 <p style="text-align: center;">CDM: Proposed new methodology expert form (version 03) (To be used by methodology experts providing desk review for a proposed new methodology)</p>	
Name of expert responsible for completing and submitting this form	Deepak Mawandia
Related F-CDM-NM document ID number	NM 0069 - 30 TPD Biodiesel Project in Andhra Pradesh, India
<p><i>Note to those completing this form, as applicable: Please provide recommendations on the proposed new baseline and monitoring methodologies based on an assessment of annexes 3 and 4 and of their application in sections A to E of the draft CDM PDD, desk reviews and public input. Please ensure that the form is entirely filled and that arguments and expert judgements are substantiated.</i></p>	
A. Evaluation of the proposed new methodologies by desk reviewers:	
I. Evaluation of the proposed new baseline methodology:	
<p>Title of new baseline methodology:>>Biodiesel production and switching fossil fuels from petro-diesel to bio diesel</p>	
<p>i. Conditions under which this methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>>>Project Type : This methodology is applicable to projects that involve a voluntary partial / complete substitution of liquid fossil fuel with bio diesel in the transport sector.</p> <p>Region : The methodology should be relevant & applicable to regions across the world, provided the country does not have local legislations requiring a shift to bio-diesel / fuel and the baseline is petro diesel based i.e. fuel switch to LNG, LPG etc. is not a viable alternative.</p> <p>Others : The entire production volume is consumed in the country of origin / another non annex 1 country with similar regulatory and operating environment.</p> <p>ii. Strengths and weaknesses of the methodology:</p> <p>>>Strengths : Clearly structured, the methodology is simple and easy to use.</p> <p>Weakness:</p> <p>(1) The project implementation will involve significant agricultural activity, including but not limited to clearing the 'waste' land, preparing it for planting the Pongamia Pinnata & Jatropha Curcas seeds etc. The methodology does not suitably address the issue of GHG emissions during the plantation & harvesting stages (this could include open field burning of the cleared biomass, emissions on account of increase use of fossil fuel based water pumps, tractors etc.). Suitable provisions should be made to account for/address the GHG emissions that are directly attributable to the project activity.</p> <p>(2) Given the fact that a lot of cities/regions in India are witnessing an increase in CNG / LPG fuelled vehicles, I am not entirely convinced by the argument that " development of other alternative fuels such as CNG, LNG and LPG are not realistic and credible baselines for the project activity" , especially when one considers the recent gas finds in India, the new LNG terminals that are being developed and the fact that the judiciary in India is getting increasingly active on the issue of vehicular air pollution. The same holds true for the use of Fuel Ethanol. The market for fuel ethanol has not caught on as yet partially due to supply and pricing related issues (as well as competition from the manufacturers of potable alcohol for the molasses). With increases in the prices of petroleum products, it would not be fair write off fuel ethanol as a possible alternative. In view of the same, suitable provisions should be incorporated to comprehensively confirm, on an annual basis that a material shift to alternative fuel options warranting a baseline</p>	

revision, has not occurred .

(3) Service delivery : The methodology assumes that the use of bio diesel will not have any impact on the 'performance' / efficiency of the engine. Being a new technology and given the fact that the engine types in the target Indian market would in all probability be different as compared to the other markets where bio diesel is being widely used, provisions should be incorporated in the methodology to establish this assumption.

(4) The methodology should address the issue that whereas at the current prices, we are not witnessing a significant shift to bio fuel (i.e. without regulatory requirements), increase in prices of petroleum beyond a point will significantly hasten the shift to bio-fuels, including bio-diesel.

(5) The methodology considers a common emissions factor for all vehicle engine types and technologies this is a cause for concern and should be addressed by establishing the fact that the selected oxidation factor is the most conservative option.

(6) The methodology, while touching upon the issue, does not suitably address the fact that the bio diesel could also be used in stationery power generation engines.

iii. Any changes needed to improve the methodology:

a. Minor changes:>>

(a) Assuming that the Bio-diesel is an ideal substitute for Petro Diesel, without significant impact on the performance of the engine, the primary driver for the acceptance of the product by the market would be:

(i) Cost - in comparison to petro-diesel and

(ii) availability;

In view of the same, it would be desirable if a cost (including selling price) comparison table of the proposed product vis-à-vis traditional petro diesel was included in the PDD. This would assist in assessing the impact of project's registration under the CDM on its viability.

(b) Details of the various grants / subsidies (if any), be it in cash or kind (land allocation, tax breaks etc) should be included in the PDD, along with an assessment of their impact on the overall project.

(c) Suitable provisions should be made to address the issue of leakages on account of spillage, product expiry, pilferage etc. of the bio-diesel. The assumption that whatever is produced is consumed may not be entirely accurate and should be substantiated.

b. Major changes: >>

(1) The methodology needs to address the fact that other options (LNG, CNG, LPG & fuel ethanol) are also possible alternative baseline scenarios, accordingly, a third scenario i.e. substitution of petro-diesel by other alternatives should be included.

(2) Emissions on account of changes in agricultural practices, in this case on account of clearing the 'waste land' and replanting, disposal of the biomass cleared etc. should either be considered, else suitably addressed.

(3) The methodology should provide for accounting changes in fuel efficiency on account of the fuel switch. The assumption that the switch does not result in any changes in the efficiency of the vehicle, may well be true, but adequate provisions should be made to identify and account for any material variances.

(4) The assumption that all the bio-diesel that is produced is used needs to be substantiated as the possibility of leakage cannot be over ruled.

II. Evaluation of the proposed new monitoring methodology:

Title of new monitoring methodology: >>Monitoring methodology for emissions from biodiesel production and switching fossil fuels from petro-diesel to bio diesel.

i. Conditions under which this methodology is applicable to other potential projects

(e.g. project type, region, data availability):

>> After addressing the issues raised elsewhere in this document, the monitoring methodology should be applicable to all similar projects, regardless of the regional location. The key criteria being that the project should involve a voluntary fuel switch from petro-diesel to bio-diesel.

ii. Strengths and weaknesses of the methodology:

>>**Strength:** The methodology is simple and easy to implement.

Weakness:

(1) Lack of suitable monitoring to validate the assumption that the quantity of bio diesel produced is equal the petro-diesel substituted.

(2) Absence of suitable provisions to monitor increase (if any) in the consumption of petro diesel, on account of blending bio-diesel.

(3) Suitable procedure to monitor fuel usage within the project premises.

(4) Lack of suitable provisions to account for plantation related GHG emissions.

iii. Any changes needed to improve the methodology:

a. Minor changes:>>

With a view to making the methodology more complete and comprehensive, suitable provisions should be included to monitor the consumption of fossil fuel within the factory premises. Detailed records should be maintained of the quantum and type of fuel consumed and its impact on the overall project GHG emissions (if any).

b. Major changes: >>

Suitable amendments must be made to monitor the following :

i) GHG emissions on account of changes in agricultural practices / plantation activity directly related to the project activity.

ii) Consumption of Bio-diesel - the assumption that consumption is equal to production is inadequate and needs to be suitably substantiated on a regular basis.

iii) GHG emissions during the treatment of waste water generated by the project activity (if any) needs to be monitored and accounted for as a leakage.

B. Details of the evaluation of the proposed new methodology by the desk reviewer:

I. Proposed new baseline methodology (*specify title here*): >>Biodiesel production and switching fossil fuels from petro-diesel to bio diesel****

(1) Short description of the methodology, including an assessment of which approach from paragraph 48 of the CDM modalities and procedures was used:

a) Describe the methodology:

>> The methodology is developed for fuel switch activities that partially or completely substitute petro-diesel with bio-diesel. The methodology considers anthropogenic greenhouse gas emissions avoided by substituting petro-diesel with bio-diesel as the baseline emission. The methodology is applicable to projects that manufacture bio-diesel and results in a fuel switch from petro-diesel to bio-diesel.

The methodology uses the consolidated additionality tools to establish that the proposed project activity is not the baseline scenario and is thus additional.

In the next step, the methodology tries to determine the baseline emissions on account of burning petro diesel. To do this, the methodology proposes to estimate the carbon emission factor for the petro diesel replaced, based on the carbon content / IPCC emission factors where applicable.

The baseline emission is computed using the carbon emission factor computed as above multiplied by the quantum of bio-diesel produced (assuming as it does that the quantum of petro-diesel replaced is equal to the quantum of bio-diesel produced)

The GHG emissions reduced as computed above is then adjusted for leakages on account of project activity.

b) State the approach selected:

>> 48(a) "existing actual or historical emissions, as applicable".

c) Indicate (in summary form) why the approach selected is the most appropriate. Please provide your expert judgement on the appropriateness of the selected approach to the project category:

>> The PDD seeks to justify it's the selection of 48(a) based on the argument that in the absence of the proposed CDM project, the baseline scenario will be the continuation of the existing practice of using petro-diesel. Despite the fact that I do not completely agree with the assumptions as alternative fuel switch options too are a possible, the selection of 48(a) is perhaps justified in the absence of a clear choice.

(2) Basis for determining the baseline scenario:

a) State whether the documentation explains how the baseline scenario is to be chosen and identified:

>> Yes, the document explains how the baseline scenario is to be chosen and identified.

b) State the basic underlying rationale for algorithms/formulae used (e.g. marginal vs. average basis) (see also section 4 below):

>> The underlying rationale is to answer the question what the petro diesel vehicle owners would do in the absence of the proposed project. The stated assumption underpinning the rationale is that the baseline scenario in the absence of the project activity would be the continuation of the existing practice of using petro diesel.

c) State whether the documentation explains how, through the use of the methodology, it can be demonstrated that a project activity is additional and therefore not the baseline scenario. If so, what are the tools provided by the project participants?

>> Being one of the first projects of its kind in the country, the PDD clearly establishes the fact that the proposed project activity is additional and not the baseline scenario by using the additionality tools suggested by the EB namely:

Step 0 : Preliminary screening of the project activity for starting date

Step 1: Identification of alternatives to the project activity

Step 2: Investment analysis OR Step 3 : Barrier analysis (selected)

Step 4: Common practice analysis

Step 5: Impact of CDM registration.

I have no hesitation whatsoever in confirming the fact that the project, being one of the first of its kind in India is additional and thus not the baseline scenario.

d) State whether the basis for determining the baseline scenario and for assessing additionality is appropriate and adequate:

>>In my opinion, the basis for determining the baseline scenario, though generally appropriate needs to be more detailed and thorough in order to be adequate. For instance, sweeping assumptions that CNG/LNG/Fuel Ethanol are not viable alternatives are not necessarily accurate. Experience has shown that even without regulatory requirements, vehicle owners do consider shifting to alternative (read cheaper) fuels like CNG / LPG. The shift to alternative fuel options should thus be considered as a possible baseline option.

The project, being the first of its kind (commercial project) in India, the issue of the project activity being additional has been appropriately addressed. It would however be desirable for the PDD to contain a detailed explanation on what is the precise impact of registration on the project's viability, in terms of concrete monetary terms, say monetary impact on the selling price per litre etc.

(3) Assessment of the description of the proposed methodology and its applicability

a) State whether the methodology has been described in an adequate manner:

>> In my opinion, the methodology has generally been described adequately. In fact barring certain issues (wrt. alternative fuel options, fuel efficiency etc.), I am of the opinion that the outline of the methodology is very concise and well written.

b) State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context (described in Sections A-E of the draft CDM-PDD and submitted along with Annex 3):

>> Subject to suitably addressing the issues raised elsewhere in this review document, I am of the opinion that the proposed methodology is appropriate for the said project activity and the referred project

context.

c) State whether the application of the methodology could result in a baseline scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity.

>> Whereas I am of the opinion that the application of the methodology would result in a baseline scenario which is not in material variance with the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed project activity, certain issues concerning potential leakages and alternative fuel options too should be considered to further strengthen / comprehensively establish the environmental integrity of the baseline.

Please explain:

>> (1) It is not entirely accurate to assume that alternative fuel options viz. CNG/LPG/ LNG / Fuel Ethanol etc. and not viable alternatives in the absence of suitable regulations. Economics too has a very critical part to play in the fuel switch related decision making process.

The new gas field that have been discovered in India, coupled with the increasing thrust by the government in facilitating imports of gas based fossil fuel and the promotion of blending fuel ethanol by the government in its policy decisions, would seem to merit a detailed evaluation of alternative baseline scenario.

(2) Issues wrt. possible change in the efficiency /service delivery and the resultant increase (if any) of fossil fuel consumption to compensate for the change needs to be addressed / established with more concrete evidence.

(4) Assessment of algorithms/formulae and type of data needed:

a) State whether the description of the methodology includes algorithms and generic formulae that can be applied to other potential project activities (if not, the proposed new methodology will be considered as a project-specific methodology):

>> The methodology contains algorithms and generic formulae that, subject suitable changes (as highlighted elsewhere in this document) should be applicable to other similar project activities.

b) Explain the spatial scope of data used to determine the baseline and whether the scope is appropriate:

>> The methodology uses the following data :

- i) Quantity of Bio-diesel produced & Methanol consumption : source - Proprietary - production records;
- ii) CO2 emission factor for petro diesel, Carbon content, oxidation factor : source - National / official statistics;
- iii) CO2, CH4 and N2O emission factors for petro-diesel & Methane emission factor for methanol production : source - Revised 1996 IPCC guidelines for NGGI.

c) Explain the vintage of data used (in relation to the duration of the project crediting period) and whether the vintage of data is appropriate, indicating the period covered by the data:

>>Vintage of data corresponds to the year of production of the bio diesel and the time of occurring of the fuel switch. The data used is sourced from the revised 1996 IPCC guidelines and a recent study by the Ministry of non conventional energy sources (of India) and would seem to be appropriate.

(5) Definition of the project boundary related to the baseline methodology:

a) State how the project boundary is defined in terms of:

i) Gases and sources

>> a) CH₄ : on account of an increased demand for Methanol (IPCC specified emission factor of 0.002 tCH₄/t of methanol produced);

b) CO₂ : an account of (i) avoided emissions - petro diesel replaced; (ii) Grid related electricity consumption; (iii) Transport related emissions.

c) N₂O : transportation linked fuel combustion - to be considered only where relevant data is available.

ii) Physical delineation

- >>
- a) The bio diesel production plant site
 - b) Transportation of the bio diesel and the feed stock
 - c) Combustion sources or vehicles that substitute petro-diesel with bio diesel.

b) Indicate whether this project boundary is appropriate:

>> The spatial scope of the data used needs to include GHG emissions on account of plantation related activities directly attributable to the project activity. This should include GHG emissions on account of clearing the land, plantation, disposal of the biomass cleared etc.

The methodology does not consider the impact on efficiency / service delivery related to the use of bio diesel. It needs to be established that there is no leakage on account of increased consumption of petro diesel on account of an adverse impact due to the partial switch to bio-diesel (would not be applicable in case of a complete fuel switch).

(6) Key assumptions/parameters (including emission factors and activity levels) and data sources:

a) List the implicit and explicit key assumptions. Identify those, if any, which are problematic and explain:

>> (a) The quantity of bio diesel produced is equal to the quantity of bio diesel consumed. This, in my opinion is problematic as storage and transportation loss, in addition to loss of account of product degradation (as it is possible that some quantity of bio-diesel may be left un used for more than its shelf life of 6 months) needs to be considered.

(b) Impact on the efficiency / delivery of service per unit of fuel, on account of the fuel switch is assumed to be negligible. Whereas this may well be the case, the same needs to be established comprehensively.

(c) Not accounting for the emissions on account of a plantation related activity - is problematic as the activities involved namely clearing of land, disposing of the cleared biomass, planting and maintaining the new plantation could result in significant GHG emissions that are directly attributable to the project activity. The carbon sequestering on account of the plantation is a reality, but the quantum vis-à-vis the increased emissions needs to be estimated.

(d) Common oxidation factor for the end users of the bio diesel : this is problematic as the vehicle type and the corresponding oxidation factor could vary significantly. The methodology should establish the the most conservative oxidation factor has been considered.

(e) Fuel switch to alternative fuel options (CNG / LNG/ LPG / Fuel Ethanol) are not a viable option : This is problematic as its is in variance with what has been observed in many parts of the country. In my opinion, with increasing petroleum prices, the search for cheaper fuel will cause users to consider switching to non traditional fuels, bio diesel being an option, but NOT the only one.

b) State whether the key assumptions are arrived at in a transparent manner:

>> Yes, the key assumptions are arrived at in a transparent manner.

c) Give your expert judgement on whether the assumptions/parameters are adequate:

>> Subject to the issues raised above, the assumptions / parameters are generally adequate.

d) Indicate which data sources are used and how the data are obtained (e.g. official statistics, expert judgement):

>> The data used has been sourced either from project activity reports (quantity of bio-diesel produced), national / official statistics (CO2 emission factor, oxidation factor & carbon content for petro diesel) or Revised 1996 IPCC guidelines (CO2, CH4 & N2O emissions factor for petro diesel & CH4 emission factor for methanol production).

e) Give your expert judgement on whether the data used are adequate, consistent, accurate and reliable:

>> In my opinion, the data used are generally adequate, consistent, accurate and reliable. It would however be desirable to ascertain the variance in the oxidation factor for the target petro diesel vehicle segment and select the most conservation option, if this is not the case (relevant data to be stated in Annex 3 " baseline information" for greater clarity).

f) State possible data gaps:

>> (i) The quantum of Bio-diesel consumed may not be equal to the quantity produced on account of various factors, including transportation loss, pilferage, product expiry, exports to Annex 1 countries etc.
(ii) GHG emissions on account of plantation related activities needs to be considered. Issues regarding the quantum of GHG emitted on account of the clearing of the 'waste land' , preparing it for planting , disposing of the biomass cleared etc. needs to be suitably addresses.

(7) Assessment of uncertainties:

a) State whether the methodology includes an assessment of uncertainties regarding:

i) The basis for determining the baseline scenario:

>> Yes it does

ii) Algorithms/formulae:

>> Yes - partially

iii) Key assumptions:

>> Yes - partially

iv) Data:

>> Yes

b) State whether the uncertainties presented are reasonable:

>> While certain issues have been addressed, many relevant uncertainties related to key assumptions are not addresses (see 6.a)

(8) Leakage:

a) State how the baseline methodology addresses any potential leakage due to the project activity:

>> The methodology accounts for the following leakages:

- (i) CH4 emissions on account of an increased demand for Methanol;
- (ii) GHG emissions on account of power drawn from the Grid for running the plant;
- (iii) transportation (feed stock + bio-diesel) related GHG emissions.

b) Indicate whether the treatment for leakage is appropriate and adequate:

>> Whereas the treatment for leakages are generally appropriate and adequate, the following needs to be addressed / explained:

- (i) potential leakage on account of a variance between the quantum of bio-diesel produced and the quantity consumed;
- (ii) Plantation related GHG emissions i.e. treatment of GHG emissions on account of the clearing of the land, preparing it for planting, disposing the biomass cleared etc.

(9) Transparency and “conservativeness”:

a) *Indicate whether the baseline methodology was developed in a transparent way:*

>> Yes - the methodology has generally been developed in a transparent way.

b) *State whether the baseline methodology is conservative:*

>> Subject to issues raised elsewhere in this document, the methodology is conservative in its approach and intent.

(10) Potential strengths and weaknesses of the proposed baseline methodology (please explain):

>> **Strengths :** Clearly structured, the methodology is simple and easy to use.

Weakness:

(1) The project implementation will involve significant agricultural activity, including but not limited to clearing the 'waste' land, preparing it for planting the Pongamia Pinnata & Jatropha Curcas seeds etc. The methodology does not suitably address the issue of GHG emissions during the plantation & harvesting stages (this could include open field burning of the cleared biomass, emissions on account of increase use of fossil fuel based water pumps, tractors etc.). Suitable provisions should be made to account for/address the GHG emissions that are directly attributable to the project activity.

(2) Given the fact that a lot of cities/regions in India are witnessing an increase in CNG / LPG fuelled vehicles, I am not entirely convinced by the argument that "*development of other alternative fuels such as CNG, LNG and LPG are not realistic and credible baselines for the project activity*", more so when one considers the recent gas finds in India & the new LNG terminals that are being developed and the judiciary in India is getting increasingly active in on the issue of vehicular air pollution. The same holds true for the use of Fuel Ethanol. The market for fuel ethanol has not caught on as yet partially due to supply and pricing related issues. With the ever increasing prices of petroleum products, it would not be fair write off fuel ethanol as a possible alternative. Suitable provisions should be incorporated to comprehensively confirm, on an annual basis that a material shift to alternative fuel options warranting a baseline revision, has not occurred .

(3) Service delivery : The methodology assumes that the use of bio diesel will not have any impact on the 'performance' / efficiency of the engine. Being a new technology and given the fact that the engine types in the target Indian market would in all probability be different as compared to the other markets where bio diesel is being widely used, provisions should be incorporated in the methodology to establish this assumption.

(4) The methodology should address the issue that whereas at the current prices, we are not witnessing a significant shift to bio fuel (i.e. without regulatory requirements), increase in prices of petroleum beyond a point will significantly hasten the shift to bio-fuels, including bio-diesel.

(5) The methodology considers a common emissions factor for all vehicle engine types and technologies. It needs to be established that the oxidation factor is the most conservative option.

(6) The methodology does not address the fact that the bio diesel could also be used in stationery power generation engines with a different emission baseline.

(11) Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account (please explain):

>> Whereas national / sectoral policies have been addressed, the scenario that is emerging on account of increased availability of gas based fossil fuel (and the related economics) and the increasing viability of fuel ethanol on account of increased petroleum prices needs to be looked at and addressed in greater details.

(12) Applicability of the proposed methodology across project types and regions (please indicate):

>> Suitable to addressing the issues mentioned in this review document, the methodology should be applicable to similar projects located in countries faced with similar 'operating' environment, regardless of the regional location. In my opinion, the principles of this methodology could be developed to formulate a standard methodology relevant to any / most voluntary fuel switch project that involves a switch from fossil to bio fuels.

(13) Any other comments:

Ownership related issues remain: I am not entirely convinced about the possibility of entering into CER transfer agreements with each and every single end user.

It must also be mentioned that competitive market forces can be expected to play a part in the transfer of benefits to the end users to a large extent, the cap being the price of the commodity that the bio-diesel with substitute - in this case petro diesel. Details of the target selling price and its computation, if given in the document, would help in clarifying these issues to a large extent.

a) State whether any other source of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) has been used by you in evaluating this methodology. If so, please provide specific references:

>> General web search on bio diesel projects in India.

b) Indicate any further comments:

>>

II. Proposed new monitoring methodology (specify title here): >> Monitoring methodology for emissions from biodiesel production and switching fossil fuels from petro-diesel to bio diesel.

In respect of the proposed new monitoring methodology, evaluate each section of annex 4 to the draft CDM PDD. Please provide your comments section by section:

(1) Brief description of new methodology:

Describe new methodology:

>> The monitoring methodology requires the monitoring of the following data to ascertain the GHG emissions reduction on account of the project activity:

- (i) Emission factor for each of the applicable green house gases
- (ii) Quantity of bio diesel produced
- (iii) electricity consumed by the bio diesel plant during its operation
- (iv) Quantity of petro diesel consumed for off-site transport - raw material, by products + bio diesel
- (v) Emissions related to the manufacture of Methanol used.

(2) Key assumptions/parameters:

a) List the implicit and explicit key assumptions. Identify those, if any, which are problematic and explain:

>> (i) Quantity of bio diesel produced is equal to the quantity of bio diesel consumed. This is problematic and suitable monitoring processes should be put in place to comprehensively establish this.

(ii) Using a single oxidation factor - the methodology should specify that the oxidation factor used is the most conservative option. This should also be established by providing suitable data. In cases where national host country emission factors are not available, the use of the most conservative emission factor as applicable to the developed countries is a conservative option.

(iii) Plantation related GHG emissions can be ignored. In my opinion, plantation related GHG emissions should be accounted for as the potential for significant GHG emissions during the land clearing and planting stage cannot be over ruled, especially during the disposal of the cleared biomass.

b) State whether the key assumptions are arrived at in a transparent manner:

>> The key assumptions have generally been arrived at in a transparent manner.

c) Give your expert judgement on whether the assumptions/parameters are adequate:

>> The assumptions / parameters, subject to the various related issues raised elsewhere in this document, are adequate.

(3) Data sources and data quality:

a) Indicate which data sources are used and how the data are obtained (e.g. official statistics, expert judgement):

>> (i) Electricity used by the project - source: project operation records

(ii) Grid emission factor - source: Official statistics

(iii) Petro diesel consumed for off-site transport - source: project operation records/ third party data

(iv) Methanol consumed - source : plant operation data

b) Give your expert judgement on whether the data used are adequate, consistent, accurate and reliable:

>>The data used are generally adequate, consistent, accurate and reliable with the following exceptions:

(i) Petro diesel consumed for off-site transport - the data should be cross checked with details of the distance covered by each vehicle. This should be relatively simple to do as the details of the distance travelled are usually stated in the bills raised by the transport operators.

(ii) Greater transparency is desirable in the selection of the oxidation factor used to compute the carbon emission factor of the petro diesel substituted. It needs to be clearly highlighted that the selected oxidation factor is the most conservative, considering the various available options (passenger cars, transport vehicles, bus, Railway engines etc.)

c) State possible data gaps:

>> The single biggest cause for concern is the potential for variance between the quantity of bio-diesel produced and the quantity actually consumed. This needs to be suitably addressed.

(4) Assessment of the description of the proposed methodology and its applicability:

a) State whether the proposed methodology has been described in an adequate manner:

>> Yes

b) State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context (described in Sections A-E of the draft CDM-PDD and submitted along with annex 4):

>> Subject to suitably addressing the issues raised in this review document, the proposed methodology is appropriate for the referred proposed project activity and the referred project context.

c) State whether this proposed monitoring methodology is compatible with the proposed baseline methodology described in annex 3 of the draft CDM-PDD:

>> Subject to addressing the issues highlighted, the proposed monitoring methodology is compatible with the proposed baseline methodology described in annex 3 of the draft CDM-PDD.

(5) Leakage (please elaborate, if appropriate):

>> Potential for leakages on account of the following have not been addressed:

(i) Mismatch in the production and consumption of bio diesel on account of various loss (transportation, storage, product expiry, export to a Annex 1 country, etc.)

(ii) Possible increase in consumption of petro diesel to compensate for any adverse impact of the bio-diesel on the performance of the engine.

(iii) Increased GHG emissions on account of plantation related activities (including but not limited to disposal of the biomass cleared from the 'waste land')

(iv) Consumption of fossil fuel within the factory premises eg. in the boiler. Whereas the assumption that the boiler is run purely on bio diesel may well be accurate, a suitable monitoring mechanism should be introduced to ensure environmental integrity.

(6) Quality assurance and control procedures (please explain):

>> (i) **Electricity used by the project** : monitored using calibrated, tamper proof energy meters installed within the premises. Electricity bills will be regularly verified and the energy meters periodically calibrated according to the industry standards / as suggested by the electricity supplier.

(ii) **Grid Emission factor**: Obtained from the national statistics.

(iii) **Petro diesel consumed for off site transport**: Project proponents will maintain a record of the petro diesel purchased for the vehicles used for transportation. Bills & amounts paid towards the purchase of the petro diesel will be verified. -- In my opinion the QA /QC needs to be strengthened by cross checking the actual consumption of petro diesel with the theoretical based on approximate distances travelled.

(iv) **Bio-diesel produced**: Two tamper proof electronic flow meters will be installed at the final product outlet point to measure and record the flow of outlet bio diesel. The flow meters will be calibrated periodically. The verified quantity will be cross checked with the quantity of raw material consumed and the sales bill for the bio diesel.

(v) **CO2 emission factor for petro diesel**: based on national data / official statistics or IPCC emission factors. --- its needs to be ensured that that most conservative option is considered. The selection of the oxidation factor needs to be explained, giving the details of the various vehicle types considered and highlighting the fact (if applicable) that the most conservative option was selected. In its current form, one cannot ascertain whether the oxidation factor used is that of a petro diesel passenger car / transport vehicle or a railway engine. Clarity on this issue will further strengthen the methodology.

(vi) **Methanol consumed** : The quantity of methanol consumed will be measured using an electronic weighing scale installed at the entry of the project premises. An inventory check too will be carried out.

(7) Potential strengths and weaknesses of the proposed monitoring methodology (please explain):

>> **Strength**: The methodology is simple and easy to implement.

Weakness:

(1) Lack of suitable monitoring to validate the assumption that the quantity of bio diesel produced is equal the petro-diesel substituted.

(2) Absence of suitable provisions to monitor increase (if any) in the consumption of petro diesel, on account of blending bio-diesel.

(3) Absence of provisions to monitor the total quantum of fuel consumed within the project premises (bio + petro diesel).

(8) Applicability of the proposed methodology across project types and regions (please indicate):

>> After addressing the issues raised elsewhere in this document, the monitoring methodology should be applicable to all similar projects, regardless of the regional location . The key criteria being that the project should involve a voluntary fuel switch from petro-diesel to bio-diesel.

(9) Any other comments:


a) State whether any other source of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) has been used by you in evaluating this methodology. If so, please provide specific references:

>> No.

b) Indicate any further comments:

>> With suitable modifications, the methodology can be extended to other fuel switch projects that involves a switch from a fuel with a high carbon emission factor to one with a lower (including nil) carbon emission factor.

Signature of desk reviewer



Date: 15th / December / 2004

Information to be completed by the secretariat

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