



VALIDATION REPORT

PERPETUAL 7.5 MW NON- CONVENTIONAL RENEWABLE SOURCES BIOMASS POWER PROJECT IN INDIA

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DET NORSKE VERITAS



VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “Perpetual 7.5 MW Non-Conventional Renewable Sources Biomass Power Project” project in India 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. This validation report summarizes the findings of the validation.

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 project design document of February 2006, meets all relevant UNFCCC requirements for the CDM, and 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 “Perpetual 7.5 MW Non-Conventional Renewable Sources Biomass Power Project” project as CDM project activity.

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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	Andhra Pradesh Transmission company
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 ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
KWh	Kilo Watt hour
MW	Mega Watts
MNES	Ministry of Non-conventional energy sources
MoEF	Ministry of Environment and Forest
MP	Monitoring Plan
NEDCAP	The Non-Conventional Energy Development Corporation of Andhra Pradesh
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
PPA	Power Purchase agreement
USD	United States Dollar
UNFCCC	United Nations Framework Convention on Climate Change



1 INTRODUCTION

The Perpetual energy systems limited (PESL) has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform validation of the “Perpetual 7.5 MW Non-Conventional Renewable Sources Biomass Power Project” project (hereafter called “the project”) in India. This report summarises 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
Santhosh Jayaram	DNV, India	GHG auditor
Subhendu Biswas	DNV, India	GHG Auditor
Einar Telnes	DNV Norway	Sector Expert, Technical Reviewer

1.1 Validation Objective

The purpose of a validation is to have an independent third party assessment on 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/ and the relevant decisions by the CDM Executive Board. 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 is a 7.5 MW (gross) capacity grid-connected biomass based power project. The project was commissioned in March 2003. The project utilises the available biomass in the region where the plant is located, such as rice husk, Prosopis juliflora, bagasse, cotton stalks etc, for generation of electricity that is exported to Andhra Pradesh state electricity grid. It uses a condensing type steam turbo generator with a matching boiler of travelling grate technology, capable of firing multiple fuels. The technology used in this project is indigenous.



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The objective of the project is to reduce anthropogenic GHG emissions by displacing fossil fuel based electricity generation with renewable biomass. The project thereby helps in reducing the power deficit in the state of Andhra Pradesh and also contributes towards natural resources conservation such as coal.

Based on a baseline emission factor determined to be to be 0.830 kgCO₂ per kWh, the project is expected to result in emission reductions of 20,300 tonnes of CO₂ per year during the first renewable seven years crediting period.

2 METHODOLOGY

The validation of the project started in August 2005, with hosting of PDD at the UNFCCC website and inviting stakeholder's comments.

The validation consisted of the following three phases:

- i) a desk review of the project design document
- 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 "Perpetual 7.5 MW non-conventional renewable sources biomass power" 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) is 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
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>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.</i>	<i>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.</i>

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>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.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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.</i>

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
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1 Validation protocol tables



2.1 Review of Documents

The PDD / 1/ submitted by the Perpetual Energy Systems Private Limited (and the earlier version) and additional background documents related to the project design and such as the baseline calculation data, local stakeholder's comments and the monitoring plan were assessed as apart of the validation.

2.2 Follow-up Interviews

On the 20th and 28th of September 2005, DNV performed interviews with representatives of Perpetual Energy Systems Private Limited (PESL) and local stake holders to confirm selected information and to resolve issues identified during the document review. The main topics of the interviews are summarised in Table 1 Interview topics.

Table 1 Interview topics

Interviewed organisation/persons	Interview topics
Perpetual Energy Systems Private Limited (PESL)	➤ 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.
Environment engineer APPCB Vizayanagaram Division	➤ Over all impact of Perpetual power project on local environment ➤ Any complaints on project
Village executive Officer –Pedabhogila gram Pnachayat	➤ Local people reaction to the project ➤ Economic impact on local population
Village President – Pedabhogila major Panchayat (neighbouring village)	➤ Implications due to biomass plant associated activities ➤ Local benefits due to project
Mandal Prajaparishad Member-Sitanagaram village	➤ Overall impact of project ➤ Revenue benefits to village
President –Crane growers association SeetaNagaram	➤ Availability of biomass ➤ Cost of biomass
Divisional Forest Officer – Vizayanagaram Range	➤ Impact of project on forest conservation
Neighbouring farmers – seetanagaram	➤ Project impact on their crops ➤ Benefits due to project for biomass selling
Principal - V.V.Junior college, Seetanagaram	➤ Local employment ➤ Impact on 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 part of the validation identified three Corrective Action Requests and nine requests for Clarification. These requests were presented to the project participants in DNV's draft validation report and the project participants were invited to provide a response to these requests. The project participants' response, which included the submission of a revised PDD dated 6 February 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 by DNV and the response provided by the project participants are documented in Table 3 of 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 February 2006.

3.1 Participation Requirements

The project activity is being proposed as a unilateral CDM project by Perpetual Energy Systems Private Limited, which is the only project participant. The host Party India meets all participation requirements and the DNA of India has approved the project on 23 September 2005 and has provided confirmation that the project assists in achieving sustainable development.

3.2 Project Design

The project has a rated generation capacity of 7.5 MW and aims to export the electricity to the Andhra Pradesh state electricity grid, which is connected to the Southern Regional electricity grid. The project is connected to APTRANSCO grid through 33/11 KV sub-station which is located about 0.5 km away from the project.

The technology used for the project is available in India and no transfer of technology is envisaged. The biomass based power plant will generate electricity by utilizing the available biomass in the region, which will be primarily rice husk, cotton stalks and chilli stalks and small quantities of juliflora. The rice husk, cotton stalks and chilli stalks used in the project are renewable biomass. Small quantities of juliflora twigs that constitute woody biomass as per the NEDCAP are also considered as renewable (as per the definition of renewable biomass provided at the 22nd meeting by the EB) as the growth period for these small branches is approximately 12 to 15 months and the land area remains a cropland. Prevailing practice is that growing of juliflora is unplanned and the normal harvesting practice is restricted to the cuttings from the plants and therefore carbon stocks can be deemed to decrease only temporarily. Hence, the use of juliflora in small quantities can be considered as renewable. The project at present does not use any other woody biomass. The source of any other woody biomass, if used, is to be verified during verification stage, in order to determine whether it can be considered renewable.



The project consists of a condensing type steam turbo generator coupled with matching boiler of travelling grate type technology capable of firing multiple fuels. The capacity generation of boiler is 33 tones of steam per hour at a pressure of 67 kg/ cm² and a temperature of 490⁰C.

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 income generated for the farmer and also in terms of jobs generated due to this project. The technology applied is deemed current good practice and is not expected to be replaced within the crediting period.

The project activity was started (implementation) on 27 January 2002 with an agreement between Triveni Engineering Industries Limited and project participant for design supply and commissioning of Turbine. The expected operational lifetime of the project is estimated around 25 years and a renewable crediting period of 7 years has been chosen with the starting date for first crediting period as 24 March 2003.

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 Project Baseline

Since the projects capacity is less than 15 MW, the project is eligible as type I small-scale CDM project activity and can apply a 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). The simplified baseline methodology AMS-I.D is applicable for grid connected renewable electricity generation projects and includes biomass projects. The application of AMS-I.D is justified as the project generates electricity using biomass and it displaces the grid electricity.

In accordance with AMS-I.D the biomass power plant may co-fires fossil fuels. As per the guidelines of the Non-conventional Energy Development Corporation of Andhra Pradesh Limited, the project can use coal up to 25% as support fuel. To arrive at a conservative ex-ante GHG emission reduction estimates, it was assumed that the project will co-fire 30% coal although actual coal consumption is expected to be less than 25%. The emissions resulting from use of coal is incorporated as project emissions and the capacity of the unit including coal and biomass is 7.5 MW.

As the project activity is feeding power to Andhra Pradesh state electricity grid which is a part of southern region electricity board, the baseline for this project activity is the function of the generation mix of southern region 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 average of the “approximate operating margin” and the “build margin” emission coefficient for southern grid of India has been estimated to be 0.830 kg CO₂e / kWh. All data has been sourced from data published by the Central Electricity Authority and are verified by the validation team.



3.4 Additionality

As per the Attachment A to Appendix B, the project demonstrates additionality through the existence of prevailing practice and other barriers.

DNV was able to verify that the CDM was considered at the time of project conceptualisation. The board of director's report for the year 2002-2003 was verified as evidence for this claim.

DNV could verify that the power generation using renewable sources like biomass is not a prevailing practice and that it constitutes less than 1% of total generation mix of APTRANSCO, thereby confirming that power generation using non-conventional sources is not a common practice in spite of governmental promotion for such projects at the stage of project initiation.

It was also demonstrated that the estimated IRR of 10% for the project with out CDM benefits could increase to 18% with the support of CDM revenue, thereby establishing that the project is non-viable even with low cost of raw material at the time of DPR.

DNV was also able to verify the presented steep increase in the cost of biomass with the suppliers.

Another barrier to the project was the risk due to the policy changes related to the tariff rates, by which the tariffs have reduced from Rs.3.48 per unit in 2003-04 to Rs.2.88 per unit for the period 2004-05. While the policy change takes in to account the variable cost of power generation and fixes an increase of 5 % every year, the increasing cost of the raw material is creating an imbalance in the % increase in the variable cost and the actual operating cost. The policy change by which electricity units generated at plant load factors greater than 80 % are priced less than the actual generating cost is also seen as a main deterrent

Based on the above barriers it has been substantiated that the project is additional and in the absence of benefits from CDM the project activity would not have been viable, and that any capacity addition to the grid would have been by the addition of fossil fuel plants.

3.5 Monitoring Plan

The project applies AMS-I.D. Since the project also co-fires coal, the amount of biomass and fossil fuel is monitored apart from electricity generated and supplied to grid.

The selected monitoring methodology is in line with the monitoring methodology AMS-I.D – metering the electricity generated by the renewable technology. The total electricity produced and auxiliary consumptions are monitored. The net electricity supplied to the grid by the project activity is multiplied by the emission factor for the grid to determine the baseline emissions for the project activity.

Direct emissions due to usage of coal (based of carbon content of the coal used) as fuel are considered as project emissions. Indirect emissions have also been considered, but are determined to be negligible such as due to transportation of biomass material and possible ash disposal.

Maintenance and calibration are being carried out as per the internal procedures of Perpetual Energy Systems Private Limited and in accordance with power purchase agreement with APTRANSCO. All data will be archived in paper/electronic form and archived until two years after verification.



While the General Manager of PESL is responsible for project management, the plant manager is responsible for data recording and archiving and reporting. 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, the fuel consumed and analysis of the biomass used.

3.6 Calculation of GHG Emissions

Direct onsite emissions are restricted to the use of fossil fuels in the boiler, when used during shortfall in rice husk supply. Transportation of biomass occurs from biomass sources within a 30 km radius of the power plant. The emissions due to transportation have been estimated to be as 640 t CO₂/year. It has been argued that the same types of GHG emissions occur during transportation of coal from coal mines for which transport distances are much longer. Hence, emissions due to transportation of biomass in comparison are considered negligible and are therefore not considered.

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.

Uncertainty is expected to be only on account of non availability of biomass. The substitute will be usage of coal, and the monitoring of coal has been addressed in the PDD.

The project replaces fossil fuel-based electricity generation. While the project emissions are zero, baseline emissions are calculated to be 0.830 kgCO₂ per kWh. The project is expected to result in emission reductions of 142,320 tonnes of CO₂, during the first 7 years of crediting period.

3.7 Environmental Impacts

The environmental impacts of the project are sufficiently assessed. The project's environmental impacts relate to suspended particulate matter, nitrogen oxides and sulphur dioxide emissions as well as the generation of fly ash. An electrostatic precipitator (ESP) has been installed and the project is designed to adhere to the stipulations as per the state pollution control board. Ash collected is disposed for manufacturing of fly ash bricks.

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 citizens, biomass suppliers and local NGOs were invited through personal communication. No adverse comments were received from local stakeholders.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of 7 August 2005 version 1 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 09 August 2005 to 07 September 2005. Two comments were received on 07 September 2005. The comments received (in unedited form) is given in the below text box. DNV also asked the project



participant to provide a response to the comments received. The project participant's response is given below in *italic*. Finally, it described how DNV has taken due account of the comments received.

1. Comment by: Axel Michaelowa, Hamburg Institute of International Economics (HWWA)

Inserted on: 2005-08-31

Subject: Baseline and additionality problems

Comment:

1. The relevant grid is the regional (multi-state), not the state grid.
2. Build margin power plant efficiencies are assumed and not substantiated. Even under Indian conditions, efficiencies of new coal plants are higher than 30% (new CCGT plants as likely above 45%) and thus the build margin is not conservative.
3. Arguing additionality on the basis of 2004/5 biomass prices for a plant that started operations in early 2003 is not acceptable. The argument should be based on prices of the time when financial closure was achieved.
4. The additionality argument is not convincing in the case of a dual-fuelled plant where the cheapest available fuel can be used.
5. I assume that the project proponent wants to start the crediting period in 2003, not 2004 if the plant is fully operational since 2003.

The project participants' response:

1. *Regional grid is considered and modified accordingly in PDD.*
2. *The efficiency values of the power plants was collected from the CEA reports and the average efficiency of these power plants selected under build margin calculations is corresponding to the average efficiency of power plants evaluated in CEA's general review reports. Now, the actual fuel consumption values are used for baseline estimation and hence there is no relevance for the efficiency values.*
3. *The main barrier to the project was the prevailing practice barrier at the time of project conceptualisation. Though the additionality argument based on biomass prices should be for the year of financial closure, considering the resolution of the plant to consider the CDM revenue in the eventuality of abnormal price rise in coming years at the start of the project conceptualization, the comparison was made with the current prices of biomass though there was a continuous increment in the price of biomass every year. The price of the biomass at the initial stage was assumed based on the reports submitted by the NEDCAP on biomass availability in the region during the DPR stage and from the field data collected on pricing of the biomass material in the region. The increased price from DPR stage to project commissioning stage itself indicates the uncertainty in predicting the fuel prices in the region. Hence, it may not be relevant to compare the biomass prices during financial closure to comment on the sustainability of the project.*



4. Generation using coal is shown to estimate baseline emissions on conservative basis as usage of coal is permitted by MNES for up to 25% of generation in case of shortage of fuel. Though regulation permits usage of coal in case of shortage of biomass fuel, it does not allow using coal as a primary fuel for power generation. Plant is restricted to use the biomass as primary fuel for power generation even if it is costlier than any other fuel that can be fired in the boiler. The sustainability of the project requires an additional revenue to the project due to the rise in the prices of the biomass year after year which this increases the generation cost.

5. The start date of the crediting period is from 2003 only. It is modified in PDD accordingly.

How DNV has considered the comment received in its validation:

1. The selection of the Southern India grid as the electricity grid system boundary is justified and in accordance with recent EB guidance on selecting the electricity grid system boundary.
2. In the final PDD, the calculation of baseline emissions is based on the combined margin approach, using actual fuel consumption data and no longer plant efficiencies. The combined margin calculations were verified and accepted by DNV. Hence, the project participant's response is considered justified.
3. The main barrier for establishing the additionality of the project is the barrier due to prevailing practice. The price rise and other barriers were presented to highlight the additional barriers that have come up since the detailed project report stage.
4. The plant does not allow use of dual fuel. The normal and main fuel for the plant will be biomass irrespective of the cost factor. The existing regulations allow the usage of coal up to 25 % as an alternate fuel in case of shortage of biomass / or to increase the availability period of biomass. Hence the calculation of baseline considering maximum coal permitted is accepted as a conservative figure.
5. Start date of crediting period is verified as 24 March 2003.

2. Comment by: Sripur, EnerGHG

Inserted on: 2005-09-07

Subject: Comment on Perpetual 7.5 MW Biomass Power Project

Comment:

In the Project Design Document (PDD), it is mentioned that the project is operational since 23rd March 2003 and the start date of the crediting period as 23rd March 2004. And also it is stated that the CDM fund was initially considered to cover the project risk in future. Project developers presented several financial barriers and policy threats in support of the project activity for CDM.

India very well recognized the importance of renewable energy sources and their contribution to energy security and environment development in early Nineties. To give a fillip to the development of renewable energy sources, Ministry of Non-conventional Energy Sources (MNES) announced a policy in the year 1994-95 which set an attractive tariff of Rs.2.25 per kWh with an annual escalation of 5%. This was adopted at State level by many State Governments including Andhra Pradesh. Government of AP (through Non-conventional Energy Development Corporation of Andhra Pradesh or NEDCAP) made a public call in the year 1999 for project proposals to set up biomass power projects in the State of Andhra Pradesh. With the



attractive tariff, other incentives and also due to the encouragement given by MNES & other stakeholders, many entrepreneurs showed interest to set up biomass power projects. Most of the proposals were approved by NEDCAP and projects were implemented between 2000 and 2002. During this period the procedures, modalities, market and the capacity of CDM are not existed / clear. With this short background, I would like to state that CDM fund was not at all considered for all these projects. My comments on some of the aspects mentioned in the PDD are furnished below.

Project is operational since 23rd March 2003: One question remains to be answered is if CDM fund is initially considered then why the validation process is started only after 2 ½ years of operation? Only after the reduction of tariff by the APERC? As yet no buyers have been identified? Appendix A of Annex B, Indicative simplified baseline and monitoring methodologies for selected Small-Scale CDM project activities clearly states that project participants shall provide a qualitative explanation to show that the project activity would not have occurred anyway. But, all these projects have occurred anyway. Project developers shall present credible evidence (to the DOE) in support of the role of the CDM fund for the project activity. The reason why the crediting period starts exactly after one year of starting of plant operation, is not clear.

Increase in cost of fuel: In the PDD, it is stated that there is an abundance of biomass within 25km radius. If there is an abundance of biomass, naturally biomass prices should not increase drastically. This is clearly evident from the data given in Page 13 of the PDD, which shows a small difference of around 4% to 6% per year between the DPR cost (assumed as prepared during the year 2000) and existing cost (during 2004-05). As per the MNES policy guidelines, all biomass power projects (including those established in Andhra Pradesh state) can utilize supplementary fuels such as Coal up to a maximum of 25% of the total annual fuel requirement. Since, coal is a viable fuel, project participants as well can use coal if the cost of biomass really increases. However, increase in the cost of fuel price is already taken care in the tariff structure in the form of an annual (normalized) escalation. This clearly shows that increase in the cost of biomass will not really affect the economic viability of the project.

Reduction in Tariff by APERC: There was a clause in the policy adopted by the Government of AP for renewable energy projects, which stated that the tariff would be revised after completion of 10 years from 1994-95. Accordingly, the tariff was worked out and revised in 2004-05 by the Andhra Pradesh Electricity Regulatory Commission (APERC), which is an independent regulatory body constituted to look after the electricity regulatory issues in Andhra Pradesh State. APERC has worked out the tariff taking into consideration several factual data, conducting independent surveys, trends in variations of biomass prices, operational history of biomass power plants etc. and concluded the tariff after several deliberations with project developers. APERC brought out a workable tariff such that it would neither hamper the sustainability of projects nor burden the power purchasers / utilities. In view of the above, revision of the tariff is not an unexpected thing, but known to all project developers in advance and hence does not represent a policy barrier. Also, the project developer's statement in Page 13 "This would result in heavy financial losses and put an additional burden on the financial sustainability of the project" is not correct. For further details Tariff Order released by APERC may be referred.



Restriction on fixed part for 80% PLF: APERC has concluded the tariff in two parts viz. fixed part and variable part. Fixed part corresponds mainly to the investment and fixed expenses. Variable part corresponds mainly to the fuel prices and other variable expenses. Fixed part is calculated such that at 80% PLF all (100%) fixed expenses including investment part are recovered. Hence, up to 80% PLF all fixed expenses of the plant are fully recovered. Any electricity generation above the 80% PLF is actually expense-free to the developer and fixed part need not be paid. But, APERC offered an incentive of Rs.0.25 per kWh (+ variable part) for the electricity generation above 80% PLF. Hence, the project developers statement in Page 16 that “Thus it is imperative that the present tariff is not sufficient and will significantly impact the sustainability of the project” is not correct.

2% subsidy is withdrawn: Project developers shall provide documentary evidence (to DOE) for the claim that the government policy was changed and the subsidy was withdrawn.

Removal of 3rd party sale: APTRANSCO has removed the third party sale and increased the wheeling charge to 28.4% only to encourage the power off-take by industries and major consumers through APTRANSCO, since APTRANSCO is formed to act as a state owned power transmission company in the state of Andhra Pradesh. However, as explained above, APERC concluded the tariff keeping in view the economic viability of biomass power projects. Hence, removal of 3rd party sale and increase of wheeling charges would in no way affect the financial stability of biomass power projects.

Grid emission factor: From the attached calculation sheet, it appears that “weighted average emissions of the current generation mix” as per 29.b. is not correctly applied. The project developers has considered only net emission factor for thermal generation (generation by coal and gas) instead of weighted average emissions for the entire grid system according to 29.b. of SSC CDM modalities. Also, the grid emission factor is not monitored ex post, although the dynamic grid emission factor is chosen. This is not appropriate and results in substantial errors in the calculation of emission reductions. Project developers shall revise the estimation of baseline / grid emission factor.

I believe in the concept of Clean Development Mechanism, which is innovatively designed to combat the climate change at the same time assisting developing countries in achieving the sustainable development and also benefiting from the transfer of environment friendly technologies. I, also strongly believe that CDM should not subsidize business as usual projects diverting the CDM funds. Let the real project cases, which are additional and contributing, get the CDM opportunities.

I request the DOE to look into the above aspects during validation of the CDM project.

The project participants’ response:

Kyoto protocol has gained the legal status only in the month of Feb 2005 and till then there were lot of uncertainties on the whole mechanism. In addition, the first project got only registered during Nov 2004. Hence, the project developer decided to wait and watch the happenings in the CDM market to get matured. It is decided to register unilaterally and hence no buyer



identification done. Credible evidence in support of the role of CDM fund for the project activity is available and will be provided to the DOE during the validation process. The project proponent wants to start the crediting period in 2003 only and will be modified accordingly in the document. All the biomass plants in the state have come up with expectations that the tariff will be in the increasing order continuously to meet the increase in operating expenses and that the percentage increase in prices in the biomass will not affect their operating margins. On the contrary to the predictions, tariff has reduced and biomass prices are increased beyond expectations to operate the plants in sustainable manner.

Biomass plants are supposed to use biomass material only irrespective of the price of the material. Plants are allowed to use up to 25% coal in cases of non availability of biomass but not to offset the increase in price of the biomass. The prices of the biomass were estimated based on the availability of the biomass reports (by NEDCAP) in the region during DPR stage. Considering the report findings on availability of biomass in the region, it was not predicted such steep increase in the prices of the fuel. The increase in fuel prices are also attributed to the emergence of many other applications to use biomass fuels such as paper industry leading to higher demand of the fuel. In addition, it was not expected the reduction in the tariff by APERC which would have offset the additional investment due to higher fuel prices to maximum extent. This has resulted in to significant financial loss to the power plants in the state.

Though it was expected revision in the prices during 2004-05 as per the clause in APERC, it was not expected reduction in the price from the existing. APERC has considered very less kcal/kWh value to estimate the unit cost which is very distant from the actual value. The very fact that all the Biomass Power Projects are not satisfied with APERC Tariff Order and approached the Hon'ble High Court in the absence of Electricity Tribunal for upward revision of tariff in April 2004. The Hon'ble High Court has passed an interim order for paying the 50% of differential tariff. This is an indication that there is no economic viability of the project with the APERC tariff. The projects are operating in anticipation of the CDM benefits.

As mentioned above, APERC had estimated pricing based on certain efficiency of the power plants which is not the realistic one and accordingly approached High Court of AP to put a stay on the tariff order. The incentive APERC providing to operate at more than 80% PLF is not meeting the actual cost of generation at more than 80% PLF (as discussed in PDD). In addition, all the biomass plants in the state are opting to shut down once they achieve the target generation for the month. This also builds up the inefficiency in the operation of power plants and hence more financial loss to the project promoter.

Though plant envisaged loan from IREDA in the beginning but later changed to loan from PFC, the clarification on the same is provided to DOE.

The project has been envisaged with the aim for sale of power to Third Party. However, APERC in their Tariff Order Notification dated March 6, 2000 has withdrawn the benefit of third party sale and directed all Renewable Energy Projects to sell the power only to APTRANSCO. Selling power to third party at previous wheeling charges would have fetched more revenue to the project activity but revised tariff order with higher wheeling charges will definitely affect the economic viability of the project.

Baseline emission factor is revised as per EB guidance and used generation mix of southern regional grid to estimate the same. The baseline emission factor is estimated using combined



VALIDATION REPORT

margin approach. Considering the higher monitoring costs to monitor the emission factor every year, the baseline calculations are modified and fixed at one value based on the ex-ante monitoring.

How DNV has considered the comment received in its validation:

The start date of project is 27 January 2002, the date when an agreement is signed with ISGEC John Thompson for design supply and commissioning of boiler. DNV witnessed the related document and satisfied with the requirement for the start date of project activity as per the “glossary of terms. Evidence has also been provided to the effect that CDM was considered at the start of the project activity through the report of the Board of Directors. The additionality of the project is now mainly based on the prevailing practice and has been appropriately addressed as a response to the Clarification Request No. 3 raised by DNV.

The project started operation on 24 March 2003. It has been demonstrated that as per the power purchase agreement with APTRANSCO, the rate payable to the Project Participant is Rs.3.48/unit at full plant load factor, and subsequent revision of tariff order concludes a two tier tariff system, according to which, the generation at 80% PLF, Rs.2.88/unit is paid, that includes both variable and fixed cost. While for the power generated above 80% PLF, only variable cost of Rs.1.27/unit is paid. Thus the revised tariff is unattractive for biomass power producers.

It was witnessed that the financial assistance from Power Finance Corporation (PFC) was taken for the project, thus removal of 2% subsidy on interest rates by IREDA is not applicable to the project.

DNV agrees with the project proponent that as per the regulation, biomass power producers can use up to 25 % of coal along with the biomass.

The revised baseline calculations have been verified and ex-ante monitoring is accepted considering the project being a small scale activity.

The *ex-ante* determination of the average of the “approximate operating margin” and the “build margin” emission coefficient is as the EB guidance.



5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “Perpetual 7.5 MW Non-Conventional Renewable Sources Biomass Power Project” in Vizayanagaram district, Andhra Pradesh in 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. UNFCCC criteria refer to Article 12 of the Kyoto protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The project participant is Perpetual Energy Systems 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. The determination of the baseline is well elaborated, transparent and sufficiently supported with facts. The selected baseline scenario is reasonable for the selected 7 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 providing benefits such as employment generation during construction and operation of the project, ensuring environmental wellbeing 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.

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 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 stake holder 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, stake holders and UNFCCC accredited NGOs were invited through the CDM web site. Two comments were received on this call. These have been considered during the validation and issues raised in these have been resolved satisfactorily.

In summary, it is DNV’s opinion that the project, as described in the project design document of date 6 February 2006, meets all relevant UNFCCC requirements for the CDM, and is eligible as category I D small-scale CDM project activity and correctly applies the approved simplified baseline and monitoring methodology AMS- D. Hence, DNV requests the registration of the “Perpetual 7.5 MW Non-conventional renewable sources biomass power project” project as CDM project activity.



REFERENCES

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

- / 1/ Perpetual Energy Systems Private Limited: CDM PDD for “Perpetual 7.5 MW Non-Conventional Renewable Sources Biomass Power Project”, version 1 of 7 August 2005 and version 2 of 6 -February 2006
- / 2/ Perpetual Energy Systems Private Limited - Calculation worksheet for grid emission factor
- / 3/ Ministry of Environment and Forests (DNA of India): Letter of Approval dated 23 September 2005

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 07: 28 November 2005.
- / 6/ Revised 1996 IPCC guidelines for national green house gas inventories – Reference Manual (Volume 3)

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

- / 7/ Mr. Ramakoteswar Rao, Director, Perpetual Energy Systems Limited.
Mr. I Rama Rao, Director, Perpetual Energy Systems Limited.
Mr. Mohan Rami Reddy, GM, Perpetual Energy Systems 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	OK	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	OK	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	Clarifications pending. 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	OK	Approval from the DNA of India, dated 23 September 2005 has been made available. No Annex I party has yet been identified.
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	Clarifications pending. 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	Clarifications pending. OK	Table 2, Section B.2.1
7. Potential public funding for the project from Parties in	Decision 17/CP.7	OK	The project is

Requirement	Reference	Conclusion	Cross Reference/ Comment
Annex I shall not be a diversion of official development assistance			proposed as an unilateral project involved.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures § 29	OK	DNA of India: 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: Ratification on August 2002. No Annex I party is yet identified.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	Not applicable	No Annex I party is yet identified.
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	Not applicable	No Annex I party is yet identified.
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
14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and	Simplified Modalities and Procedures for Small Scale CDM Project	OK	Table 2, Section A.1.3, B and D

Requirement	Reference	Conclusion	Cross Reference/ Comment
monitoring methodology for that project category	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
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 were through the CDM website be invited to provide comments during a 30 day period from 09 August 2005 to 07 September 2005. Two comments were received, made publicly available and taking into account in DNV's validation of the project.

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	The project comprises of a 7.5 MW power generation unit using renewable energy as fuel source. The project qualifies as Type I, category D of the small scale CDM projects and as the generation capacity is below the stipulated limit of 15MW.		OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/ 1/ / 7/	DR	No. The project participant has not registered any small scale CDM project in the last 2 years and the project boundary is not within 1 km radius of any other proposed small scale CDM project.		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 conforms to the category type I D for small scale CDM projects. The project is a grid connected renewable electricity generation unit (Biomass).		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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	Yes, it is clearly defined. The spatial boundary of the project includes the project site (up to the evacuation point of electricity to state grid) and includes biomass collection and storage. The project is located at Appayyapeta village, Seetanagaram mandal, Vizianagaram district, Andhra Pradesh, India. The evacuation point will be the Seetanagaram sub-station approximately 1Km from the project.		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/ 1/ / 7/	DR	Components including storage of biomass material and the generation unit are included in the project boundary. For the calculation of the baseline emission factor the power plants generating and exporting to the southern India electricity grid are included in the system boundary.		OK
A.2.3. Does the project design engineering reflect current good practices?	/ 1/ / 7/	DR	Yes, The project consists of a travelling grate type boiler capable of firing multi fuels like rice husk, juliflora, bagasse, jute waste etc.		OK
A.2.4. Will the project result in technology transfer to the host country?	/ 1/	DR	Since the technology is available in India, no technology transfer is envisaged in this project.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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/ / 7/	DR I	Yes, the project will require trained and qualified manpower in order to work as presumed during the project period. The boiler operations should be carried out by qualified personnel as per statutory requirements in India. The certificate of qualification of the personal operating the boiler was evidenced during site visit.		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/ / 7/	DR I	Yes, The project has resulted in direct (96 employees) and in-direct employment opportunity to the local population. The project has also generated an additional revenue stream to farmers on account of supply of biomass.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/ 1/ / 7/	DR I	The uncontrolled use of firewood cut from forests and prohibited species of wood by biomass plants has figured as an concern area for the Andhra Pradesh Electricity Regulatory commission (as evident in page 86 of " commissions analysis on substantive issues" detailed in tariff order 2005~2006). Andhra Pradesh Pollution Control Board has issued the consent for establishment (Order no: CFE/APP/PCB/HO/R00/CFE/2001/30-2686 dt. 21/03/2002). As per the consent order the project is permitted to use Rice husk/ Bagasse/ Juliflora/ cotton stalk and coal (up to 20%) as fuel.	CL1	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			A clarification as how the issue is being dealt with and mechanism to ensure continual supply of permitted biomass material for the project needs further elaboration.		
A.3.3. Is the project in line with sustainable development policies of the host country?	/ 1/ / 7/	DR	Yes, The project is in line with sustainable development policies of India. Host country approval granted vide letter no: F.No. 4/14/2005-CCC dt. 23 September 2005 by Government of India, Ministry of Environment and Forests (DNA of India)		OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/ 1/ / 7/	DR	<p>Factory Licence no: 1268, registration no: 1645 dt. 24/5/2003 is available</p> <p>Andhra Pradesh boiler inspection department has issued the certificate for use of a boiler (Registry no: AP-3739) valid up to 01-02-2006.</p> <p>Andhra Pradesh Pollution Control Board has issued the consent for establishment (Order no: CFE/APPCB/HO/R00/CFE/2001/30-2686 dt. 21/03/2002).</p> <p>Andhra Pradesh Pollution Control Board has issued the consent for operation of plant under Air act, 1981 valid upto 31/03/2004. M/s Perpetual Energy Systems Limited has submitted a request for renewal of this consent order for 2 years dt. 28/02/2004. But no consent issued till date, kindly clarify.</p> <p>Andhra Pradesh Pollution Control Board has issued the consent for operation of plant under Water act, 1974 valid up to 31/03/2004. M/s Perpetual Energy Systems Limited has submitted a request for renewal of this consent order for 2 years dt.</p>	CL-2	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			28/02/2004. But no consent issued till date, kindly clarify. The sanction from Non-Conventional Energy Development Corporation of Andhra Pradesh Ltd. Is not evidenced. The Power purchase agreement with APTRANSCO is not evidenced.		
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/ / 7/	DR	Yes. The project applies one of the simplified baseline methodologies proposed for the small-scale project activity category I.D, i.e. for renewable energy that displaces electricity the simplified baseline is the electricity consumption times the relevant emission factor calculated as the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kgCO ₂ /kWh). The project uses biomass and supply electricity to the grid dominated by fossil fuel based generation units. The emissions resulting from use of coal is	OK	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			incorporated as project emissions and the capacity of the unit including coal and biomass is 7.5 MW. The baseline emission coefficient is calculated using the combined margin approach.		
B.1.2. Is the baseline methodology applicable to the project being considered?	/ 1/	DR	Simplified small scale CDM project category I.D is applicable since the project is a biomass based power plant.		OK
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/ / 7/	DR	<p>As per the Attachment A to Appendix B, the project has been analysed in light of other barriers (financial and policy related) and barriers due to funding at higher interest.</p> <p>The main barrier perceived at the time of project initiation is the barrier due to prevailing practices, as power generated through renewable sources is 1% of total generation mix of APTRANSCO. It is not a common practice at the time of project inception although government promotion for such projects was there.</p> <p>The other relevant barrier would be the policy related resulting in financial barrier. The policy changes resulting in decrease of power tariffs along with increase in fuel costs is identified as the barrier.</p> <p>The proof that the project participants have</p>	OK	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			considered the revenue from CDM supporting the sustainability of the project is evidenced. To substantiate the barrier analysis a more detailed report on the IRR/NPV of the project in light of the changes in government policies and tariff is required to be evaluated. The same is not evidenced.	CL-3	
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/ 1/ / 7/	DR	The chosen baseline is in accordance with the laid down baseline methodology AMS ID under appendix B of the Simplified Modalities and Procedures for small scale CDM project activities. The chosen baseline is transparent and the choice of weighted average emission of the current generation mix used for estimation of emission coefficient is conservative considering the recent capacity additions of the selected grid dominated by fossil fuel based power plants. It is not transparent whether the baseline estimation will consider an ex-ante weighted average emission factor or the emission factor will be calculated using ex-post monitored data. In either case, the project proponent needs to demonstrate the conservativeness of the approach. Analysis of the Table provided under section E.2 indicates that the emission factor will be calculated using ex-post monitored data, but the data to be monitored is not included in the monitoring plan.	CL-4	OK OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/ 1/	DR	Yes, the selection of weighted average based on the present generation mix is justifiable considering the future expansion projects coming up in the state. The generation pattern will not change significantly over the crediting period.		OK
B.2.4. Is the baseline selection compatible with the available data?	/ 1/	DR	Yes, the data available is adequate and compatible to evaluate the baseline emissions.		OK
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, all data are drawn on the most recent years and all future expansion data are based on sanctioned projects in both renewable and fossil fuels based sectors and thus represent the most likely scenario in absence of the project.		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/ / 7/	DR	The exact project starting date is not clearly defined; it is defined as between the period January 2000 to 23 March 2003. The proof of starting date is submitted as agreement between M/s Perpetual Energy Systems Private Limited, and M/s Triveni Engineering Industries limited, dated 27 January 2002. The date is not consistent with the information provided in the PDD. The operational life time of the project is defined as 25 years.	CAR1	OK 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	/ 1/ / 7/	DR	The renewable crediting period is chosen and the first period of 7 yrs is clearly defined in the PDD. The starting date of the crediting period is indicated as 2004, whereas the project has started operation	CAR1	OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
renewal)?			from 24 March 2003. The proof of commercial production is provided as the Billing meter attested by APTRANSCO. Clarification requested on inconsistency in dates.		
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 line with the monitoring methodologies provided for the relevant project category?	/ 1/ / 7/	DR	The project falls under category ID of appendix B of the simplified modalities and procedures for small scale CDM project activities and the monitoring methodology used is in line with the same.		OK
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 co-fires biomass with coal, the amount of biomass and fossil fuel is monitored 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, since the monitoring methodology involves metering of the actual amount of electricity generated from the project and direct measurement of quantity of biomass and coal.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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/ / 7/		The following clarifications requested on the monitoring plan presented under D.3 of PDD: a) D.3.6, D.3.7 and D.3.8 – data is not evidenced as per recording frequency. b) Archival of data is given as 2 years; not specific to indicate 2 years after crediting period. c) D.3.7 and D.3.8, analysis will be carried out through an outside lab, no qualification criteria for labs are evidenced.	CL-5	OK OK
D.2.2. Are the choices of project GHG indicators reasonable?	/ 1/ / 7/	DR	The choice of indicators is sufficient to monitor the CO ₂ , the relevant GHG. CH ₄ can get generated due to biomass storage, but since the storage of biomass does not exceed 6 months, it is assumed negligible.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/ 1/ / 7/	DR	Yes it is possible with the data being monitored.		OK
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/ 1/ / 7/	DR	Yes.		OK

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

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/ / 7/		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/ / 7/		The following clarifications are requested on the monitoring plan presented under D.3 of PDD. <ul style="list-style-type: none"> a) Proportion of data to be monitored is given as >95%, it is not clear why it is limited to 95%. b) D.3.1, D.3.2, D.3.2, It is indicated that data will be archived in electronic form, but no electronic archiving system was evidenced during site visit. c) D.3.4 and D.3.5– data not evidence as per recording frequency. d) D.3.1, D.3.2 and D.3.3, the identification and location of meters are not specified. e) Archival of data is given as 2 years; not specific to indicate 2 years after crediting 	CL-6	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			period. f) D.3.5 analysis will be carried out through an outside laboratory, but no qualification criteria for this laboratory are evidenced.		
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	Comments reserved till comments under D.4.1 are resolved.	GL6	OK
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/ / 7/	DR I	The PDD indicates that the project proponent will form a CDM team/committee, which will be responsible for monitoring. But during site visit, no evidence of formation of such a team was evidenced.	CAR-2	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/ 1/ / 7/	DR I	Refer comments under D.5.1.	CAR2	OK
D.5.3. Are procedures identified for training of monitoring personnel?	/ 1/ / 7/	DR	Refer comments under D.5.1.	CAR2	OK
D.5.4. Are procedures identified for emergency	/ 1/	DR	No such emergency scenario is envisaged in this		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
preparedness for cases where emergencies can cause unintended emissions?			project.		
D.5.5. Are procedures identified for calibration of monitoring equipment?	/ 1/ / 7/	DR I	No procedure identified for calibration of monitoring equipments. (Energy meters and weighing bridge) Calibration certificates for energy meters were produced during site visit but the validity of calibration is not mentioned. Procedures were not available defining periodicity of calibration.	CAR3	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/ 1/ / 7/	DR	No procedures identified for maintenance of monitoring equipment and installations.	CAR3	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/ 1/ / 7/	DR	Refer comments under D.5.1.	CAR2	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/ / 7/	DR I	No.	CAR3	OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/ 1/ / 7/	DR I	No.	CAR3	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/ 1/ / 7/	DR I	No.	CAR3	OK
D.5.11. Are procedures identified for project performance reviews?	/ 1/ / 7/	DR I	No.	CAR3	OK
D.5.12. Are procedures identified for corrective actions?	/ 1/ / 7/	DR I	No.	CAR3	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
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 predicted 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	Direct emissions due to co-firing of coal are captured in the design document. The project participant identifies emissions from off-site transportation of fuels. But the fuel transportation of the power plants considered in baseline can off set these project emissions.		OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	/ 1/	DR	The project only identifies CO ₂ as the relevant GHG as other GHGs like CH ₄ are considered as negligible considering the storage period.		OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	/ 1/ / 7/	DR	The project proposes to calculate the project emissions resulting from coal usage either considering the default IPCC emission factor or using the actual carbon content of coal. It is not evident which algorithm will be used for calculation.	CL7	OK
E.1.4. Are the calculations documented in a complete and transparent manner?	/ 1/ / 7/	DR I	The calculations demonstrated during site visit do not comply with either of the methodologies described under comments given under E.1.3.	CL8	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.1.5. Have conservative assumptions been used?	/ 1/	DR	Yes		OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	/ 1/ / 7/	DR	No. The uncertainties can resulting from monitored values of coal are not addressed.	CL-9	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.					
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.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	/ 1/	DR	Not applicable, refer comments under E.2.1		OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	/ 1/	DR	Not applicable, refer comments under E.2.1.		OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	/ 1/	DR	Not applicable, refer comments under E.2.1.		OK
E.2.5. Have conservative assumptions been used (if applicable)?	/ 1/	DR	Not applicable, refer comments under D.3.1.		OK
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	/ 1/ / 7/	DR	Not applicable, refer comments under D.3.1.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.3. Baseline GHG Emissions The validation of predicted 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/ / 7/	DR	Yes, all aspects related to direct baseline emissions are captured. No significant indirect emissions, hence not included.		OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/ 1/ / 7/	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	Comments reserved till comment under B.2.2 is resolved.	CL4	OK
E.3.5. Are the calculations documented in a complete and transparent manner?	/ 1/ / 7/	DR	Comments reserved till comment under B.2.2 is resolved.	CL4	OK
E.3.6. Have conservative assumptions been used?	/ 1/	DR	Comments reserved till comment under B.2.2 is resolved.	CL4	OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/ 1/	DR	Comments reserved till comment under B.2.2 is resolved.	CL4	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG	/ 1/	DR	Comments reserved till comments under B.2.2 and	CL4	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
emissions than the baseline case?			section E.3 are resolved.		
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	No, Since the project cost is less than INR 1000 million, it is not required to carry out an EIA for the project.		OK
F.1.2. Does the project comply with environmental legislation in the host country?	/ 1/ / 7/	DR	Andhra Pradesh Pollution Control Board has issued the consent for establishment and consent for operation of plant under Water & Air act, valid up to 31/03/2004. M/s Perpetual Energy Systems Limited has submitted a request for renewal of this consent order for 2 years dt. 28/02/2004. However, as no consent is issued till date, this must be clarified.	CL2	OK
F.1.3. Will the project create any adverse environmental effects?	/ 1/ / 7/	DR	Comments reserved till comment under A.3.2 is resolved.	CL2	OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/ 1/ / 7/	DR	Yes. Environmental impacts have been identified in the PDD.		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 biomass suppliers were also consulted, but the PDD has not identified them as stakeholders.		OK
G.1.2. Have appropriate media been used to	/ 1/	DR	The comments from local stakeholders were invited		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
invite comments by local stakeholders?	/ 7/		through personal communication. The PDD was be 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 09 August 2005 to 07 September 2005.		
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	It is not required for the given size of the project.		OK
G.1.4. Is a summary of the comments received provided?	/ 1/	DR	Yes the summary of the comments received from the stakeholders are summarised.		OK
G.1.5. Has due account been taken of any comments received?	/ 1/ / 7/	DR	No adverse comments were received from local stake holders. The comments received on hosting the PDD are consolidated and addressed.		OK

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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
<p>CAR-1</p> <p>The exact project starting date is not clearly defined; it is defined as between the period January 2000 to 23 March 2003. The proof of starting date is submitted as agreement between M/S Perpetual Energy Systems Limited, and M/S ISGEC John Thompson, dt. 27/01/2002. The date is not consistent with the information provided in the PDD</p> <p>The date of crediting period is indicated as 2004, whereas the project has started operation from 24 March 2003. The proof of commercial production is provided as the Billing meter attested by APTRANSCO. Clarification requested on inconsistency in dates</p>	<p>C.1.1</p> <p>C.1.2</p>	<p>The actual project start date is 27.01.2002 same can be considered as project start date. This is after January 2000, criteria required to be fulfilled to qualify as a project and hence mentioned in the report accordingly. The Proof for the same is provided in Attachment (1) same is incorporated in PDD to understand clearly.</p> <p>As per the guidelines, the actual crediting period should start a day after the project commissioned i. e from 24th March 2003. The proof for the same is attached. The same is modified accordingly in PDD.</p>	<p>The complimentary information provided has been accepted. The starting of the project is 27 January 2002 and first renewable crediting period starts from 24 March 2003.</p> <p>The CAR is closed.</p>
<p>CAR-2</p> <p>The PDD indicates that the project participant will form a CDM team/committee, which will be responsible for monitoring. But during site visit, no evidence of formation of such a team was evidenced.</p>	<p>D.5.1, D.5.2, D.5.3 and D.5.7</p>	<p>The team is already formulated and is functional since then but not in formal and structured manner. Policy decision has been made and the copy of the same is attached. The team structure and their responsibilities can be demonstrated during verification stage.</p>	<p>The policy decision was evidenced and accepted.</p> <p>The CAR is closed.</p>
<p>CAR-3</p> <p>No procedures are identified for calibration of monitoring equipments. (Energy meters and weighing bridge)</p> <p>Calibration certificates for energy meters</p>	<p>D.5.5</p> <p>D.5.6</p> <p>D.5.8</p> <p>D.5.9</p>	<p>The calibration and periodicity of monitoring equipment (Energy meters and weighbridge) is being maintained as per the requirement of APTRANSCO for energy meter and Office of the</p>	<p>The monitoring plan submitted is verified and acceptable.</p> <p>The CAR is closed.</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
were produced during site visit but the validity of calibration is not mentioned. Procedures not available defining periodicity of calibration. Also procedures not identified for maintenance of monitoring equipment and installations, for monitoring, measurements and reporting, for day-to-day records handling, for dealing with possible monitoring data adjustments and uncertainties, for internal audits of GHG project compliance with operational requirements, for project performance reviews, for corrective actions.	D.5.10 D.5.11 D.5.12	controller of legal metrology for weigh bridge and the same is being done regularly. Comprehensive monitoring plan has been developed and is in the process of implementation. The monitoring plan developed in the plant is attached.	
CL1 The uncontrolled use of firewood cut from forests and prohibited species of wood by biomass plants has figured as an concern area for the Andhra Pradesh Electricity Regulatory commission (as evident in page 86 of " commissions analysis on substantive issues" detailed in tariff order 2005~2006). Andhra Pradesh Pollution Control Board has issued the consent for establishment (Order no: CFE/APPGB/HO/R00/CFE/2001/30-2686 dt. 21/03/2002). As per the consent order the project is permitted to use Rice husk/ Bagasse/ Juliflora/ cotton stalk and coal (upto 20%) as fuel. A clarification as how the issue is being dealt with and mechanism to ensure continual supply of permitted biomass material for the project needs further elaboration.	A.3.2	The following Biomass fuels can be used in Biomass Power Plants apart from Fossil fuels as per the guidelines from NEDCAP: 1 Woody Biomass : Juliflora, Casuarina, Subabul, Eucalyptus, Mango Cuttings, Cashew Cuttings and Saw Dust 2 Agricultural Waste: Rice Husk, Bengal gram and Black gram stalks, Maize stalks, Palmoil Wastes, Coconut shell and logs, Chilli stalks, Bagasse etc. Incoming biomass materials to the plant are in the scrutiny of representative of the forest department in the region to restrict the usage of non exempted	Although the NEDCAP guidelines allow woody biomass, a formal consent from Pollution control Board has to be given. In line with the EB23 meeting annex 18, on definition of Biomass, the small quantities of juliflora seen used in the project are renewable as the land area where the juliflora grows remains a cropland. It is strongly recommended that any other woody biomass that is non renewable is to be monitored and used for discounting the CERs. This is to be checked during verification. The CL is closed

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		biomass materials in the plant. This ensures the usage of only permitted biomass material.	
<p>CL2</p> <p>Andhra Pradesh Pollution Control Board has issued the consent for operation of plant under Air act, 1981 valid up to 31/03/2004. M/s Perpetual Energy Systems Private Limited has submitted a request for renewal of this consent order for 2 years dt. 28/02/2004. But no consent issued till date, kindly clarify.</p> <p>Andhra Pradesh Pollution Control Board has issued the consent for operation of plant under Water act, 1974 valid up to 31/03/2004. M/s Perpetual Energy Systems Limited has submitted a request for renewal of this consent order for 2 years dt. 28/02/2004. But no consent issued till date, kindly clarify.</p> <p>The sanction from Non-Conventional Energy Development Corporation of Andhra Pradesh Ltd. Is not evidenced.</p> <p>The Power purchase agreement with APTRANSCO is not evidenced.</p>	A.3.4	<p>Plant has applied for the renewal for the same and is waiting for the receipt of the renewal licence. The correspondence for the same is enclosed.</p> <p>PPA with APTRANSCO is attached.</p>	<p>The complimentary information provided has been accepted</p> <p>CL closed</p>
	B.2.1	IRR calculations for the project are included in attachment no. 2. The project is financially not attractive even without any changes in govt. policies and tariff. Reduction in the tariff would	<p>IRR calculations provided are supporting the argument, and substantiate the additionality. Revised PDD has been verified.</p> <p>The CL is closed.</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
<p>CL3</p> <p>To substantiate the Financial and policy related barrier analysis a more detailed report on the IRR/NPV of the project in light of the changes in government policies and tariff is required to be evaluated. The same is not evidenced.</p> <p>The data given in PDD is not correct regarding the financing agency and the rate of interest.</p>		<p>further reduce the financial viability of the project. It clearly indicates that the improvement in IRR to reasonable level is possible only with the inclusion of CDM revenue for the project activity.</p> <p>Though it was envisaged to take loan from the source mentioned in the PDD, subsequently adopted loan from PFC in spite of availability of loans at lower interest rates. The same will be incorporated in the document.</p>	
<p>CL4</p> <p>It is not transparent, whether the baseline estimation will consider an ex-ante weighted average emission factor or the emission factor will be calculated using ex-post monitored data. In either case, the project proponent needs to demonstrate the conservativeness of the approach. Analysis of the table provided under section E.2. Indicates that the emission factor will be calculated using ex-post monitored data, but the data to be monitored is not included in the monitoring plan.</p>	B.2.2	<p>It was estimated that the efficiency of coal based thermal power plants will be improved in future from the present level and hence to estimate the CER emissions on conservative basis, export emission monitoring was considered. However, considering the additional monitoring cost for small scale project like this, it is proposed to use the fixed baseline based on the ex ante emissions and use for the entire crediting period. The same is adopted in the PDD and baseline calculation sheet.</p>	<p>The considering the size of project being a small scale activity this is acceptable.</p> <p>The CL is closed.</p>
<p>CL5</p> <p>The following clarifications requested on the monitoring plan presented under D.3 of PDD:</p> <p>a) D.3.6, D.3.7 and D.3.8 – data not evidence as per recording frequency.</p>	<p>D.2.1</p> <p>D.4.1</p>	<p>a) Practice of testing biomass and coal on monthly basis can be done only if the fuel is procured from different sources. As the same has not happened so far since inception, the evidence for the same is not available.</p>	<p>The corrections have been incorporated.</p> <p>The CL is closed.</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
<ul style="list-style-type: none"> b) Archival of data is given as 2 years; not specific to indicate 2 years after crediting period. c) D.3.7 and D.3.8, analysis will be carried out through an outside lab, no qualification criteria for labs are evidenced 		<ul style="list-style-type: none"> b) It is two years after the end of credit period or from the date of last issuance of CERs, whichever is later. c) The analysis of items mentioned in D3.7 and D3.8 is done only in the accredited and government approved labs. 	
<p>CL-6</p> <p>The following clarifications requested on the monitoring plan presented under D.3 of PDD.</p> <ul style="list-style-type: none"> a) Proportion of data to be monitored is given as >95%, it is not clear why it is limited to 95%. b) D.3.1, D.3.2, D.3.2, It is indicated data will be archived in electronic form, but no electronic archival evidenced during site visit. c) D.3.4 and D.3.5– data not evidence as per recording frequency. d) D.3.1, D.3.2 and D.3.3, The identification and location of meters are not specified. e) Archival of data is given as 2 years; not specific to indicate 2 years after crediting period. f) D.3.5 analysis will be carried out through an outside lab, no 		<ul style="list-style-type: none"> a) Being a small scale project, to minimize the monitoring costs it was decided to monitor minimum 95% of the data. However, considering the requirement for the project to assess accurate CER emissions, the same can be done to 100%. Necessary changes are made in PDD accordingly. b) Plant has already initiated archival of these data electronically from paper. c) The data is being maintained as per the frequency mentioned and the can be demonstrated during verification stage. d) Mentioned accordingly in the PDD e) Specified accordingly f) The analysis of items mentioned in D3.5 are done only in the accredited and government approved labs. 	<p>The explanations provided are acceptable.</p> <p>The CL is closed.</p>

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
qualification criteria for labs are evidenced.			
CL7 The project proposes to calculate the project emissions resulting from coal usage either considering the default IPCC emission factor or using the actual carbon content of coal. It is not evident which algorithm will be used for calculation.		Though the project emissions due to the usage of coal are based on the quantity of coal used in the project, the 30% generation using coal has been considered in baseline calculation sheet for the conservative estimation. However, the project emissions due to coal usage are estimated on the basis of actual quantity of coal consumed during the monitoring and verification period.	The information provided has been accepted. The CL is closed
CL8 The calculations demonstrated during site visit do not comply with either of the methodologies described under comments given under E.1.3.	E.1.4	Project emissions due to coal usage are estimated on the basis of actual quantity of coal consumed and % carbon as per the laboratory report.	The complimentary information provided has been accepted. The CL is closed
CL9 The uncertainties can resulting from monitored values of coal are not addressed.	E.1.6	It is mandatory to submit details regarding usage of all kinds of fuels in the plant to NEDCAP on monthly basis. Also, NEDCAP permits only fixed quantity of coal per annum and is not allowed to use or procure more than the specified tons of coal. All the purchase records of the coal are maintained in the plant for verification.	The complimentary information provided has been accepted. The CL is closed

