Clean Development Mechanism South Africa
Designated National Authority

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

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# Project Design Document (PDD)

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|---|---|
| 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** | Southern African Solar Thermal Energy Programme (SA-STE PoA) |
| **Date of Submission of PDD** | 10/01/2012 |

| **Project Developer** | |
|---|---|
| **Name** | EcoMetrix Africa Solar Ventures |
| **Organizational Category** | *Select most applicable:*<br>**Private Company** |
| **Legal Status** | Privately held limited liability company |
| **Street Address** | 43 Peter Place, Bryanston, Johannesburg, 2021, South Africa |
| **Postal Address (if different from above)** | Same |
| **Website Address** | www.ecometrix.co.za |
| **Main Activities** | EcoMetrix Africa is focused on the provision of services and development of projects which result in the mitigation of climate change or assist entities to participate in the low carbon economy. |

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| **Summary of Financial Performance in last fiscal year** | Company has been operating for just over 1 yr but anticipates revenues to be less than R5m. |
| **Contact Person(s)** | Sean Buchanan |
| **Telephone** | Work:011 463 1009<br>Cell: 082 378 2032 |
| **Fax** | |
| **Email Address** | Sean.buchanan@ecometrix.co.za |
| **Project Partners**<br>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** | Ellies (pty) Ltd |
| **Nature of partner** | Listed entity |
| **Organizational Category** | *Select most applicable:*<br>*National Government/ Government Agency/ provincial Government/ Municipality/* **Private Company***/ Non-Governmental Organisation/ Other (give details)* |
| **Legal Status (if private company)** | Listed entity |
| **Street Address** | 94 Eloff Street Ext<br>Village Deep<br>Johannesburg |
| **Postal Address (if different to Street Address)** | P.O. Box 57076<br>Springfield<br>2137 |
| **Website Address** | www.ellies.co.za |
| **Main Activities** | Supply of renewable energy equipment |
| **Contact Person(s)** | Gary Wiltshire |
| **Telephone** | Work: 015 403 5200<br>Cell: |
| **Fax** | |
| **Email Address** | gary@elliesblm.co.za |
| **Contractual Arrangements** | |
| **Contractual arrangements between various entities involved** | *Provide a brief description of the contractual and/or legal relationship(s) between the various key business entities including owner(s) of the future CERs. (If applicable)* |

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

| Technical Summary of the project | |
|---|---|
| **Objective of the Project** | The objective of this programme is the promotion of small scale solar thermal technologies that reduce the use of fossil fuels and the associated emissions. |

**Project Description**

The Programme will lower the barriers to uptake for these technologies by reducing the costs of acquisition. The carbon revenue resulting from the emission reductions will be used to lower the cost.

A typical CPA will consist of an organisation, e.g. retailer or housing developer, who elects to market a solar thermal device which is installed at many locations, to provide heat for domestic or light industrial use, within the borders of the Countries. Only those products which have been shown to adhere to the appropriate local, or regional, standards and were installed by contractors who have met the participation criteria of the programme will be enrolled and therefore be eligible to claim emission reductions.

Typical examples of such CPAs include, but are not limited to, the following:

- Housing developers who offer home owners the option of installing a heat pump equipped geyser instead of an electric geyser in newly constructed homes
- Retailers who offer solar water heaters and solar space heaters at reduced rates to incentivise the purchase and installation of these products

A SSC-CPA may consist of:

1. Installations replacing existing heating technologies with solar based heating technologies ; and
2. New installations at newly built facilities (i.e. no existing heating technology is currently in place).

For both types of installations the baseline technology in the absence of a solar-based heater would be an electric geyser or electric space heater as appropriate.

| Technical Summary of the project | |
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| **Project Constraints**<br>Nil | |
| **Technology to be employed** | The PoA is a programme for the installation of domestic and light industrial devices/products that utilise solar technology to produce thermal energy for the consumer. It is envisioned that such products will include but are not limited to:<br>• Solar water heaters – These units use solar radiation to heat water which is stored in a storage tank and used for sanitary needs such as bathing, cleaning, showering etc.<br>• Air-source heat pumps – These units use the heat in the air, from solar radiation, to heat water either for direct sanitary use such as in a solar water heater or for space heating in a radiator system. Using the same system as a domestic fridge (vapour compression refrigeration) heat is absorbed from outside, transferred to the internal circuit and released into a water heater. These units typically consume 1 unit of electricity for every 3 units of heating produced, resulting in an approximate energy saving of 67%.<br>• Solar space heaters – These units use water that has been heated by solar radiation to transfer heat into a room via a radiator. The mechanism for heating the water may be either a solar water heater type system or an air source heat pump type system.<br><br>*Is the technology one that has been previously tried and tested in South Africa or internationally? If yes, provide details (1 paragraph)*<br><br>In the case of heat pumps and SWH, these have been tried in many hundreds of locations.<br><br>*Have the project operators had any previous experience or expertise with operating the technology?*<br>If yes – provide brief details (1-2 lines)<br><br>The equipment suppliers and installers must all be recognized as qualified professionals with respect to the technology provided. This is verified through registration with a professional body. |
| **Greenhouse Gases Targeted** | $CO_2$<br><br>*Note: CDM projects must result in a reduction of one of the following greenhouse gases: $CO_2$/ $CH_4$/$N_2O$/HFCs/PCFs/$SF_6$* |
| **Emission reductions** | 381,729tCO2 over the crediting period |

| Technical Summary of the project | |
|---|---|
| | *Note: please provide annual and total emission reductions in tonnes CO2 equivalent* |
| **Baseline & Additionality Assessment** | The baseline is the use of a resistive electrical element to provide the equivalent thermal energy supplied in the project activity.<br><br>The project is additional as the use of these devices is not prevalent due to the inherent and perceived risks of purchasing and installing such a device. |
| **Monitoring** | The energy production of the STE devices will be monitored.<br><br>*Note: parameters may include emissions output, energy production, energy sales, environmental impacts etc.* |
| **Type of project/activities** | *Identify which type of activity is involved in this project - and for each, provide brief details* |
| a. Energy Supply | High temperature STE technology may be used to provide process heat from solar energy. |
| b. Energy Demand | Certain STE technologies reduce the energy demand of a household. This programme intends including solar water heaters, solar space heaters and heat pumps which all reduce electrical demand to supply heat. |
| 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**<br>The project boundary is defined at the equipment that is installed as a project activity.<br>Note: a project boundary refers to all emissions which are under the control or directly affected by the project activity. Such a boundary can encompass equipment, processes and process flows. | |
| Indicate Emissions outside the Project Boundary | Nil<br>*Note: Significant and measurable net emissions of GHG that are attributable to the project outside of the project boundary* |

| Technical Summary of the project | |
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| Location of the Project | |
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| **Province** | Gauteng |
| **Municipality** | City of Johannesburg |
| **Nearest city/large town** | Johannesburg |
| **Brief description of the location of the project site** | The project locations are distributed at household and business level. There is no single project location. |

| Project Schedule/Timetable | |
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| **Earliest Project Start Date** | May 2011 |
| **When is the expected first year of CER delivery** | 2013 |
| **Project Lifetime** | 28yrs |
| **Project End Date** | Jan 2041 |
| **Crediting Period** | 3x7 |
| **Current Status or phase of the project** | *Select most applicable:*<br>Initial implementation stage<br><br>The rollout of the programme to various stores has started but training and full rollout is still in progress. |
| **DNA Approval** | NO |
| **Approval by other bodies** | In Process |

# 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 programme encourages the use of STE technology, thereby stimulating the local STE industry. Secondarily, the use of STE equipment reducing demand on the constrained electricity supply thereby freeing up more electrical capacity for economic activities.

Also, the programme can result in the reduction of the monthly electricity bill by up to a huge margin. It will reduce, the amount of electricity purchased from the main electricity supply especially during the winter months of the year.

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

The programme makes an indirect contribution to social development in that is stimulates the local STE industry and requires participants in the industry to adhere to stringent standards and up-skill workers to the nationally required standard.

**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 | **Disturbance is negligible** |
| ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied | **No additional pollution is associated with these technologies** |
| iii) That the **disturbance of landscapes** | |

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| **and sites that constitute the nation's cultural heritage** is avoided, or where it cannot be altogether avoided, is minimised and remedied | **Disturbance is negligible** |
| 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 | **Waste is negligible** |
| 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 basis of this programme is the use of renewable energy sources** |
| 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. | **Exploitation of the renewable resource is conducted at the community and household level thereby increasing supply diversity and energy security** |
| 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 | **Strict standards are applied throughout the programme to ensure the best quality equipment, skills and materials are used in the implementation.** |
| 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 | **Impacts are negligible** |
| **Other comments**<br>**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<br>• Impact of the project on water pollution<br>• Impact of the project on the generation or disposal of solid waste<br>• Any other positive or negative environmental impacts of the project (such as impacts on noise, safety, visual impacts, or traffic) | The impacts on the quality of the local environment are negligible and no effects on air quality, water or waste have been noted in previous projects. |
| | Change in usage of natural resources | • Impact of the project on community access to natural resources<br>• Impact of the project on the sustainability of use of water, minerals or other non renewable natural resources<br>• Impact of the project on the efficiency of resource utilisation | The project reduces the use of non-renewable fossil fuels, but has no impact on the access to natural resources or the sustainable use thereof. The programme does encourage more efficient use of hot water, heat and electricity. |
| | Impacts on biodiversity and ecosystems | • Changes in local or regional biodiversity arising from the project | No impacts on biodiversity and ecosystems is anticipated. |

| Indicators in Support of the Project Approval Criteria | | | |
|---|---|---|---|
| **Category** | | **Indicator** | **Comment** |
| **Economic** | Economic impacts | • Impact of the project on foreign exchange requirements<br>• Impact of the project on existing economic activity in the area<br>• Impact of the project on the cost of energy<br>• Impact of the project on foreign direct investment | The programme will reduce the cost of thermal energy, and proportionately reduce the overall energy costs but otherwise will have few economic effects. |
| | Appropriate technology transfer | • Positive or negative implications for the transfer of technology to South Africa arising from the project<br>• Impacts of the project on local skills development<br>• Demonstration and replication potential of the project | The programme will provide an incentive for the transfer of STE technology as well as the development of local STE technology. In addition the demand for installation and design skills in this arena will increase as well as demonstrating the role of the carbon markets in providing energy security to households and communities. |

| 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<br>• How the project is aligned with local developmental objectives<br>• Impact of the project on the provision of, or access to, basic services to the area<br>• Impact of the project on the relocation of communities if applicable<br>• Contribution of the project to a any specific sectoral objectives (for example, renewable energy targets) | The programme is aligned with the national priority to reduce electricity use, and diversify energy supply. |
| | 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)<br>• Impact of the project on community social structures<br>• Impact of the project on social heritage<br>• Impact of the project on the provision of social amenities to the community in which the project is situated<br>• Contribution of the project to the development of previously underdeveloped areas or specially designated development nodes | The programme will have a negligible direct impact on social factors but a positive indirect effect through the STE industry and the associated social returns. |

| 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 programme adds value to the entire supply chain from R&D and Manufacturing, to distribution and retail as well as installation. Finally the equipment owner will also benefit from a diversified energy mix and increased energy security. |

## Part D: Finance

| **Project Costs** | |
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| **Development Costs (R's )** | |
| **Installed Costs (R's)** | |
| **Other Costs (R's)** | |
| **Total Project Costs (R's)** | |
| **Sources of Finance** | |
| **Equity** | *Name of Organisation(s) and amount (R's) contributed by each*<br><br>In most cases the equipment will be funded by the owner entirely from their own equity with the upfront purchase price potentially reduced by carbon revenue. |
| **Debt** (long term) | *Name of organization(s) and amount (R's) for each* |
| **Debt** (short term) | N*ame of organization(s) and amount (R's) for each* |
| **Amount not identified (R's)** | *Amount (R's) and a brief summary of the needs and any outstanding issues*<br>*(1 paragraph or less)* |
| **Total CDM Contribution sought** | *Amount (R's) and a brief summary of the needs and any outstanding issues*<br>*(1 paragraph or less)*<br><br>R80 |
| **Expected Price of CER** in case of a contract to purchase for:<br>A period of 7 years<br>A period of 10 years<br>A period of 14 years (2x7 years) | R80 |
| Indicate the **projected Internal Rate of Return** for the project with and without CER revenues. | *Note: Please indicate assumed price of CER as used in your calculation* |

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| **Constraints on tradability of carbon credits** | *Have any commercial arrangements been made that may impact the tradability of the carbon emission reductions? If yes, please define.Note. Examples would be subjection to a mortgage, government tax etc.*<br><br>*No.* |
| **Preliminary discussions with potential purchasers** | *Have you had any preliminary discussions with any potential purchasers of the carbon credits (CERs)*<br>*If yes, please give brief details.* |