Component project activity design document form for small-scale CDM component project activities

(Version 04.0)

Complete this form in accordance with the Attachment "Instructions for filling out the component project activity design document form for CDM small-scale component project activities" at the end of this form.

COMPONENT PROJECT DESIGN DOCUMENT (CPA-DD)	
Title of the CPA	SA-REP – Greefspan 11.029 MW Solar PV Project
Version number of the CPA-DD	07
Completion date of the CPA-DD	13/01/2016
Title of the PoA to which the CPA is included	South Africa Renewable Energy Programme (SA-REP)
Host Party	Republic of South Africa
Estimated amount of annual average GHG emission reductions	24,758

SECTION A. General description of CPA

A.1. Title of the proposed or registered PoA

South Africa Renewable Energy Programme (SA-REP)

A.2. Title of the CPA

SA-REP – Greefspan 11.029 MW Solar PV Project

A.3. Description of the CPA

The Greefspan 11.029 MW Solar PV Project forms part of the South Africa Renewable Energy Programme, which seeks to promote grid-connected small-scale renewable energy projects in South Africa. The proposed CPA will install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the CPA (greenfield plant). The project will be located in Pixley ka Seme district municipality, Northern Cape province in South Africa.

The project will install 11.029 MWp of solar photovoltaic (PV) power. This is the peak capacity and maximum output, and 10MW will be the nominal power. With a plant load factor of 25.90%, the project is expected to generate on average 26,161 MWh annually during the first crediting period. Electricity will be supplied to the South African national electricity grid system.

CO_2 emission reductions will be achieved through the replacement of electricity generated by fossil fuel fired power plants connected to the grid system. It is expected that the project will generate average annual emission reductions of 24,758 tCO_2 per year during the first crediting period.

The implementation of this project is expected to contribute to sustainable development in South Africa in various ways, including:

- The project is expected to support the national policy goal of achieving 9.4% penetration for as a share of total installed capacity in 2030[1]Solar PV.
- The project is expected to provide local employment opportunities during the construction and operation phase.
- The project is expected to contribute to South Africa's fiscal revenues through payment of taxes and attract foreign direct investment.
- The project will have a positive impact on the transfer of Solar PV technology to South Africa, as well as know-how skills of local workers. The transfer of technology and know-how will be directly replicable to other Solar PV projects in the future.

[1] Integrated Resource Plan for Electricity 2010-2030, Department of Energy, Electricity Regulation Act No.4 of 2006, 6 May 2006

- The project will reduce South Africa's CO_2 emissions while increasing the electricity generation capacity of the country.

A.4. Entity/individual responsible for the operation of CPA

The entity responsible for the proposed CPA is AE-AMD Independent Power Producer 1 (Pty) Limited.

Name of entity responsible for the CPA: AE-AMD Independent Power Producer 1 (Pty) Ltd.
Postal Address: P.O. Box 5301, Cape Town 8000, South Africa
Email: tamuka@ae-amd.co.za
Tel: +27 (0) 833029870

A.5. Technical description of the CPA

The purpose of the CPA is to build a 11.029 MWp solar photovoltaic power plant that will supply a total of 26,161 MWh of clean electricity per year to the South African electricity grid.

According to AMS-I.D (version 17), the emissions sources and greenhouse gases involved include CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the CPA. The Greefspan 11.029 MWp Solar PV Project, with a capacity factor of 25.90%, is expected to produce approximately 25,018 MWh/year during the 25 year lifetime of the project activity, and 26,161 MWh[2] of clean energy on average a year for the first 7 year crediting period thereby displacing the grid connected fossil fired plants and hence reduce on CO_2 emissions by 24,758 tCO2 on average a year for the first crediting period.

This CPA will be a solar photovoltaic (PV) project located on the road R-357, approximately 60km Southwest from Douglas in Pixley ka Seme district municipality, Northern Cape province in South Africa.

The CPA will consist of 1998 1-axis vertical type trackers, each of them with 23 PV modules with a nominal power of 240 Wp, which creates a total of 45,954 PV modules. 1-axis trackers have been selected because in the geographical latitude where the project is located, it is not cost effective to use 2- axis trackers, as the increase on efficiency is not significant. The PV modules selected are Tenesol TE 220/240 60P+ polycrystalline with the following specifications:

[2] Energy generation decreases over the years due to degradation of the module

Table 1: PV-module description

Module manufacturer	TENESOL
Module model	TE220/240 60P+
Individual module power	240Wp
Power tolerance	0 / +5 Wp
Voltage at max. power	29.55 V
Current at max. power	8.2 A
Cells size	156 mm x 156 mm
Type	Polycrystalline
Certification	IEC61215 + IEC61730

Table 2: Inverter description

Inverter manufacturer	KACO
Inverter model	Powador
Type of inverter	Powador 39.0 TL 3-M-INT
Nominal AC power	15 kW
Maximum DC power	15.34 kWp
Nominal AC frequency	50 (-6, +5) Hz
Total no. of installed inverters	666

This specific PV module has been selected because Tenesol already has a factory in South Africa, resulting in a faster supply of the equipment, among other reasons such as its cost efficiency.

Every three trackers will contain one inverter to transform direct electrical current (DC) to alternating electrical current (AC), and around 27 trackers will be connected to one concentrator box. Four or five groups of trackers will be connected to one transformation center, with a total of 16 transformers that will be connected to one distribution center. The project will be connected to Eskom's Greefspan substation, which is located just next to the project site, through a 22 kV overhead power line with a length of approximately 45 m from the distribution center. For details on the interconnection to the substation and the metering system, see section D.7.2.

Regarding the production of the power plant, its availability has been estimated at 99% and the degradation for the first and the subsequent years at 0.8% and 0.5% respectively. The energy yield has been calculated following the requirements by the Department of Energy. The software PVSyst, which is standard in the industry, uses Meteonorm 6.1 database with more than 10 years of data. The following data is a summary of the data used for the calculation of the energy delivered to the national grid, which is the electricity that will be supplied to the national grid:

Table 3: Energy yield

Annual global incident in collector plane	3,102 kWh/m^2
Radiant surface area	75,521 m^2
Annual array nominal energy in STC[3]	33,299,923 kWh
Total plant losses	18.2%
Losses due to plant unavailability	1.0%
Losses due to grid connection	1.0%

[3] Standard Test Conditions

Degradation first year	0.8%
Degradation after first year	0.5%
Plant load factor	25.90%

And the following table is the energy delivered to the national grid for the first crediting period of seven years:

Table 4: Energy delivered to the grid

	Year 1[4]	Year 2[5]	Year 3	Year 4	Year 5	Year 6	Year 7
Energy delivered to the national grid (MWh)	26,590.485	26,417.487	26,285.399	26,153.972	26,023.202	25,893.086	25,763.621

In order to determine the plant load factor, 25.90%[6], the annual electricity generation over the lifetime of the CPA (25 years) has been averaged, resulting in 25,018.254 MWh.

Starting from the global incident irradiation on the collector plane (3,102 kWh/m2) the effective irradiance on collectors can be calculated, taking geometry arrangement losses into account. Considering the PV conversion the array nominal energy in STC conditions will be 33,299,923kWh. Starting from this last value, the energy production at the inverter output can be defined, taking in account the plant losses and the losses due to grid connection as above.

In addition 0.8% degradation per annum for the first year and 0.5% degradation per annum for subsequent years as typical value for similar PV modules have been taking into consideration in order to determine the energy yield. An additional loss of 1% due to unavailability has been taking into account. Availability reflects the time during which the plant is effectively ready to operate. This time is mainly affected by the time necessary for inverter maintenance or failures considered equal to 1.0%.

The metering system will be located before the delivery point with the South African electricity grid at the terminal substation, as shown in the figure below:

[4] The energy delivered to the grid is calculated using the average degradation during the first year, not the degradation of the modules at the end of first year as described in table 3, i.e. 0.8%. The energy delivered is calculated considering the degradation increases steadily through the year from zero to 0.8%, therefore the average degradation for the first year is 0.4% instead of 0.8%. (0% + 0.8%) / 2 = 0.4%

[5] Similar as with the first year of operation, the degradation for the second year decreases from 0.8% to 0.5%, therefore for the second year of operation the average degradation used to calculate the energy delivered to the grid is 0.65%. (0.8% + 0.5%) / 2 = 0.65%

[6] Plant load factor is the result of dividing the average annual electricity generation for lifetime, 25,018 MWh, per the result of multiplying the maximum output, 11.029 MW by 8760 hours in a year. 25,018/(11.029*8760)

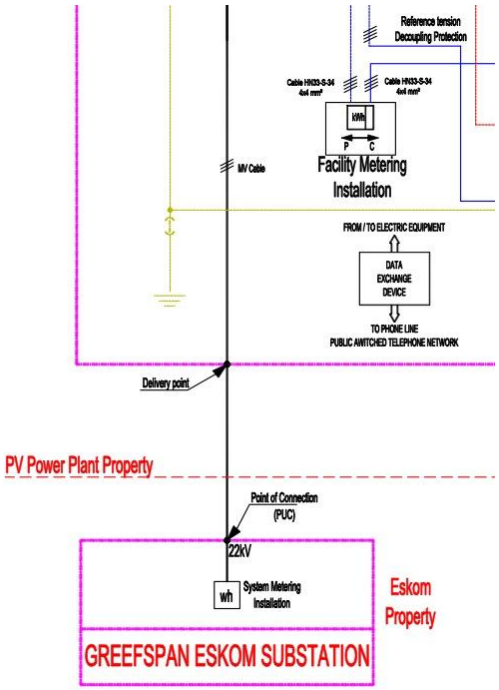

Figure 1. Detail of metering point of the single line diagram

Figure 1 shows a detailed illustration of the location of the metering system. Facility Metering Installation, defined as the main metering system will be procured, installed, tested, commissioned, operated and maintained by the project owner/CPA implementing entity. The System Metering Installation will be the back-up metering system, procured, installed, tested, commissioned, operated and maintained by ESKOM. The purpose of the System Metering Installation will be to provide data for comparison purposes as against the data to be provided by the Facility Metering Installation. The metering system will be located on 22 kV level.

More information on the metering equipment is found in section D.7.2 below.

In accordance with simplified baseline and monitoring methodology AMS-I.D (version 17) *Grid connected renewable electricity generation*, the baseline scenario is “the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid”.

In terms of installed capacity, coal power plants’ share is about 85% followed by electricity generation based on gas (6%), nuclear (4%) and pumped storage hydro power plants (3%). However, the pumped storage power plants are not considered as power plants for the calculation of the grid emission factor in line with the approved *“Tool to calculate the emission factor for an electricity system*” (version 02.2.1). Pumped storage plants are net consumers of electricity, which pump water during off-peak periods to a reservoir so that electricity can be generated during peak periods. Other energy sources like hydro, biogas etc. are negligible.

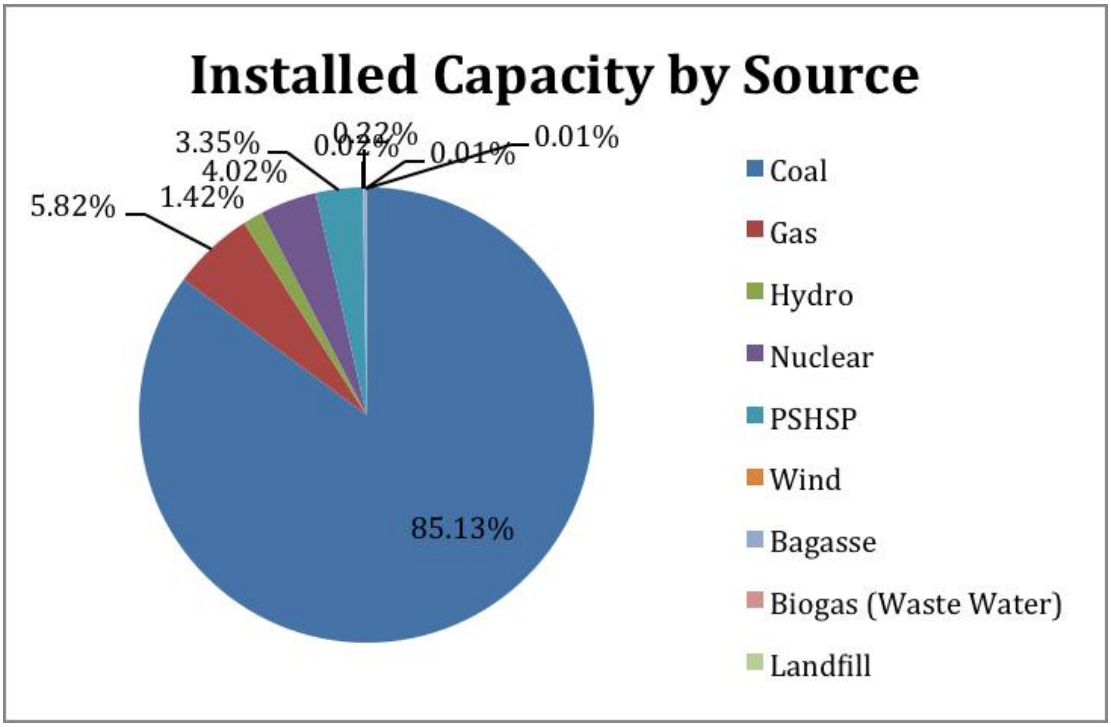

Figure 2: Installed capacity by source

The *Integrated Resource Plan 2010-2030 for Electricity,* which determines the needed capacity and share of technologies in the future proposes the following capacity additions until 2030[7]:

Table 5. Summary of capacity additions 2010-2030

	Total Capacity		Capacity added (including committed) from 2010 to 2030		New (uncommitted) capacity options from 2010 to 2030	
	MW	%	MW	%	MW	%
Coal	41,071	45.9	16,383	29.0	6,250	14.7
OCGT	7,330	8.2	4,930	8.7	3,910	9.2
CCGT	2,370	2.6	2,370	4.2	2,370	5.6
Pumped Storage	2,912	3.3	1,332	2.4	0	0.0
Nuclear	11,400	12.7	9,600	17.0	9,600	22.6
Hydro	4,759	5.3	2,659	4.7	2,609	6.1
Wind	9,200	10.3	9,200	16.3	8,400	19.7
CSP	1,200	1.3	1,200	2.1	1,000	2.4
PV	8,400	9.4	8,400	14.9	8,400	19.7
Other	890	1.0	465	0.8	0	0.0
Total	**89,532**		**56,539**		**42,539**	

[7] Department of Energy (2011), Electricity Regulations on the Integrated Resource Plan 2010-2030, http://www.info.gov.za/view/DownloadFileAction?id=146082, accessed on 30.12.2011

More detailed information of the description of the baseline is provided in section B.4 of part II of the PoA-DD. The scenario existing prior to the implementation of the CPA is considered as the baseline scenario.

Transfer of environmentally safe and sound technology will take place through the introduction of state- of-the-art photovoltaic technology. Transfer of know-how will take place through the training of local engineers and other technical staff by the operations and maintenance contractor with the support of the PV manufacturer. The PV manufacturer will, apart from assuring performance standards for the PV plant, also provide oversight of the maintenance and operation of the equipment during its lifetime.

A.6. Party(ies)

Name of Party involved (host) indicates host Party	Private and/or public entity(ies) CPA implementer(s) (as applicable)	Indicate if the Party involved wishes to be considered as CPA implementer (Yes/No)
Republic of South Africa	AE-AMD Independent Power Producer 1 (Pty) Limited	No

A.7. Geographic reference or other means of identification

The CPA will be located on the road R-357, approximately 60km Southwest from Douglas in Pixley ka Seme district municipality, Northern Cape province in South Africa. The geo-coordinates of the project area are given in the table below.

Table 6. Geo coordinates Project Area

	Latitude	Longitude
North	29°23'9.24"S	23°18'53.75"E
East	29°23'24.76"S	23°18'58.35"E
South	29°23'42.12"S	23°18'38.41"E
West	29°23'33.96"S	23°18'18.29"E

A map of the project area is given in the figure below.

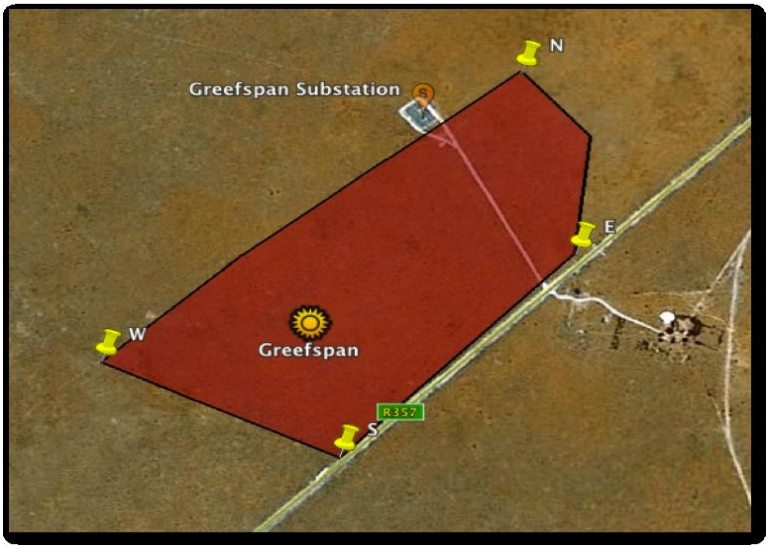

Figure 3. Project area

A.8. Duration of the CPA

A.8.1. Start date of the CPA

The starting date of the small-scale CPA will be 01/01/2013. This is the date on which the contract will be signed for the construction services required for the CPA in accordance with the *Glossary of CDM terms* (version 06, EB 66, Annex 63).

A.8.2. Expected operational lifetime of the CPA

25 years (300 months)

A.9. Choice of the crediting period and related information

Renewable crediting period

A.9.1. Start date of the crediting period

01/06/2014

A.9.2. Length of the crediting period

First crediting period will be 7 years (84 months), which can be extended twice for a maximum length of 21 years.

A.10. Estimated amount of GHG emission reductions

Emission reductions during the crediting period	
Years	Annual GHG emission reductions (in tonnes of CO_2e) for each year
01/06/2014 – 31/12/2014	14,754
2015	25,069
2016	24,928
2017	24,803
2018	24,679
2019	24,556
2020	24,433
01/01/2021 – 31/05/2021	10,087
Total number of crediting years	**7**
Annual average GHG emission reductions over the crediting period	**24,758**
Total estimated reductions (tonnes of CO_2e)	**173,309**

A.11. Public funding of the CPA

The proposed CPA has not received any public funding from Parties included in Annex I of the UNFCCC

A.12. Debundling of small-scale component project activities

The CPA included in the PoA is not a debundled component project activity of another CDM programme of activities or a CDM project activity. The following approach has been applied as per the *Guidelines on assessment of debundling for SSC project activities.* (version 03.0, EB 54, Annex 13).

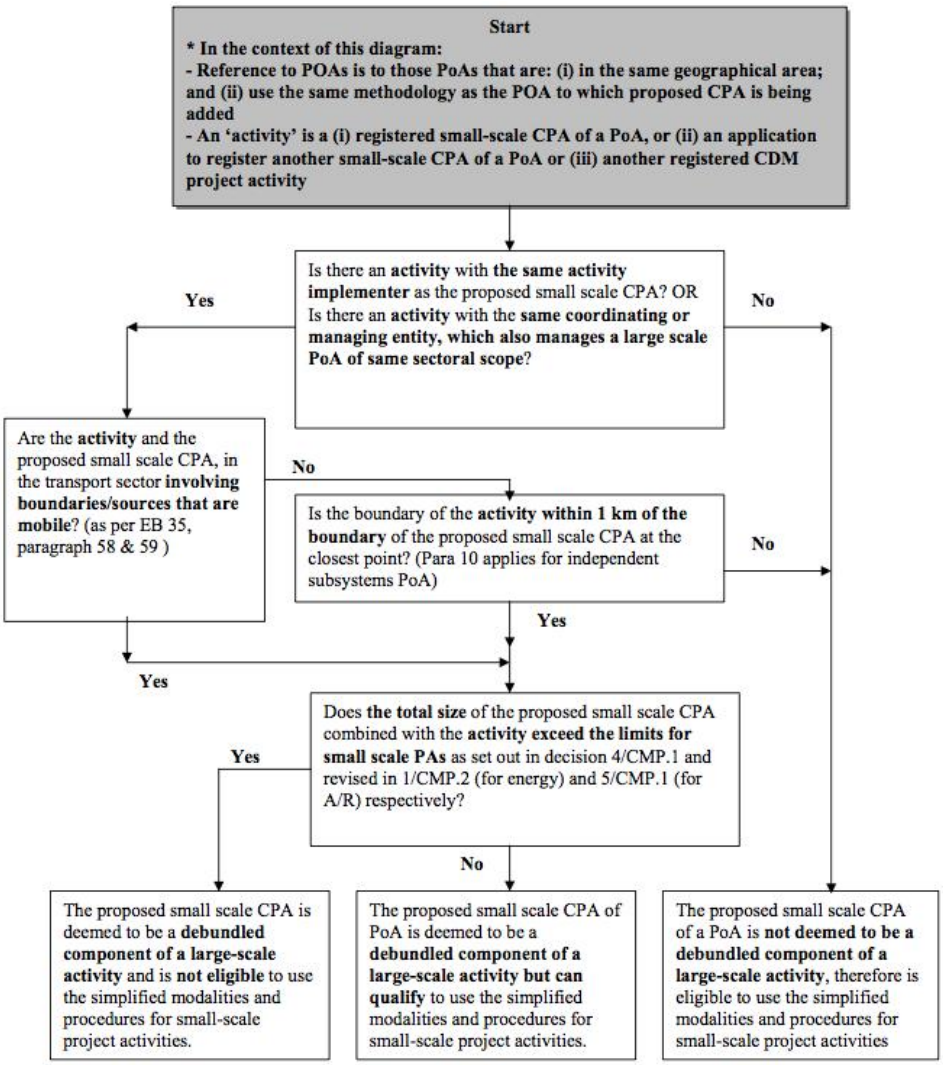

Figure 4: Debundling check procedures

1. Is there an activity with the same activity implementer as the proposed small-scale CPA? OR Is there an activity with the same coordinating or managing entity, which also manages a large-scale PoA of same sectoral scope?

There is an activity with the same coordinating managing entity, which also manages a large-scale PoA of the same sectoral scope.

2. Are the activity and the proposed small-scale CPA, in the transport sector involving boundaries/sources that are mobile?

The activity and the proposed small-scale CPA are not in the transport sector involving boundaries/ sources that are mobile.

3. Is the boundary of the activity within 1 km of the boundary of the proposed small-scale CPA at the closest point?

The boundary of the activity is not within 1 km of the boundary of the proposed small-scale CPA at the closest point.

Therefore, the proposed small-scale CPA of the PoA is not deemed to be a debundled component of a large-scale activity and is, therefore, eligible to use the simplified modalities and procedures for small-scale project activities.

A.13. Confirmation for CPA

The CPA has not been registered as an individual CDM project activity nor is it part of another registered PoA. Prior to registering the CPA, the CME has checked the CDM project database to confirm that the project has not been registered as an individual CDM project. In addition, the CPA has signed an agreement with the CME, which will ensure that the CPA has not been included to another PoA

A.14. Contact information of responsible persons/ entities for completing the CDM-SSC-CPA-DD-FORM

Anil Bhatta
Additional Energy Limited
anil@additionalenergy.com

SECTION B. Environmental analysis

B.1. Analysis of the environmental impacts

According to the National Environmental Management Act (NEMA) and Environmental Impact Assessment regulations from August 2010[8], published by the Minister of Water and Environmental Affairs, the CPA is required to carry out an environmental impact assessment depending on the "Listing Notice" they belong to. However the CPA started the environmental impact assessment process before the new legislation was published in August 2010, therefore the CPA followed the guidelines stated in NEMA EIA 2006 regulations.

The CPA applied for environmental authorization on 09th June 2011 by submitting the final Environmental Impact Assessment Report (EIAR). The final EIA report: "Construction and Operation of Greefspan PV Power Station", finalized in May 2011, was written by Van Zyl Environmental Consultants CC .

On 28th September 2011, the relevant authority, the Department of Environmental Affairs granted

[8] National Environmental Management Act, 1998 (Act NO. 197 of 1998) Environmental Impact Assessment Regulations. Government Gazette, 18 June 2010.

its authorization for the implementation of the project in terms of regulation 37 of the Environmental Impact Assessment Regulations 2006. The permitted activities are the following:

GN R.386

Item 1(a): The construction of facilities or infrastructure, including associated structures or infrastructure, for the generation of electricity where the elements of the facility cover a combined area in excess of 1 hectare.

Item 12: The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

Item 16(b): The transformation of undeveloped, vacant or derelict land to residential mixes, retail commercial, industrial or institutional use where such development does not constitute infill and where the total area to be transformed is bigger than 1 hectare.

GN R.387

Item 1(a)(i): The construction of facilities or infrastructure, including associated structures or infrastructure, for the generation of electricity where the electricity output is 20 megawatts or more.
Item 2: Any development activity, including associated structure and infrastructure, where the total area of the development area is, or is intended to be, 20 hectares or more.

The study area for the assessment of the project's environmental impacts covered an area of approximately 150 ha, which is larger than the footprint of the proposed solar PV power plant. See the map below indicating the study area. Planning of the proposed project and associated infrastructure could thus be adapted to take the identified environmental constraints into consideration.

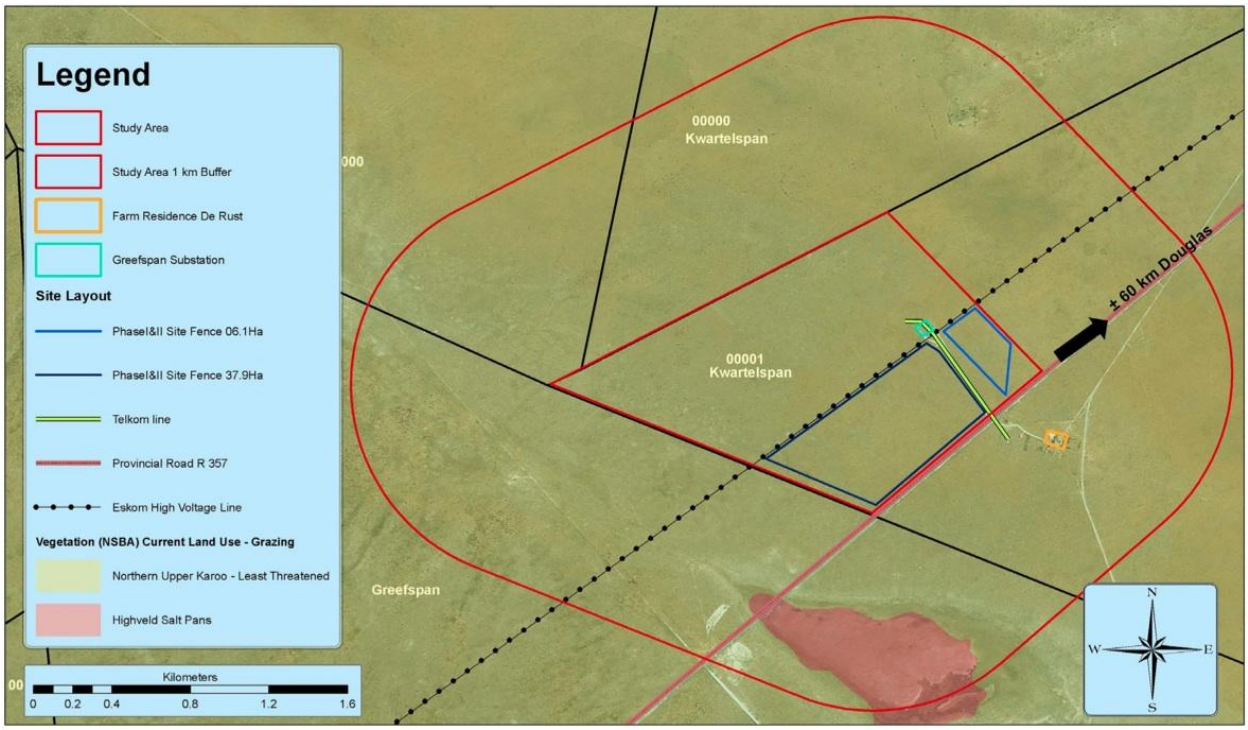

Figure 5. Study area for EIA

Impacts that might potentially be associated with the solar PV power plant include impacts on water resources, soil and agricultural potential (risk of erosion linked to topography of area, land use potential and restriction of land use), ecology and biodiversity (impacts on ecology, flora and fauna, and especially avifauna), social aspects on the macro-, meso- and microlevel, visual quality and aesthetics, economic impacts (mostly positive), traffic impacts (construction, upgrading and decommissioning phases), noise (construction, upgrading and decommissioning phases), air quality, visual and aesthetical impacts, heritage resources and tourism activities.

Most of the potential impacts identified are anticipated to be site-specific. No environmental fatal flaws and no 'no-go' areas have been identified. The following impacts are a summary list of the main impacts identified on the Final EIA Report:

Impacts on water resources

Geohydrology

Groundwater in the wider study area is mainly used for stock watering with some potable use at homesteads on farms. Abstractions are generally low and water quality range from moderately potable to poor with high nitrate and TDS (total dissolved solids) levels. The proposed development would probably have a negligible impact on the groundwater quality, as large quantities of petrochemicals would not be stored on site either during the construction or operational phase and this storage and use will be controlled by the correct implementation of measures of the Environmental Management Programme.

If the use of groundwater should be opted for in future, the sustainable yield rate of aquifers within

the study area must be established to ascertain the amount of water available to this development, taking into account other possible uses within these aquifers. This would be managed by the DWA (Department of Water Affairs). Both existing and newly drilled boreholes, as well as their current and expected use, should be registered at the DWA. Should more than 20 kiloliters be required and available to be withdrawn per day, a Water Use Application should be lodged with DWA.

Hydrology (surface water)

The Orange Vaal WUA (Water Users' Association) has confirmed that water would be available to the project. Should the project be authorised by NERSA, a Water Use Application should be submitted to the Orange Vaal Water Users' Association. It is proposed that a water purification plant be implemented to purify water obtained from the Orange Vaal WUA for potable use.

Should the developer propose to obtain potable water from the municipality/ies in future, a letter of availability of water must be obtained from the particular municipality at that time.

The developer proposes the use of the Enviro Loo system, which would not have any notable impacts on the environment.

Impacts on ecology and biodiversity (including flora, fauna and specifically avifauna)

The main impact would occur during the construction phase of the proposed development. After mitigation measures have been considered, the transformation of the habitat due to the removal of vegetation is still significant. However this impact is still minor as the habitat is of low value.

Socio-economic jmpacts

There is a significant impact on the safety and security of workers and on land use. After taking into consideration the mitigation measures as stipulated in the EMP (Environmental Management Programme) the safety, security and land use issues remain similar. An influx of workers can be controlled and mitigated by following the stipulations in the EMP.

Traffic impacts

Traffic to and from the study area would have to be monitored and controlled closely by the project manager to ensure that congestion and blocking of roads would not occur for long periods of time. The public would have to be notified through local and regional radio stations when large numbers of freight- carrying vehicles would be on the roads. By implementing the mitigation measures proposed, the developer/contractor would be able to limit the traffic impacts on the region and especially the local area.

Visual and aesthetical impacts

The PV power station will have a visual impact on users of the roads, farm homesteads in the vicinity and tourists using the provincial road. This facility would however be much lower than a CSP (concentrated solar plant) and wind power plants. It would provide several advantages over conventional power generating plants: it would use a renewable source of energy to generate power; it would not omit any harmful by-products or pollutants and would not pose any health risks to observers. It would also invoke curiosity and could become a tourist attraction or a landmark within the region. It would therefore be advisable to promote it as such.

It would not be possible to mitigate the visual impact of the PV power station. Housekeeping at the

facility should be in order and other aspects such as dust and other nuisances can be mitigated as stipulated in the EMP.

The transmission line that would connect the PV power station to the Greefspan substation would have a length of approximately 45m and would be situated within the study area. Therefore all impacts and aspects identified and addressed within the study area also include this transmission line and other associated/ancillary infrastructure. The transmission line would be aligned with the existing power line on the study area, which would partially mitigate potential negative impacts.

Impacts on heritage resources

An Archaeological Impact Assessment (AIA) Phase 1 as well as a Palaeontological Scoping Study has been conducted at the study area and no heritage resources have been identified. Mitigation measures, which must be implemented in the event of any future heritage findings, have been addressed in the EMP.

No transboundary impacts were identified in the Final EIA Report.

SECTION C. Local stakeholder consultation

C.1. Solicitation of comments from local stakeholders

The *Glossary of CDM terms* (version 06, EB 66, Annex 63), defines stakeholders as “the public, including individuals, groups or communities affected, or likely to be affected, by the proposed CDM project activity or PoA or actions leading to the implementation of such an activity”. In South Africa stakeholders are referred as Interested and Affected Parties (I&AP) in the context of the national environmental impact assessment process. I&AP are “all persons who, as a consequence of a public participation process conducted in respect of that application in terms of regulation 54, have submitted written comments or attended meetings with the applicant or EAP [environmental assessment practitioner]; all persons who, after completion of the public participation process referred to in paragraph (a), have requested the applicant or the EAP managing the application, in writing, for their names to be placed on the register, and; all organs of state which have jurisdiction in respect of the activity to which the application refers.”

In the context of the proposed Greefspan 11.029 MW Solar PV Project, the stakeholders of the project are landowners living in the vicinity of the area where the project will be implemented, local authorities, and local community organizations. Two stakeholder consultations were carried out. The first stakeholder consultation was organized on 13 April 2011 and took place at the Old Library Hall in Douglas. This consultation was organized as part of the environmental assessment process and it was communicated via registered mail to all I&APs, and by means of newspaper advertisement in the *Volksblad* (the most widely read local newspaper) in English and Afrikaans. Five stakeholders, mainly landowners and local authorities attended this meeting and gave their comments.

The second stakeholder consultation meeting was organized on 3 February 2012 and took place at the Ghaap Restaurant in Douglas. The same list of I&AP was contacted by email, and newspaper advertisements were also published on the 25 January 2012, in the *Volkblad* in Afrikaans, and in the *Diamond Fields Advertiser* in English. Also on the 3 February 2012, a visit to the local authorities was held. An update on the CDM progress was done together with a detail explanation of the CDM process.

C.2. Summary of comments received

No comments were received from the stakeholders during the stakeholder meeting on the 3 February 2012. Only some minor comments were received during the public meeting on 13 April 2011 on skills transfer, visual impact of the PV panels for the road users, and general questions on the construction phase of the power plant and how electricity is being produced.

C.3. Report on consideration of comments received

As for the comment on skills transfer, although the contractor is a German company, all unskilled labour will be sourced locally and skills transfer would occur. Furthermore, an educational trust in being implemented in Douglas, the nearby town, to support mathematics and science.

During the meeting, it was also explained how visual impact on road users is not a problem as PV modules are made to absorb light rather than reflect it and how in Europe Solar PV plants are being in use without any disturbance to road users. Therefore there is no need to account for this comment or implement special measures.

Other general questions on construction and operation of the power plant were answered and explained in detail to the interested stakeholders without any other major issues.

SECTION D. Eligibility of CPA and estimation of emissions reductions

D.1. Reference of methodology(ies) and standardized baseline(s)

SSC-CPAs included in the PoA will apply approved SSC baseline and monitoring methodology AMS- I.D. "*Grid connected renewable electricity generation"* (version 17).

AMS-I.D (version 17) also refers to the latest versions of the following methodological tools:

- *Tool to calculate the emission factor for an electricity system (version 02.2.1)*
- *Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 02)*

However in this first CPA, the *Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 02)* will not be used since this SSC-CPA is a solar PV power plant and therefore there are no CO_2 emissions from fossil fuel combustion.

The approved SSC baseline and monitoring methodology AMS-I.D is approved for use in a PoA by the CDM Executive Board.

D.2. Applicability of methodology(ies) and standardized baseline(s)

The CPA qualifies as small-scale Type I component project activity because the maximum output capacity achieved by the SSC-CPA will not exceed 15 MW during every year of the crediting period. The CPA falls under category AMS-I.D *Grid connected renewable electricity generation* (version 17) because the CPA meets the applicability criteria as follows.

Applicability criteria	CPA justification
This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The SSC-CPA under the programme will use grid- connected solar PV renewable generation units that will supply electricity to the South African national electricity grid. See: AE-AMD Renewable Energy (Pty.) Ltd., *2010/004670/07*, Project Description
This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition; (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s).	The SSC-CPA will install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the CPA (greenfield plant), option (a). See: Final Environmental Impact Assessment Report & Environmental Management Programme
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.	n/a. The SSC-CPA is a solar PV power plant. See: AE-AMD Renewable Energy (Pty.) Ltd., *2010/004670/07*, Project Description
If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale	n/a. The SSC-CPA is a solar PV power plant that does not involve non-renewable

CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	components. See: AE-AMD Renewable Energy (Pty.) Ltd., *2010/004670/07*, Project Description
Combined heat and power (co-generation) systems are not eligible under this category.	n/a. The programme of activities does not include combined heat and power (co-generation) systems. See: PoA-DD version 07
In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	n/a. The programme of activities does not include capacity additions. See: PoA-DD version 07
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	n/a. The programme of activities does not include retrofits or replacements. See: PoA-DD version 07

In addition, the project meets the applicability criteria of the *Tool to calculate the emission factor for an electricity system* (version 02.2.1) as follows:

This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	This tool is applicable since the CPA involves the generation of electricity from solar energy and its supply to the South African electricity grid system. See: AE-AMD Renewable Energy (Pty.) Ltd., *2010/004670/07*, Project Description
The tool is not applicable if the project electricity system is located partially or totally in an Annex-I country.	The project electricity system is located in South Africa. See: AE-AMD Renewable Energy (Pty.) Ltd., *2010/004670/07*, Project Description South Africa is not an Annex-I country. See: UNFCCC website

D.3. Sources and GHGs

	Source	Gas	Included?	Justification/Explanation
Baseline	CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project Activity	Project Activity	CO2	No	Zero emissions since this a renewable energy project (Solar PV energy)
		CH4	No	
		N2O	No	

The CPA will consist of a solar PV power plant with a rated capacity of 11.029 MWp. The CPA will involve the construction of a transmission line to connect to the nearby existing switching substation. More details on the technical aspects of the CPA can be found in section A.5 above.

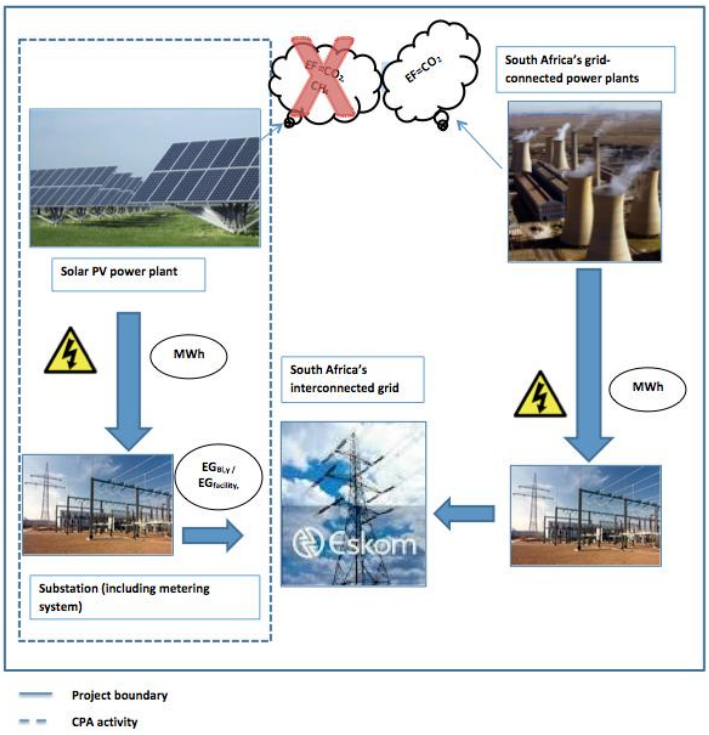

Figure 6. Flow diagram showing the equipment and systems included in the project boundary

According to the methodology AMS-I.D (version 17) applied, and the proposed project being a grid connected PV power project, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to South Africa's electricity grid as evidenced by the Power Purchase Agreement (PPA) which can be considered as proof that the CPA is located within the geographical boundary of the PoA. It is estimated that the CPA will annually supply an average of 26,161 MWh of clean electricity to South Africa's national electricity grid operated by Eskom. CPA will therefore displace electricity generated by South African's fossil fuel grid connected power plants and will therefore lead to annual emission reductions of 24,758 tCO2e.

In order to determine the annual emission reductions, the project proponent will monitor the amount of electricity generated, as described in section D.7.

D.4. Description of the baseline scenario

In accordance with simplified baseline and monitoring methodology AMS-I.D (version 17) *Grid connected renewable electricity generation*, the baseline scenario is "the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid".

The baseline scenario can be further described as follows:

Policies and regulations of the South African electricity system

The South African Department of Energy (DoE) is the legislative entity responsible for the South

African energy sector. The energy sector is determined by the *National Energy Act of 2008 (No.34 of 2008)*[9]. The key objectives stated in the *National Energy Act of 2008* are:

- *Ensure uninterrupted supply of energy to the Republic;*
- *Promote diversity of supply of energy and its sources;*
- *Facilitate effective management of energy demand and its conservation;*
- *Promote energy research;*
- *Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy;*
- *Ensure collection of data and information relating to energy supply, transportation and demand;*
- *Provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organized and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and a sustainable development;*
- *Provide for certain safety, health and environment matters that pertain to energy:*
- *Facilitate energy access for improvement of the quality of life of the people of Republic;*
- *Commercialize energy-related technologies;*
- *Ensure effective planning for energy supply, transportation and consumption: and*
- *Contribute to sustainable development of South Africa's economy*.

Specifically for the electricity sector of South Africa, the *Electricity Regulation Act of 2006 (No. 4 of 2006)*[10] determines the framework of the electricity sector. The act states the following key objectives for the South African electricity sector:

- *Achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa;*
- *Ensure that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic;*
- *Facilitate investment in the electricity supply industry;*
- *Facilitate universal access to electricity;*
- *Promote the use of diverse energy sources and energy efficiency;*
- *Promote competitiveness and customer and end user choice; and*
- *Facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public.*

The regulation of the South African electricity, piped-gas and petroleum pipelines is the responsibility of the National Energy Regulator of South Africa (NERSA). NERSA was established under the *National Energy Regulator Act, 2004 (Act No.40 of 2004)*[11] To reach the objectives

. [9] Department of Energy (2008), National Energy Act of 2oo8 http://www.info.gov.za/view/DownloadFileAction?id=92826, accessed on 30.12.2011

. [10] Department of Energy (2006), Electricity Regulation Act of 2006, http://www.info.gov.za/view/DownloadFileAction?id=67855, accessed on 30.12.2011

. [11] Department of Energy (2004), National Energy Regulator Act 2004, http://www.info.gov.za/view/DownloadFileAction?id=67980, accessed on 30.12.2011

described in the *Electricity Regulation Act of 2006*, NERSA has been granted the following power and duties as the regulator of the electricity market:

- *The regulator must consider applications for licenses and may issue licenses for the operation of generation, transmission and distribution facilities, the import and export of electricity and trading.*
- *Regulate prices and tariffs*
- *Register persons who are required to register with the regulator where they are not required to hold a license*
- *Issue rules designed to implement the national government's electricity policy framework, the integrated resources plan and this Act*
- *Establish and manage monitoring and information systems and a national information system, and co-ordinate the integration thereof with other relevant information systems.*
- *Enforce performance and compliance, and take appropriate steps in the case of non-performance*.

Regarding the installation of new generation capacity, the *Electricity Regulation Act of 2006* states that: *The minister may, in consultation with the regulator* [NERSA]*:*

- *Determine that new generation capacity is needed to ensure the continued uninterrupted supply of electricity;*
- *Determine the types of energy sources from which electricity must be generated, and the percentages of electricity that must be generated from such sources;*
- *Determine that electricity thus produced may only be sold to the persons or in the manner set out in such notice;*
- *Determine that electricity thus produced must be purchased by the persons set out in such notice;*
- *Require that new generation capacity must be established through a tendering procedure which is fair, equitable transparent, competitive and cost-effective and provides participation for the private sector*

For this purpose, the Department of Energy, acting as the legislative entity, put into force the *Electricity Regulations on New Generation Capacity*[12] in November 2010 under the *Electricity Regulation Act of 2006.* In line with the current regulation, 70% of the new generation capacity must be implemented by the state-owned utility company Eskom, and 30% by Independent Power Producers (IPPs)[13] The Department of Energy has the mandate to decide which planned capacity addition will be implemented by Eskom, and which will be determined by a bidding process between IPPs. However, all IPPs are mandated to sell the generated electricity to Eskom (Single-Buyer-Model) through the signing of long-term Power Purchase Agreements (PPAs) with Eskom.

The Department of Energy determines the needed capacity additions after consultation with the regulator NERSA. The DoE regularly develops an "*Integrated Resource Plan for Electricity"* which is updated every two years, the latest one being the *"Integrated Resource Plan 2010-2030 for Electricity*[14]*"* under the *Electricity Regulation Act No. 4 of 2006.* In its current version, from the year

[12] Department of Energy (2010), Electricity Regulations on New Generation Capacity, http://www.info.gov.za/view/DownloadFileAction?id=136320, accessed on 30.12.2011

[13] Department of Energy, http://www.energy.gov.za/files/electricity_frame.html, accessed on 30.12.2011

[14] Department of Energy (2011), Electricity Regulations on the Integrated Resource Plan 2010-2030, http://www.info.gov.za/view/DownloadFileAction?id=146082, accessed on 30.12.2011

2010, the Integrated Resource Plan determines the proposed specific amount of each technology in the electricity generation from 2010 to 2030.

The *Electricity Regulation on New Generation Capacity* replaced the former *Renewable Energy Feed-in Tariff (REFIT)*[15], which came into force on the 26 of March 2009.

Structure of the South African Power Sector

Apart from the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA), Eskom is the main player in the South African power sector. From 2002, Eskom became a public, limited liability company wholly owned by the government. It owns and operates the National Electricity Grid and parts of the distribution network, and also owns 93% of the installed generation capacity.

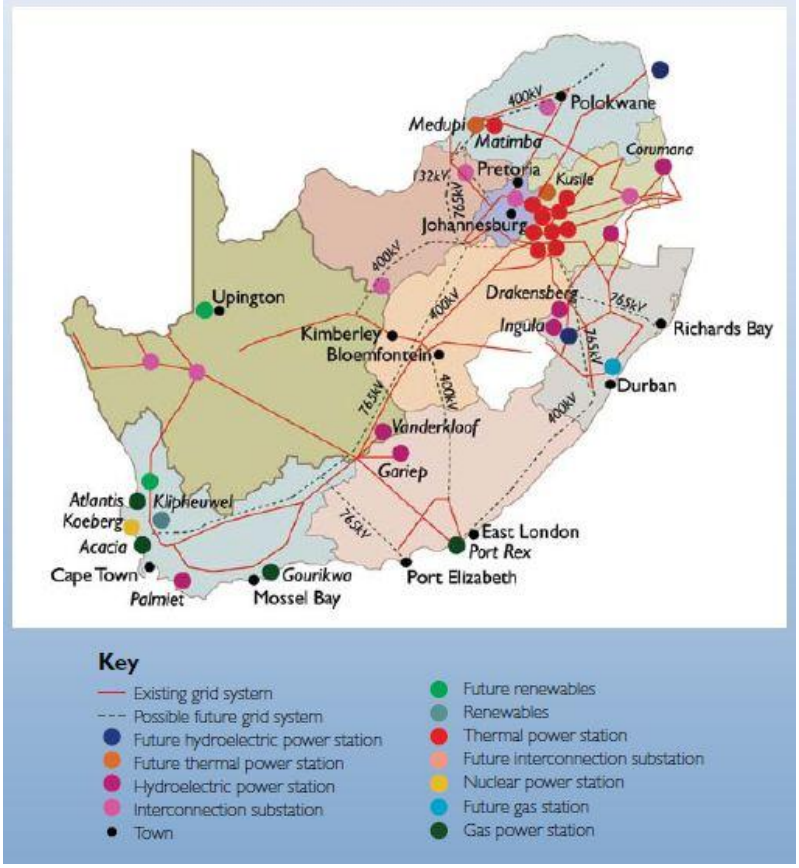

Figure 7. South African Power Sector

[15] NERSA (2009), South Africa Renewable Energy Feed-in Tariff (REFIT), http://www.info.gov.za/view/DownloadFileAction?id=99318 , accessed on 30.12.2011

Generation

As mentioned before, generation is dominated by Eskom, which supplies about 95% of South Africa's electricity. Municipal owned power plants and IPPs supply the remaining 5%. Approximately 90% of the total generated electricity is based on coal[16]

Detail description of the installed capacity for each technology is presented in the following tables. Data from Eskom's power plants is dated from 2011[17]. The latest published data for IPPs and municipal generation is from 2006[18].

Table 7. Eskom Electricity Generation Capacity

Installed Eskom capacity by source 2011	Nominal Capacity [MW]	Net maximum capacity [MW]
Coal	37,745	35,052
Gas	2,426	2,409
Hydro	661	600
Nuclear	1,910	1,830
PSHPP	1,400	1,400
Wind	3	3

Table 8. Municipalities Electricity Generation Capacity

Installed municipal capacity by source 2006	Nominal Capacity [MW]	Net maximum capacity [MW]
Coal	1,323	240
Gas	334	122
Hydro	4	-
PSHPP	189	174

[16] NERSA (2006), 2006 Electricity Supply Statistics for South Africa,http://www.nersa.org.za/Admin/Document/Editor/file/News%20and%20Publications/Publications/Current%20Issues/Electricity%20Supply%20Statistics/Electricity%20supply%20statistics%202006.pdf , accessed on 30.12.2011

[17] ESKOM (2011), Integrated Report 2011, http://financialresults.co.za/2011/eskom_ar2011/index.php, accessed on30.12.2011

[18] NERSA (2006), 2006 Electricity Supply Statistics for South Africa, http://www.nersa.org.za/Admin/Document/Editor/file/News%20and%20Publications/Publications/Current%20Issues/Electricity%20Supply%20Statistics/Electricity%20supply%20statistics%202006.pdf accessed on 30.12.2011

Table 9. IPP Electricity Generation Capacity

Installed private capacity by source 2006	Nominal Capacity [MW]	Net maximum capacity [MW]
Coal	1,339	933
Bagasse / Coal Fired Stations	105	66
Hydro	10	7
Wind	5.2	5.2
Waste Water / Biogas	4.25	4.25
Landfill	5	5

Accordingly, Eskom owns 93% of the total installed capacity in South Africa of 47,463.45 MW whereby IPPs (including CDM) and municipalities own a share of 3 % and 4 % respectively of the installed capacity.

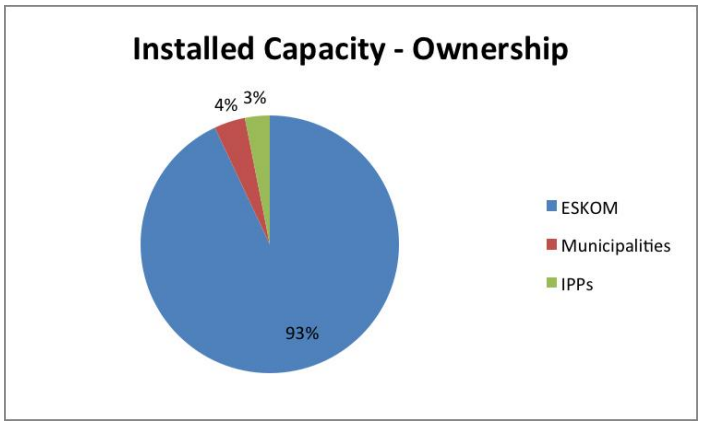

Figure 8: Installed capacity - Ownership

Municipal power plants are mostly coal thermal power plants and gas power plants which generate electricity for the direct supply in their municipal distribution area. Many municipalities own their own distribution networks, and some of them add generation capacity to their distribution lines by adding their own power plants on top of the electricity purchased from the national grid. Power plants operated by IPPs are commonly based on coal/bagasse. Some of the IPP owned power plants generate electricity for on-site consumption (large industrial consumers) and only feed electricity into the grid in the case of excess generation.

In terms of installed capacity, coal power plants' share is about 85% followed by electricity generation based on gas (6%), nuclear (4%) and pumped storage hydro power plants (3%). However, the pumped storage power plants are not considered as power plants for the calculation of the Grid Emission Factor in line with the approved *Tool to calculate the emission factor for an electricity system* (version 02.2.1). Pumped storage plants are net consumers of electricity, which pump water during off-peak periods to a reservoir so that electricity can be generated during peak periods. Other energy sources like hydro, biogas etc. are negligible.

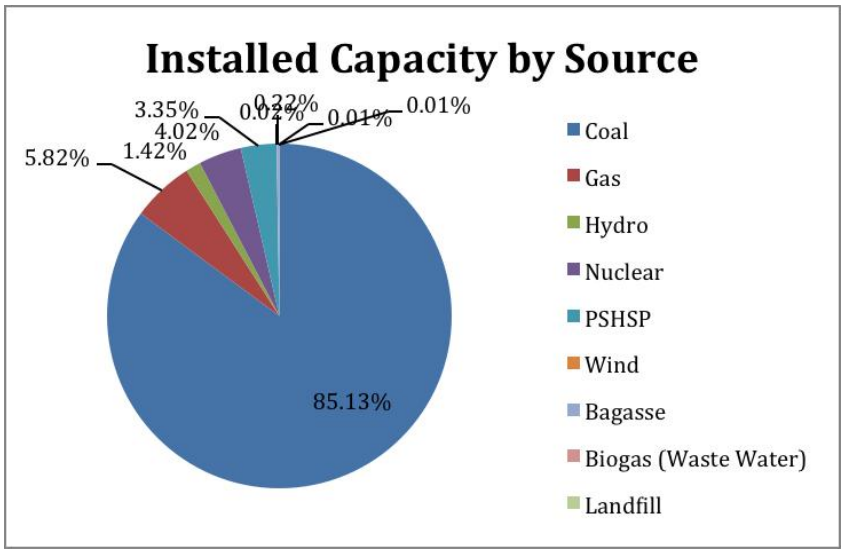

Figure 9: Installed capacity by source

The *Integrated Resource Plan 2010-2030 for Electricity,* which determines the needed capacity and share of technologies in the future proposes the following capacity additions until 2030[19]:

Table 10. Summary of capacity additions 2010-2030

	Total Capacity		Capacity added (including committed) from 2010 to 2030		New (uncommitted) capacity options from 2010 to 2030	
	MW	%	MW	%	MW	%
Coal	41,071	45.9	16,383	29.0	6,250	14.7
OCGT	7,330	8.2	4,930	8.7	3,910	9.2
CCGT	2,370	2.6	2,370	4.2	2,370	5.6
Pumped Storage	2,912	3.3	1,332	2.4	0	0.0
Nuclear	11,400	12.7	9,600	17.0	9,600	22.6
Hydro	4,759	5.3	2,659	4.7	2,609	6.1
Wind	9,200	10.3	9,200	16.3	8,400	19.7
CSP	1,200	1.3	1,200	2.1	1,000	2.4
PV	8,400	9.4	8,400	14.9	8,400	19.7
Other	890	1.0	465	0.8	0	0.0
Total	**89,532**		**56,539**		**42,539**	

The current installed capacity of 47,463 MW is therefore expected to double up to 89,532 MW by the year 2030 in order to meet the estimated rising electricity demand in the country, which is expected to have a peak demand of 80,272 MW by then. Besides the domestic generation, the *Integrated Resource Plan for Electricity* 2010-2030 forecasts increasing imports of electricity generated from hydro power plants located in Zambia and Mozambique from 2022 onwards. However, the *Integrated Resource Plan for Electricity 2010-2030* also mentions that in order to

[19] Department of Energy (2011), Electricity Regulations on the Integrated Resource Plan 2010-2030, http://www.info.gov.za/view/DownloadFileAction?id=146082, accessed on 30.12.2011

reach this objective cross-border negotiations and an upgrade in transnational transmission infrastructure would be necessary. Additional risks regarding imports are delays from hydro power plants in the construction of the power plants and long-lasting droughts.

The *Integrated Resource Plan for Electricity 2010 - 2030* also forecasts the continuation of the current power shortage until the year 2016 when newly installed power plants in line with *Integrated Resource Plan for Electricity 2010-2030* will start operation. By year 2012 a supply shortfall of 9 TWh is estimated meanwhile for the year 2013 the shortfall is expected to be only 3 TWh. However, several steps have been taken to decrease the risk of shortfalls, such as the implementation of a demand site management by Eskom or a Solar Water Heater programme[20].

Transmission and Distribution

Eskom operates the integrated national high-voltage transmission system and supplies electricity directly to large consumers such as mines and other large industries, to commercial farmers and also, through the Integrated National Electrification Programme (INEP), to a large number of residential consumers. Eskom provides electricity directly to about 45% of all end-users in South Africa. The other 55% of end- users have their electricity distributed by redistributors (including municipalities)[21] Eskom sells in bulk to certain municipalities, which distribute to the consumers within their boundaries. Those municipalities, own the distribution lines in their areas, and some also own their own generation power plants. There are also a few private entities that have the licence to distribute electricity as shown below:[22]

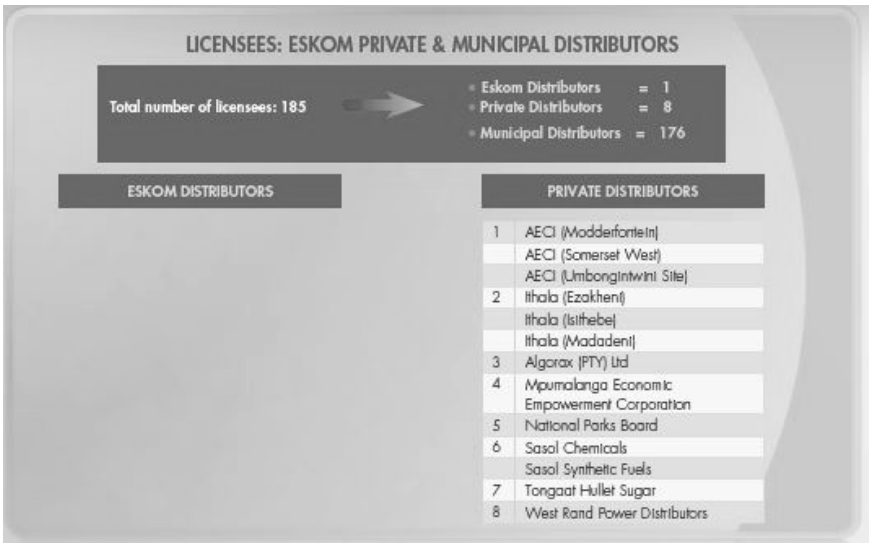

Figure 10. Distribution licenses

[20] http://www.eskom.co.za/, accessed on 30.12.2011

[21] ESKOM (2011), Integrated Report 2011, http://financialresults.co.za/2011/eskom_ar2011/index.php, accessed on30.12.2011

[22] NERSA (2006), 2006 Electricity Supply Statistics for South Africa, http://www.nersa.org.za/Admin/Document/Editor/file/News%20and%20Publications/Publications/Current%20Issues/Electricity%20Supply%20Statistics/Electricity%20supply%20statistics%202006.pdf , accessed on 30.12.2011

The government's policy on the Electricity Distribution Industry (EDI) requires the transmission of electricity to be separated from Eskom and merged with the electricity departments of municipalities to form a number of financially viable regional electricity distributors (REDs)[23]. An interim body, called EDI Holdings Company, was intended to oversee the transition period. This plan would have required Eskom to transfer its distribution assets and business to these entities. The restructuring proposal was formally revoked on 8 December 2010 by the government[24]. Therefore transmission lines are still owned and operated by Eskom.

As for transmission of the electricity, to meet the forecasted additional generation capacity in the *Integrated Resource Plan for Electricity 2010 - 2030*, the *"Transmission Ten-Year Development Plan 2012-2021"*[25] published by the Transmission Division of Eskom determines the required additional transmission capacity as follows:

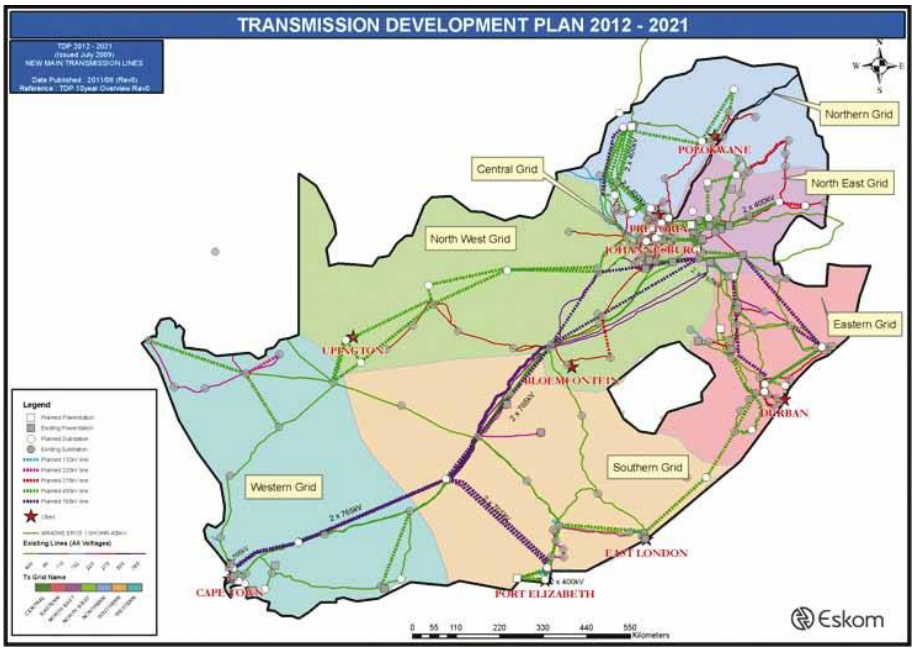

Figure 11. Transmission Development Plan 2012-2021

Significant lengths of new transmission lines are being added to the system: over 4,000 km of 765-kV and over 7,800 km of 400-kV lines have either been approved or proposed over the 10-year *Transmission Development Plan* period. This addition is mainly due to the major network reinforcements required for the supply to the Cape (South and West Grids) and KwaZulu-Natal (East Grid). The integration of the new

[23] Department of Energy, http://www.energy.gov.za/files/electricity_frame.html, accessed on 30.12.2011

[24] ESKOM (2011), Integrated Report 2011, http://financialresults.co.za/2011/eskom_ar2011/index.php, accessed on 30.12.2011

[25] Eskom (2011), Transmission Ten-Year Development Plan 2012-2021, http://www.eskom.co.za/content/TDP%20051011%20lowres.pdf, accessed on 30.12.2011

Medupi Power Station in the developing Limpopo West Power Pool (Medupi is close to Matimba) also requires significant lengths of transmission lines as it is a long distance away from the main load centres. The large length of 400-kV transmission lines is also the result of the development of a more meshed transmission 400-kV network to provide greater reliability and thus improve the levels of network security.

The addition of over 73,000 MVA of transformer capacity to the transmission system is an indication of the increase in load demand and in the capacity requirements of the customers. This figure also includes the transformation capacity required to integrate renewable energy generation. Approximately 2,000 MVArs of capacitive support are required to support areas of the network under contingency conditions to ensure that the required voltage levels are maintained. They also improve system efficiency by reducing network losses.

TDP New Assets	Total
HVDC Lines (km)	0
765kV Lines (km)	4,430
400kV Lines (km)	7,830
275kV Lines (km)	501
Transformers 250MVA+	119
Transformers <250MVA	25
Total installed MVA	73,985
Capacitors	19
Total installed MVAr	2,094
Reactors	55
Total installed MVAr	12,603

Figure 12. New grid assets

D.5. Demonstration of eligibility for a CPA

	Topic	PoA eligibility criteria	Justification
1)	Geographical boundary (a)	The geographical boundary of the CPA including any time-induced boundary is located within the geographical boundary set in the PoA, South Africa.	The SSC-CPA's geographical location as shown in the final EIA report is within the geographical boundary as set in section A.5 of the PoA-DD.
2)	Double counting (b)	The CPA has not yet been included in another programme of activities or has not yet been registered as a single CDM project activity.	The project proponent has signed a confirmation indicating that the project has not yet been included in another programme of activities nor has it been registered as a single CDM project activity. The cross-check in the CDM website has confirmed that there is no similar CDM project activity. The name "Greefspan 11.029 MW Solar PV Project" refers to the location of the CPA and the installed

			capacity of the project. The project name uniquely identifies the project.
3)	Technology (c)	The CPA involves the implementation of a renewable energy technology, including solar PV, wind, geothermal and hydro. CPAs involving the use of biomass for generating electricity are excluded from this programme of activities.	As indicated in AE-AMD's Greefspan's project description, the proposed CPA involves the installation of a 11.029 MWp solar PV powered plant in Pixley ka Seme district municipality, Northern Cape province, South Africa,
4)	Start date (d)	The start of the CPA occurs after the start date of the validation of the programme of activities, 13/03/2012. The start date will be defined as the date on which a contract has been signed for equipment, construction or operation services required for the CPA or the date on which the CPA is included in the programme of activities, whichever comes earlier.	The contract with equipment supplier will be signed on the 01/01/2013. The start date of validation of the PoA was 13/03/2012. The project thus meets the start date requirement.
5)	Applicability of methodology (e)	The CPA meets all the applicability criteria of version 17 of AMS-I.D *Grid connected renewable electricity generation* as per section B.2, part II of the PoA-DD.	A detailed assessment showing that the project meets all the applicability criteria of version 17 of AMS-I.D *Grid connected renewable electricity generation* as shown in section D.2.
6)	Applicability of methodology (e)	The CPA does not use generating equipment, which is transferred from another activity.	The CPA will not use generating equipment, which is transferred from another activity
7)	Additionality (f)	The CPA meets the eligibility criteria pertaining to the demonstration of additionality as shown in the additionality-related eligibility criteria.	Additionality check carried out in this section, below demonstrates that the project is additional.
8)	Stakeholder consultation and	(a) The CPA has carried out a local stakeholder consultation.	(a) The report of the meeting that includes summary of concerns raised and clarification provided thereof,

	EIA (g)	(b) The CPA has carried out an Environmental Impact Assessment in line with host country laws and regulations	attendance sheet, invitations and photographs shows that a local stakeholder consultation was carried out. (b) Environmental Impact Assessment report and license are provided by the - CPA and show that the CPA has carried out and EIA.
9)	ODA (h)	The CPA has not received funding from Annex I parties that results in a diversion of official development assistance	The confirmation letter from CPA entity shows that the CPA has not received funding from Annex I parties that results in a diversion of official development assistance.
10)	Target group (i)	The CPA supplies electricity to a national or regional grid; or supplies electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The draft Power Purchase Agreement shows that the CPA will supply electricity to the South African national grid system.
11)	Sampling (j)	Sampling will be carried out in line with paragraph 4 of the *Standard for sampling and surveys for CDM project activities and Programme of Activities* (version 02.0, EB 65, Annex 2) whereby the requirements from the applicable methodology will have precedence *[Applicable for geothermal project types].*	Not applicable as it is not a geothermal project, but a solar photovoltaic power project.
12)	Installed capacity limits (k)	The installed capacity of the CPA is smaller than or equal to 15 MW. However, if a CPA is applying the additionality Option A for microscale project activities, the installed capacity of the SSC-CPA will be smaller than or equal to 5 MW.	The project plans to install 11.029 MWp capacity of solar PV power. Thus it meets the 15 MW SSC-threshold.
13)	Debundling (l)	The CPA is not a debundled component of a large-scale	Debundling check carried out in line with the *Guidelines on assessment of*

		project activity in accordance with the *Guidelines on assessment of debundling for SSC project activities* (version 03, EB 54, Annex 13).	*debundling for SSC project activities* (version 03, EB 54, Annex 13) shows that the project is not a debundled component of a large-scale project activity.

Confirmation of additionality of the SSC-CPA for its inclusion in the PoA:

The additionality of the CPA is demonstrated and assessed using option C.

Option C: Automatic additionality	
Criteria	*Justification*
The CPA uses a technology, which is on the positive list of grid-connected renewable electricity generation technologies as specified in the *Guidelines on the demonstration of additionality of small-scale project activities* (version 09.0, EB 68, Annex 27).	The CPA uses solar photovoltaic with is a technology on the positive list of grid-connected renewable electricity generation technologies.

According to the *Guidelines on the demonstration of additionality of small-scale project activities (version 09.0, EB 68, Annex 27)*, the positive list of grid-connected renewable electricity generation technologies involve:

(i) Solar technologies (photovoltaic and solar thermal electricity generation);
(ii) Off-shore wind technologies;
(iii) Marine technologies (wave, tidal);
(iv) Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW;

Since the CPA is a solar photovoltaic project, the project is automatically **additional**.

D.6. Estimation of emission reductions

D.6.1. Explanation of methodological choices

The SSC-CPA is a grid-connected solar photovoltaic plant installed at a site where there was no renewable energy power plant operating prior to the implementation of the CPA (greenfield plant).

Baseline emissions

The baseline emissions are the product of electrical energy baseline EG_{BL} expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

The baseline emissions (BE_y) are calculated using **equation (1)** of AMS-I.D version 17:

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$

Where:

BE_y = Baseline Emissions in year *y* (t CO_2)

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year *y* (MWh)

$EF_{CO2,grid,y}$ = CO_2 emission factor of the grid in year *y* (t CO_2/MWh)

The emission factor is calculated in a transparent and conservative manner using the combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the *Tool to calculate the emission factor for an electricity system* (version 02.2.1).

$EF_{CO2,grid,y}$ is calculated based on the results of the grid emission factor computation described in Appendix 4 of the PoA-DD based on guidelines of the *Tool to calculate the emission factor for an electricity system (version 02.2.1)*. The calculation of the combined margin emission factor is based on weighted average CM whereby **equation (13)** in the tool shown below was applied:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * w_{OM} + EF_{grid,BM,y} * w_{BM}$$

Since the project involves the installation of a solar power plant, the values of w_{OM} and w_{BM} are 0.75 and 0.25 respectively.

The grid emission factor is calculated for the South African electricity system at PoA level and will be updated every seven years of the PoA.

Project emissions

For most renewable energy project activities PE_y = 0. However, as per the provisions in AMS-I.D (version 17), project emissions will be considered for geothermal and hydro power plants with water reservoirs. These project emissions shall be calculated using **equation (1)** in ACM0002 (version 13.0.0) taking only those parameters applicable under AMS.I-D (version 17)

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y = Project emissions in year *y* (tCO_2e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (tCO_2/yr)

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year *y* (tCO_2e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (tCO_2e/yr)

Project emissions are not considered for this specific CPA, since the CPA is a solar PV power plant.

Leakage emissions

Leakage emissions are not considered since the CPA will not use energy generating equipment that is transferred from another activity.

Emission reductions

In line with AMS-I.D. (version 17) the emission reductions are calculated using **equation 10** as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER_y = Emission reductions in year *y* (t CO_2/y)

BE_y = Baseline Emissions in year *y* (t CO_2/y)

PE_y = Project emissions in year *y* (t CO_2/y)

LE_y = Leakage emissions in year *y* (t CO_2/y)

D.6.2. Data and parameters fixed ex-ante

Data / Parameter	**$NCV_{i,y}$**
Unit	GJ/kg
Description	Net calorific value (energy content) of fossil fuel type *i* in year *y*
Source of data	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval have been used
Value(s) applied	Fuel Type: NCV (GJ/kg) Coal (other bituminous coal): 0.0199 Gas/Jet kerosene: 0.042 Gas/Diesel Oil: 0.0414
Choice of data or Measurement methods and procedures	IPCC default values are used as there is no specific data from the fuel suppliers of the power plants and also not regional default values. Average OM: Calculated once for each crediting period during validation stage using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation(*ex ante* option) BM: For the first crediting period, once *ex ante*. For the second and third crediting period, only once *ex ante* at the start of the second crediting period
Purpose of data	Calculation of baseline emissions
Additional comment	GEF has been fixed on PoA level

Data / Parameter	$EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$
Unit	tCO2/GJ
Description	CO2 emission factor of fossil fuel type *i* used in power unit *m* in year *y*
Source of data	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval have been used.
Value(s) applied	Fuel Type: EFCO2 (tCO2/GJ) Coal (other bituminous coal): 0.0895 Gas/Jet kerosene: 0.0697 Gas/Diesel Oil: 0.0726
Choice of data or Measurement methods and procedures	IPCC default values are used as there is no specific data from the fuel suppliers of the power plants and also not regional default values. Average OM: Calculated once for each crediting period during validation stage using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (*ex ante* option) BM: For the first crediting period, once *ex ante* following the guidance included in Step 5. For the second and third crediting period, only once *ex ante* at the start of the second crediting period
Purpose of data	Calculation of baseline emissions
Additional comment	GEF has been fixed on PoA level

Data / Parameter	$\eta_{m,y}$
Unit	-
Description	Average net conversion efficiency of power unit m in year y
Source of data	Default value for open cycle gas turbines built before and after 2000 and Fluidised Bed System (FBS) coal generation technology for units built before and in 2000 is used as per Annex 1 of the Tool to calculate the emission factor for an electricity system.
Value(s) applied	Open cycle gas turbines built before and in 2000: 30% Open cycle gas turbines built after 2000: 39.5% (FBS) coal generation technology for units built before and in 2000: 35.5%
Choice of data or Measurement methods and procedures	There is no data published on the efficiency of Eskom's gas power plants, therefore default values as provided in Annex 1 of the Tool to calculate the emission factor for an electricity system shall be used.
Purpose of data	Calculation of baseline emissions
Additional comment	GEF has been fixed on PoA level

Data / Parameter	$EG_{m,y}$

Unit	MWh
Description	Net electricity generated by power plant/unit m in year y
Source of data	Eskom published data and CDM Monitoring Reports for the CDM project activities
Value(s) applied	

		Generation Data (MWh)		
Name	Type	2008-2009	2009-2010	2010-2011
Arnot	Coal	11,987,281	13,227,864	12,194,878
Camden	Coal	6,509,079	7,472,070	7,490,836
Duvha	Coal	21,769,489	22,581,228	20,267,508
Grootvlei	Coal	1,249,556	2,656,230	3,546,952
Hendrina	Coal	12,296,687	12,143,292	11,938,206
Kendal	Coal	23,841,401	23,307,031	25,648,258
Komati	Coal	-	1,016,023	2,060,141
Kriel	Coal	18,156,686	15,906,816	18,204,910
Lethabo	Coal	23,580,232	25,522,698	25,500,366
Majuba	Coal	22,676,924	22,340,081	24,632,585
Matimba	Coal	26,256,068	27,964,141	28,163,040
Matla	Coal	21,863,400	21,954,536	21,504,422
Tutuka	Coal	21,504,122	19,847,894	19,067,501
Acacia	Gas (Jet kerosene)	-	971.00	992.00
Port Rex	Gas (Jet kerosene)	-	322.00	5,507.00
Ankerlig	Gas/Diesel Oil	-	6,303.00	-
Gourikwa	Gas/Diesel Oil	-	5,817.00	-
Gariep	Hydropower	-	-	-
Vanderkloof	Hydropower	-	-	-
Colleywobbles	Hydropower	-	-	-
First Falls	Hydropower	-	-	-
Second Falls	Hydropower	-	-	-
Ncora	Hydropower	-	-	-
Koeberg	Nuclear	13,004,000	12,806,000	12,099,000
Klipheuwel	Wind	2,000	1,000	2,000
PetroSA biogas to energy	CDM	23,286	23,286	23,286
Bethlehem Hydroelectric project	CDM	8,983	8,983	8,983
Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills	CDM	3,744	3,744	3,744
Durban landfill gas Bisasar Road project	CDM	23,792	31,723	31,723
Total		**224,756,730**	**228,828,053**	**232,394,838**

Choice of data or Measurement methods and procedures	Data on electricity generation has been obtained from Eskom, the main utility company in South Africa and owner of the power plants. For the CDM power plants, that are not owned by Eskom, generation data had to be calculated from the CDM Monitoring Reports. Average OM: Calculated once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option) BM: For the first crediting period, once ex ante following the guidance included in Step 5 of the Tool to calculate the emission factor for an electricity system. For the second and third crediting period, only once ex ante at the start of the second crediting period.
Purpose of data	Calculation of baseline emissions
Additional comment	GEF has been fixed on PoA level

Data / Parameter	$FC_{i,m,y}$
Unit	Kg/year
Description	Amount of fossil fuel type *i* consumed by power plant / unit *m* in year *y*
Source of data	Eskom published data, other utility and government records
Value(s) applied	

		$FC_{i,m,y}$ (kg/year)		
Name	**Type**	**2008-2009**	**2009-2010**	**2010-2011**
Arnot	Coal	6,395,805,000	6,794,134,000	6,525,670,000
Camden	Coal	3,876,211,000	4,732,163,000	4,629,763,000
Duvha	Coal	11,393,553,000	11,744,606,000	10,639,393,000
Grootvlei	Coal	674,538,000	1,637,371,000	2,132,979,000
Hendrina	Coal	7,122,918,000	6,905,917,000	7,139,198,000
Kendal	Coal	15,356,595,000	13,866,514,000	15,174,501,000
Komati	Coal	0	664,497,000	1,271,010,000
Kriel	Coal	9,420,764,000	8,504,715,000	9,527,185,000
Lethabo	Coal	16,715,323,000	18,170,227,000	17,774,699,000
Majuba	Coal	12,554,406,000	12,261,833,000	13,020,512,000
Matimba	Coal	13,991,453,000	14,637,481,000	14,596,842,000
Matla	Coal	12,689,387,000	12,438,391,000	12,155,421,000
Tutuka	Coal	11,231,583,000	10,602,839,000	10,191,709,000
Acacia	Gas (Jet kerosene)	0	-	347,066.46
Port Rex	Gas (Jet kerosene)	0	-	219,913.98
Ankerlig	Gas/Diesel Oil	0	-	0
Gourikwa	Gas/Diesel Oil	0	-	0

Choice of data or Measurement methods and procedures	Data on fuel consumption has been obtained from Eskom, the main utility company in South Africa and owner of the power plants. The values provided for the coal plants are in tonnes. These values were converted to kg by multiplying by 1000. The values provided for the gas turbines i.e. Acacia, Port Rex, Ankerling and Gourikwa are in litres. These were converted to kg units by multiplying by the fuel type density given in (kg/l). For jet gasoline, the density value used was 0.78 kg/l while 0.82 kg/l was used for diesel oil. Average OM: Calculated once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (*ex ante* option) BM: For the first crediting period, once *ex ante.* For the second and third crediting period, only once *ex ante* at the start of the second crediting period
Purpose of data	Calculation of baseline emissions
Additional comment	GEF has been fixed on PoA level

D.6.3. Ex-ante calculation of emission reductions

Baseline emissions

The baseline emissions are to be calculated as follows:

$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$

Calculation of $EG_{BL,y}$

Parameter	Value	Unit	Source
$EG_{BL,y}$	26,161	MWh	Feasibility Study

Calculation of $EF_{CO2,grid,y}$

Parameter	Value	Unit	Source
$EF_{grid,BM,y}$	0.9100	tCO_2/MWh	GEF calculations
w_{BM}	0.25		Default value
$EF_{grid,OM-DD,y}$	0.9585	tCO_2/MWh	GEF calculations
w_{OM}	0.75		Default value
$EF_{grid,CM,y}$	0.9464	tCO_2/MWh	GEF calculations

Therefore:

$EF_{CO2,grid,y}$ = 0.9464 tCO_2/MWh

BE_y = 26,161 * 0.9464 = 24,758 tCO_2/year

Project emissions

There are no project emissions to be accounted for, therefore:

$PE_y = 0$

Leakage emissions

The CPA does not use energy generating equipment that is transferred from another activity. Therefore, leakage emissions are not considered.

Emission reductions

$ER_y = BE_y - PE_y - LE_y$

Therefore, emission reductions equal: $ER_y = 24{,}758 – 0 – 0 = 24{,}758$ tCO_2/y

D.6.4. Summary of the ex-ante estimates of emission reductions

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
04/06/2013 – 31/12/2013	14,754	0	0	14,754
2014	25,069	0	0	25,069
2015	24,928	0	0	24,928
2016	24,803	0	0	24,803
2017	24,67	0	0	24,679
2018	24,556	0	0	24,556
2019	24,433	0	0	24,433
01/01/2020 – 03/06/2020	10,087	0	0	10,087
Total	**173,309**			**173,309**
Total number of crediting years	7			
Annual average over the crediting period	**24,758**			**24,758**

D.7. Application of the monitoring methodology and description of the monitoring plan

D.7.1. Data and parameters to be monitored

Data / Parameter	**EG_{BLy}**
Unit	MWh

Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year *y*
Source of data	Main and backup metering equipment installed at project activity site
Value(s) applied	26,161
Measurement methods and procedures	The electricity delivered to the grid will be measured continuously (hourly measurement and at least monthly recording) by a main-meter owned and operated by the project owner (facility metering installation) and back-up meter (system metering installation) owned and operated by the NTC or the distributor (as applicable). The metering system is installed at the point of connection with grid as agreed by the grid operator. High-precision equipment will be used to achieve high level of accuracy of the measurements. The equipment will be calibrated and tested according to recognized standards as agreed with the grid operator. In case the grid operator will install their own electricity meter, the meter by the project owner will be used to cross check the measured values. If values differ, the values from the meter with a higher precision will be used.
Monitoring frequency	The quantity of electricity supplied to the grid will be measured continuously (hourly measurement) and recorded monthly. The basic measurement period shall be carried out in line with PPA.
QA/QC procedures	Measurement results shall be cross-checked with records for sold/purchased electricity (e.g. invoices). The Facility Metering Installation and the System Metering Installation shall be treated as working satisfactorily so long as the errors are within the limits prescribed for meters of the particular standard and specification used, or are within a tolerance level of ±0.5%, whichever is the lesser. Testing and inspection will also be carried out in line with the procedures described in the PPA.
Purpose of data	Calculation of baseline emissions
Additional comment	The net electricity supplied to a grid is the difference between the measured quantities of the grid electricity export and import. If applicable, the CPA will cross check net electricity supplied to a grid as gross energy generation in the CPA power plant minus the auxiliary/station electricity consumption, technical losses and electricity import from the grid to the project power plant measured at the grid interface/connection used for billing purposes.

D.7.2. Description of the monitoring plan

Overall authority and responsibility for monitoring will rest with the CME, which will also be responsible for managing the emission reduction monitoring and verification process.

In order to enable verification of emission reductions the CPA must maintain credible, transparent and adequate data measurement, collection, estimation and tracking systems. The following monitoring procedures and responsibilities will apply:

AE-AMD Independent Power Producer 1 (Pty) Ltd. – CPA implementing entity:

AE-AMD Independent Power Producer 1 (Pty) Ltd. will be responsible for the technical aspects related to on-site monitoring such as training of personnel, calibration and maintenance of equipment and physical reading, day-to-day handling and long-term storage of metered data.

In addition, AE-AMD will be responsible for preparing invoices for the sales of electricity to Eskom. Copies of invoices will be made available to the CME for QA/QC purposes.

Metering will be conducted with calibrated measurement equipment in accordance to relevant industry standards. The South African National Standard has published the *Code of practice of electricity metering* NRS 057:2009. This code of practice specifies the procedures and standards to be adhered to by electricity licensees and their agents in operating and servicing new and existing metering installations, which are to be used for billing purposes. The code of practice is applicable to metering installations in their entirety, including all measuring transformers, wiring, cabling, metering panel construction, active and reactive meters, data loggers and associated test facilities.

Since the project is expected to have a maximum export capacity of 10 MVA, the active energy meter will have an accuracy of 0.5 S and the reactive energy meter will have an accuracy of 2 as described in table 1 of the NRS 057 standard.

AE-AMD Independent Power Producer 1 (Pty) Ltd. will monitor and keep records of the quantity of net electricity supplied to the grid. The quantity of electricity supplied to the grid will be reported to the CME on a quarterly basis for the previous three months and will be accompanied by supporting evidence for cross-checking purposes.

AE-AMD Independent Power Producer 1 (Pty) Ltd. will keep electronic copies of all CDM related data at its headquarters, at least until two years after the end of the last crediting period.

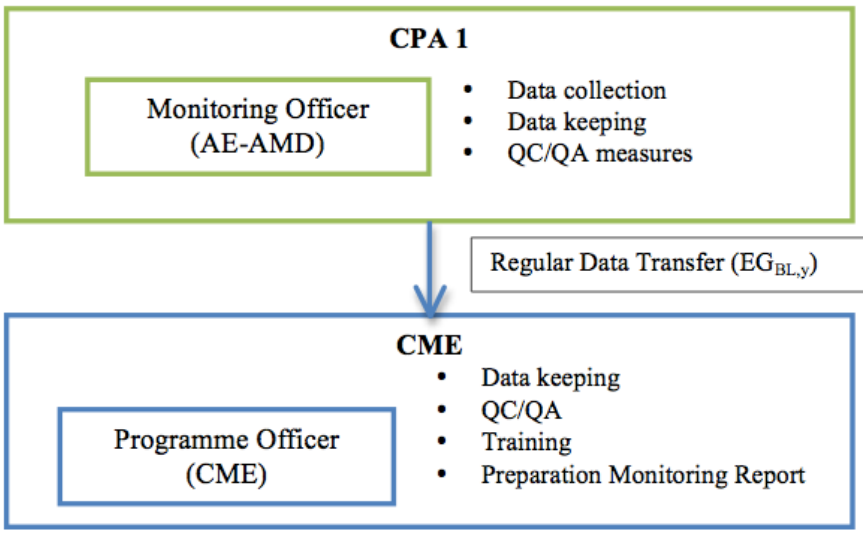

Figure 13: Monitoring management structure

Metering system

Figure 14 shows a detailed illustration of the location of the metering system. The System Metering is part of Eskom's Greefspan substation and refers to the back-up metering equipment installed by Eskom.

The Facility Metering Installation refers to the main metering equipment installed by the project owner and is located in the Terminal Substation of the project before the delivery point

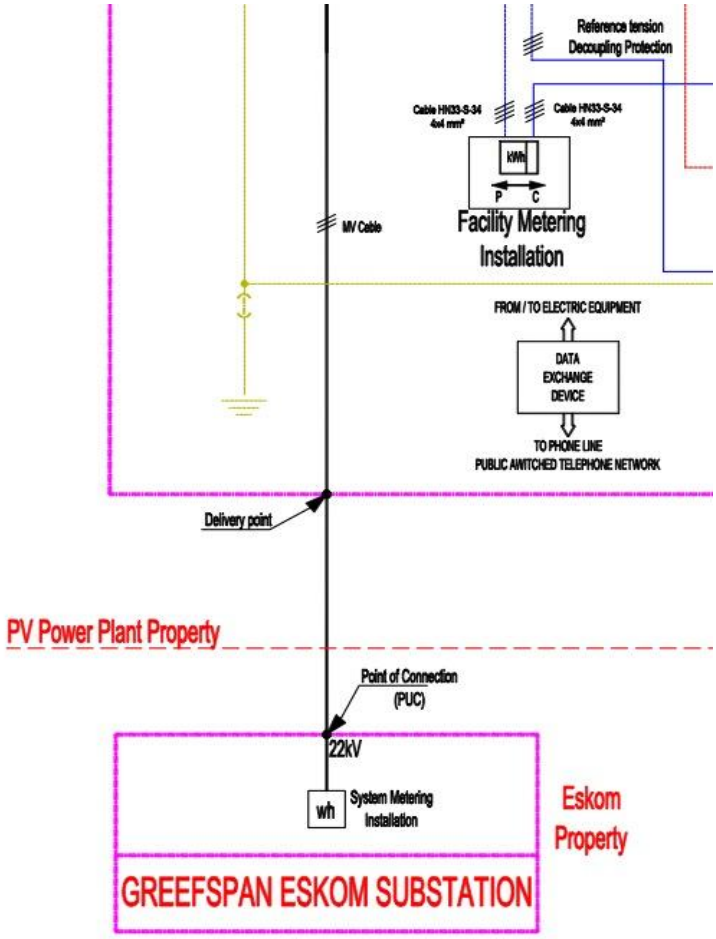

Figure 14. Detail of metering point of the single line diagram

Additional Energy Limited - Coordinating/managing entity:

Upon receipt of data and information from AE-AMD, the CME will carry out a quality assurance (QA) and quality control (QC).

If problems occur that may affect the quality of data, the CME will inform the project proponent and off taker of the need for corrective actions. For instance, metering equipment installed shall be inspected by an accredited inspection agency after the repair of all or part of meter caused by the failure of one or more parts to operate in accordance with the specifications. In the case that data quality problems result in uncertainty issues the CME will always use the more conservative value from an energy generation or emission factor standpoint in preparing calculations and monitoring data for verification.

Once the CME has carried out the QA/QC, the CME will store all data and information as received

from the AE-AMD (including supporting evidence) in an electronic database. Based on the data and information that is stored in the electronic database, the CME will prepare annually monitoring reports for each CPA separately which will be submitted to the DOE for verification.

All data and information will be archived for each CPA separately until at least two years after the end of the last crediting period.

Before the implementation of a CPA, the CME will provide training and guidance regarding the implementation of the monitoring plan. The training will include:

- CDM project cycle and the significance of monitoring
- Management structure and work scope
- Components of the monitoring plan
- QA/QC procedures
- Monitoring report template
- Preparation for verification
- Questions and answers

In addition to collecting, processing and archiving data and information from AE-AMD, the CME will also be responsible for the collection, processing and archiving of data and information for the calculation of the grid emission factor. In this context, the CME will collect data on a regular basis from the relevant sources and will carry out the relevant QA/QC procedures. The grid emission factor will be calculated and be used for the calculation of the emission reductions achieved by each CPA.

Data and information for the calculation of the grid emission factor will be stored electronically by the CME for at least two years following the end of the last crediting period.

SECTION E. Approval and authorization

The letter of Approval (LoA) of the host country South Africa is not available at the time of submitting the CPA-DD to the validating DOE for start of validation. Letter of Approval was issued on 19/09/2012.

- - - - -

Appendix 1. Contact information of CPA implementer(s) and responsible person(s)/ entity(ies) for completing the CDM-SSC-CPA-DD-FORM

CPA implementer and/or responsible person/ entity	☒ CPA implementer(s) ☐ Responsible person/ entity for completing the CDM-SSC-CPA-DD-FORM
Organization	AE-AMD Independent Power Producer 1 (Pty) Limited
Street/P.O. Box	P.O.Box 5301
Building	-
City	Cape Town
State/Region	Western Cape
Postcode	8000
Country	South Africa
Telephone	+27 833 020 870
Fax	
E-mail	tamuka@ae-amd.co.za
Website	www.ae-amd.co.za
Contact person	Tamuka Kaseke
Title	Director
Salutation	Mr.
Last name	Kaseke
Middle name	-
First name	Tamuka
Department	N/A
Mobile	-
Direct fax	-
Direct tel.	-
Personal e-mail	tamuka@alt-e.co.za

CPA implementer and/or responsible person/ entity	☐ CPA implementer(s) ☒ Responsible person/ entity for completing the CDM-SSC-CPA-DD-FORM
Organization	Additional Energy Limited
Street/P.O. Box	34B York Way
Building	-
City	London
State/Region	-
Postcode	N1 9AB
Country	United Kingdom
Telephone	+61 402643154
Fax	-
E-mail	anil@additionalenergy.com
Website	www.additionalenergy.com
Contact person	Anil Bhatta
Title	Technical Director
Salutation	Mr
Last name	Bhatta
Middle name	
First name	Anil
Department	-
Mobile	+61402643154
Direct fax	-
Direct tel.	-
Personal e-mail	anil@additionalenergy.com

Appendix 2. Affirmation regarding public funding

No public funding involved in the CPA.

Appendix 3. Applicability of methodology(ies) and standardized baseline(s)

No additional information

Appendix 4. Further background information on ex ante calculation of emission reductions

No additional information

Appendix 5. Further background information on monitoring plan

No additional information

Appendix 6. Summary of post registration changes

The CME has made post registration changes for the CPA. The description of inverter manufacturer that was outlined in the registered CPA-DD-001 (Version 06) was found inconsistent with the actual manufacturer of inverter at the project site. As per Appendix 1, paragraph 7 of the CDM Project Standard (Version 09.0), the CME requested to allow changes in description of inverter (i.e. manufacturer, model and type) for CPA-001. Corrected inverter details that were validated during the site visit are outlined below:

Parameter	**Inverter**
Manufacturer	KACO
Model	Powador
Type	Powador 39.0 TL 3-M-INT

- - - - -

Document information

Version	*Date*	*Description*
04.0	9 March 2015	Revisions to: • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Editorial improvement.
03.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the

Version	Date	Description
		component project activity design document form for small-scale CDM component project activities (these instructions supersede the "Guidelines for completing the component project activity design document form for small-scale component project activities" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a CPA implementer and/or responsible person/ entity for completing the CDM-SSC-CPA-DD-FORM in A.14. and Appendix 1; • Add general instructions on post-registration changes in paragraph 4 and 5 of general instructions and **Error! Reference source not found.**; • Change the reference number from *F-CDM-SSC-CPA-DD* to *CDM-SSC-CPA-DD-FORM*; • Editorial improvement.
02.0	13 March 2012	EB 66, Annex 17 Revision required to ensure consistency with the "Guidelines for completing the component project design document form for small-scale component project activities".
01.0	27 July 2007	EB33, Annex44 Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
Keywords: component project activity, project design document, SSC project activities