PROJECT IDEA NOTE

Description of size and quality expected of a PIN

Basically a PIN will consist of approximately 5-10 pages providing indicative information on:

- **A.** Project participants
- **B.** Project description, type, size, location and schedule
- **C.** Avoided / reduced GHG emissions
- **D.** Financial aspects
- **E.** Expected environmental and socio-economic benefits
- **F.** Risks
- ***G.*** Other relevant information

Name of the Project	Mbeya Cement Fuel Switch Project

A. Project Participants

Project developer (proponent)	
Name of the project developer	Mbeya Cement Company Limited.
Organizational category	Private company
Other function(s) of the project developer in the project	
Summary of the relevant experience of the project developer	Mbeya Cement Company Limited is one of three cement manufacturing companies in Tanzania. The company's production capacity has been growing dramatically during the recent years as a result of soaring in the demand of cement in the country. Currently, the production stands at 356,500 tons of cement against 237,990 tons in 2005.Mbeya cement is owned by Lafarge international, a company with several cement manufacture industries around the world. The project developer has vast experience in CDM undertakings. The activity to be implemented is the replication of other projects, which have been developed and implemented by the project developer under the CDM initiative.
Address	P. O. Box 529, Mbeya, United Republic of Tanzania
Contact person	Mr. Bernard Osawa
Telephone / fax	Tel: +255 25 2500119/134/153/271 Fax: +255 25 2500022
E-mail and web address, if any	Bernard.osawa@bamburi.lafarge.com
Project sponsors	
(List and provide the following information for all project sponsors)	
Name of the project sponsor	Mbeya Cement Company Limited
Organizational category	Private Company
Address (include web address, if any)	P. O. Box 529, Mbeya, United Republic of Tanzania
Main activities	Production and trading of cement in Tanzania
Summary of the financials	*Summarize the financials (total assets, revenues, profit, etc.) in less than 5 lines.*

B. Project Description, Type, Size, Location and Schedule

Technical Summary of the Project	
Objective of the Project	The objective of the project is to reduce emissions of carbon dioxide and methane to the atmosphere by partially substituting the coal currently used in energy production with the biomass residues in the Kiln during the cement production process at Mbeya Cement Factory.
Project description and proposed activities (including a technical description of the project)	Cement production process involves an intensive use of energy for conversion of raw materials (i.e., combinations of limestone, shells/chalk, clay, and sand/iron ore) into clinker. At Mbeya Cement factory, 100% of heat is derived from combustion of powdered coal, which emits CO_2 to the atmosphere. The proposed CDM project activity intends to reduce the use of coal in cement production process by

	partially replacing it with different types of biomass residues, specifically rice husks, coffee husks, and saw dust. These alternative fuels are considered as carbon neutral since they emit CO_2 equal the amount absorbed in the first place during the growing of biomass sources. Both, rice husks and coffee husks will be obtained from Mbeya while saw dusk will be sourced from a nearby region called Iringa. It is expected that these biomass residues will, periodically, replace 35% of coal consumption during the project's 7-year crediting period. In total, the project will avoid emissions of 353,301 tCO_2 equivalent during the entire crediting period. Basically, the project will involve the following activities: - Design of the firing system and procurement of the necessary equipments, - Sourcing the biomass by contracting local suppliers, and - Implementation and monitoring of the system. To reduce leakage emissions, the biomass residues will be stored at the factory's premises for less than a month to avoid anaerobic decomposition. Additionally, the biomass will be dried in the sun and no chemical treatment will be applied prior to their use.
Technology to be employed	Basically, cement production process involves the following two key processes, both produce the CO_2: 1. Decarbonation of limestone mixture for production of Calcium oxide (CaO) and clinkering: $CaCO_3 \longrightarrow CaO + CO_2$ 2. Combustion of fuels in kiln to produce energy for clinker production process. An excess of 1000ºC temperature must be achieved to facilitate clinker production at this stage The proposed technology will reduce CO_2 produced from kiln as a result of coal burning, not CO_2 generated by decarbonation of the limestone. In this way, the biomass residues will be fired in a riser duct at the rotary kiln backend. Therefore, a special biomass fuel transport and dosing system will be designed and installed to efficiently utilize the biomass streams without heat loss from the kiln. A multi fuel burner (i.e., operating with both coal and biomass residues) will be installed in the kiln to replace the existing coal burner.
Type of Project	
Greenhouse gases targeted	Carbon dioxide and Methane
Type of activities	Manufacturing industries
Field of activities	

a. Energy supply	Fuel switching.
b. Energy demand	N/A
c. Transport	N/A
d. industrial processes	Partial replacement of fossil fuel (coal) by biomass residues (rice husks, coffee husks, and saw dust)
e. waste management	Biomass wastes management
Location of the Project	
Governorate	United Republic of Tanzania.
City	Mbeya
Brief description of the location of the plant	Mbeya Cement Company Limited is located in Mbeya region, north-western Tanzania. Mbeya region lies between Latitudes 7^0 and $9^{0,}$ South of Equator, and between Longitudes 32^0 and 35^0 East of Greenwich. The Company is situated in a small town called Songwe, which is located about 20 km from Mbeya town, off the Tunduma highway near Tanzania – Zambia boarder.
Expected schedule	
Earliest project start date	January 2010
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 3 months Time required for legal matters: 3 months Time required for negotiations: 3 months Time required for construction: 3 months
Expected first year of CER delivery	January 2011
Project lifetime	20 years
Current status or phase of the project	Pre-feasibility study.
Current status of the acceptance of the Host Country	Letter of No Objection is under discussion
The position of the Host Country with regard to the Kyoto Protocol	Tanzania has signed and ratified the Kyoto Protocol
Project Size	
Is the project a small-scale project?	No

C. Avoided/ Reduced GHG Emissions

Selected Crediting Period	
7 year two times renewable	
Estimated Avoidance/Reduction of emissions in accordance with the Kyoto Protocol	
□ Carbon Dioxide(CO_2)	30,360 tCO_2 equivalent per year
□ Methane (CH_4)	19,982 tCO_2 equivalent per year
□ Nitrous Oxide (N_2O)	N/A
□ Hydrofluorocarbons (HFCs)	N/A
□ Perfluorocarbons (PFCs)	N/A
□ Sulphur Hexafluoride SF_6	N/A
Reference Scenario or Baseline :	

Description of the reference level:

Baseline Methodology to be used
An approved consolidated baseline and monitoring methodology ACM 0003 (Version 03) 'Emission reduction through partial substitution of fossil fuel with alternative fuels or less carbon intensive fuels in cement manufacture' will be used. This methodology is applicable to project activities where fossil fuel(s) used in cement manufacturing are partially substituted by alternative fuel (s), including the biomass residues. In this case, the biomass residues should be available in surplus and they should be prepared carefully to avoid any significant emissions prior to their use in the project activity. Methane emission from the biomass residues is calculated using methodological tool 'Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site'.

What modifications the project would induce?
The project will reduce the amount of Carbon dioxide released to the atmosphere by replacing partially the consumption of coal by the biomass residues (rice husks, coffee husks, and saw dust) which are less carbon intensive. Furthermore, the project will reduce methane emission from heaps of biomass residues at the solid waste disposal sites, which would have otherwise been left to undergo anaerobic decomposition and emit methane gas to the atmosphere.

What would be the situation in the absence of the project activity?
In the absence of the project activity, coal would continue to be the only fuel used by the factory in cement manufacturing process 'business as usual scenario'. This is mainly due to the high costs of alternative fuels such as natural gas and diesel; this would increase the emissions of CO_2 to the atmosphere and contribute to the problems of global warming. In addition, in the absence of the project activity biomass residues, which are available in surplus in Mbeya and neighboring regions, would be left to decay anaerobically uncontrollably without utilizing them for energy purposes and eventually increase the amount of CH_4 in the atmosphere.

Expected Emission Reductions During the Crediting Period

Total Certified Emission Reductions (CERs) per year:

50,343 tCO_2 equivalent per year

Total emission reduction for the Crediting period:

353,301 tCO_2 equivalent for 7 years.

C. Avoided/ Reduced GHG Emissions

Selected Crediting Period	
7 year two times renewable	
Estimated Avoidance/Reduction of emissions in accordance with the Kyoto Protocol	
□ Carbon Dioxide(CO_2)	30,360 tCO_2 equivalent per year
□ Methane (CH_4)	19,982 tCO_2 equivalent per year
□ Nitrous Oxide (N_2O)	N/A
□ Hydrofluorocarbons (HFCs)	N/A
□ Perfluorocarbons (PFCs)	N/A
□ Sulphur Hexafluoride SF_6	N/A

Reference Scenario or Baseline :

Description of the reference level:

Baseline Methodology to be used

An approved consolidated baseline and monitoring methodology ACM 0003 (Version 03) 'Emission reduction through partial substitution of fossil fuel with alternative fuels or less carbon intensive fuels in cement manufacture' will be used. This methodology is applicable to project activities where fossil fuel(s) used in cement manufacturing are partially substituted by alternative fuel (s), including the biomass residues. In this case, the biomass residues should be available in surplus and they should be prepared carefully to avoid any significant emissions prior to their use in the project activity. Methane emission from the biomass residues is calculated using methodological tool 'Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site'.

What modifications the project would induce?

The project will reduce the amount of Carbon dioxide released to the atmosphere by replacing partially the consumption of coal by the biomass residues (rice husks, coffee husks, and saw dust) which are less carbon intensive. Furthermore, the project will reduce methane emission from heaps of biomass residues at the solid waste disposal sites, which would have otherwise been left to undergo anaerobic decomposition and emit methane gas to the atmosphere.

What would be the situation in the absence of the project activity?

In the absence of the project activity, coal would continue to be the only fuel used by the factory in cement manufacturing process 'business as usual scenario'. This is mainly due to the high costs of alternative fuels such as natural gas and diesel; this would increase the emissions of CO_2 to the atmosphere and contribute to the problems of global warming. In addition, in the absence of the project activity biomass residues, which are available in surplus in Mbeya and neighboring regions, would be left to decay anaerobically uncontrollably without utilizing them for energy purposes and eventually increase the amount of CH_4 in the atmosphere.

Expected Emission Reductions During the Crediting Period

Total Certified Emission Reductions (CERs) per year:

50,343 tCO_2 equivalent per year

Total emission reduction for the Crediting period:

353,301 tCO_2 equivalent for 7 years.

D. Financial Aspects

Total Estimated Costs(*)	
Development Costs	US$ 529,500
Installation Costs	US$ 4,470,500
Other Costs	No other costs to be incurred.
Total Cost of Project	US$ 5,000,000
(*) Please add any additional relevant information in this table if needed.	

Sources of Identified Financing	
Cash	
Long Term Loan	
Short Term Loan	
Expected Revenues from <u>CERs transfer</u>:	
Projected Price of the CERs	15 US$/$tCO_2$ equivalent
Estimated total CDM Revenues	US$ 755,145 per year
Details of the expected Revenues during the accountability period	US$ 5,286,015 for 7 years period
Amount and Modalities for the transfer of the CDM Contribution Advanced allocation…… Yearly transfers…….	 …….In $ US …….In $ US
Additional Financing	
Will the project receive co-financing under ODA (Overseas Development Aids) or from any other sources like GEF? Please mention the amount(s)	No

E. Expected Environmental and Socio-economic Benefits

Specific global & local Environmental benefits	*(In total about ¼ page)*
Which guidelines will be applied?	Tanzania environmental and social guidelines for sustainable development as identified in the CDM national investor's Guide of 2004
Local benefits	- Alternative fuel utilization by the project activity will reduce negative environmental impacts to the local communities like air pollution caused by emissions from coal combustion - Utilization of biomass residues will prevent methane emissions and uncontrolled burning of these residues in dumping sites
Global benefits	Replacement of carbon intensive fuel (coal) with carbon neutral biomass residues (rice husks, coffee husks, and saw dust) will result in reduction of GHGs emissions, thus contributing to the global environmental initiatives of tackling the impacts of climate change.
Socio-economic aspects What social and economic effects can be attributed to the project and which would not have occurred in a	- Improving level of incomes to the local community through socio-economic activities such as collecting, handling, selling, and transportation of biomass residues to the project site. - Encouraging environmental friendly technology transfer and

comparable situation without that project? Explain the relationship between the project and the benefiting community/ies.	development of local manufacturer - The project will bring positive changes in the life style and quality of life by creating employments for both skilled and unskilled people engaged in various activities relating to the project. - Contributing to safer and healthier local environment
Which guidelines will be applied?	Tanzania environmental and social guidelines for sustainable development as identified in the CDM national investor's Guide of 2004
What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?	- Creation of both direct and indirect jobs to local people such as farmers and others through the entire supply chain of biomass residues, hence improving the social and economic status of the community. - Increase in income distribution due to job creations and rise in employee's salaries and other fringe benefits.
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	- Improving skills of professionals through training on new technology/process in cement industry, since the use of biomass residues in cement manufacturing is not a commonplace in Tanzania. Eventually, this will give impetus to introduction of clean production in cement industry in Tanzania. - The project activity will indirectly encourages development of biomass residues management, thus help reduce management cost due to income generated from trading of biomass residues. This will positively impact waste management sector and agricultural sector as well. - Replication of the similar technology to other cement industries in Tanzania. - The project will be an illustrative example of sustainable development initiative that helps develop more environmental conscience at both levels; the project and local community.
Environmental strategy/ priorities of the Host Country	Tanzania prioritizes the environmental protection and its well-being, sustainable development, as well as encouraging the use of environmental friendly technologies

F. Risks

Risks in the Project	Please describe the factors that may cause delays in, or prevent implementation of the project
Estimate the Degree of Risk	
Technical risk	☐ Low technological risk since the technology to be employed will be proven with reasonable track record
Timing risk	☐ High timing risk since the project implementation depends on the finalization of CDM legal processes, which might take longer time.
Budget risk	☐ Low budget risk as the project is self-financed

G. Other Relevant Information

Please mention any additional information or precisions to justify the project under CDM