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 use only)	
Date received (office use only)	

NOTES ON COMPLETING THIS PROJECT DESIGN DOCUMENT

1. Please provide this PDD in both hard-copy (one copy) and electronic formats (MSWord)
2. The information submitted to the DNA in this PIN will remain confidential.
3. Please ensure that all fields are filled in as far as possible to allow for proper consideration of the proposed project. Please indicate if information is not available for any particular item and reasons for the unavailability of information.

Part A: Project Proponent Details

Project Name	"Southern African Solar LED Programme – South Africa CPA"
Date of Submission of PDD	PoA-DD and first CPA-DD submitted to SA DNA on 28/05/2012

Project Developer	
Name	ToughStuff International
Organizational Category	Private Company
Legal Status	Limited Liability Company
Street Address	4th Floor, Ebene Skies, Rue de l'Institut, Ebene, Mauritius
Postal Address (if different from above)	PO Box 1701 Gallo Manor, 2052
Website Address	www.toughstuffonline.com

Main Activities	ToughStuff bring affordable energy products to people without access to electricity thereby helping to increase living standards, improve health, enhance the environment, and build enterprise and employment. ToughStuff has developed a modular range of affordable solar powered energy solutions to the three main power needs of poor consumers in the developing world – lighting, mobile phones and radios. Our unique products are designed following market research and field studies in Africa to meet the specific needs of our customers. They combine high performance, durability, and affordability
Summary of Financial Performance in last fiscal year	Revenue 2009 - $400k Revenue 2010 - $1.7m Revenue 2011 - $6.3m (projected)
Contact Person(s)	Stanley Semelane- ToughStuff International (Project Developer) Graham Paul- Ecometrix Africa (Consultant)
Telephone	ToughStuff International Work: +27(0)11 258 8624 Cell: +27(0)71 031 0834 Ecometrix Africa Work: +2711 463 1009
Fax	NA
Email Address	stanley.semelane@toughstuffonline.com
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 organisation)	
Name	A Distribution Network
Nature of partner	ToughStuff's Distribution network imports, warehouses, and distributes ToughStuff products throughout the project countries.
Organizational Category	Private Company
Legal Status (if private company)	Limited partnership.
Street Address	This will vary for every distributor as this PoA will cross between different countries.
Postal Address (if different to Street Address)	This will vary for every distributor as this PoA will cross between different countries.
Website Address	This will vary for every distributor as this PoA will cross between different countries.
Main Activities	Distribution network partners vary by country. They may include, but are not limited to, importers, distributors, wholesalers, retailers, and entrepreneurs.
Contact Person(s)	This will vary for every distributor as this PoA will cross between different countries.
Telephone	NA

Fax	NA
Email Address	stanley.semelane@toughstuffonline.com
Contractual Arrangements	
Contractual arrangements between various entities involved	NA at this time

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

Technical Summary of the project	
Objective of the Project	The objectives of this project are to reduce Greenhouse Gas (GHG) emissions from fossil fuels used for lighting (e.g. kerosene/Paraffin), to reduce energy poverty for low-income households, and to promote the use of renewable sources of energy through the sale of micro-scale solar products.

Project Description

'Southern African Solar LED Programme – South Africa CPA' (the SSC-CPA) is a small scale project activity that will replace fossil fuel based lighting with Solar LED lighting in South Africa. This SSC-CPA is implemented under the PoA titled "Southern African Solar LED Programme". The PoA is a voluntary initiative of ToughStuff International Ltd (herein referred to as ToughStuff International). The SSC-CPA will implement the replacement of fossil fuel based lighting with solar LED lighting (thereby reducing greenhouse gas (GHG) emissions) at a domestic scale including both residential and non-residential settings.

A typical technology employed within this SSC-CPA – a solar LED lamp - will consist of a solar photovoltaic (PV) panel, electronic circuits, storage battery and LED lamp. The solar PV panel captures solar energy and converts it into electrical energy which is then stored in the battery. The lamp draws electricity from the battery and provides light.

The products used are of ToughStuff's own design and are robustly made in order ensure long-term performance in the demanding rural environment while meeting the needs of the consumer. Products are sold to a major distributer in countries included in the PoA, distributors sell to two (2) types of clients: wholesale and retailers that sell to end-users, and ToughStuff sponsored micro-entrepreneurs who also serve end-users. End-users are those that use the products. Local Micro-entrepreneurs will be trained by ToughStuff to rent or sell products in rural communities that do not have access to retail locations. Micro-entrepreneurs purchase multiple sets of products from retail distributors, and rent them out, or resell them in remote locations.

ToughStuff solar panels and LED lamps replace fossil fuel based lighting (e.g. kerosene/paraffin lamps) used at night to provide lighting in areas without electricity. Such lighting is dangerous and unreliable, and is not efficient for activities such as reading/working. A ToughStuff rechargeable LED lamp charged with the solar panel by day provides 4 - 30 hours of continuous lighting, depending on the brightness setting, which affords consumers increased productivity at night.

Technical Summary of the project	
Project Constraints No constraints to project development.	
Technology to be employed	Emission reductions will be generated by LED lamps displacing fossil fuel based lighting and thus their emissions. ToughStuff manufactures and retails solar panels and LED lamps. Solar panels are 5.7 volt, 1 watt, 0.174 amps amorphous (flexible) photovoltaic panels. Rechargeable ToughStuff LED lamps have four (4) wide-angle 8mm LED bulbs each, with one green LED charging indicator for the imbedded battery (1.3 AH). ToughStuff products are manufactured in China and imported by national distributors. The products are sold via commercial distribution networks (wholesalers and retailers), as well as, NGO, civil society, and MFI partners. ToughStuff maintains a national presence in each country to manage the ToughStuff brand and marketing campaigns and build distribution partnerships. ToughStuff will additionally manage the carbon documentation and monitoring.
Greenhouse Gases Targeted	CO2: Carbon dioxide
Emission reductions	Estimated 71,520 tCO2 over the 7 year crediting period for the South Africa CPA. (The emission reduction for each CPA within the programme will vary considerably depending on the distribution networks that are developed).
Baseline & Additionality Assessment	The project activity will apply the approved consolidated small scale CDM baseline methodology III.AR./Version 02 according to baseline scenarios applicable to the PoA project boundary. The project activity provides an off grid clean energy source. Currently the targeted areas rely on fossil fuel based lighting for light and this project activity will convey a renewable source to provide light without harming the environment.
Monitoring	The applied methodology provides a default baseline situation. Where applicable, appropriate baseline scenarios shall be applied and monitored according to the methodology including statistical sampling which is prescribed in the applied methodology.
Type of project/activities	*Identify which type of activity is involved in this project - and for each, provide brief details*
a. Energy Supply	The project activity shall provide clean source energy.

Technical Summary of the project	
b. Energy Demand	Replacement of existing household kerosene/paraffin lights with LED lamps and solar panels.
c. Industrial Process	*n/a*
d. Transport	*n/a*
e. Waste Management	*n/a*
f. Forestry/ land use	*n/a*
g. Other	*n/a*
Project Boundary The boundary of this CPA is the Republic of South Africa (this also excludes Lesotho and Swaziland). [The Programme has a geographical boundary within which all the implemented small-scale CDM programme activities (SSC-CPAs) included in the PoA will occur. This geographical area includes South Africa, Mozambique, Zimbabwe, Botswana, Namibia, Zambia, Malawi and Angola.]	
Indicate Emissions outside the Project Boundary	None

Location of the Project	
Province	The boundary of the CPA is the geographical boundary of the Republic of South Africa.
Municipality	NA
Nearest city/large town	NA
Brief description of the location of the project site	The boundary of the CPA is the geographical boundary of the Republic of South Africa. The lamps will be used at a domestic scale including both residential and non-residential settings.

Project Schedule/Timetable	
Earliest Project Start Date	Date of registration of the PoA
When is the expected first year of CER delivery	2013
Project Lifetime	The methodology stipulates option 1 or option 2 be chosen. In the case of the South Africa CPA option 2 is chosen. Hence the crediting period is 7 years, renewable. The PoA lifetime is 28 years.
Project End Date	PoA end date is 2040
Crediting Period	The methodology stipulates option 1 or option 2 be chosen. In the

Project Schedule/Timetable	
	case of the South Africa CPA option 2 is chosen. Hence the crediting period is 7 years, renewable. The PoA lifetime is 28 years.
Current Status or phase of the project	The project activity is currently under development. Distribution models, partners and costs are currently being modeled.
DNA Approval	This project has not previously been submitted to the DNA for approval.
Approval by other bodies	The project has not been submitted to any government departments for regulatory approval.

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?

The project will contribute to national economic development, through:

1. Domestic savings realised from the diminished consumption of fossil fuels for lighting purposes.
2. Domestic savings on medical bills/fees traditionally attributed to illnesses and injuries associated with the use of fossil fuels for lighting purposes.
3. Reduced financial losses associated with lack of productivity due to illnesses and injuries associated with the use of fossil fuels for lighting purposes.
4. The creation of job opportunities via small enterprises through rental, sale and distribution of lamps (depending on the distribution model used).
5. The foreign direct investment through the business opportunity created by the PoA will create/expand the market for LED lighting and solar panels.
6. The project supports the energy scarcity crisis that is prevalent in South Africa.

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

1. Improved domestic lighting with increased lumen output as compared to kerosene lamps and fossil fuel based lighting. While there are a variety of models, arrays and types of LED lamps, it is a widely acknowledged fact that the typical LED Lantern produces greater quality useful light than the typical Kerosene lantern. This figure according to some reports is as high as 200 times better light than fuel based lighting systems1.

2. This will provide a better environment for children to study in devoid of the low quality

lighting and eye irritation previously witnessed with traditional based kerosene lamps. 3. The improved lighting will also allow for greater opportunities for income generating activities that do not currently take place. 4. Increased awareness on the use of environmentally friendly lighting applications and the adverse effects of traditional fossil fuel lighting applications creating social awareness on the need to conserve the environment and the health of families. 5. Further employment opportunities will be created in the distribution and implementation phases of the project. Particularly for wholesalers and retailers which will creates downstream further employment opportunities for local people. Also, workers in the on-going operations and warranty office shall benefit from this project.	
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.	
i) That the **disturbance of ecosystems and loss of biological diversity** are avoided, or where they cannot be avoided, are minimised and remedied	*n/a*
ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied	Solar panel LED lighting is a clean source of renewable energy. The project activity replaces kerosene from fossil sources. Hence, project will lead to an improvement in environmental quality, especially improvement of local air quality, as well as a reduction of indoor air pollution.
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 project will not disturb any landscape or cultural heritage, as it takes place in existing households
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	n/a
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	n/a
vi) That the **development, use and exploitation of renewable resources is responsible and equitable**, and takes into account the consequences of the	n/a

depletion of the resource.	
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	Solar Panel LED lighting produced by the project from solar energy shall address the energy poverty crisis Africa is facing. The project activity will rather promote sustainable use of renewable resources than diminish resources.
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 project will adopt a risk averse and cautious approach, including the risk assessment on health, safety and environment as per the rules and regulations of the CDM.
Other comments **Please provide any other comments on how this project contributes to sustainable development in South Africa (**optional)	

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
Environmental	Impact on local environmental quality	• 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)	The project will have positive impacts on local environmental quality through: • Reduce anthropogenic CO2 emissions associated with the use of fossil fuel based lighting applications, specifically kerosene lamps as the LED lamps /lanterns are solar charged. • Reduce indoor air pollution associated with the use of fossil fuels for the use of lighting and improve local air quality. • The project will not have any impacts on water quality or generation of solid waste; • The project will not disturb any landscape or cultural heritage, as it takes place in existing households.
	Change in usage of natural resources	• 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	The project has no impact on community access to natural resources. Furthermore, the project will make use of solar panel LED lighting to replace kerosene lighting, which is will assist in addressing energy poverty for off grid communities. The project activity does not bring negative impacts. Hence, the project rather promotes sustainable use access to natural resources. Furthermore the project will utilize renewable energy and reduce greenhouse emissions.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
	Impacts on biodiversity and ecosystems	• Changes in local or regional biodiversity arising from the project	The project does not affect biodiversity and ecosystem.

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 project will not impact the foreign exchange requirements. • The project will reduce the cost of energy for those who purchase the solar LED lamps as they use a renewable resource. • Domestic savings realised from the diminished consumption of fossil fuels for lighting purposes. • Domestic savings on medical bills/fees traditionally attributed to illnesses and injuries associated with the use of fossil fuels for lighting purposes. • Reduced financial losses associated with lack of productivity due to illnesses and injuries associated with the use of fossil fuels for lighting purposes. • The creation of job opportunities via small enterprises through rental, sale and distribution of lamps (depending on the distribution model used). • The foreign direct investment through this business opportunity that this PoA creates will create/expand the market for LED lighting and solar panels. • The project supports the energy scarcity crisis that is prevalent in South Africa.
	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 project will distribute solar panel solar lights for communities that rely on kerosene for light. While this technology is not common in South Africa, the project represents a further increase of capacity to utilize the technology as a result the country adopts to a variety of international technologies. • The international experts involved on the project design and operation will work with Southern African persons leading to local skills development.

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 • 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)	The project complies with the Government policy: • Promotion of CDM; • Improvement of environmental quality; • Reduction on reliance of fossil fuels and aiding the country meet renewable energy targets; • Enhancing economic development and job creation; • Greenhouse gas reduction. No relocation of communities will take place. The project will assist in addressing the energy poverty within the Southern African countries.

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	As stated previously the project will contribute to social development in the following ways: 1. Improved domestic lighting with increased lumen output as compared to kerosene lamps and fossil fuel based lighting. While there are a variety of models, arrays and types of LED lamps, it is a widely acknowledged fact that the typical LED Lantern produces greater quality useful light than the typical Kerosene lantern. This figure according to some reports is as high as 200 times better light than fuel based lighting systems. 2. This will providing a better environment for children to study in devoid of the low quality lighting and eye irritation previously witnessed with traditional based kerosene lamps. 3. The improved lighting will also allow for greater opportunities for income generating activities that do not currently take place. 4. Increased awareness on the use environmentally friendly lighting applications and the adverse effects of traditional fossil fuel lighting applications creating social awareness on the need to conserve the environment and the health of families. 5. Further employment opportunities will be created in the distribution and implementation phases of the project. Particularly for wholesalers and retailers which will creates downstream further employment opportunities for local people. Also, workers in the on-going operations and warranty office shall benefit from this project. Importantly the project will aid the development of underdeveloped areas who have no or limited access to electricity.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
General	General Project Acceptability	• Are the distribution of project benefits deemed to be reasonable and fair?	The project will benefit the Sothern African community through the provision of clean source of light and creation of new jobs. Furthermore, it will contribute towards to sustainable economic and global emission reductions. The international experts involved on the project development will contribute to knowhow transfer into South Africa.

Part D: Finance

Project Costs	
Development Costs (R's)	Not available.
Installed Costs (R's)	Not available.
Other Costs (R's)	Not available.
Total Project Costs (R's)	The project is still on an early stage. The financial model has not been finalized as yet. The rough estimation of the total project cost is ZAR 2.2million.
Sources of Finance	
Equity	ToughStuff will provide approximately 100% equity.
Debt (long term)	n/a
Debt (short term)	n/a
Amount not identified (R's)	*n/a*
Total CDM Contribution sought	The project is estimated to generate a total of 71,520 CERs, over the first crediting period.
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)	There is currently no purchase agreement signed with anyone. Expected price of CERs is 10 Euro/tCO2.
Indicate the **projected Internal Rate of Return** for the project with and without CER revenues.	*n/a*
Constraints on tradability of carbon cred	*n/a*
Preliminary discussions with potential purchasers	No ERPA has been signed at this time