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CLEAN DEVELOPMENT MECHANISM (CDM)

investor guide

South Africa

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

economy environment employment

CLEAN DEVELOPMENT MECHANISM (CDM)

investor guide

SOUTH AFRICA

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna, 2003

This publication has not been formally edited.

Summary

South Africa has signed the United Nations Framework Convention on Climate Change (UNFCCC). South Africa has also signed the Kyoto Protocol. The Clean Development Mechanism (CDM) has been widely discussed amongst all sectors in South Africa. Government is making final preparations to create readiness for CDM investment in the country. A number of support and capacity building agencies are active in South Africa. The private sector has commenced with project preparation on a limited scale. Extensive potential exists for CDM activity development in South Africa, but capacity needs across all spectrums are still great.

This "CDM Investment Guide and Project Developers' Portfolio for South Africa" aims at providing CDM project proponents in the country, and CDM investors interested in CDM opportunities in the country, with reliable, updated sources of information regarding CDM opportunities in the energy and industrial sectors of South Africa.

The structure of the report is:

- South Africa as a stable investment destination generally;
- The South African government's role in the CDM;
- Emissions in South Africa: a brief profile;
- Sectors and CDM opportunities;
- Industry: associations:
  annex A (on CD-ROM);
- CDM projects, a list produced through a voluntary survey:
  annex B (on CD-ROM);
- Support organizations:
  annex C (on CD-ROM);

The main findings of the report are that:

- Global climate change and greenhouse gas emissions rank as fairly important in South Africa; however the country has pressing problems such as poverty, unemployment, AIDS and education/health as main priorities. The CDM has great potential in South Africa as the country ranks as a foremost emitter of greenhouse gases. The CDM may also play an important role in bolstering the development path which South Africa has set for itself. South Africa has been setting up the institutional infrastructure for climate change and for appraising CDM projects in the country. These efforts are not complete but are underway. A large potential for CDM projects does exist in the energy sector in the country in the areas of fuel substitution and energy efficiency, as South Africa is heavily dependent on coal-based energy. A large potential for CDM projects does exist in the industrial sector in the country.
- Various CDM project development activities and types are currently underway in the country at different stages (under consideration, in preparation, or ready to be

submitted as a CDM project). Some of these have chosen to present details of projects and progress. This is done in the form of a standard template, which is attached without editing.

- Capacity development in the field is a priority, but expertise is available or in development at all levels. Further intensive capacity building will no doubt unlock the extensive potential for CDM development in South Africa.

- In summary, South Africa is fully aware of the many technical and political issues that surround CDM formulation and implementation. A high potential for CDM does exist in various sectors of the South African economy. This is yet to mature, as capacity needs are high. As a consequence, and effort should be made, both domestically and internationally, for further capacity development for CDM in South Africa.

Abbreviations

AA	Assigned amounts; GHG emissions assigned to annex I countries under the Kyoto Protocol
AIJ	Activities Implemented Jointly; projects conducted with the objective of establishing protocols and experiences, but without allowing carbon credit transfers between developed and developing countries
CDM	Clean Development Mechanism
CER	Certified Emissions Reduction; the carbon dioxide credit unit generated from CDM project activities
COP	Conference of the Parties; Conference of the Parties oversees global negotiations on climate change until the Kyoto Protocol is ratified
DEAT	Department of Environment and Tourism, South Africa
DTI	Department of Trade and Industry, South Africa (also referred to as "the dti")
DME	Department of Minerals and Energy, South Africa
ERU	Emissions reduction unit; the output of CDM or JI projects
ET	Emissions trading
GDP	Gross Domestic Product
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change; body established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to provide scientific, technical and socio-economic advice on climate change issues to the world community and in particular to the 170-plus Parties to the United Nations Framework Convention on Climate Change (UNFCCC)
JI	Joint Implementation
kgC	Kilograms of carbon
kgoe	Kilograms of oil equivalent; the amount of energy equivalent to 45,200 joules
MtC	Million tons of carbon
ODA	Official Development Assistance; funding provided by various multilateral development banks and development agencies to developing countries
OE	Operational Entity; certification body that is eligible to validate a CDM project activity
PDD	Project Design Document; document that is the output of the Project Design phase of the CDM
SSN	South-South North Project
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNOPS	United Nations Office for Project Services
WBCSD	World Business Council for Sustainable Development
1MWh = 0,086 Mtoe	One million watt-hour of electricity is equivalent to one million metric tons of oil equivalent
toe	Ton of oil equivalent; the amount of energy equivalent to 45,200 thousand joules

Abstract

This "CDM Guide and Project Developers' Portfolio for South Africa" aims at providing Clean Development Mechanism (CDM) project proponents and CDM investors interested in CDM opportunities with a reliable, updated source of information concerning CDM opportunities in various sectors of South Africa. The report was prepared from February to May 2003 and provides:

- An overview of South Africa as an investment destination for CDM investors and purchasers of CER's resulting from CDM projects developed in South Africa; this section includes the institutional infrastructure for climate change/Kyoto Protocol activities and the current views of South Africa on climate change issues;
- An analysis of priority sectors for CDM projects in various sectors in the country;
- Conclusions; and
- A CD-ROM containing three annexes:

  Annex A: A contact list of the most important industry associations in South Africa;
  Annex B: A self-generated list by Project Developers within South Africa of CDM activities in development;
  Annex C: A list of support organizations.

Contents

Introduction

This "CDM Guide and Project Developers' portfolio for South Africa" aims at potential CDM investors interested in CDM opportunities in South Africa, with reliable, updated sources of information regarding CDM opportunities in various sectors within South Africa and the national approach to CDM investments.

Special acknowledgements

The report was written in a collaborative approach under the lead of Stefan Raubenheimer and Steve Thorne of the SouthSouthNorth Project, together with assistance from Laurraine Lotter of the Chemical and Allied Industries Association, Geoff Stiles of the Capacity Building Leadership Action Project (CBLA) and Harald Winkler of the Energy Development Research Centre of the University of Cape Town (in his individual capacity).

The annexes devoted to the CDM development and support activities in South Africa are presented by the developers themselves, in the form of a series of standard templates which were completed after a comprehensive respondent's survey. These can be viewed on the accompanying CD-ROM to this publication. This information is unedited and unverified.

Finally this Guide was made possible by the support of UNIDO: the implementation of the UNIDO component is managed by Ms. M. Ploutakhina, Industrial Development Officer at the UNIDO Industrial Energy Efficiency Branch.

The report was initiated in February 2003 and is structured in a main section and annexes, so as to cover its following original objectives:

- To provide an overview of South Africa as an investment destination for foreign CDM investors or CER purchasers, including the institutional infrastructure for climate change/Kyoto Protocol activities and the current views and position of South Africa with respect to climate change issues;
- To analyse various sectors in South Africa, discussing the potential, and priorities for CDM projects in both the supply and demand sides;
- To review the current state of CDM project development in South Africa, types of projects, location, status of development, etc
- To provide a list of institutions/organizations that are involved with climate change and CDM activities in South Africa and that could be a useful source of information and contacts for CDM project proponents and investors in South Africa.

Background: Kyoto and the CDM

At the third Conference of the Parties, held in Kyoto, Japan, in 1997, the Kyoto Protocol was adopted. The Protocol provided inter alia that developed countries accept differentiated emission limitation or reduction commitments between 2008 and 2012 (representing, for the developed countries as a whole, a reduction of at

least 5% in relation to the combined emissions of greenhouse gases in 1990). The economic effort needed to comply with the goals established in the Protocol will result in significant costs to the economies of each industrialized country. As a result, three mechanisms were established to help the developed countries comply with their greenhouse gas emission reductions or limitation targets. One of these mechanisms, defined as the Clean Development Mechanism (CDM), involves both developed and developing countries. Its implementation is of particular interest to southern countries, because it will allow the transfer of resources and technologies for the reduction of the country's greenhouse gas emissions.

The purpose of the Clean Development Mechanism is to assist Parties not included in annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in annex I in achieving compliance with their quantified emission limitation and reduction commitments under Article 3.

Under the Clean Development Mechanism, parties not included in annex I will benefit from project activities resulting in certified emission reductions; and parties included in annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3, as determined by the Conference of the Parties serving as the meeting of the Parties to this Protocol.

1 South Africa as an investment destination[1]

History and current context

South Africa has emerged from its long history of Apartheid to forge a new and vibrant society and economy. South Africa is still undergoing profound economic changes after the democratic elections of 1994, which saw the change of government from an apartheid system to democratic governance. This change gave new directions to almost all aspects of government.

South Africa is a developing country located in the southern end of Africa. It has a population of about 43 million people, living on a land area of 1.2 million square kilometres. South Africa is endowed with a spectrum of natural resources including minerals, ranging from precious metals to precious stones and coal.

Economically, South Africa is the largest producer of gold and platinum group metals in the world, the fifth producer of diamonds, and fourth producer of hard coal. Its economy is highly hinged on energy production and use, with fossil fuels coal dominating more than 90% of the primary energy demand and mining (DME, 2002). Coal provides 75% of the fossil fuel demand and accounts for 91% of electricity generation (NER, 2000).

South Africa as an investment location[2]

South Africa is well placed within a developing country (non-Annex I) context as far as its physical infrastructure (Goldblatt et al., 2001). These strengths are highlighted in the KPMG Investment in South Africa 2000 Report (KPMG, 2000) and mainly relate to a well developed transportation, energy and communication infrastructure. Examples of those areas which have relevance to CDM include:

- South Africa is the most advanced country both technologically and economically in Africa;
- It has an extensive network of well maintained railway lines (34,000 km) and roads (over 6,000 km of tarred freeways and main roads);
- It possesses seven good deep water ports.
- South Africa generates approximately 200,000 GWh of electric power, chiefly coal-derived;
- Communications are efficient and improved technologies are continually being introduced into the system;
- The country is well endowed with natural mineral resources.

[1] This section draws on previous work by Davidson et al., (2002).

[2] This section and the following one are drawn from the National Strategy Study (Goldblatt et al., 2001).

Key economic and political indicators

Investment takes place within the context of macroeconomic and political conditions and is often determined or influenced by these factors. The Economic Intelligence Unit (EIU, 2000) summarizes key political and economic developments over the next five years in South Africa as being characterized by a new emphasis on macroeconomic policy formation and implementation, with an overall objective of fostering and promoting an environment conducive to employment creation.

Values and forecasts of key economic indicators are summarized in the table below.

Alongside these private agencies the International Monetary Fund (IMF) pronounced positively on South Africa's economic policies in March 2000. From the point of view of country political stability Political Risk Services (PRS), on 1 January 2000, produced the following forecasts of South Africa's risk profile to international business, showing a generally positive outlook:

More recently followed an upgrade, on 7 May, of Standard & Poor's long-term foreign currency ratings on the Republic of South Africa to 'BBB' from 'BBB-', and of its local currency ratings to 'A/A-1' from 'A-/A-2'. The outlook on South Africa is stable.

Socio-economic context

South Africa is the most industrialized country in Africa. Table 3 below shows some key South Africa's development indicators in comparison to some other regions and the world.

Table 1. Key South African economic indicators (1999-2004)

Indicators	1999	2000	2001	2002	2003	2004
Real GDP growth (%)	1.0	4.2	3.2	3.2	2.5	2.0
Consumer price inflation (ave.; %)	5.3	4.0	5.0	5.0	4.5	4.0
Budget balance (% of GDP)	–2.5	–2.5	–2.4	–2.5	–2.4	–2.5
Current-account balance (% of GDP)	–0.4	–1.3	–1.7	–1.4	–1.2	–0.6
Commercial bank's prime rate (ave.; %)	18.0	14.0	13.0	16.0	18.0	17.0
Exchange rate R:$ (ave.)	6.11	6.23	6.50	7.20	7.40	7.50

Source: Economic Intelligence Unit, 1 March 2000.

Table 2. Political risk profile of South Africa

Forecast period	Turmoil	Financial transfer	Direct investment	Export market
18-month	High	B+	B+	B+
Five-year	Moderate	B+	B+	B+

Note:
(A+ indicates lowest risk; D indicates highest risk; ( ) indicates change in rating.

Source: Political Risk Services, 1 January 2000.

While GDP per capita lies below the world average ($3,160 per capita compared to the global average of $5,040 per capita) this figure does not tell much about the gaps between different races and income levels which is substantial.

Institutions for investment promotion

In South Africa, there are a limited number of institutions which have the specific mandate of attracting and supporting FDI, each of which will be briefly discussed

Table 3. Key development indicators for South Africa and the world, 1999

Indicator	South Africa	Sub-Sahara Africa	World
Population	42.1mil.	643.3	6.0 bil.
Urban Population (% of total)	54.7	33.8	46.6
Paved roads (% of total)	20.3	12.3	45.1
Illiteracy—males, (% of males age 15+)	14.4	31.1	–
Illiteracy—females (% of females age 15+)	15.8	48.0	–
Energy use per capita (kg of oil equivalent)	2,596.6	671.2	1,671.1
GDP (US $ billions)	130.2	319.6	30,700
GDP per capita (US $)	3,160.0	490.0	5,040.0
GDP Growth (annual %)	1.9	2.4	2.9
Agriculture share of GDP (%)	3.4	17.8	5.0
Industry share of GDP (%)	30.8	28.5	31.2
Manufacturing share of GDP (%)	18.8	–	–
Services share of GDP (%)	65.8	53.7	63.8
Total exports (fob, US $ millions)	28,625	–	–
Total imports (cif, US $ millions)	24,477	–	–

Source: World Bank.

below and evaluated for their relevance to facilitating CDM investments.

Investment South Africa

Investment South Africa,[3] in "The Investment Brief on South Africa", describes itself as "the national investment promotion agency of the Republic of South Africa, established by the Department of Trade and Industry in 1996. Investment South Africa plays a vital role in implementing the Government's vision of a competitive, outward-orientated economy".

Investment South Africa offers the following free services to foreign investors:

- Information on sectors and industries;
- Consultation on the regulatory environment;
- Facilitation of inward investment missions;
- Links to joint venture partners;
- Introductions to the relevant stakeholders in the private and public sector;
- Information on incentive packages for qualifying sectors and industries;
- Assistance with work permit applications;
- Logistical support for relocation; and
- Dedicated aftercare services.

Trade and Investment South Africa (TISA) is a useful source of material for the potential investor in South Africa. http://www.tradeandinvestmentsa.org.za

TISA describes the opportunity in South Africa in these terms:

"South Africa is one of the most sophisticated and promising emerging markets in the world. The unique combination of a highly developed first-world economic infrastructure and a huge emergent market economy has given rise to a strong entrepreneurial and dynamic investment environment with many global competitive advantages and opportunities.

"Fundamental to the broad objectives of solid and sustainable economic growth and development in South Africa are increased long-term foreign direct investment (FDI) inflows. A wide array of economic and social policies has been adopted by the South African Government since 1994 to ensure the international reintegration of the country's economy, and the creation of an environment for sustained export growth, healthy net capital inflows and improved investor confidence.

"The South African Government's macroeconomic policy, as outlined in the Growth Employment and Redistribution (GEAR) strategy, sets out to achieve increased growth and employment, while strengthening the long-term competitive performance of the economy. Key tenets of this strategy, aimed at presenting an attractive and viable investment destination to foreign investors, include fiscal deficit reduction, trade and foreign exchange liberalization, restructuring state assets and promoting skills development.

"Achieving a balance between greater openness and improved competitiveness while pursuing a process of industrial restructuring aimed at expanding employment opportunities and productive capacity, is a major challenge. Despite the nature of these challenges, South Africa has made courageous strides in opening the domestic economy to international competition, and can claim significant achievements in this regard, including the following:

- *Significant reduction in tariff barriers, ahead of the WTO timetable, resulting in the lowest trade weighted average rate of protection in the SADC region;*
- *A market related and competitive exchange rate;*
- *No restrictions on the type or extent of investments available to foreigners, and no governmental approval is required;*
- *The strengthening of competition and the development of industrial cluster support programmes;*
- *The abolition of exchange control on non-residents and the substantial reduction of controls on residents;*

[3] Subsequent to the interviews and literature referenced here, ISA has changed its name to Trade and Investment South Africa but retains the functions referred to here.

- *A proactive strategy to attract foreign strategic equity partners into the process of restructuring state assets and infrastructure;*

- *The introduction of greater labour market flexibility; and*

- *The availability of attractive investment incentives to enhance international competitiveness, technology transfer and foreign direct investment.*

"South Africa has enormous potential as an investment destination. There is a vast array of opportunities available to the foreign investor and healthy capital flows into South Africa reflect the increased interest and confidence in the country. Furthermore, South Africa's positioning at the southernmost tip of the African continent is strategic for accessing world markets.

"Given the high level of competition for foreign direct investment among emerging markets, South Africa has placed greater importance on forming strong economic trading blocs to gain access to key markets. and as a result has entered into a number of bilateral trade agreements. South Africa has also turned its attention to pursuing agreements for greater South-South cooperation. The move to establish trade relations with Mercosur via a free trade agreement with Brazil, and also with India, is top of the Government's export-oriented trade agenda. This will facilitate greater trade with South America and the East. Furthermore, South Africa's participation in the Southern African Development Community (SADC), comprising 14 sub-Saharan African countries, allows access to a market of approximately 140 million, which is expected to grow at an annual rate of around 3%.

"Indeed these developments further enhance Trade and Investment South Africa's efforts in promoting foreign investments into the country. As the national trade and investment promotion agency, the investment promotion division at TISA are to promote South Africa as an attractive destination for foreign direct investment and to provide investor facilitation services to incoming investors. As part of the Department of Trade and Industry, TISA plays a critical role in implementing the Government's vision of a competitive, outward-oriented growth platform as described in GEAR.

"Together with the nine trade and investment promotion agencies, TISA has identified key investment opportunities available to the foreign investor. These investment opportunities are located within sectors and industries where South Africa offers global competitive and comparative advantages.

"Foreign direct investment is welcomed. Whilst investment opportunities are available in virtually all sectors of the economy, Trade and Investment South Africa (TISA) believe there is great value in pro-active and highly targeted investment marketing in its promotional activities. The investment promotion division at Trade and Investment South Africa, concentrates on those sectors where national and provincial research initiatives have indicated a high South African competitive and comparative advantage. It targets its marketing and promotion at countries—and the companies within these countries—that would have a high interest in capitalizing on the advantage these sector opportunities present."

(http://www.tradeandinvestmentsa.org.za)

Provincial investment promotion agencies

Each of South Africa's nine provinces as its own regional investment promotion institution.

PROVINCIAL INVESTMENT AGENCIES

Gauteng Economic Development Agency
P.O. Box 782084
Sandton
2146 South Africa
Tel: +27-11-884-2206
Fax: +27-11-884-3236
http://www.geda.co.za

Western Cape Investment & Trade Promotion Agency
P.O. Box 1678
Cape Town
8000 South Africa
Tel: +27-21-418-6464
Fax: +27-21-418-2323
http://www.wesgro.org.za

Centre for Investment & Marketing in the Eastern Cape
P.O. Box 19253
Tecoma
5214 South Africa
Tel: +27-43-721-1003
Fax: +27-43-721-1006
http://www.cimec.co.za

Mpumalanga Investment Initiative
P.O. Box 1330
Nelspruit
1200 South Africa
Tel: +27-13-752-5384
Fax: +27-13-752-5385
http://www.mii.co.za

Kwazulu Natal Marketing Initiative
P.O. Box 1105 Durban
4000 South Africa
Tel: +27-31-907-8700
Fax: +27-31-907-5685
http://www.kmi.co.za

Northern Province Investment Initiative
P.O. Box 3490
Pietersburg
0700 South Africa
Tel: +27-15-297-4414
Fax: +27-15-297-4415

North West Development Corporation
P.O. Box 3976
Rivonia
2128 South Africa
Tel: +27-11-803-5510
Fax: +27-11-803-1754

Department of Economic Affairs Free State
P.O. Box 264
Bloemfontein
9300 South Africa
Tel: +27-51-403-3604
Fax: +27-51-403-3437
http://mangaung.ofs.gov.za

Department of Economic Affairs Northern Cape
Private Bag X5016
Kimberley
8300 South Africa
Tel: +27-53-831-4227
Fax: +27-53-831-3668

Industrial Development Corporation (IDC)

The IDC's mission states that "the IDC is a self-financing State-owned development finance institution whose primary objectives are to contribute to the generation of balanced, sustainable economic growth in South Africa and to the economic empowerment of the South African population, thereby promoting the economic prosperity of all citizens. The IDC achieves this by promoting entrepreneurship through the building of competitive industries and enterprises based on sound business principles." The IDC has a number of specific sectoral strategies.

Industrial Development Corporation

The Industrial Development Corporation of South Africa (IDC) is a State-owned development finance institution whose primary objectives are to contribute to:

- The generation of balanced and sustainable growth in South Africa;
- The economic empowerment of the South African population;
- The economic prosperity of all citizens by promoting enterpreneurship through the building of competitive industries and enterprises amongst small, medium and large manufacturing firms; agri-businesses; tourism; and small-scale mining enterprises.

For details contact:

Industrial Development Corporation of South Africa Ltd.
P.O. Box 784055
Sandton
2146 South Africa
Tel: +27-11-269-3000
Fax: +27-11-269-3116
http://www.ide.co.za

The Development Bank of South Africa

The organization focuses on investment opportunities and joint ventures/partnerships in public and private sector financing, mainly for infrastructural development, through loans, equity and guarantees.

The DBSA's mandate is to:

- Invest in infrastructure and facilitate the provision of infrastructural development finance;
- Finance sustainable development in partnership with the public and private sectors;
- Respond to development demands and act as a catalyst for investment.

Development Bank of Southern Africa

The Development Bank of Southern Africa (DBSA) provides policy advice, planning, programming and financing for infrastructure provision. It cooperates with the private financial sector in support of local authority infrastructure needs, also promoting public-private partnerships.

For details contact:

Development Bank of Southern Africa
P.O. Box 1234
HALFWAY HOUSE
1685 South Africa
Tel: +27-11-313-3711
Fax: +27-11-313-3409
http://www.dbsa.org

2 South African government's role in climate change issues

Approach to climate change policy

The South African Government ratified the UNFCCC in August 1997 and acceded to the Kyoto Protocol in March 2002.

In order to fulfil the requirements of the UNFCCC, South Africa has prepared an Initial National Communication to the UNFCCC, and will submit this to the next Conference of the Parties.

South Africa sees addressing climate change issues as an integral part of achieving sustainable development. Increasingly climate change issues are being incorporated into sectoral policies. As a relatively high GHS emitter, South Africa recognizes the necessity to delink industrial development and GHG emissions. One of the mechanisms to achieve this is investment in CDM projects.

Host country approval of CDM projects

The focal point for climate change in South Africa is the Department of Environmental Affairs and Tourism (DEAT). Within the department, a directorate has been established to deal with climate change, the Directorate of Global Climate Change and Ozone Layer Protection. The CDM office (or "Designated National Authority" (DNA)) for CDM is located in the Department of Trade and Industry (the dti). The website of this department contains valuable information for investors in South Africa. The reference is: www.thedti.gov.za

The Fund for Research into Development, Growth and Equity of the dti is about to award a tender for the development of a comprehensive CDM Investment Strategy.

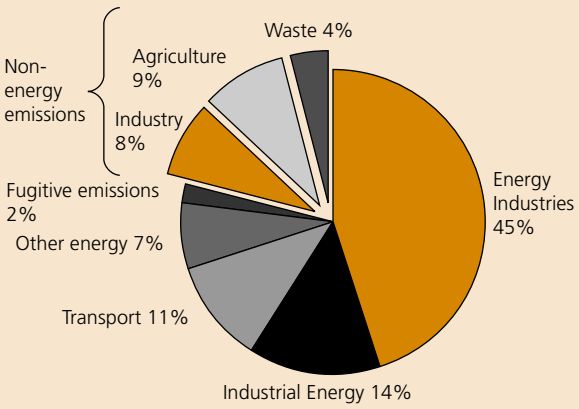
The process of considering approval will include consideration of sustainable development criteria, which are in the process of being finalized. Projects that promote benefits for local communities and create local manufacturing capacity are likely to be favourably received. Project developers will be required to present Project Design Documents for CDM activities before registration by the CDM Executive Board, whereupon they will be considered for approval by the DNA.

Emissions in South Africa

Major sources of GHG emissions in South Africa

Compared to other major developing countries, South Africa's emissions intensity is relatively high, in that it emitted 0.96 kg CO_2 per dollar of GDP in 1999 compared to a non-OECD average of 0.66. South Africa ranks in the top 20 countries in the world in emissions of greenhouse gases, notwithstanding its relatively small population. Reliance on coal resources for electricity production is the main reason behind this emission profile, and other reasons include the production of synthetic liquid fuels from coal, a high proportion of energy intensive industry and mining, and the inefficient use of energy.

Figure I. South Africa's greenhouse gas inventory by sector, 1994



Source: Van der Merwe & Scholes, 1998.

Data source: SSA, 1998, 1999; IEA, 2001.

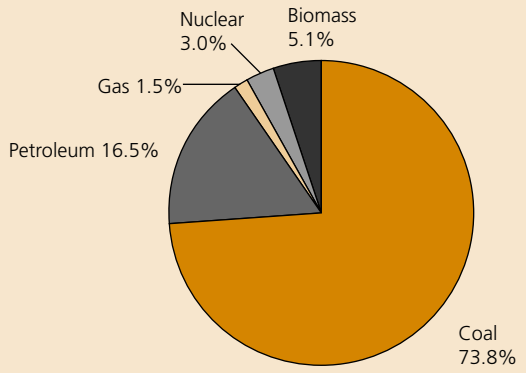
A summary of South Africa's total emissions in 1990 for major greenhouse gases indicates that South Africa contributed 1.02% to the total global emissions. The 1999 figures cited by IPCCC, which are admittedly estimates, show 1.6%, or 99 MT C-E/a vs a world total of 6,143 MT, with constant growth being predicted.

The energy sector, including energy production and use, contributed 78% of GHG emissions (297,564 tons CO_2 equivalent), agriculture 9.3%, industrial processes 8.0% and waste 4.3%. Comparing the three greenhouse gases in the inventory, carbon dioxide contributed by far the most, 83.2% in 1994. Methane contributed 11.4% and nitrous oxide 5.4% respectively. Given the predominance of carbon dioxide, this analysis focuses on CO_2 emissions.

The energy sector is a key source of emissions (see figure I), which include a number of critical energy related activities such as: energy industries (45% of total gross emissions), energy used in manufacturing and industry (14%), energy used in transport (11%), fugitive emissions from fuels (2%), and other energy related activities (6.6%), which include commercial (0.2%), residential (2.0%) and agricultural (4.4%) use of energy (calculated from (Van der Merwe & Scholes, 1998)).

3 Priority sectors and CDM project opportunities in South Africa*

Figure II. Share of total primary energy supply, 1999



Energy supply and demand

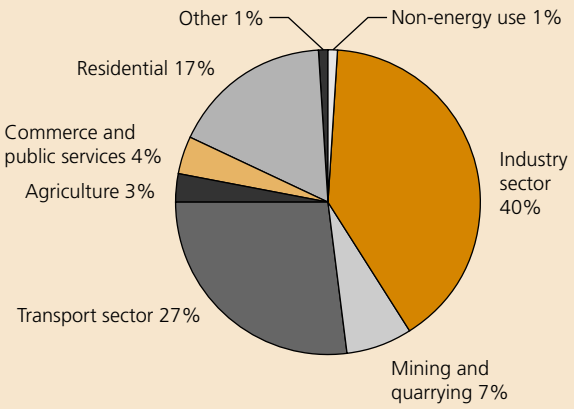
Profile of the South African energy sector

The greenhouse gas profile of South Africa is strongly related to its energy sector, as discussed above. Figures II and III show the distribution of energy consumption in different sectors and the share of different energy supply sources. It can be seen that industry, mining, and transportation consume a large share of final energy. Energy consumption levels in South Africa are significantly higher than many other developing countries, particularly consumption of electricity. Statistics show that South Africa consumes half of Africa's electricity with only 5% of its population. Since the production of electricity is mostly coal based, it results in South Africa being the largest emitter of greenhouse gases in Africa. The primary source of GHG emissions is production of CO_2 from energy use.

Mitigation options and potential for CDM

Given that the energy sector contributes most to GHG emissions, the potential for CDM projects is large. This includes both supply-side and demand-side projects. Many projects might focus on the electricity sector, but

Figure III. Share of final consumption, 1999



Source: DME, 2001.

* Very useful sector profiles can be downloaded from: http://www.thedti.gov.za/newsandevents/sectorbrochures.htm

there are also opportunities to replace other fuels with lower-emitting ones.

Concerning technology eligibility, nuclear projects are the only energy technologies that are clearly excluded from the CDM. Some projects are given fast-track prioritization, and subject to less vigorous screening. Fast-track approval applies to smaller-scale renewable energy and energy-efficiency projects, where transaction costs might negatively affect project viability. Small-scale is defined by the UNFCCC as "renewable electricity projects less than 15 megawatts, energy efficiency projects less than 15 gigawatt hours/year, or other projects displacing less than 15 kilotons of carbon per year".

Reducing emissions from electricity generation

Two possible scenarios to mitigate GHG emissions from electricity generation were evaluated, namely demand side management and a second scenario that uses a mix of more efficient supply technologies. It is estimated that demand side management (DSM) could reduce GHG emissions by a total of 265 $MtCO_2$ (10.6 $MtCO_2$/year) during the period 2001 to 2025 (Howells, 1999; Goldblatt et al., 2001).

The second mitigation scenario considered the use of a cost-effective mix of options of electricity generating processes, in order to reduce CO_2 emissions effectively. By the year 2025, the energy-generating plant mix was assumed to be 10% nuclear, 9% combined cycle gas turbine, 12% imported hydropower, 1% generated by renewable sources and the balance by coal-fired power stations. It was estimated that during the period 2001 to 2025, a total reduction of 1,055 $MtCO_2$ (42.2 $MtCO_2$) could be achieved with this mitigating option.

Renewable energy technologies

There is some experience with RETs in South Africa, but the potential for renewable energy is still largely untapped. Jointly, such projects could help make the fuel mix in South Africa significantly cleaner. Some existing and planned RE interventions include:

- To evaluate whether utility scale, renewable electricity generation could extend the renewable electricity capacity, Eskom is conducting research. In 1998, Eskom initiated a South African Bulk Renewable Energy Generation (SABRE-Gen) programme (www.sabregen.co.za)
- Plans are to demonstrate wind, solar thermal, biomass and wave power for electricity generation. In 2001, Eskom announced plans to develop 100-200 MW renewable electricity demonstration projects using wind (Lombard, 2001). These would have been the largest such investments ever in South Africa; however, recent reports indicate that these plans have been scaled back to 10 MW. The first turbine was installed in August 2002 with a capacity of 660 kW, and two more demonstration turbines are intended to be constructed at Klipheuwel (near Durbanville, Cape Town) during 2002 (Smetherham, 2002).
- SABRE-Gen also is conducting research on parabolic trough technology (Darroll, 2001) which has been commercialized in California in 30-80 MW units. No actual demonstration units have been constructed by Eskom. A 25 kW solar dish, however, was erected at the DBSA, combined with a Stirling engine, as a demonstration of the potential of renewable energy for WSSD.
- The proposed Darling Wind Farm, a 5 MW wind facility on the West Coast, was named a National Demonstration Project by the energy minister (Otto, 2000). The wind farm would be a grid-connected wind power facility, with a capacity factor of 36% and an annual output of 31,500 MWh. The potential exists to expand the facility to 10 MW. The first turbines were planned for completion by August 2002, but this goal was not reached. However, the developers have secured a contract to supply the Cape Town municipality. To be viable, the developers (the Oelsner Group) say they require tariffs of 38c/kWh. Eskom currently charges the Swartberg-Malmesbury municipality approximately 20 c/kWh, while Cape Town pays 11-12 c/kWh for bulk electricity.
- A solar chimney with a flue height of 1,500 m has been proposed for the Northern Cape (Stinnes, 2001).
- The World Bank's Prototype Carbon Fund (PCF) is considering a project in Durban using landfill gas for 20 MW electricity generation. The electricity would be sold to Durban municipality, displacing coal-fired energy purchased from the grid. The PCF envisages this leading to similar projects in other municipalities, up to 50 MW. Concerns have been raised by local communities that the project might extend the life of the landfill, and that sound waste management practices—waste minimization, separation and measures to reduce local impacts—need to be guaranteed. see: http://cdm.unfccc.int/EB/Panels/meth/CallForInputs/NM0010

Investors interested in renewable energy technologies in South Africa could pursue:

Wind power

While both Eskom and the Darling Wind farm are installing the first turbines, these do not begin to reach the estimated potential. There are various estimates of the potential, ranging between 2 and 24 TWh/year, which means that current facilities exploit less than1% of the potential.

Biomass and biodiesel

Existing use of renewable energy in South Africa primarily means biomass. Except for a few small hydroelectric facilities and a small number of other renewable energy demonstration projects, biomass use has been the only significant source of renewable energy until very recently. Quantitative research on national biomass consumption, however, has been very limited, with the Department of Minerals and Energy Biomass Initiative being the most authoritative report (Williams et al., 1996). Potential projects might use biomass for production of liquid fuels, or for electricity generation. Bio-diesel has been commercially produced in several European countries for close on 15 years, and in the United States for the past 5 years. Considerable expansion in the production of bio-diesel is anticipated in these countries. Since it has already been accepted in developed countries, bio-diesel technology can quickly and easily be implemented in South Africa. The production potential of bio-diesel without impacting negatively on food production is large, while impressive numbers of jobs can be created in the process. Using some 2.3 million hectares of land, it has been estimated that 1.4 billion litres of bio-diesel could be produced. Assuming that half of this production could be achieved in the next 10 years, this results in 700 million litres. Assuming 40 MJ/litre, this would be an additional 7,778 GWh (0.78 Mtoe; 28 PJ), which is 17% of current diesel use for road and rail transport. We suggest a target of 10% of annual diesel consumption from renewable sources to be reached within 10 years.

Solar thermal electricity

There is no doubt that the theoretical potential of solar energy is by far the largest source in South Africa (Eberhard and Williams, 1988), larger than wind or coal. Howells estimates the potential at 2.36 million TWh/ year (Howells, 1999). However, solar thermal technologies for electricity generation are little explored. Apart from RD&D by SABRE-Gen into solar thermal technologies, a solar chimney has been proposed for the Northern Cape. Enormous opportunities exist for CDM projects to take these technologies to commercialization.

Photovoltaic solar power

PV systems have been used primarily for off-grid solar home systems in South Africa:

- The Schools and Clinics Electrification Programme (SCEP) provided off-grid energy services with solar home systems (SHS) to community facilities. 1,852 schools had been connected by 2000, and an unspecified number of schools (DME, 2001: 97).
- A Shell/Eskom joint venture for SHS electrification built 6,000 systems for residential use by 2000 (DME, 2001; Spalding-Fecher, 2002c).[4] Based on recent reports (EC et al., 2000; Stassen, 2001), the size of the solar home system market, outside of the major government programmes, has been estimated at 28 million Rands in 2000 (Spalding-Fecher, 2002b).
- Roll out of the off-grid electrification programme began in 2002. The programme will target 350,000 homes for solar home systems, but had been slowed down by negotiations among government, Eskom, and the concessionaires. In 2002, DME agreed to the subsidy level (Kotze, 2001) and Eskom's role in the programme was clarified. Concessionaires have signed interim contracts, with NuonRAPS, EdF and Solar Vision each installing some 200 systems.

Reducing emissions from fossil fuels

Lower emission from fuel switching on the supply side can be achieved in several existing technologies.

Chemical and Mining Industries

Chemical

The South African chemical industry is dominated by local companies which developed from the industry's historical base in explosives for the mining industry, followed by development of the nitrogen-based fertilizers

[4] In 2002, indications were that 4,700 of these systems were operational (Afrane-Okese, pers. comm.).

and sulphuric acid. The strategic decision to adopt the Fischer-Tropsch process to derive oil from coal on a large scale resulted in the foundation of a significant polymer industry in South Africa.

The potential shortage in the availability of petroleum products and of primate feedstocks such as olefins and basic aromatics are becoming critical issues for sustainable growth in the industry. The possibility of a number of feedstock projects such as a Naptha Cracker as well as a new worldscale refinery with an aromatics unit are being proposed. This is expected to lead to further downstream investment potential in major imported chemicals such as ethylene, glycol, styrene, and terephthalic acid.

The petroleum and petrochemical industry is dominated by four oil refineries (3 coastal, 1 inland) plus the Sasol and Mossgass Fischer-Tropsch based operations. The rest of the chemical manufacturing sector consists mainly of AECI, Sentrachem and fertilizer plants such as Indian Ocean Fertilizers and Omnia.

During 1996 the chemical industry experienced relatively good growth primarily due to an exceptional rainfall season which saw fertilizer and other agrochemicals grow in excess of 50%. Good growth in the plastics industry resulted in good demand for feedstocks such as olefins and other polymer resin feedstocks. Other domestic markets experienced growth mainly in line with the GDP growth of 3.5%. The growth rate of the plastics industry has been averaging between 6-7% for the past few years.

Estimated size of the basic chemical manufacturing industry for 1996 is 10.3 million tons of inorganic and organic basic chemicals. The total production volume of fuels and lubricants is estimated at 30 million tons. In addition the production volume of formulated products such as paints, detergents, etc. was 1.2 million tons.

The export volume of basic chemicals during 1996 was estimated at 1.9 million tons, or 18% of the total production volume. Roughly an equal quantity (1.8 million tons) of basic chemicals was imported during the same period. However, these imports are mostly higher value-added fine chemicals, compared to exports which are more basic products such as phosphoric acid, alcohols and solvents.

While chemical production contributed 15% of South African manufacturing output in 1996, chemical products accounted directly for 12% of total manufacturing exports. This would exclude the significant volumes of chemicals going into the exports of other industries as intermediate products.

Exports from the industry have increased by over 20% in the past four years in real terms, as opposed to the 3% growth seen in exports as a whole. Clearly, the chemical industry is a major force in reshaping the economy's orientation to trade.

South Africa is committed to new international practice standards for research and development, manufacturing, transportation, distribution and disposal, right through to customer end-use.

Mining

In 1997 South Africa's mining industry contributed about R7.8 billion, or 8.9% to gross domestic fixed investment (GDFI). Sales of primary mineral products accounted for 37.3% of total export revenue. South Africa is one of the world's richest countries in terms of minerals, with the world's biggest reserves of gold, manganese, platinum metals, chromium, vanadium, andalusite and alumino-silicates, as well as sizeable reserves of iron ore, coal, diamonds, uranium, titanium and nickel. Its mining industry is one of the most advanced in the world, especially in deep level mining.

The recent trend toward monopoly capitalist industries is also evident in the mining sector. The emergence of more focused mining companies has resulted in the establishment of large mining houses such as Anglogold, Gold Fields, Amplats and Implats. These large mining corporations account for most of the gold, uranium, zinc, platinum-group metals, lead, diamonds and silver produced, as well as other minerals. Iscor produces the country's iron and steel requirements from minerals derived from its own mines. Sasol operates a number of collieries which provide raw materials for its synfuel plants. Beneficiation of minerals before export is a major growth area. De Beers mining is also one of the big mining groups in South Africa.

Specific opportunities for potential CDM projects in these two sectors are explored in the examples below:

SWITCH FROM COAL TO GAS

In the electricity generation sector, there is a move towards greater use of natural gas instead of coal as the

sole fuel. Natural gas is likely to form a larger percentage of South Africa's fuel mix in the medium term.

Two South African gas networks are expected to import gas from neighbouring countries. The gas network from Mozambique could supply natural gas to replace some of the coal feedstock used to manufacture chemicals at Sasolburg and synthetic liquid fuels at Secunda. It is unclear to what extent both of these projects could happen due to debates surrounding reserve sizes. An amount of 10% substitution was chosen as a "middle of the road" estimate. This, it is assumed, takes place from 2002 and over three years (Howells, 1999). Similar issues apply to perhaps the largest mitigation project in a single facility, namely switching the feedstock for SASOL synfuel from coal to gas. SASOL has already identified the Sasol Natural Gas Conversion Project (SNGCP) as a potential future CDM project. The SNGCP entails building a pipeline from the Temane gas field in Mozambique to Secunda. This natural gas will supplement coal as a feedstock at Sasol Synthetic Fuels at Secunda and replace coal as a feedstock at Sasol Chemical Industries at Sasolburg, with the effect of reducing GHG emissions from these plants. The 26-inch diameter pipeline will be approximately 895 km in length with a pressure rating of 125.7 bars for the full line. The pipeline is designed to deliver 122 MGJ/annum without transmission compression, which could be doubled with quarter point compression. substitution of gas for goal in synfuel production and in chemicals production. My understanding is that SASOL wants to bring gas to Sasolburg first to substitute for coal in the chemicals process, and then (if reserves allow) to Secunda for substitution in synfuel production. This is two projects, not one, and both may not occur because of limits on the reserve size. It is worth mentioning, too, that a third use—sending gas through the regional network to Joburg, Witbank, and even Durban for industry use—is also a serious possibility.

New coal technologies

New coal technologies, such as advanced pulverized coal combustion and atmospheric and pressurized fluidized bed combustion, are more efficient, but also generally more expensive than Eskom's current coal plants. They are not in current short-term forecasts, so they may also be able to pass the additionality screens and be attractive as potential CDM projects.

Liquid fuels and synfuels

Mitigating options were considered for both the refining of crude oil and the production of synthetic fuel. One mitigating option would be to import refined petroleum products and not to build additional refinery capacity. It is estimated that during the period 2000-2030, a total reduction of 103 $MtCO_2$ equivalent could be achieved with this mitigating option. In the synthetic fuel production industry, the substitution of 10% coal consumption with natural gas would result in a total reduction of 168 $MtCO_2$ equivalent (Howells, 1999).

Coal mining

Some options exist for reducing emissions in coal mining, including improved washing, catalytic combustion, ash filling with extraction/or with pillar support, methane drainage and combustion of discards. A project is proposed for Fluidized Bed Combustion using discard coal in Richards Bay.

Further elaboration of the options (Goldblatt et al., 2001):

- Adopting higher extraction ratios underground: Pillar methods of mining leave considerable quantities of coal not mined in the form of support pillars from which methane diffuses into the atmosphere. However, there are significant limitations on the widespread use of total extraction underground. The disadvantages of total extraction would be reduced if other means of roof support, such as ash filling, could be employed.

- Extraction of remnant pillars: The extraction of remnant pillars that are readily accessible by opencasting would stabilize the under-mined ground permanently and would prevent spontaneous combustion. It is assumed that there are 15 billion tons of coal immobilized in pillars, of which one third is close enough to the surface to be mined by opencast methods. It is therefore assumed that 5 million tons of the coal immobilized in pillars will be recovered, which will replace coal currently produced from deeper and more methane-rich areas.

- Improved coal utilization resulting from improved coal washing: Improving the efficiency of the washing plants will result in a reduced discard coal fraction. Efficiency improvements of 0.15% per annum have been achieved and are assumed for the mitigating options study.

- Improved combustion technology to burn discards: At present there are difficulties in burning discard coal because of the high ash content that leads to excessive erosion of boiler internals. Eskom is undertaking a pilot study of fluidized bed combustion that would allow coal discards to be used, and thus reduce the amount of coal that would need to be mined.

- Removal of emitted methane prior to mining: Methane drainage prior to mining through holes drilled from the surface has been widely practised. Widespread investigations into the possibility of establishing an industry to recover the methane for local heating duties have been undertaken.

- Catalytic combustion of methane: An investigation is being undertaken in Canada to evaluate the catalytic flow reversal process, which catalyses the exothermic conversion of methane to carbon dioxide and water. The heat generated by the combustion can also be recovered.

- Coal-bed methane: Previously unemitted methane in coal-beds may also show big potential as CDM projects.

Housing

Providing housing is a major development objective of the South African Government. The aim is to remove a backlog of between 2 to 3 million houses, with the aim of building 300,000 new units per year (ANC, 1994). There is an existing housing subsidy of R17,500 per household. There is experience in several projects focusing on small-scale energy efficiency interventions in low-cost housing, but potential for replication is large. Interventions in middle and upper-income housing are a relatively unexplored opportunity, even though the energy consumption (and therefore savings) are larger per household.

These interventions particularly strongly link the two objectives of the CDM, namely reducing emissions and promoting sustainable development.

Energy efficiency

This opportunity includes efficiency through improved thermal performance of houses, efficient appliances and passive solar design (see table 4).

There is great potential to install a range of energy efficiency measures in new houses. These include efficient lighting (CFLs), insulation of ceilings as well as optimizing design (e.g. orienting houses north). Efficient appliances for cooking, water heating (solar water heaters) and space heating can save both energy and GHG emissions.

Passive solar design is a way of directly harnessing heat from the sun to replace fuel and electricity use for space heating. There is already extensive South African research in this area that shows potential electricity savings (and therefore use of solar energy) of 60-75% of space heating energy in low cost housing and 30% in middle income housing, with relatively short economic payback times, using proper orientation and materials, appropriate roof overhangs and window sizing, and adequate insulation (Irurah, 2000; SEED, 2002; Winkler et al., 2002). Space heating is roughly 8% of electricity use in typical suburban households. For households using coal and paraffin, however, space heating can be up to 40% and 25% of household energy use, respectively (Simmonds and Mammon, 1996). If all new homes were required to implement passive solar design and thermal efficiency measures, and existing homes were retrofit, we could expect potential savings of at least 40% of current consumption, or 11,500 GWh (0.99 Mtoe; 41.5 PJ).

Solar water heaters

Few SWHs have been installed in low-income households, exceptions being in rental stock, such as private or publicly owned workers' hostels. The only significant project has been in Lwandle township (Thorne et al., 2000; Ward, 2002). This is despite the fact that the DME announced support from the Global Environmental Facility for a National Solar Water Heating Programme (DME, 2001a). There is significant potential for CDM projects to remove barriers to the further diffusion of this technology in South Africa.

Current residential consumption of electricity amounts to about 28,700 GWh (2.47 Mtoe; 103 PJ). Assuming that some 30% of total domestic electricity consumption is used for water heating, based on Eskom load estimates, market penetration of one third, and that 60% of this electricity can replaced by solar energy by using a hybrid solar-electric water heating system (Spalding-Fecher et al., forthcoming), then the potential savings for urban residential households come to 5,200 GWh.

Fuel switching

Further research is needed on quantification of the potential of delivering renewable liquid and other fuels for household consumption. Examples of these are ethanol gelfuel, plant oils for stoves and biogas. It is clear that the production and use of these in rural areas could have significant rural development multiplier effects in terms of both employment and wealth creation, as well as forex savings implication for the nation, making them attractive CDM projects for South Africa.

Aggregate potential

A range of technical interventions and their potential reductions (aggregated to national level, not per project) are reported in the table below, comparing the total potential for emission reductions.

Some interventions focus on lighting (replacing incandescent bulbs with CFLs; more efficient practices). More energy is used in the residential sector for cooking, making efficient wood or coal stoves more attractive than inefficient models. Fuel switching for cooking might involve moving from electric hot plates to gas or paraffin cooking. Water is heated with electricity in most middle and upper-income homes, but with multiple fuels in typical low-income households. In both cases, emissions may be reduced by introducing solar water heaters (simple or hybrid). Energy can be saved by insulating hot water geyers, and by efficient use (e.g. by changing time of use). To improve space heating, a range of passive solar methods are possible (e.g. insulation, better ceilings, orientation, etc) or switching for active heating from electricity to gas. Lower-emissions sources of electricity overall could come from solar homes systems or distributed wind generation.

Table 4. Energy efficiency in residential housing

Residential	Emission reduction cumulative $MtCO_2$ over 30 years
Replace incandescents	11
Efficient lighting practices	18
Efficient wood/coal stove	5
Hot plate to gas cooking	5
Hybrid solar water heaters	88
Solar water heaters	2
Heat pumps for hot water	19
Insulation of geysers	25
Efficient use of hot water	22
Thermally efficient housing	9
Electric to gas space heating	25
Appliance labelling & standards	25
Solar home system	2
Distributed wind generation	–
Paraffin to gas cooking	2

Source: De Villiers & Matibe, 2000.

Industry generally

Industrial boilers

Converting industrial boilers from heavy fuel oils, diesel or coal to biomass from forestry waste and biogas are attractive options.

Industrial energy efficiency

Several concepts promoting energy-efficiency have been tested in South Africa and shown to deliver significant GHG emissions reductions with relatively quick economic payback periods. Industrial demand-side management can focus on energy savings through more efficient processes (ERI, 2000).

For CDM projects, there are a number of opportunities which have been identified by previous studies as having good potential for emissions reduction:

- Fuel switching for thermal energy supply
  - From coal and oil to natural gas
  - From electricity to natural gas
- Energy efficiency improvements in steam and thermal energy supply systems
  - Gas-fired boilers and steam systems
  - Coal fired boilers and steam systems
  - Oil fired boilers and steam systems
  - Electrode boilers and steam systems
- Energy management (energy efficiency) in the following areas:
  - Variable speed drives;
  - Electrical motors;
  - Lighting; and
  - Compressed air systems (Trikam, 2002a).

Landfill gas

Historically, there has been little or no attention paid to the draining of gases from landfill sites in South African

municipalities. CDM projects can encourage the collection and productive use of methane and other landfill gases. Existing and future landfill sites can be designed to maximize this resource in a sustainable and environmentally beneficial way. Secondary benefits include the sedimentation of the material in the landfill and hence the prolonged life of the landfill before municipal waste is disposed of further and further afield, with the associated increases in costs and emissions. Currently a number of landfill CDM projects are being pursued.

Commercial buildings/building industry

Efficiency in buildings

The construction industry contributes approximately 6% of total GDP. Confidence levels in the industry are improving, as the residential sector improved strongly during the fourth quarter of 1999 (up 13% on the same period for 1998) and 23% higher than the third quarter of 1999. Confidence levels in the non-residential sector have also improved, although not as dramatically as in the residential sector.

Forecasts for the year 2000 are expected to be high for the building industry. All indicators are being monitored closely to identify any significant turning points which will signal the starting point of a recovery process, which is hoped to last for at least three to four years.

A number of energy-efficiency projects have been identified by the International Institute of Energy Conservation, the Energy Research Institute, the Energy and Development Research Centre, Green Buildings for Africa, and others (see table 5). Commercial buildings can improve lighting, heating and cooling operations (HVAC), both saving energy and reducing emissions. There are also opportunities for CDM projects in variable speed drives for fans, as well as solar water heating at the commercial level.

Table 5. Energy efficiency in commercial buildings

Commercial	Cumulative $MtCO_2$ over 30 years
New building thermal design	80
HVAC retrofit	41
Efficient new HVAC systems	50
Lighting retrofit	21
New lighting systems	16
VSDs for fans	16
Heat pumps	20
Energy star equipment	9
Solar water heating	22
Fuel to natural gas	13
Electric to natural gas	18

Source: De Villiers, 2000.

New building thermal design

The largest single influence on building energy consumption is the design of the building. New building envelope design will reduce energy consumption through:

- optimization of thermal mass for local climate;
- optimal insulation;
- glazing;
- correct orientation;
- building shape.

Potential savings depend very much on the payback of the initial investment. Using the discussion on the potential for energy efficiency in buildings as a basis, it is estimated that optimal thermal design of a new building up to 2030 can reduce heating, ventilation and cooling energy requirements by 40% relative to the baseline with an average payback of five years. The reader should note that these estimates are very uncertain.

Barriers to improved thermal design are increased initial cost, split incentives (the developer often does not have to pay for the energy bill), and lack of training of architects and consulting engineers in efficient building practices.

Improved thermal design of buildings will reduce non-greenhouse gas emissions by reducing fuel requirements. Commercial sector emissions are important from a health perspective because they are emitted in high density population areas. South Africa lags behind the developed world in efficient building design and potential measures are all technologically proven.

HVAC retrofit

Options for a heating, ventilation and cooling (HVAC) retrofit include:

- switching off air-conditioning when there are no occupants;
- eliminating reheat, in which pre-conditioned air is reheated in a heating coil in the duct system;
- prevent mixing of cold and hot air;
- new air-conditioning temperature set-points;
- ventilation with outside air and night cooling;
- use of evaporative cooling;
- use of computerized energy management systems.

The University of Pretoria library retrofitted a HVAC system and reduced energy consumption by 37% with a 2.5 year payback (Grobler et al., 1993). It is assumed that similar energy savings could be realized in 50% of existing buildings over a ten-year period, with an average payback of three years.

Barriers include a lack of awareness by building owners of the benefits of a HVAC retrofit and the mindset that energy services are merely a support service for commercial activity and therefore little attention is given to cost efficiency.

An HVAC retrofit will reduce non-greenhouse gas emissions by reducing fuel and electricity requirements. A small increase in employment would result in the HVAC industry.

Efficient HVAC systems for new buildings

The same measures as in HVAC retrofits apply. In addition, HVAC systems should not be overdesigned, leading to poor efficiencies. HVAC systems designed for new buildings will be more energy-efficient than those in existing buildings under the baseline scenario. It is estimated that efficiencies for new systems up to 2030 could be reduced by a further 25% with a payback of five years. Once again the reader should note that these estimated are highly uncertain.

The same barriers that apply to the two previous mitigation options apply to new HVAC systems as well.

Efficient new HVAC systems will reduce non-greenhouse gas emissions by reducing fuel requirements. A small increase in employment would result in the HVAC industry.

Lighting retrofit

Efficient lighting includes the following:

- Replace low wattage incandescent lighting with fluorescent lighting.
- Replace high wattage incandescent lighting with high-pressure metal halide or sodium lamps.
- Replace standard fluorescent tubes and magnetic ballasts with more efficient fluorescent tubes and electronic ballasts.
- Replace incandescent lighting with high-pressure metal halide or sodium lighting.
- Replacing existing reflectors with more efficient reflectors.
- Introducing lighting controls including more switches, photo-electric sensors and occupancy sensors.
- Reduce lighting levels where illumination is too high.

Two large lighting retrofits were carried out at Megawatt Park (Grobler, 1999). In 1996 automation and integration of the lighting system with the building management system realized energy savings of about 5,543,000 kWh annually (26% of lighting energy). In 1997 standard fluorescent tubes and magnetic ballasts were replaced with more efficient fluorescent tubes and electronic ballasts. The total cost was R2,313,559 and total savings were 3,216,000 kWh annually (21% of lighting energy). This gives a ratio of R0.72 per annual kWh saved.

Numerous case studies of lighting retrofits in the United States (US DOE, 1999) indicate that financially viable building lighting retrofits save between 20% and 40% of lighting energy. It is assumed that 30% of lighting energy can be saved in 70% of South African buildings within the next ten years. It is assumed that the average cost of lighting retrofits is the same as for Megawatt Park (R0.72 per annual kWh saved), and that this represents a once-off incremental cost.

Barriers to a lighting retrofit include lack of awareness by building owners and the mindset that lighting is a

service that is used on demand without any thought about cost-effectiveness.

Efficient lighting will reduce non-greenhouse gas emissions by reducing the amount of electricity required. Efficient lighting technologies have existed for some time and technological support is available in South Africa.

Efficient lighting systems for new buildings

There is greater potential for efficient lighting systems in new buildings compared with existing buildings, but the baseline scenario will capture some of these. It is estimated that lighting energy use in new buildings could be reduced by 20% on average with an average payback of three years. As with the lighting retrofit, it is assumed that the cost of replacing lamps does not change significantly in the mitigation scenario.

Barriers to efficient lighting systems for new buildings are increased initial cost, split incentives (the developer often does not have to pay for the energy bill), and lack of training of architects and consulting engineers in efficient building practices.

Efficient lighting will reduce non-greenhouse gas emissions by reducing the amount of electricity required. There are no technological barriers to new efficient lighting systems.

Variable speed drives for fans

Electric motors normally operate at a constant speed (and electricity consumption) no matter what flow is required, and valves or dampers used to control the flow. Variable speed drives allow electric motors to use less electricity by automatically changing the speed (and electricity consumption) of the motor in proportion to the flow required. Variable speed drives were installed at Megawatt Park in 1997 at a cost of R900,000, saving 1,599,000 kWh annually (Grobler, 1999) which is 15% of HVAC energy consumption (30% of fan energy consumption). This gives a cost of R0.56/kWh saved. The total amount of electricity used on fans is estimated to be 53% of HVAC electricity consumption (Piani, 1997). Only variable volume air handling units can operate with variable speed drives. It is estimated that 25% of air handling fans are eligible for variable speed drives and that these fans could have variable speed drives installed by 2015. The average life of a variable speed drive is 15 years.

Barriers to the installation of variable speed drives for fans are lack of awareness of their benefits, the risk that promised savings will not materialize, and the high investment cost.

Variable speed drives will reduce non-greenhouse gas emissions by reducing the amount of electricity required. Variable speed drives are currently imported, but if sufficient demand was created, local production would be possible. Variable speed drives have been successfully operated for over a decade.

Heat pumps for water heating

Replacing electrical resistance water heaters with heat pumps will reduce energy consumption by 67%. The cost of a 50 kW heat pump is R50,000 and its annual maintenance is R2,500 (Graham, 1999). Assuming a 0.2 load factor, annual electricity consumption is 29,200 kWh. The equivalent electrical resistance heater would cost R12,500, have negligible maintenance costs and consume 87,600 kWh per year.

It is estimated that by 2015 an additional 30% more than the baseline of hot water heating installations could be heat pumps. The average life of a heat pump is assumed to be 15 years.

Barriers to the installation of heat pumps are the high investment cost and possibility of operational problems.

Heat pumps will reduce non-greenhouse gas emissions by reducing the amount of electricity required. Heat pumps systems have imported components so they would a negative effect on balance of payments. They are a technologically proven technology with technical support available in South Africa.

Energy star equipment

Most computers and other office equipment are shipped to South Africa with the energy saving capability de-activated. Targeting the suppliers will capture most of the savings potential. Suppliers can either be persuaded to activate the energy savings capability through procurement requirements. Bulk computer customers will need to be educated about the potential savings. Costs are administrative and relate to the education of bulk computer customers. Average electricity savings per computer are estimated at 213 kWh per year (40% of consumption), and in 1998 700,000 computers entered South Africa (Price, 1999). Due to

uncertainties regarding future computer technologies, it is assumed that savings will only be implemented and realized from 2000 to 2015. It is estimated that computer sales will increase at 5% per year between 1998 and 2015, and it is estimated that 50% of computers bought could benefit from the programme. In addition savings can also be made on other office equipment such as printers, fax machines and photo-copiers and it is estimated that these savings will amount to 10% of computer savings. Finally it is assumed that the energy saving capability of office equipment will be activated in the future, but that an energy star programme can speed this process by five years.

Barriers to activated energy star equipment are lack of awareness and the perceived risk that activating energy star capabilities could create computer problems.

Energy star enabled equipment will reduce non-greenhouse gas emissions by reducing the amount of electricity required.

Solar water heating

Solar hot water heating in the commercial sector will usually be considered with a back-up source of heating when solar irradiation is insufficient. In South Africa, on average, about 90% of hot water would be generated by solar energy, and 10% by electricity. Solar collectors are installed on roofs of buildings and connected to a storage tank. At present solar water heating in South Africa's commercial sector is negligible. Solar water heaters have a life of about 20 years and costs including installation are about R35,000 for a 1,000 litre system (Venter, 1999) or about R462/GJ of annual water heating. Annual maintenance costs are assumed to be 3% of the investment cost. It is assumed that, by 2015, 25% of commercial hot water heating could be converted to solar water heating. It is estimated that a public programme to promote solar water heaters would cost R2 million per year.

Barriers to solar water heating are the risk of the technology not performing as promised, the risk of operational problems and the high investment cost.

Solar water heating will reduce non-greenhouse gas emissions by reducing fuel and electricity requirements.

Switching from coal and oil boilers to natural gas boilers

Coal- and oil-fired boilers can be modified to use natural gas. Natural gas is much more convenient to use and maintenance costs will be reduced, and efficiencies of fuel use will improve (assumed by 15%). In the baseline scenario natural gas becomes available in 2010 and, by 2030, 20% of boilers are converted to natural gas. In the mitigation option it is assumed that natural gas becomes available in 2005 and that, by 2030, 50% of boilers are converted to natural gas. Conversion to gas will require an upfront cost, but new gas boilers are cheaper than coal or oil boilers. Maintenance costs on a gas boiler will be lower than those for coal and oil boilers. Since the annualized cost of a boiler investment is considerably less than fuel cost and only incremental costs are of interest, incremental costs are assumed to be zero. Only fuel costs are considered.

The main barrier to the use of natural gas is its availability.

Use of natural gas instead of coal and oil will reduce non-greenhouse gas emissions. Natural gas is likely to be imported and therefore the trade balance would be adversely affected.

Switching from electricity to natural gas for heating

The mitigation option considers replacing centralized electrical heating systems with centralized gas boiler systems. In the baseline scenario it is assumed that natural gas becomes available in 2010 and, by 2030, 10% of electrical heating systems are replaced by natural gas. In the mitigation option it is assumed that natural gas becomes available in 2005 and that, by 2030, 30% of electrical heating systems are converted to natural gas. It is assumed that the efficiency of use of gas is 90% (Wiese, 1999). The costs of retrofitting a gas hot water system is R20,000 per 1,000 kg/hour system (Wiese, 1999), and it is assumed that water heating is carried out 12 hours/day, 6 days per week, and 11 months per year.

The main barrier to the use of natural gas is its availability.

Use of natural gas instead of electricity will reduce non-greenhouse gas emissions. Natural gas is likely to be imported and therefore the trade balance would be adversely affected.

Transport and automotive sectors

In the transport sector, emissions could be reduced by switching to buses using alternative fuel (compressed natural gas), promoting better transport infrastructure including commuter vehicle sharing, and techniques to improve emission control and fuel economies. Relatively few government policies are in place to promote these activities, and current transport infrastructure is not conducive to more energy-efficient transport (Naude et al., 2000). Projects promoting behavioural changes (e.g. using bicycles rather than cars [Shova Kalula], multi-occupancy lanes) sometimes find it difficult to attribute emissions reductions to the project activity.

CDM projects focusing on the transport and automotive sectors might consider:

- Efficiency in transport—more efficient vehicles;
- Fuel switching to lower-emission fuels;
- Bio-fuels (bio-diesel and ethanol);
- Infrastructure changes, e.g. from private to public transport.

The South African automotive and components industry is set for high growth. Exports have grown by 3,000% from 1988 to 1998, and indications are that growth is likely to continue.

The automotive industry is largely located in the Eastern Cape and Gauteng, with other centres in KwaZulu-Natal and the Western Cape. Multinational assemblers such as BMW, Daimler-Chrysler, Volkswagen, Toyota and Ford have established production bases in South Africa, with plants being expanded for increased exports into world markets. Global trends in the automotive industry have also been mirrored at the level of component manufacturers. International companies like Bloxwitch, Arvin Exhaust, Senior Flexonics, Corning and AP Faurecia have established production bases in South Africa.

The Motor Industry Development Programme (MIDP) enhances the international competitiveness of the industry, allowing car assemblers and component manufacturers to offset Completely Built Up (CBU) units or component exports against Completely Knocked Down (CKD) units or component imports.

In line with global sourcing trends, companies that have manufacturing facilities in South Africa will be well positioned to take advantage of low production costs as well as access to new markets as a result of the comprehensive trade agreement with the EU and the SADC free trade area.

LULUCF

CDM projects in this sector are limited to afforestation and reforestation. South Africa does not have significant forest cover and the potential for mitigation is relatively small. It is small both compared to other countries, for example Latin American countries; and compared to other options within other sectors in South Africa.

Plantations for production of paper pulp are of interest to paper manufacturers.

The mitigating options that were considered for the agricultural sector included the following (Scholes et al., 2000):

- Optimizing herd composition and feed intake: Optimization of the herd sex, age and breed would allow the national herd to be reduced while maintaining the same level of production. Supplementing the feed with high protein forage would reduce the methane production and increase productivity. A 30% reduction in the free-range herd and a 15% increase in feedlot were assumed. It is estimated that total emissions can be reduced by 207.8 $MtCO_2$ equivalent with these initiatives over the period 2000 to 2030.
- Manure management: It was assumed that 40% of the manure from feedlots is digested anaerobically and that the methane gas is collected for re-use, 10% in lagoons and the remaining 50% by dry spreading. It is estimated that total emissions can be reduced by 49.8 $MtCO_2$ equivalents with these initiatives.
- Burning of agricultural residues: It was assumed that the fraction of area planted with sugar cane that is burned prior to harvest declines to 60% by the year 2005 and remains at that level until 2030. It is estimated that total emissions can be reduced by 9.1 $MtCO_2$ equivalents with these initiatives.

- Fire frequency reduction: The frequency of fires is assumed to be halved over the period 1990 to 2030. It is estimated that total emissions can be reduced by 22.2 $MtCO_2$ with these initiatives.

- Savanna thickening: It is assumed that savanna thickening is promoted over 40% of the total savanna area. It is estimated that total emissions can be reduced by 237 $MtCO_2$ equivalents with these initiatives.

- Afforestation: An additional 330,000 ha planted as a mitigation option would reduce the total emissions by 116 $MtCO_2$ equivalents.

Of the seven activities considered in the land use mitigation study two relate to sequestration projects. However, CDM projects are limited to reforestation and new forestation. The study estimates the potential emission reduction opportunities for non-sequestration subsectors to be approximately 10 $MtCO_2$ per year with 80% of these reductions being achieved at negative or low cost.

However, for all of these five sub-sectors—animal management, manure management, fire frequency control, reduced tillage and burning of agricultural residues—there are many sources of emission spread over a wide area which creates difficulties for maintaining a consistent and acceptable level of emission verification and subsequent certification of CERs. This will significantly increase transaction costs per ton of CO_2 reduced (Goldblatt et al., 2001).

This will make CDM projects in this sector less attractive to foreign investors than projects in other sectors. However, this sector may attract interest from institutional investors.

Conclusion

This document illustrates the extensive potential opportunities for CDM development and investment in South Africa. It further illustrates that South Africa is in the early stages of readiness for CDM administration and promotion. The primary need in South Africa is extensive capacity development. Current steps are in place to develop capacity at government level; in addition various capacity drives are in place through support organizations listed to develop capacity in certain sectors. Experience has shown that the development of viable CDM projects ready for market will require individual support work with project developers. A concerted effort in this regard will release viable projects into the market. South African project developers are also interested in the views and approaches of the wider investment community, and it is hoped that this document, which is in some way a forerunner of the further work about to be embarked upon in developing an investment strategy for the CDM in South Africa, will unlock debate and interest from both developers and investor/purchasers.

The following annexes can be seen on the CD-ROM that accompany this publication:

Annex A: industry associations holding information on projects

This annex contains the self-generated details of the various industry associations which can act as information and referral agencies for CDM investors interested in that sector. This list is constantly being updated and the agencies are listed under the numbers A1, A2, etc.

Annex B: CDM projects in development

This annex contains the self-generated list of project details granted on a voluntary basis by some project developers in South Africa. This list is constantly being updated and the individual projects are listed under the numbers B1, B2, etc.

Annex C: support organizations

This annex contains lists of project details granted on a voluntary basis by support organizations in South Africa. This list is constantly being updated and the individual projects are listed under the numbers C1, C2, etc.

Annex. Final Report: CDM Delegate Programme from South Africa at UNIDO ITPO Tokyo

Introduction

The CDM Delegate Programme was launched at UNIDO in the context of the activities of the United Nations inter-agency project "Engaging the Private Sector in Clean Development Mechanism Project Activities", which aims to enhance national capacity in the participating countries (Brazil and South Africa) to implement the Clean Development Mechanism (CDM). The project has been a joint effort of UNDP, UNIDO and UNCTAD. Each of the participating agencies has been implementing a component in line with its core expertise and the United Nations mandate. The CDM Delegate Programme has been implemented as an activity of the UNIDO component of this project.

The objective of the Programme was to establish bilateral ties between the Japanese business and industrial community interested in CDM opportunities in South Africa and South African project developers and other stakeholders actively engaged in designing CDM projects. To that end, a portfolio of 23 CDM projects was compiled by the South African CDM Delegate, Mr. Stefan Raubenheimer, for presentation to potential investors in Japan. The delegate had some 30 meetings with Japanese corporations and institutions representing the industrial and energy sectors. The South African Embassy, learning of the Programme, also became involved and offered strong support and appreciation. The Programme has been successfully completed and has received positive evaluations from UNIDO, ITPO/Tokyo and participating companies in Japan and South Africa. More information about the Programme can be obtained at http://www.unido.org/file-storage/download?file_id=11671

The following is a brief description of the Programme and some information on the meetings held by the South African delegate. Details of the meetings have been deliberately omitted at the request of participants, owing to the confidential nature of the information discussed. Some specific information can, however, be obtained from ITPO/Tokyo. (Please contact Mr. F. Gelegen at fgelegen@unido.or.jp)

The programme was held at the United Nations Industrial Development Organization Investment and Technology Promotion Office in Tokyo, Japan during the period 21 to 31 May 2003. Mr. Stefan Raubenheimer, National Consultant to UNIDO and Chief Executive Officer of SouthSouthNorth participated as the South African Delegate.

Acknowledgements

Special acknowledgement is due to Mr. Stefan Raubenheimer, who served as South African delegate for the CDM Delegate Programme. He also led the research and drafting work for the CDM Investor Guide and Project Portfolio, which he and the UNIDO ITPO office in Tokyo presented in Japan. Acknowledgements are also due to Ms. Laurraine Lotter of the Chemical and Allied Industries Association, Geoff Stiles of the Capacity Building Leadership Action Project (CBLA) and Harald Winkler of the Energy Development Research Centre of the University of Cape Town (in his individual capacity) for their support of the UNIDO project and assistance in the preparation of the South African project portfolio.

Background

In 1999, UNIDO became one of the partners in a United Nations inter-agency project entitled "Engaging the Private Sector in Clean Development Mechanism Project Activities". UNIDO's component of the project was to facilitate and execute capacity building programmes in targeted countries and to design a programme to promote the projects developed in each country in an annex I country through Investment and Technology Promotion Offices (ITPOs). This was the first time such promotion had been attempted by UNIDO.

South Africa, a large emitter of greenhouse gases and the most industrialized country in Africa, was chosen to participate in the project and the CDM Delegate Programme in Japan for a number of reasons. These include a high GHG mitigation potential in terms of scale and scope and cost competitiveness. South Africa is also perceived as a country that can assist other countries in the region in building national capacities for CDM activities. UNIDO hopes to expand the number of countries participating in the Programme in the next phase of the United Nations interagency project on capacity-building for CDM.

Japan is a strong proponent of the Kyoto Protocol. The Japanese government and Japanese industry are intensely working on finding opportunities to be involved in CDM and JI projects, to help Japan to meet its target of 6% reduction by 2012. This target in based on 1990 emission levels and has now ballooned to 16% in real terms due to increasing emissions registered since 1990. As it is virtually impossible for Japan to achieve this target internally, the option of carbon

mitigation through CDM and JI is of crucial importance to the country.

Another reason for choosing Japan is the existence of UNIDO ITPO Tokyo (ITPO Tokyo), which is a part of the network of Investment and Technology Promotion offices of UNIDO. Since 2002, ITPO Tokyo has prioritized environment and technology transfer projects as part of its activities. Among these, CDM related programmes have been of particular interest to ITPO Tokyo, especially since UNIDO's co-hosting of an international forum on the CDM in Tokyo, in June 2002.

Programme outline

The CDM Delegate Programme for South Africa was undertaken in Tokyo between 21 and 31 May 2003. The programme was designed and implemented by Industrial Energy and Climate Change (IEE) Branch of UNIDO HQ and the UNIDO ITPO office in Tokyo. Mr. Stefan Raubenheimer participated in the programme as UNIDO National Expert for CDM Investment Promotion.

The CDM Guide and Project Developer's Portfolio was used as the basis of interaction with potential investors in Japan. The delegate held 16 meetings with public and private sector organizations of Japan, conducted two press interviews (Japan Industrial Journal and UNIworld), participating in one seminar organized by NEDO and UNIDO as keynote speaker, and one roundtable meeting organized by Mitsubishi Research Institute (MRI). Throughout the programme, the delegate had the opportunity to hold discussions and make presentations with 64 businesspersons, government officials and media. A detailed copy of the agenda is included in this report (see below).

The delegate presented the CDM Investor Guide for South Africa and background information for Japanese investors and potential buyers of CERs. The delegate presented the projects listed in the CDM Portfolio for South Africa (see annexes of the CDM Guide on CD-ROM).

Findings and results from the programme

The Programme has successfully initiated "bridge-building" between Japanese investors and the South African CDM project developers and other stakeholders.

South African Government

The South African Embassy in Tokyo is fully aware of the opportunity contained in the CDM and its implications for South Africa. The embassy will pursue this opportunity based on the connections built through this programme. The Embassy will seek to assist South African officials and politicians in promoting the development of the CDM capacity in South Africa, in particular the Designated National Authority.

Japanese Government

The Japanese Government needs to make tremendous efforts to attain the Kyoto Protocol emission target of –6% to 1990 level. Japan will take advantage of the flexibility built into the Protocol including the CDM. With regard to the location of CDM projects, the priority will be the Asia Pacific region. However, the Japanese Government and their affiliated agencies do not exclude opportunities in other regions.

The major responsible ministries are Ministry of Economy, Trade and Industry (METI) and MOE. Affiliated agencies of the two ministries are dealing with practical assistance to project host countries or Japanese CDM/JI investors.

Meetings with high-ranking government officials suggested that the efforts made by the Japanese private sector and foreign governments to pursue Kyoto protocol targets are in the interests of the Japanese government for GHG policy development. The Japanese Government presented its polity in respect of the CDM in general and South Africa in particular.

Other international schemes, e.g. CTI may be applicable to promote CDM project's development by Japanese investors, technology transfer and capacity building in South Africa.

Private sector

The private sector participants showed interest in the opportunities in South Africa and set out their particular interests. The private sector reactions to the presentations are contained in the contact reports listed below. (In accordance with a request from the participants in the meeting, these contact reports have been edited in order to exclude those details of the discussions deemed to be confidential. For more information on these reports, please contact Mr. F Gelegen at fgelegen@unido.or.jp).

Contact Reports

Contact Reports: South African Embassy, Tokyo

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Dr Krish Mackerdhiy, Ambassador

Angus September, Counsellor, South African Embassy

Kunio Katsunuma, Marketing Officer, Economic Division

Shinji Yamamoto, Marketing Officer, Economic Division

Pinkie Moleko, First Secretary, South African Embassy

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 22 May 2003

Place: Tokyo

Contact Reports: Japan Bank for International Cooperation (JBIC)

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Akihiko Koenuma, Director, Divisions Corporate Finance Department

Kuniaki Ito, Director General, Divisions Corporate Finance Department

Go Denda, Senior Financial Officer, Corporate Finance Department

ITPO Tokyo: F Gelegen, S Raubenheimer

Contact date: 23 May 2003

Place: Tokyo

Contact Reports: Seminar at NEDO Roundtable

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

NEDO
Hiroyuki Ochiai, Director General

Manabu Inoue, Deputy Director

Seto Kohta, Project coordinator

Yoshiko Yurugi, Chief Officer

Idemitsu Kosan Co.
Yugo Nakamura, Global Environment Project

Mitsui & Co.
Kentaro Yabe, Manager

CO2e.com
Ken Yabe, Representative

Mitsubishi Research Institute
Kenichiro Yamaguchi, Senior Consultant

JFE Engineering Corporation
Yuzo Fujii, Deputy Manager

Kawasaki Steel Corporation
Yuzo Fujii, Assistant Manager

NATSOURCE
Norio Suzuki, Senior Manager

Oil Paper Co., Ltd
Naoto Haragichi, Manager, Overseas Forestation Department

Sumitomo Metals
Takumi Yamano, Manager, Steel Engineering & Consulting Co.

Sumitono Corporation
Hidefumi Noda, Assistant Manager, Global Environment Department

Mitsui & Co., Ltd
Kentaro Yabe, Manager, Business Promotion Department

Mitsui Global Strategic Studies Institute
Masato Ichimiya, Senior Strategist, Environment Project Centre

Development Bank
Haruhisa Kawashita, Deputy Director General, Energy & Energy Department

TEPCO—Tokyo Electric Power Company
Tsuyoshi Otani, General Manager

Contact Reports: South African Embassy

Angus September, Counsellor, South African Embassy

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 26 May 2003

Place: Tokyo

Contact Reports: Marubeni Corporation

More on Marubeni Corporation at www.marubeni.com

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Toichi Kudo, General Manager

Yutaka Shinagawa, Assistant Manager

Hideto Yamaji, Assistant General Manager, Corporate Strategies Department

Shigeru Yamaguchi, Area Manager

Masahiro Kimura, Domestic & Business Generation

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Sumitomo at www.sumitonocorp.co.jp

Contact date: 26 May 2003

Place: Tokyo

Contact Reports: Sumitomo Corporation

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

R Yamamoto, General Manager, Global Environment Department

Hidefumi Noda, Assistant Manager, Global Environment Department

Masanori Takada, Manager, Global Environment Department

Sam Fukumoto, Manager, Global Warming Prevention Project Team

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Sumitomo at www.sumitonocorp.co.jp

Contact date: 27 May 2003

Place: Tokyo

Contact Reports: Mitsubishi Research Institute (MRI) Roundtable with Utility Companies

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Mitsubishi Research Institute
Kuniyuki Nishimura, Research Director, Sustainable Development

Shuta Mano, Sustainable Development Research Department

Nobuyuki Kobayashi, Sustainable Development Research Department

Kenichiro Yamaguchi, Senior Consultant, Sustainable Development Department

TEPCO—Tokyo Electric Power Company,
Yoshitaka Hagiwara, Deputy Manager, International Environmental Business Group

Mizuho Corporate Bank
Hideaki Kuraishi, Senior Vice President

Electric Power Development Corporation
Tatsuya Nitta

ITPO Tokyo: F Gelegen, S Raubenheimer

Contact date: 27 May 2003

Place: Tokyo

Contact Reports: NEDO

More on NEDO at www.nedo.go.jp

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Hiroyuki Ochiai, Director General

Manabu Inoue, Deputy Director

Seto Kohta, Project coordinator

Yoshiko Yurugi, Chief Officer

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 28 May 2003

Place: Tokyo

Contact Reports: Chubu Electric Power Co., Inc.

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

TCC—Techno Chubu Company
More about Chubu at www.chuden.co.jp/english

Takashi Nagao, General Manager, Energy & Environment

Takashi Fujiwara, Manager, Global Environment Group

Kazanori Kuze, Senior General Manager, Corporate Planning & Strategy Division

Tomoaki Sakurai, Assistant Manager, International Consulting Group

Minoru Yasui, Assistant Manager, Plant Engineering & Construction Group

Tsuyoshi Nakajima, Assistant Manager, Plant Engineering & Construction Group

Katsuhiro Suzuki, Assistant Manager, Environmental Affairs Department

Yuji Nobusawa, Assistant Manager, Environmental Affairs Department

ITPO Tokyo: F Gelegen, S Raubenheimer

Contact date: 28 May 2003

Place: Nagoya

Contact Reports: Toyota Tsusho Corporation

More on Toyota Tsusho at www.toyotsu.co.jp

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Takashi Hattorri, Managing Director

Sienosuke Sasaki, Project General Manager, GHG Mitigation Project Team, Environmental Business Development Group, Energy Department

Koji (Ken) Kawade, Project General Manager, Energy Department

Tatsunori (Tom) Kaiden, GHG Mitigation Project Team, Environmental Business Development Group, Energy Department

Atsushi Kubo, GHG Mitigation Project Team, Environmental Business Development Group, Energy Department

ITPO Tokyo: F Gelegen, S Raubenheimer

Contact date: 28 May 2003

Place: Nagoya

Contact Reports: METI

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

METI, Ministry of Economy, Trade and Industry, Global Environmental Affairs Office

More on METI at www.meti.go.jp/english/

More on CTI at www.climatetech.net/

Shigetaka Seki, Director for Environmental Affairs

Tetsuta Shimokawa, Section Chief

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 29 May 2003

Place: Tokyo

Contact Reports: METI Middle East/Africa Division

More on JICA at www.jica.go.jp

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Ryuichi Kataoka, Deputy Director, Middle East & Africa Office, Trade Policy Bureau

Yukifumi Yamaguchi, Deputy Director

Yoshikazu Hasunuma, Middle East & Africa Office, Trade Policy bureau

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 29 May 2003

Place: Tokyo

Contact Reports: Tokyo Mitsubishi Securities

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Junji Hatano, Chairman, Clean Energy Finance Committee

Mari Yoshitaka, Project Manager/Senior Analyst

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 29 May 2003

Place: Tokyo

Contact Reports: Mitsubishi Natsource

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Makoto Katagiri, Executive Vice President

Norio Suzuki, Senior Manager

Eiji Takizawa, Manager

Hiroshi Ross Aoyama, Project Manager

Ayiko Yoshizawa, Intern

ITPO Tokyo: F Gelegen, S Raubenheimer, H Negishi

Contact date: 29 May 2003

Place: Tokyo

Contact Reports: MITSUI Engineering and Shipbuilding Co.

Country: Japan

Subject: South Africa CDM Guide and Project Developers' Portfolio

Persons present:

Tadashi Katsuyama, Manager, Technology Management Department

Hideaki Yura, Manager, Sales Department

Masahide Yamakawa, General Manager, Overseas projects

Toshiaki Murata, Technical Consulting Adviser

ITPO Tokyo: S Raubenheimer, H Negishi

Contact date: 29 May 2003

Place: Tokyo

Conclusions and recommendations

Some 23 projects were introduced by the South African participant of the CDM Delegate Programme to potential Japanese investors in the course of the duration of the Programme, which entailed approximately 30 meetings including a seminar and a roundtable discussion. The activities were attended by some 64 businessmen, government officials and other stakeholders. Some of the projects of the South African portfolio were already quite advanced in terms of their development, while others were in the initial phase of design and formulation. The Ministry of Economy and Trade (METI) and the New Energy and Technology Development Organization (NEDO) generously supported the Programme. The Embassy of South Africa showed keen interest and also provided support to the Programme.

The outcome of the meetings showed that the Japanese Government and private sector companies are keen to find opportunities to be involved in CDM or JI projects. As mentioned earlier, this is reflected in a proactive policy of the Government. At the moment, however, the policy gives priority to the Asia Pacific region. Japanese companies, on the other hand, are clearly interested in markets such as South Africa, where large numbers of carbon emissions can be mitigated through joint venture projects or through outright purchase of CERs. Given the considerable interest in CDM investment in South Africa by the Japanese business and industry community, it was suggested that Japan could consider South Africa and Brazil (the other country participating in the UNIDO CDM Delegate Programme) as partners for CDM project activities and encourage and support capacity building work in these countries in a way similar to that of some EU governments, such as Denmark, Finland, Netherlands, etc.

The Japanese participants at the meetings raised questions about the institutional infrastructure necessary to launching CDM programmes in each of the participating countries. They were particularly interested in the Designated National Authority and its status and activities, as well as the rules and regulations governing the CDM transactions.

As CDM and the Kyoto Protocol represent new fields of global business activity, there is a clear gap between various capacity building activities undertaken in countries that would become potential hosts of CDM projects and also in those that would act as CDM project investors. In both cases there is an information gap about the current status and trends of the carbon market, rules and procedures elaborated by the CDM Executive Board and relevant COP meetings to guide project developers throughout the stages of the CDM project cycle as well as a clear understanding and knowledge of GHG mitigation opportunities in the industrial sector. In particular, the share of energy efficiency projects in the portfolio of both participating countries is rather low, indicating that more capacity building work in this area is necessary.

Judging by the enthusiasm of the participants, it is evident that the UNIDO ITPO CDM Delegate Programme in Japan has filled an important capacity gap faced by both potential hosts and potential investors of CDM projects. The Programme also resulted in upgrading and extension of the existing institutional capacity of UNIDO to enable the promotion of investment into CDM projects, using promotion expertise, techniques and methodologies that have been tested through many years of promoting industrial investment projects around the world. UNIDO plans to expand its newly developed CDM Delegate Programme to other countries and establish a parallel programme that would cover Joint Implementation (JI) projects.

The South African programmes and projects will be actively followed up with the help of the UNIDO ITPO office in Tokyo, which is already working on several requests for cooperation from Japanese companies. As UNIDO is discussing with the project partners the continuation of activities of the United Nations Interagency project on capacity building for CDM, the expansion of the CDM Delegate programme to include other ITPO offices is envisaged.

South Africa—CDM Investment Promotion Programme

JBIC (Japan Bank for International Cooperation).

NEDO Seminar.

NEDO, with Messrs. Ochiai, Nakanishi and September (Embassy).

Marubeni Corporation.

Marubeni Corporation.

Sumitomo Corporation.

South Africa—CDM Investment Promotion Programme

Roundtable: Mitsubishi Research Institute (MRI).

Interview: Nikkan Kogyo Shimbun.

Chubu Electric Power Co., Inc.

Toyota Tsusho Corporation.

METI, Global Environment Affairs Section.

METI, Middle East-Africa Office.

South Africa—CDM Investment Promotion Programme

Mitsubishi Securities Co., Ltd.

Natsource Japan Co., Ltd.

Embassy of South Africa.

UNIDO ITPO Tokyo farewell.

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13. ANNEXURE A

List of Industry Associations

A1 National Institute for Explosive Technology

A2 Textile Federation

A3 Chemical and Allied Industries' Association

A4 South Africa Stainless Steel Development Association

A5 Agricultural Business Chamber

A6 South Africa Sugar Association

A7 National Association of Automobile Manufacturers of South Africa

A8 The South African Wind Energy Association

A9 South African Institute of Forestry

A10 South African ISI (Iron and Steel Industries)

A11 Aluminium Federation of South Africa

A12 Chamber of Mines of SA

A13 Technical Association of Pulp and Paper of South Africa

A14 Plastics Federation of South Africa

A15 The Aerosol Manufacturers' Association of SA

A16 Cement and Concrete Institute Association/ Association of Cementitious Material Producers

A17 Paper Manufacturers of SA

A18 Commercial Aviation Association of SA

A19 Pharmaceutical Manufacturers of SA

A20 Packing Council of SA

A21 Road Freight Association of SA

A22 South African Petroleum Industry Association

A23 National Automobile Parts Association

A24 Institute of Waste Management of SA

A25 National Institute of Pharmaceutical Manufacturers

A26 South African Road Federation

A27 Association of Marine Underwriters

CDM PROJECT Industry Association INFORMATION TEMPLATE

A1

Name of Organisation	National Institute for Explosives Technology
Logo of Organisation	
Nature of services given by organisation	Fostering the interests of the South African Explosives Industry by assisting with the drafting of legislation, supporting training initiatives and conferences for our members and interest groups and providing a neutral platform in the industry. Dissemination of information.
Contact Person	Mr. F. van Rooyen
Physical address	Kenson Street 518 Constantia Park Pretoria South Africa
Telephone and fax number	012 9983933 (tel. and fax)
Email address and website	nixt@nixt.co.za
Nature of interest in CDM	No specific CDM knowledge but committed to reduction of environmental contamination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A2

Name of Organisation	***13.1.1.1 Textile Federation***
Logo of Organisation Insert logo	
Nature of services given by organisation	Textile Trade Association
Contact Person	Brian Brink
Physical address	2nd floor, Liberty Gardens, 10 South Boulevard, Bruma, Johannesburg RSA
Telephone and fax number	27 (0) 11 615-4007 27 (0) 11 615-9857
Email address and website	texfed@jhbmail.co.za texfed.co.za
Nature of interest in CDM	Support for cleaner textile production

CDM PROJECT Industry Association INFORMATION TEMPLATE

A3

Name of Organisation	Chemical and Allied Industries' Association
Logo of Organisation Insert logo	  Responsible Care
Nature of services given by organisation	Management responsible care advocacy on behalf of members. Information on areas of interest
Contact Person	Dr Laurraine Lotter
Physical address	15th Floor 25 Owl Street (cor Empire Road)
Telephone and fax number	Tel: (011) 482-1671/4 Fax: (011) 726-8310
Email address and website	Email: caia@iafrica.com Web:www.caia.co.za
Nature of interest in CDM	Encouragement of chemical industry to participate support to member companies

CDM PROJECT Industry Association INFORMATION TEMPLATE

A4

Name of Organisation	Southern Africa Stainless Steel Development Association (Sassda)
Logo of Organisation Insert logo	Sassda SOUTHERN AFRICA STAINLESS STEEL DEVELOPMENT ASSOCIATION
Nature of services given by organisation	Industry support and development through education and training, technical support, investment and export promotion, establishment of development platforms and clusters
Contact Person	Dr. Oliver F. R. A. Damm (Executive Director)
Physical address	1 Mutual Place, Rivonia, South Africa
Telephone and fax number	Tel.: +27 11 803 5610 Fax.: +27 11 803 2011
Email address and website	odamm@sassda.co.za www.sassda.co.za
Nature of interest in CDM	Potential collaboration with investors and technology partners to promote cleaner production and sustainable development within the stainless steel industry in Southern Africa.

CDM PROJECT Industry Association INFORMATION TEMPLATE

A5

Name of Organisation	Agricultural Business chamber
Logo of Organisation Insert logo	
Nature of services given by organisation	The Agricultural Business Chamber (ABC) is the umbrella mouthpiece of agricultural producers' businesses. The ABC therefore stands next to SABEK, the AHI and NAFCOC as a sectoral organisation. The ABC Office is situated in Pretoria and forms a powerful united front with Agri SA where commercial farmers' general, commodity and business interests are co-ordinated within one national organisation.
Contact Person	The Executive Director
Physical address	Agricultural Business Chamber P O Box 1508 PRETORIA South Africa 0001
Telephone and fax number	Tel.. no. (012) 322-7181 Fax. no. (012) 320-0787
Email address and website	E-mail: lbk@agriinfo.co.za http://www.agriinfo.co.za
Nature of interest in CDM	Co-ordination within membership

CDM PROJECT Industry Association INFORMATION TEMPLATE

A6

Name of Organisation	South Africa Sugar Association	
Logo of Organisation Insert logo	designed by www.epages.net SOUTH AFRICAN SUGAR ASSOCIATION	
Nature of services given by organisation	Industry association and co-ordination	
Contact Person	MK Trikam	
Physical address	170 Flanders Drive Mount Edgecombe KwaZulu-Natal 4300	MK Trikam
Telephone and fax number	**Telephone International:** +27 31 508 7007 **Telephone South Africa:** (031) 508 7007 **Fax International:** +27 31 508 7197 **Fax South Africa:** (031) 508 7197	**Postal Address:**
Email address and website		P.O. Box 700 Mour Natal 4300
Nature of interest in CDM	Co-ordination	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A7

Name of Organisation	NATIONAL ASSOCIATION OF AUTOMOBILE MANUFACTURERS OF SOUTH AFRICA
Logo of Organisation Insert logo	naamsa
Nature of services given by organisation	Co-ordination with members
Contact Person	**Mr. Nico M Vermeulen**
Physical address	1st Floor Nedbank Plaza cnr. Church & Beatrix Streets **PRETORIA 0002**
Telephone and fax number	Phone: (**012**) **323-2980** Fax: (**012**) **326-3232**
Email address and website	**www.naamsa.co.za**
Nature of interest in CDM	

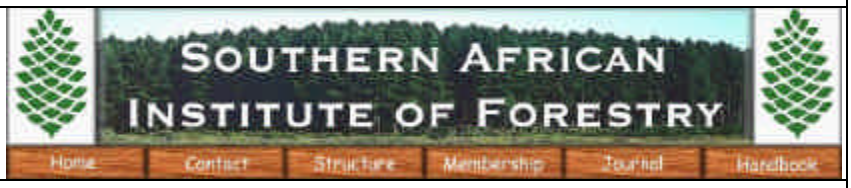
CDM PROJECT Industry Association INFORMATION TEMPLATE

A8

Name of Organisation	The South African Wind Energy Association
Logo of Organisation Insert logo	
Nature of services given by organisation	**The South African Wind Energy Association is a non-profit organisation established to further the use of wind energy in South Africa. We lobby government, build links with business and labour organisations, and inform people of the economic and environmental benefits of using wind energy for electricity generation.**
Contact Person	
Physical address	P.O. Box 837, Sunvalley 7975, Republic of South Africa
Telephone and fax number	Tel: +27 21 789 2009
Email address and website	
Nature of interest in CDM	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A9

Name of Organisation	South African Institute of Forestry
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	Dr Colin Smith
Physical address	Postnet suite 329 Private Bag X4 Menlopark 0102 South Africa
Telephone and fax number	Telephone/Fax : 012 - 348 1745
Email address and website	forestry@mweb.co.za
Nature of interest in CDM	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A10

Name of Organisation	South African
Logo of Organisation Insert logo	
Nature of services given by organisation	SAISI is a non-profit and non-governmental representative organisation serving the collective interests of the primary steel industry in South Africa.
Contact Person	Mr Johan Louw
Physical address	**PO Box 6318, PRETORIA, 0001,** **SOUTH AFRICA**
Telephone and fax number	**Tel: +2712 320-2450** **Fax: +2712 320-1150**
Email address and website	**e-mail: saisi@saisi.co.za** www.saisi.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A11

Name of Organisation	Aliminium Federation of South Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination of members
Contact Person	Dr A E Paterson
Physical address	**Physical Address:** The Birches, Riverwoods Office Park Cnr Johnson Road & Civin Drive, Bedfordview South Africa
Telephone and fax number	Telephone: +27(11) 453 3339 Fax: +27(11) 453 3403
Email address and website	General E-mail: afsa@afsa.org.za www.afsa.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A12

Name of Organisation	Chamber of Mines of SA
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination of members
Contact Person	Mr M G Dilza, Nicks Lesufi
Physical address	5 Hollard Street Marshalltown Johannesburg
Telephone and fax number	Tel: +27 11 498-7100 Fax: +27 11 834-1884
Email address and website	E-mail: webmaster@bullion.org.za Mining and trade enquiries: rboers@bullion.org.za CEO: pmitchell@bullion.org.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A13

Name of Organisation	Association of Pulp and Paper Industry of South Africa
Logo of Organisation Insert logo	TAPPSA TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY OF SOUTHERN AFRICA
Nature of services given by organisation	Co-ordination
Contact Person	**TAPPSA National Chairman - Jim Casey**
Physical address	Postal address: PO Box 1633, Kloof 3640
Telephone and fax number	Tel: (021) 951 6131 Fax: (021) 951 2900
Email address and website	email jimcasey@icon.co.za www.tappsa.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A14

Name of Organisation	Plastics Federation of South Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	
Physical address	Postal address Private Bag X68, Halfway House, 1685 South Africa
Telephone and fax number	Telephone +27 11 314 4021 Fax +27 11 314 3764/5
Email address and website	enquiries@plasfed.co.za www.plasticsinfo.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A15

Name of Organisation	Aerosol Manufacturers Association of SA
Logo of Organisation Insert logo	THE AEROSOL MANUFACTURERS' ASSOCIATION South Africa (INCORPORATED ASSOCIATION NOT FOR GAIN) Registration No:63/06547/08
Nature of services given by organisation	The AMA was formed in 1963 and represents companies involved in the supply, manufacture and marketing of aerosols.
Contact Person	Mike Naude
Physical address	PO BOX 483 Olifantsfontein 1665
Telephone and fax number	011 318 2716
Email address and website	ama@uskonet.com www.aerosol.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A16

Name of Organisation	Cement and Concrete Institute Association of Cementitious Material Producers
Logo of Organisation Insert logo	
Nature of services given by organisation	Our mission is to promote the usage of cementitious materials to policy makers, specifiers and 'owners' and, at the same time, protect the use of these materials in existing markets.
Contact Person	Naude Klopper
Physical address	PO BOX 10181 Centurion 0046
Telephone and fax number	012 663 5146 FAX : 012 663 6036
Email address and website	Naudek.acmp@mweb.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A17

Name of Organisation	Paper Manufacturers of South Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Assist members with CDM issues
Contact Person	Mr John Hunt
Physical address	Cor. Austin & Morris Sts Woodmead Santon P.O.Box 1553 Rivonia 2128 South Africa PO BOX 1553, Rivonia 2128
Telephone and fax number	Tel: 011 803 5063 Fax: 011 803 6708
Email address and website	John_hunt@pamsa.co.za www.pamsa.co.za
Nature of interest in CDM	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A18

Name of Organisation	Commercial Aviation Assoc of Southern Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	CEO Mr Peter Piggott
Physical address	PO BOX 7283, Half way House 1685
Telephone and fax number	Tel: 011 805 0680 Fax: 011 805 0599
Email address and website	caasa@iafrica.com www.caasa.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A19

Name of Organisation	Pharmaceutical manufacturers of South Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	Erika Pinto
Physical address	PO BOX 12123, VOrna Valley 1686
Telephone and fax number	TEL: 011 8055100 Fax: 011 805 5109
Email address and website	pma@iafrica.com
Nature of interest in CDM	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A20

Name of Organisation	Packaging Council of South Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	It is our vision to have the full social, economic and environmental value of packaging acknowledged by all relevant sectors of society.
Contact Person	Mr O Bruyns
Physical address	Postal address: PO Box 782205, Sandton 2146, South Africa.
Telephone and fax number	Telephone: +27 11 783 4782 Fax: +27 11 8837170
Email address and website	E- mail: Owen Bruyns, Executive Director packagec@cis.co.za Website: www.packagingsa.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A21

Name of Organisation	Road Freight Association of SA
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	Nico Badenhorst
Physical address	PO BOX 7 Randburg 2125
Telephone and fax number	TEL: 012 3203450 FAX: 9985533
Email address and website	epm@xsinet.co.za
Nature of interest in CDM	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A22

Name of Organisation	SOUTH AFRICAN PETROLEUM INDUSTRY ASSOCIATION
Logo of Organisation Insert logo	SAPIA
Nature of services given by organisation	
Contact Person	Colin McClelland - Director
Physical address	14th Floor ABSA Centre Adderley Street Cape Town 8001 South Africa
Telephone and fax number	**Tel:** +27 (0)21 419-8054 **Cel:** +27 (0)82 807-3400 **Fax:** +27 (0)21 419-8058
Email address and website	cmcclel@icon.co.za www.mbendi.co.za/sapia
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A23

Name of Organisation	National Automobile Parts Association
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	CEO: Gordon Odgers
Physical address	PO BOX 100028, Edevale
Telephone and fax number	TEL: 011 879 6280 FAX: 011 4540207
Email address and website	godgers@midas.co.za
Nature of interest in CDM	

CDM PROJECT Industry Association INFORMATION TEMPLATE

A24

Name of Organisation	Institute of Waste Management of South Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination of landfills
Contact Person	Mr Peter Novella
Physical address	PO BOX 48533, Roosevelt Park 2129
Telephone and fax number	Tel: 011 6753462 Fax: 011 675 3465
Email address and website	iwmsa@iafrica.com
Nature of interest in CDM	Already involved in building capacity for landfill projects in SA

CDM PROJECT Industry Association INFORMATION TEMPLATE

A25

Name of Organisation	National Institute of Pharmaceutical Manufacturers
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	Mr Mzi Mabenge
Physical address	PO BOX 87567 Houghton 2041
Telephone and fax number	Tel : 011 442 3656 Fax: 011 442 3685
Email address and website	napm@mweb.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A26

Name of Organisation	South African Road Federation
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination; transport projects
Contact Person	Mrs Dian Miles, Executive Secretary Executive Director Dr. Malcolm Mitchell 4 Nkutu House 7 Nqutu Road Hillcrest KZN 3610 Tel : (031) 765 1046 E-mail : mmitchell@csir.co.za Cell : 083 460 0353
Physical address	PO BOX 8180, Johannesburg 2000
Telephone and fax number	Tel: 011 402 5603 Fax: 011 403 7736
Email address and website	sarfusel@acenet.co.za
Nature of interest in CDM	Co-ordination

CDM PROJECT Industry Association INFORMATION TEMPLATE

A27

Name of Organisation	Association of Marine Underwriters
Logo of Organisation Insert logo	
Nature of services given by organisation	Co-ordination
Contact Person	Jacque Brand
Physical address	PO BOX 857, Cape Town, 8000
Telephone and fax number	Tel: 021 419 5445 Fax: 021 419 1170
Email address and website	jacquesb@amua.co.za
Nature of interest in CDM	Co-ordination

CLEAN DEVELOPMENT MECHANISM (CDM)

investor guide

South Africa

Annex B: CDM projects in development

This annex contains the self-generated list of project details granted on a voluntary basis by some project developers in South Africa. This list is constantly being updated and the individual projects are listed under the numbers B1, B2, etc.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna, 2003

ANNEX B

CDM Project Ideas from South Africa following limited survey

RSA/001	New England Road Landfill Gas Extraction	Landfill Gas
RSA/002	Durban Landfill Gas to Electricity	Landfill Gas
RSA/003	Stellenbosch Rural Hamlets	Housing / energy efficiency
RSA/004	Bellville-South Landfill Gas CDM Activity	Landfill Gas
RSA/005	Low-cost urban housing upgrade, Khayelitsha	Housing / energy efficiency
RSA/006	Using cooking liquor as furnace fuel and recovery of cooking chemicals	Biomass recovery
RSA/007	Biomass waste recovery for use as alternative fuel in biomass boilers	Biomass recovery
RSA/008	Local Authority Landfill gas recovery project	Landfill Gas
RSA/009	Zimele Efficient Lighting in Rustenburg Mines	Energy efficiency
RSA/010	Application of Photovoltaic System Joubert Park Project	Energy efficiency
RSA/011	Buffalo Flats Community Community Sustainable Housing Project	Housing / energy efficiency
RSA/012	Gasification of Biomass and Waste	Biomass recovery
RSA/013	Maphepheteni Project: Anaerobic biogas generation	Biomass recovery

RSA/014	Northern Gauteng Technikon Solar Heating Project	Energy efficiency
RSA/015	Shaft Veterans' Energy Efficient Houses	Housing
RSA/016	Apricot Inc. Farm Scale Ethanol Production Plant	Energy Conversion
RSA/017	Lekoa Water Co. Electricity Generation	Energy Conversion
RSA/018	Transnet Portfolio	Housing / energy efficiency
RSA/019	Don Apartment Hotels Energy Conservation	Housing / energy efficiency
RSA/020	Chris Hani Baragwanath Hospital	Housing / energy efficiency
RSA/021	Johannesburg Inner City Housing Upgrade	Housing / energy efficiency
RSA/022	SA Breweries	Anaerobic digestion
RSA/023	Natal Portland Cement	Fuel switching/AFRM

RSA 001

ECTION A **Name of Project Developer**	Msunduzi Municipality
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Government
Contact Person	R Raghunandam/ S Townsend
Physical address	150 Mayors Walk, Pietermaritzburg, 3201
Telephone and fax number	Tel: Fax:
Email address and website	Email: townsends@pmbcc.gov.za Web:
Nature of interest in CDM	Project Developer

SECTION B

PROJECT NAME:

NEW ENGLAND ROAD LANDFILL GAS EXTRACTION

Project description Eg: Landfill gas; biodiesel.	Landfill Gas
Technology to be applied and general outline Give a brief description of the technology to be employed and the general	

scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated	X	
	basic planning	X	
	feasibility study	X	
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project			
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane	methane		

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years				
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**

RSA 002

SECTION A

Name of Project Developer	The eThekwini Municipality (Durban, South Africa)
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Government (Waste Management)
Contact Person	Lindsay Strachan (Project Manager)
Physical address	17 Electron Road, Springfield, Durban, 4001
Telephone and fax number	Tel: 031-263 1371/2 Fax: 031-263 0904
Email address and website	Email: Lindsay@dmws.durban.gov.za Web: www.durban.gov.za
Nature of interest in CDM	1. Landfill Gas Utilisation Project 2. Carbon-Black Production / tyre recycling project 3. Sea-lift Hydro power project

SECTION B

PROJECT NAME:

Durban Landfill Gas to Electricity Project (eThekwini Municipality, South Africa)

Project description Eg: Landfill gas; biodiesel.	Landfill gas extraction for methane destruction in spark ignition turbines and the production of up to 10 MW of electrical power fed directly into the existing grid.
Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Technology to be applied: Landfill gas from municipal landfills is a routine feedstock for spark ignition engine generators that can be commercially procured from multiple international firms through a competitive bid process. Such equipment is now commonly and successfully used in many parts of the world, including the industrialized countries in North America, Europe, and Asia, and has been successfully applied in other developing countries. The gas collection system for the flaring as installed in the Durban landfill sites should prove adequate as a pre-injection treatment system for the engine-generators. General Outline: The Durban municipal landfill sites currently collect and flare methane at the Mariannhill and Bisasar Road landfills, and the landfill at La Mercy passively vents landfill gas to the atmosphere. The objective is to use this methane to generate electricity to displace coal-fired energy purchased from the grid for up to 10 MW of capacity initially, and for this to serve as a model for Durban and other municipalities to follow with a total installed capacity of at least 50 MW (half of the estimated national potential). The Durban municipal landfill sites at Mariannhill and Bisasar Road are based on a modern cellular approach with methane recovery built into the cells, and a flaring system installed to dispose of the methane in an environmentally acceptable manner. These landfills are sized and operated to be used for up to 15 more years. The municipality also purchases electricity from the municipal electric company that purchases its electricity primarily from Eskom. Eskom electricity is among the lowest cost sources of electricity in the world. The vast majority of Eskom generated electricity is derived from fully depreciated, mine-mouth coal-fired power stations. The cost of a gas-fired piston engine generator is too high in the current market context to be substituted for the flare, but with an emissions reduction revenue the installation can be justified. The project would be designed to install generation capacity at the multiple landfill sites in progressive steps based on a methane recovery projection plan as cells are put into service. The interconnection with the electricity grid would preferably be at the lower voltage levels for local supply and consumption, but it could in large capacity cases be injected into the higher voltage system at a higher interconnection cost. Off the shelf piston engine generation technology will then be specified, ordered, and be put into operation in sequential steps. The activities in Durban could then be used as a template for

<table>
<tr><td></td><td colspan="3">replicating in other municipalities such as Johannesburg, Pretoria, Cape Town, Port Elizabeth, and other relatively large scale metropolitan areas.</td></tr>
<tr><td rowspan="10">Status of CDM activity
Insert an x in appropriate column where applicable</td><td></td><td>In progress</td><td>Completed</td></tr>
<tr><td>contemplated</td><td></td><td>x</td></tr>
<tr><td>basic planning</td><td></td><td>x</td></tr>
<tr><td>feasibility study</td><td></td><td>x</td></tr>
<tr><td>project design document</td><td></td><td>x</td></tr>
<tr><td>business plan</td><td></td><td>x</td></tr>
<tr><td>validation</td><td></td><td>x</td></tr>
<tr><td>approval</td><td>x</td><td></td></tr>
<tr><td>EIA and public processes</td><td>x</td><td></td></tr>
<tr><td>registration</td><td>x</td><td></td></tr>
<tr><td>presentation for investment</td><td>x</td><td></td></tr>
<tr><td>Project participants
All partners in project</td><td colspan="3">Largely an "in-house" project by the eThekwini Municipality. The City has had discussions with the BMF & DBSA with regards to direct involvement in the project. There have be several other requests from both National & International sources. Canada and associated companies have shown significant interest.</td></tr>
<tr><td>Description of baseline methodology
If completed</td><td colspan="3">The project will result in GHG emissions being lower than "business-as-usual" in South Africa:
What is the proposed Clean Development Mechanism (CDM) project displacing? The electricity sector of South Africa is supplied primarily by the parastatal utility company Eskom. Eskom has primarily coal-fired generation capacity and at least 90% of the MWh produced by Eskom are derived from coal. Eskom currently has a large surplus of coal-fired generation capacity and the baseline will therefore be coal for quite a few years to come since the Eskom price is based on its short run marginal cost which is very low at much less than 1 US cent per kWh produced. The landfill baseline is partial landfill gas collection and flaring and current systems extract and flare some 500m3/hr of LFG. Council budgets have been significantly rationalised with the result of curtailing all funds for LFG management. Funds are offered for strict compliance with National regulations only. The CDM project (with the PCF) can enable additional gas recovery and reduce emissions of methane to the atmosphere.
What would the future look like without the proposed CDM project? Eskom will continue to dispatch its coal-fired capacity to meet the Durban municipal needs and to bring its mothballed coal-fired capacity on line as and when needed since it is clearly the least cost option in the marketplace. DSW would continue to implement its gas collection and flaring at the level of recent years and would not achieve the full emission reduction potential for the Bisasar Road site. Effective gas extraction</td></tr>
</table>

<table>
<tr><td></td><td colspan="4">would reduce annually until systems are defunct – by 2005 is the estimate.
• What would the estimated total GHG reduction be? The country potential for productive use of landfill gas projects is estimated to be close to 100 MW. The initial agreement herein is targeted to capture about 10% of that total or 10 MW. That 10 MW implemented would result in a 15 year potential reduction of 1.614 million tons of CO_2 to the atmosphere plus 270,000 tons of methane. Total equivalent carbon for CER's for the CDM will be no fewer than 3.8 million tons.</td></tr>
<tr><td>Greenhouse gas avoided or reduced
Eg: Carbon dioxide; methane</td><td colspan="4">The greenhouse gases targeted are primarily CO_2 from displacing coal-derived kWh and some additional amount of CH_4 gained from accelerating the deployment of gas collection wells beyond that historically enabled by the municipal budgets approved for DSW.</td></tr>
<tr><td>Emissions to be avoided/reduced and lifetime of project
Eg: 10 000tons CO2 equivalent over ten years</td><td colspan="4">3.8 million tons of CO2 equivalent over the agreement period of 10 years. However, the following calculations show:
Annual for 10 MW total: 107,600 tons CO_2 + (Incremental Methane of 75%* of 24,000 tons or 18,000 tons X 21) = 485,600 tons CO_2 equivalent
Up to and including 2012: 1,022,200 tCO_2 + (171,000 tCH_4 X 21) = 4,613,200 tons CO_2 equivalent
Up to a period of 10 years: 1,076,000 tCO_2 + (180,000 tCH_4 X 18) = 4,856,000 tons CO_2 equivalent
Up to a period of 7 years: 753,200 tCO_2 + (126,000 tCH_4 X 18) = 3,399,200 tons CO_2 equivalent
Up to a period of 14 years: 1,506,400 tCO_2 + 252,000 tCH_4 X 18 = 6,798,400 tons CO_2 equivalent</td></tr>
<tr><td rowspan="2">Nature of application of technology
Place x in appropriate block</td><td colspan="2">Retrofit of existing project</td><td colspan="2">Greenfields project</td></tr>
<tr><td colspan="2">x</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Technology types
Place x or details in appropriate block</td><td>Locally available</td><td>New</td><td>Needed</td><td>Partner sought</td></tr>
<tr><td>x</td><td>x</td><td></td><td></td></tr>
<tr><td rowspan="2">Financing
Place x or details in appropriate block</td><td>Self financed</td><td>Finance to be sourced locally</td><td>Finance required from CDM investor</td><td>Other details</td></tr>
<tr><td>X (at this stage)</td><td></td><td></td><td></td></tr>
</table>

SECTION C

MANDATE

I,

Your name and organisation	-

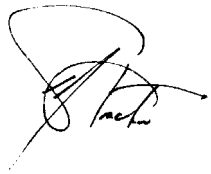
support the development by UNIDO of a South African CDM Project Developers' Portfolio and Investors' Guide.

On the basis that the lead consultants (appointed by UNIDO) and advisory team do not in any way act on our behalf as broker or agent, I hereby grant their appointee our mandate to present the PORTFOLIO and GUIDE to a selection of Japanese industry and other representatives.

Signed: -

Dated: -

Disclaimer: The eThekwini Municipality, in association with the PCF are already carrying out discussions with certain Japanese based companies. It is not required, nor is it advisable, that we consult with other concerns at this stage. However, the eThekwini Municipality has no problem with these statistics being presented, so long as the full acknowledgement of the information sources goes to the eThekwini Municipality and the Prototype Carbon Fund (PCF) and World Bank.



Lindsay Strachan
CDM Project Manager
eThekwini Municipality

RSA 003

SECTION A

Name of Project Developer	The Boland District Municipality
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Government
Contact Person	Kam Chetty, Municipal Manager
Physical address	46 Alexander Street, Stellenbosch, 7599
Telephone and fax number	Tel: 021-887 2900 Fax: 021-887-2271
Email address and website	Email: mm@bolanddm.co.za Web:
Nature of interest in CDM	An option through which the local authority would be able to provide sustainable and energy efficient low-cost housing

SECTION B

PROJECT NAME:

Stellenbosch Rural Hamlets

Project description Eg: Landfill gas; biodiesel.	The project activity is an addition to a greenfield rural hamlet housing project introducing efficiency improvements and various improvements in the embodied energy of the building materials to 3700 yet to be constructed dwellings (some of the impacts of the interventions are yet to be estimated). The housing delivery is aimed at upgrading tenure rights for farm workers. The Hamlets are all within a 100km radius of the Metropolitan area of Cape Town in the Stellenbosch District

<table>
<tr><td></td><td>of the Western Cape, South Africa. Without CDM intervention, the hamlets would be constructed along the lines of a conventional model, which would be far less sustainable.

The following will comprise elements of the proposed CDM project activity:
• Solar water heating through the introduction of solar water heaters instead of electrified geysers;,
• The introduction of stoves using LPG as opposed to electricity;
• Efficient lighting with a change from incandescent to compact fluorescent bulbs;
• Improved thermal performance through:
- Choosing the building materials and components with regard to their embodied energy, toxicity, environmental impact, durability and recycle ability taking into account embodied energy in their utilisation and therefore local materials will be used, such as earth bricks;
- Orientation and design for energy efficiency and natural climate controls using passive solar design; and
- The addition of insulation and ceilings in the houses to reduce the need for electrified space heating.
• Solid waste management that uses recycling on site where possible and thereby reducing trips to and from the landfill site in Stellenbosch;
• Wastewater-Biolytic filtration technology will be used for the wastewater treatment. This technology allows rapid, odour-free environmentally appropriate filtration that produces high quality filtrate without the use of chemicals. This filtrate can be recycled for irrigation or other uses, or discharged into rivers. Methane is emitted when human waste (sewage) is treated anaerobically, for example in anaerobic ponds or lagoons. The Biolytic filtration method would treat the waste aerobically with zero methane production.</td></tr>
<tr><td>Technology to be applied and general outline
Give a brief description of the technology to be employed and the general scope of the project</td><td>• Solar water heaters The introduction of stoves using LPG as opposed to electricity;
• Compact Fluorescent lighting
• Improved thermal performance through:
- Choosing the building materials and components with regard to their embodied energy, toxicity, environmental impact, durability and recycle ability taking into account embodied energy in their utilisation and therefore local materials will be used, such as earth bricks;
- Orientation and design for energy efficiency and natural climate controls using passive solar design; and
- The addition of insulation and ceilings in the houses to reduce the need for electrified space heating.
• Wastewater-Biolytic filtration technology</td></tr>
<tr><td>Status of CDM activity
Insert an x in appropriate column where applicable</td><td>
<table>
<tr><th></th><th>In progress</th><th>Completed</th></tr>
<tr><td>contemplated</td><td></td><td>X</td></tr>
<tr><td>basic planning</td><td>X</td><td></td></tr>
<tr><td>feasibility study</td><td></td><td></td></tr>
<tr><td>project design document</td><td>X</td><td></td></tr>
<tr><td>business plan</td><td>X</td><td></td></tr>
<tr><td>validation</td><td></td><td></td></tr>
<tr><td>approval</td><td></td><td></td></tr>
<tr><td>EIA and public processes</td><td>X</td><td></td></tr>
</table>
</td></tr>
</table>

	registration		
	presentation for investment		
Project participants All partners in project	The Boland District Municipality		
Description of baseline methodology If completed	Not Completed		
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			
Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	Addition of ceilings *Roof insulation* *CO_2/year* *Electricity to LPG for cooking* *Solar Water Heating* *CO_2/year* *Change to compact fluorescent lighting* *Shared wall housing* */year* *Change from Concrete block to Rammed earth walls* *Biolytix filtration* *CO_2/year* *Recycling Waste* *CO_2/year* ***Total GHG Emissions Avoided***	702 tons CO_2/year *74 tons* *3345 tons CO_2/year* *3330 tons* *261 tons CO_2/year* *248 tons CO_2* *310.8 tons CO_2/year* *0.899 tons* *5.44 tons* ***8277.139 tons CO_2/year***	

Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 004

SECTION A

Name of Project Developer	The City of Cape Town
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Government
Contact Person	• Peter Novella – Head of Solid Waste Disposal (City of Cape Town Solid Waste) • Craig Haskins- Key Project Researcher (City of Cape Town Environmental Management Department)
Physical address	- 9th Floor, 38 Wale Street, Cape Town, 8000 - 9th Floor, 44 Wale Street, Cape town, 8000
Telephone and fax number	Tel: 021-487-2716 Fax: 021-487-2476 Tel: 021-4872832 Fax:
Email address and website	Email: Peter.Novella@capetown.gov.za Email:Craig.Haskins@capetown.gov.za Web:
Nature of interest in CDM	Managing the closure of a municipal landfill

SECTION B

PROJECT NAME:

Bellville-South Landfill Gas CDM Activity

Project description Eg: Landfill gas; biodiesel.	The recovery and use of landfill gas at Bellville South landfill site (Cape Town; South Africa) for the generation of renewable energy and subsequent utilisation by the adjacent industrial community.		
Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	The technology which will be applied in the first project activity, includes, interconnected gas pipes, gas wells, leachate removers, dewatering system, demisting system, a blower and gas flaring system. For the second project activity, different options with respect to who will use the gas, is still being considered. One of the technology options includes, the retrofitting a plant which is currently using Low Sulphur Oil (LSO) as an energy source for its thermal energy purposes. This includes provision of the additional systems in each of the furnaces currently being used in the plant so that they are able to use the new fuel which is LFG (landfill gas). The long term objective of this CDM project activity is to gradually transform an "end of life" landfill into a "renewable energy/waste recovery park" which is not only environmentally rehabilitated but also provides socio-economic spin offs for the adjacent industrial and residential communities by creating jobs (through onsite recycling units) and provide renewable energy for a minimum of 15 years. This project consists of two project activities: Project activity will look at maximising the production of gas by actively extracting the Landfill gas from this site instead of progressively capping, whilst passively extracting and flaring the landfill gas as the city was expected to do.. Landfill gas generated from biomass is considered a renewable source of energy.Green energy (either in form of thermal or electrical energy) will be marketed to selected members of the adjacent industrial area (Bellville Sacks Circle) including a glass manufacturer (Consol glass) or nylon spinner (South African Nylon Spinners (SANS)) and/or the City Council owned Waste Water Treatment plant. The gas would be provided for a minimum of 15 years.		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning	X	
	feasibility study	X	
	project design document	X	
	business plan	X	
	validation		
	approval		
	EIA and public processes	X	
	registration		

	presentation for investment		
Project participants All partners in project	The City of Cape Town		
Description of baseline methodology If completed	**Baseline Methodology:** **The following baselines are being considered for the two considered project activities.** **First Baseline**: The Bellville South Landfill site's landfill gas which consists mainly of high concentrations of methane gas (about 57%),is not being utilised and is percolating into the atmosphere. The State, in correspondence with the City waste management has instructed the city to address "Gas management system " for this Landfill site by implementing a passive extraction system in which the gas will be passively extracted from the site and flared. Therefore this management system is considered a baseline for this project activity. **Second Baseline:** One of the potential landfill gas utilisation sites is SANS Fibre. The plant is situated in close proximity to the Bellville South Waste Disposal Site (BSWDS) SANS Fibres presently utilises 3 coal-fired boilers for steam generation and heating of 'thermic' (a heating medium utilised for their operations They have over the past 10 years been investigating the replacement of the coal-fired units with ones utilising electricity. Therefore, should the landfill gas be priced competitively with off-peak electricity, it, rather than coal generated electricity will displace the 18500 tons of coal utilised per year by the plant's three main boilers **Project Activity 1** This includes active extraction and the use of the land fill gas. **Project Activity 2** The landfill gas would directly replaced either: electricity, coal, HFO, LPG or LSO used either as furnace fuel (Consol) or to generate steam for process heat (SANS) in the baseline situation. Both project activities would not have happened without the active recovery of the landfill gas.		
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	Landfill gas will be available at an exploitable level for the next 15 years after which the technology can be transferred to other landfill sites or decommissioned. The crediting period for the project is for 10 years. Avoided emissions approximately 90.1 kilotonnes CO_2 equivalent	
	Retrofit of existing project	**Greenfields project**

Nature of application of technology Place x in appropriate block			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 005

SECTION A

Name of Project Developer	The City of Cape Town
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Government
Contact Person	Osman Asmal
Physical address	Cape Town, South Africa
Telephone and fax number	Tel: 021 - 918 7424 Fax:
Email address and website	Email: Osman.Asmal@capetown.gov.za Web:
Nature of interest in CDM	An option through which the local authority would be able to provide sustainable and energy efficient low-cost housing

SECTION B

PROJECT NAME:

Low-cost urban housing upgrade, Khayelitsha (Cape Town; South Africa)

Project description Eg: Landfill gas; biodiesel.	Low-cost upgrade in which low-cost houses will be retrofitted with an aim to improve thermal performance of housing units through the installation of ceilings, by providing energy efficient lighting and solar water heating in households in Kuyasa, Khayelitsha, Cape Town, South Africa.

<table>
<tr><td>Technology to be applied and general outline
Give a brief description of the technology to be employed and the general scope of the project</td><td colspan="3">The project activity relates to the following 3 interventions per household unit:
• Ceilings and roof insulation
• Solar water heater installation
• Energy Efficient Lighting</td></tr>
<tr><td rowspan="11">Status of CDM activity
Insert an x in appropriate column where applicable</td><td></td><td>In progress</td><td>Completed</td></tr>
<tr><td>contemplated</td><td></td><td>X</td></tr>
<tr><td>basic planning</td><td>X</td><td></td></tr>
<tr><td>feasibility study</td><td>X</td><td></td></tr>
<tr><td>project design document</td><td>X</td><td></td></tr>
<tr><td>business plan</td><td>X</td><td></td></tr>
<tr><td>validation</td><td></td><td></td></tr>
<tr><td>approval</td><td></td><td></td></tr>
<tr><td>EIA and public processes</td><td>X</td><td></td></tr>
<tr><td>registration</td><td></td><td></td></tr>
<tr><td>presentation for investment</td><td></td><td></td></tr>
<tr><td>Project participants
All partners in project</td><td colspan="3">The City of Cape Town</td></tr>
<tr><td>Description of baseline methodology
If completed</td><td colspan="3"><u>A Proposed Baseline Methodology for Kuyasa Housing Retrofit Project Activity.</u>
Baseline for this study will depend on assumptions about the future and it will based on the "take-back effect" and the "suppressed demand effect" which will be experienced, (Winkler and Thorne, 2002). Demand is suppressed due to mainly budget constraints or lack of infrastructure therefore by introducing energy savings that will mean households' income will increase allowing it to move to higher levels of service. However this may not be case, as even after the interventions, energy consumers might tend to spend their savings on more of this energy service, therefore energy consumption practices may not decline nearly as much as we would predict..

Therefore, in order to determine whether the question of suppressed demand will have an impact in determining a baseline for this project activity, it is important to determine the postulated levels of activity in future. This will be done by means of a 10 house demonstration project, in which the level of activities for proposed interventions will be captured, after the project activity. The capturing of levels of activities will be on:
• the impact of the technology on behavioural and attitudinal changes in the households,</td></tr>
</table>

<table>
<tr><td></td><td colspan="4">

- thermal performance modelling,
- Changes in levels of activity.

Based on an analysis of this captured information, it will therefore be possible to assess whether the baseline for the proposed project activity (intervention into 2309 houses), the existing level of activity, should be considered as the baseline, or whether the future expected level of activity, including "development" advances in the provision of energy services and resulting poverty alleviation, should be considered as the baseline.

</td></tr>
<tr><td>Greenhouse gas avoided or reduced
Eg: Carbon dioxide; methane</td><td colspan="4">Carbon Dioxide</td></tr>
<tr><td>Emissions to be avoided/reduced and lifetime of project
Eg: 10 000tons CO2 equivalent over ten years</td><td colspan="4">Solar Water Heaters 2078 tons CO_2/year
Addition of ceilings 460 tons CO_2/year
ADDITION OF CEILING INSULATION 46 TONS CO_2/ YEAR
Change from incandescent bulbs
to compact-fluorescent light bulbs 260.8 tons CO_2/year
Total Avoided Emissions for a crediting period
2844.8 tons CO_2/year</td></tr>
<tr><td rowspan="2">Nature of application of technology
Place x in appropriate block</td><td colspan="2">Retrofit of existing project</td><td colspan="2">Greenfields project</td></tr>
<tr><td colspan="2">• X</td><td colspan="2"></td></tr>
<tr><td rowspan="2">Technology types
Place x or details in appropriate block</td><td>Locally available</td><td>New</td><td>Needed</td><td>Partner sought</td></tr>
<tr><td>• X</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Financing
Place x or details in appropriate block</td><td>Self financed</td><td>Finance to be sourced locally</td><td>Finance required from CDM investor</td><td>Other details</td></tr>
<tr><td></td><td>X</td><td></td><td></td></tr>
</table>

RSA 006

SECTION A

Name of Project Developer	Mondi Kraft
Logo of Project Developer Insert logo	Mondi Ltd. Mondi Kraft A division of Mondi Ltd
Sector of Project Developer Eg: chemical industry, local government	Paper Industry
Contact Person	Ciska Terblanche
Physical address	Box 1551, Richards Bay, 3900, South Africa
Telephone and fax number	Tel: +27 82 898 5750 / 035 902 2111 Fax: 035 902 2229
Email address and website	Email: ciska_terblanche@mondikraft.co.za Web: www.mondikraft.co.za
Nature of interest in CDM	Recovery of organic waste to displace coal as a fuel and transfer of new technologies.

SECTION B

PROJECT NAME:

The use of the cooking liquor (black liquor) as a furnace fuel and the recovery of the cooking chemicals.

Project description Eg: Landfill gas; biodiesel.	The small old Felixton plant that produces 300 tonnes per day of cardboard from sugar cane bagasse for many years, had not considered the recovery and use of this liquor (through the full chemical recovery process) feasible. Instead

<table>
<tr><td></td><td>Felixton had been pumping this sodium carbonate and organic rich effluent out to sea, emitting it deep in the Mozambique channel along with industrial effluents from other plants in the highly industrialized Richards Bay area.

The project involves retrofitting the old plant with technology that recovers the chemicals and burns off the organic materials as a renewable fuel. This results in a reduction of the burning of coal and the manufacture, purchase and transport of replacement caustic soda. Co-benefits include a reduction in waste streams.</td></tr>
<tr><td>Technology to be applied and general outline
Give a brief description of the technology to be employed and the general scope of the project</td><td>A Connox-based technology which will recover chemicals and burn off the organic materials as a renewable fuel will be used.This technology is presently being designed and produced by a Finnish technology supplier, Conox.</td></tr>
<tr><td>Status of CDM activity
Insert an x in appropriate column where applicable</td><td>
<table>
<tr><th></th><th>In progress</th><th>Completed</th></tr>
<tr><td>contemplated</td><td>X</td><td></td></tr>
<tr><td>basic planning</td><td>X</td><td></td></tr>
<tr><td>feasibility study</td><td></td><td></td></tr>
<tr><td>project design document</td><td>X</td><td></td></tr>
<tr><td>business plan</td><td>X</td><td></td></tr>
<tr><td>validation</td><td></td><td></td></tr>
<tr><td>approval</td><td></td><td></td></tr>
<tr><td>EIA and public processes</td><td>X</td><td></td></tr>
<tr><td>registration</td><td></td><td></td></tr>
<tr><td>presentation for investment</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Project participants
All partners in project</td><td>Mondi Kraft, SSN</td></tr>
<tr><td>Description of baseline methodology
If completed</td><td>Not Completed</td></tr>
<tr><td>Greenhouse gas avoided or reduced
Eg: Carbon dioxide; methane</td><td>GHG mostly avoided will include Carbon dioxide (reduction in the burning of coal) and caustic soda.</td></tr>
<tr><td>Emissions to be avoided/reduced and lifetime of project
Eg: 10 000tons CO2 equivalent over ten years</td><td>This project activity has a 7 year crediting period. Emissions to be avoided include 114968 ton CO_2 per /annum which results in 804776 tons of CO2 for this period..</td></tr>
<tr><td></td><td>
<table>
<tr><th>Retrofit of existing project</th><th>Greenfields project</th></tr>
</table>
</td></tr>
</table>

Nature of application of technology Place x in appropriate block	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 007

SECTION A

Name of Project Developer	Mondi Kraft
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Paper Industry
Contact Person	Ciska Terblanche
Physical address	Box 1551, Richards Bay, 3900, South Africa
Telephone and fax number	Tel: +27 82 898 5750 / 035 902 2111 Fax: 035 902 2229
Email address and website	Email: ciska_terblanche@mondikraft.co.za Web:
Nature of interest in CDM	Access to new technology (cleaner production processes)

SECTION B

PROJECT NAME:

The recovery of biomass waste for usage at Mondi Kraft, Richards Bay for generation of renewable energy to utilise as an alternative fuel in biomass boilers

Project description Eg: Landfill gas; biodiesel.	The proposed main project activity has two activities: • Recovery of biomass waste which consists of fines, wood chips, logs etc. presently being dumped at a Richards bay Landfill.

<table>
<tr><td></td><td>Mondi Kraft, and other timber users in the area of Richardsbay presently dump their biomass waste at a local landfill site. With this project activity these entities will no longer dump their biomass waste in this landfill site

• Usage of the biomass waste as an alternative fuels in power boilers at Mondi Kraft, Richards Bay.</td></tr>
<tr><td>Technology to be applied and general outline
Give a brief description of the technology to be employed and the general scope of the project</td><td>Coal based boilers are presently used at Mondi Kraft, Richardsbay to generate steam for the making of pulp paper. Therefore with this project activity, new precipitators will be installed in the existing boilers to assist in converting these boilers into using biomass.</td></tr>
<tr><td>Status of CDM activity
Insert an x in appropriate column where applicable</td><td>
<table>
<tr><th></th><th>In progress</th><th>Completed</th></tr>
<tr><td>contemplated</td><td></td><td>X</td></tr>
<tr><td>basic planning</td><td>X</td><td></td></tr>
<tr><td>feasibility study</td><td>X</td><td></td></tr>
<tr><td>project design document</td><td>X</td><td></td></tr>
<tr><td>business plan</td><td>X</td><td></td></tr>
<tr><td>validation</td><td></td><td></td></tr>
<tr><td>approval</td><td></td><td></td></tr>
<tr><td>EIA and public processes</td><td>X</td><td></td></tr>
<tr><td>registration</td><td></td><td></td></tr>
<tr><td>presentation for investment</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>Project participants
All partners in project</td><td>Mondi Kraft</td></tr>
<tr><td>Description of baseline methodology
If completed</td><td>Coal would have been used to provide thermal energy to the paper manufacturing process. GHG Emissions would result from the burning of fossil fuel (coal). The biomass would have been landfilled resulting in methane emissions from landfill. Methane emissions from landfill would not have been recovered and would have percolated into the atmosphere.</td></tr>
<tr><td>Greenhouse gas avoided or reduced
Eg: Carbon dioxide; methane</td><td></td></tr>
<tr><td>Emissions to be avoided/reduced and lifetime of project
Eg: 10 000tons CO2</td><td>
<table>
<tr><td>Activity</td><td>Current Mill</td><td>CDM</td></tr>
<tr><td>CO_2 from coal</td><td>57200</td><td>0</td></tr>
<tr><td>CO_2 from transport</td><td>74</td><td>1142</td></tr>
<tr><td>Fossil CO_2 from imported electricity</td><td>0</td><td>558</td></tr>
<tr><td>CO_2 equivalent ito CH_4</td><td>9280</td><td>0</td></tr>
<tr><td>Total CO_2 emitted</td><td>66555</td><td>1700</td></tr>
</table>
</td></tr>
</table>

equivalent over ten years	**Reduction in CO2 emissions**	**64855**

Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 008

SECTION A **Name of Project Developer**	Sol Plaatje Municipality (Kimberly)
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Goverment
Contact Person	M. Steyn
Physical address	Industria Road Kimberley
Telephone and fax number	Tel 053 8306842 Fax:053 8411956
Email address and website	Email: Lvdlinde@kbymun.org.za Web:http://www.kbymun.org.za
Nature of interest in CDM	Managing the closure of a municipal landfill

SECTION B

PROJECT NAME:

N/A

Project description Eg: Landfill gas; biodiesel.	Landfill gas
Technology to be applied and general	N/A - Project only contemplated thus far

outline Give a brief description of the technology to be employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated	X	
	basic planning		
	feasibility study		
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project			
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years				
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**

RSA 009

SECTION A

Name of Project Developer	Envirolight(pty)Ltd – (Anglo American Group)
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Mining
Contact Person	Melissa Whitehead
Physical address	IIEC Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Establish projects to reduce harmful gas emissions

SECTION B

PROJECT NAME:

Zimele Efficient Lighting in Rustenburg Mines

Project description Eg: Landfill gas; biodiesel.	Energy Efficiency and Retrofit

Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Retrofit mineshafts with energy efficient CFL's. (50 000 Envirolight Bulkheads)		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document		X
	business plan		X
	validation	X	
	approval	X	
	EIA and public processes	X	
	registration	X	
	presentation for investment	X	
Project participants All partners in project	JCL Participants		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	373 058 tons of CO2 mitigated (10 years)			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
	X		X	Total Cost of R11 060 000

RSA 010

SECTION A **Name of Project Developer**	The Greenhouse Project
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Community/Building
Contact Person	Melissa Whitehead
Physical address	IIEC Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Obtain funding and reduce greenhouse gas emmissions

SECTION B

PROJECT NAME:

Application of Photovoltaic System Joubert Park Project Offices

Project description Eg: Landfill gas; biodiesel.	Installation of Photovoltaic System
Technology to be applied and general outline Give a brief description of the technology to be	PV system installation

employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning	X	
	feasibility study		
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	The GreenHouse Project		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	45 tons CO2 mitigated (10 years)			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 011

SECTION A

Name of Project Developer	Buffalo Flats Community Development Trust
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Local Community
Contact Person	Melissa Whitehead
Physical address	IIEC Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Establish projects to reduce harmful gas emissions

SECTION B

PROJECT NAME:

Buffalo Flats Community Community Sustainable Housing Project

Project description Eg: Landfill gas; biodiesel.	Installation of energy efficient technologies in 200 low cost houses		
Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Not specified		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study	X	
	project design document	X	
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment	X	
Project participants All partners in project	Buffalo Flats Community Development Trust		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	1241 tons CO2 mitigated (10 years)			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types	**Locally available**	**New**	**Needed**	**Partner sought**

Place x or details in appropriate block	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 012

SECTION A

Name of Project Developer	Thanya Upliftment Programme
Logo of Project Developer Insert logo	Johannesburg Climate Legacy 2002
Sector of Project Developer Eg: chemical industry, local government	Community/Biogas/Energy
Contact Person	Melissa Whitehead
Physical address	IIEC Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Establish projects to reduce harmful gas emissions

SECTION B

PROJECT NAME:

Gassification of Biomass and Waste

Project description Eg: Landfill gas; biodiesel.	Project will utilize a thermal gasification process to produce "clean" electrical power from renewable bio-resources

Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Not specified		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning	X	
	feasibility study	X	
	project design document	X	
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Thanya Upliftment Programme		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	35 244 tons CO2e (10 years)			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 013

SECTION A

Name of Project Developer	Solar Engineering Services
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Solar/Thermal Energy
Contact Person	Melissa Whitehead
Physical address	IIEC Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Establish projects to reduce harmful gas emissions

SECTION B

PROJECT NAME:

Anaerobic biogas generation – Maphepheteni Project

Project description Eg: Landfill gas; biodiesel.	Anaerobic biogas generation for provision of thermal energy. Install biogas digesters from general waste and produce methane

Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Installation of Biogas Digesters to convert human and animal waste to usable methane gas for energy usage		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document		X
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Solar Engineering Services		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	26 510 tons CO2e mitigated (10 years)			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 014

SECTION A **Name of Project Developer**	Technikon Northern Gauteng
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Solar Energy
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Reduce harmful emissions

SECTION B

PROJECT NAME:

Northern Gauteng Technikon Solar Heating Project

Project description Eg: Landfill gas; biodiesel.	Extension of Solar Heating System to produce 1.2 KW of electricity to provide heated water for all 3 campuses
Technology to be applied and general outline Give a brief description of	Solar Heating Panels

the technology to be employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document		X
	business plan	X	
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Northern Gauteng Technikon, JCL		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	30 016 ton of CO2e mitigated (10 years) Cost: R2 209 316			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X (Extend)			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 015

SECTION A

Name of Project Developer	Recondev (Sec 21), University of Witwatersrand, and Peer Africa (Pty) Ltd
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Housing
Contact Person	Melissa Whitehead
Physical address	IIEC Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	Establish projects to reduce harmful gas emissions

SECTION B

PROJECT NAME:

Shaft Veterans' Energy Efficient Houses

Project description Eg: Landfill gas; biodiesel.	Build 300 Energy Efficient Houses for Veterans Community

Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Thermal insulation of walls and ceilings, solar heating for water, energy efficient lighting, water efficient fittings		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document		X
	business plan	X	
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Recondev (Sec 21), University of Witwatersrand, and Peer Africa (Pty) Ltd		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years				
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 016

SECTION A

Name of Project Developer	Ndiswe Trust
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Bio-diesel
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Apricot Inc. Farm scale Ethanol Production Plant

Project description Eg: Landfill gas; biodiesel.	Project uses waste CO2 generated by industrial ethanol production, plus municipal waste, to feed a special algae that produces high levels of oil. The algae produce up to 60% of their weight in triacylglycerols which

	can easily be converted to bio-diesel through transesterification		
Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Not specified		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document	X	
	business plan	X	
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Ndiswe Trust, JCL		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	9600 tons of CO2e mitigated, Cost: R1 500 000			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 017

SECTION A

Name of Project Developer	Lekoa Water Company
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Electricity
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Lekoa Water Co. Electricity Generation

Project description Eg: Landfill gas; biodiesel.	Project involves the establishment of off grid electricity generating capacity. Generators will utilize methane rich digester gas from Sebokeng water works.

Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	Not specified		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document		X
	business plan	X	
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Lekoa Water Company, Sebokeng		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	4952 tons CO2e mitigated (10 years)			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
			X	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 018

SECTION A **Name of Project Developer**	Iskhus Power
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Energy Savings
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Transnet Portfolio

Project description Eg: Landfill gas; biodiesel.	Conduct audit of Transnet and Propnet buildings and facilities and retrofit of energy saving fittings and education on usage savings
Technology to be applied and general outline Give a brief description of the technology to be	Not specified

employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Iskhus Power, JCL		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	90 893 tons CO2e mitigated – 10 years Cost: R11 171 800			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 019

SECTION A **Name of Project Developer**	Iskhus Power
Logo of Project Developer Insert logo	ISKHUS POWER (PTY) LTD
Sector of Project Developer Eg: chemical industry, local government	Energy Conservation
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Don Apartment Hotels Energy Conservation

Project description Eg: Landfill gas; biodiesel.	Conduct audit of Don Apartments Hotels buildings and facilities and retrofit of energy saving fittings and education on usage savings
Technology to be applied and general outline Give a brief description of	Not specified

the technology to be employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Iskhus Power, JCL		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	7291 tons CO2e mitigated – 10 years Cost: R783 000			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 020

SECTION A **Name of Project Developer**	Iskhus Power
Logo of Project Developer Insert logo	ISKHUS POWER (PTY) LTD
Sector of Project Developer Eg: chemical industry, local government	Energy Conservation
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Chris Hani Baragwanath Hospital

Project description Eg: Landfill gas; biodiesel.	Conduct audit of Baragwanath buildings and facilities and retrofit of energy saving fittings and education on usage savings
Technology to be applied and general outline Give a brief description of	Not specified

the technology to be employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	Iskhus Power, JCL		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	62 597 tons CO2e mitigated – 10 years Cost: R7 973 000			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 021

SECTION A **Name of Project Developer**	Inner City Housing Upgrade Trust (ICHUT)
Logo of Project Developer Insert logo	Johannesburg Climate Legacy 2002
Sector of Project Developer Eg: chemical industry, local government	Solar Heating
Contact Person	Melissa Whitehead
Physical address	Johannesburg, South Africa
Telephone and fax number	Tel: +27 (11) 482-5990 Fax: +27 (11) 482-4723
Email address and website	Email: m.whitehead@iiec.org.za Web: http://www.climatelegacy.org
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Johannesburg Inner City Housing Upgrade

Project description Eg: Landfill gas; biodiesel.	3 Inner city community housing project currently using coal fire water heating to be upgraded using solar heating
Technology to be applied and general outline Give a brief description of the technology to be	Solar Technolgy

employed and the general scope of the project			
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		X
	basic planning		X
	feasibility study		X
	project design document	X	
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project	ICHUT, JCL		
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane			

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	6 884 tons CO2e mitigated – 10 years Cost: R1 145 980			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
	X			
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**
	X			
Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
		X		

RSA 022

Name of Organisation	The South African Breweries Limited
Logo of Organisation Insert logo	
Nature of services given by organisation	Brewing of Long Alcoholic Beverages
Contact Person	Tony Cole
Physical address	The South African Breweries Limited *Postal address:* P.O.Box 782178 Sandton 2146 RSA *Physical address:* 65 Park Lane Sandown Sandton RSA
Telephone and fax number	++27 (11) 881-8111 Voice ++27 (11) 881-8379
Email address and website	tony.cole@sabreweries.com
Nature of interest in CDM	Currently installing anaerobic digestors to treat our effluent. We currently discharge ca 23kte COD pa, which equates to ca. 8million Nm^3 of Methane. Currently we flare at one Brewery. We are commissioning the second UASB plant. Two more will be built next year. Currently the installation of Methane scrubbing and combustion systems is not EVA positive. CMD funding could take these initiatives over the required hurdle rate.

RSA 023

SECTION A

Name of Project Developer	Natal Portland Cement
Logo of Project Developer Insert logo	
Sector of Project Developer Eg: chemical industry, local government	Cement manufacture
Contact Person	Ian Naidoo
Physical address	199 Coedmore Rd Bellair Durban Kwa-Zulu Natal
Telephone and fax number	Tel: 031 450 4517 Fax: 031 451 9010
Email address and website	Email: ian.Naidoo@npc-eagle.co.za Web: www.npc-eagle.co.za
Nature of interest in CDM	

SECTION B

PROJECT NAME:

Alternative Fuels and Raw materials (AFRM)

Project description Eg: Landfill gas; biodiesel.	Replace the use of traditional fossil fuels with alternatives from other industries.

Technology to be applied and general outline Give a brief description of the technology to be employed and the general scope of the project	As above		
Status of CDM activity Insert an x in appropriate column where applicable		**In progress**	**Completed**
	contemplated		
	basic planning		
	feasibility study		
	project design document		
	business plan		
	validation		
	approval		
	EIA and public processes		
	registration		
	presentation for investment		
Project participants All partners in project			
Description of baseline methodology If completed			
Greenhouse gas avoided or reduced Eg: Carbon dioxide; methane	Carbon dioxide; methane		

Emissions to be avoided/reduced and lifetime of project Eg: 10 000tons CO2 equivalent over ten years	Dependant on substitution of traditional fuel.			
Nature of application of technology Place x in appropriate block	**Retrofit of existing project**		**Greenfields project**	
Technology types Place x or details in appropriate block	**Locally available**	**New**	**Needed**	**Partner sought**

Financing Place x or details in appropriate block	**Self financed**	**Finance to be sourced locally**	**Finance required from CDM investor**	**Other details**
	X			

CLEAN DEVELOPMENT MECHANISM (CDM)

investor guide

South Africa

Annex C: support organizations

This annex contains lists of project details granted on a voluntary basis by support organizations in South Africa. This list is constantly being updated and the individual projects are listed under the numbers C1, C2, etc.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna, 2003

Annex C

South Africa

List of Support Organizations for CDM

C1 Minerals and Energy Policy Organization

C2 Development Bank of Southern Africa

C3 IMBEWU ENVIRO-LEGAL SPECIALISTS (PTY) LTD

C4 Africon Engineering International Energy & Industrial Consulting Services Division

C5 Capacity-Building Leadership and Action (CBLA)

C6 KPMG Sustainability Advisory Services

C7 Pricewaterhouse Coopers Inc.

C8 Energy Research Institute

C9 NCS Resins (Pty) Ltd.

C10 Afrocarbon Solutions

C11 SouthSouthNorth

C12 IUCN

C13 Energy Development Research Centre

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C1

Name of Organisation	Minerals and Energy Policy Organisation
Logo of Organisation Insert logo	MEPC MINERALS & ENERGY POLICY CENTRE
Nature of services given by organisation	CDM capacity building Assistance in identifying CDM projects Assistance in developing CDM projects, access to SA CDM stakeholders Involvement with SA CDM process and project cycle
Contact Person	Shomenthree Moodley
Physical address	Minerals & Energy Policy Centre P.O.Box 629 Randburg 2125
Telephone and fax number	Phone 27 11 7094042 Fax 27 11 7094595
Email address and website	shomen@ mepc.org.za
Nature of interest in CDM	Project development CDM implementation

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C2

Name of Organisation	Development Bank of Southern Africa
Logo of Organisation Insert logo	
Nature of services given by organisation	Development Finance Institution. Provides project finance and development support.
Contact Person	Rob Short
Physical address	No 1, Lever Road, Headway Hill, Halfway House, Midrand, Gauteng Province
Telephone and fax number	Tel: 27 11 313 3275 Fax: 27 11 313 3416
Email address and website	robs@dbsa.org www.dbsa.org
Nature of interest in CDM	The DBSA has signed a carbon finance intermediary agreement with the World Bank and is interested in assisting project developers in this area in accessing carbon finance, as well as providing loan finance to such projects.

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C3

Name of Organisation	IMBEWU ENVIRO-LEGAL SPECIALISTS (PTY.) LTD
Logo of Organisation Insert logo	
Nature of services given by organisation	PROVISION OF ENVIRONMENTAL LEGAL SERVICES TO THE BUSINESS, INVESTMENT, MINING AND ENVIRONMENTAL SECTORS
Contact Person	CATHERINE WARBURTON
Physical address	IMBEWU Enviro-Legal Specialists First Floor, Block 6, Albury Park Cnr. Jan Smuts Ave. and Albury Rd. Dunkeld West, Sandton
Postal Address	46 Buffalo Rd., Emmarentia, 2195
Telephone and fax number	Tel.: 011-325-4928 Fax.: 011-325-4901
Email address and website	catherine@imbewu.co.za www.imbewu.co.za
Nature of interest in CDM	Legal and policy development and contractual facilitation between investors and suppliers in the African context. We are currently engaged in assessing the South African national legal regime pertaining to the capture and use of GHG gases from landfill sites and coal mines.

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C4

Name of Organisation	Africon Engineering International Energy & Industrial Consulting Services Division
Logo of Organisation Insert logo	AFRICON
Nature of services given by organisation	As the Energy & Industrial (E&I) consulting wing of Africon, a South African professional services firm with over fifty years of experience developing and sustaining infrastructure in South Africa and internationally, E&I's Vision is to be a recognised provider of select and integrated services in the energy, industrial and property sectors. Our Mission is to provide life cycle engineering and management solutions to our South African and international clients in a least cost and ethical manner. Since 1982, Africon's E&I team has provided its clients with a wide range of professional services in: ❑ Power Systems ❑ Industrial Process Engineering ❑ Building Electrical and Electronic Systems ❑ Energy Sector Advisory and Management Services. The team comprises experienced engineers, technicians and support staff as well as economists and financial analysts, and can draw on the wealth of experience and expertise in Africon's other divisions, such as Civil and Environmental Engineering.
Contact Person	Michau Nel, Managing Director
Physical address	Africon Centre 1040 Burnett Street Hatfield, Pretoria 0083
Telephone and fax number	T: +27 12 427 2310 F: +27 12 427 2350
Email address and website	michaun@africon.co.za www.africon.com
	Interested in supporting project development through provision of

Nature of interest in CDM	technical and professional expertise in infrastructure development, in providing Environmental Impact Assessment services and in participating in monitoring activities

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C5

Name of Organisation	Capacity-Building, Leadership and Action (CBLA): Mitigating Greenhouse Gas Emissions in Southern African Industry
Logo of Organisation Insert logo	CBLA
Nature of services given by organisation	Funded by Canadian International Development Agency; provides technical support services to industry and industry associations that wish to initiate CDM or other greenhouse gas mitigation projects. Services include project identification, energy/emissions audits, feasibility studies, and development of monitoring protocols. Services are generally cost-shared. Project also anticipates related capacitiy-building activities aimed specifically at industry sectors in South Africa and Mozambique.
Contact Person	Geoff Stiles, PhD Project Manager
Physical address	24 Sturdee Avenue Rosebank, South Africa
Telephone and fax number	Tel: +27 (0) 11 447-7883/5 Fax: +27 (0) 11 447-7879
Email address and website	Email: gstiles@iafrica.com Or: geoff@cbla.org.za Web: www.cbla.org.za (under development)
Nature of interest in CDM	1. Helping industry participants to better understand the CDM process and to be able to pre-screen potential projects more effectively. 2. Helping to develop procedures/analytical methods for CDM projects having a strong organizational/management element, hence lower capital costs. 3. Developing capacity of training providers in South Africa and Mozambique to deliver short courses on CDM-related topics.

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C6

Name of Organisation	KPMG Sustainability Advisory Services
Logo of Organisation Insert logo	
Nature of services given by organisation	CDM project verification and validation, assistance with CDM project development, greenhouse gas emissions data review and verification, corporate climate change policy and strategy.
Contact Person	Shireen Naidoo, Director: KPMG Sustainability Advisory Services
Physical address	KPMG Crescent, 85 Empire Road, Johannesburg
Telephone and fax number	Office: 031 327 6121 /327 6100 Mobile: 083 381 9235
Email address and website	Shireen.Naidoo@kpmg.co.za
Nature of interest in CDM	CDM project verification and validation, assistance with CDM project development, greenhouse gas emissions data review and verification, corporate climate change policy and strategy.

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C7

Name of Organisation	PricewaterhouseCoopers Inc
Logo of Organisation Insert logo	PRICEWATERHOUSECOOPERS
Nature of services given by organisation	• Clean Development Mechanism Strategies • CDM project management • Corporate GHG reporting & verification • Verification of GHG baselines and targets • Validation and verification of project based emissions reductions
Contact Person	PwC global climate change coordinator – Laurent Segalen PwC South Africa – Harmke Immink
Physical address	2 Eglin Road Sunninghill 2157
Telephone and fax number	Tel: 011 797 4732 Cell: 083 2281781 Fax: 011 209 4732
Email address and website	Harmke.immink@za.pwc.com www.climatechangeservices.com
Nature of interest in CDM	CDM project developer support, see nature of climate change services

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C8

Name of Organisation	Energy Research Institute
Logo of Organisation Insert logo	Energy Research Institute ERI
Nature of services given by organisation	▸ Formulation of CDM applications and assistance in PDD ▸ Greenhouse Gas Inventories ▸ Training and Education in CDM and Energy associated research ▸ National and regional baseline and mitigation modeling ▸ Assessing national potential of greenhouse gas mitigation in South Africa
Contact Person	Professor K Bennett
Physical address	Energy Research Institute Room 319, 3rd Floor Elec/Mech Building Library Road Upper Campus University of Cape Town 7701 RONDEBOSCH SOUTH AFRICA
Telephone and fax number	**Tel:** +27 21 650 3892 **Fax:** +27 21 686 4838
Email address and website	kbennett@eng.uct.ac.za http://www.eri.uct.ac.za
Nature of interest in CDM	▸ Have already produced of several guides on CDM ▸ Capacity building in CDM ▸ Several proposals for CDM associated research ▸ Vast portfolio of information on South African situation

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C9

Name of Organisation	NCS Resins (Pty) Ltd.
Logo of Organisation Insert logo	
Nature of services given by organisation	Supply of unsaturated polyester resins, gelcoats, reinforcements and other accessory products to the fibreglass industry
Contact Person	C.W. Haupt, Market Development Leader
Physical address	9 Pineside road, Pinetown, 3610
Telephone and fax number	031 7130654 Fax 031 7059388
Email address and website	Christoh@ncsresins.com www.ncsresins.com
Nature of interest in CDM	Internationally, wind turbine blades are made from fibreglass. We'd be interested in exploring joint ventures/manufacture under licence. The same applies to other items which could be made in fibreglass eg solar heaters, PV arrays, fuel cells etc.

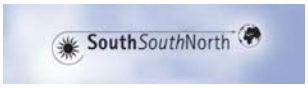
CDM PROJECT Support Organisation INFORMATION TEMPLATE

C10

Name of Organisation	Afrocarbon Solutions
Logo of Organisation Insert logo	
Nature of services given by organisation	Working with any industry sector, civil society, local and national government organisations keen to unlock climate change opportunities and to address climate change risks. Special focus on developing projects that promote sustainable development to ensure adherence to the CDM additionality criteria.
Contact Person	Gwen de Jong, Secretary
Physical address	63 Second Street Linden, 2195 Johannesburg South Africa
Telephone and fax number	Tel: +27 11 888 8225 Fax: +27 11 888 8980
Email address and website	Email:afrocarbonsa@afrosustain.com Web:www.afrosustain.com
Nature of interest in CDM	Focus on renewable energy CDM projects, especially solar power projects aimed at providing power for rural and peri-urban schools, through the afrocarbon solar initiative and the capture of methane from wastewater treatment plants.

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C11

Name of Organisation	SouthSouthNorth
Logo of Organisation Insert logo	
Nature of services given by organisation	The SouthSouthNorth (SSN) Project is an experiment in the packaging of CDM projects in 4 countries, through the development of pilot projects. These projects promote the idea of south-driven self-developed projects, where the owner of the project, with technical and facilitation input from SSN, collaborate to develop a sustainable project. This technical and facilitation service is provided at no cost to the owner. The aim of SSN is to assist the owner and project developers through the process of design of the project, and to conclude the registration and transaction of the Project. SSN has interest in the SSN methodology and capacity building around the CDM project cycle. SSN has no vested interest in the outcome of any specific project, **other than the recoupment of its costs as CERs are transferred.** SSN includes a monitoring process up to the point of transaction and feasibility as part of the experiment to build a southern-based international monitoring capacity. This capacity will be provided by HELIO International (an international NGO) and will be in the form of independent third party observation for the benefit of the process. The SSN Project brings the following value to the process: ♦ *Grant funding for all SSN expenses, and for certain other costs* ♦ *Technical and Project Management services* ♦ *Third Party facilitation of multi-stakeholder processes* ♦ *International NGO network and credibility* ♦ *South-south network with our partner countries* ♦ *South-north network with our partners in Annex I* ♦ *Candidate Investors* ♦ *Advice and Information that may influence the timing of transactions.*
Contact Person	Steve Thorne
Physical address	Loft 5, 138 Waterkant Street,

	Green Point 8001
Telephone and fax number	Tel: +27 21 4251465 Fax: +27 21 4251463
Email address and website	Email:steve@southsouthnorth.org Website: www.southsouthnorth.org
Nature of interest in CDM	SSN intends to fill the capacity gap with regard to CDM, to benefit all public bodies, public interest groups and private owners with an interest in CDM activity. Our ideal is through a persistent dedication to sustainable development, to protect the natural environment, to support life and to reduce the emission of greenhouse gas emissions.

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C12

Name of Organisation	IUCN
Logo of Organisation Insert logo	
Nature of services given by organisation	Support
Contact Person	Salim Fakir
Physical address	**IUCN South Africa Country Office** *Postal address:* P.O.Box 11536 Hatfield Pretoria 0028 *Physical address:* 3rd Floor North Wing Hatfield Forum West 1067 Arcadia Street Hatfield Pretoria.
Telephone and fax number	++27 (12) 342 8304/5/6 Voice ++27 (12) 342 8289
Email address and website	iucnsa@iucn.org
Nature of interest in CDM	Support to project developers

CDM PROJECT Support Organisation INFORMATION TEMPLATE

C13

Name of Organisation	Energy Development Research Centre
Logo of Organisation Insert logo	
Nature of services given by organisation	University based research centre
Contact Person	Harald Winkler
Physical address	Energy & Development Research Centre, University of Cape Town, Private Bag, Rondebosch 7701, South Africa
Telephone and fax number	Telephone: +27 +21 650 3230 Fax: +27 +21 650 2830
Email address and website	E-mail: energy@energetic.uct.ac.za
Nature of interest in CDM	Support to project developers; research