

Clean Development Mechanism South Africa
Designated National Authority



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

Private Bag X 19 , Acardia ,Pretoria, 0007, Tel:012-444 4116, Fax: 012 341 5133
Private Bag X9111, Cape Town, 8000, Tel: 021-469 6412, Fax: 021-465 5980

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	CPA Title: <i>CarbonSoft Pan Africa PA003</i> CPA ID: <i>PA003</i> PoA Title: <i>CarbonSoft Open Source PoA, LED lighting distribution: Pan Africa</i>
Date of Submission of PDD	10 July 2012

Project Developer	
Name	Moon Tree Trading (Pty) Ltd Reg. No. 2009/017682/07
Organizational Category	Private Company
Legal Status	Private Company
Street Address	8 Hendrik Street Sunair Park Brakpan South Africa 1541
Postal Address (if different from)	Postnet Suite 23

above)	Private Bag X3 Dalview South Africa 1544
Website Address	Not Applicable
Main Activities	Trading in environmentally friendly energy products and solutions.
Summary of Financial Performance in last fiscal year	Except for a few small transactions, (whilst awaiting finalisation of agreements in relation to environmentally friendly energy products and solutions), no major trading activities took place. For all intents and purposes the company has been dormant. Financials are being finalised at present which will reflect the afore-stated.
Contact Person(s)	Mr. Willem Maartens De Wet
Telephone	Work: +27 (11) 743 1035 Cell: +27 (72) 214 9850
Fax	+27 (11) 86 675 0374
Email Address	wdewet@lantic.net
Name	CarbonSoft Limited (UK) Ltd
Nature of partner	CarbonSoft Corporation Ltd. is acting as the co-ordinating and managing entity (CME) for the PoA.
Organizational Category	Private Company
Legal Status (if private company)	Privately Held Company
Street Address	The Hub 34 (B) York Way London, N1 9AB United Kingdom
Postal Address (if different to Street Address)	Not Applicable
Website Address	www.carbonsoft.net
Main Activities	CarbonSoft, (in partnership with Standard Bank), CarbonSoft has a simple solution to put the carbon market into the hands of companies, entrepreneurs and NGOs. It is currently establishing a carbon credit platform that by 2013 will span across Africa and Asia to enable local projects to generate the financial benefits that only UN-approved carbon credits can deliver. It only operates within the UN approved carbon trading rules to ensure that carbon credits are fungible in the largest emission trading scheme in the world, the European Emissions Trading Scheme, which offers long-term demand for the credits our clients generate. With a focus on solar lamp projects it offers companies and entrepreneurs financial rewards as they build their low-carbon businesses.
Contact Person(s)	Sebastian Foot
Telephone	Work: +44 (0) 20 71 93 7381 Cell: +44 759 591 3833
Fax	+44 (0)20 30 31 1143

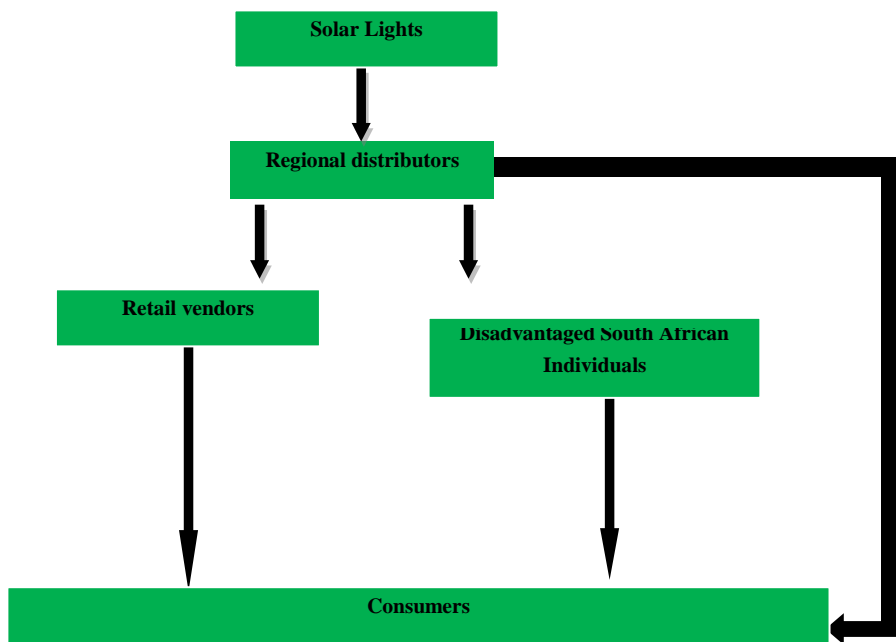
Email Address	Sebastian@carbonsoft.net
Contractual Arrangements	
Contractual arrangements between various entities involved	<p>Moon Tree Trading (Pty) Ltd and CarbonSoft Corporation Ltd have entered into a CPA Participation Agreement for the distribution of Solar LED Lights in South Africa as part of a CPA under the CarbonSoft OpenSource PoA, LED Lighting: Pan Africa.</p> <p>This agreement defines the roles and responsibilities of the parties with regard to the distribution of solar lights, management of the CDM process of generating CERs as well as fees and revenue sharing.</p>

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

Technical Summary of the project	
Objective of the Project	<p>The objective of the project is threefold:</p> <ul style="list-style-type: none"> • Eliminate the greenhouse emissions from burning kerosene for light • Reduce the weekly fuel cost burden for lower income South African families • Provide a more environmentally benign, brighter and healthier form of light to South African families
Project Description	
<p>Currently, a substantial group of South Africans, more especially those in informal settlements and at the lower end of the economic ladder do not have access to grid-connected electricity and have no choice but to use kerosene as their domestic fuel, and principal light, source. Moon Tree Trading along with its partner CarbonSoft aims to replace kerosene lamps used by those South Africans with low cost, robust, purpose-designed solar LED lamps.</p> <p>The distribution model will consist of a few centralized distribution points throughout South Africa which will partner with previously disadvantaged South Africans, (especially women as stipulated by the Executive Board of the CDM), to sell solar lamps through to their local communities in which they are already operative. In particular those small entrepreneurs who are currently selling kerosene to existing clientele would be targeted in order to offset any losses which they may encounter in terms of losses of sales of kerosene.</p> <p>For each lamp sold the individual distributor will receive profit margin which is anticipated to be in between 10 - 15% of the gross selling price.</p> <p>By working with individual distribution partners at grass roots level, Moon Tree Trading will be able to maintain a low cost strategy and thereby ensure that the solar lamp's retail price is the lowest in Africa. Based on the experience elsewhere in Africa it is anticipated that a new low-cost solar energy business would be created within the informal sector which would boost;</p> <ul style="list-style-type: none"> • Economic and entrepreneurial development amongst previously disadvantaged South Africans; • Employment as new jobs would be created at a very low cost in comparison to other industries. 	

Technical Summary of the project

Flow diagram showing distribution modal



Project Constraints: None

Technology to be employed

The PoA will employ the small-scale methodology, AMS.III.AR (“Substituting fossil fuel based lighting with LED lighting systems”). The project will focus on replacing portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with LED based lighting systems in residential and non-residential areas.

Is the technology one that has been previously tried and tested in South Africa or internationally? If yes, provide details (1 paragraph)

The specific technology has not been tried in South Africa but is being implemented in Tanzania and Malawi.

Have the project operators had any previous experience or expertise with operating the technology? If yes - provide brief details (1-2 lines)

Yes, the majority shareholder in Moon Tree Trading is currently involved in a similar CDM project in Malawi and the local Designated National Authority has provided Host Country Approval

Greenhouse Gases Targeted

The project targets GHG emission from burning kerosene which is mainly CO₂ (carbon dioxide)

Technical Summary of the project	
Emission reductions	<p>Annual average emission reductions over the crediting period is estimated to be 50,079 tonnes of CO₂eq</p> <p>And Total Emission reductions is estimated to be 350,550 tonnes of CO₂eq</p>
Baseline & Additionality Assessment	<p>Baseline The baseline will be the continued uncontrolled actual CO₂ emissions generated from the combustion of kerosene fossil fuel for lighting.</p> <p>Additionality The foundation of the additionality case is that the price of solar lamps continues to exceed that which low-income families in South Africa can afford. For example, if the Illumination solar lamp were sold without consideration for the carbon credit value, they would cost at least \$15 per unit. Whereas, the retail price of the solar lamp, with the incorporation of the carbon credit value is only approximately \$10.</p>
Monitoring	<p>The monitoring plan is in accordance with the approved small-scale baseline methodology AMS.III.AR “Substituting fossil fuel based lighting with LED lighting systems”</p> <p>Project Activity will record the following data:</p> <p>Number of lamps distributed to end users under the project activity, identified by the type of project lamps (lamp wattage, battery type, charging method, the date of supply).</p> <p>The database will be operated and maintained to ensure completeness and accuracy of monitoring information and will be presented in the form of a “Monitoring Report”.</p> <p>Each Project Lamp distributed will only be eligible to generate CERs for a period of two years from the date of sale. Monitoring will be ongoing throughout the Project; and will take account of verification periods.</p>
Type of project/activities	<i>Identify which type of activity is involved in this project - and for each, provide brief details</i>
a. Energy Supply	<p><i>Select if applicable: Renewable Energy (excluding biomass)/ Biomass/ Cogeneration/ Improving energy efficiency by replacing existing equipment/minimization of transport and distribution/ fuel switch/ other</i></p> <p>Household energy supply switching - Substituting fossil fuel based lighting with LED lighting systems</p>
b. Energy Demand	<p><i>Select if applicable: Replacement of existing ‘household equipment’/ improvement of energy efficiency of existing production equipment/ other</i></p> <p>Replacing traditional kerosene lamps with solar lamps</p>
c. Industrial Process	Not applicable

Technical Summary of the project	
d. Transport	Not applicable
e. Waste Management	Not applicable
f. Forestry/ land use	Not applicable
g. Other	Not applicable
Project Boundary The project boundary will include replacement of all the fossil fuel based lamps with solar LED lamps within the CPA boundary, which includes following provinces: Eastern Cape, Western Cape, Northern Cape, Kwa Zulu Natal, Mpumalanga, Limpopo, North West, Free State and Gauteng	
Indicate Emissions outside the Project Boundary	There are no significant and measurable net emissions of GHG that are attributable to the project outside of the project boundary

Location of the Project	
Province	It is envisaged that all provinces of South Africa would included in the PoA.
Municipality	Not applicable
Nearest city/large town	Not applicable
Brief description of the location of the project site	Not applicable

Project Schedule/Timetable	
Earliest Project Start Date	1st August 2012
When is the expected first year of CER delivery	2013
Project Lifetime	28 years
Project End Date	2038
Crediting Period	7 years with reassessment for a further two renewal phases
Current Status or phase of the project	<i>Select most applicable: Under discussion/ planning/preparation/construction or other actions already commenced/ Other (explain)</i> <i>Please provide brief details (1-2 lines)</i>

Project Schedule/Timetable	
	Submitted for Host Country Approval, Stake holder meeting carried out.
DNA Approval	<p><i>Has this project been submitted to the DNA for approval previously?</i></p> <p>No</p> <p><i>If yes - provide date of last submission and brief details of the response from the DNA (1 paragraph)</i></p> <p>Not applicable</p> <p><i>Provide details of any other official response by the DNA regarding this project</i></p> <p>Not applicable</p>
Approval by other bodies	None

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?

Please give details (1 paragraph)

By creating a new industry i.e. "small scale informal settlement solar light solutions", a new breed of entrepreneurs would enter the market and create a sustainable livelihood for them and their families. This would impact directly on the GDP even though it is small scale CDM project. The impact could be seen in other countries where the gross kerosene usage of those countries has dropped as the new breed of entrepreneurs started to make their presence felt.

Indirectly because of cost savings the disposable income of families at the bottom-end of the economy (the so called "bottom of the pyramid") would increase as a result of this new type of technology and hence they would have more money to spend on other essential goods and services which would impact positively on the national economic development.

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

Please give details (1 paragraph)

The project will contribute enormously to social development in South Africa as it would allow income

<p>families to have access to clean and sustainable lighting which is contrary to dominant use of kerosene. Under the current situation kerosene use is dirty, expensive, non-sustainable and also dangerous. Moreover, it has been demonstrated that proper lighting (constant, ambient light) enables better learning conditions for student studying at for at all schooling levels. Improving education opportunities would create a better culture of learning and impact positively on society as a whole. Furthermore, the benefits of living in a unpolluted household environment over the longer term hardly needs any further justification.</p>	
<p>3. Environmental: Does the project conform to the National Environmental Management Act principles of sustainable development? Please provide brief comment for each of these below.</p> <p>Yes</p>	
<p>i) That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be avoided, are minimised and remedied</p>	<p>The project would not disturb any ecosystems or lead to the loss of any biological diversity.</p>
<p>ii) That pollution and degradation of the environment are avoided, or where they cannot be altogether avoided, are minimised and remedied</p>	<p>The project would not lead to the pollution and / or degradation of the environment in any way whatsoever. Insofar as the project would lead to batteries being recycled a special program is being implemented to collect and recycle used batteries which would be disposed of outside of South Africa in a manner which would not be detrimental to the environments even at the final recycling plant.</p>
<p>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</p>	<p>The project would not lead to any disturbance of landscapes and sites that constitute the nation's cultural heritage</p>
<p>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</p>	<p>The disposal of batteries will take place by following the laws and regulations of South Africa. The same sales network will be used to replace and collect used batteries for recycling purposes. The batteries will be sent to Europe for recycling as no battery recycling units exist in the country at present.</p>
<p>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</p>	<p>The project would not use and or exploit any non-renewable resource.</p>
<p>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.</p>	<p>The project is based on the usage of solar energy and would thus not have any impact on any renewable resource.</p>
<p>vii) That a risk averse and cautious approach is applied, which takes into</p>	<p>The project holds no risk of any nature whatsoever for human beings,</p>

<p>account the limits of current knowledge about the consequences of decisions and actions</p>	<p>animal life and the environment.</p>
<p>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</p>	<p>No negative impact on the environment and or people's environmental rights is anticipated.</p>
<p>Other comments Please provide any other comments on how this project contributes to sustainable development in South Africa (optional)</p> <p>None</p>	

Indicators in Support of the Project Approval Criteria

Category	Indicator	Comment
Environmental	Impact on local environmental quality	<ul style="list-style-type: none"> • Impact of the project on air quality • Impact of the project on water pollution • Impact of the project on the generation or disposal of solid waste • Any other positive or negative environmental impacts of the project (such as impacts on noise, safety, visual impacts, or traffic)
	Change in usage of natural resources	<ul style="list-style-type: none"> • Impact of the project on community access to natural resources • Impact of the project on the sustainability of use of water, minerals or other non renewable natural resources • Impact of the project on the efficiency of resource utilisation
	Impacts on biodiversity and ecosystems	<ul style="list-style-type: none"> • Changes in local or regional biodiversity arising from the project

- **The project would have a positive impact on air quality**
- **The project would have no impact on water pollution except for the better**
- **The project would have a minor effect on the generation of and disposal of solid waste which would be mitigated by means of a battery recycling programme which would be introduced**
- **The project is extremely environmentally friendly and should lead to a cleaner and safer environment for South Africa as a whole and low-income families in particular**

- **The project would have no, other than a positive impact on the communities' access to natural resources.**
- **The project would have none, other than a positive impact on the usage of water, minerals and other non-renewable natural resources.**
- **The project would have none, other than a positive impact on the efficiency of resource utilisation.**

- **The project would have none, other than a positive impact on biodiversity and any ecosystem.**

Indicators in Support of the Project Approval Criteria			
Category	Indicator	Comment	
Economic	Economic impacts	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • The project as a whole would have a positive effect on South Africa’s foreign exchange requirements • The project shall contribute towards economic in any area as it would bring into being a new class of entrepreneur or diversification of economic activities • The project should lead to a substantial saving on the cost of energy for low income households • Foreign direct investment can be generated once solar lamp sales have been established. Specifically, there is the potential to manufacture the product range in South Africa – ultimately, this manufacturing hub could serve southern Africa
	Appropriate technology transfer	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • The project, although not based on “new” technology does bring a new applications of existing technologies to South Africa which can only have a positive implication for South Africa • The project should lead to local skill development in mostly the informal sector amongst primarily previously disadvantaged South Africans • This project approach is intended to be replicated across South Africa

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	<ul style="list-style-type: none"> • How the project is aligned with provincial and national government objectives • How the project is aligned with local developmental objectives • Impact of the project on the provision of, or access to, basic services to the area • Impact of the project on the relocation of communities if applicable • Contribution of the project to a any specific sectoral objectives (for example, renewable energy targets) 	<ul style="list-style-type: none"> • The project is aligned with provincial and national government objectives and developmental priorities. • The project is aligned with local developmental objectives and developmental priorities. • Although the project would not lead to the provision of, and / or access to, basic services, it would render a complimentary service. • The project would not lead to the relocation of any community. • The project would lead to the contribution of sectoral objectives i.e. usage of renewable energy targets within the context of solar energy being achieved.
	Social equity and poverty alleviation	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • It has been the experience, (in Malawi and Tanzania), that the project has had a positive impact on community social structures • The project should have a positive effect on social heritage • The project should contribute towards better usage of social amenities i.e. lighting • The project should contribute towards the development of previously underdeveloped areas or specially designated development nodes

Indicators in Support of the Project Approval Criteria

	Category	Indicator	Comment
General	General Project Acceptability	<ul style="list-style-type: none"> • Are the distribution of project benefits deemed to be reasonable and fair? 	<ul style="list-style-type: none"> • The major benefits of the project relate to the customers purchasing the lamp. For example, health, education, significant impact on household budgets • Introduction of a new and game changing technology • The low cost of the unit is maintained by the future CER income – which makes them more affordable to low-income households • Therefore, the benefits of the project are fair and reasonable

Part D: Finance

Project Costs	
Development Costs (R's)	R550 000-00
Installed Costs (R's)	R75 000-00
Other Costs (R's)	R570 000-00
Total Project Costs (R's)	+/- R1 200 000-00
Sources of Finance	
Equity	All localized capital expenditure has been absorbed by the local South African project participant.
Debt (long term)	This project has no debt obligations
Debt (short term)	This project has no debt obligations
Amount not identified (R's)	There are no outstanding issues
Total CDM Contribution sought	<p>It is anticipated that the value of the CDM on a per lamp basis will be approximately \$4 per unit. This is passed onto the consumer by way of a reduction in the unit price.</p> <p>A carbon price of €12 per tone is assumed. Should the price of carbon increase, it will be passed on as a further cost savings to the consumer.</p>
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)	<p>Price (R120)</p> <p>Price (R120)</p> <p>Price (R120)</p>
Indicate the projected Internal Rate of Return for the project with and without CER revenues.	The IRR for consumer products is not an applicable financial measurement. IRRs are typically used for industrial projects. Therefore, an IRR cannot be measured for this project. This has been demonstrated in the similar projects in Malawi and Tanzania.
Constraints on tradability of carbon credits	A long-term CER purchase agreement has been agreed.
Preliminary discussions with potential purchasers	CarbonSoft Corporation Limited (which is a joint venture with Standard Bank) shall purchase the future CERs.