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|  <p style="text-align: center;"><b>CDM: Proposed new methodology expert form<br/>(version 03)</b><br/>(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  | Agus P. Sari |
| Related F-CDM-NM document ID number   | NM0069       |
| <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>   |              |
| <b>A. Evaluation of the proposed new methodologies by desk reviewers:</b>   |              |
| <b>I. Evaluation of the proposed new baseline methodology:</b>  |              |
| <p>Title of new baseline methodology:&gt;&gt;Biodiesel production and switching fossil fuels from petro-diesel to biodiesel (NM0069)</p>  |              |
| <p>i. Conditions under which this methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>&gt;&gt;The proposed methodology is applicable to other potential projects under the following conditions:</p> <p>Production and use of bio-diesel nationally is constrained;</p> <p>Alternative, non-bio-diesel, fuels are not envisaged in the course of the project activity;</p> <p>There is no enforceable mandate to produce and use bio-diesel to replace petro-diesel in the transport sector;</p> <p>It can be readily verified that the produced bio-diesel will be used as fuel to replace petro-diesel in the transport sector.</p> <p>Unless it is improved, the proposed methodology can only be applied when petro-diesel is entirely imported.</p> <p>ii. Strengths and weaknesses of the methodology:</p> <p>&gt;&gt;Conservativeness is the stated strength of the proposed methodology. However, calculating emissions associated from combustion only may not capture the whole emissions from the consistent baseline and project boundary; similarly, the use of IPCC default emissions factor in place of national emissions factor, even if it is available, may not be advisable.</p> <p>The proposed methodology is also simple and straightforward. If improved according to suggestions in Section 2(d), above, it is also generic enough to allow the methodology to be applied elsewhere and further improved by future project developers.</p> <p>The weaknesses of the proposed methodology, according to the documentation, are the application of common emissions factor for all vehicle engine types and technologies, as well as limited applicability across similar project activities. Actually, appropriate monitoring methodology may partially address the first weakness with respect to emissions factor for all vehicle engine types and technologies, whereas the latter is not entirely correct, thus not quite a weakness.</p> <p>iii. Any changes needed to improve the methodology:</p> <p>a. Minor changes:&gt;&gt;</p> <p>b. Major changes: &gt;&gt;Divide the petro-diesel supply into domestically-produced and imported. Use "well-to-wheel" analysis to calculate emissions from domestically produced gasoline so that emissions associated with the production of petro-diesel --</p> |              |

not only combustion of it -- can be taken into account, and use tank-to-wheel analysis, as in the proposed methodology, to calculate emissions for imported petro-diesel, plus the associated emissions from transporting the fuel. Add the emissions from domestically-produced petro-diesel with imported one. Replace the emissions associated with the portion to be replaced by bio-diesel with emissions associated with producing and transporting bio-biodiesel.

Better yet, if the distribution company to which the bio-diesel will be sold, and if the sources of petro-diesel supplied to the company is known (either domestically-produced or imported), then just calculate this portion using the above method. Take into account the reduction of vehicular fuel efficiency resulting from the use of bio-diesel in place of petro-diesel. Address the leakage better.

## 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 biodiesel

- i. Conditions under which this methodology is applicable to other potential projects (e.g. project type, region, data availability):  
>>Production and use of bio-diesel nationally is constrained;  
Alternative, non-bio-diesel, fuels are not envisaged in the course of the project activity;  
There is no enforceable mandate to produce and use bio-diesel to replace petro-diesel in the transport sector;  
It can be readily verified that the produced bio-diesel will be used as fuel to replace petro-diesel in the transport sector.  
Unless it is improved, the proposed methodology can only be applied when petro-diesel is entirely imported.
- ii. Strengths and weaknesses of the methodology:  
>>Simplicity is the strength of the proposed methodology. However, calculating emissions associated from combustion only may not capture the whole emissions from the consistent baseline and project boundary.
- iii. Any changes needed to improve the methodology:
  - a. Minor changes:>>
  - b. Major changes: >>Add monitoring methodology to measure the actual biodiesel that is combusted in place of petro-diesel. This can be done through checking the receipts of sales of biodiesel to consumers.  
Monitor the portions of domestic production of petro-diesel and imported petro-diesel.

## 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 biodiesel (NM0069)

**(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 proposed methodology is developed for fuel switch activities that partially or fully substitute petro-diesel with biodiesel. The methodology is as follows: since bio-diesel is deemed to release zero emissions of greenhouse gases, its use as full or partial replacement of petro-diesel can reduce the release of carbon dioxide from petro-diesel. The expected production -- and use -- of 27 tons of bio-diesel per day, or 8,910

tons per year, is expected to avoid emissions by around 27,851 tons from the use of petro-diesel, a rate of 3.126 tons of carbon dioxide avoided for every use of one ton of bio-diesel replacing petro diesel. This amount, which is less than 15 kilotons (kts) per year, allows this project activity to be treated as a "type (iii)" small-scale project (FCCC/CP/2001/13/Add.2, paragraph 6 (c) (iii); and FCCC/CP/2002/7/Add.3, Section C).

A large amount of emissions from petro-diesel is generated by the combustion, and a minor portion by the production and transport (distribution) of the petro-diesel itself. Avoiding the use of petro-diesel will avoid the release of emissions generated not only by the combustion of the petro-diesel itself, but also the deemed emissions from the production and transport.

The emissions from bio-diesel is generated mainly by the production and transport (distribution) only, since combustion of which, being a renewable source with zero net emissions, is deemed to release no emissions of carbon dioxide. The emissions reduction is determined as the difference between total emissions released by the use of petro-diesel and that of bio-diesel.

This methodology is applicable to project activities under fuel switch category, under sectoral scope 7 (Transport) since the main application of the biodiesel is the transport sector. According to the small-scale modalities and procedures, the category comes under III.B, Switching fossil fuels (FCCC/CP/2002/7/Add.3, paragraph 5).

*b) State the approach selected:*

>>The methodology uses 48(a) as its approach, namely "existing actual or historical emissions". But as this is a (type (iii)) small-scale project activity, the approach selected need not follow paragraph 48 of the CDM modalities and procedures. Instead, Appendix B of FCCC/CP/2002/7/Add.3 is used as the approach.

*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 approach used, 48(a), is appropriate since in the absence of the proposed CDM project the baseline scenario will be the continuation of the existing practice of using petro-diesel. Approach 48(b) may also be appropriate, although less so, since the most economically-attractive course of action, taking into account barriers to investment, appears to be the continuation of the existing practice of using petro-diesel.

While the selection of approach 48(a) is appropriate, there are some elements in which approach 48(b) may be used as well, especially since the use of gas continues to be an attractive, feasible, and prevailing trend in India (and in many other similar developing countries).

## (2) Basis for determining the baseline scenario:

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

>>The documentation explains how the baseline scenario is chosen. The documentation identifies two possible scenarios, namely the continuation of the use of petro-diesel in transport sector and the use of bio-diesel in place of the petro-diesel. The first case, namely the continuation of the use of petro-diesel, is chosen to be the baseline due to the following reasons: First, all strategies other than technological changes -- namely vehicle retrofits, fuel switching with alternative fuels such as compressed natural gas (CNG), liquefied natural gas (LNG), and liquefied petroleum gas (LPG) -- are not technically and economically comparable with technological changes in terms of carbon abatement costs and benefits. The implementation of such technologies require sizable infrastructure investments as well as vehicle retrofits. The documentation demonstrates this assertion by using "several studies and initiatives" being taken by the government of India, in particular the Report of the Expert Committee on Auto Fuel Policy.

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

>>Baseline emissions are calculated by calculating the emissions associated with the combustion of petro-diesel that is to be replaced by bio-diesel, using the prevailing (European) emissions factor of petro-diesel according to the IPCC Guideline (1996). Carbon dioxide emissions are determined by multiplying the carbon content in petro-diesel (tons of carbon per liter of petro-diesel) with its oxidization factor (percent).

The baseline emissions are the emissions solely generated by combustion. This is calculated by multiplying the bio-diesel produced (tons per year) with the emissions factor of petro-diesel.

The underlying rationale for the formulae used is as follows: First, it assumes that every unit of bio-diesel replaces exactly another unit of petro-diesel. Second, it assumes that the use of IPCC default emissions factor is conservative, and country-specific emissions factor makes the calculation less conservative as developing country emissions factor tends to be higher than the IPCC default one. Finally, the baseline emissions appear to disregard emissions from the production (and distribution) of 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?*

>>The documentation explains how, through the use of the proposed methodology, it claims to demonstrate that the proposed project activity is additional, by comparing it with lower emissions generated by the project activity.

Emissions from project activity are determined as the sum of emissions generated by the electricity consumption in the process of production and transport of bio-diesel, taking into account emissions generated due to leakage.

The emissions generated by the electricity consumption in the production of bio-diesel is determined by multiplying the electricity consumed per year (megawatt-hours, MWh) per year) with the grid emissions factor (tons of carbon dioxide per MWh). The proposed methodology also considers that, when grid emission factor is not available, emissions factor from coal can be used and is adequately conservative.

The emissions generated by the transport comprises the following: transportation from the production plants to filling stations and transport of raw materials to the production plants. Light to medium-duty diesel trucks are considered to be employed for transport. Emissions caused by the transport, therefore, are calculated by multiplying the petro-diesel consumed by the light or medium -trucks and their emissions factors.

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

>>The basis for determining baseline scenario and for assessing additionality is appropriate and, as it stands now, can show that the project activity is additional. However, it needs improvement to make it more reasonably represent the emissions in the absence of the project activity, as follows:

First, the proposed methodology can represent the baseline emissions better and more accurately if the emissions due to production (in the case of domestically-produced petro-diesel) and distribution (transport) of petro-diesel can also be included. This may make the baseline emissions higher, thus less conservative, but considerably more accurate.

Second, by definition leakage is not part of the project boundary, and therefore may be excluded from the calculation of project emissions (as otherwise treated in D9 of the NMB).

Third, the assumption that every unit of bio-diesel can replace exactly the same unit of petro-diesel may not be entirely accurate. Experiences in pilot projects in several countries show that, due to the different physical and chemical characteristics between bio-diesel and petro-diesel, the use of bio-diesel in place of petro-diesel actually reduces the vehicle fuel efficiency by about 10 percent. This means that every unit of biodiesel actually replaces only 0.9 units of petro-diesel. This needs to be reflected accordingly in the methodology.

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

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

>>The methodology has been described adequately, but needs improvement as described in Section 2(d), above.

*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):*

>>Once the appropriate improvements as indicated in Section 2(d), above, can be made, the proposed methodology is appropriate for the referred proposed project activity and 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.*

>>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, provided that some adjustments and improvements as indicated in Section 2(d), above can be made.

*Please explain:*

>>First, only by calculating the emissions associated with the combustion of petro-diesel, compared with the well-to-wheel emissions associated with the production and combustion of biodiesel create an uneven comparison. This can only apply if and when all of the petro-diesel to be replaced by biodiesel is from imported sources. For the petro-diesel to be replaced that is from domestically-produced sources, emissions associated with the production of the petro-diesel should be taken into account. This, however, may exhibit larger amount of emissions in the baseline, but could make the boundaries for the baseline and the project consistent with each other.

Second, the proposed methodology claims that the use of petro-diesel will not change in the near future or in the course of the project activity, and the next best alternative such as natural gas is not likely. It has been demonstrated, however, that alternative fuels for transportation has been used in India, especially in Delhi, for reasons other than greenhouse gas reductions. The possibilities of the use of alternative fuels such as natural gas in the transport sector should be taken into account, even though it may not change the baseline (because natural gas-based vehicles cannot use bio-diesel except if they use converters). This may affect the assumption of the potential for fuel switching from petro-diesel to bio-diesel.

Third, the leakage, in the documentation explained as the possible increase of methanol consumption, should not be considered as part of the project boundary, by definition. Therefore, emissions reduction (additionality) due to the implementation of the project activity can already be demonstrated by calculating the difference between the baseline emissions and the project emissions with consistent boundary between the two. Besides, in addition to the mentioned potential leakage, there are other (positive as well as

negative) leakages of the project that the proposed methodology developer may wish to include.  
And finally, the changes in vehicle efficiency (by ten percent) needs to be reflected in the methodology.

**(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 description includes algorithms and generic formulae that can be applied to other potential project activities. The suggested improvement of the methodology (Section 2(d), above) can also be made generic, such as the inclusion of the emissions generated by the energy use of petro-diesel production and transportation when produced domestically. Meanwhile, the emissions generated by imported petro-diesel is limited only to transportation.

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

>>The spatial scope of data used to determine the baseline, which is the emissions level of petro-diesel combustion that is to be replaced by the bio-diesel, is the whole nation, and it is appropriate. But it is not sufficient given the problem with the emissions associated with the production of petro-diesel that is different from imported petro-diesel.

*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:*

>>The vintage of data corresponds to the year of production of the biodiesel and the time of occurring of fuel switching. Generally, national data or official statistics or the IPCC default factors will not change overtime. Hence, vintage of data is not considered relevant. The vintage of data in the proposed methodology is 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*

>>The gases included is carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). The sources include combustion (for both project and baseline emissions) and production and transport for project emissions.

*ii) Physical delineation*

>>The physical delineation is the combustion of petro-diesel and production and combustion of biodiesel.

*b) Indicate whether this project boundary is appropriate:*

>>The project boundary is inappropriate since the source of the petro-diesel to be replaced by the biodiesel may be both domestically-produced and imported, which have different emissions associated with them. Emissions from the production of the petrodiesel domestically may be calculated as part of the proposed baseline boundary. This needs to be taken into account in the proposed methodology.

**(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:*

>>The following are the key assumptions

First, the emissions associated with the use of petro-diesel are only emissions in the combustion;

Second, 100 percent of the biodiesel is actually combusted;

Third, the penetration of the use of natural gas will not influence the baseline;

Fourth, the barrier to using biodiesel as a replacement of petro-diesel is not economic competitiveness;

Fifth, every unit of bio-diesel can replace exactly one unit of petro-diesel.

Sixth, emissions factors are IPCC default.

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

>>The key assumptions are transparent except the second and fourth.

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

>>The assumptions make the approach more conservative in the case of the first and the sixth ones but less so in the others.

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

>>Quantity of biodiesel produced (proprietary); methanol consumed during biodiesel production (proprietary, but can be excluded if considered as leakage); emissions factor for petro-diesel (IPCC, can be improved with national emissions factor if any); carbon content of petro-diesel; oxidization factor; and emissions factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O for petro-diesel (IPCC guidelines, but can use national factors if any); and methane emissions for methanol emissions (IPCC guidelines, but can be excluded if considered leakage).

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

>>the data used can be improved. While they are consistent, accurate, and reliable, they are not adequate, as in point (f), below.

*f) State possible data gaps:*

>>The following are the possible data gaps:

First, there should be data showing the portions of domestically-produced and imported petro-diesel supply, and the associated emissions arising from the imported gasoline. The data only on combustion to calculate emissions from petrodiesel is not entirely appropriate, since emissions from the production of gasoline, if produced domestically, should be taken into account. The well-to-wheel analysis can be applied to domestically-produced gasoline. For the imported gasoline, the tank-to-wheel -- as in the currently proposed methodology should be sufficient (plus the associated transport emissions to import and distribute the gasoline).

Second, there should be at least a statistical data showing the amount of petro-diesel sold, which part of its supply will be replaced by bio-diesel, and a verified estimates on the total sales of the bio-diesel mixed fuel. Uncertainties regarding the sales of bio-diesel should be taken into account. As it stands now, it is implicitly assumed that 100 percent of the bio-diesel produced will be used.

Third, there should be an experimental data showing the reduced vehicular fuel efficiency due to the use of bio-diesel in place of petro-diesel. Experiences in pilot projects in other countries show about 10 percent reduction of efficiency. This figure, using reasonable assumptions and citations, can be used in the case that experimental data are inexistent.

Fourth, national emissions factors for India are available, and even though they may make the baseline less conservative, they are more accurate.

## **(7) Assessment of uncertainties:**

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

*i) The basis for determining the baseline scenario:*

>>The methodology includes the following uncertainties: the carbon content of petro-diesel and oxidization factor. But more uncertainties exist, and the suggested improvement in Section 2(d), above, will address the uncertainty of the basis for determining the baseline scenario, especially the rate of penetration of gas as alternative to petro-diesel.

*ii) Algorithms/formulae:*



>>The methodology includes uncertainties regarding the algorithms / formulae, but only for the carbon content of petro-diesel. In fact, the uncertainties are not adequately addressed (for example the range of the uncertainties in the carbon content of petro-diesel is not adequately explained). There are other sources of uncertainties in the formulae, as follows: the emissions factor, the penetration of gas as alternative to petro-diesel (that may influence the competitiveness of bio-diesel), the portion of petro-diesel that is domestically produced, and the vehicular fuel efficiency reduction.

*iii) Key assumptions:*

>>The methodology does not include uncertainties in the key assumptions, although some of them are not explicitly. The suggestions to improve the methodology (in Section 2(d)) includes the inclusion of additional calculation to reduce uncertainties (to increase accuracy).

*iv) Data:*

>>The methodology does not include uncertainties inherent in the data, but is not vital. What is more important is the improvement with regard to additional data (and calculation) needed to reduce uncertainty and increase accuracy.

*b) State whether the uncertainties presented are reasonable:*

>>The uncertainties presented are reasonable (see above), provided that the improvements suggested in Section 2(d) is made.

**(8) Leakage:**

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

>>The proposed baseline methodology addresses the potential leakage, but not adequately, as explained in point (b), below.

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

>>The proposed methodology addresses potential leakage due to the increase in methanol consumption due to the project activity. Since leakage by definition happens outside the project boundary, then it should not be included in the calculation emissions reduction from the project activity. The treatment of leakage, however, is not yet appropriate and adequate. Leakage due to the increased consumption of methanol consumption is not necessarily in the form of methane leakage. It is even more so in the form of all greenhouse gas emissions resulting from the entire production and transport process of methanol.

In addition, the proposed project activity may actually lead to potential positive transboundary leakage in the form of reduced emissions overseas due to reduced imports of petro-diesel, thus reduced emissions associated with petro-diesel exploitation, refineries, etc. in the producing countries (on the project level, this is if and when India imports petro-diesel, but generically this is a leakage that can be identified in similar project activities elsewhere).

The use of *Jathropa curcas* seeds or oil palm as the raw material for producing bio-diesel may lead to positive leakage in which since the use of the seeds needs no felling of the trees, and therefore the carbon sequestered and stored in the trunks of the *Jatropha* and palm trees remain. However, negative leakage may occur when the land used to plant the *Jatropha* and palm trees were cleared from higher biomass density land use.

**(9) Transparency and “conservativeness”:**

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

>>The baseline methodology was developed in a transparent way.

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

>>The baseline methodology is conservative, or at least attempts to be conservative. However, an improvement of the methodology can make it less or more conservative, but more accurate. The documentation states that it "allows for the development of baselines in a transparent and conservative manner since it considers national circumstances and data as the first choice." This is not necessarily



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| <p>correct in the case of the use of emissions factor for petro-diesel. In this case, the proposed methodology uses the IPCC default factor for reasons of conservativeness, instead of national emissions factor that is already available in India but will lead to higher emissions in the baseline. In this case, the use of national emissions factor is advisable even when it makes the baseline less conservative.</p>  |
| <p><b>(10) Potential strengths and weaknesses of the proposed baseline methodology (please explain):</b></p> <p>&gt;&gt;Conservativeness is the stated strength of the proposed methodology. However, calculating emissions associated from combustion only may not capture the whole emissions from the consistent baseline and project boundary; similarly, the use of IPCC default emissions factor in place of national emissions factor, even if it is available, may not be advisable.</p> <p>The proposed methodology is also simple and straightforward. If improved according to suggestions in Section 2(d), above, it is also generic enough to allow the methodology to be applied elsewhere and further improved by future project developers.</p> <p>The weaknesses of the proposed methodology, according to the documentation, are the application of common emissions factor for all vehicle engine types and technologies, as well as limited applicability across similar project activities. Actually, appropriate monitoring methodology may partially address the first weakness with respect to emissions factor for all vehicle engine types and technologies, whereas the latter is not entirely correct, thus not quite a weakness.</p> |
| <p><b>(11) Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account (please explain):</b></p> <p>&gt;&gt;The portions of domestically-produced gasoline and imported gasoline are important for the baseline emissions calculation, but not reflected in the proposed methodology. The economic competition between petro-diesel and bio-diesel is also not reflected in the proposed methodology. National emissions factors for India are already available and therefore can be used. Also, penetration of natural gas as alternative to petro-diesel, while addressed, is not adequately reflected in the formulae.</p> <p>Otherwise, national policy considerations are addressed in the proposed methodology.</p>  |
| <p><b>(12) Applicability of the proposed methodology across project types and regions (please indicate):</b></p> <p>&gt;&gt;If improved according to section 2(d), above, the proposed methodology can be applied across project types and regions.</p>   |
| <p><b>(13) Any other comments:</b></p> <p>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:</p> <p>&gt;&gt;Personal communications with Prof. Mitra of the Indian National Physical Laboratory on the existence of Indian national emissions factors, and publications by the Center for Science and Environment regarding the natural gas penetration in the transport sector in New Delhi, India.</p> <p>b) Indicate any further comments:</p> <p>&gt;&gt;The proposed methodology needs to be improved according to suggestions in Section 2(d).</p>  |
| <p><b>II. Proposed new monitoring methodology (specify title here):</b> &gt;&gt;Monitoring methodology for emissions from biodiesel production and switching fossil fuels from petro-diesel to biodiesel</p>  |
| <p><i>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:</i></p>  |
| <p><b>(1) Brief description of new methodology:</b></p> <p><i>Describe new methodology:</i></p> <p>&gt;&gt;The proposed monitoring methodology monitors the emissions associated with the production and combustion of bio-diesel, compared to those in the baseline, which is the emissions associated with the combustion of petro-diesel.</p>  |

**(2) Key assumptions/parameters:**

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

>>The following are the key assumptions

First, the emissions associated with the use of petro-diesel are only emissions in the combustion;

Second, 100 percent of the biodiesel is actually combusted;

Third, no other alternative, such as the use of natural gas, exists in the course of the project.

Fourth, the barrier to using biodiesel as a replacement of petro-diesel is not economic competitiveness.

Fifth, the amount of petro-diesel substituted can be inferred through the amount of bio-diesel produced. This is problematic since demand for diesel fuel will increase overtime and there is no way to ascertain that the biodiesel produced will actually be combusted in place of petro-diesel.

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

>>The key assumptions are arrived at in a transparent manner.

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

>>The assumptions 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):*

>>Electricity used by project (paper source, proprietary of the project proponent); grid emissions factor (paper source, national statistics); petro-diesel consumed for off-site transport (paper, proprietary); quantity of biodiesel produced (paper, proprietary); emissions factor for petro-diesel (paper, calculation from national statistics); methanol consumed (paper, proprietary).

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

>>The data used are consistent, can be relatively accurate and reliable if proprietary but may not be accurate or reliable if not proprietary, but these statistical data are outside the control of the project proponent. But these are not adequate. To increase certainty and accuracy, additional data can be acquired and measured, as in point (c), below.

*c) State possible data gaps:*

>> For the proposed methodology, the data acquisition as stated in the documentation is adequate. But if the suggested improvement as in Section 2(d), above, is to be made, more data need to be acquired, as follows. For the accuracy of the baseline, the following addition of data acquisition may be desirable: First, the portion of petro-diesel replaced that is domestically produced and imported, and portion of biodiesel that is actually used and combusted when it replaces petro-diesel, including, if possible, the types of vehicles; the possible reduction of vehicular fuel efficiency due to the use of bio-diesel in place of petro-diesel.

**(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:*

>>The proposed methodology is described adequately.

*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):*

>>The proposed methodology is appropriate, but if the baseline methodology is improved according to the suggestions in Section 2(d), above, it can be better.

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

>>The proposed methodology -- given the additional data acquisition according to the need for the improved baseline according to Section 2(d) is compatible with the proposed baseline methodology.

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

>>Leakage is elaborated but can be improved (see Section 8 on Leakage, above). The inclusion of positive leakage due to reduced emissions overseas due to reduced consumption of imported petro-diesel requires data on emissions from production and transport of petro-diesel in the producing countries.

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

>>The monitoring plan while adequate appear to be a rough plan; some of the key measurements are not finalized yet. No explicit monitoring procedure for calculating the bio-diesel that is actually used. If the baseline is improved according to the suggestions in Section 2(d), above, the monitoring plan -- especially the data acquisition -- also needs to be improved.

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

>>The strength of the proposed methodology is that it is simple but not too robust. The documentation states that the strength is related to "the accuracy and stringent quality control measures", but given that many of the data are actually based on national statistics and paper, not direct measurements, the accuracy remains problematic.

The proposed methodology is also simple and straightforward. If improved according to suggestions in Section 2(d), above, it is also generic enough to allow the methodology to be applied elsewhere and further improved by future project developers.

The weaknesses of the proposed methodology, according to the documentation, are the application of IPCC emissions factor. Since national emissions factors are already available, they can be used to address this weakness. Appropriate monitoring methodology may partially address the first weakness with respect to emissions factor for all vehicle engine types and technologies if the sales of bio-diesel according to types of vehicles can be applied. The proposed methodology, once adjusted with the improvement of the baseline methodology in Section 2(b), above, is actually applicable to other similar project types.

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

>>The proposed methodology is applicable across project types and regions. It is generic enough, uses available data from international statistics, national statistics, and proprietary information. The proposed baseline methodology improvement (in Section 2(d)) requires additional information such as emissions from the production (if domestically produced) and transport of petro-diesel, the use of national emissions factor data, and vehicular efficiency reduction resulting from the use of bio-diesel in place of petro-diesel. But these information can easily be made generic to allow national circumstances.

**(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:*

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*b) Indicate any further comments:*

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Signature of desk reviewer .....

Date:    /    /

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