The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia

A research collaboration between BORDA, BALIFOKUS, BEST and LPTP

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By:
Jati Kusumowati, Frank Fladerer, and Robert Müller

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## Abbreviations

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<th>Abbreviation</th>
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<td>BEST</td>
<td>Bina Ekonomi Sosial Terpadu</td>
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<td>BORDA</td>
<td>Bremen Overseas Research and Development Association</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<td>CER</td>
<td>Certificated Emission Reduction</td>
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<td>Const</td>
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<td>CDM Program Activities</td>
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<td>CDM Program Activities Development Design</td>
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<td>DNA</td>
<td>Designated National Authority</td>
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<td>DOE</td>
<td>Designated Operation Entity</td>
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<td>IDRC</td>
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<td>LPTP</td>
<td>Lembaga Pengembangan Teknologi Pedesaan</td>
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<td>NGO</td>
<td>Non Governmental Organization</td>
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<td>PDD</td>
<td>Project Development Design</td>
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<td>PoA</td>
<td>Program of Activities</td>
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<td>PoA-DD</td>
<td>Program of Activities Development Design</td>
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<td>Sub.Dist.</td>
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<td>UNESCAP</td>
<td>United Nations Economic and Social Commission for Asia and the Pacific</td>
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<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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<td>USD</td>
<td>United States Dollar</td>
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<td>VER</td>
<td>Verified Emission Reduction</td>
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A. Abstract

This report presents an in depth assessment from a three-year applied research project in Indonesia that has attempted to use Clean Development Mechanisms (CDM) and voluntary market mechanisms as co-financing tools for low income community projects in the urban waste management sector.

The project, which partnered with three local NGOs, has evaluated the potential for carbon projects to tackle urban challenges in the solid waste management and sanitation sector, tested alternative implementations of community-based projects under the “Program of Activities” (PoA) CDM and voluntary projects, as well as explored the possibilities for partnerships with non-government organizations (NGOs), communities, municipalities and the private sector to engage in carbon projects.

Through the effort to register KIPRAH, the decentralized community solid waste project under PoA, it was learned that every aspect of CDM including the methodology, way of communication, related institutions as well as transaction costs, are not suitable with the capacity and needs of a community project. There is therefore no doubt that the current CDM approach should be reformed if it intends to accommodate low income community projects. Based on the experiences of project implementation during the research period, lessons learned have been elaborated and changes in CDM methodology have been initialized (e.g. revision of methodology AMS.III-F).

The project has contributed significantly to make CDM accessible for approaches that introduce new decentralized waste management systems in low income neighbourhoods. The project also played an important role in widening the scope of the Gold Standard label, which represents highly sustainable projects, and offers premium price credit for CDM and voluntary projects, which was restricted to energy-based projects, to include composting in the new version launched in June 2012. Currently, the project undergoes registration processes under the Gold Standard micro-scale voluntary emission reduction.

Keywords: PoA KIPRAH, CDM, AMS-III.F, composting, community, Gold Standard VER

B. Background

Indonesian national statistics from 2008 illustrate that 43% of waste generation in Indonesia in 2006 came from households. Sixty-nine percent of that household waste was collected and brought to dumpsites, while the rest was buried (9.6%), composted (7.15%) or burned (4.8%)\(^1\). The composition of organic waste was up to 60-70% of the total waste generated. Apart from a few ‘land flaring gas’ CDM projects in final dumpsites\(^2\), 80.6 % of in total 378 of Indonesia’s final disposal sites practice open dumping where wastes are piled without further treatment\(^3\). These not only cause health, safety, and aesthetic problems, but also climate problems from methane emission. Regardless of the Millennium Development Goals that aim to halve the proportion of households without sustainable access to basic sanitation in Indonesia by 2014\(^4\), the amount of waste management services offered by the government of Indonesia remains low, especially for low income communities.

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4. [http://www.undp.or.id/pubs/docs/MDG%202010%20Report%20Final%20Full%20LR.pdf](http://www.undp.or.id/pubs/docs/MDG%202010%20Report%20Final%20Full%20LR.pdf)
KIPRAH is a name given for the decentralized community based solid waste management project in Indonesia that was initiated by International Development Research Center (IDRC) and Bremen Overseas Research Development (BORDA) from 2006-2009 under the research project grant no.103074-001 “Decentralized Urban Solid Waste Management in Indonesia”. KIPRAH consists of two main components; the establishment of material recovery facilities where waste is separated and composted, and the development of community based organizations as entities that manage the facilities. Facilities are developed based on demand from the community and co-financed by donors and government budgets. KIPRAH empowers communities because its operation is paid by user fees of between 50-cent euro and 1 euro per month per household. The facilities employ a minimum of 2-8 operators and serve approximately 300 – 1000 households per facility. KIPRAH is a sustainable approach to waste management because it is demand responsive, integrated with local government systems, and provides the community with the direct benefit of a cleaner environment as well as employment. KIPRAH requires an intensive community facilitation component where the cost can partially be covered by governmental funds and by donors. However, donor funds are limited to facilitate only a small amount of KIPRAH systems. Therefore, other sources of financing for the community facilitation component need to be accessed; one of the alternatives could be from carbon financing.

This research project under grant no 105813-001 “The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia” (2009-2012) explores if or to what extent carbon financing under the CDM or other carbon market mechanisms can work for the poor and what are the particular conditions for success. CDM was specifically developed to help the developed countries achieve emission reductions targets as well as to foster sustainable development in the developing countries. It has shown to be a suitable co-financing tool for large industrial projects, but did not have a significant impact on livelihoods in low income communities.

A CDM modality named “Program of Activities” (PoA) was introduced in 2007 to accommodate registration of projects dealing with many, often small units. PoA acts as an umbrella of a typical projects, thus once registered other projects can be added under the PoA at any time until the crediting period is over without having to repeat the registration process again. This modality has attracted many community based projects5.

The project team also has been seeking KIPRAH registration under PoA since the beginning of the research project in October 2009.

C. Research Problem

Despite the initial enthusiasm surrounding the CDM, this much touted ‘win-win’ approach is more of a ‘win-lose’ in terms of sustainable development and poverty alleviation.

CDM is without doubt a complicated and bureaucratic mechanism. Actors in the CDM market either invest so much time to stay updated with the CDM rules or pay a great deal of money to CDM specialists for each project scope. A simple look at the countless acronyms used under CDM can illustrate this. Under the conventional CDM, only around 1% of the projects are dealing with households, and their share in Certified Emission Reductions (CERs) issuance is around 0.01%.6 And under the CDM PoA, even though 17 of 30 registered programmes target households7, not a single CER has been issued for such projects since the start of PoAs in 2008. Moreover, the first request for issuance from such a project was rejected.8

On the other hand, for projects that target households or communities, the local stakeholders in the developing countries are victims of climate change rather than being responsible for it. Where they cause

5 http://www.cdmpipeline.org
6 http://www.cdmpipeline.org
7 http://www.cdmpipeline.org
8 http://cdm.unfccc.int/Reference/Notes/iss/iss_note27.pdf
greenhouse gas emissions, e.g. piling organic waste that emits methane, this occurs due to a lack of infrastructure. In virtually all carbon projects benefiting low income communities, these beneficiaries are not interested in saving carbon but in improving daily life – e.g. by improved waste handling.

In order to integrate both objectives of the CDM, this research project involved the collaboration of NGOs, researchers, the private sector, communities, and government agencies to create integrated and decentralized waste management solutions that can contribute to the reduction of greenhouse gas emissions, while reducing the local environmental burdens of the communities.

D. Objectives

The overall goal of this project was to develop an integrated waste solution model in urban centers that contributed to the reduction of greenhouse gases, optimized the alternative energy resources for local communities, successfully generated carbon credits (i.e. Certified Emission Reductions or Voluntary Emission Reductions), and built capacity for NGOs to engage in CDM/voluntary carbon market. The aforementioned integrated waste solution model was a combination of community based solid waste management projects with the community based sanitation projects, in an effort to tackle solid waste and waste water management at sub-district level. These two projects are BORDA’s expertise in Indonesia.

After a feasibility study was done for the community-based sanitation project, it was found that emission reduction from such projects was marginal. Thus it was decided to dedicate the research to community based solid waste management projects, which are referred to as KIPRAH.

The specific objectives of the research project were:

a) Assess the feasibility of KIPRAH and community-based sanitation projects to qualify for carbon credits;

b) Build capacity for NGOs, local governments, and the private sector to achieve certification of emission reduction projects and to acquire carbon credit revenues;

c) Determine an equitable role for waste pickers in KIPRAH emission reduction projects, and assess the social impacts of these projects;

d) Develop best practices for how emission reduction projects can be sustainable and equitably managed between NGOs, governments, the private sector, waste pickers and communities; and

e) Create policy recommendations for KIPRAH and equitable emission reduction projects and disseminate through national, regional and international networks.

E. Methodology

The research project was designed to be carried out in two stages. First, there was creation of a project team in BORDA who were responsible for the emission reduction project registration process, the technical and social monitoring, capacity building (e.g. training and informing partners about developing emission reduction projects) and developing policy recommendations to the CDM Executive Board. Second, the partners worked at the community and local government level in order to build partnerships and arrange funds for infrastructure implementation, developed KIPRAH, and facilitated communities and local governments in implementing the service packages.

The project was scheduled to start in October 2009 and be completed in September 2012. Initially the methodology had been divided into 3 phases: (1) Foundations, (2) Implementation and Operations, and (3) Outcomes and Dissemination. “Foundations” was to mobilize staff and administration, assess the feasibility of
KIPRAH to qualify for a carbon project registration, and build capacity for project team and partner NGOs to achieve registration. The “implementation and operations” phase was to implement the carbon-financing component within the service package. And the last phase gathered the outcomes of research and disseminated them through national and international channels.

Once the research process began, it was found that KIPRAH is the first of its kind among other small solid waste projects under CDM. There was no suitable baseline methodology available when the project started, thus resulting in a huge delay in the registration process. Since it took much longer to register than originally expected, it was decided to implement all three phases simultaneously in order to maximise the opportunity of getting as many findings and disseminations during the course of the research project. While the project team was seeking registration, the partners examined the ability of communities to handle the project as well as disbursed information at every step.

Acknowledging the responsibility that would arise from monitoring the material recovery facilities accordingly to CDM standard, the partner selected the facilities which are located nearby their office as the first CDM project activity. The closer range to the facilities was expected to improve the quality of training and assistance to the community based organizations and operators.

F. Project Activities

In the course of the three-year research time, the available resources were used to support the following activities within the “Foundation”, “Implementation and Operations”, and “Outcome and Dissemination’ phases.

F.1. Foundation

F.1.1 Mobilization of staff and administration

The project had appointed and hired a number of staff at different levels, such as:

- BORDA had appointed Frank Fladerer as an international backstopping; Surur Wahyudi as a part time Coordinator; Jati Kusumowati as Research Coordinator, Septa Noegroho as part-time engineer, and Dyah Purwanti as a part time financial administrator.
- BEST had appointed Hamzah Harun Al-Rasyid as a part time Team Leader of the Tangerang region and Abdullah Basyri as part time Team Leader of Surabaya region; assigned Ilhamsyah Lubis and Syawaluyo as Community Development Experts; Suwardi and Nurlela as project accountants. BEST Tangerang hired one Field Facilitator, Adji Kusuma, who later was replaced by Taslim Saamah. BEST Surabaya region hired Chandra Krishna as a Field Facilitator.
- BALIFOKUS had appointed Yuyun Ismawati as a part time Team Leader, she later pursued her doctoral degree in the UK and was replaced by Bayu Kusuma; assigned Ketut Indrawati as a Community Development Expert for two years, who in the last year was replaced by Kusuma Jaya; Ni Ketut Sri Artini as a project accountant.
- LPTP had appointed Mr. Suryanto as a part time Team Leader; assigned Mr. Mahmud Abdussalam as a Community Development Expert and Ms. Asih as a project accountant. LPTP hired Mr. Sabihis and Mr. Nurcahyo as field facilitators.
- The Community Development Experts and field facilitators were the key players in translating ideas on carbon financing in the field and in communicating directly with the community.

F.1.2 Assessment of feasibility of KIPRAH and community-based sanitation projects
An assessment of KIPRAH and community-based sanitation projects to qualify for carbon funding was held at the beginning of the research in October 2009. The project team assessed the potential emission reduction of each activity and the possible carbon scheme for the most potential activity chosen.

**Potential of carbon credits of KIPRAH and community-based sanitation projects**

The community-based sanitation plants use low-tech waste water treatment that works under highly anaerobic conditions and thus generates high methane emissions compared to a centralized treatment plant using activated sludge treatment or open discharge. The CDM small scale methodology AMS-III.H\textsuperscript{10} and the corresponding tool to calculate emission reduction from wastewater treatment focuses on the usage of the methane recovered from the wastewater treatment plants (i.e. flaring, cooking or electricity production). These plants, which serve on average 70 – 100 households, produce around 2-3 m3 biogas/day. This amount is too small for permanent and cost efficient electricity production. Whereas the usage of biogas for cooking stoves from a community based sanitation plant for cooking stoves yield an emission reduction of approximately 2 tCO2e per year per plant.\textsuperscript{11}

KIPRAH that involve composting in the facility have opportunity under CDM methodology AMS-III.F.\textsuperscript{12} A material recovery facility that serves 1000 households has the potential to reduce emissions by 132 tCO2e per year per facility.\textsuperscript{13}

Based on these evaluations, an integration of KIPRAH and community based sanitation wasn’t found beneficial since the amount of emission reduction from waste water treatment plants was marginal and it would also further complicate the registration process since there were two different CDM methodologies involved. The project team decided to develop KIPRAH as a carbon project.

**Program of Activities, a carbon scheme for KIPRAH project**

There are two major choices of carbon credit schemes: compliance market under CDM or voluntary market. The first criterion in choosing the most suitable carbon scheme for KIPRAH was the expected price per credit. At the time when assessment was done in October 2009, the carbon credit price from CDM project was in average more than 10 EUR/ ton CO2 eq while credit price from voluntary market was lower. Gold Standard label for CDM and voluntary project, which assured a premium credit price, was limited to the energy sector. Due to these conditions, the project team had the choice to register the project under the CDM bundling or PoA.

PoA facilitates projects dealing with many, often small units to be registered under one umbrella project. Once registered, PoAs allows for adding projects at any time until the crediting period is over, unlike bundling where each bundle of project has to go through an individual registration. PoA also offered a renewable crediting period, giving the advantage of a longer crediting period for activities which were added later. This attracted many community based projects\textsuperscript{14} and was the reason why the project team chose to register KIPRAH under PoA.

**F.1.3 Registration of KIPRAH under PoA**

\textsuperscript{10} [http://cdm.unfccc.int/methodologies/DB/4ND00PCGC7WXR3L0LOJTS6SVZP4NSU](http://cdm.unfccc.int/methodologies/DB/4ND00PCGC7WXR3L0LOJTS6SVZP4NSU)

\textsuperscript{11} Annex I. Estimated Emission Reduction from a typical Community based Sanitation plant

\textsuperscript{12} [http://cdm.unfccc.int/methodologies/DB/7RF5DZ276T8F88BMPHNDOTX40Y0](http://cdm.unfccc.int/methodologies/DB/7RF5DZ276T8F88BMPHNDOTX40Y0)

\textsuperscript{13} Refer to section G.1.1, p.27

\textsuperscript{14} [www.cdmpipelines.org](http://www.cdmpipelines.org)
The registration of KIPRAH under PoA comprises several steps and key actors. Figure 1. illustrates the steps in the registration of PoA and also the inclusion of new CDM project activity (CPA). The first step took by the project team was writing a Project Idea Note (PIN), explaining briefly about KIPRAH and the methodology that would be used. The next step of PoA documentation development was preceded by a local stakeholder consultation. Although it was known that the project was not eligible for the Gold Standard energy limited project at that time, it was decided to conduct a local stakeholder meeting according to Gold Standard rules, in order to keep the possibility of Gold Standard registration, which would allow for better prices and selling options of expected carbon credits. The local stakeholder meeting is the first step towards Gold Standard registration. As requested by the Gold Standard, key persons belonging to different stakeholders were invited. The principles of PoA were explained and discussed, and a participatory assessment of the project’s sustainability according to Gold Standard criteria was also conducted\(^{15}\).

**Development of PoA Documentation**

From October 2009 until November 2009, the PoA documentation was prepared, consisting of a PoA-DD (Programme of Activities Design Document), a generic CPA-DD (Component Project Activity Design Document, as a blue print for future CPAs), and a specific CPA-DD (describing the first real-case project activity to be implemented under the PoA). In regards to KIPRAH, the first real-case CDM project activity was a group of material recovery facilities. For the preparation of these documents, the entire procedure for calculating and monitoring of expected emission reductions had to be described. It included the application

\(^{15}\) Annex 2. Report PoA KIPRAH_LocalStakeholder Meeting_2009

of the relevant CDM methodology (AMS-III.F), and corresponding tools to the project, part of which was the calculation of baseline methane emissions, the demonstration of additionality, and the development of a monitoring plan. The PoA documents were based on a thorough analysis of the situation of waste handling before any intervention, and the current practise of implementing material recovery facilities. The first formal step towards the registration of a CDM project was the uploading of the project documentation to the UNFCCC website 009 where comments could be received during 4 weeks. TUEV Nord was contracted as Designated Operational Entity and the PoA documentation was open for comments from 23 Dec 2009 - 21 Jan 2010.17

**Getting the Host Country Approval**

Host country approval had to be obtained by the project team and partner to proceed with the PoA registration. Indonesian Designated National Authority (DNA) known as “Komnas MPB” is the institution to issue the letter of approval based on the sustainable development criterion set by the Indonesian government. Figure 2 depicts the procedure for CDM project approval by the Indonesian DNA.

![Figure 2. Procedure for CDM project approval by the Indonesian DNA](http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/J8AS7C008X090OT9BYMYLY2T23DSUS/view.htm)

Enclosed in the application, the Indonesian DNA required all administrative papers from the first real-case project activities. In regards to KIPRAH, that was eight sets of material recovery facilities’ documents. The

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17 [http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/J8AS7C008X090OT9BYMYLY2T23DSUS/view.html](http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/J8AS7C008X090OT9BYMYLY2T23DSUS/view.html)
decentralized and multi-stakeholder financing of KIPRAH raised the array of papers required (i.e. agreement letter from community that project team will manage the carbon credit and environmental impact assessment for each facility). To get the agreement from the community, the partner had to wait until July 2010 when the community-based organization was established. Also, the process to get the environmental impact assessment letter for KIPRAH caused some confusion at the local government level since this procedure was never done for such a small scale low impact project like KIPRAH. The project team later paid a visit to the Ministry of Environment for clarification regarding this matter. It was advised to refer to the new Ministry of Environment regulation no. 13, year 2010, which stipulates that small scale low impact programs are only required to present a statement letter to manage and monitor the environment which is signed by the project developer and the responsible local government officer. However since the regulation was new, not all local governments knew how to respond to this matter. By February 2011, the project team and partner succeeded in compiling five out of eight statement letters\(^{19}\) and decided to apply to DNA anyway. During the presentation in front of the DNA, it was explained why the project team and partner didn’t have the complete documents. The letter of approval was obtained in May 2011\(^{20}\).

**Validation of PoA KIPRAH**

Recognizing the lengthy process to get approval from DNA, the validation process was carried out in parallel with the project application for host country approval. Validation refers to the independent evaluation of the PoA documentation against the UNFCCC’s requirement (CDM Modalities and Procedures, paragraph 34,p.34). Validation provides assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs). The independent party that has the right to validate is the Designated Operational Entity (DOE)\(^ {21}\). TUEV Nord was appointed as the DOE for KIPRAH.

The CDM small-scale methodology AMS.III-F requires identification of solid waste disposal sites before the project intervention to define the baseline of the project. Since KIPRAH serves areas where waste collection systems don’t exist, the disposal sites vary among communities, which led to different baseline scenarios. Due to KIPRAH conditions and unfamiliarity of CDM institutions, which mostly handle localized projects, the validation process took from August 2010 – August 2011. It was finally stated in the DOE validation report that KIPRAH baseline was not in accordance with the available methodology\(^ {22}\). Recognizing that the project team couldn’t convince the DOE, the project team asked for a clarification of the methodology from CDM Executive Board\(^ {23}\).

**Adaptation of baseline methodology to accommodate KIPRAH project**

A revision of the methodology by introducing the concept of suppressed demand was proposed through public input mechanisms in CDM Executive Board\(^ {24}\) from September 2011 – February 2012. The concept of suppressed demand in the AMS.III-F CDM methodology is as follows: *In urban areas where waste collection is missing, there will automatically be wild and generally illegal waste dumping because there is no other choice. Wild dumping is however a consequence of poverty and lack of development. In the context of urban development, it would be reasonable to assume that the waste would be brought to existing*

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\(^{19}\) Annex 3. Statement Letters to Manage and Monitor the Environment

\(^{20}\) Annex 4. Letter of Acceptance_PoA KIPRAH

\(^{21}\) http://cdm.unfccc.int/DOE/index.html

\(^{22}\) Annex 5. DOE Report: PoA Preliminary Findings of KIPRAH (p.20)

\(^{23}\) http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/60731

\(^{24}\) http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/86230
landfills in the future with the corresponding conditions for methane generation. Therefore, a CDM project introducing waste collection will prevent waste from disposition at the landfill and reduce the corresponding emissions.

The revision was accepted on May 2012. The revised methodology has allowed KIPRAH to apply a methane generation factor for a landfill as a standardized baseline because KIPRAH prevents wild dumping of municipal waste in urban areas. It is not necessary anymore to find and analyse each single waste disposal site for each MRF.

**Expanding Gold Standard Scope to include composting**

In the effort to pursue registration with Gold Standards label, correspondence was held with the Technical Advisory Committee from Gold Standard Foundation to include composting under their scope of project. The informal meeting with the Gold Standard Technical Advisory Committee during international carbon events and conference calls with other composting project developers were also conducted to continuously bring the issue into surface.

**F.1.4 Registration of KIPRAH under Gold Standard micro scale VER project**

The revision on the methodology by introducing a suppressed demand argument was accepted in May 2012. With that, KIPRAH would have been able to proceed with the PoA registration, but recognizing the extravagant transaction cost that was involved (50,000 EUR for validation cost, 5,000 EUR for CDM project activity inclusion under PoA, and 15,000 EUR for paying a consultant to prepare the monitoring report and 15,000 EUR for verification every time before credit issuance) and the plummeted price of CER in the market since 2011 from 12 EUR/ton CO2 eq to 4 EUR/ton CO2 eq, it was decided not to continue the registration process. A financial cost benefit analysis was also conducted prior to the decision-making.

In June 2012, Gold Standard Foundations announced the inclusion of composting under their scope of project. Gold Standard label offers a premium price and unique buyers who are interested in the environmental and social impacts of the project. The transaction cost for micro scale VER project is 5,000 USD. The project team decided to register KIPRAH under the Gold Standard micro scale Voluntary Emission Reduction project.

Another local stakeholder consultation was held in July 2012. All comments and concerned were taken to improve the design of the project (e.g. simplification of compost monitoring). The consultation report was uploaded in the Gold Standard registry in September 2012.

**F.1.5 Capacity building for NGOs and communities to achieve certification of Emission Reduction project**

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25 [http://cdm.unfccc.int/filestorage/E/3/Q/E3OBKLV1DCR248PZY5XJ906U17GWFN/EB67_repan20_Revision/AMSI II_F_ver11.0.pdf?r=QUt8bTl4ZmZyvDDg9qXqXqr8UyfPokwrd](http://cdm.unfccc.int/filestorage/E/3/Q/E3OBKLV1DCR248PZY5XJ906U17GWFN/EB67_repan20_Revision/AMSI II_F_ver11.0.pdf?r=QUt8bTl4ZmZyvDDg9qXqXqr8UyfPokwrd)
27 [http://www.co2prices.eu/](http://www.co2prices.eu/)
Development of training tools and training for partners on the integration of carbon financing in KIPRAH was held in November 2009. In the beginning of the research project, most of the staff involved was unfamiliar with the CDM process.

Although there have been successful implementations of KIPRAH from the project in 2006-2009, it was way beyond the proven technology for composting and monitoring required by CDM. In the previous KIPRAH project, composting was seen as a way to treat the organic waste in order to reduce the amount of waste transported to landfills. The project initially didn’t pay attention whether the composting method was aerobic, what type of waste was composted, or how many fossil fuels were used during the composting process. In this research, KIPRAH aimed to be a carbon project that avoided methane by composting, thus composting became the essential part in KIPRAH where the aerobic condition constantly needed to be assured and monitored. A research on appropriate aerobic composting methods and monitoring to be applied in pilot MRF was conducted from January 2010 – April 2010. The description of appropriate aerobic composting technique is elaborated in Annex8.

In February 2010, two project team members and two partners attended “UNESCAP Regional Exposure Workshop on Pro-Poor & Sustainable Solid Waste Management for Secondary Cities and Small Towns” in Bangladesh. Site visits were held to a small scale composting plant registered under voluntary project and a big composting plant registered under CDM.

Development of training modules on appropriate aerobic composting and carbon financing for KIPRAH for Field Facilitators and Community Development Experts was done in February 2010-March 2010. The module was designed so that the Field Facilitator and Community Development Expert can give simple but clear information on PoA CDM to local governments and communities.

Training for Community Development Experts and Field Facilitators in the implementation of KIPRAH under the PoA was held on 12 – 14 April 2010 in Yogyakarta.

To equip the Field Facilitator and Community Development Expert to convey the message of solid waste management and its impact on climate change, a movie was produced in April 2011.

Training for community based organizations on appropriate aerobic composting and carbon financing through KIPRAH was conducted on June 2011 after the pilot material recovery facilities start operation.

Participation of project team, partners, and community based organizations in “The Asia Pacific Round Table for Sustainable Consumption and Production”, which discussed solid waste management on 9-11 November 2011 in Yogyakarta.

In 2nd-3rd July 2012, a workshop inviting 15 community-based organizations under pilot MRF was held to facilitate knowledge exchange on best practises of MRF operation and experiences from aerobic composting implementation.

After 10 months of aerobic composting implementation in 8 material recovery facilities, it was learned that the chosen aerobic composting method (e.g. passive-aerated windrow) was too slow in decomposing waste. As a result, the MRF were full with compost piles and this has disturbed the facilities operation. The quality of compost products also received complaints from buyers. Responding to the need of faster composting processes and enhancement of compost quality, a

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31 Annex 8. Appropriate Aerobic Composting Technologies
32 http://youtu.be/aqvOWXa02wc
collaboration research with INSTIPER Agricultural Institute Yogyakarta on the composting acceleration process and enhancement of compost nutrition were conducted in April 2012- August 2012.

F.2 Implementation and operations

The three partners built the partnership with local governments (LGs) and communities to develop KIPRAH and implement carbon components in the service packages through several activities mentioned below:

- Road show to introduce the concept of carbon financing was held to 30 LG during 2010-2012.
- City selections for pilot KIPRAH locations under government budget 2010, 2011 and 2012.
- Stakeholder meetings about KIPRAH concepts and potential carbon financing in the selected communities.
- Development of community action plan in the selected communities.
- Formation of community-based organizations that will be responsible for the project in the selected communities.
- Supervision during material recovery facilities construction in the selected locations.
- Training for community based organizations and operators on how to manage the project in the selected communities.
- Assistance for community based organizations on project operation and management in the selected communities
- Trial of aerobic composting and monitoring within pilot MRF was conducted from July 2011 until September 2012

**Table 1** illustrates the status of project implementations and **Figure 3** shows map of the project implementations.

---

### Table 1. Status of Project Implementation

<table>
<thead>
<tr>
<th>No.</th>
<th>Facility’s Name</th>
<th>Address</th>
<th>Funding</th>
<th>Const. year</th>
<th>Const. cost (million IDR)</th>
<th>Start operational</th>
<th>Served HH</th>
<th>Numbers of Operator employed</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Location</td>
<td>Province</td>
<td>Municipality</td>
<td>District</td>
<td>Village</td>
<td>State Budget</td>
<td>Oct-Dec 2010</td>
<td>Januari 2011</td>
<td>670</td>
</tr>
<tr>
<td>----</td>
<td>------------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>--------------</td>
<td>--------------</td>
<td>--------------</td>
<td>-----</td>
</tr>
<tr>
<td>6</td>
<td>Prasung Berseri</td>
<td>East Java</td>
<td>Sidoarjo</td>
<td>Buduran</td>
<td>Prasung</td>
<td>State Budget</td>
<td>2010</td>
<td>1,300</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Kenongo Asri</td>
<td>East Java</td>
<td>Sidoarjo</td>
<td>Tanggulangin</td>
<td>Ngaban</td>
<td>State Budget</td>
<td>Oct-Dec 2010</td>
<td>1,300</td>
<td>May 2011</td>
</tr>
<tr>
<td>8</td>
<td>Asri Karya</td>
<td>Bali</td>
<td>Denpasar</td>
<td>South Denpasar</td>
<td>Ngaban</td>
<td>State Budget</td>
<td>Nov 2010-Jan 2011</td>
<td>250</td>
<td>Feb 2011</td>
</tr>
<tr>
<td>9</td>
<td>Reni Asri</td>
<td>Banten</td>
<td>South Tangerang</td>
<td>Pamulang</td>
<td>West Pamulang</td>
<td>LG Budget</td>
<td>Jan-May 2012</td>
<td>500</td>
<td>May 2012</td>
</tr>
<tr>
<td>10</td>
<td>Jombang 17</td>
<td>Banten</td>
<td>South Tangerang</td>
<td>Ciputat</td>
<td>Jombang</td>
<td>LG Budget</td>
<td>Jan-May 2012</td>
<td>500</td>
<td>April 2012</td>
</tr>
<tr>
<td>11</td>
<td>Bersahabat</td>
<td>Banten</td>
<td>South Tangerang</td>
<td>PondokAren</td>
<td>PondokBetung</td>
<td>State Budget</td>
<td>Jan-May 2012</td>
<td>600</td>
<td>May 2012</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------</td>
<td>-----------</td>
<td>-------</td>
<td>-----------</td>
<td>------------</td>
<td>-------------------</td>
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<td>-------------------</td>
</tr>
</tbody>
</table>

The Material Recovery Facilities in the locations mentioned below are built with the government budget 2012 and not yet in operation:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Asri Ramah Damai</td>
<td>Banten</td>
<td>South Tangerang</td>
<td>Ciputat</td>
<td>Pondok Kranji</td>
<td>LG Budget 2012</td>
<td>Construction in Mid-November 2012</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Ketapang Ramah</td>
<td>Banten</td>
<td>South Tangerang</td>
<td>Pamulang Barat</td>
<td>Pamulang</td>
<td>LG Budget 2012</td>
<td>Construction in Mid-November 2012</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Sentolo</td>
<td>Yogyakarta</td>
<td>Kulon Progo</td>
<td>Sentolo</td>
<td>Sentolo</td>
<td>State Budget 2012</td>
<td>August-October 2011</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Description</td>
<td>State Budget 2012</td>
<td>Period</td>
<td>Amount</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>------------------</td>
<td>--------------------------------------------------</td>
<td>--------------------</td>
<td>-----------------</td>
<td>--------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 19  | Ringin harjo     | Province: Yogyakarta  
City: Bantul  
District: Bantul  
Sub. Dist: Ringin Harjo | State Budget 2012 | August-October 2011 | 350    |
| 20  | Kepek            | Province: Yogyakarta  
City: Gunung Kidul  
District: Wonosari  
Sub. Dist: Kepek | State Budget 2012 | August-October 2011 | 350    |
| 21  | Minomartani      | Province: Yogyakarta  
City: Sleman  
District: Ngaglik  
Sub. Dist: Minomartani | State Budget 2012 | August-October 2011 | 350    |
| 22  | Tegaltirto       | Province: Yogyakarta  
City: Sleman  
District: Berbah  
Sub. Dist: Tegal Tirto | State Budget 2012 | August-October 2011 | 350    |
| 23  | Blimbing         | Province: East Java  
City: Jombang  
District: Gudo  
Sub. Dist: Blimbing | State Budget 2012 | August-October 2011 | 950    |
**F.3 Outcome and Dissemination**

Knowledge and finding of the project was disseminated through local and international channels as mentioned below:

- On 22-24\textsuperscript{th} February 2010, the project team and partners attended “UNESCAP Regional Exposure Workshop on Pro-Poor & Sustainable Solid Waste Management for Secondary Cities and Small Towns” in Bangladesh and presented carbon financing initiative for KIPRAH.

- On 22\textsuperscript{nd}-23\textsuperscript{rd} June 2010, the project team presented KIPRAH pro-poor carbon financing project during The Carbon Market Asia in Singapore.

- The paper “Pro-Poor Carbon Financing through KIPRAH Community-based Solid Waste Management” that was written by the project team was accepted by the committee in International Conference on Solid Waste 2011, and presented during the conference in Hong Kong in May 2011.

- This project was covered and published as an article with the title of “Indonesian Garbage Project Helps to Save Climate” in Jakarta Globe Newspaper (1\textsuperscript{st} of January 2012)\textsuperscript{35}, “Business Out of Rubbish” Gulf Times (6\textsuperscript{th} of January 2012)\textsuperscript{36}, and Al Watan Life (6\textsuperscript{th} January 2012)\textsuperscript{37}.

- The project team and partners were involved as trainers for nation-wide social facilitator training for a solid waste management project held by Ministry of Public Works in Jakarta from 27\textsuperscript{th} January-4\textsuperscript{th} February 2012. The aerobic composting as composting method choices for the community was introduced.

- The project team and partners were again involved as trainers for nation-wide technical facilitator training for a solid waste management project held by Ministry of Public Work in Yogyakarta from 27\textsuperscript{th} January-4\textsuperscript{th} February 2012.

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26th -31st March 2012. Technical facilitators who are responsible for the facilities architectural design were trained to design MRF according to different aerobic composting methods.

- Local Dissemination Workshop inviting Ministry of Public Works, local governments, NGOs, and CBOs on “Lesson learnt from KIPRAH carbon financing research project and Sustainable KIPRAH implementation” were held in Tangerang, Yogyakarta, and Surabaya during May-June 2012.

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G. Project Outputs and Outcomes
Table 2 presents an overview of outputs and outcomes related to the objective of the research project. Section G.1.1 – G.1.7 provide further detailed information regarding the output and section G.2.1 – G.2.5 regarding the outcome.

<table>
<thead>
<tr>
<th>G.1. Output</th>
<th>G.2. Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1.</strong> Assess the feasibility of KIPRAH to qualify for carbon credits;</td>
<td><strong>Objective 2.</strong> Build capacity for NGOs, local governments, and the private sector to achieve certification of emission reduction projects and to acquire carbon credit revenues;</td>
</tr>
<tr>
<td>• Assessment on the potential carbon reduction from KIPRAH project (G.1.1)</td>
<td>• The project team and partners gained knowledge on how to assess feasibility, register, and implement carbon projects, as well as on how to interact with the main stakeholders (LG, DOE, DNA, CDM EB, GS). The project team and partners’ awareness and capacity in policy-making processes in UNFCCC level have been improved significantly.</td>
</tr>
<tr>
<td>• Publication of PoA-DD KIPRAH on UNFCCC website</td>
<td>• CDE and field facilitators have received training on integration of carbon components in</td>
</tr>
<tr>
<td>• Host country approval of PoA KIPRAH project</td>
<td></td>
</tr>
<tr>
<td>• Assessment of CDM methodology compatibility for KIPRAH project (G.1.2)</td>
<td>Limitation of NGOs and communities’ capacity to apply for, and acquire carbon credit funding is identified (G.2.3)</td>
</tr>
<tr>
<td>• Assessment of the feasibility of CDM monitoring in a low-tech environment of KIPRAH project (G.1.3)</td>
<td></td>
</tr>
<tr>
<td>• Cost benefit analysis PoA KIPRAH (G.1.4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identification of GS Micro scale VER as the ideal carbon credit scheme for KIPRAH (G.2.1)</td>
</tr>
<tr>
<td></td>
<td>• On-going KIPRAH registration under GS micro scale VER (G.2.2)</td>
</tr>
</tbody>
</table>
KIPRAH and implementation of carbon project standards within pilot MRFs.

- 15 CBO’s and operators in pilot facilities have been empowered to tackle their waste problem and assisted in optimizing aerobic composting and monitoring.
- The project team and partners are now recognized by the Ministry of Public Works as the leading organization in KIPRAH implementation by appointment as national trainers for 180 social and technical field facilitators for 90 new facilities to be built in 2012 in 27 provinces. Aerobic composting has been introduced as the technology of choice.
- Members of 30 provincial task forces from the Ministry of Public Works who are responsible for handling the KIPRAH program have been facilitated in streamlining the KIPRAH approach in cooperation with local governments. Aerobic composting has been introduced as the technology of choice.
- In total, 171 relevant stakeholders from central and local government, community-based organizations, and the private sector have been informed on the opportunities and challenges of carbon financing in KIPRAH during local dissemination workshops in Tangerang, Yogyakarta, and Surabaya.

**Objective 3.** Determine an equitable role for waste pickers in KIPRAH emission reduction projects, and assess the social impacts of these projects;

- 15 MRFs in operation have provided 40,000 beneficiaries with improved hygiene and public health conditions.
- 72 people from local communities are employed as MRF operators.
- An equitable role for waste pickers in KIPRAH ER projects is determined (G.2.4)
- 15 Community self help structures are established and operation in a sustainable way.
<table>
<thead>
<tr>
<th>Objective 4.</th>
<th>Objective 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Involvement of 315 local workers during the construction of 21 MRF</td>
<td>• Presentation of KIPRAH pro-poor carbon financing project during The Carbon Market Asia in Singapore, 22nd-23rd June 2010</td>
</tr>
<tr>
<td>• Adaptation of CDM baseline methodology AMS.III-F for cases where no waste collection is in place (G.1.5)</td>
<td>• Presentation of paper “Pro-Poor Carbon Financing through KIPRAH Community-based Solid Waste Management” at International Conference on Solid Waste 2011 Hong Kong, May 2011</td>
</tr>
<tr>
<td>• Expansion of Gold Standard project to include composting (G.1.6)</td>
<td>• Media coverage entitled “Indonesian Garbage Project Helps to Save Climate” in Jakarta Globe Newspaper (1st of January 2012), “Business Out of Rubbish” Gulf Times (6th of January 2012), and Al Watan Life (8th January 2012).</td>
</tr>
<tr>
<td>• Methodology applicable for small and decentralized projects in low-income neighborhoods</td>
<td>• Involvement as trainers for nation-wide social facilitator training for a solid waste management</td>
</tr>
<tr>
<td>• Eligibility of composting under the GS, offering the possibility of highest quality carbon credits for such projects</td>
<td>Research findings have been disseminated through national and international channels</td>
</tr>
</tbody>
</table>
| • Lessons learned from the practical experience of registering KIPRAH under CDM and VER (G.2.5) | **Note:**


41 *Ibid, Annex 11*

42 *Ibid, Annex 12*
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>project held by Ministry of Public Work in Jakarta from 27th January- 4th February 2012. The aerobic composting as composting method choices for the community was introduced.</td>
</tr>
<tr>
<td></td>
<td>• Involvement as trainers for nation-wide technical facilitator training for a solid waste management project held by Ministry of Public Works in Yogyakarta from 26th -31st March 2012. Technical facilitators who are responsible for MRF architectural design were trained to design MRF according to different aerobic composting methods.</td>
</tr>
<tr>
<td></td>
<td>• Local dissemination workshop of research finding in three cities in Indonesia, May-June 2012 (G.1.7)</td>
</tr>
</tbody>
</table>
G.1. Project Outputs

G.1.1 Assessment on the potential carbon reduction from PoA KIPRAH project

The calculation of emission reduction for KIPRAH refers to the CDM small-scale methodology AMS-III.43 and the corresponding tool to calculate methane emission44.

\[
BE_{CH4,SWDS,y} = \phi \cdot (1-f) \cdot GWP_{CH4} \cdot \left(1-OX\right) \frac{16}{12} \cdot F \cdot DOC_f \cdot MCF \cdot \sum_{j=1}^{n} W_{j,x} \cdot DOC_{j} \cdot e^{-k_j(y-x)} \cdot (1 - e^{-k_j}) \cdot (1)
\]

Where:
- \( BE_{CH4,SWDS,y} \) = Methane emissions avoided during the year \( y \) from preventing waste disposal at the solid waste disposal site (SWDS) during the period from the start of the project activity to the end of the year \( y \) (tCO\(_2\)e)
- \( \phi \) = Model correction factor to account for model uncertainties (0.9)
- \( f \) = Fraction of methane captured at the SWDS and flared, combusted or used in another manner
- \( GWP_{CH4} \) = Global Warming Potential (GWP) of methane, valid for the relevant commitment period
- \( OX \) = Oxidation factor (reflecting the amount of methane from SWDS that is oxidised in the soil or other material covering the waste)
- \( F \) = Fraction of methane in the SWDS gas (volume fraction) (0.5)
- \( DOC_f \) = Fraction of degradable organic carbon (DOC) that can decompose
- \( MCF \) = Methane correction factor
- \( W_{j,x} \) = Amount of organic waste type \( j \) prevented from disposal in the SWDS in the year \( x \) (tons)
- \( DOC_{j} \) = Fraction of degradable organic carbon (by weight) in the waste type \( j \)
- \( k_j \) = Decay rate for the waste type \( j \)
- \( j \) = Waste type category (index)
- \( x \) = Year during the crediting period: \( x \) runs from the first year of the first crediting period \((x = 1)\) to the year \( y \) for which avoided emissions are calculated \((x = y)\)
- \( y \) = Year for which methane emissions are calculated

Table 3. Value chosen in emission reduction calculation of KIPRAH project

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value chosen</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual amount of organic waste in tons (( W_{j,x} ))</td>
<td>500</td>
<td>50% of total incoming waste to MRF of 1000 ton/year</td>
</tr>
<tr>
<td>phi:</td>
<td>0.9</td>
<td>Default value</td>
</tr>
<tr>
<td>f:</td>
<td>0</td>
<td>No flaring at dumpsites</td>
</tr>
<tr>
<td>GWP:</td>
<td>21</td>
<td>Default value</td>
</tr>
<tr>
<td>OX:</td>
<td>0</td>
<td>At informal, unmanaged solid waste disposal sites</td>
</tr>
<tr>
<td>F:</td>
<td>0.5</td>
<td>Default value</td>
</tr>
<tr>
<td>DOC_f:</td>
<td>0.5</td>
<td>50% of incoming waste</td>
</tr>
<tr>
<td>MCF:</td>
<td>0.4</td>
<td>At informal, unmanaged solid waste disposal sites</td>
</tr>
<tr>
<td>DOC_j:</td>
<td>0.15</td>
<td>Mainly wet food waste</td>
</tr>
<tr>
<td>kj:</td>
<td>0.4</td>
<td>Wet food waste, humid tropical climate</td>
</tr>
<tr>
<td>Crediting year:</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

43 http://cdm.unfccc.int/methodologies/DB/7RF5DZ2T6T8F88BMPPPHNOATXD40Y
44 http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-04-v6.0.1.pdf/history_view
Methane generation during composting 0 Monitored that oxygen content of the composting process is above 8%

Fossil fuel consumption of the MRF l/(year * HH) 2 Only a few liters per year and tons of organic waste

The estimated emission reductions of this CDM Project Activities of 15 facilities with an annual load of 500t of organic waste and a diesel consumption for waste processing of 2 liters/year/household during the first crediting period (7 years) is shown in Table 4.

Table 4. Estimated Emission Reduction from KIPRAH project over one crediting period

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimation of project activity emissions (tonnes of CO₂ e)</th>
<th>Estimation of baseline emissions (tonnes of CO₂ e)</th>
<th>Estimation of leakage (tonnes of CO₂ e)</th>
<th>Estimation of overall emission reductions (tonnes of CO₂ e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>81.6</td>
<td>934.6</td>
<td>0</td>
<td>853.0</td>
</tr>
<tr>
<td>Year 2</td>
<td>81.6</td>
<td>1561.2</td>
<td>0</td>
<td>1479.6</td>
</tr>
<tr>
<td>Year 3</td>
<td>81.6</td>
<td>1981.1</td>
<td>0</td>
<td>1899.5</td>
</tr>
<tr>
<td>Year 4</td>
<td>81.6</td>
<td>2262.6</td>
<td>0</td>
<td>2181.0</td>
</tr>
<tr>
<td>Year 5</td>
<td>81.6</td>
<td>2451.3</td>
<td>0</td>
<td>2369.7</td>
</tr>
<tr>
<td>Year 6</td>
<td>81.6</td>
<td>2577.8</td>
<td>0</td>
<td>2496.2</td>
</tr>
<tr>
<td>Year 7</td>
<td>81.6</td>
<td>2662.6</td>
<td>0</td>
<td>2581.0</td>
</tr>
<tr>
<td>Total (tonnes of CO₂ e)</td>
<td>571.2</td>
<td>14431.3</td>
<td>0</td>
<td>13,860</td>
</tr>
</tbody>
</table>

Table 4. Illustrates the amount of estimated reduction of 13,860 tCO₂e over a crediting period or an average of 1,980 tCO₂e per annum. This reduction is considered very small when compared to other registered composting projects under CDM which estimate 3,382 – 48,086 per annum.

G.1.2 Assessment of CDM methodology AMS-III.F compatibility for KIPRAH project

Though several composting projects have been registered under the CDM (mostly composting of palm oil waste at oil plants), none is similar with KIPRAH (not even at validation stage). There is one registered project in Bali with a large facility composting organic waste recovered from an existing landfill and receiving waste originally destined to this landfill. There is also a PoA registered in Uganda which composts waste that is supposed to be brought to existing landfills. The difference in KIPRAH however is that small, decentralized facilities are built and that waste is recovered from areas without an existing waste collection system.

The first-of-its-kind status was a challenge itself, especially when dealing with the baseline methodology as elaborated in the following paragraph.

In absence of the KIPRAH project, the waste would be dumped informally at different dump sites of different characteristics, resulting in different methane generation scenarios at different sites. The CDM methodology was not fully clear about the need to identify individual waste sites. It was however clear from the beginning for the project team and partners that it would not be possible to conduct sophisticated and detailed baselines surveys for each MRF resulting in different amounts of emission reductions per ton of organic waste treated in MRF. Therefore, an attempt was made from the start to get approval for a standardized baseline for all MRF sites. It turned out to be extremely complicated:

45 http://cdm.unfccc.int/Projects/DB/SGS-UKL1214472977.27/view
a. In the original PoA-DD, the baseline was developed according to the information given in the National Waste Statistics in 2008, assuming a standardized baseline of 68% of municipal solid waste to the deposited in landfills. This approach received an informal approval of DOE in November 2009.

b. In September 2010, DOE later mentioned that CDM AMS.III-F tool didn’t allow the use of national statistics as a baseline referring to the sentence of “the solid waste disposal site where the waste would be dumped can be clearly identified”. It revoked the initial informal approval.

c. The project team proposed an assumption of small dumpsite as standardized baseline, pleading it was more conservative that the National Statistic but no approval was obtained. In the PoA Preliminary Findings report issued by DOE in August 2011 stipulated that KIPRAH doesn’t suit the requirement of using the methodology AMS.III-F.

G.1.3 Assessment of the feasibility of CDM monitoring in a low-tech environment of KIPRAH project

The fact that after four years there has not been a single CER issued after the start of PoA (The first PoA’s documentation was published in July 2008) shows that the mechanism does not work properly. Also there is a specific lack of suitability for community-based projects, which becomes evident by the before-mentioned issue with the baseline, but also, e.g., by monitoring requirements. Since KIPRAH consists of many small units, monitoring gets more complicated since the same standards need to be applied as for large centralized units – this gets difficult under community project conditions. The CDM methodology required regular measurements of oxygen concentration in compost piles in all facilities, which is hardly feasible in a low-tech environment of community-based projects.

Trials on the implementation of carbon monitoring were held in the 8 projects that were built in 2010. Apart from measurement of oxygen content from compost piles, the monitoring also included weighing daily processed organic waste, measurement of moisture level of each compost pile, regular turning of compost, and documentation of all monitored parameters, and also presentation of monthly financial reports. Even though these facilities started operation between February – April 2011, the implementation of the carbon component started after community based organizations received training on June 2011. The time in between February-June was used by the organization and operators to learn to manage and operate the facility.

During the implementation of carbon components of the 8 material recovery facilities only 6 facilities applied the component. A facility in Banten province stopped operation due to a dispute among organization members, and another facility in East Java province doesn’t operate properly because of incomplete operational equipment. None of the six facilities showed the ability to carry out monitoring despite being assisted by partners. The daily monitoring of calculating the organic waste treated, monitoring compost, and documentation were considered by the community based organizations as too heavy a workload, as the organisations also had to focus on their basic tasks to manage the MRF. The monitoring and documentation were done when the ‘priority’ work of waste collection and separation were finished. The monthly incentive scheme (50 USD/month) to simulate income from carbon financing that was introduced for every complete monitoring sheet to each facilities worked in 3 facilities out of 6 facilities, and stopped after a certain time when the CBOs determined that the additional work outweighed the amount of incentive they received.
Below is the summary of trial monitoring activities in 8 Material Recovery Facilities:

Table 5. Trial Monitoring Result

<table>
<thead>
<tr>
<th>Name of facility</th>
<th>Starting trial Implementation</th>
<th>Stop trial implementation</th>
<th>Aerobic composting: Passive aerated windrow</th>
<th>Monitoring compost</th>
<th>Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sehati, Sepang municipality, Banten Province</td>
<td>July 2011</td>
<td>Sept 2012</td>
<td>Yes</td>
<td>Sometimes</td>
<td>incomplete</td>
</tr>
<tr>
<td>GriyaResik, South Tangerang city, Banten Province</td>
<td>July 2011</td>
<td>Sept 2012</td>
<td>Yes</td>
<td>Sometimes</td>
<td>incomplete</td>
</tr>
<tr>
<td>Rumah KomposV ipamas, South Tangerang city, Banten Province</td>
<td>July 2011</td>
<td>Sept 2012</td>
<td>Yes</td>
<td>Sometimes</td>
<td>incomplete</td>
</tr>
<tr>
<td>Sampora Beraksi, Tangerang municipality, Banten Province</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pendowo Lestari, Sleman municipality, Yogyakarta Province</td>
<td>July 2011</td>
<td>February 2011</td>
<td>Yes</td>
<td>Sometimes</td>
<td>incomplete</td>
</tr>
<tr>
<td>Prasung Berseri, Sidoarjo municipality, East Java Province</td>
<td>July 2011</td>
<td>May 2012</td>
<td>Yes</td>
<td>Sometimes</td>
<td>incomplete</td>
</tr>
<tr>
<td>Kenongo Asri, Sidoarjo municipality, East Java Province</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Asri Karya, Denpasar city, Bali Province</td>
<td>July 2011</td>
<td>December 2011</td>
<td>Yes</td>
<td>Sometimes</td>
<td>incomplete</td>
</tr>
</tbody>
</table>
G.1.4 Cost benefit analysis of PoA KIPRAH

The financial analysis was done at the scale of running PoA, which consists of 15 material recovery facilities where a facility serves up to 1000 HHs. The costs of the project related to carbon finance are treated in the following three categories based on the real cost that has spent and conservative assumption of the potential cost in the future:

A. Up-Front Carbon Project Costs for the development of the POA –PDD, validation of the project, staff salaries. Total up-front carbon finance investment is considerable (2.29 billion IDR = €190,000). This is investment that has already been made.

B. Project Development Investments at the MRF level: this includes community facilitation funds and monitoring of the project by the MRF, the budget for which is provided under the research project:
   i. Community Facilitation at the start of the project is estimated at 35,000,000 IDR/MRF (€2,836/MRF). Community facilitation is the process to socialize the project to the community, formation of a community based organization, and training for the organization members and operators.
   ii. Monitoring incentives to be received regularly by each CBO/month (approx. 500,000 IDR/MRF/Month) are expected to be 1.179 billion IDR (€95,499) over 7 years for 15 MRF. As labor cost in the facilities arise from the carbon monitoring regardless of any carbon issuances, communities are given a monthly monitoring incentive to cover the cost.

C. On-going carbon costs: this includes cost for preparation of the monitoring report before verification that usually needs help from a consultant (€15,000) and annual verification costs of the project by DOE (€15,000 of DOE fee, €5,000 for flight ticket and accommodation). The cost for monitoring assistance at MRF levels such as staff salary and travel cost are assumed to be covered by other donors (e.g. BORDA). The on-going costs are estimated to be 3.48 billion IDR (€284,970) over 7 years.

The financial viability, in terms of a sustainable carbon project that can pay cover on-going costs after the research project finished is calculated excluding the excluding PDD development, validation, community facilitation and first year of carbon fund (B year 1 to 7 +C).

The total costs (A+B+C) of development as a carbon project, over the first crediting period of the project i.e. 7 years crediting, are nearly 7.48 Billion IDR (Approx. €612,402). Ongoing costs of the carbon project are approximately 648 millions IDR (€53,076) per annum.

The KIPRAH project would therefore require large revenue over 7 years to recover all or some of these costs as the project moves forward.
Following allocation the financials look as follows in Table 6:

<table>
<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Total cost of carbon project (A+B+C)</th>
<th>Total cost excluding carbon finance investment and project development cost year 0 (B year 1 to 7 +C) IDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1,693,701,665</td>
<td>604,500,000</td>
<td>525,000,000</td>
<td>121,825,156</td>
<td>2,945,026,821</td>
</tr>
<tr>
<td>1</td>
<td>101,700,000</td>
<td>427,910,000</td>
<td>529,610,000</td>
<td>529,610,000</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>114,921,000</td>
<td>449,305,500</td>
<td>564,226,500</td>
<td>564,226,500</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>129,860,730</td>
<td>471,770,775</td>
<td>601,631,505</td>
<td>601,631,505</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>146,742,625</td>
<td>495,359,314</td>
<td>642,101,939</td>
<td>642,101,939</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>165,819,166</td>
<td>520,127,279</td>
<td>685,946,446</td>
<td>685,946,446</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>187,375,658</td>
<td>546,133,643</td>
<td>733,509,301</td>
<td>733,509,301</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>211,734,493</td>
<td>573,440,326</td>
<td>785,174,819</td>
<td>785,174,819</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>7,487,227,330</td>
<td>4,542,200,509</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Cash balance of PoA KIPRAH running cost over 7 years crediting period

As seen in the table above, we find that at current scale the project is not viable in terms of carbon finance as a CDM POA, under conservative assumptions on the price of carbon and associated costs of project development. As shown by the tables above, the total project costs cannot be covered by carbon revenue. Each year the project would require additional financing and after 7 years of project crediting with carbon finance the project has a deficit 2,508,772,189 IDR (€205,199)

<table>
<thead>
<tr>
<th>Year</th>
<th>Expected CER (ton/CO2eq)</th>
<th>Carbon Revenue Estimate (with High price@12 Euro per ton) (IDR)</th>
<th>Total cost excluding carbon finance investment and project development cost year 0 (B year 1 to 7 + C) (IDR)</th>
<th>Annual Cash Balance ( IDR)</th>
<th>Cumulative cash balance of project (IDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>853</td>
<td>125,145,336</td>
<td>529,610,000</td>
<td>(404,464,664)</td>
<td>(404,464,664)</td>
</tr>
<tr>
<td>2</td>
<td>1,480</td>
<td>217,075,075</td>
<td>564,226,500</td>
<td>(347,151,425)</td>
<td>(751,616,089)</td>
</tr>
<tr>
<td>3</td>
<td>1,900</td>
<td>278,679,444</td>
<td>601,631,505</td>
<td>(322,952,061)</td>
<td>(1,074,568,150)</td>
</tr>
<tr>
<td>4</td>
<td>2,181</td>
<td>319,978,872</td>
<td>642,101,939</td>
<td>(322,123,067)</td>
<td>(1,396,691,216)</td>
</tr>
<tr>
<td>5</td>
<td>2,370</td>
<td>347,663,426</td>
<td>685,946,446</td>
<td>(338,283,019)</td>
<td>(1,734,974,236)</td>
</tr>
<tr>
<td>6</td>
<td>2,496</td>
<td>366,222,494</td>
<td>733,509,301</td>
<td>(367,286,807)</td>
<td>(2,102,261,042)</td>
</tr>
<tr>
<td>7</td>
<td>2,581</td>
<td>378,663,672</td>
<td>785,174,819</td>
<td>(406,511,147)</td>
<td>(2,508,772,189)</td>
</tr>
<tr>
<td>Total</td>
<td><strong>13,860</strong></td>
<td><strong>2,033,428,320</strong></td>
<td><strong>4,542,200,509</strong></td>
<td>(2,508,772,189)</td>
<td></td>
</tr>
</tbody>
</table>
G.1.5 Adaptation of CDM baseline methodology AMS.III-F for cases where no waste collection is in place

In September 2011, the project team sent a request for clarification to the CDM executive board about DOE’s decision of not allowing a standardized baseline. The request was answered 6 weeks later stating that a request for revision of methodology would be needed if the project team wanted to pursue KIPRAH registration.46 A request for revision of the baseline methodology AMS.III-F, which included the concept of suppressed demand that would allow a standardized baseline for KIPRAH, was sent in December 201147. The request was first rejected in February 2012 by the CDM executive board not because of its content but rather how the revision was composed. Another request for revision was submitted in February. After answering detailed questions, the suggested new methodology was finally approved by the executive board in May 201248.

The concept of suppressed demand in the baseline methodology AMS.III-F is as follows: In urban areas where waste collection is missing, there will automatically be wild and generally illegal waste dumping because there is no other choice. Wild dumping is however a consequence of poverty and lack of development. In the context or urban development, it would be reasonable to assume that the waste would be brought to existing landfills in the future with the corresponding conditions for methane generation. Therefore, a CDM project introducing waste collection will prevent waste from disposition at the landfill and reduce the corresponding emissions.

The revised methodology has allowed KIPRAH to apply a methane generation factor for a landfill as a standardized baseline because KIPRAH prevents wild dumping of municipal waste in urban areas49. It is not necessary anymore to find and analyse each single waste disposal site for each MRF. The adapted version makes the methodology applicable to cases where no waste collection system is in place.50 This is considered as a major breakthrough in smoothing the path for future KIPRAH like project.

G.1.6 Gold Standard expands its project scope to include composting

Until June of 2012, composting was not eligible under the Gold Standard due to a restriction on the energy based projects. It was however expected that the Gold Standard would be willing to broaden its scope by including composting. Therefore, in 2009 KIPRAH was developed according to Gold Standard criteria, and the corresponding report of the stakeholder consultation together with the sustainability assessment was sent to the Gold Standard as part of the request to include composting. Discussion with the Technical Advisory Committee of Gold Standard Foundation also was done to include composting. The correspondence letter to Technical Advisory Committee can be found in Annex5. The approval was finally obtained in June 2012 within the framework of Gold Standard version 2.2.51 This achievement opens up the possibility of highest quality carbon credits for KIPRAH and decentralized small-scale projects in the solid waste sector.

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46 http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/60731
47 http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/36461
48 http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/86230
49 http://cdm.unfccc.int/filestorage/E/3/O/E3QBKLVI1DCR248PZHY5XJ906IU17GWFN/EB67_repan20_Revisio
n/AMSIII.F_ver11_0.pdf?_=wU18bT4ZmZyDDq0qXq2Qpr8UHynPokwrd
50 https://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications/86230
51 http://www.soilandmore.com/index.php/eng/News-Events/What-is-going-on/06-06-2012-Scope-of-gold-
standard-now-expanded-to-composting
G.1.7 Research findings disseminated through national channels

The successful implementation of KIPRAH ER project is determined by the quantitative performance of the projects. The steps in developing KIPRAH play an important role in KIPRAH operation which later influences emission reduction.

Dissemination was done by conducting local workshops in Tangerang, Yogyakarta, and Surabaya during May and June 2012. For each workshop all related stakeholders in waste management programs, from the Ministry of Public Works as the donor for MRF infrastructure, local government, community-based organizations from pilot facilities, and community-based organizations from other waste projects within the province, were invited. In total 177 participants engaged in the workshops. The project team and partners presented the lessons learned and recommendations of emission reduction project registration and what particular conditions should be met by the facilities that want to be part of the program. The participants of the workshop were asked to sit together according to each topic on sustainability of KIPRAH, discuss on the topic, and make direct recommendations that were specific to the condition in each province to the central and local government representatives that attended the workshop.52

G.2 Project Outcomes

G.2.1 Identification of Gold Standard Micro scale VER as the ideal carbon credit scheme for KIPRAH

During the last few years, CERs traded on the compliance market used to get better prices than VERs – but this does not necessarily hold true anymore after the crisis of the European Emissions Trading Scheme. At the time when reasonable prices were paid on the compliance market (e.g. > 10 EUR/CER as before mid 2011), the compliance market had the advantage of offering guaranteed uptake of credits since a spot market exists where credits can be bought and sold at any time. But at the current price level, it is clear that premium prices are needed which can only be obtained in the voluntary market.

Voluntary market on the other hand also has active non-conventional buyers which are needed for KIPRAH for several reasons below:

- Only a small quantity of credits can be expected, at least at the first stage. Many conventional buyers however are not interested in small quantities, e.g. the KfW CDM fund from Germany only signs contracts with projects generating over 50,000 t CO2 per year.53
- No delivery guarantee can be given, since BORDA is not in the position to buy equal carbon credits in the market in case of non-delivery
- Non-conventional buyers have an interest in supporting a unique project with extraordinary benefits and sustainable development potentials.

There are several standards of VER in the market and the project proponent has to choose one standard regarding project scope and potential buyers. There is however no standard with carbon prices comparable to the Gold Standard, due to the higher integrity of the latter. Such other standards are often used to generate carbon credits from projects with questionable additionality, i.e. projects that take carbon funding as a surplus without really needing it. Therefore other standards are not recommended for community-based projects that really need carbon funding.

A clear advantage of generating Gold Standard VERs apart from the premium price is that retroactive crediting is possible. This means that carbon credits may be also obtained for up to two years before

52 Ibid. annex 13
registration. Therefore possible delays in the registration procedure do not have a negative effect on the carbon revenues – which would be the case under CDM. The case is clear for very small projects like KIPRAH:

Projects saving up to 10,000 tons of annual emission reductions (recently raised from 5,000) like KIPRAH can use the Gold Standard micro scale scheme with a flat fee for validation of 5,000-10,000 US$ (depending on the size); generally no DOE is involved in such micro scale projects which clearly reduces bureaucracy and delays. So the recommendation would be to go for Gold Standard Micro scale VERs in the case of very small projects like KIPRAH. The inclusion of waste handling and disposal project within Gold Standard version 2.2 is available since June 2012.

G.2.2 Registration of KIPRAH under Gold Standard Micro scale Verified Emission Reduction

The decision to shift the registration of KIPRAH under PoA to Gold Standard Micro Scale VER was based on the cost benefit analysis, the opportunity to get premium carbon price and cheaper transaction cost of Gold Standard Micro scale VER. After composting became eligible, a second GS stakeholder meeting was conducted in July 2012 and the reports of both stakeholder consultations (e.g. Local Stakeholder Consultation 2009 and Local Stakeholder Consultation 2012) were finally submitted to the Gold Standard for approval.

The project is therefore on its way to become the first Gold Standard composting project ever. As the research period is coming to an end, the activities will be continued under BORDA financing.

G.2.3 Limitation of NGOs and communities to apply for and acquire carbon credit funding is identified

Limited communities’ capacity to manage their own carbon projects:

In terms of community empowerment, it would be desirable to enable locals to become active stakeholders in handling carbon finance for their own projects. This would allow the ability to bypass the use of consultants and at the same time maximise the income for community projects and their replication.

Our practical experiences however – e.g. during the local stakeholder consultations - show that the complexity of carbon crediting is rather frightening to local agents. Carbon credits always require a detailed, sophisticated and long-term monitoring. The experience from KIPRAH shows that these monitoring requirements go already far beyond conventional monitoring and fully absorb the communities administrative capacities. It therefore became clear to KIPRAH that the only feasible way was to translate CDM and Gold Standard requirements into simplified monitoring instructions without “bothering” communities with sophisticated details on the calculation of emission reductions.

Apart from these practical constraints, which are due to the tendency of carbon crediting schemes to become overly complex, there is also a need to discuss if the full involvement of communities in carbon matter is really desirable. In most cases, local stakeholders in developing countries are victims of climate change rather than being responsible for it. Where they cause greenhouse gas emissions, e.g. by illegally dumping the waste, this occurs due to lack of infrastructure. In virtually all carbon projects benefiting the low income, these beneficiaries are not interested in saving carbon but in improving daily life – e.g. by improved waste handling. Carbon finance is just a way to fund such activities, and the challenge that comes with them, e.g. organising a waste collection system, is already big enough. The concept of reducing greenhouse gas emissions in this context is not relevant to locals, and in practice is often misunderstood. In KIPRAH, the concept of methane as a greenhouse gas is hardly understood by the community mainly because methane gas is invisible. Furthermore, when the word
carbon fund is brought to the discussion, the expectation to receive cash money to cover operational costs arose instead of understanding that carbon funds will be directed for community facilitation and maintenance cost. This contradicts the KIPRAH self-recovery cost concept.

We therefore think that community involvement in carbon reduction quantification does not need to be a priority.

**Limited NGOs to manage the carbon project**

In comparison to hiring international consultants, it would be desirable to develop a cadre of local consultants. The local consultant that is expected during this research period should be a part of the project team and partners. The experience of KIPRAH however shows big hurdles even here.

The high complexity of CDM and also Gold Standard is again the main reason. A CDM consultant recently formulated the following input to a call for suggestions to improve the CDM:

“... Actors in the CDM market have to spend a great deal of time staying up to date on CDM rules. ... This has made understanding of the CDM the realm of extreme specialist; non-specialists have to turn to specialists as a middleman to aid in their participation in the mechanism.”

Most of these CDM specialists are members of large consultancy firms where several of such specialists work together – each of them with his own area of expertise. A simple look at the countless acronyms used under CDM can illustrate this. In this context, forming local consultants is obviously a big challenge.

Also the Gold Standard has complicated rules. This has also been experienced during the attempts of shifting the approach from PoA to Gold Standard micro scale. The complexity of the processes is becoming simplified, but the documentation of the rules get more and more complicated. This may have similar effects as mentioned above for the CDM though to a lesser extent.

The project team and partners couldn’t fulfill the expectation to become the local consultant considering the overwhelming additional work on top of current responsibility to assist the community. But it should be possible to form specialized local consultants on community projects, maybe with a focus on the GS micro scale scheme.

**G.2.4 An equitable role for waste pickers in KIPRAH ER projects is determined**

Some of the workers in the MRFs formerly worked as waste pickers. Waste pickers walk around the city to collect waste, are exposed to bad environmental conditions and often receive a negative image as thief. Working as the MRF’s employees has increased their social status. The income that they receive is more or less the same but the working condition is considered to be more comfortable. To have waste pickers as waste separators in the MRF is an advantage as they have the skill and knowledge on what is valuable. As for the role for waste pickers in ER project please refer to section H.3 page 26; “Ability of communities to manage their own carbon project”

**G.2.5 Lessons learned from the practical experience of registering KIPRAH under CDM and VER**

The following lessons learned can be fundamental for the future development of best practices. The explanations below provide further details but due to the stage of the project development, it is not possible to derive a conclusive, efficient implementation strategy:

54 [http://cdm.unfccc.int/public_inputs/2011/eb64_02/cfi/EZWQTPTLKB3VR46OY6VA6S0NS0QA0H](http://cdm.unfccc.int/public_inputs/2011/eb64_02/cfi/EZWQTPTLKB3VR46OY6VA6S0NS0QA0H)
Pilot projects should not be considered for carbon funding. Carbon funding is only suitable for proven technologies. Carbon funding makes sense for up scaling successful pilot projects like the condition where KIPRAH is today, not three years ago when the research project began.

There is a need of high degree standardization in baseline and monitoring approach. If many small units are to be implemented, they need to be very similar with monitoring needs, use the same templates etc. The coordinators of the project should try to translate CDM requirements into simple monitoring requirements – without expecting communities to get into CDM details.

Extensive time to develop the project is needed. Carbon credits are only obtained after it has been demonstrated that a project was successfully implemented, and the amount of carbon credits depends on the quantitative performance of a projects. This is in general a positive approach that opposes the typical way of cooperation-based grant funding where it is often difficult to clearly condition funding to success. As a general problem however there will be a need for upfront funding when using carbon finance. This is often difficult to obtain for NGOs or their local partners. Recently a CDM loan scheme was launched which offers the possibility of lending funds for paying CDM transaction costs\(^{55}\). But costs for project implementation remain difficult to pre-finance.

The process of obtaining carbon credits takes many years, while typical grants are provided for 1-3 years. And also the need of doing a lot of paper work to document the ongoing project success can lead to problems since local partners are generally not used to it.

Typical barriers that CDM presents for community based projects are assessed.

Below are a number of typical barriers for household based project applying for CDM mainly relating to the way CDM was implemented:

a. **Transaction costs**: Until the first carbon credit can be generated in a PoA, there will be transaction costs of some 70,000 EUR for the DOE (50,000 for validation, 5,000 for CPA inclusion and 15,000 for verification). This is clearly beyond any reasonable NGOs budget. Additionally, the preparation of CDM documentation requires qualified consultants that charge over 100,000 – 200,000 EUR for developing a PoA\(^{56}\). Preparation of monitoring report before verification also requires consultant that charge around 15,000 EUR\(^{57}\).

b. **Bureaucracy and complexity**: It was our experience that a simple adaptation of a CDM methodology took 10 months, mainly due to a delay of two months between each question and answer. Methodologies are constantly changed, so every delay leads to a need to adapt to new methodologies. And even the DOEs have trouble in interpreting the methodologies in the correct ways.

c. **Scope on large, industrial projects**: Particularly DOEs are used to working with large power plants rather than with community-based projects. Requirements in methodologies are often not possible to fulfill community-based projects, as shown in the example of scientific oxygen measurement in low-tech MRFs. Instead of having to deal with simplified rules, the KIPRAH project has even more difficulty monitoring because it has to include many small facilities.

\(^{55}\) [http://cdmloanscheme.org/](http://cdmloanscheme.org/)

\(^{56}\) 2009. Personal communication with Geres, Climate Focus, and South Pole Ltd.

Typical investment barriers of composting project are identified. From the investment point of view composting is not attractive compared to Land Flaring Gas (LFG) in the landfill. C. Rogger et al compared the effect that this tool has on the financial concept of a composting project respectively a landfill project. In Figure 4 it is shown the expected emission reductions in the first seven years of the composting project (left of the dotted line) and the emission reductions of a landfill CDM project with the same amount of waste accumulated over 7 years before closing the landfill (right of the dotted line).

![Figure 4. Methane emission reductions in CO2 equivalents for a 7 year composting/landfill project with the boundary conditions as in the KIPRAH project for one CPA (15 MRF)](image)

As it can be seen in Figure 4, the composting project receives low cash flows in the early stages and higher ones in the later stages of a project on the contrary with the LFG project in landfill that directly receives the highest CERs on the first and early stages. The composting project is also labor intensive compared to LFG project and needs to be maintained closely to make sure that high CER can be achieved in the following year.

Points to be considered in developing KIPRAH project as a carbon project

For a project that is implemented by a third party such as KIPRAH, the quality of implementation depends on the government and the policies that apply. KIPRAH is implemented within different administrative governments, which means there different policies in developing and supporting KIPRAH. The 16 MRFs are located in 4 different provinces. The different administrations led to at least three major variations that affected MRF operations; which are considered crucial for sustainable carbon financing:

a. Provision of land for KIPRAH:

In providing land for KIPRAH, the local city government has limited choices. They can either find state owned land around housing clusters, cooperate with private housing developers to provide land for a public facility (e.g. MRF) inside the housing complex as mandated by the law, or approach individuals to donate/rent their land. As for local governments at the village level, they have more flexibility in allocating land by using “community village land”. This land can be converted into a public facility under village regulations.

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58Rogger et. al (2011). Composting projects under the Clean Development Mechanism : Sustainable contribution to mitigate climate change. Waste Management (31), 138-146
Based on our experiences, an MRF that is located inside the housing complex is more efficient in serving the community by having a clear target user and closer range of services. Another benefit is access for communities to supervise the construction of the MRF, reducing the risk of corruption. An MRF that uses “community village land” is usually located far away from the settlement area so monitoring is less consistent. The following makes operation of MRF more challenging in the future due to a) raising cost of fuel and vehicle maintenance due to distance; b) small sense of belonging from community towards MRF; c) less control during MRF construction which leads to low quality of building and incomplete supporting equipment such as no waste collection vehicle.

b. Policy in constructing material recovery facility

Government-funded public infrastructure in Indonesia uses two approaches: Tender process of bidding for private sectors to build the infrastructure or award a grant to the community to build their own infrastructure. Facilities built through community grants have better quality and the communities have higher level of ownership of facilities compared to those that are constructed by the private sector. The community even makes contributions in-kind for the facility. Material recovery facility construction by the private sector can be of good quality as long as the community supervised the process and their input is taken seriously. Some facilities that have been built by the private sector don’t work properly because they were not equipped with waste collection vehicles and have bad building quality or incomplete facilities.

c. Local government support

Although ideally the support from local governments for KIPRAH is the same because of a signed agreement on their roles and responsibilities with the related funding ministry (i.e. Ministry of Public Works), the realization is far from ideal. There are two kinds of basic support from LG that should have been provided: budget for community facilitation and the support given once the MRF is built. The budget for community facilitation determines how community will accept the project and also be trained to operate the MRF. The supports given once an MRF is developed include initial fund to start operation, regular residual pick up, as well as absorption of compost product.

The successful implementation of KIPRAH as an emission reduction project requires all stakeholders (e.g. community, NGO, and local governments) to perform their tasks.

H. Overall Assessment and Recommendations

This project has contributed to make CDM accessible for projects that introduce new waste collection systems in low income neighborhoods. Additionally, the project has played an important role in widening the scope of the GS to include composting in the new version launched in June 2012.

This project also encouraged 3 Indonesian Partners (Balifokus, BEST, LPTP) to introduce the concepts for GHG emission reductions from solid waste management to governmental bodies in 30 provinces in Indonesia. The main challenge will always be the multi stakeholder financing of the project thus resulting in different levels of quality amongst different components. As mentioned above in the project activities segment, the governments are the main source of funding for the development of KIPRAH and all parties have to comply with their policies. MRF operation is subject to this policy.
In order to increase the involvement of more community projects in CDM, below are recommendations for CDM Executive Board:

a. Reduced transaction costs: There should be a fund to subsidize DOE costs for community-based projects

b. Better DOEs: Based on our experience, the DOE was not able to answer many of the questions, made contradictory statements and worked extremely slow. The broader reason for the poor performance of the DOE may be the lack of experience with community based projects since generally CDM projects deal with large industrial plants. Additionally the project was not in a good position to put pressure on the DOE since it is not part of the DOE’s ‘important clients’. Normally, DOEs are contracted by or via large CDM developers who represent these ‘important customers’ to DOEs – with such ‘important customers’ status, the negligence would probably not have happened. There should be specialized DOEs which professionally trained for project that is designed to help low income communities.

c. Improved communication with stakeholders: For projects developing new standards (like KIPRAH), there should be the possibility of directly discussing proposals with the DOE instead of having to make a different submission every few months

d. Standardized baselines and monitoring procedures: There is already a current process on standardized baselines in the UNFCCC with considerable improvements. However monitoring requirements are still a big hurdle and would need to be further adapted for community-based projects. In the case of composting, it should be, for example, possible to monitor the correct application of an aerobic composting method instead of having to measure oxygen contents.

e. Further improvement on composting CDM methodology: Composting projects have high sustainable and direct impacts to communities. This approach should be preferred to LFG projects, thus a more accommodating methodology for composting project should be developed.

f. Finally, it needs to be recognized that community-based projects represent a different case from the vast majority of CDM projects. Therefore, a specific track for such projects should be created, including a specialized working group in CDM EB and specialized DOEs with people who have experience in such projects. This would also include an official initial assessment center for household based projects applying for CDM, since many project proponents should learn from the beginning that the project is not realistic under CDM – in order to avoid unnecessary work for all sides.

Recommendation to the Government of Indonesia:

a. Continuous support to facilitate community-based low income carbon financing projects as a main component in Indonesian climate policy

b. Encourage local government to implement proper infrastructure quality and management systems for KIPRAH

c. Continuous support to develop KIPRAH through the Ministry of Public Works

d. Institutionalize a proper job description and employment contract for the facilitator for future projects.

Matching the needs of a community-based project with the needs of a carbon market mechanism was indeed ambitious. It requires an enormous effort but yet results in a valuable contribution to CDM/GS institutions and also communities. Without the research, it could not be expected that any
party would advocate for a better mechanism for community projects under CDM. Journals or papers should be produced to share these valuable finding with a larger audience.
Annex 1. Estimated Emission Reduction from a typical Community based Sanitation plant (Serving 100 HHs)

The calculations of the emission reduction associated with wastewater treatment are based on the UNFCCC methodology AMS-III.H. There are two baseline scenarios which have to be considered for wastewater treatment and it can not be determined in advance which scenario would be accepted for a community based sanitation plant in Indonesia:

1. Open discharge of the wastewater to the river/ lagoon/ septic tank without methane recovery corresponding to AMS-III.H. Version 09, Paragraph 1, Section (vi)
2. Arguing with the suppressed demand argument a centralized treatment plant (assumed is here the activated sludge technology with flaring of the manure gas with a flaring efficiency of 40 % (low maintained flaring and sludge treatment system)

The emission reduction due to the wastewater treatment ($ER_{y,ww}$) is calculated as the difference between the baseline emission from wastewater ($BE_{y,ww}$) and the sum of the project emissions ($PE_{y,ww}$) and leakage ($LE_{y,ww}$).

$$ER_{y,ww} = BE_{y,ww} - (PE_{y,ww} + LE_{y,ww}) + ER_{y,Power}$$

With the baseline emissions for scenario 1 (open discharge/ septic tank):

$$BE_{1,ww} = Q_{y,ww} × \sum COD_{y,removed,i} × B_{0,ww} × MCF_{ww,treatment} × GWPC_{H4}$$

Respectively the baseline emissions for scenario 2 (central treatment plant activated sludge):

$$BE_{2,ww} = cel × n_{HH} × n_{pe} × EF_{y,grid} + p_{manure} × n_{HH} × n_{pe} × (1-\eta_{manure}) × \xi_{CH4} × \zeta_{CH4} × GWPC_{H4}$$

Community based sanitation plant does not use pumps and thus does not consume electric or fossil energy, the overall methane emissions are considered to be partly recovered (biogas reactor efficiency) and partly released to the atmosphere through the gas release pipe. The sludge is considered to be treated in an aerobe sludge treatment process. The project emissions are calculated as following:

$$PE_{y,ww} = PE_{y,Power} + PE_{y,ww,treated} + PE_{y,s,final} + PE_{y,fugitive} + PE_{y,dissolved}$$

The project emissions from the treatment process are calculated as following (no methane recovery apart from biogas reactor):

$$PE_{y,ww,treated} = Q_{y,ww} × \sum COD_{y,removed,i} × B_{0,ww} × 1-S × 1-\eta_{bioreactor} × MCF_{ww,treatment} × GWPC_{H4}$$

And the emission reduction from electricity production:

$$PE_{y,Power} = EG_{y,displaced} × EF_{y,grid}$$

As the Project Activity would not use the technology transferred from or to another activity, the leakage effects of transportation are not counted.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
<th>Assumptions/ Sources</th>
</tr>
</thead>
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<td>Connected households (HH)</td>
<td>$n_{HH}$</td>
<td>100</td>
<td>-</td>
<td>Assumption</td>
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<tr>
<td>Inhabitants per HH</td>
<td>$n_{pe}$</td>
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<td>-</td>
<td>Assumption</td>
</tr>
<tr>
<td>Flow rate 100 HH</td>
<td>$Q_{y,ww}$</td>
<td>64</td>
<td>m$^3$/day</td>
<td>Assumption</td>
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<td>Parameter</td>
<td>Equation</td>
<td>Value</td>
<td>Unit</td>
<td>Source</td>
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<td>-----------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>COD removed</td>
<td>$\text{COD removed}$</td>
<td>0.825</td>
<td>kg COD/m³</td>
<td>Assumption 2009 Sasse et al., DEWATS - A practical guide, BORDA and WEDC</td>
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<td>Organic component removed as sludge in community based sanitation plant</td>
<td>$S$</td>
<td>5</td>
<td>%</td>
<td>Assumption 1997 Henze et al., Wastewater Treatment, Springer Second Edition</td>
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<td>Methane producing capacity</td>
<td>$B_0\text{ww}$</td>
<td>0.21</td>
<td>kg CH₄/kg COD</td>
<td>Fixed value (2006) IPCC Guidelines for National Greenhouse Gas Inventories, Specified in AMS-III.H.</td>
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<td>Methane correction factor (open discharge/ septic tank)</td>
<td>$MCF_{\text{Baseline1}}$</td>
<td>0.5</td>
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<td>Stagnant sewer open and warm (2006) IPCC Guidelines for National Greenhouse Gas Inventories, Specified in AMS-III.H.</td>
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<td>Methane correction factor anaerobe treatment plant</td>
<td>$MCF_{\text{DEWATS}}$</td>
<td>0.7</td>
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<td>Factor for anaerobe treatment plant (2006) IPCC Guidelines for National Greenhouse Gas Inventories, Specified in AMS-III.H.</td>
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<td>Global warming potential methane</td>
<td>$GWP_{\text{CH₄}}$</td>
<td>21</td>
<td>kg CO₂/kg CH₄</td>
<td>AMS-III.H.</td>
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<td>Biogas reactor efficiency</td>
<td>$\eta_{\text{bioreactor}}$</td>
<td>40</td>
<td>%</td>
<td>Assumption BORDA R&amp;D data</td>
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<td>Specific electric power consumption</td>
<td>$e_{\text{el}}$</td>
<td>35</td>
<td>kWh/(pe*year)</td>
<td>Assumption 2008 Haberkern et al., Energieeffizienz auf Kläranlagen, Umweltbundesamt Deutschland</td>
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<tr>
<td>Specific manure gas production</td>
<td>$p_{\text{manure}}$</td>
<td>19.6</td>
<td>l/(pe*day)</td>
<td>Assumption 2008 Haberkern et al., Energieeffizienz auf Kläranlagen, Umweltbundesamt Deutschland</td>
</tr>
<tr>
<td>Flaring efficiency</td>
<td>$\eta_{\text{manure}}$</td>
<td>40</td>
<td>%</td>
<td>Assumption including leakage and direct methane emissions from low maintained sludge plant</td>
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<tr>
<td>Methane density</td>
<td>$\zeta_{\text{CH₄}}$</td>
<td>0.657</td>
<td>kg/m³</td>
<td>Fixed value Baehr et al., Thermodynamik-Technische Grundlagen, Springer 2009</td>
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<td>Biogas production per year (recovered)</td>
<td>$Q_{\text{Biogas}}$</td>
<td>2,520</td>
<td>m³/year</td>
<td>Calculated</td>
</tr>
<tr>
<td>Methane production per year (recovered)</td>
<td>$Q_{\text{Methane}}$</td>
<td>1,638</td>
<td>m³/year</td>
<td>Calculated</td>
</tr>
</tbody>
</table>
Methane content of the biogas: $\chi_{\text{CH}_4} = 65\%$

Electric efficiency: $\eta_{\text{el}} = 18\%$

Net caloric value methane: $NCV_{\text{CH}_4} = 35.9\text{ MJ/m}^3$

Electricity production per year: $EG_{\text{y,displaced}} = 2,940\text{ kWh/year}$

Electricity grid emission factor: $EF_{\text{y,grid}} = 0.743\text{ kgCO}_2/\text{kWh}$

Emission reductions from electricity production: $ER_{\text{y,Power}} = 2.2\text{ tCO}_2/\text{year}$

Project emissions: $PE_{\text{y,ww}} = 33.9\text{ tCO}_2/\text{year}$

Emissions from electricity or diesel consumption: $PE_{\text{y,power}} = 0\text{ tCO}_2/\text{year}$

Emissions through degradable organic carbon in treated wastewater: $PE_{\text{y,ww,treated}} = 33.9\text{ tCO}_2/\text{year}$

Methane emissions from the anaerobic decay of the final sludge generated in the wastewater system: $PE_{\text{y,s,final}} = 0\text{ tCO}_2/\text{year}$

Emissions from methane release in capture and flare systems: $PE_{\text{y,fugitive}} = 0\text{ tCO}_2/\text{year}$

Emissions from dissolved methane in treated wastewater: $PE_{\text{y,dissolved}} = 0\text{ tCO}_2/\text{year}$

Carbon emission Baseline 1: $BE_{1,\text{ww}} = 42.5\text{ tCO}_2/\text{year}$

Carbon emission Baseline 2: $BE_{2,\text{ww}} = 25.8\text{ tCO}_2/\text{year}$

Emission reductions (Baseline 1): $ER_{1,\text{ww}} = 10.7\text{ tCO}_2/\text{year}$

Emission reductions (Baseline 2): $ER_{2,\text{ww}} = -5.7\text{ tCO}_2/\text{year}$

These calculations contain several uncertainties such as the biogas digester efficiency which can only be estimated as an average efficiency (the range of $\eta$bioreactor goes from 28% - 43%) and is estimated rather high. Lower biogas digester efficiency as well as a higher Methane correction factor of anaerobe treatment plant would lead to a negative carbon emission balance even with an efficient biogas usage. Uncertain is also the baseline scenario as mentioned above and the range of yearly emission reduction is calculated to be between -5.7 tCO2/year and 10.7 tCO2/year. This means, in average a yearly emission reduction of a DEWATS plant is 2 tCO2/year. In Table A.2 the estimated emission reductions of a community based sanitation plant CDM Project of Activities of 15 facilities serving 100 HH and using the recovered biogas for electricity production, the first crediting period (7 years) is shown.

Table A.2: Estimated Emission Reduction from DEWATS project over one crediting period using the average of two baseline scenarios (open discharge respectively centralized treatment plant)

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimation of project activity emissions (tonnes of CO2 e)</th>
<th>Estimation of baseline emissions (tonnes of CO2 e)</th>
<th>Estimation of leakage (tonnes of CO2 e)</th>
<th>Estimation of overall emission reductions (tonnes of CO2 e)</th>
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</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Year 2</td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Year 3</td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>---</td>
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<td>---</td>
</tr>
<tr>
<td></td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Year 4</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 5</td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Year 6</td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td>Year 7</td>
<td>31.7</td>
<td>34.1</td>
<td>0</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>221.9</strong></td>
<td><strong>238.7</strong></td>
<td><strong>0</strong></td>
<td><strong>16.8</strong></td>
</tr>
<tr>
<td>(tonnes of CO₂e)</td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>
SECTION A. Project Description

A.1 Project eligibility under the Gold Standard
According to the current Gold Standard rules, the project would only be eligible if energy is produced by briquetting and burning compost. The feasibility of doing so is still being assessed. The project proponents argue however that the project should be eligible for the Gold Standard in any case. The project empowers communities to run their own waste recovery facilities; thereby all Gold Standard criteria of social and environmental integrity as well as stakeholder participation are met.

The argument for restricting the Gold Standard to energy projects is that this guarantees sustainable development. However, by producing compost and recycling valuable materials from waste, a benefit analogously to energy is created which guarantees sustainability in the same way.

A.2 Current project status
Seven pilot MRFs were co-funded with ODA from BORDA and IDRC, these are not part of the PoA. Only two out of the seven pilot MRFs apply aerobic composting technology which shows that it is a challenge to secure anaerobic composting.

All seven plants are run by community based organizations. The process for the selection of possible sites for 15 MRFs planned to be implemented under the first CPA has been started by contacting local governments.

SECTION B. Design of Stakeholder Consultation Process

B.1 Design of physical meeting

i. Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda</th>
<th>PIC</th>
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</thead>
<tbody>
<tr>
<td>09.30 – 10.00</td>
<td>Opening of the meeting</td>
<td>Frank Fladerer (BORDA)</td>
</tr>
<tr>
<td>10.00 – 10.30</td>
<td>KIPRAH Community-based solid waste management background</td>
<td>Yuyun Ismawati (BALI FOKUS)</td>
</tr>
<tr>
<td>10.30 – 11.30</td>
<td>Waste Manangement in CDM and its Implementation Status in Indonesia</td>
<td>Haneda Sri Mulyanto (DNA)</td>
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<tr>
<td>11.30 – 12.30</td>
<td>Program of Activities of KIPRAH Community-based solid waste management</td>
<td>Robert Mueller (Atmosfair)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jati Kusumowati (BORDA)</td>
</tr>
<tr>
<td>12.30 – 13.30</td>
<td>Break</td>
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<tr>
<td>13.30 – 14.30</td>
<td>Questions and answers</td>
<td>Yuyun Ismawati (BALI FOKUS)</td>
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<td></td>
<td></td>
<td>Robert Mueller (Atmosfair)</td>
</tr>
<tr>
<td>14.30 – 15.30</td>
<td>Blind Sustainable Development Matrix Exercise and Discussion on monitoring</td>
<td>Surur Wahyudi (BORDA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harun Al-Rasyid (BEST Tangerang)</td>
</tr>
</tbody>
</table>
ii. Non-technical summary

KIPRAH, an abbreviation of “Kita-PRO-Sampah” or “We pro waste”, is a community-based solid waste management which served densely populated urban poor areas that lack solid waste collection and management systems for average 1500 HHs by installing Material Recovery Facilities (MRF). KIPRAH is implemented by local NGOs (BEST, LPTP, and BALIFOKUS) with financial support from BORDA-IDRC and local government. As pilot projects, KIPRAH has been implemented in 7 cities/municipalities in Indonesia: Denpasar (Bali), Badung regency (Bali), Makassar (South Sulawesi), Tangerang (Banten), Blitar (East Java), Sidoarjo regency (East Java), and Tarakan (East Kalimantan).

Through KIPRAH, communities are empowered to organize the separation of waste and compost organic waste. This approach reduces the amount of waste taken to the final dumpsite. Methane generation due to anaerobic decomposition in final dumpsites and current open dumping practice is avoided.

Community participation and partnership among communities, governments and private sectors are the reason behind KIPRAH success story. KIPRAH’s biggest challenge now is to replicate the project in other cities/municipalities without foreign grant funding.

The proposed Gold Standard CDM Programme of Activities KIPRAH is seeking the replication of KIPRAH through synergizing local government programs for waste management and CDM funding. Local governments provide budget for MRF infrastructure but do not cover community empowerment and capacity building which are mandatory for the sustainability of the project. Carbon funding is also needed to cover higher operation costs due to the application of strictly anaerobic composting technologies.

iii. Invitation Tracking Table

<table>
<thead>
<tr>
<th>Category code</th>
<th>Organization</th>
<th>Name of invitee</th>
<th>Way of invitation</th>
<th>Date of invitation</th>
<th>Confirmation received? Y/N</th>
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</thead>
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<tr>
<td>A</td>
<td>Community-based Organization Bremis, Tangerang</td>
<td>Suhadi</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
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<td>A</td>
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<td>Susanto</td>
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<td>11 November 2009</td>
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<td>Ngadiran</td>
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<td>Agus</td>
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<td>Bambang Hartiko</td>
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<td>B</td>
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<tr>
<td>B</td>
<td>Head of Ubung District, Denpasar city</td>
<td>I Nyoman Sudarsana, S.Sos</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>B</td>
<td>Head of Environment Agency, Denpasar city</td>
<td>Ir. Anak Agung Bagus Sudharsana, Dipl. PLG</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
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<tr>
<td>B</td>
<td>Settlement and Infrastructure, Public Work Department of Sleman</td>
<td>Martoyo</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>B</td>
<td>Head of Environment Agency Yogyakarta</td>
<td>Pak Suyono</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>B</td>
<td>Head of Sanitation and Landscape Department, Sidoarjo</td>
<td>Bp. Ir. Sigit Setyawan, MT</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>C</td>
<td>National Commission on CDM Ministry of Environment</td>
<td>Masnellyarti Hilman</td>
<td>Email and Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>D</td>
<td>Director of BEST Tangerang</td>
<td>Hamzah</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>D</td>
<td>Community Development Expert BEST Tangerang</td>
<td>Pratiwi</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
<tr>
<td>D</td>
<td>Director of BEST Surabaya</td>
<td>Abdullah Basyri</td>
<td>Letter of Invitation</td>
<td>11 November 2009</td>
<td>Y</td>
</tr>
</tbody>
</table>
All the above mentioned invitees are affected by the CDM project activity and its registration process and therefore important stakeholder that needed to participate in the stakeholder meeting.

Organizations from the BORDA NGO Network (BORDA, Balifokus, BEST and LPTP) are project developers and responsible for local community empowerment as well as for training and monitoring. These organizations will be the managing entities and therefore it is essential to the project that these local NGOs get the opportunity to express their concerns and state their comments, since the project will require additional work and capacities.

Atmosfair as an international NGO was invited because Atmosfair is the developer of the CDM project’s PoA-DD and CPA-DDs and has much experience in community based CDM projects. The stakeholder meeting is therefore a good opportunity to meet up with the people implementing and developing the project. The exchange with the local organization and community is essential so that the PDD and CPA can be adjusted to local needs.

KSM (Ind.: Kelompok Swadaya Masyarakat) are the community based organizations (CBO) that will run the MRFs. They are directly affected by the project as the MRFs are located in their neighborhood. Both, the KSM of old pilot MRFs and KSM of future MRFs are invited. This is done because thereby it is guaranteed that all stakeholders understand the impact of the project to those people actually carrying out the work. Concerns about the amount of work to be expected, future responsibilities and direct impacts of the project can be discussed. Moreover, project developers find out what they can expect from the CBOs and adjust the project to local needs.

Local governments are involved in the project funding, commissioning and supervision. The best possible understanding of the project is therefore indispensable to gain support from these local governments. Local government representatives, from the old MRF projects were also invited to learn about difficulties and possible legal or beaucratic boundaries during the project implementation.

The representative of the Indonesian DNA is invited to gain the best possible understanding of the project since the DNA’s approval of the project is necessary in the end.

The Gold Standard (GS) expert is invited since GS for the project is anticipated and all stakeholders need to understand the requirements that come with a GS certification. CBOs and local NGOs need to have the platform to raise their concerns about possible additional work and complications of a project with GS.

iv. Text of Individual invitation
No surat : 172/RP/XI/09
Hal : Undangan

Lampiran :
1. Kerangka Acuan Kegiatan
2. Agenda
3. Daftar Peserta

Kepada :
Yth.

Dengan hormat,

Dengan ini BORDA (Bremen Overseas Research and Development Association) mengundang Ibu untuk hadir dalam pertemuan konsultasi pertama stakeholder untuk Program of Activities CDM (Clean Development Mechanism) dalam program Pengelolaan Sampah Berbasis Masyarakat KIPRAH pada:

Hari/ tanggal : Rabu, 25 November 2009
Tempat : The Hotel Phoenix, Jl. Jend. Sudirman No 9, Yogyakarta
Waktu : 09.30- 16.00 WIB

Bersama ini kami lampirkan Kerangka Acuan Kegiatan.

Untuk konfirmasi kehadiran Ibu, staff kami Jati Kusumowati HP:0815-680-1400, email : jati@borda-sea.org akan menghubungi Ibu via telepon.

Demikian undangan ini kami sampaikan. Atas perhatian Ibu kami megucapkan terimakasih.

Hormat kami,

Frank Fladerer
Regional Coordinator BORDA SEA
www.borda-sea.org
SECTION C. CONSULTATION PROCESS

C.1 Participants’ in Physical Meeting

i. List of Participants

<table>
<thead>
<tr>
<th>No</th>
<th>Nama</th>
<th>Instansi/Organisasi</th>
<th>Kontak</th>
<th>Tanda Tangan</th>
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<tbody>
<tr>
<td>1</td>
<td>Drs Rudy Darmawan</td>
<td>BLH Badung bali</td>
<td>Telp. 081936089075</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Suhadi</td>
<td>KSM Bremis Tng</td>
<td>Telp. 0812102354345</td>
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<tr>
<td>3</td>
<td>Paijan</td>
<td>KSM Lestari Tarakan</td>
<td>Telp. 085246009819</td>
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<tr>
<td>4</td>
<td>Ngadiran</td>
<td>KSM Atlas Sleman</td>
<td>Telp. 02746622486</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Wilko Smidt</td>
<td>Borda</td>
<td>Telp. 08976805554</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Maren Henvels</td>
<td>Borda</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hamzah</td>
<td>BEST Tangerang</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Tiwi</td>
<td>BEST Tangerang</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>Susanto</td>
<td>KSM Telaga Bestari</td>
<td>Telp. 081238794479</td>
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<tr>
<td>10</td>
<td>Maryanto</td>
<td>Din KIMPRASWIL Sleman</td>
<td>Telp. 0274580128</td>
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<td>11</td>
<td>Mahmud</td>
<td>C-BETech-LPTP</td>
<td>Telp. 085228578242</td>
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<tr>
<td>12</td>
<td>Jutta Camargo</td>
<td>LPTP</td>
<td>Telp. 081392186826</td>
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</tr>
<tr>
<td>13</td>
<td>Muhammad Isa</td>
<td>BLH Tangsel, Banten</td>
<td>Telp. 08882180091</td>
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</tr>
</tbody>
</table>
ii. Evaluation forms

Participants were asked to fill out an anonymous evaluation form after the meeting, that way it was assured afterwards that there were no objections towards the project, which might have been overlooked or not documented in the meeting. Because of anonymity people were not intimidated to express their personal views that they might have held back during the meeting. After looking at the participants answers it can be inducted that general impressions are:

- Meeting supplied participants with all necessary information regarding project
- Meeting was a suitable platform to express concerns and find solutions to problems
- Participants find CDM procedure complicated to understand
- CDM project seems ambitious to be implemented in the community based organizations
- Briquette fabrication has to be clarified
- Concerns about funding through CDM income

A compiled selection of all the participants’ evaluation forms is attached in the Annex.

C.2 Pictures from physical meeting
C.3 Outcome of consultation process

i. Minutes of physical meeting

Q.1: How feasible CDM-KIPRAH could be implemented for the community-based project since it requires rigid documentation for monitoring while there are other important stuff within MRF management?
(Susanto, CBO Talaga Bestari- pilot project MRF)
A.1: We have to admit CDM is very complicated. But the most complicated part is done by the project development team whereas in the community level will not be complicated, CBO needs to follow standardized documentation and treatment prepared by the development team. The monitoring that will be held by BORDA on CDM-KIPRAH is basically the same with the practiced monitoring in the pilot project only we make sure that composting is aerobic and documentation is keep in good record.

Q.2: What do we need to prepare for the daily monitoring at MRF? (Ngadiran, local representatives of Sleman)
A.2: Each MRF need to have a good log book which at least noting amount of compostable organic waste, amount of compost product. Parameters for aerobic composting should be well observed.

Q.3: Uncertainty in compost market is becoming a problem with community composting. What can we do with the compost? (Faizah, Yogyakarta Environmental Agency)
A.3: KIPRAH concept is never to create money from waste, our concept comes from community awareness to reduce waste and “neutralize” it by making compost, so that it is safe to be brought back to nature. If we can sell compost and get additional income it will be good, but if not we can distributed to the community for free. (Yuyun Ismawati, Bali Fokus)
Q.4: With the complicated scheme of CDM funding what do we benefit from them as local government and especially CBO who is dealing with the monitoring and documentation day by day? (Bambang Hartiko, CBO Siwalan Panji, Sidoarjo)

A.4: Up scaling KIPRAH in many locations all over Indonesia is impossible without CDM funding. As it presented before local government budget allocation only cover infrastructure of MRF, yet as we all recognize, sustainability of MRF cannot be achieved without community facilitation. There are many infrastructure that has been built by government that don not run well because lack of community participation. Total amount of the money needed for community facilitation reach 30% of all investment cost. For local government, KIPRAH will lighten the burden of solid waste management as community is empowered to manage their waste. Community will benefit better sanitation and hygiene from KIPRAH.

Q.5: We have encouraged community to separate their waste but the problem comes when we don’t know what to do with abundant styrofoam and broken glasses waste or hazardous waste (eg. batteries). The regulation stated that hazardous waste fall under the responsibility of central government, but for local government to transport all hazardous waste to capital city is not cost effective? (Public Work Department official, Sleman)

A.5: There are some crafter in Klaten that already made a type of manufactured brick from Styrofoam and broken glasses. You can train community to make it, but we don’t know are there any market yet for such thing. Regarding hazardous waste management, there are three solutions. First the simplest approach is to bury them. Second, used battery can be sent back to the manufacturer because taking care of used battery is part of their obligation. The last one is, although is not cost effective, used battery can be send to capital city to be taken care of by central government. (DNA)

ii. Assessment of all comments

PoA CDM KIPRAH is generally welcomed by stakeholders; the only concern is documentation on monitoring at the MRF. CDM Developer needs to develop simple standardized monitoring sheet that can easily implemented at the MRF.

No alteration is needed within project design.

iii. Revisit sustainability assessment

<table>
<thead>
<tr>
<th>Are you going to revisit sustainable development assessment?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td></td>
</tr>
</tbody>
</table>

The project activity is welcome as it would improve sanitation, hygiene, livelihood, and reduce pollutions through up scaling KIPRAH in as many location as the carbon finance could cover.

The following are stakeholders input on monitoring sustainable development indicators:

a. All elements (government, private sectors, NGO, and community) to actively participate on KIPRAH project.

b. Stakeholder awareness on KIPRAH operational status.

c. Community sensitization on waste management on HHs level, waste separation in HHs level would increase work efficiency at MRF.
SECTION D. Sustainable Development Assessment

D.1 Own Sustainable Development Assessment

i. ‘Do no harm’ assessment
None of the 11 criteria was found to be a potential source of harm.

ii. Sustainable development matrix

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mitigation measure</th>
<th>Relevance to achieving MDG</th>
<th>Chosen parameter and explanation</th>
<th>Preliminary score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Standard indicators of sustainable development</td>
<td>If relevant, copy mitigation measure from ‘Do No Harm’ assessment, and include mitigation measure used to neutralize a score of ‘‐’</td>
<td>Check <a href="http://www.undp.org/mdg">www.undp.org/mdg</a> and <a href="http://www.mdgmonitor.org">www.mdgmonitor.org</a> Describe how your indicator is related to local MDG goals</td>
<td>Defined by project developer</td>
<td>Negative impact: score ‘‐’ in case negative impact is not fully mitigated, score ‘0’ in case impact is planned to be fully mitigated No change in impact: score ‘0’ Positive impact: score ‘+’</td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td>Toxic gases due to uncontrolled decay and burning of waste are avoided</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Water quality and quantity</td>
<td></td>
<td>Pollution of water by wild waste dumping avoided</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Soil condition</td>
<td></td>
<td>Contamination of soils by wild waste dumping avoided, soils improved by use of compost</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Other pollutants</td>
<td></td>
<td>Release of harmful substances in waste are avoided by recollection of e.g. batteries</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td></td>
<td>No direct impact</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Quality of employment</td>
<td></td>
<td>MRFs offer good jobs and avoid informal and unhealthy work of waste pickers</td>
<td>+</td>
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</table>
### Livelihood of poor

<table>
<thead>
<tr>
<th>Access to affordable and clean energy service</th>
<th>Living conditions in poor neighborhood improved by waste management</th>
</tr>
</thead>
<tbody>
<tr>
<td>No direct impact</td>
<td>0</td>
</tr>
</tbody>
</table>

**Human and institutional capacity**

<table>
<thead>
<tr>
<th>Human and institutional capacity</th>
<th>Communities learn to organize themselves for implementation of MRFs and resolve their waste problems together</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

**Quantitative employment and income generation**

<table>
<thead>
<tr>
<th>Quantitative employment and income generation</th>
<th>New jobs created in MRFs</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td></td>
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</tbody>
</table>

**Balance of payments and investment**

<table>
<thead>
<tr>
<th>Balance of payments and investment</th>
<th>No direct impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

**Technology transfer and technological self-reliance**

<table>
<thead>
<tr>
<th>Technology transfer and technological self-reliance</th>
<th>Capacity built for production of compost</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

### D.2 Blind Sustainable development matrix

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mitigation measure</th>
<th>Relevance to achieving MDG</th>
<th>Chosen parameter and explanation</th>
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<tbody>
<tr>
<td>Gold Standard indicators of sustainable development</td>
<td>If relevant, copy mitigation measure from ‘Do No Harm’ assessment, and include mitigation measure used to neutralize a score of ‘‐’.</td>
<td>Check <a href="http://www.undp.org/mdg">www.undp.org/mdg</a> and <a href="http://www.mdgmonitor.org">www.mdgmonitor.org</a></td>
<td>Defined by project developer</td>
<td>Negative impact: score ‘‐’ in case negative impact is not fully mitigated, score ‘0’ in case impact is planned to be fully mitigated. No change in impact: score ‘0’ Positive impact: score ‘+’</td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Water quality and quantity</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Soil condition</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
</tbody>
</table>
Facilitator from Borda NGO Network introduced each point of indicators and asked for inputs and suggestions for the score which were then discussed among the participants until a consensus was reached.

The following are short explanations on the comments/justification of the scores of each parameter:

- **Air Quality**
  First comment was that inside the MRF bad smell can occur, but then participants agreed that bad smell from wild dumping and burning waste was much worse. Therefore, a positive score was accorded.

- **Water Quality and quantity**
  The project perceived to minimize waste dumping in the river and prevent leachate generated from illegal waste dumping piles which could infiltrate ground water. Therefore, a positive score was accorded.

- **Soil Condition**
  Participants thought that soil condition would improve from compost product application resulted from waste treatment, therefore, a positive score was accorded.

- **Other pollutant**
  Participants agreed that implementation of MRFs reduces burning of HH waste, which would also occur along with illegal dumping, within the communities. Especially the burning of plastics with the emission of harmful smoke is considered a problem, which would be solved through the MRF. Participants accorded this point a positive score.

- **Biodiversity**
  Participants’ view that the project helps to keep biodiversity by keeping the environment clean and healthy, therefore, a positive score was accorded.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Score</th>
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<td>Other pollutants</td>
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<tr>
<td>Biodiversity</td>
<td>+</td>
</tr>
<tr>
<td>Quality of employment</td>
<td>+</td>
</tr>
<tr>
<td>Livelihood of poor</td>
<td>+</td>
</tr>
<tr>
<td>Access to affordable and clean energy service</td>
<td>0</td>
</tr>
<tr>
<td>Human and institutional capacity</td>
<td>+</td>
</tr>
<tr>
<td>Quantitative employment and income generation</td>
<td>+</td>
</tr>
<tr>
<td>Balance of payments and investment</td>
<td>+</td>
</tr>
<tr>
<td>Technology transfer and technological self-reliance</td>
<td>+</td>
</tr>
</tbody>
</table>
• **Quality of Employment**
  With training and capacity building on MRF managements, participants believed that quality of employment could be achieved, therefore, a positive score was accorded.

• **Livelihood of the poor**
  Participant comments that MRF would open new job opportunity within their community especially for those with low educational training. Since the project also improves sanitation and hygiene, livelihood for the poor who suffer most from the absence of waste management is expected to be upgraded. Therefore, a positive score was accorded.

• **Access to affordable and clean energy service**
  The idea of compost utilization for briquette compost was received well, but the participants emphasized the needs of sufficient research to prove quality of compost briquette, therefore, a neutral score was accorded.

• **Quantitative employment and income generation**
  MRF would open new job opportunity within their community whereas recycle waste and compost sales would increase income generation, therefore, a positive score was accorded.

• **Balance of payments and investment**
  Participants acknowledge that sustainability of MRF operation is assured through cost operative recovery principle, as long as community is committed to pay collection fees, MRF would run well, therefore, a positive score was accorded.

• **Technology transfer and technological self-reliance**
  The project does not involve sophisticated technology. Instead, appropriate technology is applied, therefore, a positive score was accorded.

The outcome of the “own” and the stakeholder’s sustainability assessment was identical with exception of biodiversity which was deemed neutral in the own assessment and positive by stakeholders where stakeholders’ views the project would avoid water and soil contamination.

We conclude that the project is welcome and sustainably indicators are met.

### D.3 Consolidated sustainable development matrix

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mitigation measure</th>
<th>Relevance to achieving MDG</th>
<th>Chosen parameter and explanation</th>
<th>Preliminary score</th>
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<tbody>
<tr>
<td>Gold Standard indicators of sustainable development</td>
<td>If relevant, copy mitigation measure from 'Do No Harm' assessment, and include mitigation measure used to neutralize a score of '-'</td>
<td>Check <a href="http://www.undp.org/mdg">www.undp.org/mdg</a> and <a href="http://www.mdgm.onitor.org">www.mdgm.onitor.org</a> Describe how your indicator is related to local MDG goals</td>
<td>Defined by project developer</td>
<td>Negative impact: score ‘-' in case negative impact is not fully mitigated, score ‘0’ in case impact is planned to be fully mitigated No change in</td>
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<tr>
<td>Impact</td>
<td>Score</td>
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<tr>
<td>---------------------------------</td>
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<td></td>
<td></td>
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<tr>
<td>Positive impact: score ‘+’</td>
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<td></td>
</tr>
<tr>
<td>Impact: score ‘0’</td>
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</table>

<table>
<thead>
<tr>
<th>Category</th>
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</thead>
<tbody>
<tr>
<td>Air quality</td>
<td>+</td>
</tr>
<tr>
<td>Water quality and quantity</td>
<td>+</td>
</tr>
<tr>
<td>Soil condition</td>
<td>+</td>
</tr>
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<td>Other pollutants</td>
<td>+</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>+</td>
</tr>
<tr>
<td>Quality of employment</td>
<td>+</td>
</tr>
<tr>
<td>Livelihood of poor</td>
<td>+</td>
</tr>
<tr>
<td>Access to affordable and clean energy service</td>
<td>0</td>
</tr>
<tr>
<td>Human and institutional capacity</td>
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<tr>
<td>Quantitative employment and income generation</td>
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<tr>
<td>Balance of payments and investment</td>
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</tr>
<tr>
<td>Technology transfer and technological self-reliance</td>
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</table>

**SECTION E. Discussion on Sustainability Monitoring Plan**

Stakeholders agreed that monitoring requirements for CDM would be challenging and that monitoring of the sustainability indicators should not cause unnecessary work, especially because no negative indicators were identified.

It was agreed to keep sustainability monitoring as simple as possible and, where possible, replace direct monitoring of sustainability indicators by monitoring of the general operation of MRFs.
SECTION F. Description of Stakeholder Feedback Round

Annex 1 Participant List

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Instansi</th>
<th>Kontak (Tel, HP, email)</th>
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<tbody>
<tr>
<td>1</td>
<td>Danny Bawum</td>
<td>BP - Kendal Park</td>
<td>081 745 089 927</td>
<td>C-18FTR-LFTP</td>
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<td>2</td>
<td>Sekar Wati</td>
<td>BP - Kendal Park</td>
<td>081 330 837 374</td>
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<tr>
<td>3</td>
<td>Nurlina</td>
<td>BP - Kendal Park</td>
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<td>4</td>
<td>Nurch Hairu</td>
<td>BP - Kendal Park</td>
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<td>Joko Suwita</td>
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The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia
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Annex 3. Statement Letters to Manage and Monitor the Environment

SURAT PERNYATAAN
KESANGGUPAN PENGELOLAAN DAN PEMANTAUAN LINGKUNGAN HIDUP (SPPL)
Nama yang bertanda tangan di bawah ini:

- Nama: I Wayan Sujendra, SE
- Jabatan: Ketua KSM ASRI KARYA
- Alamat: Br. Pegok, Kelurahan Sesetan – Denpasar
- Nomor Telp.: 0361 – 721041 / 08123977610

Selaku penanggung jawab atas pengelolaan lingkungan dari:

- Nama perusahaan / Usaha: Unit Pengolahan Sampah ASRI KARYA
- Alamat perusahaan / Usaha: Br. Pegok, Kelurahan Sesetan – Denpasar
- Nomor Telp./Perusahaan: 0361 – 721041 / 08123977610
- Jenis Usaha / Sifat Usaha: Usaha Kecil (Skala Lingkungan)
- Kapasitas Produksi: 900 kg / hari
- Keperluan: Pengolahan Sampah Rumah Tangga
- Besarnya modal: Bangunan Sarana Pengolahan Sampah
- Perizinan yang dimiliki:
  - Keputusan Kelan Dinus Br. Sewung peruntukan tanah untuk pembagian tempat pengolahan sampah terpadu
  - Surat Keterangan Sifat Usaha tentang kepentingan lahan tempat pengolahan sampah
  - Surat Penyanding tentang persetujuan penggunaan lahan sebagai tempat pengolahan sampah
  - Keputusan Kepala Lingkungan Br. Pegok Nomor 09/KSM- AK/01/09 tentang pembentukan KSM dan Operator FPS (Fasilitas Pengolahan Sampah) terpadu kelurahan sesetan

Keperluan: Pengolahan sampah terpadu 3 R (KIPRAH)
Pendanaan: APBD Kota Denpasar

Dengan ini menyatakan bahwa kami sanggup untuk:

1. Melaksanakan keterlibatan umum dan nentukan membina hubungan baik dengan tetangga sekitar.
2. Menjaga kesehatan, kebersihan dan keindahan di lingkungan usaha
3. Bertanggung jawab terhadap kerusakan dan / atau pemecahan lingkungan yang diakibatkan oleh usaha dan / atau kegiatan tersebut.
4. Bersedia dipantau dan pihak lingkungan dari usaha dan / atau kegiatan oleh pejabat yang berkewenangan.
5. Menjaga kelestarian sumber daya alam dan lingkungan hidup dilokasi dan disekitar tempat usaha dan / atau kegiatan.

SPPL ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya usaha dan / atau kegiatan atau mengalami perubahan lokasi, desain, proses, bahan baku dan / atau bahan penolong.

Menyatakan,

(Rahmat Wiwaha, SE, Msi)
Ketua Desa

(Denpasar, 13 Desember 2010)

Yang tercantum,

(I Wayan Sujendra, SE)
Ketua KSM ASRI KARYA

NIP: 19600824 198603 1 021
SURAT PERNYATAAN
KESANGGUPAN PENGELOLAAN LINGKUNGAN DAN PEMANTAUAN LINGKUNGAN HIDUP (SPPL)
Nomor: 660.3 / COC / 2010

Kami yang bertanda tangan di bawah ini:
• Nama: Priyo Susanto
• Jabatan: Ketua KSM Pandawa Lestari
• Alamat Rumah: Padukuhun Brayut Desa Pandowoarjo Kecamatan Sleman Kabupaten Sleman
• No. Telepon: 0274 899766

Selaku penanggung jawab atas pengelolaan lingkungan dari:
• Nama Perusahaan/Usaha: KSM Pandawa Lestari
• Alamat Perusahaan/Usaha: Padukuhun Jetakan Toino Desa Pandowoarjo
• Jenis Usaha/Sifat Usaha: Pengelolaan Sampah Berbasis Masyarakat
• Kapasitas Produksi: 903 Kg/ hari
• Perlizinan yang Dimiliki:
  - Keputusan Kepala Desa Pandowoarjo No. 07/KPTS/KD/2010 tanggal 23 April 2010 tentang Peruntukan Tanah Kas Desa Untuk Pembangunan Tempat Pengelolaan Sampah Terpadu
  - Keputusan Badan Permusyawaratan Desa Pandowoarjo No. 28/SPH/PD/PH/2010 tentang Persetujuan Rancangan Keputusan Kepala Desa Pandowoarjo No. 07/KPTS/KD/2010
  - Keterangan IPT, TPST. Sedang dalam proses No. 410/77/2010 tanggal 30 September 2010
  - Keputusan Kepala Desa Pandowoarjo No 09/KPTS.KD/2010 tanggal 1 Juni 2010 Tentang Pembentukan KSM dan Operator MRF Tempat Pengelolaan Sampah Terpadu (TPST) Desa Pandowoarjo
• Keperluan: Pengelolaan Sampah Mandiri 3 R (KIPRAH)
• Pendanaan: APBD/ DAK

Dengan ini menyatakan bahwa kami sanggup:
1. Melakukan pengelolaan lingkungan sesuai dengan yang tercantum dalam matrik upaya pengelolaan lingkungan dan upaya pemantauan lingkungan (terlampir)
2. Melaksanakan ketertiban umum dan senantiasa membina hubungan baik dengan tetangga sekitar
3. Menjaga kebersihan, kebersihan dan keindahan di lingkungan usaha
4. Beritangan jawab terhadap kerusakan dan/atau pengeolaman lingkungan yang diakibatkan oleh usaha dan/ atau kegiatan
5. Dipantau dampak lingkungan dari usaha dan/atau kegatianannya oleh pejabat yang berwenang
6. Menjaga kelestarian sumber daya alam dan lingkungan hidup di lokasi dan di sekitar tempat usaha dan/atau kegiatan
7. Melaporkan hasil pengelolaan lingkungan yang tercantum dalam matrik upaya pengelolaan lingkungan dan upaya pemantauan lingkungan (terlampir), kepada Kepala Kantor Lingkungan Hidup Kabupaten Sleman sekurang-kurangnya 12 (dua belas) bulan sekali
8. Bertanggung jawab sesuai dengan peraturan perundangan-undangannya yang berlaku, apabila kami lalai untuk melaksanakan pernyataan pada angka 1 sampai angka 7 di atas

SPPL ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya usaha dan/atau kegiatan atau mengatasi perubahan lokasi, desain, proses, bahan baku dan/atau bahan penolong.

Demikian Surat Pernyataan ini kami buat dengan sesungguhnya untuk dapat dipergunakan sebagaimana mestinya.

Menyetujui,
Kepala Kantor Lingkungan Hidup
Kabupaten Sleman

[Signature]

Pelaksana:
[Signature]

Demikian surat ini dibuat dalam bahasa Indonesia yang mengikuti contoh yang ada di bawah ini.

Dengan ini menyatakan...
SURAT PERNYATAAN KESANGGUPAN PENGELOLAAN DAN PEMANTAUAN LINGKUNGAN HIDUP (SPPL)

Kami yang bertanda tangan di bawah ini:
Nama: Djody Setyo Wibowo
Jabatan: Ketua KSM Rumah Kompos VIPAMAS
Alamat: RW 08 Perum Villa Pamulang Mas, Kelurahan Bambu Apus, Kecamatan Pamulang Kota Tangerang Selatan.
No. Telp: 081310338171

Selaku penanggung jawab atas pengelolaan lingkungan dari:
Nama Perusahaan/Usaha: KSM Rumah Kompos VIPAMAS
No. Telp Perusahaan: -
Jenis Usaha/ cabang usaha: Pengolahan Sampah
Kapasitas Produksi: 5342 lb/hari
Perizinan yang dimiliki: - Rekomendasi Ijin Lingkungan dari Kec. Pamulang.
- Site Plan Perumahan Villa Pamulang Mas
- Site Plan TPST KSM Rumah Kompos VIPAMAS.

Keperluan: Untuk mengikuti persyaratan yang berlaku
Besarnya modal: Rp. 534,000,000,-

Dengan ini menyatakan bahwa kami sanggup untuk:

a. Melaksanakan keterbitan umum dan sensansi membina hubungan baik dengan tetangga sekitar.
b. Menjaga kesehatan, kebersihan dan keindahan di lingkungan usaha
c. Bertanggung jawab diikhatkan oleh usaha dan/atau kegiatan tersebut
d. Bersedia dipantau dampak lingkungan dari usaha dan/atau kegiatannya oleh pejabat yang bervenang
e. Menjaga kelestarian Sumber Daya Alam dan lingkungan hidup di lokasi dan sekitar tempat usaha dan/atau kegiatan
f. Apabila kami lalai untuk melaksanakan pernyataan pada angka 1 sampai angka 5 di atas, kami bersedia bertanggung jawab sesuai dengan peraturan perundang-undangan yang berlaku.

SPPL ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya usaha dan/atau kegiatan atau mengalami perubahan lokasi, desain, proyek, bahkan baku dan/atau bahan penolong.

Pamulang, 25 November 2010

Menyetujui,
Kepala Bidan Lingkungan Hidup
Kota Tangerang Selatan

Drs. H. TOTO SUDARTO, M.Si
Pejabat Tk.I (Jv/b)
NI.K. 19660728 198503 1 004

Yang Menyatakan,
Ketua KSM Rumah Kompos
VIPAMAS

/Djody Setyo Wibowo
SURAT PERNYATAAN KESANGGUPAN PENGELOLAAN
 DAN PEMANTAUAN LINGKUNGAN HIDUP (SPPL)

Kami yang bertanda tangan di bawah ini:
Nama: 
Jabatan: 
Alamat: 
No. Telp: 

Selaku penanggung jawab atas pengelolaan lingkungan dari:
Nama Perusahaan/Usaha: 
Alamat Perusahaan/Usaha: 
No. Telp Perusahaan: 
Jenis Usaha/Tempat usaha: 
Kapasitas Produksi: 
Perizinan yang dimiliki: 

Dengan ini menyatakan bahwa kami bersanggup untuk:
1. Melaksanakan keterlibatan umum dan senantiasa membina hubungan baik dengan tetangga sekitar.
2. Menjaga kesehatan, kebersihan dan keindahan di lingkungan usaha
3. Bertanggung jawab diikuti oleh usaha dan/atau kegiatan tersebut
4. Bersedia dipantau dampak lingkungan dari usaha dan/atau kegiatannya oleh pejabat yang berwenang
5. Menjaga kelestarian Sumber Daya Alam dan lingkungan hidup di lokasi dan disekitar tempat usaha dan/atau kegiatan
6. Apabila kami lalui untuk melaksanakan pernyataan pada angka 5 sampai angka 6 di atas, kami bersedia bertanggung jawab sesuai dengan peraturan perundang-undangan yang berlaku.

SPPL ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya usaha dan/atau kegiatan atau mengalami perubahan lokasi, desain, proses, bahan baku dan/atau bahan penolong.

Menyetujui,
Kepala Badan Lingkungan Hidup
Tangerang Selatan

[Signature]

Yang Menyatakan,
Ketua KSM Griya Renik

[Signature]

Setu, 14 October 2010
Grant No. 105813-001

The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia

SURAT PERNYATAAN KESANGGUPAN PENGELOLAAN
DAN PEMANTAUAN LINGKUNGAN HIDUP (SPPL)

Kami yang bertanda tangan dibawah ini:

- Nama : Maman C Kartawijaya
- Jabatan : Ketua KSM SEHATI
- Alamat : Jln. Anturium BMI A.9 No. 9 Ciracas Serang
- Nomor Telepon : 0254 – 207006 HP. 081382098775

Selaku penanggung jawab atas pengelolaan lingkungan dari:

- Nama Perusahaan / Usaha : KSM SEHATI
- Alamat Perusahaan / Usaha : Jln. Raya Sepaung Km 1 Serang
- Nomor Telp. Perusahaan : 0254 – 207006 HP. 081382098775
- Jenis / Sifat Usaha : Pengolahan Sampah
- Kapasitas Produksi : 75.000 Kg. Per Bulan
- Persyaratan yang dimiliki : SK, KSM
- Keperluan : Kebersihan Lingkungan
- Besar Modal : Rp. 10.000.000,-

Dengan ini menyatakan bahwa kami sanggup untuk:

1. Melaksanakan ketertiban umum dan senantiasa membina hubungan baik dengan tetangga sekitar.
2. Menjaga keselamatan, kebersihan dan keindahan lingkungan usaha.
3. Bertanggung jawab terhadap kerusakan dan / atau pencemaran lingkungan yang diakibatkan oleh usaha dan / atau kegiatan tersebut.
4. Bersedia dipianat dan dampak lingkungan dari usaha dan / atau kegiatanya oleh pejabat yang berwenang.
5. Menjaga kelestarian sumber daya alam dan lingkungan hidup di lokasi dan sekitar tempat usaha dan / atau kegiatan.
6. Apabila kami lalai untuk melakukan pernyataan pada angka 1 sampai angka 5 diatas, kami bersedia bertanggung jawab sesuai dengan peraturan perundang-undangan yang berlaku.
Keterangan:

a. Dampak langsung yang terjadi:
1. Sampah Berserakan
2. Tidak Nyaman
3. Bau kurang sedap
4. Mencemari Lingkungan
5. Menimbulkan wabah

b. Pengelolaan dampak lingkungan yang dilakukan:
1. Sampah Basah diolah menjadi Kompos
2. Sampah Kering didaur Ulang
3. Subagan sampah Kering dibuat Kerajinan
4. Sampah Residu dan Sejenisnya dibuang ke TPA Cilowong
5. Penanganan bau dengan cara airasi pakai peralatan airator

SPPL ini berlaku sejak tanggal ditetapkan sampai dengan berakhirnya usaha dan/atau kegiatan atau mengalami perubahan lokasi, desain, proses, bahan baku dan/atau bahan penolong.

Menyetujui,
Kepala Kunker Lingkungan Hidup
Kota Serang

[Signature]

Serang, November 2019
Yang Menyetujui

[Signature]

Mamam C Kartawijaya
Annex 4. Letter of Acceptance_PoA KIPRAH

Jakarta, 24 May 2011

To:
Borda NGO Network
Kayen No 176, Jalan Kalirungan km 6.5, Yogyakarta 55283

As authorized representative of the National Committee on CDM (Designated National Authority - DNA for the Republic of Indonesia) under the Kyoto Protocol, I hereby approve the “PoA KIPRAH Community Based Integrated Waste Management Project, Indonesia” at Republic of Indonesia, as a Clean Development Mechanism Programme of Activities (CDM PoA) and confirm that:

(i) The Republic of Indonesia has ratified the Kyoto Protocol on 28 July 2004;
(ii) The Republic of Indonesia participates voluntarily in the Clean Development Mechanism (CDM);
(iii) The Project will contribute to the sustainable development in Indonesia.

As authorized representative of the DNA of the Republic of Indonesia under the Kyoto Protocol, I further authorized the participation of Borda NGO Network as Project Participant as well as Coordinating/Managing Entity in the CDM PoA. Therefore I request the CDM Executive Board to issue and allocate CERs for any verified greenhouse gas reductions resulted in from the Project based on the method directed by the Project Participants.

Sincerely yours,

Ir. Rachmat Witoelar
Executive Chair of National Council on Climate Change as the Chairman of the National Committee on CDM of the Republic of Indonesia

CC:
- Ministry of Environment, Republic of Indonesia
- The Executive Board of the CDM
POA PRELIMINARY FINDINGS REPORT

BORDA e.V.

KIPRAH COMMUNITY BASED INTEGRATED WASTE MANAGEMENT PROJECT, INDONESIA

Report No: 8000379984 – 10/64 – PoA

Date: 2010-12-17
The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia

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<td>[x] CAR</td>
<td>[ ] CL</td>
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**Description of finding**  
Describe the finding in unambiguous style; address the context (e.g. section)

Section A.1 of the PoA-DD didn’t include date and version of the document.

**Corrective Action #1**  
This section shall be filled by the PP. It shall address the corrective action taken in details.

Date and Version of the PoA-DD were added.

**DOE Assessment #1**  
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

However, date version shall not be formatted as “today’s date”. Kindly revise the formatting.

**Corrective Action #2**  
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #2**  
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**

**Conclusion**  
Tick the appropriate checkbox

- [ ] To be checked during the first periodic verification
- [ ] Appropriate action was taken
- [ ] Project documentation was corrected correspondingly
- [ ] Additional action should be taken
- [ ] The project complies with the requirements

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<th>[ ] real case CPA-DD</th>
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<td>[x] CL</td>
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**Description of finding**  
Describe the finding in unambiguous style; address the context (e.g. section)

1. Figure 1 “The general operating and implementing framework of PoA” needs clarification regarding  
   a. From what financial sources BNN supports “…partial funding of operation costs”, e.g., CDM benefit?  
   b. Whether contracts will be signed also between BNN and CBO as per context below the figure and onsite visit interviews.

2. More explanation shall be given w.r.t. CDE and Facilitator’s functions and responsibilities.

3. “All three parties agree on … CAP” shall specify which three parties.

4. “Each household is asked for a monthly fee ranging between Rp
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<th>generic CPA-DD</th>
<th>real case CPA-DD</th>
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<td>CAR</td>
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<tr>
<td>5,000-7,000” shall be confirmed, since it is not sure w.r.t. the above context “is decided later on by communities themselves”.</td>
<td></td>
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<td>5. “elevated costs caused by the application of aerobic composting technology” shall be explained how the operation costs will be increased, and shall be funded by carbon credits.</td>
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<td>6. <strong>As per PoA requesting registration uploading step 4, please include an estimation of annual average emission reductions of the 1st CPA over the first crediting period in section A.2 of the PoA-DD.</strong></td>
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<td><em>This section shall be filled by the PP. It shall address the corrective action taken in details.</em></td>
<td></td>
</tr>
<tr>
<td>1. Financial sources of BNN supports and requirement to sign contract between BNN and CBO were clarified</td>
<td></td>
</tr>
<tr>
<td>2. It was explained what are the CDE’s and Facilitator’s roles and responsibilities</td>
<td></td>
</tr>
<tr>
<td>3. The three parties which agree on CAP were specified.</td>
<td></td>
</tr>
<tr>
<td>4. The explanation on the amount of monthly fee were added.</td>
<td></td>
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<tr>
<td>5. It was explained why “aerobic composting” results in ‘elevated costs’ compared to the pilot plants and the increased costs are funded by carbon credits. How the usage of carbon funding under this PoA will assure the sustainability of the project was further explained.</td>
<td></td>
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<tr>
<th><strong>DOE Assessment #1</strong></th>
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<td><em>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</em></td>
<td></td>
</tr>
<tr>
<td>1. <strong>Not OK. Figure 1 has not clarified the followings:</strong></td>
<td></td>
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<tr>
<td>a. From what financial sources BNN supports “...partial funding of operation costs”, e.g., CDM benefit?</td>
<td></td>
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<tr>
<td>b. Whether contracts will be signed also between BNN and CBO as per context below the figure and onsite visit interviews.</td>
<td></td>
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<tr>
<td>2. OK. More explanation has been given w.r.t. CDE and Facilitator’s functions and responsibilities.</td>
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<tr>
<td>3. OK. “All three parties agree on ... CAP” has been specify as “the community, local government, and BNN”.</td>
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<tr>
<td>4. OK. The statement has been revised and clarified that the fee will be “tentative finally decided by the decision of the community.”</td>
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<tr>
<td>5. <strong>Not OK. The revision only refers to that “compost is turned regularly and that the monitoring plan is applied” increases the operation costs, which does not distinguish clearly with the “pilot projects”, e.g., does the “pilot project’ not include composting at all? Or except turning the compost, e.g., waste sorting, shredding, compost packaging, etc. are the same for “pilot projects” and the proposed CDM projects? Further clarification is necessary.</strong></td>
<td></td>
</tr>
<tr>
<td>6. <strong>Please respond.</strong></td>
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<table>
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### Related DDs

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<td><strong>Doe Assessment #2</strong>&lt;br&gt;The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</td>
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### Related Checklist(s)

**Conclusion**<br>
Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

### Description of finding

Describe the finding in unambiguous style; address the context (e.g. section)

1. Section A.3 of the PoA-DD shall clarify the Cooperation/managing entity (CME) and project participants, since the CME was introduced as “BORDA NGO Network” but project participants were stated as “BORDA Indonesia”, “BORDA e.V., Germany” and “atmosfair gGmbH”, all which are included in the “BORDA NGO Network”. Please clarify the relationship among all and specify CME and PPs accordingly.

Correspondingly, Annex 1 of the PoA-DD shall be revised consistently to section A.3 of the PoA-DD and the MoC.

2. Besides, duly filled MoC shall be provided, considering the following requirements:
   
   (1) The MoC confirms that the CME of the PoA communicates with the CDM Executive Board;
   
   (2) The CME is either sole or joint focal point for each area of communication;
   
   (3) Number of joint focal points for the PoA is no more than 5, or equal to the number of host Parties if greater than 5.
   
   (4) No modifications to the template/form have been made;
   
   (5) Each document (MOC statement including the Annex 1) have been clearly dated;
   
   (6) Title of the project and names of CME and project participants and focal points have been fully consistent with those indicated in all other project documentation submitted at the request for registration stage (e.g., PDD, LOAs, etc.);
   
   (7) Focal point scopes have been clearly and correctly indicated;
   
   (8) Contact details and specimen signatures of focal point entities including those of project participants in Annex 1 have been...
Corrective Action #1
This section shall be filled by the PP. It shall address the corrective action taken in details.

It was clarified that BORDA NGO Network consist only of BORDA Indonesia and the Indonesian NGO’s (BEST, BALIFOKUS, and LPTP) excluding atmosfair gGmbH. Borfa e.V., Germany was added as CME. Thus making three CMEs of the PoA; BORDA NGO Network (BNN), Borda e.V., Germany, and atmosfair gGmbH.

Borda Indonesia is replaced by BNN as PP. The CMEs are also the PPs.

DOE Assessment #1
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

1. Not OK. As per PoA Procedures, only one entity shall be the CME, and communicates to the CDM Executive Board, hence please revise the CME and PP composition.
2. Not OK. MoC shall be provide.

Corrective Action #2
This section shall be filled by the PP. It shall address the corrective action taken in details.

DOE Assessment #2
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

Related Checklist(s)

Conclusions
Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

Description of finding
Describe the finding in unambiguous style; address the context (e.g. section)

The host country (Indonesia) DNA and Annex I country (Germany) letters of Approvals should be provided. (Cp EB-47, Annex-29, para 8).

Please consider the following before submitting LoAs.

1. Coordinating/managing entity should obtain letters of authorization of its coordination of the PoA from each Host Party.
2. Letter of approval should confirm that the project is a ‘programme of activities’
3. Letter of approval should confirm exact PoA Title, all PP names
### Finding

**Related DDs**

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<tr>
<td>PoA-A4</td>
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</table>

**Finding**

- listed in the PoA-DDs.
- 4. **Letter of approval should confirm corresponding party is a Party to the Kyoto Protocol.**
- 5. **Letter of approval should confirm participation is voluntary.**

### Corrective Action #1

This section shall be filled by the PP. It shall address the corrective action taken in details.

### DOE Assessment #1

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

### Related Checklist(s)

**Conclusion**

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

### Description of finding

Describe the finding in unambiguous style; address the context (e.g. section)

1. In section A.4.1.2 of the PoA-DD, the map given shall be specified with highlights of the PoA boundary; besides, title shall be given to the map.

2. **There is no confirmation in section A.4.1.2 of the PoA-DD on whether all applicable national and/or sectoral policies and regulations within Indonesia have been reflected in determination of baseline. Further information is necessary.**

### Corrective Action #1

The old map was replaced with a new map, which better indicates the boundaries of the PoA. A caption was added to the map.

### DOE Assessment #1

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

1. **Not OK.** The map has been revised to be clearer. However, whether all 17,508 islands will be covered by the PoA implementation is unclear, in case only major islands are covered, please specify.

2. **Please respond.**

### Related Checklist(s)

**Conclusion**

- To be checked during the first periodic verification
### Related DDs

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- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

### Finding

#### Description of finding

Describe the finding in unambiguous style; address the context (e.g. section)

1. Section A.4.2.1 has described the technology employed, but has not defined a typical CPA. Further information is necessary.
2. Besides, the technology described has been a bit deviating from the observation by the auditors during onsite visit. Further clarification is necessary.
3. Furthermore, whether the CPA will involve alteration of existing MRFs are not clearly described.

#### Corrective Action #1

This section shall be filled by the PP. It shall address the corrective action taken in details.

#### DOE Assessment #1

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

#### Related Checklist(s)

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

### Finding

#### Description of finding

Describe the finding in unambiguous style; address the context (e.g. section)

In section A.4.2.2 of the PoA-DD, a full list of eligibility criteria definition for inclusion of a project activity as a CPA under the PoA should be included, which also includes criteria for demonstration of additionality of the CPA, and the type and/or extent of information (e.g. criteria, indicators, variables, parameters or measurements) that shall be provided by each CPA in order to ensure its eligibility. Inter alia, the
### Related DDs

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</table>

#### PoA-DD
- (1) Methodology applicability requirement of the CPA
- (2) Other methodological / tool requirement of the CPA
- (3) Technical requirement of the CPA, including procurement
- (4) Geographic requirement of the CPA boundary
- (5) De-bundling criterion for the CPA
- (6) Confirmation of no double-counting
- (7) Public funding requirement of the CPA
- (8) CPA start date not before PoA webhosting date
- (9) CPA crediting period not exceed the PoA end date
- (10) Local stakeholder consultation prior to inclusion of the CPA
- (11) Environmental analysis requirement of the CPA
- (12) The additionality assessment criteria for each CPA (as per E.5 particularly in E.5.2 of the PoA-DD are met
- (13) Monitoring requirement of the CPA, including scrapping
- (14) The CPA shall be approved by the coordinating entity
- (15) Other eligibility criteria applicable for CPA implementation
- (16) All supporting documents required are provided.

This full list shall be included also in section B.2 of the generic CPA-DD. Demonstration of additionality criteria shall be described in section E.5 of the PoA-DD and B.3 of the generic CPA-DD.

### Corrective Action #1

**This section shall be filled by the PP. It shall address the corrective action taken in details.**

- Missing criteria have been added to the PoA-DD section A.4.2.2 and to section B.2 of both generic CPA-DDs.

**Detailed explanations:**
- (2) No criteria referring to other requirements have been added.
- (5) No de-bundling check is necessary (see A.4.4.1.iii, since ER of MRFs are less the 1% of the SSC threshold).
- (6) Double counting will be excluded by a guarantee within the contracts signed with each MRF
- (7) No public funding requirement is specified
- (10) No local stakeholder consultation criterion is included since the LSC was conducted on the PoA level.
- (13) No monitoring requirements are specified. Scapping requirements does not seem to be applicable to the PoA

The additionality requirements have not been changed.

### DOE Assessment #1

**The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.**

**Assessment pending, need discussion.**

### Related Checklist(s)

<p>| Conclusion | To be checked during the first periodic verification |</p>
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**Finding**
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

<table>
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<td>☐ CAR</td>
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**Description of finding**
Describe the finding in unambiguous style; address the context (e.g. section)
- In section A.4.3 of the PoA-DD,
  1. The “Act of The Republic of Indonesia Number 18, Year 2008, Regarding Waste Management” shall be provided as supporting document.
  2. Footnote 4 link does not exist.

**Corrective Action #1**
This section shall be filled by the PP. It shall address the corrective action taken in details.
- 1. The “Act of The Republic of Indonesia Number 18, Year 2008, Regarding Waste Management” was provided.
- 2. Footnote 4 link was replaced.
- 3. In addition, link 5 in section A.4.3. and link 13 in section E.5.1. were also updated due to changes on the website and supplemented by the document “DEWATS Project List”, which will be provided to TUV Nord.

**DOE Assessment #1**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.
- 1. OK. The “Act of The Republic of Indonesia Number 18, Year 2008, Regarding Waste Management” has been provided as supporting document.
- 2. Not OK. Revised Footnote 4 link still does not exist.
- 3. Not OK. Footnote 5 has been updated but footnote 13 has been deleted and now footnote 14 mentions the “DEWATS Project List”, please rearrange the footnotes accordingly.

**Corrective Action #2**
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #2**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**
- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements
### Description of finding

*Describe the finding in unambiguous style; address the context (e.g. section)*

In section A.4.4.1 of the PoA-DD,

1. The record keeping system shall be provided to DOE for crosschecking;
2. BNN shall also confirm no double counting of CERs of the same CPA/MRFs under other CDM or other PoAs;
3. “The PoA as a whole will not pass the small scale limit of an annual reduction of 60,000t CO2e” shall be clarified;
4. It has not been demonstrated that the SSC-CPA included in the PoA is not a de-bundled component of another CPA or CDM PA according to EB54 Annex13;
5. There are no procedures identified for data management regarding storage area of records and how to process performance documentation, as well as whether the data archiving will be kept for the whole crediting period + 2 years.
6. There is no provision to ensure that the CPA operators are aware of and have agreed that their activity is being subscribed to the PoA.
7. The management plan has not made provisions for meeting training and maintenance needs of the implementation of the PoA.

### Corrective Action #1

*This section shall be filled by the PP. It shall address the corrective action taken in details.*

1. The record keeping system is provided to the DOE attached to this report. See the file “Database” (Password is ‘password’) and click on DESWAM (Decentralized Solid Waste Management. All MRFs will be recorded here with GPS location, the corresponding CPA, etc.
2. It was elaborated on BNN’s actions to avoid double counting. BNN confirms that no double counting of CER’s will occur.
3. The sentence “The PoA as a whole will not pass the small scale limit of an annual reduction of 60,000t CO2e” was deleted and replaced with: No de-bundling check is necessary (see A.4.4.1.iii, since ER of MRFs are less the 1% of the SSC threshold).
4. see 3.
The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia

<table>
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</table>

**DOE Assessment #1**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (warf, 3rd, etc.) shall be added.

1. **Not OK.** The record keeping system DESWAM has been provided, however it has to be clarified that at least why the CPA 1 was not included in the database, besides, all necessary information that will be included in the database shall be included in the database design and PoA-DD;

2. **Not OK.** It shall be one of the eligibility criteria, in meantime, there are other similar PoAs within Indonesia under validation, please clarify how to distinguish the KIPRAH CPAs and MRFs with the other one, e.g., unique identification of MRFs, GPS location etc.

3. **Not OK.** Section A.4.4.1 of the PoA-DD does not specify the evidence and calculation on each MRF will have less than 1% ER of the SSC threshold.

4. **Not OK.** See point 3.

5. -7. Please respond.

**Corrective Action #2**
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #2**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (warf, 3rd, etc.) shall be added.

**Related Checklist(s)**

**Conclusion**
Tick the appropriate checkbox
- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements
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**Description of Finding**
Describe the finding in unambiguous style; address the context (e.g. section)

In section A.4.4.2 of the PoA-DD, the proposed sampling method is not sufficiently described by using statistically sound sampling procedure, further information shall be given.

**Corrective Action #1**
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

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**Description of Finding**
Describe the finding in unambiguous style; address the context (e.g. section)

1. In section A.5 of the PoA-DD, public funding is used, an affirmation should be provided that such funding does not result in a diversion of Official Development Assistance (ODA) and is separate from and is not counted towards the financial obligations of those Parties (3/CMP.1, Annex, Appendix B, paragraph 2(f)).
2. Besides, as per PoA registration uploading requirement step 3, PP shall confirm whether there are any bilateral or multilateral fund project participants involved in the PoA.

**Corrective Action #1**
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Corrective Action #2**
This section shall be filled by the PP. It shall address the corrective action.

1. Not OK. There was no specific statement mentioned in section A.4.5 saying that the project funding does not lead to diversion of ODA. Besides, there are several funding mentioned and which are directly used for this PoA shall be clarified.
2. Please respond.
### DOE Assessment #2

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

### Related Checklist(s)

**Conclusion**

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

---

### DOE Assessment #1

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Corrective Action #1**

The start date of lifetime was changed to 01.April 2011 which is the estimated registration submission date.

**Related Checklist(s)**

**Conclusion**

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements
# Related DDs

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## Description of Finding

Describe the finding in unambiguous style; address the context (e.g. section)

In section C of the PoA-DD, clarification is requested w.r.t. the followings:

1. During onsite visit interview, it has been observed an updated law rather than “Indonesia Environmental Management Law No 23 Year 1997” has come into effect and the project shall apply the new law, please provide the information regarding the new law and revise the section accordingly.
2. EIA corresponding documents need to be provided to substantiate the demonstration on CPA-level.
3. Some inconsistencies have been found during onsite interviews, e.g., “waste is treated in the same day as waste load” but not on Sunday, waste residues were not “immediately transport... to landfill” but after some weeks. Please clarify.
4. Transboundary environmental impacts are not described in the analysis in section C.2 of the PoA-DD.

## Corrective Action #1

This section shall be filled by the PP. It shall address the corrective action taken in details.

1. Explanation regarding new law was added.
2. Statement of Environmental Management and Monitoring Capability which represent EIA for small scale low impact were provided.

## DOE Assessment #1

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

1. Not OK. Indonesia Environmental Management Law No 32 Year 2009 has not been corrected added in section C.2 and C.3, besides, it shall be provided with necessary English translation regarding the referenced paragraph.
2. Not OK. Statement of Environmental Management and Monitoring Capability has not been provided.
3. And 4. Please respond.

## Corrective Action #2

This section shall be filled by the PP. It shall address the corrective action taken in details.

## DOE Assessment #2

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

## Related Checklist(s)

**Conclusion**

Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements
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### Description of finding
Describe the finding in unambiguous style; address the context (e.g. section)

In section D.1 of the PoA-DD, following issues need clarifications:

1. The justification on why the local stakeholder consultation is done at PoA level and whether it is representative to all users and stakeholders that will be influenced by the PoA is not sufficiently described.
2. The PoA-DD does not include description on whether a stakeholder consultation process is required by regulations/laws in the host country with sufficient evidences.
3. Besides, the detailed stakeholder meeting report has not yet been provided to DOE.

### Corrective Action #1
This section shall be filled by the PP. It shall address the corrective action taken in details.

It was explained why stakeholder consultation were done at PoA Level and stakeholder meeting report was provided.

### DOE Assessment #1
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

1. OK. The justification on why the local stakeholder consultation is done at PoA level has been sufficiently described and is deemed appropriate.
2. Please respond in Corrective Action 1.
3. OK. The detailed stakeholder meeting report has been provided and is deemed appropriate.

### Related Checklist(s)

<table>
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- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

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### Related DDs
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<td>PoA-E1</td>
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### Description of finding
Describe the finding in unambiguous style; address the context (e.g. section)

In section E.2 of the PoA-DD, methodology was misspelt as “AMS-F.III”, which shall be corrected. Besides, version of the methodology was not indicated in the generic CPA-DD.

### Corrective Action #1
This section shall be filled by the PP. It shall address the corrective action taken in details.

The spelling of “AMS-F.III” was corrected to AMS.III.F and in the generic CPA the methodology was stated under A.4.

### DOE Assessment #1
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE

Section E.2 was reviewed; spelling was corrected.
### Finding: PoA-E1

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**Related Checklist(s)**

**Conclusion**

Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

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### Finding: PoA-E2

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**Description of finding**

Describe the finding in unambiguous style; address the context (e.g. section)

The applicability criteria of the methodology, the applied tools or any other methodology component are not referred in the PoA-DD and generic CPA-DD and therefore not discussed. Please include the discussion of the applicability criteria in the relevant sections, e.g., E.2 of the PoA-DD.

**Corrective Action #1**

This section shall be filled by the PP. It shall address the corrective action taken in details.

Corrected accordingly in the PoA-DD. **Where in the CPA-DD should this be addressed?**

**DOE Assessment #1**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

The PoA-DD was reviewed and following was observed:

- Not all applicability criteria are referred and discussed, i.a. para 8. Therefore revision is necessary.

**Corrective Action #1**

This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

---

**Related Checklist(s)**

**Conclusion**

Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements
### Related DDs

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### Description of finding

*Describe the finding in unambiguous style; address the context (e.g. section)*

The statement “The project will avoid methane from anaerobic decay of organic waste” to discuss the project’s spatial boundaries of the project is not sufficient. All GHG within the CPA boundary shall be listed as per the methodology. Therefore revision is necessary (PoA- DD section E3; generic CPA-DD section B4).

### Corrective Action #1

*This section shall be filled by the PP. It shall address the corrective action taken in details.*

A table was added to PoA-DD section E.3 and generic CPA-DD section B.4 listing all GHG within the SSC CPA boundary.

### DOE Assessment #1

*The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*

The table added in the PoA-DD was reviewed. The GHGs included in the baseline and the project scenario are correct.

### Related Checklist(s)

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### Related DDs

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### Description of finding

*Describe the finding in unambiguous style; address the context (e.g. section)*

In section E.4 of the PoA-DD, the project applies the Additionality Tool and therefore defines following alternatives:

CPA implemented as Non-CDM and Continuation of the current situation (no project activity undertaken).

Other possible alternatives should be discussed. For example during onsite visit it was observed that MRFs were already implemented.

### Corrective Action #1

*This section shall be filled by the PP. It shall address the corrective action taken in details.*

No alternative added but further explanation given.

1. Alternative – CPA implemented as Non-CDM: this includes the MRFs observed during onsite-visit. The few already existing MRFs, which already apply aerobic composting, do so because they are operating with the support of BNN and are given financial support from BNN as they function as pilot plants for the KIPRAH CDM project. The financial support is necessary, because aerobic composting represents higher as described in section A.2.

   **Where in the CPA-DD should this be addressed?**
### Finding

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<td><strong>Finding</strong></td>
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In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

Improvement is sufficient to describe that the alternative CPA implemented as non-CDM includes the MRFs. Nevertheless, alternatives like other biological treatments or incineration have to be discussed.

### Corrective Action #2

This section shall be filled by the PP. It shall address the corrective action taken in details.

### DOE Assessment #2

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

### Related Checklist(s)

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<td>The project complies with the requirements</td>
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### Description of finding

Describe the finding in unambiguous style; address the context (e.g. section)

For the baseline estimation the Indonesian Domestic Solid Waste Statistics 2008 was taken into account.

According to the methodology AMS.III.F version 8 the location and characteristics of the disposal site of the biomass in the baseline condition shall be known, in such a way as to allow the estimation of its methane emissions.

Clarification is requested if the baseline estimation follows this applicability criteria.

### Corrective Action #1

This section shall be filled by the PP. It shall address the corrective action taken in details.

The baseline scenario was changed in the adapted version of the PoA-DD, the domestic waste statistics are only kept as supplementary material.
The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia

<table>
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**DOE Assessment #1**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

For the baseline it is assumed that the waste would be brought to an unmanaged waste disposal site with heights below 5 meters.

The statement that this assumption results in a less emission reduction instead of using the assumption of waste piles above 5 meters (MCF of 0.4 instead of 0.8) is correct but it is not substantiated with documented evidences. It shall be substantiated that within the project scenario the waste would be brought to an unmanaged waste disposal site with heights below 5 meters. Additional clarification is requested with documented evidences that this assumption is also applicable and conservative over the entire crediting period.

Clarification is requested why a MCF factor of 0.4 is applicable to a waste pile height below 5 meters (acc. To the tool SWDS which have a depths of less than 5 meters).

Furthermore clarification is requested if the baseline approach is in line with the following criteria of the methodology AMS.III.F version 8 and the Tool to determine methane emissions avoided from the disposal waste at a solid waste disposal site respectively.

“...the location and characteristics of the disposal site of the biomass in the baseline condition shall be known, in such a way as to allow the estimation of its methane emissions.”

The tool is applicable where the solid waste disposal site ... can be clearly identified.”

**Corrective Action #2**
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #2**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**

- [ ] To be checked during the first periodic verification
- [ ] Appropriate action was taken
- [ ] Project documentation was corrected correspondingly
- [ ] Additional action should be taken
- [ ] The project complies with the requirements
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### Description of finding
*Describe the finding in unambiguous style; address the context (e.g. section)*

The additionality demonstration of the CPA in section E.5 of the PoA-DD is not correctly using barrier analysis as per EB50 Annex 13, e.g., “management barrier” does not belong to one specific barrier in the Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

### Corrective Action #1
*This section shall be filled by the PP. It shall address the corrective action taken in details.*

Apart from specific barriers, attachment A to appendix also mentions “other barriers”. The expression “management barrier” could be changed to “organizational capacity barrier” which is given as an example in the best practise examples (annex 14 of the 12th meeting report of the small scale working group).

### DOE Assessment #1
*The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*

Investment barrier:
Clarification is requested if the investment barrier can be considered as a barrier taken into account that a financially more viable alternative to the project activity would have led to higher emissions and that the barrier has not a clear direct impact on the financial returns. The PP shall substantiate all the statement (30 % of hardware cost, 7000US$,...) by independent sources of data.

Organizational capacity barrier:
Please provide evidence 11 to verify this barrier. Furthermore please substantiate with documented evidences that the DEWATS projects can be used for comparison.

Technological barrier:
If existence of a barrier is substantiated only by the opinions of the PP, this barrier shall not be considered as substantiated adequately. Therefore barrier shall be substantiated with independent sources of data.

### Corrective Action #2
*This section shall be filled by the PP. It shall address the corrective action taken in details.*

### DOE Assessment #2
*The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*

### Related Checklist(s)
*Tick the appropriate checkbox*

- [ ] To be checked during the first periodic verification
- [ ] Appropriate action was taken
- [ ] Project documentation was corrected correspondingly
- [ ] Additional action should be taken
- [ ] The project complies with the requirements
**Related DDs**

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<tr>
<td><strong>Description of finding</strong></td>
<td>With regard to the baseline emission calculation (section E.6 of PoA-DD), it was assumed that 68.86% of the waste which is handled at MRFs would be brought to unmanaged waste disposals with heights over 5 meters. Clarification is requested with documented evidences that this assumption is applicable and conservative over the crediting period, as this value is based on documents from 2008. A new waste management law was issued in 2008.</td>
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</table>

| **Corrective Action #1** | The baseline scenario was changed in the adapted version of the PoA-DD, the domestic waste statistics are not used anymore as main evidence for the baseline determination. Instead, informal waste disposal sites are used as a conservative standardized baseline scenario, with heights under 5 meters. Where in the CPA-DD should this be addressed? |

| **DOE Assessment #1** | The baseline scenario was changed and doesn’t take into account the assumption anymore. It is only used for additional argumentation. CAR PoA-E7 is closed;pls also refer to PoA-E 5. |

| **Related Checklist(s)** |
| **Conclusion** | To be checked during the first periodic verification |
| | Appropriate action was taken |
| | Project documentation was corrected correspondingly |
| | Additional action should be taken |
| | The project complies with the requirements |

**Related DDs**

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<tr>
<td><strong>Description of finding</strong></td>
<td>For the baseline estimation and the emission reduction calculation (section E.6 of the PoA-DD), the Indonesian Domestic Solid Waste Statistics 2008 was taken into account. It was assumed that the waste which is handled at the MRFs would be brought to an unmanaged waste disposal site with a height over 5 meters. Therefore the MCF factor was defined as 0.8. Clarification is requested with documented evidences that the factors MCF=0.8 is applicable and conservative. Furthermore the parameters OX and f was defined as zero. Clarification is requested with documented evidences that the factors are applicable and conservative. Furthermore please clarify the assumption as according</td>
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<tr>
<td>to the monitoring of this parameter a site visit should be conducted at the solid waste disposal site in order to assess the type of cover of the solid waste disposal site.</td>
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</table>

**Corrective Action #1**

*This section shall be filled by the PP. It shall address the corrective action taken in details.*

The baseline scenario was changed in the adapted version of the PoA-DD, the domestic waste statistics are not used anymore as main evidence for the baseline determination.

**DOE Assessment #1**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

Even the baseline scenario has been changed the following request shall be clarified:

Clarification is requested with documented evidences that the factors MCF=0.4 is applicable and conservative.

Furthermore the parameters OX and f was defined as zero. Clarification is requested with documented evidences that the factors are applicable and conservative. Furthermore please clarify the assumption as according to the monitoring of this parameter a site visit should be conducted at the solid waste disposal site in order to assess the type of cover of the solid waste disposal site.

Please provide the revised emission reduction calculation.

**Corrective Action #2**

*This section shall be filled by the PP. It shall address the corrective action taken in details.*

**DOE Assessment #2**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**

Tick the appropriate checkbox

- [ ] To be checked during the first periodic verification
- [ ] Appropriate action was taken
- [ ] Project documentation was corrected correspondingly
- [ ] Additional action should be taken
- [ ] The project complies with the requirements
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<tr>
<td><strong>Description of finding</strong></td>
<td>Describe the finding in unambiguous style; address the context (e.g. section)</td>
<td>Not all monitoring parameters listed in the tool and methodology are listed in the relevant monitoring sections E.7.1. Improvement is necessary. Furthermore the parameters have to be checked if they belong to the section “data to be monitored” (section E.7.1 of PoA-DD) or “data not to be monitored” (section E.6.3 of PoA-DD). For example diesel density is included in the section data to be monitored.</td>
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</tr>
<tr>
<td><strong>Corrective Action #1</strong></td>
<td>This section shall be filled by the PP. It shall address the corrective action taken in details.</td>
<td>1. The parameters “EF\textsubscript{diesel} – Emission factor of diesel” and “ρ\textsubscript{diesel} – Density of diesel” were moved up from section E.7.1 to section E.6.3. 2. Under section E.6.3. the following parameters were added: • “DOC\textsubscript{j} - Fraction of degradable organic carbon in waste type j” • “GWP\textsubscript{CH4} – Global Warming Potential of CH4” • “f - Fraction of methane captured” • “TDL\textsubscript{h,f} - technical transmission and distribution losses” • “EF\textsubscript{grid} – Emission grid factor” • “k\textsubscript{i} - Decay rate of waste type j” 3. Under section E.7.1. the following parameters were added as requested by the “‘Tool to calculate baseline, project and/or leakage emissions from electricity consumption”: • “p\textsubscript{n,j,y} - Weight fraction of waste type j” further description was added to Annex 4 • “EC - Electricity consumption” • Diesel consumption 4. The corresponding parts for the calculation of the project emissions in section E.6.2 and the monitoring pan in section E.7.2 were adapted to the newly added parameters. In section E.7.2 a figure on the structure of the monitoring plan was added to improve understanding of the monitoring plan.</td>
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<tr>
<td><strong>DOE Assessment #1</strong></td>
<td>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</td>
<td>The revised monitoring plan was checked and i.a. following was observed: Parameter z is missing; Fuel consumption shall be a parameter to be monitored,... As not all monitoring parameters are in line with the tool and the methodology improvement is necessary.</td>
<td></td>
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<tr>
<td><strong>Corrective Action #2</strong></td>
<td>This section shall be filled by the PP. It shall address the corrective action taken in details.</td>
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**DOE Assessment #2**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**

**Conclusion**
Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

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**Description of finding**
Describe the finding in unambiguous style; address the context (e.g. section)

The justification of the choice of the approved baseline and monitoring methodology for the typical CPA is not sufficient and the relevant section shall be improved.

Furthermore the CPA should be improved to indicate that the typical CPA is in accordance with all PoA specific stipulation and requirements.

**Corrective Action #1**
This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**
The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**

**Conclusion**
Tick the appropriate checkbox

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements
### Finding 1

**Description of finding**

Describe the finding in unambiguous style; address the context (e.g. section)

According to the PoA-DD the source of the emission factor diesel used in the project activity is the CDM Small scale methodology AMS-1.B. Clarification is requested if in line with the requirement of the methodology AMS III.F para. 22: For project activity emissions from fossil fuel consumption the emission factor for the fossil fuel shall be used (tCO2/tonne). Local values are to be used, if local values are difficult to obtain, IPCC default values may be used.

**Corrective Action #1**

This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

**Related Checklist(s)**

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

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### Finding 2

**Description of finding**

Describe the finding in unambiguous style; address the context (e.g. section)

Provision shall be in place for the case that a CPA implementation might lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the methodology.

**Corrective Action #1**

This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.
### Finding

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#### Related Checklist(s)

**Conclusion**

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
- Additional action should be taken
- The project complies with the requirements

### Description of finding

**Description of finding**

Describe the finding in unambiguous style; address the context (e.g. section)

Furthermore all equation used for ex-post and ex-ante calculation shall be provided in the PoA-DD.

According to the methodology soil application of the compost in agriculture or related activities will be monitored. This includes documenting the sales or delivery of the compost final product. Clarification is requested how this will be considered.

**Corrective Action #1**

This section shall be filled by the PP. It shall address the corrective action taken in details.

**DOE Assessment #1**

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.

### Related Checklist(s)

**Conclusion**

- To be checked during the first periodic verification
- Appropriate action was taken
- Project documentation was corrected correspondingly
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- The project complies with the requirements
<table>
<thead>
<tr>
<th>Related DDs</th>
<th>PoA-DD</th>
<th>generic CPA-DD</th>
<th>real case CPA-DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding</td>
<td>PoA-E14</td>
<td>CAR</td>
<td>CL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description of finding</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the finding in unambiguous style; address the context (e.g. section)</td>
<td>Justification is necessary, why the identified barriers would not prevent the implementation of the alternatives. Please specify the defined region for the common practice analysis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrective Action #1</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>This section shall be filled by the PP. It shall address the corrective action taken in details.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>DOE Assessment #1</th>
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</thead>
<tbody>
<tr>
<td>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</td>
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</table>

<table>
<thead>
<tr>
<th>Related Checklist(s)</th>
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<tbody>
<tr>
<td>Conclusion</td>
<td>To be checked during the first periodic verification</td>
</tr>
<tr>
<td></td>
<td>Appropriate action was taken</td>
</tr>
<tr>
<td></td>
<td>Project documentation was corrected correspondingly</td>
</tr>
<tr>
<td></td>
<td>Additional action should be taken</td>
</tr>
<tr>
<td></td>
<td>The project complies with the requirements</td>
</tr>
</tbody>
</table>
Annex 6. Technical Advisory Committee of the Gold Standard Foundation_Eligibility of composting projects

Dear members of the Gold Standard’s Technical Advisory Committee,

As developers of community based GHG reducing projects and official Gold Standard Supporter NGO, atmosfair and BORDA would like to request the eligibility of small composting projects under the Gold Standard. Such projects make important contributions to sustainable development and achieve very high values in the Gold Standard sustainable development scoring. We refer specifically to the KIPRAH project (see below). Possibly this project could be used as a showcase to define GS eligibility criteria of such projects.

The KIPRAH project consists in the implementation of community based waste recycling and composting facilities. Validation has already started; the CDM-PoA-DDs were developed by atmosfair and BORDA and published at the UNFCCC website in December 2009. (http://odm.unfccc.int/UserManagement/FileStorage/3CEHJR07VGGKN0Y84MOVBPTX2DZ615).

The project empowers communities to run their own decentralized waste recovery facilities. Besides methane reduction, there are valuable benefits for locals: Waste dumping on unmanaged landfills and informal dump sites is avoided which reduces health risks and pollution of water. Recycling and composting reduce the amount of deposited waste and generate valuable resources. Thereby, Gold Standard criteria of social and environmental integrity as well as stakeholder participation are met.

The project does however not produce energy. We argue that, by producing compost and recycling valuable materials, a benefit comparable to energy is created which guarantees sustainability in the same way.

In order to show the compatibility with the Gold Standard, atmosfair and BORDA organized the local stakeholder meeting according to the GS rules (see attached LSC meeting report). All SD criteria with exception of energy received a positive scoring by the participants of the meeting.

We would like to encourage the Gold Standard to permit the eligibility of small composting projects, possibly restricted to the composting of household waste. Maybe there is also a possibility to grant an exceptional permission to the KIPRAH project in order to create a show case for the handling of composting projects in the future.

We would ask you to discuss our request at your next TAC meeting and look forward to your reply.

Thanks and best regards,

Robert Müller, atmosfair

Stefan Reuter, BORDA

ANNEX Q – LSC REPORT TEMPLATE

CONTENTS

A. Project Description
   1. Title of the project activity
   2. Project eligibility under Gold Standard
   3. Current project status

B. Design of Stakeholder Consultation Process
   1. Description of physical meeting(s)
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      ii. Non-technical summary
      iii. Invitation tracking table
      iv. Text of individual invitations
      v. Text of public invitations
   2. Description of other consultation methods used

C. Consultation Process
   1. Participants’ in physical meeting(s)
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      ii. Evaluation forms
   2. Pictures from physical meeting(s)
   3. Outcome of consultation process
      i. Minutes of physical meeting(s)
      ii. Minutes of other consultations
      iii. Assessment of all comments
      iv. Revisit sustainable development assessment
      v. Summary of changes to project design based on comments

D. Sustainable Development Assessment
   1. Own sustainable development assessment
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      ii. Sustainable development matrix
   2. Stakeholders blind sustainable development matrix
   3. Consolidated sustainable development matrix

E. Sustainability Monitoring Plan
   1. Discussion on Sustainability monitoring Plan
   2. Discussion on continuous input / grievance mechanism

F. Description of Stakeholder Feedback Round

Annex 1. Original participants list

Annex 2. Original feedback forms
A. 1. Title of the project activity
Title: KIPRAH community based integrated waste management project, Indonesia
Date: September 17 2012
Version no.: 2

A. 2. Project eligibility under the Gold Standard

KIPRAH is a community-based solid waste management project that implements waste recovery facilities where waste is separated and composted. Waste recovery facilities which are later referred to as Material Recovery Facility (MRF) are managed and operated by community based organizations.

The project is eligible under the waste handling and disposal category which is newly introduced in the Gold Standard 2.2 version (Annex C to the toolkits). The applied technology is composting; it generates compost which is a usable product with sustainable development benefits; moreover, the waste separation and recycling process leads to the recovery of many kinds of valuable materials such as plastic, glass or metal. Therefore the project is eligible for the Gold Standard.

The project is partly supported by Official Development Assistance: The development of the carbon component of the project is funded by Official Development Aid from Canadian government through International Development Research Center (IDRC) as part of applied research Grant No 105813-001 “The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia”. The development as a carbon project also partly benefits from funding by the German government through Bremen Overseas Research Development (BORDA) since some BORDA staff dedicates part of their time to this component and the BORDA office is used. But there is no condition whatsoever to cede future credits from this project to the governments of Canada or Germany.

The MRFs supported by this project are aware of and willing to give up their rights on emission reductions by signing contracts with the project developer.

A. 3. Current project status

There are currently 15 MRFs that run under the project all over Java island Indonesia that shall be part of the micro-scale GS VER. These facilities are built with government
funds where BORDA non government organizations network (BORDA, BEST, and LPTP) facilitate and empower community to receive the program. Each facility serves 100-1500 HHs, hires minimum 2 operators, and financially operates from user (community) waste collection fees.

The project before was intended to be registered under PoA CDM scheme (http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/J8AS7C008XO90OT9BYMYLY2T23DSUS/view.html) but project proponent decided not to pursue this registration due to high transaction cost and complicacy involves in the scheme.

The project was also planned as a GS project in 2009 already and was waiting since then for an update of the GS rules to include composting. Already in 2009 an LSC was organized; the report is provided as evidence.

The following table shows MRFs operational and construction dates:

<table>
<thead>
<tr>
<th>MRFs Name</th>
<th>Address</th>
<th>Construction. year</th>
<th>Start operation</th>
<th>Served HH</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>-----------</td>
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</tbody>
</table>
### SECTION B. DESIGN OF STAKEHOLDER CONSULTATION PROCESS

#### B. 1. Design of physical meeting(s)

**i. Agenda**

<table>
<thead>
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<th>Agenda</th>
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<tbody>
<tr>
<td>09.30 – 10.00</td>
<td>Opening of the meeting</td>
<td>Surur Wahyudi (BORDA)</td>
</tr>
</tbody>
</table>
| 10.00 – 11.00| • Micro scale VER GS KIPRAH Community-based Integrated Solid Waste Management Project, Indonesia  
• Questions and Answers  
• Continuous input / grievance mechanism | Jati Kusumowati (BORDA)                  |
| 11.00 – 11.15| Coffee Break                                                           |                                          |
| 11.15 – 12.30| Blind Sustainable Development Matrix Exercise and Discussion on monitoring Sustainable Development | Hamzah Harun Al-Rasyid (BEST Tangerang) |
| 12.30-13.00  | Feedback                                                               | Septa Noegroho (BORDA)                  |
| 13.00 – 13.30| Closure of meeting                                                    | Jati Kusumowati (BORDA)                  |
ii. Non-technical summary

KIPRAH is a community-based solid waste management project which serves densely populated urban areas for average 1,500 HHs by installing Material Recovery Facilities (MRF). KIPRAH is implemented by local NGOs (BEST, LPTP) with financial support from BORDA-IDRC and governments. KIPRAH is an abbreviation of “Kita-PRO-Sampah” or “We pro waste”. KIPRAH is developed in areas where an organized waste collection is absent. The reason of missing waste collection systems in urban areas are poverty and poor financial capacity of the responsible governments; therefore among the populations of corresponding urban areas there is a suppressed demand for waste collection systems.

Fig.1 MRF Building in Sepang, Serang Municipality

Fig 2. Waste composting at MRF

Fig 3. Waste separation at MRF

The project empowers communities to handle their waste by installment of Material Recovery Facility, an open facility where waste is separated, recyclables are sold, and organic waste is composted.

The percentage of organic waste of total waste generation in Indonesian household reaches 60-70%\(^{59}\) thus the project apart from contributing to healthier environment of the

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community also significantly reduces the burden of city’s final dumpsites. Methane generation due to anaerobic decomposition in final dumpsites and current open dumping practice is avoided. The project also develops the capacity of the community to run the facility through assistance and trainings so that the project can run independently. KIPRAH’s biggest challenge is to assure sustainability of the project in other cities/municipalities without government or foreign grant funding. The government budget doesn’t include the assistance once the facility is built whilst for community based organization although they received training assistance during early months is critical in defining whether the facility can operate. The other challenge is the maintenance cost of the building and waste collection vehicle.

The proposed Gold Standard Micro scale VER is seeking to achieve project sustainability through linking government programs for waste management and carbon financing. The carbon financing is also intended to cover the costs that arise from aerobic composting facility. The composting methods that applied in 16 facilities are mostly piling the organic waste and leave it without any treatment. Aerobic composting is considered labor intensive. The elevating costs that arise from aerobic composting are as follows:

a. Provision of supporting infrastructure and instrument for application of aerobic composting i.e. bamboo aerator, monitoring documents, weight scale, etc
b. Training for operators of aerobic composting practice and monitoring
c. Working hours to apply and monitor aerobic composting
d. Continuous assistance from project proponent to ensure quality management system

This project is the first pro-poor carbon financing initiative which place community as actors in fighting climate change through synergizing it with government program and assisted by non government organization.
### iii. Invitation tracking table

<table>
<thead>
<tr>
<th>No.</th>
<th>Categ. code</th>
<th>Organisation (if relevant)</th>
<th>Name of invitee</th>
<th>Way of invit.</th>
<th>Date of invitation</th>
<th>Confirm. received? Y/N</th>
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<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>CBO* Pendowo Lestari, Sleman Regency</td>
<td>Priyo Susanto</td>
<td>Letter</td>
<td>20 Juni 2012</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>CBO Sampurno Asih, Kulonprogo Regency</td>
<td>Sudjendro</td>
<td>Letter</td>
<td>20 Juni 2012</td>
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<tr>
<td>3</td>
<td>A</td>
<td>CBO Griya Resik, South Tangerang City</td>
<td>Jumadi Arga</td>
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<td>26 Juni 2012</td>
<td>Y</td>
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<td>CBO Sampora Beraksi, Tangerang Regency</td>
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<td>Maman Carman</td>
<td>Letter</td>
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<tr>
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<td>CBO Rumah Kompos, South Tangerang City</td>
<td>Rahmadi Waluyo</td>
<td>Letter</td>
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<td>Y</td>
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<tr>
<td>7</td>
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<td>CBO Kenongo Asri, Sidoarjo Regency</td>
<td>Muchlis Askyar</td>
<td>Letter</td>
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<td>Y</td>
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<tr>
<td>8</td>
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<td>M Habibulloh</td>
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<td>20 Juni 2012</td>
<td>Y</td>
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<tr>
<td>9</td>
<td>A</td>
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<td>Ahmad Rifai</td>
<td>Letter</td>
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<td>Y</td>
</tr>
<tr>
<td>10</td>
<td>A</td>
<td>CBO Jombang 17, South Tangerang City</td>
<td>M Hatta</td>
<td>Letter</td>
<td>26 Juni 2012</td>
<td>Y</td>
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<tr>
<td>11</td>
<td>A</td>
<td>CBO Bersahabat, South Tangerang City</td>
<td>AR Gito</td>
<td>Letter</td>
<td>26 Juni 2012</td>
<td>Y</td>
</tr>
<tr>
<td>12</td>
<td>A</td>
<td>CBO Maju Bersama, South Tangerang City</td>
<td>N Ridwan Syam</td>
<td>Letter</td>
<td>26 Juni 2012</td>
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<tr>
<td>13</td>
<td>A</td>
<td>CBO Puspa Agro, Sidoarjo Regency</td>
<td>Head of CBO</td>
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<td>14</td>
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<td>Ach. Muzha-kir Walad</td>
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<td>B</td>
<td>Ministry of Environmental Affairs (Deputy Assistant Minister of Environment and Forestry)</td>
<td>Ir. Sulistyowati</td>
<td>Letter</td>
<td>20 Juni 2012</td>
<td>N</td>
</tr>
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<td>17</td>
<td>B</td>
<td>Ministry of Public Works (Sanitation Directorate)</td>
<td>Ir. Syukrul Amin</td>
<td>Letter</td>
<td>20 Juni 2012</td>
<td>Y</td>
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<td>Chief Department</td>
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<td>18 Juni 2012</td>
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<td>19</td>
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<td>Chief Department</td>
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<td>20 Juni 2012</td>
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<td>20</td>
<td>B</td>
<td>Sanitation Taskforce East Java Province</td>
<td>Chief Department</td>
<td>Letter</td>
<td>20 Juni 2012</td>
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<td>Chief Department</td>
<td>Letter</td>
<td>20 Juni 2012</td>
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<td>22</td>
<td>B</td>
<td>DTKBP Kota Tangerang Selatan (Urban Services, Buildings and Settlements of South Tangerang City)</td>
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<td>26 Juni 2012</td>
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<tr>
<td>23</td>
<td>B</td>
<td>DTKBP Kab. Tangerang (Urban Services, Buildings and Settlements of Tangerang Regency)</td>
<td>Chief Department</td>
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<td>20 Juni 2012</td>
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<tr>
<td>24</td>
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<td>DPUP Kab. Sleman (Public Works and Housing Department of Sleman Regency)</td>
<td>Chief Department</td>
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<td>20 Juni 2012</td>
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<td>26</td>
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<td>DKP Kab. Sidoarjo (Sanitation and Landscape Department Sidoarjo)</td>
<td>Chief Department</td>
<td>Letter</td>
<td>20 Juni 2012</td>
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</table>
| No. | Type | Organization | Role/Expert | Contact | Date | Multiple?
|-----|------|--------------|-------------|--------|------|--------
| 27  | B    | DKP Kab. Madiun (Sanitation and Landscape Department Madiun Recency) | Chief Department | Letter | 20 Juni 2012 | Y |
| 28  | B    | DKP Kab. Jombang (Sanitation and Landscape Department Jombang Recency) | Darmanto | Letter | 20 Juni 2012 | Y |
| 30  | D    | BEST TANGERANG Director | Hamzah Harun Al Rasyid | Email | 20 Juni 2012 | Y |
| 31  | D    | BEST TANGERANG Community Dev. Expert | Ilhamzah Lubis | Email | 20 Juni 2012 | Y |
| 32  | D    | BEST SURABAYA Director | Abdul Basri | Email | 20 Juni 2012 | Y |
| 33  | D    | BEST SURABAYA Community Dev. Expert | Y Syawaluyo | Email | 20 Juni 2012 | Y |
| 34  | D    | LPTP Director | Popo Suryanto | Email | 20 Juni 2012 | Y |
| 35  | D    | LPTP Community Dev. Expert | Mahmud Abdussalam | Email | 20 Juni 2012 | Y |
| 36  | E    | Gold Standard | Leong Wang & Annyta Luo | Email | 20 Juni 2012 | Y |
| 37  | F    | Atmosfair | Robert Mueller | Email | 20 Juni 2012 | Y |

Other GS supporter NGOs invited separately, see below
All the above mentioned invitees are affected by the Micro scale VER project activity and its registration process and therefore important stakeholder that needed to participate in the stakeholder meeting.

- Organizations from the BORDA NGO Network (BORDA, BEST and LPTP) are project developers and responsible for local community empowerment as well as for training and monitoring. These organizations will be the managing entities and therefore it is essential to the project that these local NGOs get the opportunity to express their concerns and state their comments, since the project will require additional work and capacities.

- Atmosfair as an international NGO was invited because Atmosfair is one of NGO that support Gold Standard and has much experience in community based VER and CDM projects. The stakeholder meeting is therefore a good opportunity to meet up with the people implementing and developing the project. The exchange with the local organization and community is essential so that the PDD can be adjusted to local needs.

- Community based organizations (CBO) is the entity that will run the MRFs. They are directly affected by the project as the MRFs are located in their neighborhood and they are the one who actually carrying out the work. Concerns about the amount of work to be expected, future responsibilities and direct impacts of the project can be discussed. Moreover, project developers find out what they can expect from the CBOs and adjust the project to local needs.

- Central and Local governments are involved in the project funding, commissioning and supervision. The best possible understanding of the project is therefore indispensable to gain support from these local governments.

- The representative of the Indonesian DNA is invited to gain the best possible understanding of the project since the DNA`s approval of the project is necessary in the end.

- The Gold Standard (GS) expert is invited since GS for the project is anticipated and all stakeholders need to understand the requirements that come with a GS certification. CBOs and local NGOs need to have the platform to raise their
concerns about possible additional work and complications of a project with GS.

- Due to a misunderstanding, the GS supporter NGOs had not been invited to the physical meeting. They were invited just after the meeting to provide comments by email.

iv. Text of individual invitations

Yogyakarta, 18 Juni 2012

Letter No : 69/CDM/VI/12
Regard : Invitation
Attachment :
  1. Term of Reference
  2. Agenda

To :.................................

Dear Madam/Sir,

Hereby i Borda NGO Network invite you to the Local Stakeholder Consultation of Gold Standard Micro-scale VER project activity “KIPRAH Community Based Integrated Waste Management Project, Indonesia” that will be held on:

Day/Date : Wednesday, 4th July 2012
Location : Cakra Kusuma hotel, Jl Kaliurang no.25 km 5,2, Yogyakarta
Time : 09.30- 15.00 WIB

Please find attached the Term of Reference for the meeting.

We are looking forward to hearing from you.

Best regard,
Jati Kusumowati
Carbon Research Coordinator BORDA  
www.borda-sea.org

Please find original invitation in Annex 1

v. Text of public invitations

To raise awareness of the project and offer any stakeholder to participate in the stakeholder meeting public invitations were used stating place, date, objective of the stakeholder meeting and the meeting’s agenda. The invitations were placed in several public places in those municipalities where the project will be first implemented. A picture of a public invitation in Yogyakarta is displayed below.

Fig 4.Invitation displayed in front of District Depok in Sleman for public invitation

B. 2. Description of other consultation methods used

- Feedback from the GS supporter NGOs:
  Due to a misunderstanding, the GS supporter NGOs had not been invited to the physical meeting. They were invited shortly after the meeting to provide comments by email: Greenpeace, Helio, Mercy Corps, REEEP, World Vision and WWF. No input was received. WWF international however announced to forward the message to the national office which did not react till the date of submission. As for national GS supporter NGOs, emails were sent to Mr. Tri Pantoro (WALHI). Then through telephone conversation it was
known that Tri Pantoro already quit his work in WALHI, so emails were sent to Alin and Ranti (WALHI).

Another attempt of communication was made with Fabby (Climate Action Network), but the first email address did not work and neither a second one which was looked up in the internet then.
## CONSULTATION PROCESS

### C. 1. Participants’ in physical meeting(s)

#### i. List of participants

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>M/F</th>
<th>Institution</th>
<th>Contact</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Priyo Susanto</td>
<td>M</td>
<td>CBO Pandowo Lestari</td>
<td>082138404829</td>
</tr>
<tr>
<td>2</td>
<td>Achmad Rifai</td>
<td>M</td>
<td>CBO Griya Reni Asri</td>
<td>08176515005</td>
</tr>
<tr>
<td>3</td>
<td>Suparno</td>
<td>M</td>
<td>CBO Mustika Iklas</td>
<td>081384519726</td>
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<tr>
<td>4</td>
<td>N. Ridwan Syam</td>
<td>M</td>
<td>CBO Maju Bersama</td>
<td>081288684447</td>
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<tr>
<td>5</td>
<td>A.R Gito</td>
<td>M</td>
<td>CBO Bersahabat</td>
<td>081383077250</td>
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<tr>
<td>6</td>
<td>Rahmadi Waluyo</td>
<td>M</td>
<td>CBO Vipamas</td>
<td>081381453774/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:rahmadiwl01@gmail.com">rahmadiwl01@gmail.com</a></td>
</tr>
<tr>
<td>7</td>
<td>Ilhamsyah Lubis</td>
<td>M</td>
<td>Local NGO BEST</td>
<td>081252012195/</td>
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<td></td>
<td></td>
<td><a href="mailto:lubis1962@yahoo.com">lubis1962@yahoo.com</a></td>
</tr>
<tr>
<td>8</td>
<td>Lintang Nugroho</td>
<td>M</td>
<td>Sanitation Task Force</td>
<td>0856412183000/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Banten Province</td>
<td><a href="mailto:lintang.nunu@gmail.com">lintang.nunu@gmail.com</a></td>
</tr>
<tr>
<td>9</td>
<td>Paijan</td>
<td>M</td>
<td>CBO Lestari Tarakan</td>
<td>085246009819</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kaltim</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>M. Habibullah</td>
<td>M</td>
<td>CBO Prasung</td>
<td>085731757144/</td>
</tr>
<tr>
<td>No.</td>
<td>Name</td>
<td>Gender</td>
<td>Title/Position</td>
<td>Contact Information</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------</td>
<td>--------</td>
<td>---------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>Muchlis A</td>
<td>M</td>
<td>CBO Kenongo Asri Sidoarjo</td>
<td>081331093609</td>
</tr>
<tr>
<td>12</td>
<td>Ach. Muzakir Walad</td>
<td>M</td>
<td>CBO Redjoagung Berseri</td>
<td>085732032757 <a href="mailto:cakdalaw@gmail.com">cakdalaw@gmail.com</a></td>
</tr>
<tr>
<td>13</td>
<td>Hariono</td>
<td>M</td>
<td>CBO Bangunsari Madiun Municipality</td>
<td>085331973073</td>
</tr>
<tr>
<td>14</td>
<td>Mahmud</td>
<td>M</td>
<td>Local NGO CB-tech LPTP</td>
<td>085228373246</td>
</tr>
<tr>
<td>15</td>
<td>Hamzah Harun Al-Rasyid</td>
<td>M</td>
<td>Local NGO BEST</td>
<td>08161800526</td>
</tr>
<tr>
<td>16</td>
<td>Nina Indrasari</td>
<td>F</td>
<td>Ministry of Public Work</td>
<td>0811992325</td>
</tr>
<tr>
<td>17</td>
<td>Sandhi Eko Bramono</td>
<td>M</td>
<td>Ministry of Public Work</td>
<td><a href="mailto:sandhieb@yahoo.com">sandhieb@yahoo.com</a></td>
</tr>
<tr>
<td>18</td>
<td>M. Hatta</td>
<td>M</td>
<td>CBO Jombang 17</td>
<td>085213476966</td>
</tr>
<tr>
<td>19</td>
<td>Y Syawluyo</td>
<td>M</td>
<td>Local NGO BEST Sby</td>
<td>082140319658</td>
</tr>
<tr>
<td>20</td>
<td>Jumadi Arga</td>
<td>M</td>
<td>CBO Griya Resik</td>
<td>08129683251</td>
</tr>
<tr>
<td>21</td>
<td>Sujendro</td>
<td>M</td>
<td>CBO Sampurno Asih Kulon Progo</td>
<td>081328550419</td>
</tr>
<tr>
<td>22</td>
<td>Bambang W</td>
<td>M</td>
<td>Public Work Agency, Sleman</td>
<td>081328084941</td>
</tr>
</tbody>
</table>
## Evaluation forms

Participants were asked to fill out an anonymous evaluation form after the meeting, that way it was assured afterwards that there were no objections towards the project, which might have been overlooked or not documented in the meeting. Because of anonymity people were not intimidated to express their personal views that they might have held back during the meeting. After looking at the participants answers it can be inducted that general impressions are:

<table>
<thead>
<tr>
<th>S.No</th>
<th>What is your impression of the meeting?</th>
<th>What do you like about the project?</th>
<th>What do you not like about the project?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All stakeholders actively discussed</td>
<td>Community participate in fighting global warming by managing waste correctly</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Interaction was useful. I have no objections</td>
<td>Project will generate new employment opportunities</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Comments accompanying Annex 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I’m very satisfied with the meeting.</td>
<td>Alternative source of funding to support KIPRAH project</td>
<td>There is no disadvantage</td>
</tr>
<tr>
<td>4</td>
<td>Networking among CBOs and give opportunity to discuss with other CBO and government</td>
<td>Getting new knowledge of managing waste</td>
<td>-</td>
</tr>
</tbody>
</table>

C. 2. Pictures from physical meeting(s)
C. 3. Outcome of consultation process

i. Minutes of physical meeting(s)

Still during the presentation, the Continuous Input / Grievance mechanism was discussed. It was found that the email and phone contact of the BNN were already established and could be used for this purpose (see table E.2).

It was also accorded to include keep a continuous input/grievance sections in the monitoring forms that are provided regularly by the MRFs to the BNN, in order to have a continuous input/grievance expression process book. It was accorded that a mediator would not be needed.

The minutes of the “question and answer” session are as follows:

Q1. What makes this micro scale project different with similar decentralized solid waste management program from government?

A1. BNN has been assisting projects under decentralized solid waste management program since 2004 and our experiences have shown that long term assistance is needed as well as funding for maintenance of the MRF building and equipment; otherwise MRFs often stop operating. The micro scale scheme under GS makes it feasible for these assistances to be realized by BNN unlike the regular program that fully depends on the yearly governmental budget.

Q2. Is there any binding agreement with any company to assure the sales of expected VER?

A2. In any carbon project there is an ERPA or Emission Reduction Purchasing Agreement which will arrange how the credit will be sold and also at what price it will be sold. ERPA depends on the agreement between project developer and buyer. As in our case, Atmosfair; a German NGO that support Gold Standard is ready to sign an ERPA and they also have been helping us so far with the carbon financing concept as our project has a high value of sustainability.

Q3. Will there be any training given to CBO so that CBO knows how to comply with the expected monitoring in Micro scale VER project?

A3. If the project is approved, there will be training on how to meet the requirement of a VER project, assistance and regular monitoring from Borda NGO Network in each facility that sign a contract to become part of VER project.

Q4. What kind of government support that is given in assuring sustainability of KIPRAH project as now communities are already consulted of alternative funding to support
sustainability of project through carbon financing? (Jumadi, Head of CBO Griya Resik)

A.4

*Nina Indrasari (Head of Sub-Division Waste Management, Environmental Sanitation Center, Ministry of Public Works)*: Community-based solid waste management project through MRF installment are a joint project between Central and local government. Central government through Ministry of Public Work provides the funds for MRF building while Local government is responsible for community process and monitoring of the facility. Coordination between central and local government is continuously enforced to assure sustainability of the program.

*Bambang (Public Work Department DIY Province)*:

We are trying to solve waste problem with different approach at different level. Apart from communal approach of KIPRAH with MRF installment, government in Sleman Municipality, Yogyakarta also reinforce Reduce-Reuse-Recycle project in smaller scale of 50-200 HHs and village scale of approximately 5000 HHs. The different scale and variation of program are expected to solve waste problem. At Municipality level, local government of Sleman in cooperation with Shimizu have tried to register methane capture project at final dumpsite under CDM but we are still baffled with regulation in central government. On top of that the fluctuation of CER price has to be anticipated with good strategy.

*Hamzah Al Rasyid (Director of BEST, local NGO)*

In my opinion the main problem of this program are: a) The market of compost is not yet established, b) collection of untreated waste from MRF. In city planning, local government should provide one waste truck for every 1000 houses build apart from that local government also obliged to buy compost from MRF.

Q.5 How long does it takes to register the project?

A.5 Six to twelve months

Q6. Is it difficult to apply aerobic composting? Will that bother the operational of MRF?

A.6 Once our stakeholder meeting report is accepted, BNN will hold another meeting on which aerobic composting method is acceptable and feasible for CBO to apply so that it will not bother the operational of MRF

Q7. The special treatment of composting process, and monitoring will take extra time from the operator also will make additional cost. Who will be responsible for these?

A7. BNN will cover the costs that arise from the application of aerobic composting and monitoring also the salary of the field facilitator that assist the activities on regular basis.
After the break, the blind sustainable development exercise was conducted. The facilitator from BNN displayed the first sustainable development indicator on the screen and asked the participants to raise concerns or comments regarding the criterion; then the next indicator was discussed. All answers were directly typed and displayed. Once all the answer all typed, all participants together went one by one through all the answers, discussed, summarized the answers, and discussed which score should be given to the indicator based on the answers.

ii. Minutes of other consultations

- Feedback from the GS supporter NGOs:
Due to a misunderstanding, the GS supporter NGOs had not been invited to the physical meeting. They were invited to provide comments by email: Greenpeace, Helio, Mercy Corps, REEEP, World Vision and WWF. However no input was received. WWF international however responded and announced to forward the message to the national office which did not react till the date of submission. As for national GS supporter NGOs, emails were sent to Mr. Tri Pantoro (WALHI). Then through telephone conversation it was known that Tri Pantoro already quit his work in WALHI, so emails were sent to Alin and Ranti (WALHI).

Another attempt of communication was made with Fabby (Climate Action Network), but the first email address did not work and neither a second one which was looked up in the internet then.

- There had already been a LSC meeting according to GS rules in November 2009 on the project (at that time “PoA Kiprah Community-based Integrated Solid Waste Management Project, Indonesia”), when composting was not eligible for the GS. The outcome was very similar to the recent meeting. The report is attached in a separate document.

iii. Assessment of all comments

<table>
<thead>
<tr>
<th>Stakeholder comment</th>
<th>Was comment taken into account (Yes/ No)?</th>
<th>Explanation (Why? How?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doubts about the capacity to apply aerobic composting and monitoring</td>
<td>Yes</td>
<td>Further consultation on applicable composting method and training for monitoring will be</td>
</tr>
<tr>
<td>Coverage of the costs that arise from composting process and monitoring</td>
<td>Yes</td>
<td>BNN will cover the cost that arises from monitoring and aerobic composting</td>
</tr>
</tbody>
</table>

iv. **Revisit sustainability assessment**

<table>
<thead>
<tr>
<th>Are you going to revisit the sustainable development assessment?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please note that this is necessary when there are indicators scored ‘negative’ or if there are stakeholder comments that can’t be mitigated</td>
<td>☐</td>
<td>X</td>
</tr>
</tbody>
</table>

**Give reasoning behind the decision**

The project activity is welcome as it would improve sanitation, hygiene, livelihood, and reduce pollutions through up scaling KIPRAH in as many location as the carbon finance could cover.

v. **Summary of alterations based on comments**

Due to the comments and questions on aerobic composting, BNN will organize an additional workshop on this topic after registration.

Moreover, special attention will be put on explaining monitoring requirements well.
### SECTION D. SUSTAINABLE DEVELOPMENT ASSESSMENT

#### D. 1. Own sustainable development assessment


<table>
<thead>
<tr>
<th>Safeguarding principles</th>
<th>Description of relevance to my project</th>
<th>Assessment of my project risks breaching it (low/medium/high)</th>
<th>Mitigation measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The project respects internationally proclaimed human rights including dignity,</td>
<td>The project does not oblige beneficiaries to change cultural lifestyle in any way. Indonesia has ratificed</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>cultural property and uniqueness of indigenous people. The project is not complicit in</td>
<td>the following conventions: - UN International Covenant on Economic, Social and Cultural Rights on the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Rights abuses.</td>
<td>10 Apr 1979 a60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- UN International Convent on Civil and Political Rights on the 10 Apr 1979 a 61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The project does not involve and is not complicit in involuntary resettlement.</td>
<td>The land that is used for MRF is vacant and belongs to local government or housing developer.</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The land that is used for MRF is vacant, free of cultural heritage and belongs to local</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

removal of any critical cultural heritage.

government or housing developer

<table>
<thead>
<tr>
<th>4. The project respects the employees' freedom of association and their right to collective bargaining and is not complicit in restrictions of these freedoms and rights</th>
<th>The CBO employs 2-8 workers who mostly live in the surrounding area of MRF. Voluntary working contracts are signed without restricting any of the worker’s rights. The host country has ratified the following Conventions: - ILO Convention 105(^{62}) - ILO Convention 100 (equal remuneration)(^{63})</th>
<th>low</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. The project does not involve and is not complicit in any form of forced or compulsory labour.</td>
<td>The CBO and workers agree on voluntary and fair working contracts.</td>
<td>low</td>
</tr>
<tr>
<td>6. The project does not employ and is not complicit in any form of child labour.</td>
<td>Indonesia has ratified the ILO convention no 182 in 2000 on „Elimination of the Worst Forms of Child Labour“</td>
<td>low</td>
</tr>
<tr>
<td>7. The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis.</td>
<td>The CBO prioritized workers from surrounding area and does not endorse any form of discrimination based on gender, race, religion, sexual orientation or any other basis. Indonesia in 1999 has ratified ILO convention no 111 on Discrimination in Respect of Employment and Occupation(^{4})</td>
<td>low</td>
</tr>
</tbody>
</table>


8. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments. The worker is dealing with household waste. There is no involvement of hazardous component. Workers use gloves and masks as minimum safety equipment.

<p>| |</p>
<table>
<thead>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
</tbody>
</table>

9. The project takes a precautionary approach in regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. This principle can be defined as: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."

The project’s environmental impact is positive, no negative impacts are expected. The host country has ratified the following relevant conventions:
- UN Kyoto Protocol to the United Nations Framework Convention on Climate Change on the 3 Dec 2004[^64]
- UN Convention on Biological Diversity on the 23 August 1994[^65]
- UN Convention to combat Desertification on the 31 Aug 1998[^66]

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
</tbody>
</table>

10. The project does not involve and is not complicit

The project is a mitigation measure; it protects natural

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
</tr>
</tbody>
</table>


in significant conversion or degradation of critical natural habitats, including those that are (a) legally protected, (b) officially proposed for protection, (c) identified by authoritative sources for their high conservation value or (d) recognised as protected by traditional local communities

habitats by decreasing the amount of waste that illegally dumped into river or vacant land. No protected areas will be chosen as MRF sites.

11. The project does not involve and is not complicit in corruption.

All accounts are checked by a third party organisation on a yearly basis. low

ii. Sustainable development matrix

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mitigation measure</th>
<th>Relevance to achieving MDG</th>
<th>Chosen parameter and explanation</th>
<th>Preliminary score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Standard indicators of sustainable development</td>
<td>If relevant, copy mitigation measure from 'Do No Harm' assessment, and include mitigation measure used to neutralize a score of '-'</td>
<td>Check <a href="http://www.undp.org/mdg">www.undp.org/mdg</a> and <a href="http://www.mdgmonitor.org">www.mdgmonitor.org</a> Describe how your indicator is related to local MDG goals</td>
<td>Defined by project developer</td>
<td>Negative impact: score ‘-’ in case negative impact is not fully mitigated, score ‘0’ in case impact is planned to be fully mitigated. No change in impact: score ‘0’. Positive impact: score ‘+’</td>
</tr>
<tr>
<td>Category</td>
<td>Impact Description</td>
<td>Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>--------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air quality</td>
<td>Toxic gases due to burning of waste are avoided</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water quality and quantity</td>
<td>Pollution of water by wild waste dumping avoided</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil condition</td>
<td>Contamination of soils by wild waste dumping avoided, soils improved by use of compost</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other pollutants</td>
<td>Release of harmful substances in waste are avoided by recollection of e.g. batteries</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td>No direct impact</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of employment</td>
<td>MRFs offer good jobs and avoid informal and unhealthy work of waste pickers</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livelihood of poor</td>
<td>Living conditions in poor neighborhood improved by waste management</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to affordable and clean energy service</td>
<td>No direct impact</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human and institutional capacity</td>
<td>Communities learn to organize themselves for implementation of MRFs and resolve their waste problems together</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantitative employment and income generation</td>
<td>New jobs created in MRFs</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of payments and investment</td>
<td>MRF is self-sustained through collection fees from</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology transfer and technological self-reliance</td>
<td>Capacity built for production of compost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments accompanying own sustainable development matrix

### D. 2. Stakeholders Blind sustainable development matrix

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mitigation measure</th>
<th>Relevance to achieving MDG</th>
<th>Chosen parameter and explanation</th>
<th>Preliminary score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Standard indicators of sustainable development</td>
<td>If relevant, copy mitigation measure from ‘Do No Harm’ assessment, and include mitigation measure used to neutralize a score of ‘-’</td>
<td>Check <a href="http://www.undp.org/mdg">www.undp.org/mdg</a> and <a href="http://www.mdgmonitor.org">www.mdgmonitor.org</a> Describe how your indicator is related to local MDG goals</td>
<td>Defined by project developer</td>
<td>Negative impact: score ‘-’ in case negative impact is not fully mitigated, score ‘0’ in case impact is planned to be fully mitigated No change in impact: score ‘0’ Positive impact: score ‘+’</td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td>First comment was MRF inside the MRF bad smell can occur, but then participants agreed that bad smell from wild dumping and burning waste was much worse. Therefore, a positive score was accorded.</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Water quality</td>
<td></td>
<td>Quality: The project</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>and quantity</td>
<td>perceived to minimize waste dumping in the river and sea as well as prevent leachate generated from illegal waste dumping piles which could infiltrate ground water. <strong>Quantity:</strong> Compost application in the soil will increase the capacity of soil to absorb water. Therefore, a positive score was accorded.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil condition</td>
<td>Participants thought that soil condition would improve from compost product application resulted from waste treatment. Soil pollution from mercury coming from battery and light bulb also avoided with organized waste treatment at MRF. Therefore a positive score was accorded.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other pollutants</td>
<td>The MRF avoided mercury pollution coming from battery and light bulb. On the other hand the noise coming from the organic shredder (maximum 12 HP) will not disturb the community. Participants accorded this point a positive score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Participants’ view that the project helps to keep biodiversity by keeping the environment clean and healthy, and especially for those who leaves on coast side or small island waste management will save</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of employment</td>
<td>Jobs are created with the implementation of project where the local people are prioritized to work. When waste pickers join the project, they will have a better working environment. With training and capacity building on MRF managements, participants believed that quality of employment could be increased; therefore, a positive score was accorded.</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livelihood of poor</td>
<td>Participants comment that MRF would open new job opportunity within their community especially for those with low educational training. Since the project also improves sanitation and hygiene, livelihood for the poor who suffer most from the absence of waste management is expected to be upgraded. Income also generated from the sales of recyclable craft. Therefore, a positive score was accorded.</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to affordable and clean energy service</td>
<td>The project doesn't have impact on the access to affordable and clean energy service; therefore a neutral score was accorded.</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human and institutional</td>
<td>The project empowers the community to solve their</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>capacity</td>
<td>waste problem and manage the plant through formation of community based organization, training for its members, and assistance during early operational of MRF; therefore a positive score was accorded.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantitative employment and income generation</td>
<td>MRF would open new job opportunity within their community whereas recycle waste and compost sales would increase income generation, therefore, a positive score was accorded.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance of payments and investment</td>
<td>Participants acknowledge that sustainability of MRF operation is assured through cost operative recovery principle, as long as community is committed to pay collection fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology transfer and technological self-reliance</td>
<td>The project does not involve sophisticated technology. Instead, appropriate technology is introduced and applied, therefore, a positive score was accorded</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments resulting from the stakeholders blind sustainable development matrix**

Give analysis of difference between own sustainable development matrix and the one resulting from the blind exercise with stakeholders. Explain how both were consolidated.

The outcome of the "own" and the stakeholder’s sustainability assessment was identical with exception of biodiversity which was deemed neutral in the own assessment and positive by stakeholders where stakeholders’ views the project would save marine life due to the waste negative effect when ended up in the sea. Therefore positive remark is accorded positive for biodiversity.

We conclude that the project is welcome and sustainability indicators are met.
### D. 3. Consolidated sustainable development matrix

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Mitigation measure</th>
<th>Relevance to achieving MDG</th>
<th>Chosen parameter and explanation</th>
<th>Preliminary score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold Standard indicators of sustainable development</td>
<td>If relevant, copy mitigation measure from ‘Do No Harm’ assessment, and include mitigation measure used to neutralize a score of ‘-’</td>
<td>Check <a href="http://www.undp.org/mdg">www.undp.org/mdg</a> and <a href="http://www.mdgmonitor.org">www.mdgmonitor.org</a> Describe how your indicator is related to local MDG goals</td>
<td>Defined by project developer</td>
<td>Negative impact: score ‘-’ in case negative impact is not fully mitigated, score ‘0’ in case impact is planned to be fully mitigated. No change in impact: score ‘0’. Positive impact: score ‘+’.</td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Water quality and quantity</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Soil condition</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Other pollutants</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Biodiversity</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Quality of employment</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Livelihood of poor</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Access to affordable and clean</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
### Energy Service

<table>
<thead>
<tr>
<th>Human and institutional capacity</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative employment and income generation</td>
<td>+</td>
</tr>
<tr>
<td>Balance of payments and investment</td>
<td>0</td>
</tr>
<tr>
<td>Technology transfer and technological self-reliance</td>
<td>+</td>
</tr>
</tbody>
</table>

### Justification choices, data source and provision of references

A justification paragraph and reference source is required for each indicator, regardless of score.

**Air quality**

The participants were concerned that inside the MRF's a bad smell could occur. After a discussion they agreed on that toxic gases due to burning of waste and wild dumping is much worse ([http://www.unep.org/ietc/Portals/136/SWM_Vol-II.pdf](http://www.unep.org/ietc/Portals/136/SWM_Vol-II.pdf), page 288.). Therefore, a positive score was accorded.

**Water quality and quantity**

The project perceived to minimize waste dumping in the river and sea as well as prevent leachate generated from illegal waste dumping piles which could infiltrate ground water ([http://www.europeanjournalofscientificresearch.com/ISSUES/EJSR_79_2_01.pdf](http://www.europeanjournalofscientificresearch.com/ISSUES/EJSR_79_2_01.pdf)). So the pollution of water by wild waste dumping will be avoided. Beyond this the compost application in the soil will increase the capacity of soil to absorb water. Therefore, a positive score was accorded.
| Soil condition | The contamination of soil by wild waste dumping will be avoided. The soil condition will improve from compost product application resulted from waste treatment ([http://aciar.gov.au/files/node/10942/PMg%20Mar-Jun09%20Part4.pdf](http://aciar.gov.au/files/node/10942/PMg%20Mar-Jun09%20Part4.pdf), page 10.). Soil pollution from mercury coming from battery and light bulb also avoided with organized waste treatment at MRF. Therefore a positive score was accorded |
| Other pollutants | The release of harmful substances in waste (Viriyadhika, C, Sustainable Battery Waste Management, Case Study Indonesia 2007, page 9) will be avoided by recollection of e.g. batteries. Beyond this the MRF will avoid mercury pollution coming from battery and light bulb. As the organic shredder has a maximum of 12 HP the noise coming from it will not disturb the community. Participants accorded this point a positive score |
| Biodiversity | The Project proponent couldn’t see a direct connection to the project but the participants thought that the project helps to keep biodiversity by keeping the environment clean and healthy, and especially for those who leaves on coast side or small island waste management will save marine life ([http://www.marineinsight.com/marine/environment/effects-of-marine-pollution/](http://www.marineinsight.com/marine/environment/effects-of-marine-pollution/)). But due to the fact that there is no direct relation a neutral score was chosen. |
| Quality of employment | MRFs offer good jobs and avoid informal and unhealthy work of waste pickers. The projects will be implemented where the local people prioritize work. When waste pickers join the project, they work environment will improve from the very poor life conditions they right now ([http://www.spiegel.de/panorama/indonesiens-groesste-muellhalde-auf-der-kippe-a-813980.html](http://www.spiegel.de/panorama/indonesiens-groesste-muellhalde-auf-der-kippe-a-813980.html)). With trainings and capacity buildings on MRF managements, participants believed that quality of employment could be increased; therefore, a positive score was accorded. |
| Livelihood of the poor | Living conditions in poor neighborhood improved by waste management as the MRF would open new job opportunity within their community especially for those with low educational training. Since the project also improves sanitation and hygiene, livelihood for the poor who suffer most from the absence of waste management is expected to be upgraded. Income also generated from the sales of recyclable craft. (Bali declaration on waste management for human health and livelihood,
| Access to affordable and clean energy services | The project doesn’t have impact on the access to affordable and clean energy service; therefore a neutral score was accorded. |
| Human and institutional capacity | Communities learn to organize themselves for implementation of MRFs and resolve their waste problems together. Therefore the project empowers the community to solve their waste problem and manage the plant through formation of community based organization, training for its members, and assistance during early operational of MRF (http://www.un.org/esa/dsd/susdevtopics/sdt_pdfs/meetings2010/icm0310/1e_Toshizo_Maeda.pdf). A positive score was accorded. |
| Quantitative employment and income generation | MRF will open new job opportunity within their community whereas recycle waste and compost sales will increase income generation, therefore, a positive score was accorded (http://www.idrc.ca/EN/Resources/Publications/Pages/ArticleDetails.aspx?PublicationID=115) |
| Balance of payments and investment | MRF is self-sustained through collection fees from users. The participants acknowledge that sustainability of MRF operation is assured through cost operative recovery principle, as long as community is committed to pay collection fees. But since MRFs are local activities without foreign investment or currency involved, a neutral score was given. |
| Technology transfer and technological self-reliance | Capacity needs to be built for the production of compost. The project does not involve sophisticated technology. Instead, appropriate technology is introduced and applied, In 2000 only 1.6% of all waste in Indonesia was treated by composting. Capacity building is therefore highly necessary (http://www.un.org/esa/agenda21/natlinfo/countr/indonesia/sanitationIndonesia04f.pdf). A positive score was accorded |

References can be an academic or non-academic source, such as a university research document, a feasibility study report, EIA, relevant website, etc.
SECTION E. SUSTAINABILITY MONITORING PLAN

E.1 Discussion on Sustainability monitoring Plan

Discuss stakeholders’ ideas on monitoring sustainable development indicators. Do people have ideas on how this could be done in a cost effective way? Are there ways in which stakeholders can participate in monitoring?

Stakeholders agreed that monitoring requirements for VER would be challenging and that monitoring of the sustainability indicators should not cause unnecessary work, especially because no negative indicators were identified.

It was agreed to keep sustainability monitoring simple; since most positive effects are connected to the regular operation of the MRF, participants agreed that many indicators could be monitored indirectly by monitoring the correct operation of the MRF.

E.2 Discussion on continuous input / grievance mechanism

<table>
<thead>
<tr>
<th>Method Chosen (include all known details e.g. location of book, phone, number, identity of mediator)</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Input / Grievance Expression Process Book</td>
<td>A section will be added to the regular monitoring forms that are provided regularly by the MRFs to the BNN</td>
</tr>
<tr>
<td>Telephone access</td>
<td>• BEST Office: Villa Melati Emas Blok O2 no 14, BSD, Tangerang (021)537.87.40 Contact person: Ilhamsyah Lubis • BEST Surabaya Office: Jl. Tenggilis Utara V no 7, Tenggilis Mejoyo, Surabaya (031)841.02.10 Contact person: Syawaluyo • LPTP Office: Jl. Melati no 173 RT 05/RW 57 Sambilegi Baru, Maguwoharjo, Depok, Sleman, Yogyakarta (0274)488473 Contact person: Mahmud Abdussalam:</td>
</tr>
<tr>
<td>Internet/email access</td>
<td><a href="mailto:jati@borda-sea.org">jati@borda-sea.org</a> septa <a href="mailto:noe@yahoo.co.id">noe@yahoo.co.id</a></td>
</tr>
<tr>
<td>Nominated Independent Mediator</td>
<td>n.a.</td>
</tr>
</tbody>
</table>
since there is a close and steady contact and good cooperation between MRFs and the BNN anyways.

All issues identified during the crediting period through any of the Methods shall have a mitigation measure in place. The identified issue should be discussed in the revised Passport and the corresponding mitigation measure should be added to sustainability monitoring plan.

<table>
<thead>
<tr>
<th>SECTION F. DESCRIPTION OF THE DESIGN OF THE STAKEHOLDER FEEDBACK ROUND</th>
</tr>
</thead>
</table>

Still to be done
Local Stakeholder Meeting "Micro-scale VER GS Community Based Solid Waste Management"
Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   Informasi yang baik dan komunikatif

2) Apa yang anda sukai dari pertemuan ini?
   Dari membuka lapangan pencarian

3) Apa yang anda tidak sukai dari pertemuan ini?
Local Stakeholder Meeting “Micro-scale VER GS Community Based Solid Waste Management”
Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?

Membuat kesempatan komunikasi antara KSM dan bisa berdiskusi dengan pemerintah.

2) Apa yang anda sukai dari pertemuan ini?

Menambah pengetahuan KSM tentang Macam\textsuperscript{2} pengelolaan sampah.

3) Apa yang anda tidak sukai dari pertemuan ini?
Local Stakeholder Meeting "Micro-scale VER GS Community Based Solid Waste Management"
Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   Sangat puas, meetingnya bagus.

2) Apa yang anda sukai dari pertemuan ini?
   pendanaan alternatif untuk mendukung program KIPRAH.

3) Apa yang anda tidak sukai dari pertemuan ini?
   tidak ada.
Local Stakeholder Meeting "Micro-scale VER GS Community Based Solid Waste Management"
Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   - Selanjut mengenal auror LER
   - Menambah pengertian tentang pengolahan sampah
   - Kesatuan teknologi yy lain

2) Apa yang anda sukai dari pertemuan ini?
   - Kesatuan fokus
   - Carbon

3) Apa yang anda tidak sukai dari pertemuan ini?
   - Belum tertibkan aryasi, pengurangan
   - Aturan apa saja, namanya bagi KITI di Indonesia.
Local Stakeholder Meeting “Micro-scale VER GS Community Based Solid Waste Management”
Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?

Sangat mendukung untuk menambah wawasan dan pengalaman bagi KSM Baru.

2) Apa yang anda sukai dari pertemuan ini?

Saling tukar pikiran satu KSM dengan yang lain.

3) Apa yang anda tidak sukai dari pertemuan ini?

Tidak ada.

KSM BERSAHABAT

[Signature]
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?

Menambah kesadaran dan pengetahuan tentang pentingnya kemandirian masyarakat dalam hal ketersediaan bahan baku kompost sebagai merupakan bagian dari praktek penyediaan kompost sebagai bahan baku dalam menjaga lingkungan.

2) Apa yang anda sukai dari pertemuan ini?

Menambah pengetahuan tentang praktik etnis kompost dalam masyarakat dalam menjaga lingkungan

3) Apa yang anda tidak sukai dari pertemuan ini?

Tidak ada
Local Stakeholder Meeting "Micro-scale VER GS Community Based Solid Waste Management"

Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   - Sesat informasi karena tidak relevan
   - Bertambah ilmu mengenai dampak sampah
   - Terhadap kekinian cenderung maruh
   - Sama KSM lebih aktif dan bertemu lagi

2) Apa yang anda suka dari pertemuan ini?
   - Materi & Tanya jawab
   - Biologi interaktif di antara KSM

3) Apa yang anda tidak suka dari pertemuan ini?
   - Tidur on time, mudah mengagumkan
   - Paramigma lain

KSM Griya Refik

Signature: [Signature]

Date: [Date]
Local Stakeholder Meeting “Micro-scale VER GS Community Based Solid Waste Management”
Rabu, 4 Juli 2012

FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   - Ruang pertemuan ini, pemangku kepentingan sangat
     interesant. Good! ^^
   - Masyarakat (pura pemangku kepentingan) benef-benef
     ini berpartisipasi dalam diskusi & memberi masukan.

2) Apa yang anda sukai dari pertemuan ini?
   Interaksi antara BORDA & pemangku kepentingan.
   (Interaksi masyarakat baik).

3) Apa yang anda tidak sukai dari pertemuan ini?
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   Pertemuan ini sangat bagus karena dapat memfasilitasi keterlibatan tim dan memberikan pemahaman yang lebih baik tentang program pengelolaan sampah komunal.

2) Apa yang anda sukai dari pertemuan ini?
   Pelaksanaan pembicaraan secara berkelompok sangat baik dan memungkinkan peserta untuk berpartisipasi secara aktif dan mendapatkan jawaban yang tepat.

3) Apa yang anda tidak sukai dari pertemuan ini?
   -
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   
   Bermain fair bagi seluruh stake holder.

2) Apa yang anda sukai dari pertemuan ini?
   
   Networking antara stake holder.

3) Apa yang anda tidak sukai dari pertemuan ini?
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?

Pertemuan ini sangat positif karena memaparkan berbagai aspek pengelolaan limbah dan berbagai macam solusi. Siswa dan guru telah menerima pengalaman/infomasi tentang pengelolaan sampah.

2) Apa yang anda sukai dari pertemuan ini?

- Menambah pengetahuan/penalaran
- Menambah pengalaman/infomasi
- Menyegarkan hati dan pikiran

3) Apa yang anda tidak sukai dari pertemuan ini?

- Penjelasan yang tidak jelas, mungkin terlalu cepat dan kurang detail.

Local Stakeholder Meeting "Micro-scale VER GS Community Based Solid Waste Management"
Rabu, 4 Juli 2012
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   a. Saya sangat bangga dan terimakasih. Karena “KSN Bongun Meri” Kab. Madura merupakan binaan dari Borda sepanjang Muster yang akan memulai kegiatan PERST.
   b. Program PER SLOD standar, sangat sesuai dengan PERST yang diterapkan.
   c. Tutorial yang komunikatif dan terbuka.

2) Apa yang anda sukai dari pertemuan ini?
   a. Pola kerja tim KSN.
   b. Mencegah pembelajaran dan pengetahuan.
   c. Meningkatkan nilai per-persenetrataan.
   d. Manfaat kompetensi yang baik (fasilitas memadai).

3) Apa yang anda tidak sukai dari pertemuan ini?
   a. Undangan kurang disiplin.
   b. Pada waktu makan malam kurang bersama.
   c. Waktu yang kurang efisien.
   d. Buka malam hari tidak digunakan untuk cerita.
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   - Pertemuan lucu bisa tercatat dan diperhatikan
   - Sengitnya usul rencana untuk urusan
   - Sampah yang lebih baik

2) Apa yang anda suka dari pertemuan ini?
   - Keterbukaan
   - Batas dan sampah untuk kegiatan
   - Bermanfaat untuk pengetahuan
   - Transfer ilmu

3) Apa yang anda tidak suka dari pertemuan ini?
   - Terlalu panjang dan membosankan
   - Keterbatasan bahasa
   - Paparan, orasi, tindak, resit
<table>
<thead>
<tr>
<th>Nomor</th>
<th>Pertanyaan</th>
<th>Jawaban</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>Apa kesan anda terhadap pertemuan ini?</td>
<td>Sangat bermanfaat &amp; membuka wawasan juga pada stakeholder pengelola sistem penanganan sampah, untuk meningkatkan kinerjanya.</td>
</tr>
<tr>
<td>2)</td>
<td>Apa yang anda sukai dari pertemuan ini?</td>
<td>Banyak peningkatan ini yang di bawa tim (Capacity building), untuk bermanfaat penanganan sampah, saat semua stakeholder terlibat, berbagi pengetahuan - sharing.</td>
</tr>
<tr>
<td>3)</td>
<td>Apa yang anda tidak sukai dari pertemuan ini?</td>
<td>——</td>
</tr>
</tbody>
</table>
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?

- Kesempatan yang selalu terbuka untuk menerima dan menyerap informasi yang diberikan. Saya rasa kegiatan ini sangat penting untuk mengoptimalkan pengelolaan sampah.

2) Apa yang anda suka dari pertemuan ini?

- Presentasi yang sangat detail dan mudah diikuti oleh semua peserta. Dapat membantu meningkatkan pemahaman tentang pengolahan dan penggunaan sampah.

3) Apa yang anda tidak suka dari pertemuan ini?

- Kerumunan yang membuat kesulitan dalam bertanya dan mendengarkan. Saya rasa jika lebih kecil, maka akan lebih efisien dan mudah dalam komunikasi.

Rabu, 4 Juli 2012

Local Stakeholder Meeting "Micro-scale VER GS Community Based Solid Waste Management"
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   1. Saya sangat puas pertemuan di adakan
      di tempat yang bagus dan suasana nyaman.
   2. Saya puas bertemu rekan-rekan baik di
      tempat ini.

2) Apa yang anda sukai dari pertemuan ini?
   1. Pendekatan pendekatan ini sangat
      baik.
   2. Pendekatan pendekatan ini.

3) Apa yang anda tidak sukai dari pertemuan ini?
   Saya tidak suka yang suka bicara
   selalu karena sangat mengganggu pertemuan ini dan kelupas waktu.
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
- Dalam pertemuan micro scale VERA 05 adanya pengejol lebih banyak yang bersangkutan dengan pengelolaan sampah. Ada peserta yang meminta lebih banyak partisipasi.

2) Apa yang anda sukai dari pertemuan ini?
- Peningkatan keterlibatan peserta lebih banyak dalam membicarakan masalah. Membahas teknologi yang digunakan dan manfaatnya.

3) Apa yang anda tidak sukai dari pertemuan ini?
- Waktu pertemuan yang tidak optimal. Peserta merasa kurang memadai.
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   a. Kesalahan Perkembangan ini sangat positif dan dapat diteruskan... 
   b. Kesuksesan Perkembangan ini sangat positif dan dapat diteruskan...
   c. Berdasarkan pengalaman dan penelitian, penelitian dan penelitian...
   d. Berdasarkan pengalaman dan penelitian, penelitian dan penelitian...
   e. Berdasarkan pengalaman dan penelitian, penelitian dan penelitian...

2) Apa yang anda suka dari pertemuan ini?
   a. Kesuksesan Perkembangan ini sangat positif dan dapat diteruskan...
   b. Kesuksesan Perkembangan ini sangat positif dan dapat diteruskan...
   c. Berdasarkan pengalaman dan penelitian, penelitian dan penelitian...
   d. Berdasarkan pengalaman dan penelitian, penelitian dan penelitian...
   e. Berdasarkan pengalaman dan penelitian, penelitian dan penelitian...

3) Apa yang anda tidak suka dari pertemuan ini?

  
FORMULIR EVALUASI

1) Apa kesan anda terhadap pertemuan ini?
   
   Baik dan perlu tinjau lanjut sehingga perlukan yg telah dicurahkan bisa berjalan.

2) Apa yang anda suka dari pertemuan ini?
   
   Keterbukaan dan keterlibatan semua peserta dalam suatu keberian planing.

3) Apa yang anda tidak suka dari pertemuan ini?
   
   Tingkat kebadiyan yg tidak maksimal.
NON-TECHNICAL SUMMARY IN BAHASA

KERANGKA ACUAN
KONSULTASI STAKEHOLDER
MICROSCALE GOLD STANDARD KIPRAH PENGELOLAAN SAMPAH BERBASIS MASYARAKAT
Yogyakarta, 4 Juli 2012

1. LATAR BELAKANG


Voluntary Emission Reduction atau Pengurangan Emisi secara Sukarela adalah sebuah proyek pengurangan Gas Rumah Kaca yang kredit pengurangannya bisa dibeli pihak (baik perorangan maupun perusahaan) yang ingin mengurangi emisi karbonnya secara sukarela.

Microscale Gold Standard KIPRAH Pengelolaan Sampah Berbasis Masyarakat adalah sebuah inisiatif untuk mensinergikan program pengelolaan sampah berbasis masyarakat dengan program pengurangan emisi secara sukarela. TPST telah turut mengurangi emisi gas rumah kaca yaitu gas metana dan adanya kgiatan pengelolaan sampah organik dengan pengomposan. Kredit yang diperoleh diharapkan dapat digunakan untuk mendukung keberlanjutan pelaksanaan kegiatan TPST. Program ini melibatkan berbagai pihak baik pemerintah pusat, pemerintah daerah, lembaga donor, Lembaga Swadaya Masyarakat, dan masyarakat sendiri.

2. TUJUAN & OUTPUT
2.1 TUJUAN:
   a. Menyampaikan dan mensosialisasikan kegiatan yang akan dilakukan, sekaligus dalam rangka pengembangan proyek berskala micro untuk kegiatan pengelolaan sampah berbasis masyarakat.
   b. Mendapatkan masukan dan saran dari stakeholders kegiatan pengelolaan sampah berbasis masyarakat untuk memenuhi persyaratan registrasi dibawah proyek skala mikro Gold Standard.

2.2 OUTPUT:
Output atau hasil yang diharapkan antara lain:
1. Stakeholders mengetahui rencana implementasi kegiatan
2. Mendapatkan masukan dari stakeholders untuk penyempurnaan kerangka implementasi kegiatan
3. Mendapatkan komitmen awal dari stakeholders untuk implementasi kegiatan.
Annex 8. Appropriate Aerobic Composting Technologies

**BAMBOO AERATOR**

### i. How It Work

In windrow composting method, organic waste piled up on a bamboo triangle construction (just like in figure), so air flows through the cavity. Thus the need of oxygen for composting available through this aerator. One unit of composting pile with 2.5 m length can be completed in 2-3 days.

### ii. Composting Process

1. Sorted organic waste
2. Put the organic waste on bamboo aerator with max. height 120 cm
3. The organic waste piled for 30-40 days
4. Regular monitoring according to SOP during composting process
5. Mature compost ready to packaged

### iii. Design Parameter

<table>
<thead>
<tr>
<th>Criteria</th>
<th>500 HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension/unit (L x W x H)</td>
<td>2.5 m / 1.6 m / 1.1 m</td>
</tr>
<tr>
<td>Composting Duration</td>
<td>40 days</td>
</tr>
<tr>
<td>Space required</td>
<td>112 m²</td>
</tr>
<tr>
<td>Numbers of unit</td>
<td>15 windrow</td>
</tr>
<tr>
<td>Capacity</td>
<td>1 ton/unit</td>
</tr>
<tr>
<td>Numbers of workers</td>
<td>3 person</td>
</tr>
<tr>
<td>Total cost</td>
<td>Rp 250,000,-/unit Rp 3,750,000,-</td>
</tr>
<tr>
<td>Materials</td>
<td>Bamboo, nail, wood stick 5/7 etc</td>
</tr>
</tbody>
</table>

**Plus:**
- Little time required for monitoring and operation
- Medium workforce needed
- Cheaper if compare with others method

**Minus:**
- High investment cost
- Requires a lot of space
- Not very tidy and requires discipline in operation
- Requires a lot of turning of the compost
- Slow composting process
i. Design Drawing

- The dimension of bamboo aerator
  L=250cm; W=60cm; H=52cm

- Wide of organic waste side pile 50cm

- Compost monitoring (moisture content, oxygen content, and temperature)

- Keep the triangle cavity always open, to make sure air flows

i. How it Work

Box method of composting is done by pile up organic waste in to hollow brick structure.

Air circulation inside through by porous pipes.

This construction lets air flows through:

- The holes in the wall
- Vertical pipes in the pile

While the hole between the pipes at the bottom structure as drainage for excessive water

Pictures reference: Info Materials example of replication of waste-conker small scale model,
Regional exposure workshop on Pro-poor & Sustainable Solid Waste Management for Secondary Cities and Small Towns, 22-24 February 2010, Dhaka, Bangladesh
ii. Composting process

- 3-5 cm aggregate of organic waste spread into the box by 20 cm layer
- The organic waste piled for 30-40 days
- Regular monitoring according to SOP during composting process
- After composting process finish, open box and break up the fresh compost is r from the box and store it on the floor for couple days
- Mature compost ready to packaged

iii. Design Parameter

<table>
<thead>
<tr>
<th>Criteria</th>
<th>500 HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension/unit (L x W x H)</td>
<td>5m /1,2cm/1,2cm</td>
</tr>
<tr>
<td>Composting Duration</td>
<td>40 days</td>
</tr>
<tr>
<td>Space required</td>
<td>96 m²</td>
</tr>
<tr>
<td>Numbers of unit</td>
<td>8 box</td>
</tr>
<tr>
<td>Capacity</td>
<td>1,9 ton organic waste/unit</td>
</tr>
<tr>
<td>Numbers of workers</td>
<td>2-3person</td>
</tr>
<tr>
<td>Total cost</td>
<td>±Rp2,400,000,-/unit</td>
</tr>
<tr>
<td>Materials</td>
<td>Brick, ¾” PVC pipe, 4” perforated PVC pipe</td>
</tr>
</tbody>
</table>

Plus:
- Little time and workforce required for monitoring and operation
- Tidy and very structured process
- Robust and needs no maintenance

Minus:
- High investment costs
- Requires a lot of space
- Construction is permanent and cannot easily be changed once built
- Slow materials degradation process

*organic waste from 500HH/2500person, Waste generation=0,25kg/days, Organic waste density=350kg/m³
iv. Design drawing

- Space formation of several box
- Side view of box
- Front view

Plan

Pipe PVC 35' (dia. 8mm)
Efforts to Accelerate Decomposition Of Municipal Solid Waste With Variety Of Decomposers

Enny Rahayu, Pauliz B. Hastuti, Harry Setiawan, Aziz Riyanto

Agriculture Institute INSTIPER, Yogyakarta, Indonesia 2012

ABSTRACT

The study aims to accelerate the decay of municipal solid waste, and test the quality of municipal solid waste compost. The composting process research was conducted in May-June 2012 at Jetakan, Pandowoharjo, Sleman, Jogjakarta Province and followed by laboratory test composting result in July-August 2012

The research used Complete Randomized Designed where the treatment design used two factors. Factor 1, is decomposer mixtures (A) which consists of three variations: A1 = Fermented Rotten Fruit (FRF) + goat blood serum + cow rumen, A2 = FRF + Factory-made microbial decomposer “Superdegra” + Goat manure, A3 = FRF + “Superdegra”+ Shrimp paste. Factor 2, is the composition of the compost (B), which consists of three variations: B1 = Household waste (HH) B2 = HH+ Gliricidia sepium leaves +husk charcoal + bran, B3 = HH +cow manure + bran+ charcoal husk. All 9 variations of the two factors were composted using passively-aerated windrow which later the piles were covered with clothes to maintain moisture condition. Another variation of A1B1 was composted using the same method of composting but not covered with cloth.

The results showed that all treatments from A1B1 to A3B3 of either a covered or uncovered were perfectly decomposed within 30 days.. The statistical analysis of compost content showed that the compost macro nutrients (N, P and K) is affected by interactions between the kinds of decomposers and organic materials. the best N content is A2B1 or while lowest one is A2B1. However, all results when compared to Indonesian Standard of Compost Product SNI No. 19-7020-2004, the N and K contents are higher while P content is lower. For the other quality parameters: C/N ratio is not influenced by the kinds of decomposers but influenced by the kinds of materials. C/N ratio of municipal waste compost (B1) was the lowest and significantly better from B2 and B3 even though B2 and B3 C/N ratio results are still in accordance to Indonesian Standard of Compost Product SNI No. 19-7020-2004

Keyword: Compost, decomposer, C/N ratio

67 Agriculture Institute, INSTIPER, Jl. Nangka II, Maguwoharjo (Ringroad Utara), Yogyakarta, Indonesia. Email: ennyanjal@yahoo.com
Assessment of Compost Quality from Household Organic Waste on Yield Mustard

Pauliz B. Hastuti68, Enny Rahayu, Harry Setiawan, Aziz Riyanto
Agriculture Institute INSTIPER, Yogyakarta, Indonesia
2012

ABSTRACT

This study aims to determine the quality and dose of compost from municipal solid waste from a variety of mixed materials and decomposers to the mustard crop. The design environment used in this study is CRD (Complete Randomized Design), while the treatments are the factorial design consisting of two factors.

The first factor is the compost variety of applications*, they are:

- **P1** = Fermented Rotten Fruit (FRF) + goat blood serum + cow rumen + Organic Waste (OW)
- **P2** = Factory-made microbial decomposer “Superdegra” + goat manure + FRF + OW
- **P3** = “Superdegra” + shrimp paste + FRF + OW
- **P4** = FRF + goat blood serum + cow rumen + OW + *Gliricidia sepium* leaves + husk charcoal + bran
- **P5** = “Superdegra” + goat manure + FRF + OW + *Gliricidia sepium* leaves + bran + husk charcoal;
- **P6** = “Superdegra” + shrimp paste + FRF + OW + *Gliricidia sepium* leaves + husk charcoal + bran;
- **P7** = FRF + animal blood Serum + cow rumen + OW + husk charcoal + bran;
- **P8** = “Superdegra” + goat manure + FRF + OW + cow manure + bran + husk charcoal;
- **P9** = “Superdegra” + shrimp paste + FRF + OW + cow manure + bran + husk charcoal,
- **P10** = FRF + animal blood serum + cow rumen + OW

*all piles are covered except P10

The second factor is the compost dose:

- **D1** = 120 gram/plant (30t/Ha)
- **D2** = 80 gram/plant (20t/Ha)
- **D3** = 40 gram/plant (10 ton/Ha).

The results showed that the composts and dose showed no significant interaction. Treatment of compost materials gave similar results on plant height, stem diameter, fresh weight of plant, number of leaves, fresh weight and dry weight of roots. The best chlorophyll content found in P6D1 (“Superdegra” + shrimp paste + FRF and OW + forage material + bran+ husk charcoal at dose 30ton/Ha). The best C vitamine content found in P1D3 (FRF + cow rumen + animal blood serum with organic waste compost at dose 10 ton/Ha ). Efficient compost dose is 20 ton/Ha. The Orthogonal Contrast Test figured the effect of compost compared to treatment with chemical fertilizer and no treatment at all to mustard plants. The result showed that the number of leaves and fresh weight of mustard with compost treatment are as good as chemical fertilizer. The chemical fertilizer yielded the highest mustard plants. The mustard plants without any treatment showed the lowest result in all parameters.

**Keywords** : municipal solid waste, organic waste, compost, mustard

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68 Agriculture Institute, INSTIPER, Jl. Nangka II, Maguwoharjo (Ringroad Utara), Yogyakarta, Indonesia.
Email: pauliz@instiper.ac.id
Business out of rubbish

An Indonesian garbage project helps to save the climate. By Christiane Oelrich

Cover photograph: Komar collects garbage using a cart attached to a motorcycle.

"We get a lot of precious metals," says Ali F., one of the project’s workers.

"I didn’t want to have anything to do with violence. Now I am collecting black gold and clean things," says Ali.

Students built the facility with the help of DTEC, a local non-governmental organization focusing on youth empowerment and community development.

An operator of the composting facility says, "Our project is an example of how to improve the environment and create jobs for the unemployed."

At the same time, the project has helped to reduce the local waste problem. According to the Government of Indonesia, the country produces over 12 tonnes of waste per day.

As a result, the facility has contributed to reducing the local waste problem, helping to improve the environment and create jobs for the unemployed.

The facility has also created a business out of rubbish, collecting precious metals and precious stones from the garbage collected. The facility is now employing local people, contributing to the local economy.

LOCAL DISSEMINATION WORKSHOP REPORT
Tangerang, 29 May 2012; Yogyakarta, 5th June 2012; Sidoarjo, 27th June 2012

I. BACKGROUND

The Progress of KIPRAH-CDM Program

Piloting program of *Kita Pro Sampah Clean Development Mechanism (KIPRAH-CDM)*, starting since 2009, is a program to seek chance and opportunity of the relation between Community Based Solid Waste Management and CDM as one of alternative funding mechanisms in the programs frameworks of reducing greenhouse gases.

Piloting research and testing of KIPRAH-CDM have undergone long-complex process and stage (this is because CDM Program is a relatively new program and there are not many stakeholders that comprehensively understand it), the research team continued to work hard under relatively limited resources.

Currently, the research team has succeeded in getting the approval from DNPI (*Dewan Nasional Perubahan Iklim*)/National Council on Climate Change for the PoA (Program of Activities) KIPRAH program Community Based Solid Solid waste Management as the only micro scale and community-based program.

To date, the research team has come to the tentative conclusion that the carbon market mechanism that may be taken is the Gold Standard Voluntary Emission Reduction (GS-VER). As for the implementation, it requires better institutional and prepared human resources, financial feasibility, legality, Community Based Organization's (CBO) role as the management and else must be well prepared.

One important lesson in this program is that people are willing and able to manage organic solid waste to be composted in accordance with the recommended aerobic technology standard, monitoring the process of composting activity and keeping record of the organic solid waste processing result. Willingness and ability can be maintained but must be accompanied by a clear system of incentives for them.

And since last year, all CBO registered in the PoA are given SOP (standard operating procedures) for operating, monitoring equipment as well as assistance in the context of treatment and monitoring process.
**KIPRAH-CDM Evaluation**

The purpose of this activity is to review the learning outcome of KIPRAH-CDM project to map the problems encountered during the implementation of this program, as well as to find a feasible solution.

Evaluation was conducted through stakeholder meeting in three cities in the province where *Borda NGO Network (BNN)* has a partnership with the Local Government (LG) to organize and facilitate a Community Based Solid Waste Management program. The three provinces are Banten, Yogyakarta Special Region and East Java.

As in the Province of Bali which was originally listed to have one MRF (*Tempat Pembuangan Sampah Terpadu*)

69} registered as PoA KIPRAH BORDA NGO Network, local workshop was not held because MRF built in the place was no longer conducting composting practice in accordance with SOP.

This local Workshop was inviting representatives of the national government (Waste Management Sub-Directorate and Sanitation Task Force); relevant local government offices (Public Works Office, Environment Office, Cleanliness and Landscaping Department) that has had basic tasks in solid waste management, better infrastructure provisioning, monitoring and solid waste management in the district / city.

The meeting would also invited Community Based Organization (CBO) of Community-Based Solid waste Management program that are not accompanied by the BNN with the aim of sharing knowledge with them and build networking among CBO.

**II. AIMS**

The aims of the series of workshop in 3 provinces are:

1. Understanding the strategy, policy and implementation of the program from the central government and regency and city government in solid waste management especially community-based solid waste management.

2. Evaluating the implementation of community-based solid waste management in relation to *Clean Development Mechanism (CDM)* and *Voluntary Emission Reduction (VER)* programs.

3. Evaluating and retrieving lesson in relation with *3R (Reduce, Reuse, Recycle) Community-Based Solid Waste Management Projects* in regional scale which in process and already implemented by CBO.

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69 MRF (Integrated Solid Waste Treatment Facilities), in KIPRAH-CDM Project will be called Mass Recovery Facility
4. Understanding the potential of recycle industry in 3R community-based solid waste management in area scale as an alternative funding.

III. PARTICIPANTS

The participants of the seminar are:
1. Central Government Elements (Directorate Development of Settlement Environmental Sanitation and Sanitation Task Force), Local Government and other LG offices related to Solid Waste Management (Public Work and Housing office, Sanitation and Landscaping office, City Planning and Settlement office), as well as Village Headman.
2. CBO (Community Based Organization) and people that are involved in solid waste management world, having solid waste issue, and MRF worker,
3. NGO (Non-Government Organization) as the facilitator of the program implementation, which is BNN, as an institutional entity that consists of Bremen Overseas Research Development Association (BORDA), Bina Ekonomi Sosial Terpadu (BEST), Lembaga Pengembangan Teknologi Pedesaan (LPTP).

<table>
<thead>
<tr>
<th>Table 1. The Participants of Local Stakeholder Meeting KIPRAH_CDM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Participants of Local Stakeholder Meeting in Banten Province</strong></td>
</tr>
<tr>
<td><strong>Day &amp; Date</strong></td>
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<td><strong>Location</strong></td>
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### Agency, South Tangerang City

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<thead>
<tr>
<th>Agency, South Tangerang City</th>
<th>Msc; Bambang Budianto, ST</th>
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</thead>
<tbody>
<tr>
<td>Environmental Agency, Banten Province</td>
<td>Budi Hermanto</td>
</tr>
</tbody>
</table>

### Integrated Solid waste Management Team, Jakarta

- Integrated Solid waste Management Team, Jakarta

### Independent Community Group

- Bina Cinta Lingkungan Community
- Independent Scavenger Group ‘La Roiba’
- Independent Scavenger Group ‘Barokah’
- Recycle Business Unit
- Griya Resik CBO, Tangerang City
- Vipamas CBO, South Tangerang City
- Jombang CBO 17, South Tangerang City
- RW12 CBO, Benda Baru, South Tangerang City
- Griya Reni Asri CBO, South Tangerang City
- Puri Resik CBO,
- ]Sehati Sepang CBO, Serang Regency
- Sampora Beraksi CBO, Tangerang Regency
- Serua Makmur CBO, South Tangerang City
- Bersahabat CBO, South Tangerang City
- Pondok Aren Beriman CBO, South Tangerang City
- Sari Mulya CBO, South Tangerang City
- Maju Bersama CBO, South Tangerang City
- Bermis CBO, South Tangerang City
- Mustika Tiga Raksa CBO, Tangerang Regency
- Pengelola Tiga Raksa CBO, Tangerang Regency
- Puri Mandiri
- Mia Mandiri
- Beriman CBO
- Semanggi CBO

### Borda Indonesia

- BEST Director
- Community Development Expert (CDE) of BEST
- Field Facilitator Expert (TFL) of BEST
- BEST Staff
- Borda Indonesia

- Hamzah H. AL Rasyid
- Ilhamsyah Lubis
- Taslim Samah
- Suwardi, Iradati Pratiwi, Maria, Iman Munandar, Fadli Nur Ilmi
- Jati Kusumowati, Septa
The Participants of Local Stakeholder Meeting in Yogyakarta Province

**Day & Date**: Tuesday, June 5, 2012  
**Location**: Lestari Restaurant, Yogyakarta

<table>
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<tr>
<th>Code</th>
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<th>N</th>
<th>Representation(s)</th>
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<tr>
<td>A</td>
<td>Sanitation Task Force, Yogyakarta Province</td>
<td>2</td>
<td>Dardjat Widjunarso, ST, Msi</td>
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<td></td>
<td>Public Work and Housing Office, Sleman Regency</td>
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<td>Bambang Widiyoko, ST</td>
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<td>Public Work and Housing Department, Gunungkidul Regency</td>
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<td>UPT KP3, Public Work and Housing Department, Bantul Regency</td>
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<td>Shinta Surya Dewi, ST</td>
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<td></td>
<td>Environmental Agency, Bantul Regency</td>
<td>1</td>
<td>Antony Hutagaol</td>
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<td></td>
<td>Environmental Impact Control Office (Kapedal), Gunung Kidul Regency</td>
<td>1</td>
<td>Eko Sp</td>
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<td>Environmental Office, Kulonprogo Regency</td>
<td>1</td>
<td>Arie Budiyanto</td>
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<td>Environmental Office, Sleman Regency</td>
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<td>Haryono</td>
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<td>Head of Villages from MRF located</td>
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</tr>
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<td>B</td>
<td>Kepek CBO, Gunung Kidul Regency</td>
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<tr>
<td></td>
<td>Bringinharjo CBO, Bantul Regency</td>
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<td></td>
<td>Sampurno Asih CBO, Bantul Regency</td>
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<tr>
<td></td>
<td>Asri Sentolo CBO, Bantul Regency</td>
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<td>Minaharjo CBO, Sleman</td>
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<td>Pendowo Lestari CBO, Sleman Regency</td>
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<td>Atras Temulawak CBO, Sleman Regency</td>
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<tr>
<td>C</td>
<td>Director of LPTP</td>
<td>1</td>
<td>Popo Riyanto</td>
</tr>
<tr>
<td></td>
<td>LPTP Project Coordinator</td>
<td>1</td>
<td>Suryanto</td>
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<tr>
<td></td>
<td>Technical Field Facilitator</td>
<td>4</td>
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<td></td>
<td>Social Field Facilitator</td>
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<td>KIPRAH Project Coordinator BORDA</td>
<td>1</td>
<td>Surur Wahyudi</td>
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<td>BORDA Staff</td>
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<td></td>
<td>Carbon Funding Project Researcher BORDA</td>
<td>1</td>
<td>Jati Kusumawati</td>
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<td></td>
<td>Project Assistant of KIPRAH-CDM BORDA</td>
<td>1</td>
<td>Septa Nugroho</td>
</tr>
</tbody>
</table>

The Participants of Local Stakeholder Meeting in East Java Province

**Date and Time**: Wednesday, June 27, 2012  
**Location**: Auditorium Diklat Air Minum East Java, Surabaya, Jawa Timur

<table>
<thead>
<tr>
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<tr>
<td>A</td>
<td>Sanitation Task Force, East Java Province</td>
<td>5</td>
<td>Wahyu W, Sukirno Hadi, Zaenuri, Agus, Eko Sutantooyo</td>
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<tr>
<td>Sanitation and Park Department, Surabaya City</td>
<td></td>
<td>Saida, Mahmud</td>
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<tr>
<td>Sanitation and Park Department, Sidoarjo City</td>
<td></td>
<td>Moh Subiyanto</td>
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<tr>
<td>Public Works and Planning Office, Jombang Regency</td>
<td></td>
<td>M Rosyid</td>
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<tr>
<td>Public Works and Planning Office, Ngawi Regency</td>
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<td>M dhori, Januri,</td>
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<td>Public Works and Planning Office, Malang Regency</td>
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<td>Dion Rudy, Gunawan P</td>
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<td>Village Head</td>
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<td><strong>B (Independent Community Group)</strong></td>
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<td><strong>C (BORDA &amp; BEST)</strong></td>
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<td>1</td>
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</tr>
<tr>
<td>Community Development Expert (CDE)</td>
<td></td>
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<td></td>
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<tr>
<td>Field Facilitator (TFL)</td>
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</tbody>
</table>
IV. MEETING AGENDA

KIPRAH-CDM team had arranged the agenda for local workshop in accordance to the need of each province because the condition MRF in each province is different. The detailed agenda for local workshop in each province can be seen in the attachment.

Mainly, the agenda for local workshop has 2 main activities, namely:

a. The explanation from stakeholders and solid waste management actors
   1. *The policy explanation from ministry representative/related department’s*
      
      Satuan Kerja Pengembangan Penyehatan Lingkungan Permukiman Departemen Pekerjaan Umum (Public Works Department Sanitation Task Force) formed by Public Work Ministry as a national stakeholder in waste management. The representative person from Sanitation Task Force delivered strategic program in handling solid waste issue in the household scale, neighborhood scale, or village area scale, therefore the representative person not merely deliver speech about MRF program. There is an important thing to be note that MRF’s plays important role to help solving the city solid waste management issue because: MRF reduces the volume of residue which need disposed to Final Dump Site, therefore it also extend MRF ages, educates the community served to behave towards solid waste and sanitation, so then peoples more care about healthy lifestyle.
   2. *The explanation from local government who implementing ‘community based solid waste management’ projects.*
      
      Local government, as in regulatory compliance (Article 24 of Act No.18 of 2008 about solid waste management) is responsible for the maintenance cost of MRF. This authority is under public work and housing office, city planning and settlement office, or cleanliness and landscaping office.
   3. *The explanation of MRF’s CBO*
      
      CBOs, that have been conduct aerobic composting and monitoring in accordance to the need of research were selected to deliver presentation of their project activities.
   4. *The exposure of BORDA KIPRAH-CDM Team*
      
      BNN as a institutional entity who organizing the projects provides the explanation about what, how and the aims KIPRAH-CDM program. The integrated solid waste management in MRF which managed by CBO is implementing aerobic composting to manage organic waste. This activity has a major role in helping to makes clean environment and reduce methane (CH4) released into the air as part of the environment rescue effort, in addition the CDM market mechanism is also one of the alternative funding sources. From the explanation from various stakeholders, we gained insight and stimulation for the evaluation of community-based waste management program and formulate strategies to address the challenges of implementing community-based waste management program in the future.

b. Focus Discussion Group (FGD)

The group discussion aims to obtain information from various stakeholders regarding the implementation of community-based solid waste management program. On FGD agenda, the participants divided into several groups, the group members adjusted to needs of different
Benefits

Solution

Problems

1. Grouping participant at Banten Local Stakeholder Meeting

Tangerang is the province where BNN conducts most of community facilitation to the CBOs through Bina Ekonomi Sosial Terpadu (BEST) as NGO that initiated the community-based solid waste management and has good relation with Local Goverment. main challenge encountered MRFs in Banten are how to optimize the existing projects and to ensure the sustainability MRFs built there. in FDG session, grouping discussion participants based on the activity and the impact occured. Members in one group discussion are mix between LG, NGO, CBO and Field Facilitator. The groups are:

- Beneficiaries Group of MRF in solving the solid waste problems in Banten Province. (this group was only attended by representatives from the local and office government, so that agreement could be made concerning the things that are feasible for the government and region to support the continuity of MRF)

While the other groups were of CBO representatives and MRF operators.

- The Composting Group
- Residue Processing Group
- Recycle Group
- Operational and Maintenance Group

<table>
<thead>
<tr>
<th>Topic</th>
<th>Benefits</th>
<th>Problems</th>
<th>Solution</th>
</tr>
</thead>
</table>
| MRF’s existence | - Reducing the solid waste disposed to Final Dump Site  
- Prolonging Final Dump Site lifespan because solid waste is managed at MRF  
- Community-based solid waste management | - It is difficult to get the site with preferable size.  
- Many community members didn’t agree if MRF built near to their neighbourhood | - Local Government to provide land space for MRF  
- To push property investor on providing space/land for social facility which possible to used as MRF site  
- Community pay the management fee regularly. |
| Composting  | - Reducing volume of waste trough composting the organic waste  
- Producing compost as organic fertilizer. | - Hug piles of unsold compost  
- Compost price are too low. | - Local government to buy compost product from MRF |
| Recycled Goods | - Reducing the solid waste volume should to disposed at Final Dump Site  
- Recyclable has more economic value  
- earn more income for | - Not all recyclable goods can be sold.  
- The fluctuation on price of recyclable goods. | - Making cooperation with recycle business units.  
- Making cooperation with small industry producing goods from recycled garbage. |
2. Grouping participant at Yogyakarta Local Stakeholder Meeting

Because Yogyakarta province is the newest to conduct the program (2008), the number of CBO and experience either from the government, NGO, and community are relatively less. The discussion group is based on the experience before and after the construction, this is done because prior to MRF site construction it was preceded with socialization, planning, and mobilizing community activity. After MRF was built, solid waste management activity began.

Table 3. FGD Result in Yogyakarta Workshop

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solutions</th>
</tr>
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</table>
| - It is difficult to find land space for MRF, even if there is, the space is limited.  
  - Land space status often becomes problem, if it is village property's, it needs Village Regulation for function alteration.  
  - The rejection from local community considering that MRF causes odor, dirtiness and disease; many flies (the case occurs in Kulonprogo Regency) | - Local government should entirely back-up the determining land space for MRF building.  
  - Village Regulation for altering land space function  
  - For residential area, developer needs to provide land space for social facility which can be used as MRF site.  
  - Solid and prepared socialization to community, so there is no rejection or problem in the later day.  
  - Actively forming cadres to caring about sanitation issue in every village. This role can be done by NGO facilitation |
- Problems with related building orientation with local land use planning.
- The solid waste management process coming to MRF is not fully understood by CBO and its operator.
- Community are careless towards waste handling

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solution</th>
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<tbody>
<tr>
<td>Early socialization of KIPRAH-CDM program and the construction of MRF should be transparant and detailed so that the community properly understood the benefit of this project for them. The continuous socialization of 3R activity so that the Community feel to take part in KIPRAH-CDM program. Socialization to community if MRF building is different with final dump site.</td>
<td>- Facilitate the CBO in the bylaw drafting by expert facilitator. - Election of CBO board member, considering the factor of ability and capability in community work, having the insight environmental awareness - Operator recruitment with the criteria of resilient in working with garbage, having social and environmental initiative. Enough and proper salary according to the workload for the operator.</td>
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</table>

In relation to CBO forming:
- The lack of knowledge in arranging bylaw as the basic rule of organization.
- It is difficult to set up CBO administrator because only few community would like to actively manage MRF.
- It is difficult to recruit operator because only few people would like to work in MRF.

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solution</th>
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</thead>
<tbody>
<tr>
<td>Building and facility: - MRF completed is not according to the planned design. - Less completeness of facility and operational equipment (cart, restroom, counter machine, clean source of water) - The building is not adequate.</td>
<td>- Community involvement in the planning design of MRF - After construction completed, joint checking should be done among government, community and executing contractors. - Adding light equipment with independent budget. - Independent clean water supply because of no well available.</td>
</tr>
</tbody>
</table>

Human factor:
- There are cases of prospect client cancel joining.
- The spirit of CBO is reducing due to incomplete facility and supporting equipment.
- CBO is not solid in running MRF
- The number of operator / worker is limited and insufficient for MRF capacity.
- Operator is not working seriously.
- Parsing from household level and operator is not good.
- Post construction, the attention of local government stakeholders (KLH, DPU, DKP)

<table>
<thead>
<tr>
<th>Problems</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Persuasive approach to the community concerning the expediency of MRF for the improvement of environmental sanitation. - The forming of CBO organizer is based on ability, responsibility, not because of popularity or seniority, so that solid CBO is formed. - Providing operating skill training and encouraging welfare of the operator (through incentive) so that the motivation of work increases. - Continuous socialization about 3R and parsing. - CBO remains open network and contact to local government to be able to communicate</td>
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</table>
restricting.
- The institutional strengthening of CBO to be business entity when the service area covers the entire village.
- Solid waste volume in management keep rising, solid waste management becomes less maximum.

problems in MRF, in case someday needs help from the local government.
- Support from local government to strengthen CBO position as business entity of the village.
- Adding the number of operator, if possible.

3. Grouping participant at East Java Local Stakeholder Meeting

At East Java, the number of CBO running MRF are quite a lot, MRF buildings are mostly built with huge funding (around a billion rupiah), but the succession level is not good enough. According to BNN, this is because of the lack coordination among stakeholders. Then grouping is done based on each role, every group has its own discussion topic. The first discussion consists of three groups namely:

- CBO group (operational supporting factor; operational restricting factor; local government’s role towards MRF 3R operational; expectation)
- Village head group (what role has been conducted towards the existence of MRF 3R; the benefit earned from the existence of MRF 3R; problems encountered; expectation)
- Government and office representatives group (what role has been conducted towards the existence of MRF 3R; the benefit earned from the existence of MRF 3R; problems encountered; expectation)

After FGD finished, the group representation presented the discussion result. In this session, participants were given more time to share their experience and exchange information to other stakeholders. At the end of the session, a representation of KIPRAH-CDM BORDA delivered the review and brief conclusion of this discussion.

Table 4. FGD Result in East Java Workshop

<table>
<thead>
<tr>
<th>CBO Group</th>
<th>Supporting Factor</th>
<th>Restricting Factor</th>
<th>Local Government’s Role</th>
<th>Future Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Sufficient Location</td>
<td>- Troubled Site and Building</td>
<td>Solid waste container aid / giving transport service of residue to FINAL DUMP SITE</td>
<td>Routine monitoring activity from related department to supervise MRF progress.</td>
</tr>
<tr>
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<td>- Far from the residential.</td>
<td>- Insufficient machine capacity.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>- Complete facility and media.</td>
<td>- Easily broken Machine and transportation unit.</td>
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<tr>
<td></td>
<td>- The awareness, care and support from the community towards MRF.</td>
<td>- Community are not actively supportive towards the solid waste management program.</td>
<td>Village to facilitate routine meeting with related department to discuss the progress of MRF.</td>
<td>Village regulatory fixation that bounds the community to actively involved in solid waste management.</td>
</tr>
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<td></td>
<td>- Good cooperation among community, CBO and the</td>
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The Carbon Market and Integrated Waste Solutions: A Case Study of Indonesia

| government. | - CBO is not actively assistance community.  
|            | - Local (village) government is careless towards the progress and management of MRF. |
| - Local government support.  
| - Operational aid funding  
| - Village regulatory bonding the community to join MRF program. | - Compost is not sold out.  
|            | - Government does not support compost selling and residue transport. |
|            | - Related department to give overall training.  
|            | - If wanting progress of MRF service, budget must be allocated. |
| - Solid CBO, operator working in accordance to SOP  
| - A regular payment from the community. | - There are community late / refusing to pay the contribution fee  
|            | - Less number of operators.  
|            | - Operator not working in accordance to SOP |
|            | Reward to MRF worker that they are not considered of having dirty job.  
|            | The effort to keep learning and innovating in terms of technique and method of solid waste management. |

**Village Head Group**

<table>
<thead>
<tr>
<th>Role applied to MRF’s existence</th>
<th>The benefits of MRF’s existence</th>
<th>Problems Encountered</th>
<th>Future Expectation to MRF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socialization to village institutions (LKMD, BMD, PKK, RT,RW) about solid waste management program and MRF</td>
<td>The community starts to realize the importance of solid waste management making clean and natural environment, supporting the program of save environment.</td>
<td>The awareness of the community is still lack, some of them still pile up garbage.</td>
<td>Village environment is cleaner, peoples are more aware and concern about waste handling, they do not handle the waste that possibly to harm the environment.</td>
</tr>
<tr>
<td>Actively involved in the conducting of MRF plan, make an assessment letter for CBO</td>
<td>CBO earned recognition and is legality to work and be responsible to MRF.</td>
<td>The difficulty of communication with CBO board member. If there is a not-working CBO board member, a refreshment should be done.</td>
<td>There is incentive for MRF workers</td>
</tr>
<tr>
<td>Role applied to MRF’s existence</td>
<td>The benefits of MRF’s existence</td>
<td>Problems Encountered</td>
<td>Future Expectation to MRF</td>
</tr>
<tr>
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</tr>
<tr>
<td>Continuous socialization to the beneficiary community about the benefit of solid waste management and parsing form household to MRF</td>
<td>Waste separation/sorting by household level conducted from household level creates clean environment. Reducing solid waste from its source.</td>
<td>Piled solid waste and not managed properly will cause odor and environmental corrupt.</td>
<td>Compost product is better in quality causing sold out in sale. Helping the demand for manure for those in need.</td>
</tr>
<tr>
<td>Giving facility to MRF building: - Electricity. - Operational charge funding for a month. - Operator’s working cloth - Assistance and monitoring.</td>
<td>Reducing unemployment and providing job vacancy for local peoples</td>
<td>- CBO organizer is not active that refreshment is required. - Quarrels among CBO organizers, not solid CBO. - Location limitation and the problem of ground status used as MRF.</td>
<td>Central government to support budgeting need for solid waste system. Involving the role of private company to seek for funding through CSR grant to add MRF working equipment.</td>
</tr>
<tr>
<td>Giving assistance and help in the process of organic solid waste management, either in forms of knowledge or material (composter).</td>
<td>Compost products from MRF is handy for the local community and become an additional income</td>
<td>Lack of operational budget causing difficulties to manage operational activities, and the waste not well handled</td>
<td>MRF and its surrounding environment can be educational place of solid waste management and environment sanitation.</td>
</tr>
<tr>
<td>Provide vehicle (truck and driver) to</td>
<td>Reducing residue disposal to final dump</td>
<td>MRF operates continually that</td>
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</table>
The result of FGD with Local stakeholder meeting in three provinces is distributed to local government, Sanitation Task Force of each province, Public Work Ministry as input to fix and increase the policy of community-based solid waste management.

V. WORKSHOP ACTIVITIES DOCUMENTATION


Pic. 2. Yogyakarta FGD Documentation, June 5, 2012

Pic. 3. Surabaya FGD Documentation, June 27, 2012
VI. RESULTS

1. The main challenge to implement KIPRAH, with carbon credit components can be identified and disseminated, are:
   - The knowledge about CDM is extremely complex and requiring an expert to monitor the progress every day. The capacity of executing NGO as the spearhead of pilot application of carbon component in KIPRAH needs better preparation.
   - CDM program campaign by the government is not sufficiently distributed and shared. While the local government still needs more knowledge input, it creates gap when executing NGO tries to communicate the program to the local government.
   - The concept that small communities in developing countries can participate in the effort to reduce global warming through solid waste management and can get the benefit in the form of incentives from carbon sale "is still a smoke and distant fire" because the real community still has to work hard to overcome solid waste problems.
   - The concept methane (CH4) reduction through solid waste management activity, especially on a small scale and carried out by the community themselves, is still difficult to be understood by the community.
   - Monitoring activity in CDM requires a long period of time and detail. Based on the evaluation result of CDM monitoring application, the administrative capability to perform monitoring has not taken thoroughly by CBO. Thus, the implementation of KIPRAH CDM should be accompanied by a simple and acceptable monitoring.

2. Evaluation of implementation KIPRAH CDM 2009-2012 projects has been delivered to all the stakeholders either from central government, local government, implementing NGO, and CBOs.

3. Coordination among stakeholders for the sustainability of the community-based solid waste management has been successfully implemented.

4. Recommendations of the implementation of sustainable community-based waste management program has been consolidated and communicated among stakeholders.

   The followings are recommendations for every stage in MRF program implementation which are divided into: (a) the Location Selection of MRF, (b) Socialization and Planning, (c) MRF Management (d) MRF Construction Stage, (e) Solid waste Transport and Parsing, (f) Composting, (g) Residues Management
   a. MRF Location Selection
      - Each region has its own challenge that differs between one region and another. Generally, when there is a village property's ground in the village, it can be used for the MRF site.
      - Urban areas tend to be rather difficult in selecting the ground for building MRF, because there is minimum ground availability and the resistance from local people (solid waste is identical with the bad odor and dirty)
      - The status of the building ground should be clear in order to prevent the risk of conflict in the later day. (If it is the kas ground of the village, there should be a setting/PERDES, etc.)
   b. Socialization and Planning
• Management capacity design is planned in accordance to current need and projected to proportional progress (adding service area to other RT / RW).
• The term ‘management fee’ used in CBO Prasung Berseri is more proper to use than the term ‘charge’.
• The calculation of management fee is with the calculation of safety limit where the expense prediction equals to 80% ‘management fee’ from total participants. The result from the stall is considered to be extra value to support the operation.
• MRF design and blueprint socialization should be transparently and openly conducted, not only to the formed CBO organizer but also to the served community.

c. MRF Management
• The election for CBO organizer determines the progress of MRF progress. KPST organizer is not merely accepting structural rank of formality but the organizer must work to manage MRF.
• The service range of MRF affects MRF Management. Medium range is easier to manage.
• Financial management transparency plays an important role in the progress of MRF operation. There should be Periodic financial report to the served community.
• If in its progress MRF can operate well both in operational and community service, then the raise of ‘management fee’ is possible so that MRF can increase the well-being of its operator and TPS 3R worker. As for example: THR, health and hazard cost, insurance, etc.
• Restructuration and refreshment in CBO organizer is necessary to be done in a certain period. It is that MRF is not of organizer ownership but community ownership.
• CBO organizer needs to be innovative in terms of idea and effort to develop MRF by looking at chance and opening cooperation with outsider, donor, and the government.

d. MRF Construction Stage
• Construction with hibah (grant) pattern gives more space to the community to involve and determine their need of MRF site.
• Contractual progress model, based on experience so far, tends to be incomplete and not transparent in its implementation. Many MRF have been built but not having its supporting tool which is supposed to be included in the construction package. Some MRF built in 2010 area also not yet equipped with minimum facility supposedly owned in a MRF.
• Assistance during the construction stage by an escort partner is absolutely necessary to ensure that the needs of the facility has been fulfilled (water, electricity, tool)
• Environmental infrastructure (road access, drainage system) on the building site of MRF exists so the operational could run well.
• The active role of the community is required in this construction stage, either directly involved or when (contractually) overseeing the construction activity.

e. Waste Collection and Separation
• Parsing at household scale cannot be forced instantly when MRF starts operating. It takes continuous approach and socialization.
• Incentive to people (household scale) that conduct solid waste sorting at their house and vice versa – disincentive – can be applied depending on the social condition of the community.
• The process and smoothness of solid waste transport area affected by the number of transportation unit available and the condition of service infrastructure.
• Scheduling of solid waste transport also affects to composting activity.
• Parsing at household level would reduce the workload of MRF operator that they can focus more on composting activity.

f. Composting
• The understanding about aerobic composting in relation to its impact towards climate change needs to be socialized to all community, not only to CBO. So far, community only understand that MRF is a mere solid waste management site.
• The application of aerobic composting at CBO level varies because many CBO previously learned about composting. This results that the agreed composting standard becomes diverse, in terms of different composting age.
• Composting model planning (bamboo aerator, brick box, stacking basket) is decided at the time of MRF construction planning, this is because the size of the building site can determine the composting model employed.
• This aerobic composting monitoring is complex and a little tricky that synergy between organizer and MRF operator is essential to be done because if it is only done by the operator, solid waste management will be overwhelmed. In this case organizer needs to lend a hand to help monitoring activities. If necessary to appoint special operator for monitoring and record-keeping (especially when the composting units are many).
• In KIPRAH CDM program, monitoring towards aerobic composting activities is a determining factor to gain carbon credit that can be sold.
• Technical evaluation towards method and monitoring device is continuously conducted by BORDA in sake of gaining easy implementation of composting record.
• BNN currently undergoing advanced research with the aim to search for good compost formula (mixture solid waste- ‘ingredients’ and composting age). Research is conducted in cooperation with INSTIPER University, Yogyakarta.

g. Residue Management
• The management of parsing result in stalls is an extra value.
• The economic value of the stall is different in each MRF 3R. It takes sharp attention and decisive effort of CBO and its organizer in terms of aiming business opportunity by managing the stall.
• It takes further effort in managing re-used and re-cycled goods. Exchange of skill in utilizing the used materials is according to the character in each region (in Probolinggo, stereo foam is used to make Madura trumpet).
VII. Closing

Thereby we deliver the activities report of ‘One-day Seminar of Community-Based Solid waste Management and Its Impact towards Climate Change’ which has been held in three provinces. Hopefully, these discussion results from this activities will be a useful input and delivering extra value in implementing community-based solid waste management system for the following years.

Yogyakarta, September 10, 2012
BORDA NGO NETWORK INDONESIA