Clean Development Mechanism South Africa
Designated National Authority

energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

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Project Design Document (PDD)

Project reference number (office	
Date received (office use only)	

NOTES ON COMPLETING THIS PROJECT DESIGN DOCUMENT

1. Please provide this PDD in both hard-copy

Part A: Project Proponent Details

Project Name	Manufacture and utilization of bio-coal briquettes in Stutterheim, South Africa
Date of Submission of PDD	12/09/2012

Project Developer	
Name	Bio-Coal Manufacturers and Distributors (Pty) Ltd (BCMD)
Organizational Category	Private Company
Legal Status	*Privately held company*
Street Address	15 Breezy Ridge
Postal Address (if different from above)	P.O. Box 281, Kidds Beach, Eastern Cape-5264
Website Address	15 Breezy Ridge , P.O. Box 281, Kidds Beach, Eastern Cape-5264
Main Activities	Bio Coal Manufacturers and Distributors (Pty) Ltd (BCMD)'s prime purpose is to manufacture and distribute biomass pellets and briquettes to the South African industrial customers. The project activity involves the conversion of solid biomass waste in form of wood waste into bio coal briquettes and pellets. The briquettes/pellets shall be sold to existing facilities wherein fossil fuel - coal is either presently used as the primary fuel for generation of thermal energy.
Summary of Financial Performance in last fiscal year	Not Applicable (NA) - the company is a new entity which hasn't started operations.

<table>
<tr><td>Contact Person(s)</td><td>Mr. Avinash Sarda</td></tr>
<tr><td>Telephone</td><td>Work:+27 43 781 1987
Cell: +27 794752345</td></tr>
<tr><td>Fax</td><td>+27 85 1503539</td></tr>
<tr><td>Email Address</td><td>agro_technologies@yahoo.co.in</td></tr>
<tr><td colspan="2">Project Partners
Provide the following Information for all project partners (copy and paste relevant sections of the table if information is to be provided on more than one partner organization)</td></tr>
<tr><td>Name</td><td>Not Applicable</td></tr>
<tr><td>Nature of partner</td><td></td></tr>
<tr><td>Organizational Category</td><td></td></tr>
<tr><td>Legal Status (if private company)</td><td></td></tr>
<tr><td>Street Address</td><td></td></tr>
<tr><td>Postal Address (if different to Street Address)</td><td></td></tr>
<tr><td>Website Address</td><td></td></tr>
<tr><td>Main Activities</td><td>(Not more than 1 paragraph)</td></tr>
<tr><td>Contact Person(s)</td><td>Name</td></tr>
<tr><td>Telephone</td><td>Work:
Cell:</td></tr>
<tr><td>Fax</td><td></td></tr>
<tr><td>Email Address</td><td></td></tr>
<tr><td colspan="2">Contractual Arrangements</td></tr>
<tr><td>Contractual arrangements between various entities involved</td><td>There are contractual arrangements between Bio-Coal Manufacturers and Distributors (Pty) Ltd (BCMD) and the customers for sale of bio-coal that will be utilized as fuel source in their heat generation equipment.

<table>
<tr><td>SL. No</td><td>Customer Details</td></tr>
<tr><td>1</td><td>Summer pride</td></tr>
<tr><td>2</td><td>Brick & Clay</td></tr>
<tr><td>3</td><td>Blueberry Hill Farm</td></tr>
<tr><td>4</td><td>Da Gama Textiles</td></tr>
<tr><td>5</td><td>Stutt Bricks</td></tr>
<tr><td>6</td><td>Frier Hospital</td></tr>
<tr><td>7</td><td>National Correction Services</td></tr>
<tr><td>8</td><td>Nestle</td></tr>
<tr><td>9</td><td>Parmalat</td></tr>
<tr><td>10</td><td>Nestle Port Elizabeth</td></tr>
</table></td></tr>
</table>

	However it may be noted that the contractual arrangements specify that the CER ownership will lie with BCMD.

Part B: Project Overview (Technical Summary, Location and Schedule)

Technical Summary of the project	
Objective of the Project	The main objective for the project is to support socio-economic and technical development in the energy sector that will contribute to sustainable and affordable use of energy resources. This project activity will result in reduction of greenhouse gas (GHG) emission due to avoidance of methane that would have been generated from the wood waste disposed off in the existing landfill undergoing anaerobic decomposition, in the absence of the project activity. Further, the project will help in emission reduction due to avoidance of carbon dioxide equivalent by combustion of bio-coal briquettes instead of coal for thermal energy generation.
Project Description The project activity involves the establishment (design, construction and erection) and the operation of a new manufacturing plant in Stutterheim (Eastern Cape) which will produce Bio Coal in the form of briquettes & Pallets. The Bio Coal produced will be used to replace Grade A coal in boilers that are used in manufacturing industries, hospitals, educational facilities and prisons. Bio-coal is a type of solid fuel prepared by compacting pulverized biomass. Bio Coal which is obtained by compressing plant material; where incoming raw materials are first chemically analyzed to ascertain values of the contents and composition. The high pressure applied in the process ensures liquefying of inherent lignin in the biomass particles and becomes binder which holds biomass together; as a result they do not separate during transportation, storage and combustion. This process is called Binder less ram/piston extrusion technology. The size of the briquette is determined by the use of dies through which the briquettes are extruded. Briquettes are then chopped mechanically or manually to required lengths, which are conveyed via conveyor belt and stored in feeder hopper for packing. In the palletizing process, the dry material will be injected with steam. The steam softens the material and help to liquefy the lignin in the biomass waste, which then become binder. This steam will be produced on-site using a small portion of the bio coal produced. The biomass waste will be pushed through tapered disk die to produce the pallets. The bio-coal produced will be packed in High Density Poly Ethylene (HDPE) woven sling bags of 1 ton capacity and delivered to the customers.	
Project Constraints The project activity is financially not attractive and hence requires revenue through sale of CERs accrued through CDM process.	
Technology to be employed	The technology applied is called **Binder less ram/piston extrusion** technology. All solid bio-mass waste, in any form is first chipped into smaller pieces in wood chipper followed by grinder to convert to saw dust. Once the bio-mass waste enters the briquette machines it is compacted under high pressure, liquefying the "lignin" in biomass to bind the material together. The size of the briquette is determined by the use of dies through which the briquettes are extruded. Briquettes are then chopped mechanically or manually to required lengths, which are conveyed via conveyor belt and stored in feeder hopper for packing in HDPE woven sling bag. Bio coal technology proposed by BCMD is new to South Africa.
Greenhouse Gases Targeted	The project will be targeting mainly the following gases: CH_4,CO_2,N_2O
Emission reductions	The total annual average emission reductions of the project activities over the crediting period of 10 years are expected to be **133,599** tonnes CO_2e. Total Emission reductions of **1,335,994 tCO_2e** over the crediting period of 10 years.
Baseline & Additionality	Baseline:

<table>
<tr><th colspan="2">Technical Summary of the project</th></tr>
<tr><td>Assessment</td><td>
The baseline scenario is based on the methodology AM0025/version-13: “Avoided emissions from organic waste through alternative waste treatment process”
The most plausible baseline scenario as per the above mentioned methodology for the waste treatment component is M3 and for the energy component is H4 which is identified as:
M3-The disposal of the waste in a landfill site without capturing landfill gas.
H4- Existing or new construction of on-site or off-site fossil fuel based boilers;

Biomass waste disposal on landfill with Fossil fuel – coal combustion in industrial facilities for thermal energy generation.

<u>Additionality</u>:
Project’s additionality is demonstrated and assessed using the “Tool for the demonstration and assessment of additionality”, (version 06.0).
In the “Tool for the demonstration and assessment of additionality” (Version 06.0), three options are available for investment analysis: the simple cost analysis (Option I), the investment comparison analysis (Option II) and the benchmark analysis (Option III).
According to the Additionality Tool, if the alternative to the CDM project activity does not include investments of comparable scale to the project, then Option III must be used.
Given that the project proponent does not have alternative and comparable investment choices, benchmark analysis (Option III) is more appropriate than investment comparison analysis (Option II) for assessing the financial attractiveness of the project activity.
The project proponent chose the Equity IRR (Internal Rate of Return) as the most appropriate financial indicator computed in nominal terms. The financial analysis is based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer.
The benchmark value was derived based on the default real term value for the expected return on equity and the average target inflation rate of the central bank (South African Reserve Bank)
The Equity IRR is compared with benchmark value to prove that the project activity is financially not attractive and hence requires revenue through sale of CERs accrued through CDM process.
Table to demonstrate Project is financially non attractive:

<table>
<tr><td>Default Value as per the Guidelines on the Assessment of Investment Analysis/Version 05’*</td><td>Average Target Inflation Rate** (2011-2015)</td><td>Benchmark Value</td><td>Equity IRR</td></tr>
<tr><td>10.9% (Group-I: Energy Industries)</td><td>To be between 3-6%; Average value = 4.5%</td><td>15.4%</td><td>1.11%</td></tr>
</table>

*The default value for the expected return on equity calculated after taxes has been extracted from the Table in Appendix: Default values for the expected return on equity of Guidelines on the Assessment of Investment Analysis (EB62, Annex5)
</td></tr>
</table>

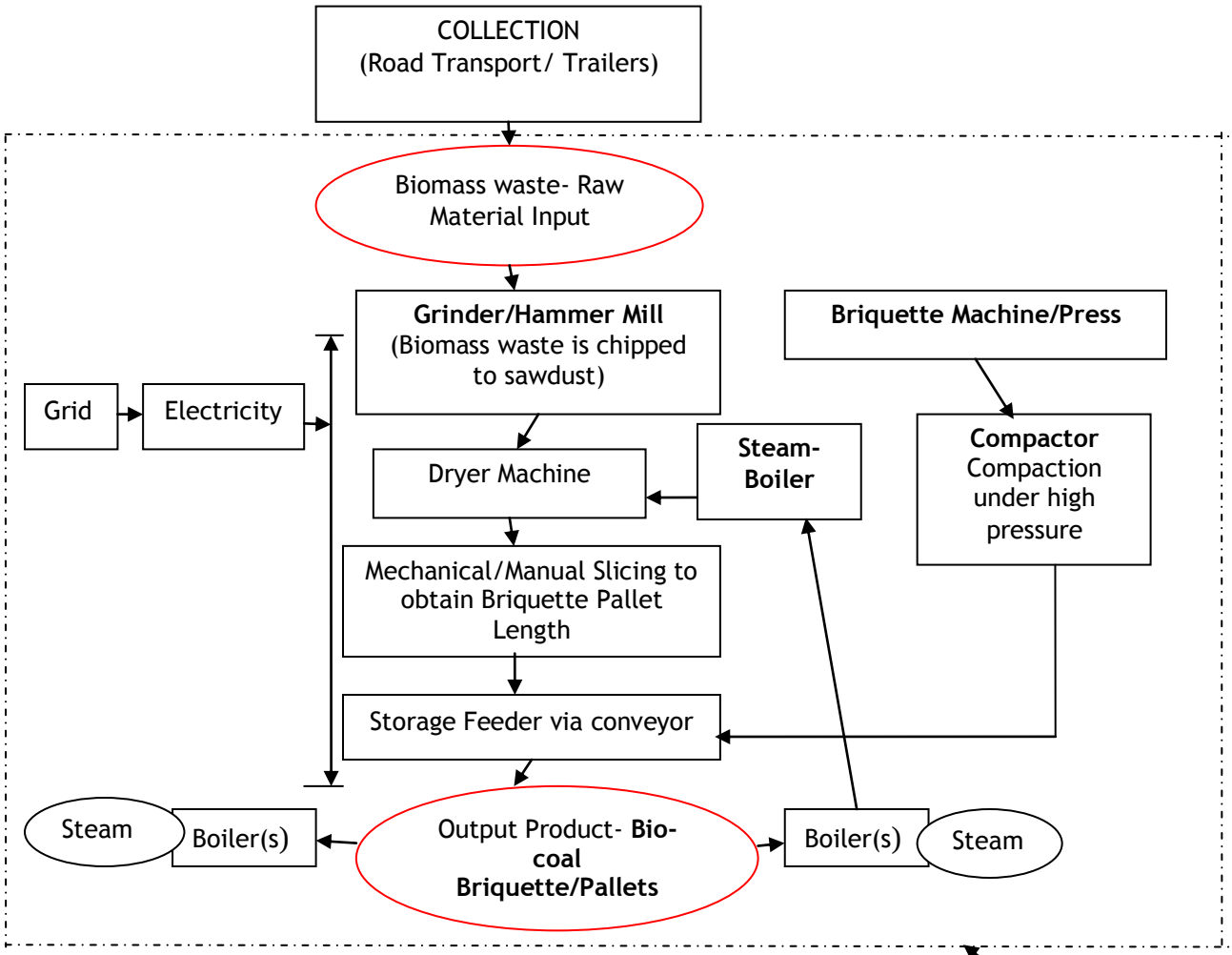
<table>
<tr><th colspan="2">Technical Summary of the project</th></tr>
<tr><td></td><td>**Average Target Inflation Rate has been obtained from Southern African Reserve Bank</td></tr>
<tr><td>Monitoring</td><td>The parameters that will be used as performance indicators will be monitored according to the monitoring rules provided in AM0025/version-13 & methodology tool to verify that emissions reductions are taking place. The parameters includes:
<table>
<tr><th>SL. No</th><th>Parameters</th><th>Description</th></tr>
<tr><td>1</td><td>$EG_{PJ,FF,y}$</td><td>Amount of electricity consumed (MWh) from the grid as a result of the project activity</td></tr>
<tr><td>2</td><td>f_y</td><td>Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y</td></tr>
<tr><td>3</td><td>W_x</td><td>Total amount of waste (Tonnes) disposed in a SWDS in year x</td></tr>
<tr><td>4</td><td>$Q_{biomass,y}$</td><td>Amount of waste gasified, incinerated or RDF/stabilized biomass combusted in year y (Tonnes/yr)</td></tr>
<tr><td>5</td><td>$NO_{vehicle,i,y}$</td><td>Vehicles per carrying capacity per year</td></tr>
<tr><td>6</td><td>$DT_{i,y}$</td><td>Average additional distance travelled by vehicle type i compared to the baseline in year y (Km)</td></tr>
<tr><td>7</td><td>$VF_{cons,i}$</td><td>Vehicle fuel consumption in litres per kilometer for vehicle type I (Lt/Km)</td></tr>
<tr><td>8</td><td>D_{fuel}</td><td>Density of fuel (Kg/Lt)</td></tr>
<tr><td>9</td><td>EF_{N2O}</td><td>Aggregate N_2O emission factor for waste incineration (KgN_2O/tonne waste (dry))</td></tr>
<tr><td>10</td><td>EF_{CH4}</td><td>Aggregate CH_4 emission factor for waste incineration ($KgCH_4$/tonne waste (dry))</td></tr>
<tr><td>11</td><td>Rt</td><td>Total weight of RDF/stabilized biomass produced (t/yr)</td></tr>
<tr><td>12</td><td>Q_y</td><td>Net quantity of thermal energy supplied by the project activity in year y (TJ)</td></tr>
<tr><td>13</td><td>Degradability Analysis</td><td>Project proponent shall provide degradability analysis on an annual basis to demonstrate that the methane generation in the life-cycle of the SB is negligible.</td></tr>
<tr><td>14</td><td>Amount of RDF/stabilized biomass used outside the project boundary</td><td>Project proponent shall monitor the amount of RDF/stabilized biomass sold for use outside of the project boundary (Tons)</td></tr>
</table></td></tr>
<tr><td>Type of project/activities</td><td>The project activity is a large scale potential CDM project under the following scopes: Sectoral Scope 1: Energy industries (renewable/non-renewable sources) and Sectoral Scope 13: Waste Handling and Disposal
The following two sectoral scopes are chosen because the project</td></tr>
</table>

Technical Summary of the project	
	involves production of bio-coal from wood & wood products and will be utilized in small scale industries as replacement of Grade-A coal. Since, bio-coal production involves use of renewable products as raw material in form of waste so both the Scope is applicable for this project.
a. Energy Supply	The energy supply includes use of bio-coal briquettes which can be a direct replacement of Grade-A coal in many small industries & household applications; thereby reducing the dependence on direct coal for thermal use.
b. Energy Demand	*Not Applicable*
c. Industrial Process	*Not Applicable*
d. Transport	*Not Applicable*
e. Waste Management	The project helps in utilization of the fresh wood waste which is dumped in the pre-project and baseline scenarios, causing the generation of landfill methane due to anaerobic decomposition.
f. Forestry/ land use	*Not Applicable*
g. Other	*Not Applicable*

Project Boundary

The project boundary includes the facilities for processing the waste, on-site electricity consumption, onsite fuel use, the baseline biomass waste landfill site and the industrial facilities that consume the solid biomass for thermal energy generation. The project boundary does not include facilities for waste collection, sorting and transport to the project site. The project boundary as per figure-1 below includes:

1. The waste disposal sites where the raw materials would have been left to decompose in the absence of the project activity.
2. The bio-coal manufacturing facility.
3. The buyers/purchasers of the bio coal including the consumption point of the solid biomass.

Technical Summary of the project	
	 Figure-1: Schematic representation of Project Boundary
Indicate Emissions outside the Project Boundary	The sources of emissions outside the Project Boundary (*i.e.* Leakage) considered in the methodology are CO_2 emissions from off-site transportation of waste materials. This would occur when the waste is transported from waste collecting points, in the collection area, to the treatment facility, instead of to existing landfills. This includes overview of collection points from where the waste will be collected, their approximate distance (in km) to the treatment facility, existing landfills and their approximate distance (in km) to the nearest end-user.

Location of the Project	
Province	Eastern Cape
Municipality	Amahlathi Municipality
Nearest city/large town	Stutterheim
Brief description of the location of the project site	Latitude: 32034'40.67" S; Longitude: 27025'18.75" E According to Stats SA, Amahlathi is home to a total population of

	139 035, majority of whom are resident in Stutterheim. Amahlathi is well endowed with indigenous forests in the area stretching from North West of Stutterheim into the Keiskammahoek area. The two key sectors in the economy of Amahlathi are Community Services and Agriculture and Forestry, both (Community Services – 27% and Agriculture/Forestry – 22%) of which contribute significantly to the employment creation.

Project Schedule/Timetable	
Earliest Project Start Date	Jan 2012-Date of Board Decision for the Project activity
When is the expected first year of CER delivery	2013-2014
Project Lifetime	10 Years
Project End Date	March 2024
Crediting Period	A fixed 10 Years crediting period has been selected for this project activity.
Current Status or phase of the project	The project is under conceptualization stage
DNA Approval	No, this project has not been submitted to the DNA for approval previously.
Approval by other bodies	- No Objection Certificate (NOC) for the project by Economic Development & Environmental Affairs, Province of Eastern Cape. - Electricity Approval-Amahlathi Municipality, Eastern Cape, South Africa.

Part C: Performance Against the DNA's Sustainable Development Criteria

South Africa has identified the following sustainable development criteria and indicators against which each CDM project will be assessed. Please provide your interpretation of how this project will address each of these **criteria and indicators** where they are relevant to the project. If the space provided is not sufficient please append additional information as required.

NOTE: For all indicators which are of relevance to the project show how the performance of the project against these indicators can be objectively monitored and measured on an ongoing basis.

1. **Economic: Does the project contribute to national economic development?**

Yes, the Proposed project contributes to national economic development. The benefits are provided below:

The proposed project will contribute to foreign exchange earnings for South Africa via the carbon credit sales revenue. The manufacturing facility is a new industry in the area and will therefore contribute to the local economy. Both Direct and in-direct jobs opportunities will be generated for technicians, semi-skilled & skilled workers, harvesters, labourers and transporters.

2. **Social: Does the project contribute to social development in South Africa?**

Yes, the Proposed project contributes to social development. The benefits are provided below:

Over and above the employment opportunities mentioned above, management, operational and

maintenance staff will receive internal and external training on the project that will increase their skill base and allow effective management, operation and maintenance of the project.
As a result of the development of project activity, there will be increases in household income in the areas surrounding the project. The income increases are a result of increased employment and local spending by the projects. Indirectly there will be positive impact through increased spending on services of local businesses such as banking, general retail, plant hire firms, transport companies, hotels, catering, property etc. Improving household incomes leads to improved social conditions. This will be in line with government's growth, poverty eradication and job creation strategy which will aid in the development of the local communities. The proposed project will further provide the communities with economical and safer sources for energy generation.

3. **Environmental: Does the project conform to the National Environmental Management Act principles of sustainable development?**

Yes, the Proposed project contributes to National Environmental Management Act principles of sustainable development. The project activity has received No Objection Certificate to Economic Development & Environmental Affairs, Province of Eastern Cape due to its positive environmental impacts.

Please provide **brief** comment for each of these below.

The brief comments for each are provided below:

i) That the **disturbance of ecosystems and loss of biological diversity** are avoided, or where they cannot be avoided, are minimised and remedied	The proposed project activity utilizes wood waste, which is dumped presently. The project activity will not affect the ecosystems or the biological diversity since it is dependent on the waste biomass material. The procedures are set to ensure no direct biomass/wood is utilized from the ecosystems/biological diversity.
ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied	There is no release of toxic gases, fumes or chemicals and there is no air/water/land pollution that would in any form degrade the environment; Moreover the process does not involve any hazardous chemicals and compounds & no release of solid or liquid effluents. The process does not cause any underground pollution or contamination & the process does not create any noise pollution that can be heard outside of factory premises. This can be further objectively evidenced from the stakeholder presentation of the project provided on 10th February, 2012 at Manderson Hotel and Conference Centre, Stutterheim, Eastern Cape, South Africa enclosed.
iii) That the **disturbance of landscapes and sites that constitute the nation's cultural heritage** is avoided, or where it cannot be altogether avoided, is minimised and remedied	The bio coal manufacturing facility will be established on an approved demarcated industrial site. Thus, it has no negative effect on the natural resources of the region. There are no wetlands or areas of high biodiversity value on the factory site. This can be evidenced from the stakeholder presentation of the project provided on 10th February, 2012 at Manderson Hotel and Conference Centre, Stutterheim, Eastern Cape, South Africa. Therefore the project activity will not cause any disturbance of landscapes and sites that constitute the nation's cultural heritage. The project activity does not involve the relocation of any communities
iv) That **waste is avoided**, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner	The project activity does not generate any waste. In turn it utilizes the biomass waste generated in saw mills and forest and thereby reduces waste dumping. The wood waste which otherwise would have been left unused in solid waste disposal site is utilized for the production of bio-coal which can be used as a direct replacement of Grade-A coal. This can be objectively monitored and measured on an ongoing basis by the parameters W_x i:e "*Total amount of waste disposed in a SWDS in year x*" & $Q_{biomass,y}$ i:e "*Amount of waste gasified,*

	incinerated or RDF/stabilized biomass combusted in year y" through the project appraisal report and purchase invoices.
v) That **the use and exploitation of non-renewable resources is responsible and equitable**, and takes into account the consequences of the depletion of the resource	The proposed project activity does not use any form of non-renewable resource like coal in its process. In turn, the use and exploitation of non-renewable resources is avoided through use of bio-coal instead of coal thereby enabling resource conservation.
vi) That the **development, use and exploitation of renewable resources is responsible and equitable**, and takes into account the consequences of the depletion of the resource.	The proposed project activity utilizes waste renewable resources, which is dumped in landfill presently and not just renewable resources. Therefore the project activity does not entail the exploitation of renewable resources.
vii) That **a risk averse and cautious approach** is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions	The Project Proponent (PP) has ensured that a reputable engineering firm will be carrying out project implementation such that where possible an approach is adopted that safeguards and adds value to existing natural heritage and ecosystems and therefore reduces risks that currently exist.
vii) That **negative impacts on the environment and on people's environmental rights** be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied	The proposed project activity is eco-friendly in nature and has no negative impact on the environment or on people's environmental rights. In turn the proposed project activity's positive impacts can be envisaged and created to minimize the negative impacts of pre-project / baseline scenarios on the environment. This can be further evidenced from the comments from the stakeholders present during the stakeholder presentation of the project dated 10th February, 2012.
Other comments **Please provide any other comments on how this project contributes to sustainable development in South Africa (**optional) The proposed project activity will have an overall positive impact both from economic perspective and energy and environment perspective. The project activity will assist South Africa in delivering on its objectives with regard to moving to a low greenhouse gas emissions trajectory. This as detailed in the national government's "National Climate Change Response White Paper (2011)"	

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Environmental	Impact on local environmental quality	• Impact of the project on air quality	- Locally, the proposed project is expected to improve the air quality through the reduction of carbon dioxide and methane. On a wider scale, the project is expected to contribute to addressing global climate change.
		• Impact of the project on water pollution	- The proposed project will not have an impact on any surface or ground water; hence no impact on water pollution is expected from the project.
		• Impact of the project on the generation or disposal of solid waste	- The proposed project reduces the amount of wood waste that is discarded; thereby avoiding methane emissions due to the anaerobic decomposition of biomass.
		• Any other positive or negative environmental impacts of the project (such as impacts on noise, safety, visual impacts, or traffic)	- This proposed project reduces the amount of wood waste that is discarded; thereby avoiding methane emissions due to the anaerobic decomposition of biomass; further it replaces coal consumption at industrial sites enabling resource conservation and preventing CO_2 emissions which cause global warming and other local pollution in the form of SO_x and NO_x. Moreover, the location of the project is carefully selected to not have any negative impacts on visual impacts and traffic.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	Change in usage of natural resources	• Impact of the project on community access to natural resources	- The potential sources of raw material for the plant are the local forestry and timber industry, community suppliers of alien tree species and wood wastes gather from forests owned by the municipality.
		• Impact of the project on the sustainability of use of water, minerals or other non renewable natural resources	- The production of bio coal in Sutterheim will ensure the maximum utilisation of the waste resources in important sectors of the economy of the area.
		• Impact of the project on the efficiency of resource utilisation	- The proposed project activity therefore ensures, use and exploitation of non-renewable resources is avoided due to use of bio coal instead and positively effects the depletion of the resources.
	Impacts on biodiversity and ecosystems	• Changes in local or regional biodiversity arising from the project	The project activity will not affect the ecosystems or the biological diversity since it is dependent on the waste biomass material. The procedures are set to ensure no direct biomass/wood is utilized from the ecosystems/biological diversity. Further, there are no wetlands or areas of high biodiversity value on the factory site. The property is appropriately zoned. From an environmental point of view the site is regarded as of low environmental risk.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Economic	Economic impacts	• Impact of the project on foreign exchange requirements • Impact of the project on existing economic activity in the area • Impact of the project on the cost of energy • Impact of the project on foreign direct investment	- The proposed project will contribute to foreign exchange earnings for South Africa via the carbon credit sales revenue. The manufacturing facility is a new industry in the area and will therefore contribute to the local economy. - Both direct and indirect jobs opportunities will be created due to the development of the project. - South Africa's indigenous energy resource is dominated by coal. Presently, 77% of South Africa's primary energy needs are provided by coal and 81% of all coal consumed domestically goes towards electricity production. So, by replacing coal by bio-coal the cost of energy can be affected significantly reducing dependence on fossil fuels. - The proposed project is expected to contribute around R19.5 million to the national GDP. The low income households will be expecting to receive a total direct benefit of R2.2 million which contribute towards upliftment of socio-economic deprived households.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	Appropriate technology transfer	• Positive or negative implications for the transfer of technology to South Africa arising from the project • Impacts of the project on local skills development • Demonstration and replication potential of the project	- The technology employed by the project activity has been implemented widely in foreign countries, but not in South Africa. The technology adopted for Bio-coal production is a new technology in South Africa. Agro-Technologies, an Indian manufacturing company, will supply the briquetting plant and render after-sale-services. The Project Team is of the opinion that the supplier is well established and offers a good product and service. The technology will be transferred to the host country through ocean freight. - The local and global energy crisis and international and local government policy and legislation are driving the renewable energy market. The technology employed will enhance the capability and skill of South Africans to participate in this market, and contribute to national targets in this regard. - Since the technology adopted for the project is new, the proposed project activity will bring new opportunities for the locals to learn and develop their skills, work efficiency & effectiveness. In addition to the above, local skills will be advanced in the understanding, operation and maintenance of the technology. These skills are transferrable. The proposed project activity has a large replication potential by improving the overall economic & social upliftment of communities.

Indicators in Support of the Project Approval Criteria		
Category	**Indicator**	**Comment**

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Social	Alignment with national provincial and local development priorities	• How the project is aligned with provincial and national government objectives • How the project is aligned with local developmental objectives	National government has set objectives in terms of renewable energy generation and the reduction of greenhouse gases. The project aligns with these objectives. - The project supports the emission mitigation actions of South Africa. According to a letter sent to the United Nations Framework Convention on Climate Change (UNFCCC) on 29/01/2010, South Africa committed to "taking nationally appropriate mitigation actions to enable a 34% deviation below the 'Business as Usual' emissions growth trajectory by 2020 and a 42% deviation below the 'Business as Usual' emissions growth trajectory by 2025". The project will displace coal consumption of 8-10 customers industrial facilities, which will result in a reduction in all of the negative impacts associated with coal mining and coal consumption including GHG reduction. - Job creation is a key focus of national government's economic strategy as defined in the "New Growth Plan". The project will create several permanent jobs. The South African Government's economic policy is defined in the New Growth Path. This document indicates that the key social development deliverable the policy is aiming to support is the creation of new jobs in South Africa. Unemployment is recognised as key problem in the country that needs to be addressed. This project will create jobs during the installation and operational phases of the programme, thereby supporting Government's policy objectives.
		• Impact of the project on the provision of, or access to, basic services to the area	- The proposed project will create positive impacts by providing services to the customers whose main raw material source is dependent on coal; thereby providing them opportunity for using a cleaner fuel source.
		• Impact of the project on the relocation of communities if applicable	- The proposed project will be established on an approved demarcated industrial site; and no relocation of communities will occur due to the project activity
		• Contribution of the project to a any specific sectoral objectives (for example, renewable energy targets)	- Proposed project activity will utilize the amount of biomass waste that is discarded; as a result there will be conservation of coal – natural resource that is presently being used as fossil fuel source thereby promoting use of renewable energy.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	Social equity and poverty alleviation	• Impact of the project on employment levels? (specify the number of jobs created/lost; the duration of time employed, distribution of employment opportunities, types of employment, categories of employment changes in terms of skill levels and gender and racial equity) • Impact of the project on community social structures • Impact of the project on social heritage • Impact of the project on the provision of social amenities to the community in which the project is situated • Contribution of the project to the development of previously underdeveloped areas or specially designated development nodes	- Approximately 30 direct jobs will be created in the categories of technicians, semi-skilled workers, labourers and clerical. Indirect job opportunities will be for the local rural entrepreneur like waste collectors, short haulers & transporters. - The proposed project will contribute immensely by providing the community with a new technology of replacing the depleting fossil fuel (coal) source at reasonable cost. - As stated above, the proposed project will not cause any damage or negative impact on social heritage - As stated above, the proposed project will create positive impacts by providing the communities with economical and safer sources of energy generation. - The proposed project will help focus on the underdeveloped areas by utilization of the untreated timber waste for production of bio-coal.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
General	General Project Acceptability	• Are the distributions of project benefits deemed to be reasonable and fair?	The distributions of the project benefits are fair and reasonable to all the stakeholders. The project will bring increased spending of foreign exchange through services as specified above, create job opportunities to skilled and unskilled workers and also minimize the dependence on fossil fuel sources & its associated fossil fuel emissions.

Part D: Finance

Project Costs	
Development Costs (R's)	2.18 Million
Installed Costs (R's)	35.12 Million

Other Costs (R's)	4.03 Million
Total Project Costs (R's)	41.33 Million
Sources of Finance	
Equity	Bio Coal Manufacturers and Distributors (Pty) Ltd (BCMD) Amount- R18.65 Million
Debt (long term)	R18.65 Million
Debt (short term)	-
Amount not identified (R's)	*Amount (R's) and a brief summary of the needs and any outstanding issues* *(1 paragraph or less)*
Total CDM Contribution sought	Around R7.16 Million per annum
Expected Price of CER in case of a contract to purchase for: A period of 7 years A period of 10 years A period of 14 years (2x7 years)	Confidential
Indicate the **projected Internal Rate of Return** for the project with and without CER revenues.	**1.11%** Without CDM Revenue **34.70%** With CDM Revenue
Constraints on tradability of carbon credits	No
Preliminary discussions with potential purchasers	No