

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 (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	CDM Africa Small Scale Hydro PoA for Southern Africa
Date of Submission of PDD	19 September 2012


Project Developer	
Name	(i))PoA Africa Hydro (Pty) Ltd, (ii) CDM Africa Climate Solutions (Pty) Ltd (joint Project Participants)
Organizational Category	Select most applicable: Private Company (both)
Legal Status	Private company (both)
Street Address	83 Mackay Blairgowrie Randburg (both)

Postal Address (if different from above)	C/o Imbewu 59 Dudley Avenue Rosebank Johannesburg Gauteng (both)
Website Address	www.cdmafrica.com
Main Activities	(i) <i>Acting as a Co-ordinating and Managing Entity for the CDM Africa Small Scale Hydro PoA for Southern Africa</i> (ii) <i>CDM Project Development</i>
Summary of Financial Performance in last fiscal year	(i) <i>N/a new entity erected specifically for this purpose</i>
Contact Person(s)	Ms Marilize Stoltz
Telephone	Work: 011 214 0660 Cell:082 7463364 (both)
Fax	N/a
Email Address	marilize@cdmafrica.com (both)
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	N/a – no project partners. CPA's will join the PoA on a contractual basis
Nature of partner	
Organizational Category	
Legal Status (if private company)	
Street Address	
Postal Address (if different to Street Address)	
Website Address	
Main Activities	
Contact Person(s)	
Telephone	
Fax	
Email Address	
Contractual Arrangements	
Contractual arrangements between various entities involved	

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

Technical Summary of the project	
Objective of the Project	The objective of the CDM Africa Wind and Solar Programme of Activities for South Africa is to The objective of the Hydro Programme of Activities for Southern Africa is to develop a multi-track platform for overcoming regulatory, institutional, financial and structural hurdles for the roll-out of hydro power by providing access to carbon finance.
<p>The programme of activities (hereafter referred to as “the PoA”) is an initiative for the implementation of small scale hydro projects generating electricity into the respective national grids across Southern Africa. The following countries are involved:</p> <ul style="list-style-type: none"> □ South Africa (first CPA), Angola, Botswana, DRC, Lesotho, Malawi, Mozambique, Madagascar, Mauritius, Namibia, Seychelles, Swaziland, Tanzania, Zimbabwe and Zambia <p>Each CDM programme activity (SSC-CPA) will be implemented in a geographically distinct area within Southern Africa. The PoA and the inclusion of each CPA will be managed by a managing/coordinating entity (CME) called PoA Africa Hydro (Pty) Ltd.</p> <p>The PoA targets greenfield projects, will cap capacity as it exists at the end of the first phase and will regard capacity expansions as separate and distinct CPA’s.</p> <p>The following renewable energy technologies can be implemented under the PoA:</p> <ul style="list-style-type: none"> - Small scale hydro (run-of-river or existing reservoir) 	
Project Constraints	
The biggest project constraint is the fungibility of the CER’s into the EU ETS for countries that are not classified as Least Developed. If the project is registered in time to be eligible into the EU ETS (before the end of 2012), the carbon revenue will be significant and will enable future projects. If not the impact will be smaller and some projects may not reach feasibility.	
Technology to be employed	Grid connected small scale hydro
Greenhouse Gases Targeted	CO2 produced in generating electricity for the national grids in the respective countries
Emission reductions	The total amount of CER’s will depend on the number of CPA’s that join the PoA. The CER’s in the first CPA are approximately 30,000 per year for ten years.
Baseline & Additionality Assessment	<p>The CDM methodology applied to this project is AMS 1.D – a small scale methodology</p> <p>The baseline scenario is a “business as usual” scenario, where no project activity is undertaken.</p> <p>The first CPA will use financial analysis to prove additionality and possibly also barrier analysis</p>
Monitoring	Electricity production will be monitored in order to determine the emissions reductions as against the baseline of electricity production by the grid
Type of project/activities	
a. Energy Supply	<i>Renewable Energy – small scale hydro</i>
b. Energy Demand	N/a
c. Industrial Process	N/a

Technical Summary of the project	
d. Transport	N/a
e. Waste Management	N/a
f. Forestry/ land use	N/a
g. Other	N/a
Project Boundary Define the Project Boundary (Approximately 1 paragraph) The PoA chooses a geographical boundary being the countries mentioned above. At CPA level the boundary is the relevant national grid.	
Indicate Emissions outside the Project Boundary	N/a

Location of the Project	
Province	The first CPA in is the Frees State of Province. The countries in the PoA are mentioned above
Municipality	Bethlehem
Nearest city/large town	Bethlehem 
Brief description of the location of the project site	<i>Agricultural area near Bethlehem, Free State</i>

Project Schedule/Timetable	
Earliest Project Start Date	October 2012
When is the expected first year of CER delivery	2015

Project Schedule/Timetable	
Project Lifetime	Technically 20 years or more
Project End Date	June 2034
Crediting Period	Ten years fixed for al CPA's in the PoA – the PoA itself has a 28 year lifetime
Current Status or phase of the project	The project hopes to bid into the third round of the REIPPP
DNA Approval	No but a PIN was submitted in Q4 of 2011
Approval by other bodies	EIA ROD received (positive)

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 PoA will create the opportunity for communities who do not have access to electricity to create economic growth once electricity is available.

- The PoA increases employment opportunities in the area where each CPA is located, leading to a general increase in local-community income.
- The PoA/CPA enhances the local investment environment and improves the local economy.

At CPA level, hydro energy has the potential to play a role in meeting South Africa's growing energy demand through diversifying the sources of power generation. Once operational this project will produce 13GWh¹ hours of green electricity per year - enough to power hundreds of South African homes.

- Contract jobs: ±60-100 for 2 years
- Permanent: 2-3 jobs

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

- Temporary and permanent jobs will be created in the construction and operation phases of the CPA projects;
- There will be an opportunity to improve skills levels as the need for local labour to operate and maintain the installations grows.

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

The PoA encourages the development of renewable energy plants that either meet the suppressed energy demand and alleviates energy poverty and /or replaces non-renewable energy (typically energy generated from fossil fuels) and reduces emissions of pollutants (per unit of energy generated) including GHG emissions;

- In contrast to most other sources of power, hydro power does not produce solid waste to a large extent, which addresses the problem of solid waste disposal encountered by most other sources of power.
- When used to generate electricity, renewable energy contributes to natural resource conservation, for instance coal.

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

NOTE: The questions below are for the greater part answered with respect to the first CPA as it is not possible to provide a generic answer that will apply to all CPA's in the PoA. Each CPA will need to carry out such environmental investigations as may be required by law in the host country

¹ Feasibility report by Vela VKE Engineers to be supplied to validators

<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 following key issues/impacts were assessed in the EIA:</p> <ul style="list-style-type: none"> • Geology and Soils • Ground and Surface Water • Fauna and Flora • Impact of the proposed infrastructure on the wetland. • Land Use • Impact of the power plant on the noise levels of the surrounding area • Reduction of carbon dioxide emissions (Positive Impact). • Social Economic structure of the area² <p>The above issues were described and assessed in detail. Furthermore, mitigation measures were proposed and incorporated in an associated Environmental Management Plan for the preconstruction phase, construction phase, operational phase and decommissioning. Although certain potential impacts on the environment were identified, no “red flag” significant impacts on the environment were identified that are deemed as severe as to suggest that the proposed activity should not commence. The implementation of the proposed mitigation measures will effectively mitigate all the identified potential impacts. A positive Record of Decision was received</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>These aspects were fully covered in the EIA and impacts during for instance construction will be minimized as far as possible</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>These aspects were fully covered in the EIA and impacts will be minimized as far as possible</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>These aspects were fully covered in the EIA and waste will be minimized as far as possible</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>Hydro power consumes no non-renewable fuel for continuing operation.</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>Hydro power is the conversion of wind energy into a useful form, such as electricity, using wind turbines. The use of hydro for electricity generation is a non-consumptive use of a natural resource, and therefore does not deplete the resource. The electricity generated will be exported to the national grid from where it will be distributed to all South Africans for consumption.</p>

² See Final EIR Report page 8-9

<p>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</p>	<p>Adherence to the conditions of the Environmental Authorisation for the project will ensure that a risk averse and cautious approach is adopted. This will be enhanced further by the use of established and internationally-recognised technologies, control systems and procedures.</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>The CPA will be implemented in such a manner that any potential social negative impacts will be anticipated and prevented wherever possible. The environmental assessment process includes the relevant social and environment impacts in its assessment and mitigation measures are recommended where applicable. Interested and Affected Parties (I&APs) participated in the stakeholder process and were given the opportunity to learn about the project, raise questions, and provide input into the project at the planning stage.</p>
<p>Other comments</p> <p>South Africa has announced that it is embarking on a low carbon energy future including significant renewables. In order to be sustainable this initiative should ensure as far as possible that the electricity consumer/tax payer is not affected by the installation of renewable energy rather than dirtier but cheaper energy sources. Carbon revenue will ensure that the transition to renewables is funded as much as possible from international sources. The PoA will not only make it easier for projects to access carbon revenue but will also (if registered in time) ensure that participating projects/CPA's will have access to selling CER's into the EU ETS, thus maximizing carbon revenue.</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) 	<ul style="list-style-type: none"> • The use of renewable energy for power generation will avoid the emission of air pollutants such as Suspended Particulate Matter (SPM), Sulphur Dioxide (SO₂) and Nitrogen Oxides (NO_x) thereby improving the surrounding air quality. • The CPA project will not cause water pollution. • The CPA project will not result in significant disposal of solid waste. • Visual impacts: if mitigation measures are adhered to as described in the Environmental impact assessment, the impact is predicted to be of moderate significance.
	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 	<p>The project is to make use of a renewable resource as a fuel being hydro. As such, no effect on community access to natural resources will take place. The project activity will reduce the use of finite fossil fuel resources by substituting coal-derived grid electricity with renewable energy. The project will in no way negatively impact on the surrounding community's access to natural resources.</p> <p>Additionally, the project will have no impacts on any non-renewable resources at local level.</p> <p>On a wider national level, the project will have a positive impact on non-renewable resources by replacing fossil-fuel based power from the national grid. This will reduce in particular coal and water consumption and improve the efficiency of resource utilization overall.</p>
	Impacts on biodiversity and ecosystems	<ul style="list-style-type: none"> • Changes in local or regional biodiversity arising from the project 	<p>The project will not have a significant impacts on local or regional biodiversity. The environmental assessment addressed the environment impacts including those on biodiversity in its assessment.</p>

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 <p>The PoA will leverage Direct Foreign Investment into renewable energy infrastructure through carbon finance</p> <ul style="list-style-type: none"> · In the first CPA, owing to the additional employment opportunities created from the implementation of the project, employees from the surrounding areas will benefit from the increased spending power. · The PoA will lower the cost to the SA consumer/fiscus of buying renewable energy under the REIPPP ·
	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 <p>Significant benefits exist in the transfer of modern hydro technology to South Africa from Austria</p> <p>It is believed that lessons learnt and systems developed during its implementation will be highly replicable in other potential projects throughout the country. As such it will have significantly high demonstration potential.</p>

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)
	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

- Firstly, South African Government has recognised the country’s high level of renewable energy potential and in terms of the IRP 2010 presently has in place targets more than 17,000 MW of renewable power installed by 2030.
- The Renewable Energy Independent Power Procurement Programme (REIPPP) launched by the DOE envisions procuring the above in a manner that ensures value for money for South Africa
- If CPA’s have the benefit of carbon revenue they will be able to bid lower prices into the REIPPP, to the ultimate benefit of the country.
- There will be no impact in terms of relocation of communities.

Roughly 60 – 10-0 jobs of two years’ duration will be created. With regard to direct employment during operations, it is expected that approximately 2 - 3 direct employment opportunities would be created by the project.

The project will not impact on social heritage.

The project will enhance the development of the Municipal region and surrounding areas.

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? <p>The Department of Energy's REIPPP initiative has extensive terms and conditions aimed specifically at ensuring that renewable energy projects provide sufficient benefits for people on local level in a manner that ensures that the distribution of project benefits are reasonable and fair. The carbon revenue stream through the PoA will facilitate these projects and so leverage the exact benefits that the Department of Energy envisions.</p>

Part D: Finance

Project Costs	
Development Costs (R's)	ZAR 10 million
Installed Costs (R's)	ZAR 190 million
Other Costs (R's)	N/a
Total Project Costs (R's)	ZAR 200 million
Sources of Finance	
Equity	30% - Kruisvallei Hydro (Pty) Ltd
Debt (long term)	70% - Commercial lenders
Debt (short term)	N/a
Amount not identified (R's)	N/a
Total CDM Contribution sought	The final capital expenditure is being finalized and this figure is unknown at present
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)	The term can only be 10 years in terms of PoAS rules – CER price of 4 - 6 euro may be achievable if Kyoto is extended
Indicate the projected Internal Rate of Return for the project with and without CER revenues.	Not known as yet, capex being finalised
Constraints on tradability of carbon credits	None
Preliminary discussions with potential purchasers	No