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	Trigeneration at Mobile Telephone Networks (MTN), 14th Avenue Commercial Site South Africa
Date of Submission of PDD	08/03/2012

Project Developer	
Name	Mobile Telephone Networks (Pty) Ltd
Organizational Category	Private Company
Legal Status	Limited Company
Street Address	216 14th Avenue Fairland Johannesburg Gauteng

	2118 South Africa
Postal Address (if different from above)	As above
Website Address	http://www.mtn.co.za
Main Activities	*Telecommunications company offering voice and data communications products and services to individuals and businesses.*
Summary of Financial Performance in last fiscal year	Year on year, MTN Group Limited has seen little change in their bottom line. Please see MTN's financial statements, which can be found in MTN's annual reports at: http://www.mtn.com/Investors/Financials/Pages/annualreports.aspx
Contact Person(s)	Mr Pierre Lombard
Telephone	Work: 011 912 3000 Cell: 083 212 5612
Fax	083 705 7171
Email Address	lombar_p@mtn.co.za
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	There are no project partners. This section is intentionally left blank.
Nature of partner	N/A
Organizational Category	N/A
Legal Status (if private company)	N/A
Street Address	N/A
Postal Address (if different to Street Address)	N/A
Website Address	N/A
Main Activities	N/A
Contact Person(s)	N/A
Telephone	N/A
Fax	N/A
Email Address	N/A
Contractual Arrangements	
Contractual arrangements between various entities involved	*Not applicable.*

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

Technical Summary of the project	
Objective of the Project	The purpose of this project activity is to reduce the greenhouse gas emissions at MTN's commercial site, through the installation of an on-site, energy efficient, 2.136 MW trigeneration plant.
Project Description The project activity involves the installation of an on-site, energy efficient, 2.136 MW trigeneration plant. This plant will see the simultaneous production of electricity, cooling, and heating from a single fuel source - methane-rich natural gas which is sourced from the Egoli gas pipeline. The outputs from the trigeneration plant will be used to meet part of the commercial site's energy requirements.	
Project Constraints There are no constraints affecting project operations or commissioning.	
Technology to be employed	*Power generation:* Two internal combustion engines will be installed to generate electricity from natural gas. These engines are spark ignition engines operating on the same principles as normal petrol engines, and have an electrical output of 1.068 MW each. *Cooling:* The waste heat from the engines will be used to generate cooling at the trigeneration plant. The waste heat will be passed through three absorption chillers (which make use of a thermal-chemical process) to generate chilled water. The absorption chillers use lithium bromide, a refrigerant with no global warming potential (GWP). *Heating:* A 100kW heat exchanger will be used to generate heating at the trigeneration plant.
Greenhouse Gases Targeted	This project will target CO_2.
Emission reductions	Total emission reductions: 152,840 tCO_2e* Annual average emission reductions: 15,284 tCO_2e/year *A ten year fixed crediting period has been selected for this project activity.
Baseline & Additionality Assessment	Baseline: The baseline scenario is the purchase of electricity from Eskom, the generation of cooling with conventional electric chillers, and the generation of heating with conventional electric heaters. Additionality: In accordance with the CDM guidance, the project is automatically additional at it is a 'First-of-its-kind'.

Technical Summary of the project	
Monitoring	The following parameters will be monitored in the project activity: – Amount of grid electricity displaced by the project – Cooling output of baseline scenario chillers – The chilled water mass flow rate for chillers. – Differential temperature of inlet and outlet chilled water for chillers. – The water mass flow rate from heater. – Differential temperature of inlet and outlet hot water from heater. – Quantity of fuel consumed by the project activity. – Net calorific value of natural gas. – Emission factor of natural gas. – Quantity of electricity consumed by the project.
Type of project/activities	
a. Energy Supply	This project activity generates electricity in internal combustion engines from natural gas. The waste heat from the engines will be used to generate heating and cooling which will meet part of MTN's 14th avenue campus energy demand.
b. Energy Demand	Not applicable
c. Industrial Process	Not applicable
d. Transport	Not applicable
e. Waste Management	Not applicable
f. Forestry/ land use	Not applicable
g. Other	Not applicable
Project Boundary The project boundary encompasses: – The MTN 14th Avenue campus. – The national grid for the purposes of calculating the grid emission factor.	
Indicate Emissions outside the Project Boundary	There are no significant and measurable net emissions of GHGs that are attributable to the project outside of the project boundary.

Location of the Project	
Province	Gauteng
Municipality	City of Johannesburg
Nearest city/large town	Located within Johannesburg
Brief description of the location of the project site	The street address of MTN's head office is: 216 14th Avenue, Fairland, Johannesburg. The GPS coordinates are: 26° 08' 59" S 27° 55' 51" E

Project Schedule/Timetable

Project Schedule/Timetable	
Earliest Project Start Date	January 2012
When is the expected first year of CER delivery	2013
Project Lifetime	The life time of trigeneration plant exceeds the 10 year period of this project activity.
Project End Date	December 2021
Crediting Period	A fixed ten year crediting period has been selected for this project activity.
Current Status or phase of the project	The trigeneration plant is fully operational.
DNA Approval	This project has not been previously submitted to the DNA for approval.
Approval by other bodies	The project has not been submitted to any other national, provincial or local government departments or agencies for regulatory or legal 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?

There will be a transfer of technology from a developed country to a developing country. The internal combustion engines that are used to generate the electricity are sourced from GE Jenbacher in Austria (Annex-1 country) and will be imported to South Africa. There will be a transfer of knowledge as personnel responsible for the operation and maintenance of the engines will receive the necessary training. The project will also contribute to foreign reserve earnings for South Africa via the carbon credit sales revenue.

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

The electricity saved as a result of the project will alleviate pressure from the national grid. The alleviation of pressure from the national grid will reduce the probability of electricity supply interruptions and make the electricity available for development of other industries.

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

i) That the **disturbance of ecosystems and loss of biological diversity** are avoided, or where they cannot be avoided, are minimised and remedied	*There is no disturbance of ecosystems and loss of biological diversity as a result of this project activity. This project is developed at an existing commercial site.*
ii) That **pollution and degradation of the environment** are avoided, or where they cannot be altogether avoided, are minimised and remedied	*There is no pollution and degradation of the environment as a result of this project activity.*

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	*There are no signs of culturally or historically significant elements (including archaeological or paleontological sites) on or close to the project site. The project activity did not need to apply for a permit in terms of the National Heritage Resources Act, 199 (Act 25 of 1999).*
That **waste is avoided**, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner	*The project activity will not produce solid construction waste during the initiation phase of the project, nor will the project produce solid waste during its operational phase.*
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 project will reduce electricity consumption from a predominantly coal-fired grid, through the combustion of natural gas. The use of this natural gas resource is responsible and equitable.*
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.	*This project activity does not make use of renewable resources.*
vii) That **a risk averse and cautious approach** is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions	*A reputable electrical engineering firm was used for project 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	*The overall environmental impact will be positive. The project will displace grid electricity, thereby indirectly reducing the exploitation of non-renewable natural resources (coal) from coal-fired power stations, as well as helping to lessen the associated environmental impacts of coal mining.*
Other comments **Please provide any other comments on how this project contributes to sustainable development in South Africa (**optional) On a global scale, the project makes a contribution to greenhouse gas emission reduction.	

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 improve air quality by reducing greenhouse gas emissions. • There will be no water pollution in this project • There will be no generation of solid waste, or disposal thereof in this project • The overall impact of this project on the local environmental quality is positive.
	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 activity will not use any natural resources that are currently used by the community. • The proposed project will not change the current local water availability or access. Neither will the project have an impact on the current local water quality. The project activity does not make use of minerals. • The project will use an alternative energy source to generate captive electricity. This will reduce the MTN's reliance on Eskom power. Though the project will not result in a direct reduction in greenhouse gas emissions, it will result in an indirect, 'upstream' reduction in carbon emissions, through a reduction in the on-site use of electricity, which is produced primarily by conventional coal-fired power stations. The project activity is considered to have a high level of resource utilisation.
	Impacts on biodiversity and ecosystems	• Changes in local or regional biodiversity arising from the project	• The current land use at the project site is commercial and therefore there will be no disturbance of ecosystems or a loss of biological diversity as a result of the project activity.

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 contribute to foreign reserve earnings for South Africa via the carbon credit sales revenue. • The project will generate additional temporary employment in the construction phase, and will result in permanent employment during the operational phase (13 jobs). • The project will increase the cost of energy for the MTN, as it is more expensive to generate captive electricity from natural gas, than to import it from the grid. However, the expected revenue from the certified emission reductions (CERs) will be used to overcome this barrier.
	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	• There will be a transfer of technology from a developed country to a developing country. The internal combustion engines that are used to generate the electricity will be sourced from GE Jenbacher in Austria (Annex-1 country) and will be imported to South Africa. • There will be a transfer of knowledge as the personnel responsible for the operation and maintenance of the engines will receive the necessary training. • The project can serve as an example to other telecommunications company in South Africa on the importance of exploring alternative energy sources and the possible generation of CERs.

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 supports the emission mitigation actions of South Africa. According to a letter sent to the United Nations Framework Convention on Climate Change (UNFCCC) on 29/01/2010, South Africa committed to "taking nationally appropriate mitigation actions to enable a 34% deviation below the 'Business as Usual' emissions growth trajectory by 2020 and a 42% deviation below the 'Business as Usual' emissions growth trajectory by 2025". The project will reduce electricity consumption from a predominantly coal-fired grid, which will result in a reduction in all of the negative impacts associated with coal mining. • The project creates 13 permanent jobs, which is in line with South Africa's developmental goals. • The project activity does not involve the relocation of any communities, as it is developed on an existing commercial site.. • The South African Government's economic policy is defined in the New Growth Path. This document indicates that the key social development deliverable the policy is aiming to support is the creation of new jobs in South Africa. Unemployment is recognised as key problem in the country that needs to be addressed. This project will create jobs during the installation and operational phases of the programme, thereby supporting Government's policy objectives.
	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	• The project creates jobs in the construction and operations phases of the project.

Indicators in Support of the Project Approval Criteria			
Category		**Indicator**	**Comment**
General	General Project Acceptability	• Is the distribution of project benefits deemed to be reasonable and fair?	• The project contributes to sustainable development from an economic, environmental and social perspective. The local community and environment benefits from the project activity and these benefits are considered to be reasonably and fairly distributed. • The financial benefit of the project is reasonably distributed as the carbon credits are sold to the mutual benefit of the contracting parties.

Part D: Finance

Project Costs	
Development Costs (R's)	Confidential
Installed Costs (R's)	Confidential
Other Costs (R's)	Confidential
Total Project Costs (R's)	Confidential
Sources of Finance	
Equity	100%
Debt (long term)	Not applicable.
Debt (short term)	Not applicable.
Amount not identified (R's)	Not applicable.
Total CDM Contribution sought	Confidential
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)	Not applicable
Indicate the **projected Internal Rate of Return** for the project with and without CER revenues.	Not available.
Constraints on tradability of carbon credits	None.
Preliminary discussions with potential purchasers	This is confidential, however only preliminary discussions have been undertaken.