions made or not made based on the determination opinion, which will go beyond that purpose. The project as described in the PDD ver.8 from February 4 2010 is in compliance with the requirements of Decisions 16 and 17 CP7 of the Marrakech Accords, Article 6 of the Kyoto protocol, Guidelines for the implementation of Article 6 of the Kyoto Protocol and subsequent guidance from JI Supervisory Committee. The Determination Opinion is based on the current rules surrounding Article 6 of the Kyoto Protocol and JI Guidelines.

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

6 REFERENCES

Category 1 Documents:

/1/ PDD for "UkrHydroEnergo (UHE) hydropower rehabilitation project in Ukraine" received 28-07-2005. The following revisions have been received:

- Revision 1 dated 19-11-2005
- Revision 1.1 revised dated 17-03-2006
- Revision 2 dated 16-01-2008
- Revision 3 dated 15-12-2008
- Revision 4 dated 05-03-2009
- Revision 5 dated 23-03-2009
- Revision 6 dated 16-07-2009
- Revision 7 dated 02-10-2009
- Revision 8 dated 04-02-2010

/2/ Ukraine Hydro Rehab Monitoring workbook

/2a/ Ukraine Hydro Rehab Monitoring workbook 2005_2006 revised/ 20090515

/3/ UHE ER calculation 17 March 2006.xls

/4/ Енерг 2000-2004.xls

/5/ LoA issued by Host party, The Ukraine, "LoA Hydropower Rehab_21-05-07_en.doc, LoA Hydropower Rehab_21-05-07_ua.pdf"

/6/ UHE Project Appraisal Document.pdf

/7/ Ans_Q2.3.1 Inflation rate.xls

/8/ Ans_Q 2.1 Electricity Volume sold.xls

/9/ LoA issued by Sponsor party (dated 28th June 2007), The Netherlands

Category 2 Documents:

/10/ Part of the World Bank Project Appraisal Document relating to project financing

11/ IRR calculations

/12/ On Approval of Instruction on Procedure of Calculations and Collection of the Fees for the Special Use of Water Resources and for the Use of Waters for the Needs of Hydro Power Industry and Water Transport
Order # 231/539/118/219 of the Ministry of Finance of Ukraine, State Tax Administration of Ukraine, Ministry of Economy of Ukraine, Ministry of Environment Protection and Nuclear Safety of Ukraine dated October 1, 1999

/13/ Environmental Management Plan

/14/ Energy Strategy of Ukraine for the Period until 2030, http://mpe.energy.gov.ua/minenergo/control/uk/archive/docview?typeId=900000200715&docs_stind=41

/15/ UkrEnergo energy Data on-line:
http://www.ukrenergo.energy.gov.ua/ukrenergo/control/uk/publish/article?art_id=55234&cat_id=35061&search_param=%C1%E0%EB%E0%ED%F1

http://www.ukrenergo.energy.gov.ua/ukrenergo/control/uk/publish/article?art_id=50486&cat_id=35061&search_param=%D4%E0%EA%F2%E8%F7%ED%E8%E9

/16/ Historical exchange rates b/w Ukrainian grivna and USD for period of 2002-2007 National Bank WEB-Page:

/17/	http://www.bank.gov.ua/ENGL/Fin_mark/Kurs_mid/kurs_96-last.htm data for -2006-2007 at Ministry of Fuel and Energy of Ukraine web-site reports: For 2007 - http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=121024&cat_id=35081 For 2006 - http://mpe.kmu.gov.ua/fuel/control/uk/publish/article?art_id=83217&cat_id=35081
/18/	"Ekspert summary_Project CO2.pdf" – Approval by UA National Authorities
/19/	File "Govermment ecology summary.pdf" – Approval by UA National Authorities
/20/	Approval by Ministry of Environmenal Protection of Ukraine file "List agree_Minprirod_180507.pdf"
/21/	"Letter of No objection.pdf" by Ministry of Environmenal Protection of Ukraine
/22/	Minutes of hearings at HPPs
/23/	File "Inform_instal power UHE 2002-2004.pdf" based 6TP forms
/24/	Bulletin of the National bank of Ukraine, February, 2005, page 58. Available at http://www.bank.gov.ua/ENGL/Publication/Of_edit/Bulletin/2005/bull-02_05.pdf
/25/	1.3.1 Job responsibilities_Power engineer - Kyiv HPP.pdf
/26/	1.3.2 Program of training_Power engineer - Kyiv HPP.pdf
/27/	1.3.3 Extract of training registration book_Power eng.pdf
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/30/	Power meter_certificate_G4_KremenchugHPP.JPG
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/32/	Reports: ' 11mtp 2005g.PRN', ' 11mtp 2006g.PRN', ' 11mtp 2007g.PRN'
/33/	Letter from Director of Production Department of Ukrhydroenergo (UHE) for information about lifetime of hydro units

Persons interviewed:

/01/	Mrs.Zhanna Gutina – UHE deputy director on reconstruction and production.
/02/	Mr. Victor Shevchenko – Production manager,UHE
	Mrs. Valentina Korneeva – data operator, UHE