

Response to the clarifications raised by the Executive Board on the project “Avoidance of Methane Emissions from Municipal Solid Waste and Food Waste through composting” (Project No: 1904)

Clarification of the EB:

1. *The PP/DOE are requested to further clarify the various investment and operational barriers that were considered prior to the decision to go ahead and implement the project.*

Response of the PP:

As the project activity involves treatment of Municipal Solid Waste and Food Waste by composting to produce organic manure, the only return in absence of CDM from the project activity is the revenue through sales of organic manure.

The PP would like the EB to note that the viability of the project activity (sustained and continuing operation) depends on two primary factors:

1. Creation of a demand of the new concept of ‘organic manure’ in a market which is pronouncedly dominated by chemical fertilizers.
2. Stabilizing the supply of organic manure once sufficient demand has been created in the market by higher production levels of the composting facility.

Under circumstances wherein even if any one of the above two is not achievable, the project activity will not work out to be a viable one. The first factor outlined above is prohibited by the investment barrier faced by the project activity while the second factor is prohibited by the operational barrier faced by the project activity as outlined in the PDD submitted to request for registration. The same have been clarified further below.

Investment barrier:

As the project activity involves treatment of Municipal Solid Waste and Food Waste by composting to produce organic manure, the only return in absence of CDM from the project activity is the revenue through sales of organic manure. Thus the project viability is solely determined by the quantum of sales of organic manure achieved by the PP. The market where the organic manure may be sold is the agricultural farmers. This market presently is absolutely dominated by chemical/synthetic fertilizers for a very long time and this trend is expected to continue for a very long time in the future as well. This is evident from the references to support the market dominance of chemical/synthetic fertilizers submitted in the PDD and Validation Report submitted for request for registration (please refer to Page 2 – Policy Paper on Fertilizer Policy Issues 2000-2025, National Academy of Agricultural Sciences and the fertilizer consumption patterns in India outlined in the report ‘Fertilizer use by crop in India’ by Food and Agriculture Organization of the United Nations, Rome 2005). Thus considering the pronounced preference of the Indian agricultural farmers to the market dominant chemical/synthetic fertilizers, penetration of the organic manure in this market is tremendously challenging and entails selling of an entirely new ‘concept’ rather than selling a product. Market penetration will be achievable only by huge marketing and sales promotional exercises (refer to the exercises planned by the PP as outlined in the PDD submitted to request for registration) without which there will be no demand of the product and the production of the composting facility will decrease and may ultimately stop due to zero market penetration (in line with what has been happening in the pre-project case). Returns from the project will thus be nil. Hence, to ensure that the production continues the PP has to ensure a stable and high demand for the organic manure through major capital intensive marketing campaigns. Given the fact that the PP is under financial strain (net losses as per the audited balance sheets) and that the PP cannot take any loan (as per terms and conditions with OSFC),

investing in such major capital intensive marketing campaign is not viable without financial support from CDM.

Thus it is evident that in absence of CDM the PP will not be able to invest commensurately in marketing exercises and consequently due to low demand of organic manure, the PP would be forced to operate under very low capacity utilization thus increasing the cost of unit production of organic manure. It is common knowledge that as the production levels (capacity utilization) of the facility fall the unit cost of production also increases. With lower and lower capacity utilization, the cost of production will increase and immediately exceed the selling price of organic manure. Consequently the facility will be making losses (not even minimum expected returns) and aggravate the financial burden of the PP (which is already a loss making company). Under such circumstances, the PP did not want to invest in the project implementation without CDM revenue. This was the barrier to investing in the project which has been faced by the project activity.

Thus prior to project implementation the PP had closely evaluated whether they would be able to make the commensurate investments in marketing campaigns so that operation of the composting facility is viable. On analysis it was concluded that without support from CDM revenue, such an endeavour in marketing organic manure was not viable and hence the project implementation was approved only after due consideration of CDM revenues. Please refer to copy of Minutes of Meeting of the Board of Directors of the PP Appendix 5 – KR Board MoM 02.06.2003 submitted in the package for request for registration of the project along with the PDD.

Operational Barrier

Once the market demand is established through the heavy marketing promotions and campaigns the next step to ensure that the project activity is sustainable would be to reduce the production costs of the organic manure by increasing the production levels. To increase production levels the PP has to overcome the operational barriers such as the problem of high moisture content or wetting of waste during treatment in the long monsoons and frequent wet weather. To overcome such a barrier, the PP has to invest in capital intensive equipment such as a fibre glass shed or canopy. Given the poor financial health of the company, the PP depends solely on the revenue from CDM with which these equipments will be financed and obtained to ensure that the project operates on a sustained basis and is viable. If CDM revenue is absent, it will be unviable for the PP to finance such equipment and they will not be able to overcome the operational barriers. Thus they would be forced to produce at low capacity levels and render the project unviable.

The PP hopes that it has been able to clarify that without the support from CDM revenue, the investments in marketing of the organic manure and stabilising production and supply thereafter, both of which are essential and vital for project activity sustenance and viability, are not possible because of the poor financial health of the PP. In absence of the CDM revenue, the PP would not have implemented the project activity because it would have turned out to be an unviable one. This is also evident from the fact that despite the composting facility owned by Puri Municipality existing in Puri, the waste from Puri town was not being treated or composted in the facility but was just being dumped in the dumping grounds as has been confirmed by the Puri Municipality itself. Please refer to the communication of the Executive Officer, Office of Puri Municipality (dated 15/08/2003) submitted along with PDD in request for registration. Please also refer to Annex Ib of this response.

Clarification of the EB:

2. *The PP/DOE are requested to clarify how the various alternative baseline scenarios are selected and confirmed, in particular how the baseline of zero compost is confirmed, and how the most plausible baseline scenario is selected, with evidence and justifications.*

Response of the PP:

The following baseline alternative scenarios are applicable to the project activity.

1. Implementation of the project activity without CDM: This is not a viable alternative because it is subject to the investment barriers, operational barriers and other barriers as outlined in section B.5 of the PDD submitted for request for registration.

2. Incineration of waste materials for energy generation: This is not a viable alternative as the waste materials are not suited for power/energy generation because of their low calorific values and high moisture content. This is substantiated by the technical paper titled “Municipal Solid Waste Management in India: Present practices and future challenges” – authored by Sunil Kumar available at <http://www.adb.org/Documents/Events/2005/Sanitation-Wastewater-Management/paper-kumar.pdf>

3. Conversion of waste materials to pellets by pelletisation: This is not a viable alternative as the capital cost of such an alternative is very high and there are no markets for selling the pellets. This is substantiated by the web-article available at http://infochange.dreamhosters.com/index.php?option=com_content&task=view&id=5654&Itemid=68

4. Disposal of the waste materials in landfill with provision for power generation from the landfill gas being captured: This alternative involves disposal of the waste materials (*i.e.* municipal solid waste and food waste) in landfills followed by landfill gas (LFG) capture from the disposal sites and utilization of the same for power generation. There is no legal or regulatory mandate on the PP to capture the LFG from the disposal sites and its utilization for power generation. Capture of LFG from the site requires major infrastructural investments which renders the alternative unviable for the PP. As the PP does not have any power requirement nor does it have any business operations of power generation, there is no drive for the PP to implement this project activity in absence of any CDM revenue. Hence this alternative is not a part of the baseline.

5. Disposal of the waste materials in landfill with provision for flaring of landfill gas being captured: This alternative involves disposal of the waste materials (*i.e.* municipal solid waste and food waste) in landfills followed by landfill gas (LFG) capture from the disposal sites and its subsequent flaring. There is no legal or regulatory mandate on the PP to capture the LFG from the disposal sites and flare it. This alternative requires major infrastructural investments which renders it unviable for the PP. There is absolutely no major drive for the PP to flare the LFG in absence of any CDM revenue. Hence this alternative is not a part of the baseline. This may also be justified by the declaration from Puri Municipality attached as Annex Ib of this reply.

6. Disposal of the waste materials in unscientific and ordinary landfill for anaerobic decay: This alternative involves disposal of the waste materials (*i.e.* municipal solid waste and food waste) in unscientific and ordinary landfills wherein it is allowed to undergo anaerobic decomposition resulting in methane emissions. This alternative is in compliance with all legal

and regulatory requirements and is the most common alternative being practised by majority of the waste disposal systems in the country, especially in and around the project location. It is important to note that there are no composting facilities in and around the location of the project activity which can treat the waste of the Puri Municipality by composting. This also does not require any major infrastructural investments and is a viable alternative available to the PP. This is evident from the technical paper titled “Technological options for municipal solid waste-to-energy project:” authored by Sudhir Kumar, TERI Information Monitor on Environmental Science 5(1) : 1-11, June 2000 (Reference: <http://www.terienviis.nic.in/times5-1.pdf>)

Thus from the above the only real and credible alternative is the alternative 6 which is the baseline alternative.

Baseline alternative of zero compost

This corresponds to the alternative 6 outlined above wherein all the waste materials are simply dumped in unscientific and ordinary landfills for anaerobic decay. The suitability of this scenario as the baseline alternative is justified by the facts that it was the same as the pre-project activity and that this scenario is the most prevalent scenario of waste handling in India. It is important to note that there are no composting facilities in and around the location of the project activity to treat the waste generated by Puri Municipality by composting (this is clearly substantiated by the declaration of the Puri Municipality that there are no other composting facilities in and around the region – please refer to Annex Ia of this response document). Thus it is evident that in absence of the project activity, the waste collected from Puri would just have been left to decay anaerobically in unscientific and open landfills.

Before the PP took over the operations of the composting facility, the waste materials were simply dumped adjacent to the composting facility without any conversion to compost. This was because the composting facility was completely shut down due to lack of any private promoters. The same may be substantiated by the communication of the Executive Officer, Office of Puri Municipality (dated 15/08/2003) which states that the composting facility “*was not operational till date because of lack of promoters*”. Copy of the communication has been attached as Appendix 3 of the PDD submitted to request for registration.

In addition to the above, the Puri Municipality has also clarified that the composting facility was absolutely stopped and shut down and not operating due to lack of any private promoters. Please refer to Annex Ib of this response for copy of the same communication from Puri Municipality.

Hence it is evident that had the PP not taken over the operations of the composting facility considering CDM revenue, the pre-project scenario of shut down of the facility with zero compost production would have continued. The waste dumped would have continued to generate equivalent methane emissions. Thus the baseline corresponds to zero composting and continued dumping of waste in unscientific landfill.

Clarification of the EB:

3. *The PP/DOE are requested to clarify that continuing and real actions were taken to secure CDM status for the project activity in parallel with its implementation (EB41, Annex 46, paragraph. 5(b) guidance).*

Response of the PP:

As per the guidance outlined in Annex 46 of EB 41 paragraphs 5a and 5b,

“The project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a CDM project activity.”

Prior to the start date (date when the PP took over operations of the shut composting facility and initiated its operations), the PP took the decision to implement the project activity as a CDM project activity (consideration of CDM). This is substantiated by the Minutes of Meeting of the Board of Directors of the PP dated 02/06/2003. Copy of the same has been submitted as Appendix 5 of the PDD submitted to request for registration.

Prior to the Board decision to implement the project as a CDM project, the PP had approached a technical consultant namely Eco Save Private Limited (waste management consultants) for advice on the operation of the composting facility (reference: communication from the PP to ESPL dated 04/04/2003). In reply to the queries of the PP, the consultant reverted with their answers vide their letter dated 16/04/2003. In this reply, the consultant had informed the PP that the composting facility is eligible for obtaining carbon credits under the Kyoto Protocol. Please refer to the last paragraph in the copy of the same letter submitted as Appendix 4 to the PDD submitted to request for registration. Thus the PP came to know of the fiscal benefits of Kyoto Protocol for the composting projects and based on this, the Board of Directors of the PP finally decided to implement the project.

Moreover, that the PP had implemented the project activity after taking CDM into consideration is also evident from the fact that the PP had announced in its annual audited report for the year 2003-2004 of its decision to implement the project activity as a CDM project activity. The annual audited reports, the EB may please note, are circulated to potential public investors. Copy of the same has been submitted as Appendix 6 of the PDD submitted to request for registration. In addition, the auditor has also recorded in the Auditors' Report to the Members of Krishi Rasayan Private Limited that “the Company has invested in a Solid Waste Management Project which is expected to increase cash inflows by revenues under carbon trading scheme”. The auditors report is attached with the Annual Audited Report.

The above clearly justifies that CDM was seriously considered before project start.

“The project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), evidence of agreements or negotiations with a DOE for validation services, submission of a new methodology to the CDM Executive Board, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat;”

For the explanation as per the above guidance, the EB is requested to kindly refer to the chronological sequence of events towards taking real and continuing actions to secure CDM status for the project activity given below.

Milestone	Date	Evidence
Decision by Board of Directors of the PP to implement the project activity as a CDM project activity taking into consideration CDM revenue.	2/06/2003	Copy of Minutes of Meeting of Board of Directors of Krishi Rasayan Private Limited (Appendix 5 of the PDD submitted to request for registration)
Signing of Lease Agreement to take over operations of the composting facility from Puri Municipality	8/08/2003	Copy of Lease Agreement (Appendix 2 of the PDD submitted to request for registration)
Initiation of proceedings related to obtaining carbon credit from the project activity. However due to absence of any guidance on CDM modalities (and approved methodologies), PP could not initiate any activities towards obtaining carbon credits. The PP turned to the technical consultants namely ESPL for advice and guidance regarding obtaining carbon credits	18/02/2004	Copy of the letter from PP to ESPL dated 18 th February 2004 attached as Annex II of this reply.
In reply to the above ESPL reverted stating that carbon credits were not their core operations and they would not be able to provide any guidance on the same.	14/06/2004	Copy of the letter from ESPL to PP dated 14 th June 2004 attached as Annex III of this reply.
PP requested ESPL to refer them to relevant consultants who can assist them to obtain carbon credits	9/07/2004	Copy of the letter from PP to ESPL dated 9 th July 2004 attached as Annex IV of this reply.
ESPL referred the PP to number of leading consultants in India who were providing consultancy services under the Clean Development Mechanism to Indian projects	10/11/2004	Copy of the letter from ESPL to PP dated 10 th November 2004 attached as Annex V of this reply.
PP initiated discussions with the consultants. However, at that time there was no approved methodology with UNFCCC that were applicable to composting activities and hence consultants had proposed very high charges for methodology development which the PP was not in a position to fund. The PP short listed one consultant and started rounds	December 2004 to March 2005	Discussion and negotiation were primarily based on verbal and telephonic discussions. There are some email communications. Please refer to copies of email

of discussion and fee negotiation with the consultant.		communications between PP and the shortlisted CDM Consultant attached as Annex VI.
Approved Methodology AM0025/Version 01 (large scale) was approved by EB and publicly available on 30 th September 2005. As no methodology development was required, contract only for PDD development was signed with the CDM consultant.	6/10/2005	Copy of CDM Consultant Engagement Letter (Annex VII)
A small scale methodology for composting activities was also proposed to the SSC WG in April 2005 and subsequently followed up in August 2005. However the methodology was not finalized nor approved for use.	First proposal 24/04/2005 Second proposal 10/08/2005	F-CDM-SSCwg ver 01 SSC_015 and SSC_25
Owing to fund crisis of the PP, the PP had repeatedly requested lowering the consultancy charges.	February 2006	Copy of email communications between PP and CDM Consultant
Small scale methodology AMS III.F. was approved and available on the UNFCCC website	03/03/2006	Revision history of AMS III.F.
The CDM consultant agreed to lower the consultancy charges on availability of the small scale methodology.	April 2006	Copy of email communication between PP and CDM Consultant
Cancellation of earlier contract with the CDM consultant, followed by signing of new and final contract between the PP and the CDM consultant as per revised charges.	June 2006 – cancellation of earlier contract 17/08/2006 – final engagement letter	Copy of CDM Consultant Engagement Letter and Termination letter (Annex VIII)
Completion of Project Concept Note	31/03/2007	Copy of covering letter submitted to Indian DNA for application of Host Country Approval (Annex IX)
Local Stakeholder consultation	25/04/2007	Copy of stakeholder approach letter (Annex X)
Appointment of DOE for CDM validation by PP	18/07/2007	Copy of signed appointment contract of DOE
Host Country Approval from Indian DNA	06/08/2007	Copy of HCA (Already submitted during request for registration).
Webhosting of PDD for international stakeholder consultation	29/08/2007 to 27/09/2007	UNFCCC link

Clarification of the EB:

4. *The PP/DOE are requested to confirm that the project start date (8 August 2003, signing the lease agreement) is based on the 'CDM glossary of terms' guideline.*

Response of the PP:

As per the 'CDM glossary of terms' guidelines, the start date of a project activity corresponds to

1. *The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.*

The real action of the project activity under consideration started with effect from the date on which the project operation was handed over to the PP on a lease from Puri Municipality. This date corresponds to 8th August 2003 as is evident from the lease agreement signed between the PP and the Puri Municipality. The agreement came into effect from the date of 8th August 2003. This date onwards, the PP gained operational control of the facility and could initiate all real actions to start the operations of the project activity. Thus it has been considered as the start date of the project activity.

The composting facility (plant site) already existed (though under shutdown) and no major additional constructional activities such as setting up of foundations for machines & equipment *etc* were required. Some constructional activities like concreting of floor and construction of canopy/shed *etc* are required to improve the composting operation and productivity and they have commenced only after the project operation was handed over to the PP by the Puri Municipality. Hence as per the above definition of start date, the real actions for the project activity operation started only on 8/08/2003 – date from which the PP's ownership of the composting facility is legalized through a lease agreement.

Clarification of the EB:

5. *The PP/DOE are requested to further clarify how the project correctly applies the baseline methodology with respect to increased utilisation of composting facilities.*

Response of the PP:

As per the applicable methodology AMS IIIIF/Version 05, the applicability conditions pertaining to increased utilization of composting facilities,

For project activities that increase capacity utilization at existing composting facilities, project participant(s) shall demonstrate that special efforts are made to increase the capacity utilization, that the existing composting facility meets all applicable laws and regulations and that the existing composting facility is not included in a separate CDM project activity. The special efforts should be identified and described.

The project activity under consideration involves increasing capacity utilization of the existing composting facility in Baliapanda, Puri. Prior to start of the project activity the composting facility was not operating at all and waste was simply being dumped in the dumping ground adjacent to the composting facility. No waste was being treated in the composting facility and the entire facility was under shutdown. The capacity of the composting facility was 100 tonnes per day (TPD) but as the facility was not operating, the

facility was operating under zero capacity utilization¹. Under the project activity, the PP proposes to increase the capacity utilisation from the pre-project levels of zero to 100% to 120% to 140% in a phase-wise manner based on the increment in the availability of waste from the Puri town (which is again based on the demographic increase of the town). Kindly refer to the production plans of the PP provided in Annex 3 (Baseline Information) of the PDD submitted to request for registration.

To achieve the proposed capacity utilization increment, the following actions have been taken/are proposed by the PP:

1. Large investment in marketing and promotional activities for sale of the composted organic manure to the farmers and end users: At the time of start of project activity the PP has planned to invest considerably in marketing and promotional exercises to push the sales of composted product ('Enrich') for each year of the crediting period. The composted product *i.e.* organic manure is very difficult to sell because it is a new concept in the fertilizer market and also because the effect on soil fertility in the case of organic manure is much slower than that of chemical fertilizers. Thus the farmers (consumers) prefer to use chemical fertilizers in place of the composted organic manure. In fact the PP has received a number of communications from farmers and dealers expressing their reluctance of purchasing 'Enrich'. In fact, this has been one of the major barriers faced by the PP during implementation of the project activity (for further details please refer to section B.5 of the PDD submitted to request for registration) and the PP has made special efforts of pushing sales through marketing and promotional exercises to overcome this barrier.

2. Investment to install a fibre glass shed or a canopy: An important step in the production process of compost involves drying of the treated waste. However, in a place like Puri (because of the tropical climate and proximity to the sea) the rainfall is very high and weather remains wet for a considerable period of time. Due to this limitation drying becomes difficult. Presence of moisture (high levels) in the waste renders limitations on the production levels of the facility. To overcome this setback, the PP proposes to install a fibre glass shed or a canopy which will not only protect the dried waste materials from moisture and rain water but also ensure that the heaps receive sufficient sunlight. This will greatly enhance the production and regulate the supply of 'Enrich' to the market throughout the year. Moreover if this canopy is installed with a steam heating system, the plant can run three shifts daily and further increase production. The entire technology is available at a very high cost (approximately INR 55 million). The PP will finance the investment required from the revenue through sale of CERs for the project activity.

Thus it is evident that in absence of the above initiatives of the PP, the composting facility owned by Puri Municipality would continue to remain under shut down without any compost production due to lack of private promoters (*i.e.* capacity utilization of 0%). The waste (municipal solid waste and food waste) would continue to be dumped openly in the dumping ground adjacent to the composting site and equivalent methane emissions related to anaerobic decay of waste would happen. As outlined earlier, there are no composting facilities in and around the region of the project location which may treat the waste by composting. The Puri Municipality has confirmed through a written communication that there are no alternative waste treatment sites in and around the project activity and the only option in absence of the project activity is to dump the entire waste in unscientific landfills leading to methane emissions. Please refer to Annex 1a and 1b of this response.

¹ This can be inferred from the covering letter (dated 15.08.2003) of the lease agreement between Puri Municipality and the PP after which the PP has started the composting operations.

As per the guidance of the approved small scale methodology AMS III.F., the emission reduction formula used to calculate that has been used in the PDD submitted to request for registration includes,

$$ER_y = (BE_y - PE_y - L_y) * (1-r)$$

Where,

r is defined as

$$r = WCOM_{BAU} / TWCOM_y$$

Where,

$TWCOM_y$ = Total quantity of waste composted in year y (tonnes) at the facility.

$WCOM_{BAU}$ = Registered annual amount of waste composted (tonnes) at the facility on a BAU basis calculated as the highest amount of annual compost production in the last five years prior to project implementation.

The value of $WCOM_{BAU}$ is zero because the composting facility was not operational before the start of the project activity. This has been clarified as above. Hence the emission reduction calculations are revised to

$$ER_y = (BE_y - PE_y - L_y)$$

The EB may please note that the baseline and the formulae used to estimate baseline emissions and emission reductions correspond to the same scenario as mentioned. Thus the project correctly applies the baseline methodology corresponding to a scenario that the baseline is continuation of pre-project scenario of zero compost production and dumping of waste materials in unscientific and ordinary landfills.