Tentative PROJECT IDEA NOTE

A. Project description, type, location and schedule

Technical summary of the project Date submitted**: August 22, 2005**

Objective of the project	Replicable model for environmentally friendly and economically viable municipal solid waste processing.
Project description and proposed activities (including a technical description of the project)	The Gianyar, Bali Waste Recycling Project will process all the 27 tons of municipal solid waste that is collected daily in the Gianyar Regency, which is home to 350,000 inhabitants. The project will reduce the amount of waste that must be landfilled to 10 to 15 % by recovering the material made from non-renewable resources as well as composting the organic waste in a forced aeration process. Additionally, the project will help to alleviate poverty and transfer know-how for the replication of the model. The project is strongly endorsed by the Regent of Gianyar, who among other support makes state land available free of charge. In a community based program style, the village of Temesi - where the project is located - will take sole ownership of the project once it is fully implemented and self-sustaining.
Technology to be employed	The project will recover 85 to 90 % of non-renewable resources and organics from the incoming waste, which is first separated manually on conveyer belts. Material made from non-renewable resources like plastic, glass, metals and paper are first removed manually from the conveyer belts and then sold to waste recyclers. Where appropriate, recovered material is compressed in a hydraulic baler. Organic waste that comes off the conveyer belts is first chopped in shredders to increases its surface. This accelerates the microbiological aerobic digestion, which is enhanced with effective microorganisms. Composting is done in up to 2.5 meter high piles by forced aeration using a centrifugal air blower. The piles are turned periodically to loosen up and homogenize the substrate. The composting process is monitored with temperature and oxygen sensors as well as a pH-meter to guarantee a good compost quality that is free of phyto-toxic volatile fatty acids (VFA) and pathogenic bacteria. Manometers allow controlling the air blown into the piles at approx. 2 millibar. Flow control in the piles is essential to keep the CO_2 levels low, while maintaining the oxygen levels at or above 16 % and the temperature at the required 55 to 65 degree Celsius. Only forced aeration can completely prevent the formation of the greenhouse gas methane. When the composting process is completed, the compost is passed through electrical sieves (mesh size 4) and then cured before being sold.

Project developer	
Name of the project developer	**Rotary Club of Bali Ubud**
Organizational category	NGO
Other function(s) of the project developer in the project	The project developer supervises the daily operations until the project is fully operational and self-sustaining.
Summary of the relevant experience of the project developer	Since June 2004, the project developer runs a 2 ton/day pilot research and test facility on the future location of the project to optimize the technical design for this 27 ton/day project with instruments to measure oxygen content, temperature and pH during the composting trials. The pilot plant is equipped with a conveyer belt, a 45 hp shredder, a 5 meter electrical compost sieve and a hydraulic baler. The Project Leader was Indonesian Resident Representative for Swisscontact from 1995 to 1998.
Address	PO-Box 10011 / Ubud, Bali 80571
Contact person	David Kueper, Project Leader (MSc in Chemistry and MBA)
Telephone / fax	0361 980 205
E-mail and web address, if any	dkuper@indo.net.id
Project sponsors	
(List and provide the following information for all project sponsors)	
Name of the project sponsor	Rotary Club of Bali Ubud
Organizational category	NGO
Address (incl. web address, if any)	PO-Box 10011 / Ubud, Bali 80571
Main activities	Execution of community projects.
Summary of the financials	Dependent of Rotary on other donations.
Type of the project	
Greenhouse gases targeted	Methane formation in landfill
Type of activities	Methane abatement
Field of activities	Waste reduction
d. Waste management	Small Scale Municipal Solid Waste Management by composting in a forced aeration process.
Location of the project	
Region	South-Asia
Country	Indonesia
City	Gianyar, Bali
Brief description of the location of the plant	The project facility is built on the existing but nearly full landfill of the Regency of Gianyar.
Expected schedule	
Earliest project start date	2006
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 4 months. Time required for legal matters: 1 months. Time required for construction: 5 months. Total: 10 months.
Expected first year of CER delivery	2006
Project lifetime	at least 10 years.
Current status or phase of the project	Feasibility study finished.
Current status of the acceptance of the Host Country	Formalities and approach to obtain Letter of No Objection are known and will be obtained in due time.
The position of the Host Country with regard to the Kyoto Protocol	Indonesia is a non-Annex I country and has ratified the Kyoto Protocol (?).

B. Expected environmental and social benefits

Estimate of Greenhouse Gases abated / CO_2 Sequestered (in metric tons of CO_2-equivalent)	Annually 14,500 tons CO_2e. (27 t waste expected – 2 t pilot facility = 25 tons/day. 25 t/day x 350 days = 8,750 t/yr @ 0.072 t CH_4/t = 630 t CH_4/yr. 630 t CH_4/yr x 23 = 14,490 tons CO_2e/yr.)
Baseline scenario	Presently, the annual 8,750 tons of mostly organic waste from the Gianyar Regency are deposited in a controlled landfill without a methane collection system. This leads to methane emission from the anaerobic digestion of the organic content. Without the aerobic composting proposed in this project, the methane emission would continue unabated.
Specific global & local environmental benefits	
Which guidelines will be applied?	The Kyoto Protocol's CDM guidelines.
Local benefits	The waste deposited in the existing landfill is reduced by 85-90 %. Emissions like odor, flies, liquid leakage from deposited waste and potential methane hazards are drastically reduced or eliminated.
Global benefits	Reduction of the greenhouse gas methane.
Socio-economic aspects What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?	The community in which the project is located benefits from new jobs and an emission reduction. The Regency of Gianyar benefits from an environmentally friendly and low cost waste management and a nearly ten times longer useful life of the existing landfill, thus avoiding the usual opposition against extensions or new landfills. By recovering plastic, glass, paper and metals, etc, non-renewable resources are recycled and by composting organics, they become a valuable resource for farmers that replace the production of synthetic fertilizers with non-renewable resources.
Which guidelines will be applied?	A state-of-the-art forced aeration composting method is applied.
What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?	The project will directly employ about 100 persons, new jobs that otherwise would not be created and will indirectly give rise to a considerable cottage industry e.g. glove manufacturing, use of non-salable recovered polyethylene and polypropylene as fuel for brick (batako) production thus avoiding deforestation, etc.
What are the possible other effects? For example: • training/education associated with the introduction of new processes, technologies and products and/or • the effects of a project on other industries	This project will become a replicable model for the region for a decentralized, environmentally friendly, sustainable, low risk and cost municipal solid waste management. Thus not only the local employees will be trained in new technologies and processes, but the project will also develop information packages that can be disseminated to facilitate replication of this easy to implement and low-tech method for municipal waste processing. Compared to other waste processing methods, the project approach has very low investment and operating costs. It is about ten times cheaper than incineration that - interpreting the World Bank Technical Guidance Report: "Municipal Solid Waste Incineration" - is problematic for developing countries. The material recovery approach of this project also compares favorably to other waste processing methods. This reduces the demand for soft loans and thus helps the development of Indonesia.
Environmental strategy / priorities of the Host Country	Indonesia is faced with an increasing and cumulating amount of solid waste, a problem that needs to be addressed urgently.

C. Finance

Total project cost estimate	(Based on waste processing capacity of 10,000 tons/year).
Development costs	US$ 0.015 million (voluntary work of Rotarians saves G&A costs).
Installed costs	US$ 0.255 million
Other costs	US$ 0.020 million
Total project costs	US$ 0.290 million
Sources of finance to be sought or already identified	None identified so far. Raising funds is difficult as ODA funding for CDM projects should be avoided.
Equity	Rotary Club of Bali Ubud, Indonesia: US$ 0.04 million funded by Rotary clubs from developed countries.
Debt – Long-term	None
Debt - Short term	None
Not identified	US$ 0.25 million
CDM contribution sought	US$ 0.25 million advanced payment, plus yearly CERs.
CDM contribution in advance payments. (The quantum of upfront payment will depend on the assessed risk of the project by the World Bank, and will not exceed 25% of the total ER value purchased by the World Bank for the project. Any upfront payment will be discounted by a factor considered appropriate by the World Bank for the project.)	US$ 0.25 million Without income from CDMs, the investment cost and the operating expenses cannot be covered, preventing the project from being implemented. This would destroy the chance to establish a low cost, economically viable, environmentally friendly and replicable model solution to the region's escalating solid waste problem.
Sources of carbon finance	Possibly a Swiss based CERs brokerage firm (the project leader is an early retired Swiss national contributing his time to the project).
Indicative CER Price (subject to negotiation and financial due diligence)	US$ 7.00 to 9.00 (based on Swiss brokerage prices). US$ 10.00 to 13.00 (based on Swiss Gold Standard prices) for which the project might very well qualify.
Total Emission Reduction Purchase Agreement (ERPA) Value	(Estimates based on an average CER price of US$ 10.00 as quoted above and an annual abatement of 14,500 tons CO_2e).
A period until 2012 (end of the first budget period)	US$ 0.870 million (6 years 2007 to 2012).
A period of 10 years	US$ 1.450 million
A period of 7 years	US$ 1.015 million
A period of 14 years (2 * 7 years)	US$ 2.030 million (subject baseline is constant)
If financial analysis is available for the proposed CDM activity, provide the forecast financial internal rate of return for the project with and without the CER revenues. Provide the financial rate of return at the expected CER price above and US$ 3 / tCO_2e. DO NOT assume any up-front payment from the NCDF in the financial analysis that includes PCF revenue stream. Please provide a spreadsheet to support these calculations.	

Source: World Bank