VALIDATION REPORT

11.3 MW RENEWABLE ENERGY PROJECT FOR A GRID SYSTEM BY K.M.POWER (P) LIMITED PROJECT IN INDIA

REPORT NO. 2006-9064

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DET NORSKE VERITAS

VALIDATION REPORT

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Approved by: Einar Telnes Director	Organisational unit: DNV Certification, International Climate Change Services
Client: K.M. Power Private Limited	Client ref.: Mr. G.Ramnarayan Reddy Managing Director

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "11.3 MW renewable Energy Project for a Grid System by K.M.Power (P) Limited" in India previously web-hosted as "10.6 MW renewable energy project for a grid system by K.M.Power (P) Limited, India". The validation is performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

The validation consisted of the following three phases: i) a desk review of the project design documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV's opinion that the project, as described in the revised project design document of 12 October 2006, meets all relevant UNFCCC requirements for the CDM is eligible as category I.D small-scale CDM project activity and correctly applies the approved simplified baseline and monitoring methodology AMS-I.D version 09. Hence, DNV requests the registration of the "11.3 MW renewable Energy Project for a Grid System by K.M.Power (P) Limited" as a CDM project activity.

Report No.: 2006-9064	Subject Group: Environment
Report title: 11.3 MW renewable Energy Project for a Grid System by K.M.Power (P) Limited Project in India	
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Appendix A Validation Protocol

Abbreviations

AP	Andhra Pradesh
APERC	Andhra Pradesh Electricity Regulatory Commission
APPCB	Andhra Pradesh Pollution Control Board
APTRANSCO	Transmission corporation of Andhra Pradesh Limited
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electrical Authority
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
DPR	Detail Project Report
EIA	Environmental impact assessment.
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
kWh	Kilo Watt hour
MW	Mega Watts
MNES	Ministry of Non-conventional energy sources
MoEF	Ministry of Environment and Forest
IREDA	Indian Renewable Energy Development Agency Limited
IRR	Internal rate of return
IPCC	Intergovernmental Panel on Climate Change
MAT	Minimum Alternative Tax
MP	Monitoring Plan
NEDCAP	The Non-Conventional Energy Development Corporation of Andhra Pradesh
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PPA	Power Purchase Agreement
PDD	Project Design Document
PLF	Plant Load Factor
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

K.M. Power Private Limited has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the "11.3 MW renewable Energy Project for a Grid System by K.M. Power (P) Limited" in India (hereafter called "the project"). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for small-scale CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

Astakala Vidyacharan	DNV India	Team Leader, GHG auditor
Vijay Kumar Yadav	DNV India	GHG auditor
C.Kumaraswamy	DNV India	GHG Auditor, Sector Expert
K.Venkata Raman	DNV India	Technical vérifier

1.1 Validation Objective

The purpose of a validation 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. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities / 5/ a and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-I.D. The validation team has, based on the recommendations in the Validation and Verification Manual / 4/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 Description of Proposed CDM Project

The project activity is a bundle of three small hydro power projects with an aggregated gross capacity of 11.3 MW, connected to the Andhra Pradesh state electricity grid. The first project, Guntakandala mini Hydel scheme (4.0 MW capacity) was commissioned in February 2002. The second project, Velpanuru mini Hydel scheme (3.3 MW) was commissioned in November 2002 and the third project, Madhavaram mini Hydel scheme (4.0 MW) was commissioned in October 2003. The project utilises the head available in the Nippulavagu natural stream (used as a carrier canal for Kurnool-Cuddapa canal) located in Andhra Pradesh region, for generation of

electricity. The projects have a diversion structure for the stream, and intake chamber, desilting chamber, fore bay, tail race for creating the additional head to run the turbines. The technology used in this project is indigenous.

The objective of the project is to reduce anthropogenic GHG emissions by displacing fossil fuel based electricity generation with renewable energy in the southern regional grid to which the Andhra Pradesh state grid is connected. The project thereby helps in reducing the power deficit in the state of Andhra Pradesh and also contributes towards conservation of natural resource like coal.

The project is expected to result in emission reductions of 21 198 tonnes of CO_2 per year during the crediting period of 10 years.

2 METHODOLOGY

The validation 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 validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual / 4/. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "11.3 MW renewable Energy Project for a Grid System by K.M. Power (P) Limited" is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation protocol 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) validation protocol requirements have not been met; or
iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term Clarification may be used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

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

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

Figure 1 Validation protocol tables

2.1 Review of Documents

The PDD / 1/ submitted by K.M. Power Private Limited (version 01 dated 27 December 2005 and version 02 dated 12 October 2006) and additional background documents related to the project design and baseline, such as grid emission calculations, emission reduction calculations, local stakeholders' responses and monitoring were assessed as a part of validation activity.

2.2 Follow-up Interviews

On 22 March 2006, DNV performed interviews with representatives of K.M. Power Private Limited and local stakeholders to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
K.M. Power Private Limited	➢ Further clarifications that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, barriers due to prevailing practice or other barriers. ➢ Clarifications on establishment of baseline, monitoring plan and emission reduction calculations. ➢ Resources, training needs and procedures for operation and maintenance. ➢ Benefits from CDM registration.
Panchayat Secretary Velpanur Village	➢ Status of power supply ➢ Impacts of project on local environment ➢ Local employment ➢ Welfare activities by project promoters
Rice mill Owner Velpanur village	➢ Industrial area development due to consistent power availability ➢ Local employment
Village members Velpanur Village	➢ Impact on local environment due to project activity ➢ Local employment
President, Single window co-operative society Velugodu village	➢ Local employment ➢ Impact on irrigation & agricultural activity
Local Farmers Velugodu village	➢ Impact on agricultural activities due to project ➢ Impact on crop patterns
Employees of project from Madhavaram village	➢ Local employment ➢ Impact on local environment

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design. The initial validation identified one corrective action request and five requests for clarification. These requests were presented to the project participants in DNV's draft validation report. The project participants were invited to provide response to these requests. The project participant response, which

included the submission of revised PDD dated 12 October 2006, addressed the corrective action requests and requests for clarification to DNV's satisfaction.

To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A to this report.

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation dated 12 October 2006.

3.1 Participation Requirements

The project activity is being proposed as an unilateral project by K.M. Power Private Limited, which is the only project participant. The host Party India meets all the participation requirements, and the DNA of India has accorded a letter of approval for the project on 2 August 2006 / 3// and has also provided confirmation that the project assists in achieving sustainable development.

3.2 Project Design

The bundled project has a total rated generation capacity of 11.3 MW and exports electricity to the Andhra Pradesh state electricity grid, which forms a part of southern regional electricity grid.

The three projects are constructed on 'Nippulavagu,' a natural stream used for irrigation activities in the Kurnool district of Andhra Pradesh state. The project components utilise the head available in the stream at different locations spread in a range of around 10 km. The first project is located at Guntakandala village and comprises two generating units of 2 MW capacity each, connected to the APTRANSCO grid through the 33/11 KV Velugodu substation, located about 5.0 km away from the project. The second project is located at Velpanur village and comprises two generating units of 1.65 MW capacity each connected to grid through the above mentioned substation. The third project is located at Madhavaram village and comprises two generating units of 2 MW capacity each. This is connected to the grid through the 33/11 KV Gadivamula substation, located about 11 km from the project. The project components have vertical full Kaplan type hydro turbines with matching synchronous generators. The average plant load factor envisaged at the time of project design is approximately 35% based on hydrology data available for the Kurnool region.

The project results in reduction of GHG emissions by capacity addition to the grid, which is dominated by fossil fuel based power generators. The added advantage of the project will be in terms of additional usage of available stream which is basically used for irrigation and also in terms of jobs generated by the project. The technology applied is deemed current good practice and is not expected to be replaced within the crediting period.

The project implementation was initiated on 7 May 2001 with an agreement for the construction of first Hydel project at Guntakandala, between K.M. Power Private Limited and Sri Sai Venkataramana Constructions Limited, Nellore, Andhra Pradesh State. The expected operational

lifetime of the projects is estimated around 30 years. A fixed crediting period of 10 years has been chosen, with the starting date of crediting period as 06 February 2002, which is the commissioning date for the first project.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards India.

3.3 Baseline Determination

Since the project's installed capacity is less than 15 MW, the project is eligible as type I small-scale CDM project activity and can apply the simplified baseline methodology. The project applies the baseline methodology stipulated for category I.D of the "simplified modalities and procedure for small scale CDM project activity" (AMS-I.D version 09). The simplified baseline methodology AMS-I.D is applicable for grid connected renewable electricity generation projects and includes hydro projects. The application of AMS-I.D is justified as the project generates electricity using hydel source and displaces the grid electricity.

As the project activity is feeding power to Andhra Pradesh state electricity grid, which is a part of southern region electricity grid, the baseline for this project activity is the function of the generation mix of this grid. The selection of the southern region grid as the grid system boundary for the project activity is in line with the recent EB guidance for large countries such as India. Using the methodology available for small-scale project activities as applicable for category I.D, the "weighted average emissions (in kg CO_2 e/kWh) of the current generation mix" emission coefficient for southern grid of India has been calculated. The baseline emission factor for the years 2002-03 to 2005-06 is estimated at 0.819, 0.841, 0.795 and 0.739 kg CO_2 e/kWh respectively. The baseline emission factor for the rest of the crediting period will be calculated ex-post. The calculation worksheets for the years 2002, 2003, 2004 and 2005 have been verified by DNV.

While the actual heat rates of power plants have been used, IPCC default values have been used for the emission factors of fossil fuels such as diesel, naphtha and natural gas. The completeness of the set of power plants as well as the correctness of the reported heat rates and electricity generation data has been verified. All data has been sourced from data published by the central electricity authority (CEA).

3.4 Additionality

As per the Attachment A to Appendix B of simplified modalities and procedures for small-scale CDM project activities, the project demonstrates additionality through the existence of the investment barrier, prevailing practice and other relevant barriers.

DNV was able to verify that CDM revenues were considered at the time of project conceptualisation. Minutes of organisation's board of directors meeting for year 2000-2001 was verified as evidence for this claim. Discussion on possibilities of making the project as a CDM project was part of the assessed minutes of meetings. It was also verified that during year 2001, the project proponent has rendered the services of 'Consortium Zenith/Factors' for consultancy and participation in the CERUPT 2002 tender.

The project's additionally has been demonstrated through investment barriers occurring both during construction and operation of the project. It has been indicated that since the project is located in an underdeveloped area, lack of infrastructure by way of roads, transportation etc. have forced the project proponents to incur an additional investments towards infrastructure development alone.

The project faces hydrological risks, such as uncertainty in the availability of water in the irrigation canal primarily due to (a) lack of sufficient water flow throughout the year due to erratic rainfall and (b) likely change in the irrigation pattern upstream of the project.

Infrastructure barriers exist in the project area where no electricity, communication, transportation and proper civic amenities exist. The project proponents had to invest to create these amenities in order to establish and operate the project..

Institutional barriers are found to be represented by the frequent changes to the power purchase policy and power purchase rate fluctuations. As per APERC guidelines a two tier tariff system is imposed considering a threshold annual plant load factor (PLF) as 35%. According to this the project is eligible for Rs.2.69 per KWh up to 35% PLF any electricity generation exceeding 35% PLF is eligible for an incentive of Rs.0.25 per KWh only. This policy will thus render the project unviable without added CDM incentives.

DNV could verify that the power generation using small hydro sources is not a prevailing practice and that there were only few projects representing 56.23 MW of installed capacity operational out of the approximately 500 MW of available potential as per NEDCAP assessment. This contributed to only 11% of the total potential and also to less than 1% of the total power generated in the fossil fuel dominant Andhra Pradesh region at the time the project was conceptualised. This confirms that power generation using non-conventional sources was not a common practice in spite of governmental promotion for such projects at the stage of project initiation.

It was also verified that the project activity has a calculated IRR of 13.00% with a payback period of around 8 years without considering the CDM benefits. The IRR increases to 16.2% on considering the CDM revenues. A sensitivity analysis on the IRR, considering fluctuations in the plant load factor and electricity tariff also indicates the un-viability of the project activity without CDM revenues.

Based on the above, it is substantiated that the project faces barriers compared to other generation sources supplying electricity to the same grid and thus is deemed additional.

3.5 Monitoring Plan

The project applies AMS-I.D baseline and monitoring methodology and the monitoring involves metering of the electricity generated and exported to grid. The auxiliary power consumption is individually monitored apart from electricity generated and supplied to the grid.

It has been verified that the power exported to the APTRANSCO grid is monitored on monthly basis by both project management and APTRANSCO officials and recorded.

Details of the data to be collected, frequency of data recording, certainty and format and the project management are clearly defined.

The baseline emission is being calculated as the product of the electricity supplied to the grid and the grid emission factor of the southern regional grid, which is calculated each year ex-post for the crediting period.

Maintenance and calibration of electricity meters are carried out as per the internal procedures and in accordance with the power purchase agreement with APTRANSCO. All data will be archived in paper electronic form for two years after the crediting period.

While the board of directors of K.M. Power Private Limited is responsible for the project management, the Executive Director of the plant is responsible for data recording, archiving and reporting. Three individual teams at respective locations have been established for recording and monitoring day to day data. Procedures for internal audits, performance reviews and corrective actions have also been established. The provided monitoring plan is adequate to provide the necessary information for the calculation of electricity generated and auxiliary consumptions.

3.6 Calculation of GHG Emissions

The project will partly displace fossil fuel based electricity generation. The GHG emissions are calculated as the product of the electricity generated and exported to the grid by the project activity and the grid emission factor. In line with the methodology, the weighted average emission of current generation mix for the southern regional grid is chosen. While the grid emission factor for the years 2002, 2003, 2004, 2005 have been calculated using data sourced from the central electricity authority website, the emission factor for the rest of the crediting period will be calculated ex-post. The calculations are transparent.. While project emissions are zero, emission reductions are equivalent to baseline emissions.

Since the energy generating equipment is not transferred from another activity and no existing equipment is transferred to another activity, no leakages are considered.

Uncertainty is expected to be only on account of non availability of water head during off season, during which the plant is taken for annual maintenance.

The project replaces fossil fuel-based electricity generation. Baseline emissions are determined each year *ex-post*, and the project is expected to result in emission reductions of 211,984 tonnes of CO2, during the 10 years of fixed crediting period.

3.7 Environmental Impacts

The proposed bundled project is located on a natural stream, which is used for irrigation activities and environmental impacts of the project are considered not significant. Since the project is located on an irrigation stream, the no objection clearance from the irrigation department of Government of Andhra Pradesh dated 1 August 2000, G.O. Ms. No. 109 has been obtained and been verified.

As per the MoEF, an EIA is not required for projects costing less than USD 22 million, which is the case for this project.

3.8 Comments by Local Stakeholders

The comments from local stakeholders like local village administrators, and employees, local NGOs were invited through personal communications. No adverse comments were received from local stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD version 1 of 27 December 2005 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 29 December 2005 to 27 January 2006.

One comment was received on 27th January 2006. The comment received (in unedited form) is given in the below text box.

Comment by: Rajaram velayudhan, individual

Inserted on: 2006-01-27

Subject: Inconsistent baseline

Comment: Dear Sir,

The following are my observations

Investment Barrier:

These kinds of Irrigation canal based projects are to be welcome on red carpet in a country like India where as once these projects are considered as CDM projects the vision should be on a holistic way not constricted only towards the capital cost.

The projects benefits are as below:

1. 100% accelerated depreciation for tax purposes in the first year of the installation of projects/systems

2. Hundred per cent deduction from profits and gains for first five years and thereafter 30 per cent of the profits and gains.

3. Exemption from MAT

4. An equity component of only 30% of the total project cost

5. For survey , investigation and DPR preparation the grant was in the region of 0.3 millions

6. Interest subsidy of 2 %

7. Interest rate of 12%, with repayment duration of 12 years having a moratorium of max 3 years.

8. No excise duty on manufacture of most of the finished products.

9. Low import tariffs for capital equipment and most of the materials and components.

10. Soft loans to manufacturers and users for commercial and near commercial technologies.

11. Five year tax holiday for power generation project

12. Zero fuel cost

13. No water cess etc for utilization of power

So the factor of investment Barrier on the SHP should be addressed by considering the above factors too.

Infrastructure facility:

Being a irrigation canal based (“not on a hilly terrain”) the infrastructure barrier should be supplemented with suitable documents like investment made by the project proponent to do the same ,amenities created (through local Panchayat sources) should be verified by the DOE at the time of validation to make the process transparent.

Institutional Barrier:

The institutional barrier would place a hinging factor if all the money has been invested by the promoter himself as equity where as the payback for the equity is only 2 years based on the actual generation details with out any consideration of the above stated benefits. As stated in the PDD if the tariff would have remained the same then the pay back on equity would be at much lesser time than this.

Baseline Emission Factor:

I personally believe that there are certain pertaining issues needs to be considered on the scale of conservativeness while considering the baseline emission factors.

Inconsistency in the baseline assumption and non conservative baseline

The section E.1.1 states that the “Calculation of the project GHG emissions reductions applies a weighted average emissions factor for all thermal plants that are operational on the Southern grid of India as of March 2005”.where as the generation data considered is for the year 2003 -04 not 2004 -05.

The conservativeness is debatable in this value of two reasons.

1. Heat rate

2. Year of consideration

Heat Rate: The heat rate considered is too high and the source for that data is 2001-02 which would be appropriate if the baseline emission factor would have considered the generation data of that particular year or any latest sources are not available. As the starting date of the project activity falls with in that time period if the CEF value would have been that then it would be the most conservative value.

The latest data available with the CEA "Performance Review of thermal power stations 2004-05 Section 13"mentioned average heat rate for the southern region is 2707 for the year 2003 -04 and 2700 for the FY 2004-05.

As because the Project developer has considered the generation data at the time of submission of PDD for the year 2005 (even though not considered correctly) the SHR should be accordingly to that source not the earlier one.

For Example

The SHR for the following plants are compared

Kothagudem plant SHR considered in PDD is 3357 against 2594

Vijawada plant SHR considered is 2639 against 2435

Rayalseema 2662 against 2288

Ramagundam 3239 against 2723

So the appropriateness would be average SHR of the region (or) the IPCC default SHR (if sources are not available) which substantially reduces the CEF for the region.

Year of consideration:

The actual starting date of the project activity is 14th Feb 2002 where as the baseline considered was for the year 2005 as mentioned in the PDD even though that is not true(it is for 2004).

The methodology I.D states that on option b that "The weighted average emissions (in kg CO2equ/kWh) of the current generation mix" but it has not stated as how it has stated in the ACM 0002 Version 4 pg no 6.

Under this assumption the appropriate year of baseline selection would be weighted average emission at the time of the generation or 3 year average on most recent statistics not the current generation mix at the time of PDD submission.

As per the assumptions made by the Project proponent

The CEF value for 2005 (as stated in PDD) would be 814 with high SHR as assumed not 848.The actual values should be less as else where explained in the comments by considering the appropriate SHR at present values and is the most highest value from the starting date of the project activity.

In my opinion the following should be rectified before being submitted for further processes.

Warm regards

Rajaram Velayudhan

The project participants' response:

As per Sec.32 of the Income Tax Act, 1961 and the schedule of depreciation given under the said section, on Renewable energy equipment front, only wind energy equipment and biomass equipment is given accelerated depreciation at 80% and Hydro power equipments are subject to normal depreciation only and accelerated depreciation is not available. Extract of Sec.32 of the Income Tax Act is enclosed.
Hundred percent deduction from profits and gains for first five years and 30% there after are considered while preparing the IRR. IRR statements are enclosed.

As per Sec. 115JB of the Income Tax Act no exemption available for the Power generation companies from the payment of MAT. Extract of Sec.115JB of the Income Tax Act is enclosed.

Regarding 30% equity component, our projection for the said projects is based on the funding structure approved by IREDA. Copies of IREDA sanction letter are furnished.

Due to complex procedures the incentive could not be availed by the company for detail project report and survey. The incentive has to be claimed within 6 months from the date of financial closure through a nodal agency and there is no possibility for claim after 6 months.

Interest subsidy of 2% is considered for the purpose of working out IRR. Letter from MNES is furnished.

Interest rate is considered as per the norms of IREDA. The repayment period was 28 quarterly instalments with a moratorium of 3 years. Subsequently the repayment period was enhanced to 12 years for two of the bundled projects. IREDA sanction letter is enclosed.

No excise duty on manufacturing cost of finished products, IREDA has considered the same while firming up the project cost.

All the equipments used in the projects are indigenous except generators. Generators are imported from Brazil and no import duty is imposed on the equipment, same has been taken into account while considering the total project cost.

The cost of equipments is decided by tendering process and the cost quoted by the suppliers are after considering all the benefits. Hence no credit will be availed in the project cost.

Five year tax holiday for power generation project is considered in the IRR calculations. Extract of the Income Tax Act is enclosed.

Zero fuel cost is taken in the financial calculations.

In Andhra Pradesh water cess is payable to Irrigation Department @Rs.0.02 per kWh

Therefore all the above incentives are considered while calculating IRR.

The project proponent has spent about Rs.2 million on laying a road of 4 Kms length from Madhavaram to Abdullapur via Velpanur to help the local population as well as movement of men and material for the project. The project proponent also spent a sum of Rs.0.6 million on renovation of a temple consisting of purchase of some additional land for temple, construction of compound wall, developing a garden as well as laying of water pipe line in the temple. Further the project proponent has constructed a foot bridge at Aiyavaripalli road (Madhavaram project) from one end of Nippulavagu to the other end for movement of people by spending Rs.0.1 million. The project proponent has also undertaken renovation of existing causeway and road near Guntakandala project spending Rs.0.3 million. A confirmation letter from the project proponent is enclosed.

If all the money has been invested by the promoter, the institutional barrier would not be severe as the case where there are borrowed funds. In this particular case, the promoter has borrowed about 70% of the loan from a lending institution and he is liable to repay the same based on a schedule. With institutional barrier with regard to tariff, meeting the liability on schedule becomes more difficult. If the tariff price is fixed downwards as is the project case, the project cash flow would be seriously affected resulting in the inability of the promoter to meet loan obligation.

Realising the genuine difficulties faced by the promoter due to the problems of hydrology as well as tariff problems, IREDA has extended the loan repayment period from 7 year repayment to 12 year repayment for two of the bundled projects. Letter from IREDA is enclosed.

The pay back is calculated for the whole investment and not just for equity component only.

The baseline considered for the project activity is in accordance with the SSC baseline methodology I.D. Version 9. As per 9.b of I.D. the emission factor shall be the weighted average emissions of current generation mix, according to which current generation mix is interpreted as the one prevailing at the time of submitting the PDD. At the time of submitting the PDD for validation, the most recent year for which the annual data is available is 2004-2005, hence the same has been considered in the PDD and a constant baseline has been considered for the purpose of indicating the anticipated emission reductions from the project activity. However, now it has been clearly shown in Section D.3 of PDD, the grid emission factor is considered for ex post monitoring during the year the generation occurs, hence, the generation data published by CEA for the same year will be considered for estimating the emission reductions from the project activity.

With regard to the heat rates, the project participants have considered a more aggregated data published by the Ministry of Non-conventional Energy Sources, Govt. of India. The CEA has published a report "Performance Review of Thermal Power Stations 2004-05". This report considered a very small sample group of 40 thermal power plants and only 10 thermal power plants in the Southern Region. CEA has calculated average station heat rates of only 10 power plants and projected as an average of the entire southern region. Project Participants have considered this as inappropriate since the southern region has 44 thermal power plants and all

thermal power plants are not comparable with those selected by CEA. Out of all the thermal power plants in the southern region some of the plants have larger heat rates than the aggregated average values, hence, project participants felt that the aggregated heat rates specified by MNES better represent the baseline situation. However, project participants have now revised the baseline estimation considering the heat rates of 10 thermal power plants those considered by CEA for performance review and MNES heat rates for the remaining thermal power plants. Also, the grid emission factor is re-calculated using the yearly generation data for the previous years and the same is attached herewith for verification.

How DNV has considered the comment received in its validation:

DNV could verify that accelerated depreciation is not applicable for hydro power generating equipment and as per the Income Tax Act of India rules, normal depreciation rate of 3.4% is applicable.

Details of IREDA estimations on payback period, IRR/sensitivity analysis were also verified by DNV. It has been confirmed that the IRR calculations consider all applicable interest subsidies, tax holidays and minimum alternative tax (MAT). It was also verified that MAT is not exempted for the power generation companies.

DNV could also verify the evidences for the expenditure incurred on infrastructure development for the project activity. As regards the institutional barrier, the evidence that the IREDA had extended the repayment period for the project from 7 years to 12 years, due to poor rain fall in the starting years of the project was also verified.

DNV had raised a clarification on method of baseline factor calculation, and has verified the revised baseline emission factor for southern grid and the completeness of the set of power plants, reported heat rates and electricity generation data. All data has been sourced from the central electricity authority (CEA) and MNES websites.

The grid emission factor will be calculated ex-post each year based on generation data and is to be verified during the verification process.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "11.3 MW renewable Energy Project for a Grid System by K.M. Power (P) Limited" at Velugodu mandal, Kurnool District, Andhra Pradesh, India on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project participant is K.M. Power Private Limited. The host Party India meets all participation requirements and the DNA of India approved the project.

The validation has confirmed that the project is eligible as category I.D small-scale CDM project activity and correctly applies the simplified baseline and monitoring methodology AMS-I.D version 09. The determination of the baseline is well elaborated, transparent and sufficiently supported with facts. The selected baseline scenario is reasonable for the selected 10 year crediting period. Moreover, an analysis of the barriers facing the project demonstrates that project is not a likely baseline scenario.

The project will contribute to sustainable development by generating renewable energy, providing benefits such as employment generation during construction and operation of the project, ensuring environmental well being and aid in bridging the gap between demand and supply of power. The DNA of India has confirmed that the project assists in achieving sustainable development and has accorded the approval for the project on 02 August 2006.

The validation did not reveal any information indicating that the project can be seen as a diversion of ODA funding towards India.

The project results in the reduction of GHG emissions those are real, measurable and give long-term benefits and that are additional to what would have occurred in the absence of the project.

The total emission reductions from the project are estimated to be on the average 21,198 tCO_2e per year over the selected 10 year crediting period. The emission reduction forecast has been checked and is deemed likely that the state amount is achieved given that the underlying assumptions do not change.

The monitoring plan makes sufficient provision for monitoring relevant project and baseline emission indicators. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been addressed.

A local stakeholder consultation process has been carried out by the project participant. DNV published the PDD on the DNV climate change web site and comments by Parties, stakeholders and UNFCCC accredited NGOs were invited through the CDM web site. One comment was received and DNV has taken due account of this comment in its validation of the project.

In summary, it is DNV's opinion that the project, as described in the project design document of 12 October 2006, meets all relevant UNFCCC requirements for the CDM, is eligible as category I.D small-scale CDM project activity and correctly applies the approved simplified baseline and monitoring methodology AMS-I.D. Hence, DNV requests the registration of the "11.3 MW

renewable Energy Project for a Grid System by K.M. Power (P) Limited" as a CDM project activity.

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/ 1/ K.M. Power Private Limited: CDM PDD "10.6 MW renewable energy project for a grid system by K.M.Power (P) Limited, India " Version 1 of 27 December 2005 and "*11.3 MW renewable Energy Project for a Grid System by K.M. Power (P) Limited*" Project version 2 of 12 October 2006.

/ 2/ K.M. Power Private Limited : Baseline calculation for grid emission factors

/ 3/ Ministry of Environment and Forest (DNA of India): Letter of Approval dated 02 August 2006.

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

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

/ 5/ Appendix B of the simplified modalities and procedures for small-scale CDM project activities: *Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories*. Version 09: 28 July 2006.

/ 6/ Revised 1996 IPCC guidelines for national green house gas inventories – Reference manual (volume 3)

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

/ 7/	Mr. Ramanarayana Reddy	Managing Director, K.M. Power Private Limited.
	Mr. Y. Timmayya	Executive Director, K.M. Power Private Limited.

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APPENDIX A

VALIDATION PROTOCOL
FOR SMALL-SCALE CDM PROJECT ACTIVITIES

Table 1 Mandatory Requirements for Small Scale Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference/ Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	The project has been proposed as a unilateral project	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	~~CAR 1~~	Table 2, Section A.3 The Host country approval has been obtained.
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	~~CAR1~~	The Host country approval is obtained.
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	OK	Table 2, Section B.2.1
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not	Decision 17/CP.7, CDM Modalities and Procedures Appendix B,	OK	The project is being proposed as a unilateral project

Requirement	Reference	Conclusion	Cross Reference/ Comment
result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	§ 2		
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures § 29	OK	DNA of India is the National Clean Development Mechanism Authority, Ministry of Environment and Forests.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities and Procedures § 30, 31b	OK	India ratified Kyoto Protocol on 26 August 2002
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	Annex I Party has not been identified yet	The project is being proposed as a unilateral project
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	Annex I Party has not been identified yet	The project is being proposed as a unilateral project
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK	Table 2, Section A.1
13. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	OK	Revised PDD of date 12 October 2006 was submitted.
14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM	Simplified Modalities and Procedures for Small	OK	Table 2, Section A.1.3, B and D

Requirement	Reference	Conclusion	Cross Reference/ Comment
project activities and uses the simplified baseline and monitoring methodology for that project category	Scale CDM Project Activities §22e		
15. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	OK	Table 2, Section G Local stake holders are consulted by the project proponent
16. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK	Table 2, Section F
17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD was made publicly available on www.dnv.com/certification/climatechange and Parties, stakeholders and NGOs will through the CDM website be invited to provide comments during the 30 day period from 29 December 2005 to 27 January 2006. One comment was received.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. **Project Description** The project design is assessed.					
A.1. Small scale project activity It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/ 1/ / 7/	DR	Yes, The project qualifies as a renewable energy project with a maximum power output capacity equivalent to up to 11.3 MW, (category -Type I small scale CDM project activity). The project is a bundle made of three smaller projects. It involves the installation of three small hydro power generation stations located on the Nippulavagu, a natural stream which is also a carrier canal for Kurnool-Cuddapah canal. The generation station locations and capacities are as follows- Village Guntakandala - 2 X 2MW Village Velapanur – 2 X 1.65 MW Village Madhavaram - 2 X 2.0 MW The documents supplied for verification like IREDA Letter dated 03-04-2003, certificate of payment to Sri Sai Venkataramana constructions dated 26-05-03 and site observations confirm this. A clarification on actual installed capacity of the bundled project is needed as the project title has a capacity of 10.6 MW instead of 11.3 MW.	~~**CL 1**~~	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.1.2. The small scale project activity is not a de bundled component of a larger project activity?	/ 1/	DR	No. The project is not a de bundled component of a larger project as there is no other similar project that has been registered by the project proponent in the same project category using the same measures.		OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	/ 1/	DR	Yes, the project falls under category Type-I, Renewable Energy Projects and category-D Renewable electricity generation for a grid. The bundled project is a hydro electric project.		OK
A.2. Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	/ 1/ / 7/	DR	The projects are located at Villages Guntakandla, Velpanur and Madhavaram, Velugodu Mandal, Kurnool district in Andhra Pradesh, India. All projects are situated on Nippulavagu stream with in span from 7.95 km to 18.202 km.		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/ 1/	DR	Yes, The project system boundaries clearly defined. The project boundary encompasses the diversion structure, power canal, penstock, powerhouse, power evacuation system and tailrace.		OK
A.2.3. Does the project design engineering reflect current good practices?	/ 1/	DR	Yes, The project design reflects current good practices through the use of synchronous generator and vertical full Kaplan type turbine.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.2.4. Will the project result in technology transfer to the host country?	/ 1/	DR	No technology transfer is involved as the technology is available in the host country.		OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	/ 1/	DR	Though not specifically addressed in the PDD, the project will require minimal additional training and maintenance efforts, as this involves setting up of a small hydro project using indigenous technologies.		OK
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	/ 1/	DR	Yes, the project generates employment during the construction and operation of the project. It also acts as catalyst for further construction of roads, rural development in shape of buildings and communication system, checks rural migration, and ensures environmental well being and reliable power generation from renewable source of energy to the region.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/ 1/	DR	The project is unlikely to create any adverse environmental or social effects, as this is a run of river small hydro electric project.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/ 1/	DR	The proposed project is likely to create jobs and contribute to local development, apart from environmental and social being. However, this should be further confirmed by the DNA of India, as Host country approval for the project is not evidenced.	~~CAR1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/ 1/	DR	As per the MoEF, an EIA is not required for projects costing less than USD 21.74 millions, as is the case with the proposed project activity. The no-objection certificate dated 1st August 2000, from Irrigation department of Government of Andhra Pradesh has been obtained.		OK
B. **Project Baseline** The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	/ 1/	DR	Yes, The project applies one of the simplified baseline proposed for the small scale project category I D i.e. the baseline is the annual kWh generated by the project times an emission coefficient calculated as the weighted average emission (in kgCO2/kWh) of the current generation mix.		OK
B.1.2. Is the baseline methodology applicable to the project being considered?	/ 1/	DR	AMS ID is applicable to renewable energy projects and as the project is a small hydro power plant.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	/ 1/	DR	Yes, the project's additionally has been demonstrated through the barriers of investment, hydrological, infrastructure and institutional investment barriers occurring both during construction and operation of the project. It has been indicated that since the project is located in an underdeveloped area, lack of infrastructure by way of roads, transportation etc. have forced the project proponents to incur an additional investments towards infrastructure development alone. Hydrological barrier is due to the uncertainty in the availability of water in the irrigation canal primarily due to (a) lack of sufficient water flow throughout the year due to erratic rainfall (b) likely change in the irrigation pattern upstream of the project. Infrastructure barriers exist in project area where no electricity, communication, transportation and proper civic amenities exist. Project proponents have to invest to create these amenities to establish and operate the project. Institutional barriers are found to be frequent changes to the power purchase policy, power purchase rate fluctuations. There is also a requirement of shutting down of plant in cases of	~~CL 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			emergency, surplus power situations and off peak duration. A two tier tariff system imposed on the hydro power projects operating at and above 35% plant load factor also is a barrier. These all render the project unviable under normal conditions. Prevailing practice still continues to be reliant on fossil fuel based power generation. The installed capacity of small hydropower plants generation in India is only 1994 MW out of total installed capacity 114,164 MW i.e. only 1.7 %, as verified from the Ministry of non conventional energy sources. It remains to be clearly demonstrated that the project would not have occurred anyway. In view of the validation team, the presented analysis requires additional information such as an IRR analysis without CER revenues but including incentives for renewable energy projects, data on small hydro units in Andhra Pradesh and their status with respect to finance.		
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/ 1/	DR	Yes, the methodology chosen has been applied in a transparent and conservative manner. The choice and application of weighted average methodology is not clear.	~~CL 3~~	OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/ 1/	DR	National policy encourages the development of renewable energy sources.		OK
B.2.4. Is the baseline selection compatible with the available data?	/ 1/	DR	The available data has been primarily taken from reports published by the CEA Ministry of Power, Government of India.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	/ 1/	DR	Yes, it is likely that India will remain dependent on fossil fuel energy for the entire duration of the crediting period.		OK
C. **Duration of the Project / Crediting Period** It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	/ 1/	DR	The starting date of the first power plant, 7 May 2001 is taken as starting date for the project and the project operational life time is specified as 30 years and reasonable. Evidence of commissioning of the project or synchronising with the grid needs to be submitted.	~~CL 4~~	OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/ 1/	DR	Yes, the crediting period is for 10 years starting from 6 February 2002.		OK
D. **Monitoring Plan** The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in	/ 1/	DR	The project falls under category I.D of appendix B		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
line with the monitoring methodologies provided for the relevant project category?			of the simplified modalities and procedures for small scale CDM project activities and the monitoring methodology used is in line with the same.		
D.1.2. Is the monitoring methodology applicable to the project being considered?	/ 1/	DR	The project is a renewable energy generation project and thus the monitoring requirement under category I.D. is used in this project. Since the project is bundle project of three small hydro projects, the auxiliary consumptions are also monitored separately apart from electricity generated and supplied to grid.		OK
D.1.3. Is the application of the monitoring methodology transparent?	/ 1/	DR	Yes.		OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/ 1/	DR	Yes the monitoring methodology will give opportunity for real measurement of achieved emission reductions.		OK
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. 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/		There will not be any project emissions, since the activity is run-of- the river hydroelectric project.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.3. Monitoring of Leakage If applicable, it is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/ 1/	I	Since the energy generating equipment is not transferred from another activity and no existing equipment is transferred to another activity, no leakage needs to be considered.		OK
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/ 1/	I	Yes, the baseline indicators have been chosen in line with the small-scale methodologies approved by the CDM EB. The monitoring plan provides for the monitoring of the total electricity exported to the grid from the project activity The grid emission factor for the southern regional grid is calculated ex-post each year.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/ 1/	DR	The choice of indicators is sufficient to monitor the CO_2 emissions, the relevant GHG.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/ 1/	DR	Yes, it is possible with the data being monitored.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/ 1/	DR	Yes.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	/ 1/	DR	The authority and responsibility for the project management has to be formally described.	~~CL 5~~	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/ 1/	DR	Available but need to be formalised.	~~CL5~~	OK
D.5.3. Are procedures identified for training of monitoring personnel?	/ 1/	DR	As in D.5.2	~~CL5~~	OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/ 1/	DR	As the project activity is a mini-hydro projects (3 components), no emergencies are foreseen.		OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	/ 1/	DR	Calibration of instruments is being done but procedures need to be formalised.	~~CL5~~	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/ 1/	DR	Available but need to be formalised.	~~CL5~~	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/ 1/	DR	Available but need to be formalised	~~CL5~~	OK
D.5.8. 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	Available but need to be formalised	~~CL5~~	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/ 1/	DR	As in D.5.7	~~CL5~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/ 1/	DR	Procedures need to be formalized.	~~CL5~~	OK
D.5.11. Are procedures identified for project performance reviews?	/ 1/	DR	Procedures need to be formalized	~~CL5~~	OK
D.5.12. Are procedures identified for corrective actions?	/ 1/	DR	Procedures need to be formalised	~~CL5~~	OK
E. **Calculation of GHG emission** 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.					
E.1. Project GHG Emissions The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	/ 1/	DR	Since the project activity is a small hydro power project there will be no project emissions.		OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	/ 1/	DR	Same as E.1.1		OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	/ 1/	DR	Same as E.1.1		OK
E.1.4. Are the calculations documented in a complete and transparent manner?	/ 1/	DR	Same as E.1.1.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.1.5. Have conservative assumptions been used?	/ 1/	DR	Same as E.1.1		OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	/ 1/	DR	Yes.		OK
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed and estimated ex-ante.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	/ 1/	DR	Since the energy generating equipment is not transferred from another activity and no existing equipment is transferred to another activity, no leakage needs to be considered.		OK
E.3. Baseline GHG Emissions The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	/ 1/	DR	Yes the baseline emission sources are clearly defined.		OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/ 1/	DR	Yes, all aspects related to direct baseline emissions are captured. No significant indirect emissions, hence not captured. The baseline emissions are calculated as the product of the estimated electricity generation and the grid emission factor of the southern regional grid.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/ 1/	DR	Yes, CO_2 is the relevant greenhouse gas and the sources are evaluated.		OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/ 1/	DR	The methodology for calculating the baseline emission complies with existing good practice. Also as B.2.2	~~CL3~~	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	/ 1/	DR	Yes, the calculations are documents in a transparent manner.		OK
E.3.6. Have conservative assumptions been used?	/ 1/	DR	Same as B.2.2.	~~CL3~~	OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/ 1/	DR	Yes.		OK
E.4. Emission Reductions Validation of ex-ante estimated emission reductions.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	/ 1/	DR	Yes, the project activity will result in fewer emission reductions than in the baseline case.		OK
***F.* Environmental Impacts** It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	/ 1/	DR	As per the MoEF, an EIA is not required for projects costing less than USD 22 Millions, as is the case with the proposed project.		OK
F.1.2. Does the project comply with environmental legislation in the host country?	/ 1/	DR	Yes.		OK
F.1.3. Will the project create any adverse	/ 1/	DR/I	No. The no-objection certificate from irrigation		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
environmental effects?			department of Government of Andhra Pradesh has been obtained and verified..		
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/ 1/	DR	Yes		OK
G. **Comments by Local Stakeholder** Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	/ 1/	DR	Yes the following relevant stakeholders have been consulted - Local community / administrative authorities comprising of Village Panchayat, District local administration and biomass suppliers; APTRANSCO and other regulatory authorities.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/ 1/	DR/I	The comments from local stakeholders were invited through personal communication and were verified.		OK
G.1.3. 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	Not specifically required for small scale biomass projects under the Indian legislation.		OK
G.1.4. Is a summary of the comments received provided?	/ 1/	DR/I	Summery of local stake holder's comments is available and was verified		OK
G.1.5. Has due account been taken of any comments received?	/ 1/	DR	No adverse comments have been received.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
~~**CAR 1**~~ The Host country approval is yet to be confirmed	A.3.3	The project has obtained host country approval from the Indian DNA. Copy of approval is enclosed for verification.	Approval from DNA of India dated 2 August 2006 has been evidenced. CAR 1 is closed.
~~**CL 1**~~ It involves the installation of three small hydro power generation stations located on the Nippulavagu, a natural stream which is also a carrier canal for Kurnool-Cuddapah canal. The generation station locations and capacities are as follows- Village Guntakandala - 2 X 2MW Village Velapanur – 2 X 1.65 MW Village Madhavaram - 2 X 2.0 MW The documents supplied for verification like IREDA Letter dated 03-04-2003, certificate of payment to Sri Sai Venkataramana constructions dated 26-05-03 and site observations confirm this. A clarification on actual installed capacity of the bundled project is needed as the project title has a capacity of 10.6 MW instead of 11.3 MW.	A.1.1	Total installed capacity of the bundled project activity is 11.30 MW. Out of the three bundled hydro power projects, the installed capacity of Madhavaram Hydel scheme has been revised from 3.3 to 4 MW. Hence, the present installed capacity is 11.30 MW. The revision of capacity has taken place before the implementation of the project activity. The approval received for enhancement of capacity is enclosed for verification.	The complimentary evidence provided has been verified and confirmed that the capacity of bundled is project is 11.3 MW. CL 1 is closed.
~~**CL 2**~~ It remains to be clearly demonstrated that the project would not have occurred anyway. In the view of the validation team, the presented	B.2.1	The project proponent has not relied on IRR analysis for demonstration of additionality. However, an IRR analysis has been	The IRR and sensitivity analysis provided has been reviewed and accepted.

<table>
<tr><th>Draft report corrective action requests and requests for clarification</th><th>Ref. to Table 2</th><th>Summary of project participants' response</th><th>Final conclusion</th></tr>
<tr><td>analysis requires additional information such as an IRR analysis without CER revenues but including incentives for renewable energy projects; data on small hydro units in Andhra Pradesh and their status with respect to finance.</td><td></td><td>made for the project activity with and without GHG revenue. While working out the IRR analysis the project proponent has considered all the incentives and concessions available for the project. The IRR worked out to 13% without GHG income and the same is 16.20% considering CDM revenue. The project proponent has also worked out sensitivity analysis considering three scenarios viz., 10% decrease in PLF, 10% increase in PLF and 10% decrease in tariff. The result of sensitivity analysis is shown below:
<table>
<tr><td></td><td>IRR with GHG (%)</td><td>IRR without GHG (%)</td></tr>
<tr><td>10% decrease in PLF</td><td>10.19</td><td>13.14</td></tr>
<tr><td>10% increase in PLF</td><td>15.73</td><td>19.16</td></tr>
<tr><td>10% decrease in tariff</td><td>10.18</td><td>13.47</td></tr>
</table>
Detailed assumptions underlying calculation of IRR is enclosed.

Data on small hydro units in Andhra Pradesh and their status is furnished in the PDD.</td><td>CL 2 is closed.</td></tr>
<tr><td>~~CL 3~~</td><td>B.2.2</td><td>The baseline calculation of PDD has been revised. While calculating the</td><td>The revised baseline calculations have been reviewed and accepted.</td></tr>
</table>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
The choice and application of weighted average methodology is not clear.		emission factor for coal, Net Heat Rate (NHR) is taken from CEA (local) published values, Carbon emission factor and oxidation factor is taken from India's Initial National Communication to UNFCCC (local) and Revised 1996 IPCC guidelines. Both Local and IPCC default values are applied in the following formulae where ever applicable for Calculating emission factor. EF = NHR * IPCC / Local CEF * IPCC Oxi F * 44/12 (In the above mentioned formulae, necessary unit conversion factors have been used in baseline calculation sheet) All necessary references have been furnished in attachment (Baseline information) to PDD According to para 9 (b) of AMS I.D version 9, projects qualify under this category (I.D) can use either combined margin or weighted average as choice. For calculating the build margin (part of combined margin), it requires project commissioned dates including for each unit in the each project and current generation of particular unit, where inconsistency existed in the data availability. For other than coal and	CL 3 is closed.

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		large hydro projects (gas, naphtha, lignite, biomass, co-gen, wind, small hydro and solar) commissioned dates and generation details are not available with authentic sources like CEA, MNES and MoP. Hence, in current project case weighted average approach is applied for baseline calculations, which is conservative.	
~~**CL 4**~~ The starting date of first project 7 May 2001 is taken as starting date for the project and for an operational life time of 30 years. Evidence of commissioning of the project or synchronising with the grid needs to be submitted.	C.1.1	The three bundled small hydro projects synchronised with the grid on 06.02.02, 07.11.02 & 29.10.03 respectively. Synchronisation certificates from AP Transco are enclosed.	The evidences provided have been accepted. CL 4 is closed.
~~**CL 5**~~ The authority and responsibility for project management has to be formally described. **P**rocedures for project management covering authority & responsibility, measurement, monitoring, reporting, calibration, maintenance & emergency preparedness to be formalised. Management system procedures related to documentation/record keeping, corrective actions, internal audits & performance reviews also to be formalised.	D.5.	K.M. Power Private Limited is managed by a Board of Directors. There is a full time Managing Director who is assisted by an Executive Director. The Executive Director is responsible for operation of the project and has under him support staff such as managers, shift in-charges, operators, maintenance personnel etc. Detail procedures are attached for reference.	The procedures furnished have been reviewed and accepted. CL 5 is closed.

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