THE GOLD STANDARD MICRO-SCALE SCHEME PROJECT DESIGN DOCUMENT FORM - Version 2.2

CONTENTS

Annexes

SECTION A. General description of micro-scale project activity

A.1 Title of the micro-scale project activity:

Title: India One Solar Thermal Power Project

Date & Version of the PDD: 05th of April 2017, Version 2

A.2. Project participants:

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity (ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	World Renewal Spiritual Trust (WRST)	No
Germany	atmosfair gGmbH	No

A.3 Description of the micro-scale project activity:

A.3.1. Location of the micro-scale project activity:

A.3.1.1. Host Country:

India

A.3.1.2. Region/State/Province etc.:

Rajasthan

A.3.1.3. City/Town/Community etc:

District: Sirohi

Block: Abu Road

A.3.1.4. Details of physical location, including information allowing the unique identification of this micro-scale project activity:

Figure 1: Map of India and location of the project activity in the northwestern state of Rajasthan.

'India One Solar Thermal Power Project' referred to as the 'Project Activity' is located in Rajasthan, India in the district of Sirohi. The project activity lies at a distance of around 2 km and 8 km from Brahma Kumaris campus and Abu Road Railway Station respectively, at 24.5° N to 72.8° E. It is spread over 35 Acres (141640.10 m^2) of land with a total mirror area of 46,200 m^2. The nearest airport is Udaipur which is at a distance of around 153 km from Abu Road.

Figure 2: Map of Rajasthan and location of Sirohi district in which the project activity is located.

Figure 3: Exact location of the project activity at Abu Road and south of Mount Abu.

A.3.2. Description including technology and/or measure of the micro-scale project activity:

The objective of the 'Project Activity' is to implement solar thermal as an alternative power source and to mitigate the emission of anthropogenic greenhouse gases (GHG) by replacing and reducing the dependence on carbon intensive grid electricity from NEWNE grid[1].

World Renewal Spiritual Trust (WRST), a daughter organization of Brahma Kumaris, is setting up a Solar Thermal Power Plant with a capacity of 1.0 $MW_{electrical}$ (3.5 $MW_{thermal}$) and a net electrical output of 6,130 MWh/year. The plant consists of 770 Scheffler parabolic reflectors with a total mirror surface of 46,200 m^2, 770 heat receiver and storages located in front of each reflector, 42 km of piping and a very robust Siemens Twin AA46 two stage turbine capable to run on saturated as well as superheated steam.

The renewable electricity generated through the project activity will be transmitted and used internally for in-house (captive) consumption of energy requirements in Shantivan, Manmohini and Anand Sarovar complexes present inside Brahma Kumaris Campus thus avoiding the use of carbon intensive NEWNE grid electricity which is primarily dominated by fossil fuel based thermal power plants. In the pre project scenario the electricity requirements of Brahma Kumaris Campus are met through NEWNE grid.

The date at which the implementation or construction or real action of the project activity began was 01st March 2011 and it is presently undergoing the installation phase. The crediting period of the project activity starts from September 1st 2017. The estimated total annual emission reductions are 4,250 tCO_2e or 42,500 tCO_2e over the entire crediting period of 10 years (01st September 2017 to 31st August 2026).

After a detailed evaluation of various solar technologies WRST came to the conclusion to make use of the in-house developed 60m^2 parabolic dish in order to set up a solar thermal power plant 2 km away from Brahma Kumaris Campus in Abu Road, Rajasthan.

Figure 4: Prototype of the Scheffler Parabolic Dish with Cavity Receiver (left); first test of focus size and receiver (right).

[1] NEWNE: Integrated Northern, Eastern, Western, and North-Eastern regional grids

The Solar collectors are of the proven and well established SCHEFFLER Parabolic Dish type. The field will consist of 770 x 60 m^2 Scheffler parabolic dish of the latest design in a modular layout. The generated concentrated heat from each dish is focused onto the in-house, high efficient iron core cavity receiver which is mounted in front of each dish. The iron core receiver is well insulated against heat loses and features an automatic shutter which shuts the opening in case of low radiation and/or night time.

Figure 5: Setup of one of the steel frames for the mirrors.

Figure 6: Side view on the solar dishes and cavity receiver.

During sunshine hours the iron core will be heated up to a maximum temperature of 450^{O}C. Water will be pumped through the coil around the iron core receiver to generate saturated/superheated steam. The iron core can be discharged in a modular manner to a temperature of 250^{O} C. The stored energy will be sufficient to run the turbine in the cloudy and non-sunshine hours.

A de-superheating control and a cyclone steam dryer will ensure a uniform steam quality as per the requirement of the turbine. The Brahma Kumaris has an average hot water requirement of 1 million litre hot water per day thus the process will be equipped to generate electricity and heat in two different processes.

A heat exchanger will be installed within the condensing unit to facilitate the hot water requirement and ensure cooling at the turbine end. Further a cooling tower shall be installed. Soft water as cooling medium shall be circulated through the condenser to provide necessary cooling and condensing of the process medium. Through a steam pass out valve, steam of 8 bar, 170^{O} C can be send to the kitchen of the campus in order to deal with the increased demand and peak hours.

Only the emission reduction achieved by the generation and utilization of renewable electricity is part of the proposed Gold Standard project activity. No credits will be claimed for additional emission reduction by the generation and utilization of renewable heat and hot water.

The emissions of trace gases, air pollutants and greenhouse gases are completely absent in this project activity, compared to the power generation by conventional fossil fuel based power plants.

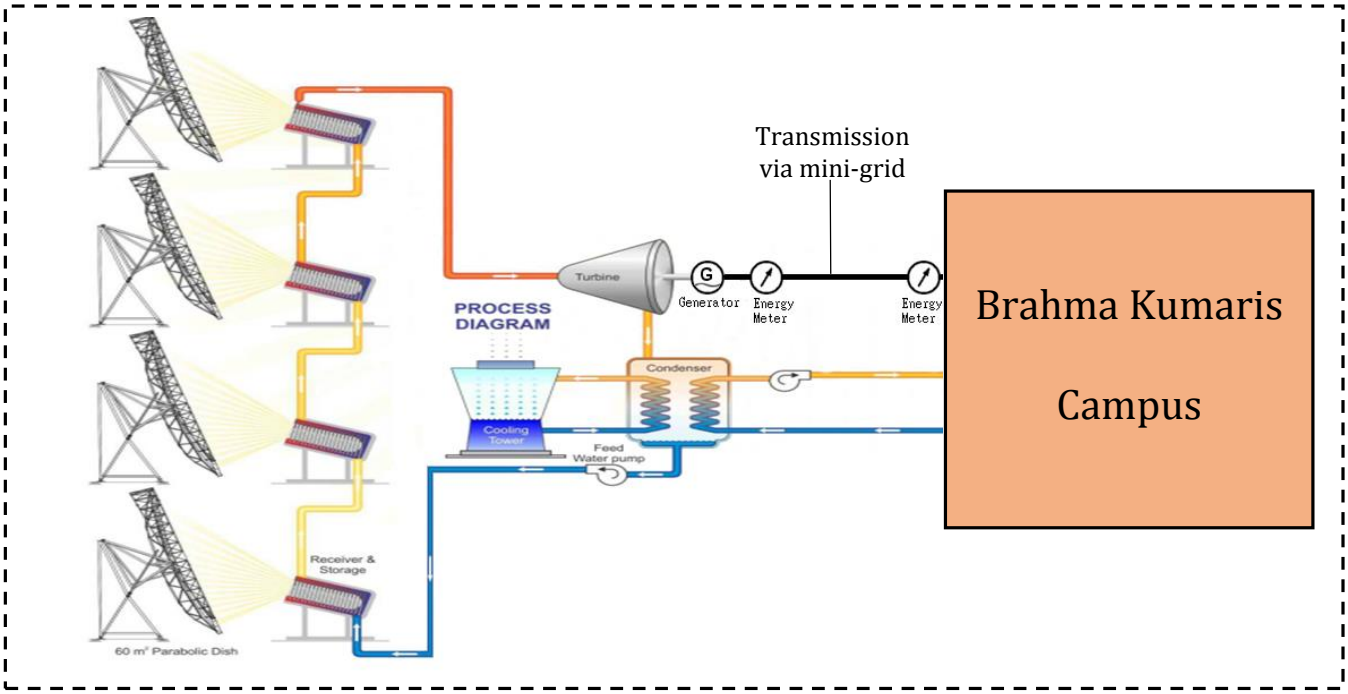

Figure 7: Schematic view (process diagram) of the solar thermal power plant. For the sake of completeness, the heat cycle is included as well in this depiction but will not be considered in the emission reduction calculation.

Gold Standard eligibility criteria:

1. Scale of the project: The project generates emissions reductions (ER) of less than 10,000 tCO_2e per annum. In case the project surpasses the threshold of 10,000 tCO_2e in a given year, the ER will be capped at 10,000 tCO_2e.
2. Type of project: This project supplies renewable energy to the Brahma Kumaris Campus using a mini-grid.
3. Host country: The project is located in India, which has ratified the Kyoto Protocol and is listed as a Non-Annex 1 country with no cap on GHG emissions[2].
4. Project Category: The project involves the generation of electricity from a power plant based on solar thermal technology. This leads to savings in the consumption of electricity from the carbon intensive grid. This project activity therefore classifies as a renewable energy supply category.
5. Green House Gases: Among the six greenhouse gases eligible under the UNFCCC, only Carbon Dioxide (CO_2), Methane (CH_4) and Nitrous oxide (N_2O) are eligible under the Gold Standard. The project activity reduces Carbon Dioxide (CO_2) emissions by replacing grid electricity, it therefore complies with Gold Standard eligibility criteria.
6. Official Development Assistance (ODA): In Annex 8, project developer has declared that credits coming out of the project are not transferred, directly or indirectly, to the donor country requirements.
7. Previous announcement check:
   The start date of the project is 01st March 2011, the date at which the implementation or construction or real action of the project activity began.
8. Other Certification Schemes: The project activity has not applied under any other certification scheme or standard.

[2] http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php

A.3.3 Estimated amount of emission reductions over the chosen crediting period:

The estimated annual electricity generation of 6,130 MWh, will result in a reduction of 4,250 tCO_2e per year. The total emission reduction by the project activity will be 42,500 tCO_2e over the full 10 year crediting period. Start date of the crediting period is 1st of March 2017. The estimated amount of emission reductions over the chosen crediting period is given below:

Table 1: Annual and total estimated emission reductions over the crediting period.

Years	Annual estimation of emission reductions in tonnes of CO_2e
01st September 2017 – 31st August 2017	4,250
01st September 2018 – 31st August 2018	4,250
01st September 2019 – 31st August 2019	4,250
01st September 2020 – 31st August 2020	4,250
01st September 2021 – 31st August 2021	4,250
01st September 2022 – 31st August 2022	4,250
01st September 2023 – 31st August 2023	4,250
01st September 2024 – 31st August 2024	4,250
01st September 2025 – 31st August 2025	4,250
01st September 2026 – 31st August 2026	4,250
Total emission reductions (tonnes of CO_2e)	**42,500**
Total number of crediting years	**10**
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	**4,250**

A.3.4. Public funding of the micro-scale project activity:

>> Refer to Annex 3

SECTION B. Application of an existing baseline and monitoring methodology or of a new methodology submitted as part of this project activity

B.1. Title and reference of the existing or new baseline and monitoring methodology applied to the micro-scale project activity:

The 'Project Activity' applies UNFCCC's Small Scale Consolidated (SSC) methodology, AMS I.F. 'Renewable Electricity Generation for Captive Use and Mini-Grid' Version 03[3], Sectoral Scope 01, as an existing approved baseline and monitoring methodology.

[3] https://cdm.unfccc.int/methodologies/DB/9KJWQ1G0WEG6LKHX21MLPS8BQR7242

B.2 Justification of the choice of the methodology and applicability:

The small-scale methodology 'AMS-I.F Renewable electricity generation for captive use and mini-grid', version 03 is applicable, since the following criteria are met by the project activity:

Table 2: Justification of the choice for the project category.

Criterion	Condition	Applicability
1.	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e. in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below: (a) A national or a regional grid (grid hereafter); (b) Fossil fuel fired captive power plant; [4] (c) A carbon intensive mini-grid.	The project activity implements a solar thermal power plant with an installed capacity of 1.0 $MW_{electrical}$ (3.5 $MW_{thermal}$) and a gross electrical output of 6,130 MWh/year (net electrical output is 4,360 MWh/year). The generated electricity will be used internally for in-house (captive) consumption in Shantivan, Manmohini and Anand Sarovar complexes present in Brahma Kumaris Campus, located at a distance of round 6 km from Abu Road Railway Station, Sirohi, Rajasthan and thus will avoid use of grid electricity which is primarily dominated by fossil fuel based thermal power plants.
2.	Applicability of methodologies AMS-I.D, AMS-I.F and AMS-I.A[5] based on project types: Category 4: Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel.	The project activity consists of a mini-grid with a small- scale Solar Thermal Power System with a total capacity of 1 $MW_{electrical}$ (3.5 $MW_{thermal}$) and a net electrical output of 4,360 MWh/year. The mini-grid is not connected to a national or regional grid.
3.	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	This criterion is not applicable since the project activity is based on Solar Energy.

[4] Where the users of the captive electricity are also connected to the grid in the project site
[5] AMS-I.D .Grid connected renewable electricity generation., AMS-I.F .Renewable electricity generation for captive use and mini-grid. and AMS-I.A .Electricity generation by the user.

	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.	
4.	This methodology is applicable for 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,[6] (c) Involve a retrofit[7] of (an) existing plant(s); or (d) Involve a replacement[8] of (an) existing plant(s).	The project activity is a Greenfield plant and does not involve any retrofit of existing systems.
5.	In the case of project activities that involve the capacity 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[9] from the existing units.	The project activity is not a capacity addition of an existing renewable energy generation unit.
6.	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.	The project activity is a Greenfield plant and does not involve any retrofit or replacement of existing systems.

[6] A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) The installation of a new power plant beside the existing power plant/units; or (ii) The installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.

[7] Retrofit (or rehabilitation or refurbishment). A retrofit is an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit restores the installed power generation capacity to or above its original level. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.

[8] Replacement. Investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The new power plant or unit has the same or a higher power generation capacity than the plant or unit that was replaced.

[9] Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered physically distinct.

7.	If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel[10], the capacity of the entire unit shall not exceed the limit of 15 MW.	The project activity does not consist of a renewable and a non-renewable component.
8.	Combined heat and power (co-generation) systems are not eligible under this category.	Cogeneration is defined in Methodology AMS-I.C as '*Cogeneration - means the simultaneous generation of heat and electrical energy in one process. Project activities that produce heat and electrical energy in separate element processes (for example heat from a boiler and electricity from a biogas engine) do not fit under the definition of cogeneration.'* Under the project activity heat is generated by concentrating solar radiation with the solar dishes on the receiver and then transported in form of water vapour to the Siemens steam turbine to produce electricity. Therefore heat and electricity are produced in two different processes and the project therefore is not labelled as a combined heat and power system.
9.	If electricity and/or steam/heat produced by the project activity is delivered to a third party, i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures that there is no double counting of emission reductions.	The generated electricity from the project activity will be used internally for in-house (captive) consumption in Shantivan, Manmohini and Anand Sarovar complexes present in Brahma Kumaris Campus, located at a distance of round 6 km from Abu Road Railway Station, Sirohi, Rajasthan. Project activity will not supply any unit generated to a third party.

[10] A co-fired system uses both fossil and renewable fuels, for example the simultaneous combustion of both biomass residues and fossil fuels in a single boiler. Fossil fuel may be used during a period of time when the biomass is not available and due justification are provided.

B.3. Description of the project boundary:

As per methodology, the physical, geographical site of the renewable generation source and consumption delineates the project boundary. 'India One Solar Thermal Power Project' referred to as the 'project activity' is located 2 km from Brahma Kumaris campus. The project activity is spread over 141614.90 m^2 of land with a total mirror area of 46,200 m^2 situated at a distance of around 8 km from Abu Road Railway Station and lies at 24.5^0 N to 72.8^0 E. The renewable electricity generated through the project activity will be transmitted and used for captive consumption for all the three complexes (Shantivan, Manmohini and Anand Sarovar) present inside Brahma Kumaris campus.

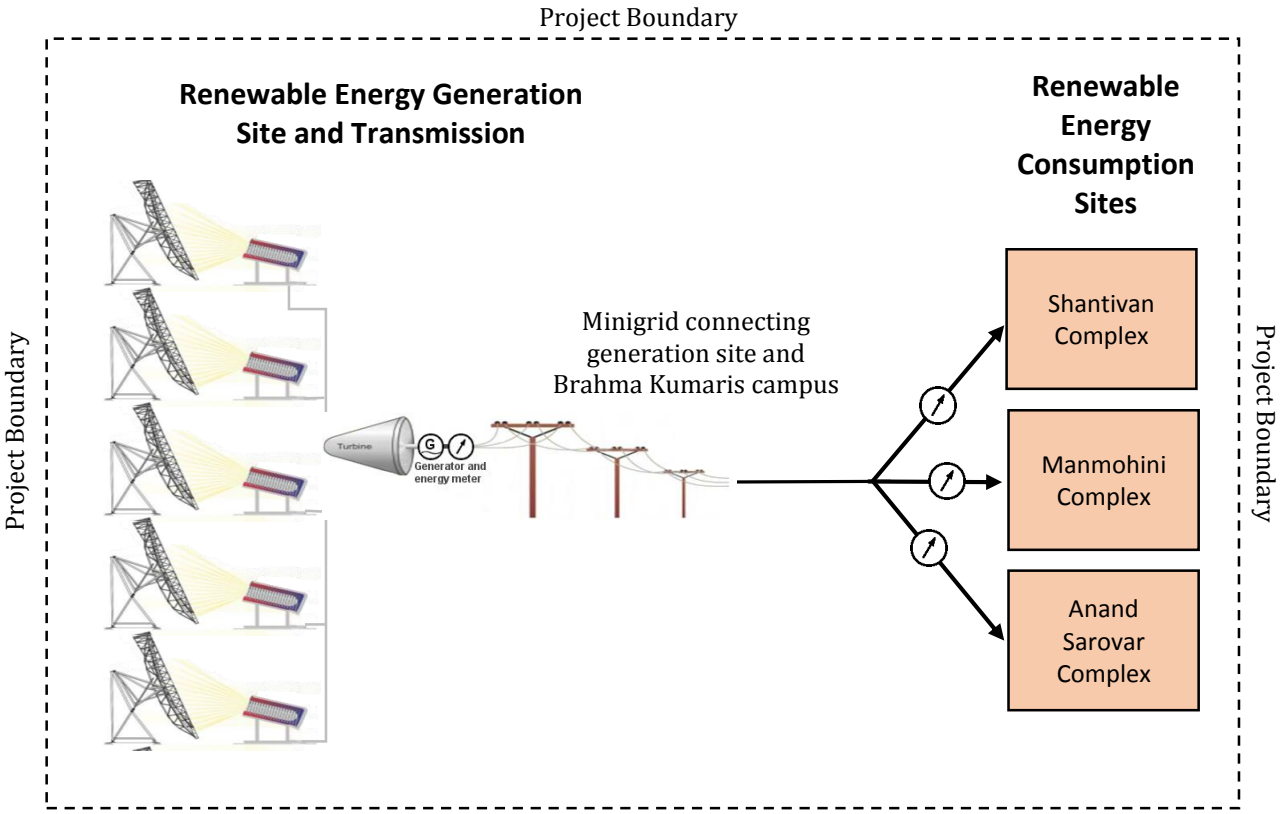

Figure 8: Visual representation of the project boundary.

Table 3: Emission sources and gases considered in the emission reduction calculation.

Source		GHGs	Included	Justification/Explanation
Baseline scenario	CO_2 emissions from electricity generation in grid connected fossil fuel fired power plants that is displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Negligible
		N_2O	No	Negligible
Project scenario	Power generation by the project activity	CO_2	No	This is a renewable power generation facility
		CH_4	No	This is a renewable power generation facility
		N_2O	No	This is a renewable power generation facility

B.4. Description of the baseline and its development as per the chosen methodology:

Baseline Scenario

In the absence of the project activity, equivalent quantum of electricity would have been generated by the power plants in the Indian grid, dominated by thermal units resulting in GHG emissions.

Baseline Emissions

As per UNFCCC Small Scale Consolidated (SSC) methodology, AMS I.F. 'Renewable Electricity Generation for Captive Use and Mini-Grid' Version 03, para 19:

'Baseline emissions are the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor.'

The Baseline Emission (BE_y) is in tCO_2, calculated by multiplying the units of renewable electricity generated ($EG_{BL,y}$) measured by electrical meters on monthly basis and a grid emission factor ($EF_{CO2,grid,y}$).

$$\boldsymbol{BE_y = EG_{BL,y} * EF_{CO2,y}} \qquad \textit{Equation 1}$$

Where:

BE_y	=	*Baseline Emissions in year y (tCO_2)*
$EG_{BL,y}$	=	*Quantity of net electricity displaced as a result of the implementation of the GS VER project activity in year y (MWh)*
$EF_{CO2,y}$	=	*CO_2 emission factor of the single Indian grid in year y (tCO_2/ MWh)*

Calculation of $EF_{CO2,y}$

According to UNFCCC Small Scale Consolidated (SSC) methodology, AMS I.F. 'Renewable Electricity Generation for Captive Use and Mini-Grid' Version 03, para 19, the emission factor for captive electricity generation is to be calculated as following:

'Emission factor for a captive electricity generation shall be calculated as per the procedures described in the latest version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption".'

$EF_{CO2,y}$ corresponds to the combined margin CO_2 emission factor $EF_{grid,CM,y}$ as defined in the UNFCCC *Tool to calculate the emission factor for an electricity system Version 04.0*[11] and is calculated according to par 80 of the tool.

$$EF_{CO2,y} = EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM} \qquad \textit{Equation 2}$$

Where:

$EF_{CO2,y}$	=	*CO_2 emission factor of the single Indian grid in year y (tCO_2/ MWh)*
$EF_{grid,CM,y}$	=	*Combined margin CO_2 emission factor for the project electricity system in year y (tCO_2/MWh)*
$EF_{grid,BM,y}$	=	*Build margin CO_2 emission factor in year y (tCO_2/MWh)*
$EF_{grid,OM,y}$	=	*Operating margin CO_2 emission factor in year y (tCO_2/MWh)*
W_{OM}	=	*Weighting of operating margin emissions factor (%)*
W_{BM}	=	*Weighting of build margin emissions factor (%)*

Since $EF_{CO2,y}$ and $EF_{grid,CM,y}$ correspond to the same value, only $EF_{CO2,y}$ will be used in further calculations. The parameter and values used to calculate $EF_{CO2,y}$ as defined in Equation 2 are listed in Table 4.

As per paragraph 20 of the methodology, three year historical data is required for establishing the weighted average emission factor from captive plants and the grid. Since in the baseline scenario no captive plant existed, the emission factor $EF_{CO2,y}$ as calculated above, will be used.

[11] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf, Para 80 and 81

Table 4: Grid emission calculation table.

Parameter	Value	Data Source
Single Indian grid Operating Margin (OM) for the year 2014-2015 ($EF_{grid,OM,y}$)	0.99 tCO_2/MWh[12]	CO_2 Baseline Database for the Indian Power Sector User Guide, April 2016 Government of India Ministry of Power Central Electricity Authority (Version 11.0)
Single Indian grid Build Margin (BM) for the year 2014-2015 ($EF_{grid,BM,y}$)	0.93 tCO_2/MWh[13]	CO_2 Baseline Database for the Indian Power Sector User Guide, April 2016 Government of India Ministry of Power Central Electricity Authority (Version 11.0)
Weighting of operating margin emissions factor (%) and Weighting of build margin emissions factor (%)	0.75 and 0.25 [14]	UNFCCC default value[15]

Hence,

$$EF_{CO2,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM} \qquad \textit{Equation 2}$$

$$EF_{CO2,y} = 0.99 \frac{tCO2}{MWh} * 0.75 + 0.93 \frac{tCO2}{MWh} * 0.25$$

$$EF_{CO2,y} = 0.975 \frac{tCO2}{MWh}$$

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered micro-scale project activity:

The project activity is generating electricity from solar energy by which no greenhouse gases are emitted. The generated electricity is supplied to a mini grid connecting the solar thermal power plant and the consumption sites of Shantivan, Manmohini and Anand Sarovar, all located inside the Brahma Kumaris Campus. In the absence of the project activity the consumption sites would have been supplied with electricity from the NEWNE grid. Therefore an equivalent quantum of electricity would have been

12 http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver11.pdf
13 http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver11.pdf
14 The following default values should be used for w_{OM} and w_{BM}:
(a) Wind and solar power generation project activities: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods;
(b) All other projects: w_{OM} = 0.5 and w_{BM} = 0.5 for the first crediting period, and w_{OM} = 0.25 and w_{BM} = 0.75 for the second and third crediting period, unless otherwise specified in the approved methodology which refers to this tool. Para 81, https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf

generated by thermal power plants and fed into the NEWNE grid resulting in GHG emissions. Thus the project activity is replacing electricity by fossil fuel based power plants.

Additionality

Gold Standard VER projects are required to use either a UNFCCC-approved or a Gold Standard-approved additionality tool to demonstrate project additionality [15]. The project proponent demonstrates additionality of the project according to the UNFCCC approved *Guidelines on The Demonstration of Additionality of Small-Scale Project Activities (Version 09.0)*[16].

According to paragraph 2 of the *Guidelines on The Demonstration of Additionality of Small-Scale Project Activities (Version 09.0)*[17]- Documentation of barriers, as per paragraph 1 above, is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds (e.g. installed capacity up to 15 MW).

The positive list comprises of:

(a) The following grid-connected and off-grid renewable electricity generation technologies:

(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;

(b) The following off-grid electricity generation technologies where the individual units do not exceed the thresholds indicated in parentheses with the aggregate project installed capacity not exceeding the 15 MW threshold:

(i) Solar technologies (photovoltaic and solar thermal electricity generation);
(ii) Micro/pico-hydro (with power plant size up to 100 kW);
(iii) Micro/pico-wind turbine (up to 100 kW);
(iv) PV-wind hybrid (up to 100 kW);
(v) Geothermal (up to 200 kW);
(vi) Biomass gasification/biogas (up to 100 kW);

Conclusion: Project activity is a solar thermal electricity generation project with an installed capacity of 1 MW. Therefore the project is deemed additional.

[15] The Gold Standard Requirements ver. 2.2, pg. 53
[16] https://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf
[17] https://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf

B.6 Emission reductions:

B.6.1. Explanation of methodological options or description of new proposed approach:

Calculation of Emission Reductions

The Emission Reduction at a project facility in the year 'y' is according to the Small Scale Consolidated (SSC) methodology, AMS I.F. *'Renewable Electricity Generation for Captive Use and Mini-Grid'* Version 03 paragraph 28 calculated as per the equation given below:

$$\boldsymbol{ER_y = BE_y - PE_y - LE_y} \qquad \textit{Equation 3}$$

Where:

ER_y	=	*Emission reductions in year y (t CO_2)*
BE_y	=	*Baseline emissions in year y (t CO_2)*
PE_y	=	*Project emissions in year y (t CO_2)*
LE_y	=	*Leakage emissions in year y (t CO_2)*

'y' is any year in the crediting period.

Computation BE_y please see Section B.4.

Computation of PE_y:

According to paragraph 24 of the Small Scale Consolidated (SSC) methodology, AMS I.F. 'Renewable Electricity Generation for Captive Use and Mini-Grid' Version 03, *"For most renewable energy project activities, PE_y = 0. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002[18].*

a) *Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption)*
b) *Emissions from water reservoirs of hydro power plants"*

Since the project activity does not fall under the above mentioned categories a) or b), hence project emission $PE_y = 0$.

Computation of *LEy*:

According to paragraph 27 of the Small Scale Consolidated (SSC) methodology, AMS I.F. 'Renewable Electricity Generation for Captive Use and Mini-Grid' Version 03,

- *General guidance on leakage in biomass project activities shall be followed to quantify leakages pertaining to the use of biomass residues.*

Since, the 'Project Activity' neither involve biomass nor the replacement of equipment, hence the leakage emissions is $LE_y = 0$. Therefore:

$$\boldsymbol{ER_y = BE_y}$$

[18] ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	**$EF_{CO2,y}$**
Data unit:	tCO_2/MWh
Description:	**$EF_{CO2,y}$** is the grid emission factor calculated in a transparent and conservative manner as Combined Margin (CM) which is the combination of Operation Margin (OM) and Build Margin (BM). *Note: OM & BM has been calculated ex-ante*
Source of data used:	Central Electricity Authority (CEA): CO_2 Baseline Database Version 11.0 published in April 2016 http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver11.pdf
Value applied:	0.975
Justification of the choice of data or description of measurement methods and procedures actually applied:	**$EF_{CO2,y}$** is calculated according to the UNFCCC *Tool to calculate the emission factor for an electricity system Version 04.0*[19] $EF_{CO2,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ $= 0.99 \frac{tCO2}{MWh} * 0.75 + 0.93 \frac{tCO2}{MWh} * 0.25$ $= 0.975 \frac{tCO2}{MWh}$
Any comment:	As the calculation of baseline emission has been done ex-ante its value will remain fixed for the entire 10 year crediting period.

Data / Parameter:	**PE_y**
Data unit:	tCO_2/MWh
Description:	Project emissions
Source of data used:	AMS-I.F
Value applied:	0
Justification of the choice of data or description of measurement methods and	According to paragraph 24 of the Small Scale Consolidated (SSC) methodology, AMS I.F. *'Renewable Electricity Generation for Captive Use and Mini-Grid'* Version 03, for this proposed project activity **PE_y** is 0. For detailed justification see chapter '*B.6.1. Explanation of methodological options or description of new proposed approach'*

[19] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf, Para 80 and 81

procedures actually applied:	
Any comment:	

Data / Parameter:	**LE_y**
Data unit:	tCO_2/MWh
Description:	Leakage emissions
Source of data used:	AMS-I.F
Value applied:	0
Justification of the choice of data or description of measurement methods and procedures actually applied:	According to paragraph 27 of the Small Scale Consolidated (SSC) methodology, AMS I.F. *'Renewable Electricity Generation for Captive Use and Mini-Grid'* Version 03, for this proposed project activity **LE_y** is 0. For detailed justification see chapter '*B.6.1. Explanation of methodological options or description of new proposed approach'*
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

The Emission Reduction at a project facility 'n' in the year 'y' is calculated as per the equation given below:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y	=	*Emission reductions in year y (t CO_2)*
BE_y	=	*Baseline emissions in year y (t CO_2)*
PE_y	=	*Project emissions in year y (t CO_2)*
LE_y	=	*Leakage emissions in year y (t CO_2)*

'y' is any year in the crediting period. Since $\mathbf{LE_y}$ = 0 and $\mathbf{PE_y}$ = 0:

$$ER_y = BE_y$$

As per the Annex AD, Annex C and GS version 2.2 requirements, the project activity is eligible under Small Scale Consolidated (SSC) methodology, AMS I.F. 'Renewable Electricity Generation for Captive Use and Mini-Grid' Version 03, in which the baseline emissions (BE) are calculated as "*the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor*":

$$BE_y = EG_{BL,y} * EF_{CO2,y} \qquad \textit{Equation 1}$$

Where:

$EG_{BL,y}$	=	*Quantity of net electricity displaced as a result of the implementation of the GS VER project activity in year y (MWh).*

As per the methodology (Equation 1) the quantity of net electricity displaced is used for the calculation of the expected emission reduction.

Ex –ante estimation of $EG_{BL,y}$

$EG_{BL,y}$ is the net quantity of electricity that is displaced as a result of the implementation of the GS VER activity. It is calculated as follows:

$$EG_{BL,y} = EG_{BL,y,gross} * (1 - Aux) * (1 - TLoss) \qquad \textit{Equation 4}$$

Where:

$EG_{BL,y,\ gross}$	=	*Quantity of gross electricity produced as a result of the implementation of the GS VER project activity in year y (MWh)*
Aux	=	*Is the Auxiliary consumption of the solar thermal power plant.*
TLoss	=	*Nameplate capacity of the generator (MW)*

Since this is a greenfield plant especially designed for the proposed project site and without comparable power plants in the nearby surroundings, the computation of the gross electrical energy ($EG_{BL,y,\ gross}$) generated from the solar thermal power station entails elements of uncertainty. The combination of the in-house developed solar collectors and thermal storage units is even unique worldwide. For the

The gross average annual energy generation of the plant is computed as follows:

$$EG_{BL,y,gross} = P_m * h_F * PLF \qquad \textit{Equation 5}$$

Where:

$EG_{BL,y,\ gross}$	=	*Quantity of gross electricity produced as a result of the implementation of the GS VER project activity in year y (MWh)*
P_m	=	*Mean capacity of the generator (MW), composed of electrical output during sunshine hours of the day and for the remaining time.*
h_F	=	*Theoretical full load hours of the power plant per year when running 24h on 365d*
PLF	=	*Plant load factor in % as given in the*

The nameplate capacity of the generator is 1 $MW_{eletrical}$. But the plant shall be designed to deliver 1 MW electrical output for 8 hours duration during day time and 900 kW for the remaining 16 hours as stated in the Detailed Project Report (DPR)[20]. Therefore the theoretical capacity of the generator is a weighted mean value calculated as follows:

$$P_m = \frac{1MW * 8h + 0,9MW * 16h}{24h} = 0.933\ MW \qquad \textit{Equation 6}$$

The full load hours are a theoretical value for the number of hours the power plant could produce electricity at full load. The theoretical full-load hours of the power plant are:

$$h_F = d_y * h_d \qquad \textit{Equation 6}$$

Where:

h_F	=	*Full load hours of the power plant when running 24h on 365d (hours)*
d_y	=	*Days per year (number)*
h_d	=	*Hours per day (24h)*

The DPR states the plant load factor (PLF) to be between 75 and 80%. To make a conservative assumption for the gross electricity produced, the lower bound of 75% is adopted. The gross electricity generation for each year of the crediting period is then calculated as follows:

$$EG_{BL,y,gross} = P_m * h_F * PLF$$
$$EG_{BL,ygross} = 0.933\ MW * 8760\ h * 75\%$$
$$EG_{BL,ygross} = 6131.781\ MWh$$

The amount of net electrical energy produced is expressed by the parameter $EG_{BL,y}$ which will be monitored in the project activity. For ex-ante assessment it is calculated here:

$$EG_{BL,y} = EG_{BL,y,gross} * (1 - Aux) * (1 - TLoss)$$

20 Detailed Project Report On "India One" A 1 Mw El. (3.5 Mw) Solar Thermal Power Plant With 16 Hours Thermal Storage For Continous Operation as of December 2008

The parameter is the gross electrical energy produced minus auxiliary consumption (Aux) of the power plant and minus Transmission losses (Tloss). A 125 kW solar system with battery storage was built to cover the auxiliary load of the power plant. As of today, the auxiliary load of the power plant is expected to be 100 kW. The auxiliary consumption will be monitored. For a conservative approach and in case the 125 kW PV-System is not capable of covering the total auxiliary load, a default value for the auxiliary energy consumption is applied. The Indian Central Electricity Regulatory Commission (CERC) proposes a default value for the auxiliary energy consumption of a solar thermal installation of 10%[24]. Although the CERC especially mentions the use of auxiliary heater to ensure that the salt used to store heat is maintained in a molten state as a driving factor for auxiliary consumption in solar thermal power plants and the India One Solar Thermal Power Plant is not using any salt and therefore will not need auxiliary heaters, the auxiliary consumption is still stated with 10% to ensure a conservative calculation of the expected emission reductions.

The transmission and distribution losses (T&D) of electrical energy in India are very high (above 20%) throughout the country. They also differentiate strongly between the states. Average values for mini-grids are not available. The mini-grid connecting the project activity with the consumption sites Shantivan, Manmohini and Anand Sarovar campus, will be an 11kV AC grid. Although the transmission losses are expected to be very low with this technique, a default value for transmission losses is applied. The report 'Mini-Grids Electricity for all' from the Centre for Science and Environment[25] uses a value of 21% T&D losses of generation in mini-grids. That value comes from a World Bank report and is adopted for ex-ante calculation of $EG_{BL,y}$. Since $EG_{BL,y,\ gross}$ and $EG_{BL,y}$ are monitored, the transmission and distribution losses (TLoss) are monitored indirectly. Energy meters are placed at the point of generation and consumption (see Figure 8). There are four energy meters installed: One at each campus (or end-user): Shantivan, Manmohini and Anand Sarovar; and one at the point of generation, right behind the generator. The energy meters used will be multi-function meters by ABB.

Therefore:

$$EG_{BL,y} = 6131.78\ MWh * (1 - 10\%) * (1 - 21\%)$$
$$EG_{BL,y} = 4359.70\ MWh$$

Hence the ex-ante calculated emission reduction of the proposed GS VER project is:

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$
$$BE_y = 4359.70\ MWh * 0.975\ \frac{tCO2}{MWh}$$
$$BE_y = 4250.70\ tCO_2$$

The Emission Reduction at the project facility in the year 'y' therefore is:

$$ER_y = BE_y$$
$$ER_y = 4250\ tCO_2$$

The proposed GS VER project 'India One Solar Thermal Power Project' will supply 4359.70 MWh of net electrical energy to the nearby campus of Brahma Kumaris, replacing an equivalent quantum of

[24] http://www.cercind.gov.in/2009/July09/Draft-Explanatory-Memorandum_Solar-Power-Projects.pdf (page 15)
[25] Chandra Bhushan and Aruna Kumarakandath 2016, Mini-grids: Electricity for all, Centre for Science and Environment, New Delhi

electricity that would have been generated by thermal power plants and fed into the Indian grid and therefore avoiding the emission of 4250 tCO_{2e} per year**.**

B.6.4 Summary of the ex-ante estimation of emission reductions:

The estimated annual net electricity generation of 4,360 MWh, will result in a reduction of 4,250 tCO_2e per year. The total emission reduction by the project activity will be 42,500 tCO_2e over the full 10 year crediting period. Start date of the crediting period is 01st September 2017. The estimated amount of emission reductions over the chosen crediting period is given below:

Table 5: Estimation of project, baseline and leakage emissions over the ten year crediting period.

Year	Estimation of project activity emission (tCO_2)	Estimation of baseline emissions (tCO_2)	Estimation of leakage (tCO_2)	Estimation of overall emission reductions (tCO_2)
Year 1: 01st Sep. 2017 – 31st Aug. 2017	0	4,250	0	4,250
Year 2: 01st Sep. 2018 – 31st Aug. 2018	0	4,250	0	4,250
Year 3: 01st Sep. 2019 – 31st Aug. 2019	0	4,250	0	4,250
Year 4: 01st Sep. 2020 – 31st Aug. 2020	0	4,250	0	4,250
Year 5: 01st Sep. 2021 – 31st Aug. 2021	0	4,250	0	4,250
Year 6: 01st Sep. 2022 – 31st Aug. 2022	0	4,250	0	4,250
Year 7: 01st Sep. 2023 – 31st Aug. 2023	0	4,250	0	4,250
Year 8: 01st Sep. 2024 – 31st Aug. 2024	0	4,250	0	4,250
Year 9: 01st Sep. 2025 – 31st Aug. 2025	0	4,250	0	4,250
Year 10: 01st Sep. 2026 – 31st Aug. 2026	0	4,250	0	4,250
Total (tCO_2)	0	42,500	0	42,500

B.7 Application of a monitoring methodology and description of the monitoring plan as per the existing or new methodology applied to the micro-scale project activity:

B.7.1 Data and parameters monitored:

Data / Parameter:	$EG_{BL,y,gross}$
Data unit:	MWh/y
Description:	Gross electricity generated by the project activity and fed into the mini-grid
Source of data to be used:	Monthly generation report based on meter readings
Value of data	Actual value will be applied. For ex-ante calculation: 6,131.78 MWh will be applied. For computation see chapter *'B.6.3 Ex-ante calculation of emission reductions'*
Description of measurement methods and procedures to be applied, inc. frequency:	• Electricity generated shall be measured continuously with energy meters at the point of generation. • Data Type: Measured and calculated • Archiving Procedure: Paper/ Electronic • Recording Frequency: Hourly measurement, summarized monthly and annually • Electricity is not sold to a third party, therefore no cross-check of sold/purchased electricity invoices/receipts can be done
QA/QC procedures to be applied:	Annual calibration of energy meters.
Any comment:	The uncertainty level of the parameter is considered to be low since the same will be monitored with calibrated meters. The data will be archived for two years.

Data / Parameter:	$EG_{BL,y}$
Data unit:	MWh/y
Description:	The net electricity displaced as a result of the implementation of the GS project activity. It is the gross electricity generated minus the transmission losses of the mini-grid. It will be measured by energy meters, each placed at the point of consumption at Shantivan, Manmohini and Anand Sarovar campus.
Source of data to be used:	Monthly generation report based on meter readings
Value of data	Actual value will be applied For Ex-ante calculation: 4,359.7 MWh

Description of measurement methods and procedures to be applied, inc. frequency:	• The power transmitted via mini-grid will be measured at each campus (Shantivan, Manmohini and Anand Sarovar) before usage. • Electricity is not sold to a third party, therefore no cross-check of sold/purchased electricity invoices/receipts can be done.
QA/QC procedures to be applied:	Annual calibration of energy meters
Any comment:	The uncertainty level of the parameter is considered to be low since the same will be monitored with calibrated meters. The data will be archived for two years.

B.7.2 Description of the monitoring plan:

The monitoring plan is developed in accordance with the Gold Standard Toolkit and the applied methodology AMS-I.F. This monitoring plan, which will be implemented by the project participants, describes the parameters to be monitored, monitoring practices, monitoring organization, quality assurance, quality control procedures and data storage and archiving. It´s goal is to ensure reliable recordings of the generated and transmitted electricity.

Parameters

According to method 'AMS-I.F Renewable electricity generation for captive use and mini-grid', version 03, the monitoring shall consist of the monitoring of the parameters:

- $EF_{CO2,y}$: As per the Methodology AMS I.F, the grid emission factor needs to be monitored. Paragraph 19 of AMS I.F refers to the methodology AMS I.D for calculating the grid emission factor. AMS I.D. refers to the CDM *'Tool to calculate the emission factor for an electricity system'* for calculation of the grid emission factor. Therefore, the *'Tool to calculate the emission factor for an electricity system'* is used for the calculation of the grid emission factor.
- $EG_{BL,y,gross}$: The gross annual electricity generated by the project activity. Measured by energy meters at the point of generation. Recorded hourly and add to the database once a month. Archived for two years.
- $EG_{BL,y}$: The net annual electricity consumed by the three campuses (Shantivan, Manmohini and Anand Sarovar) that are the sole consumer of the produced electricity. Measured by energy meters at each campus. Recorded hourly and add to the database once a month. Archived for two years.

Table 6 Overview of parameters, monitoring procedure and quality assurance.

Parameter	Frequency	Monitoring Procedure	Responsibility		QA/QC/Data Archiving
			Recording	Approval	
$EG_{BL,y,gross}$	Hourly measurement, Monthly recording	$EG_{BL,y,gross}$ will be monitored continuously using the energy meter. Hourly data will be recorded monthly.	Shift in charge	Plant Manager	Annual calibration of energy meter and archiving of monthly generation report for two years.
$EG_{BL,y}$	Hourly measurement, Monthly recording	$EG_{BL,y}$ will be monitored continuously using energy meter at each of the three campuses. Hourly data will be recorded monthly.	Shift in charge	Plant Manager	Annual calibration of energy meter and archiving of monthly generation report for two years.

Organization Structure

The monitoring plan will be implemented by the project proponent World Renewal Spiritual Trust (WRST). The WRST Team consists of a 40 person team. All are assigned with different responsibilities for the operation of the site. The plant manager is supposed to be full time on the project site and is supported by the shift in charge (see Figure 9).

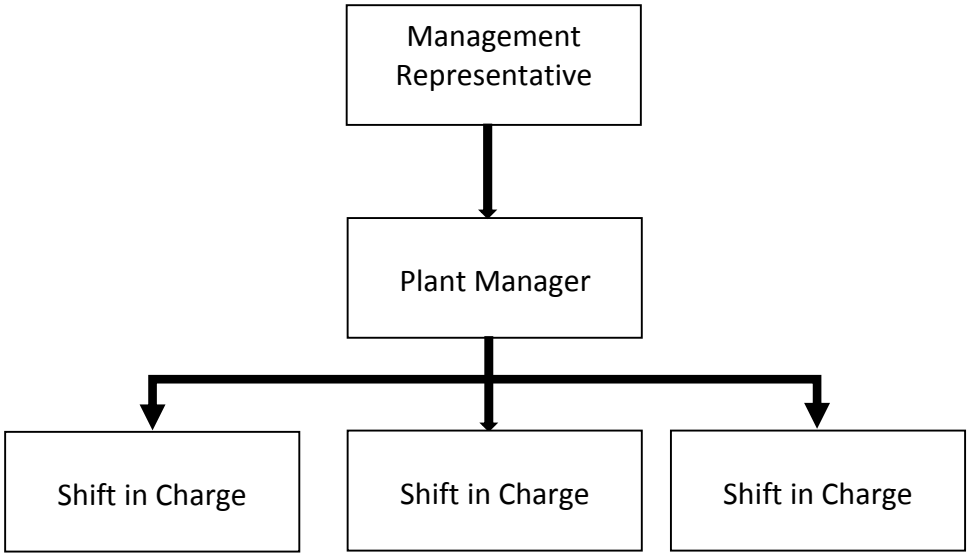

Figure 9: Organization Structure of Monitoring Team.

Responsibilities of Monitoring Team

Management Representative

- Reviewing the overall implementation of the monitoring plan and the project performance.

Plant Manager

- Reviewing the daily and monthly reports in consultation with the Shift In-charge.
- Implementation of appropriate corrective measures in case any discrepancies are identified in the daily and monthly reports.
- Ensuring calibration of the monitoring equipment as and when required

Shift In-Charge

- Monitoring and recording hourly measurements of electricity generation

Maintenance of Meters and Calibration

The energy meters measuring the parameters $EG_{BL,y,gross}$ and $EG_{BL,y}$ will be calibrated annually.

B.8 Date of completion of the application of the existing or new baseline and monitoring methodology and name of the responsible person(s)/entity(ies)

Date of completion of the application of the existing or new baseline and monitoring methodology: 13/10/2016

Project Proponent:	**Carbon Consultant:**
World Renewal Spiritual Trust (WRST) 121 Mahatma Gandhi Road, 1st Floor, Above Bank of Baroda Fort, Mumbai - 400023 Office: +91-22-22625825 Fax: +91-22-22623919	atmosfair gGmbH Mr. Denis Machnik CDM Project Manager +49-(0)30-6273550-15 machnik@atmosfair.de

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

Start date of the project activity is the date of purchase order as on 01/03/2011

C.1.2. Expected operational lifetime of the project activity:

20 years 0 month

C.2	Choice of the crediting period and related information:

C.2.1.	Renewable crediting period

Not Applicable

C.2.1.1.	Starting date of the first crediting period:

Not Applicable

C.2.1.2.	Length of the first crediting period:

Not Applicable

C.2.2.	Fixed crediting period:

C.2.2.1.	Starting date:

1st of September 2017 or the date of registration, whichever is later.

C.2.2.2.	Length:

10 years 0 month

SECTION D. Stakeholders' comments

D.1. Brief description how comments by local stakeholders have been invited and compiled:

>> Please describe the agenda of physical meeting, Non-technical summary, Invitation tracking table, Text of invitations sent, any other consultation method used

The physical stakeholder meeting was organized on 27th of September 2012.

I. Agenda of the physical meeting

1. Opening of the meeting
2. Explanation of the project & Gold Standard
3. Questions for clarification about project explanation by all participants
4. Blind sustainable development exercise
5. Discussion on the need to monitor sustainability indicators
6. Closure of the meeting

II. Non-technical Summary

Energy is one of the most important requirements in this world to function properly. Its availability and regular supply are of paramount interest. As we are all aware energy/ fuel prices are rising day by day and the negative effects of global warming are more and more visible. Coal consumption and electricity generation are nowadays recognized as one of the prime contributors to global warming and respective climate change. It has been postulated that these climatic changes would be even more adverse in upcoming decades. The coal is been burned in the process which greatly affects/disturbs carbon cycle, increasing atmospheric GHG concentrations, leading to many direct and indirect adverse effects such as (i) elevated air pollution (CO_2 and particulate matter) which badly impacts public health; (ii) reduced visibility that affects air transportation; and (iii) reduced photosynthetic activity when fly ash settles on the leaves of the plant. Thus, an urgent need to manage carbon emissions has captured special attention among environmentalist during Kyoto Protocol and Copenhagen Summit. Both the summits impose legal bindings on the nations, especially for developing economies to cut carbon emissions.

The project activity exploits solar energy in a proper manner and thus the power is produced with no net greenhouse gas emissions, hence contributes to sustainable development. In the project activity, the electricity would be generated from solar energy to meet the captive energy requirements of Brahma Kumaris Campus at Village Talheti, Tehsil Abu Road, District Sirohi, Rajasthan. The generated electricity will be used internally for in-house consumption and thus will avoid use of grid electricity which in India is primarily dominated by coal based thermal power plants. The project will demonstrate, at a commercial level the potential and technical viability of solar energy and utilizing for power generation through solar thermal route. In the absence of the project activity, the same amount of electricity would have been generated by burning of coal resulting in greenhouse gas (GHG) emissions into the atmosphere. The generation of electricity from solar energy will contribute to reducing greenhouse gas (GHG) emissions in the current energy mix. In addition to reducing the GHG emissions the project activity will limit emissions of SO_X and NO_X, since these emissions are higher in coal based power plants as coal consist of carbon, hydrogen, oxygen, nitrogen, sulphur and mineral matter.

III. Invitation Tracking Table

Table 7: Invitation Tracking Table.

Category Code	Organization (if relevant)	Name of Invitee	Means of Invitation	Date of Invitation	Confirmation received (Y/N)
A	Not Applicable	Local People	Newspaper: 'Times of India' (English)	21-Sep-12	-
A	Not Applicable	Local People	Newspaper: 'Dainik Bhaskar' (Hindi)	22-Sep-12	-
B	Rajasthan Energy Development Agency (REDA)	Shri Shyam S. Agarwal, IAS	Official Mail	24-Sep-12	N
C	Designated National Authority (DNA), India	Mr. Rajiv Kumar	Official Mail	24-Sep-12	N
C	Designated National Authority (DNA), India	Mr. Bose	Official Mail	24-Sep-12	N
D	GIZ	Sven Eberle	Official Mail	24-Sep-12	N
E	Gold Standard Foundation (GSF)	Ms. Neha Rao	Official Mail	24-Sep-12	Y
F	Carbon Watch	Mr. Deepak Mawandia	Official Mail	24-Sep-12	N
F	Development Alternatives	Dr. Ashok Khosla	Official Mail	24-Sep-12	Y
F	EnerGHG India	Mr. Narendra Paruchuri	Official Mail	24-Sep-12	N
F	Fair Climate Network	Dr. Sudha Padmanabha	Official Mail	24-Sep-12	N
F	NERD SOCIETY Coimbatore	Mrs. Sathiajothi Kamaraj	Official Mail	24-Sep-12	N
F	Rural Education for Development Society-REDS	Mr. M. C. Raj	Official Mail	24-Sep-12	N

F	Rural Education for Development Society-REDS	Mrs. Jyothi Raj	Official Mail	24-Sep-12	N
F	SKG Sangha	Vidya Sagar Devabhaktuni	Official Mail	24-Sep-12	N
F	Winrock International India	Debajit Das	Official Mail	24-Sep-12	N
F	HELIO International	Helene O'Connor-Lajambe	Official Mail	24-Sep-12	N
F	Mercy Corps	Dorothy McIntosh	Official Mail	24-Sep-12	N
F	Greenpeace International	Steve Sawyer	Official Mail	24-Sep-12	N

IV. Text of invitations sent

a. Text of individual invitations for the stakeholder meeting on 27/09/2012:

Dear All,

We are planning to implement Solar Thermal Power Project at Village - Talheti, Tehsil - Abu Road, District - Sirohi, Rajasthan. The project uses Solar Energy to generate power and helps to reduce Carbon Dioxide and other harmful Green House Gas emissions. The project will have positive impact on environment and will contribute to the sustainable development of the Nation. We are developing our Solar Thermal Power Project under Gold Standard Voluntary Emission Reduction Scheme.

We cordially invite you to attend the Stakeholders' meeting **on 27th September 2012 at 10:30 AM at Brahmakumaris Shantivan Campus, Talheti, Abu Road, Rajasthan** and express your views on the above initiative by World Renewal Spiritual Trust.

With Kind Regards,

BK Yogendra
Meeting Co-ordinator
India One Solar Thermal Power Plant
Abu Road, Rajasthan - 307510
Mob: 8233260227 / 9667583989

b. Text of public invitation:

World Renewal Spiritual Trust
Public Notice

World Renewal Spiritual Trust is implementing Solar Thermal Power Project at Village Talheti, Tehsil Abu Road, District Sirohi, Rajasthan. The project produces clean energy and is eligible under Gold Standard Voluntary Emission Reduction Scheme. The project will have positive impact on the environment as it reduces Carbon dioxide and other harmful Green House Gases by using solar energy. Therefore World Renewal Spiritual Trust is pleased to meet, discuss and apprise the stakeholders, the details of the proposed project, as per the program given below:

Date: - 27/09/2012
Venue: - Shantivan Complex, Abu Road, Rajasthan
Time: - 10:30 AM

All concerned are requested to attend

Project Head, India One Solar
World Renewal Spiritual Trust

The 'Project Activity' is a micro scale project, developed under Gold Standard (GS) Voluntary Emission Reduction (VER) scheme. In order to comply with the same, a Local Stakeholder Consultation (LSC) meeting was conducted on 27th of September 2012 at Shantivan Complex, Brahma Kumaris Campus, Abu Road, Rajasthan, to intimate the local community about the project activity, benefits on its implementation and to get their feedback about the proposed project activity.

The stakeholders were invited through an advertisement in the local newspapers, "Times of India", Ahmadabad (in English Page #3) and in "Dainik Bhaskar", Sirohi, Abu Road (In Hindi Page #14), as well as through formal invitation letter along with the non-technical summary send via e-mail to the key people. In parallel, World Renewal Spiritual Trust (WRST) distributed hard copy of the public notification requesting local community to attend the LSC meeting and to give their views regarding the proposed project activity.

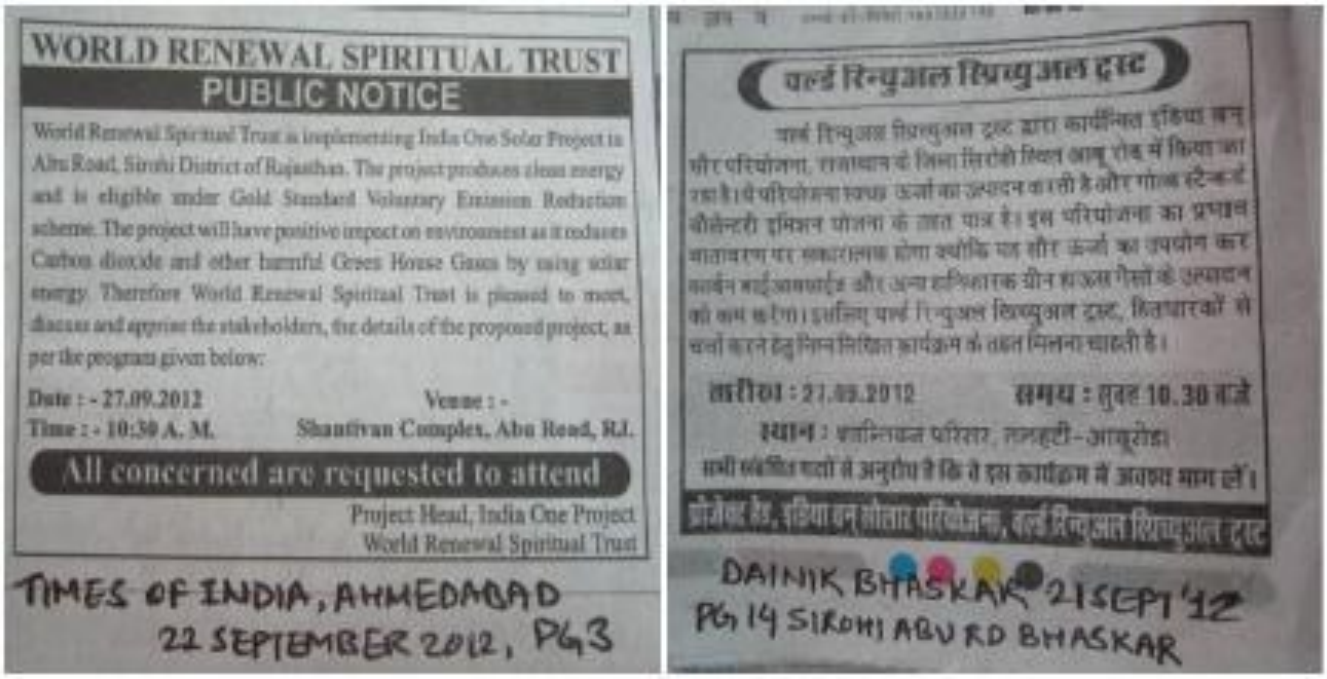

Figure 10: LSC Invitation in local Newspapers.

Invitees were identified according to guidelines in the Gold Standard toolkit version 2.2 and the invitees include the following relevant stakeholders directly associated with the project activity:

Table 8: Stakeholder Category.

Category Code	Category
A	Local people impacted by the project activity
B	Local policy makers and representatives of local authorities
C	Official representative of the DNA
D	Local non-governmental organisations working on topics relevant to the Project activity
E	The local Gold Standard expert who is located closest to the location of project activity
F	Relevant international Non-Governmental Organisations (NGOs) supporting the Gold Standard, with a representation in the region and all GS Supporter NGOs located in the host country of the project activity.

Local people, where the project is under implementation, are an integral part of the project activity and they are therefore involved in the stakeholder meeting.

Being a Gold Standard VER project, representatives of the DNA, local expert of the Gold Standard foundation and other Gold Standard supporters were invited to get their feedback on the project activity. Local policy makers are involved in different legal approval and clearance procedure and therefore were also invited.

Invitation tracking table for the proposed project activity is given below:

Table 9: LSC Invitation tracking Table.

Category Code	Organization (if relevant)	Name of Invitee	Means of Invitation	Date of Invitation	Confirmation received (Y/N)
A	Not Applicable	Local People	Newspaper: 'Times of India' (English)	21-Sep-12	-
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C	Designated National Authority (DNA), India	Mr. Bose	Official Mail	24-Sep-12	N
D	GIZ	Sven Eberle	Official Mail	24-Sep-12	N
E	Gold Standard Foundation (GSF)	Ms. Neha Rao	Official Mail	24-Sep-12	Y
F	Carbon Watch	Mr. Deepak Mawandia	Official Mail	24-Sep-12	N
F	Development Alternatives	Dr. Ashok Khosla	Official Mail	24-Sep-12	Y
F	EnerGHG India	Mr. Narendra Paruchuri	Official Mail	24-Sep-12	N
F	Fair Climate Network	Dr. Sudha Padmanabha	Official Mail	24-Sep-12	N
F	NERD SOCIETY Coimbatore	Mrs. Sathiajothi Kamaraj	Official Mail	24-Sep-12	N
F	Rural Education for Development Society-REDS	Mr. M. C. Raj	Official Mail	24-Sep-12	N

F	Rural Education for Development Society-REDS	Mrs. Jyothi Raj	Official Mail	24-Sep-12	N
F	SKG Sangha	Vidya Sagar Devabhaktuni	Official Mail	24-Sep-12	N
F	Winrock International India	Debajit Das	Official Mail	24-Sep-12	N
F	HELIO International	Helene O'Connor-Lajambe	Official Mail	24-Sep-12	N
F	Mercy Corps	Dorothy McIntosh	Official Mail	24-Sep-12	N
F	Greenpeace International	Steve Sawyer	Official Mail	24-Sep-12	N

The Stakeholders assembled at the venue of the meeting as per scheduled time at 10.30am. The meeting was attended by around 33 people including the personnel from WRST who had coordinated the LSC meeting. Literature in English and Hindi (local language widely spoken and understood by the local population) with the description of the project activity was distributed among the stakeholders. The project proponent (Mr. Golo Pilz) opened the meeting with welcoming remarks to the stakeholders. Further, he explained about the project activity and the benefits related to the implementation of the same e.g. the reduction of GHG emissions and air pollutants by implementing the Solar Thermal Power Plant.

The blind sustainable development exercise was carried out as per Gold Standard toolkit version 2.2. A separate gold standard questionnaire and evaluation form was also circulated to the stakeholders during the LSC meeting.

D.2. Summary of the comments received:

>> Please describe the outcome of the meeting, assessment of stakeholders comment, list of participants.

No negative comments were received from the stakeholders. All the queries raised by the stakeholders were satisfactorily answered by the project proponent. The comments can be summarized as overall positive, especially regarding the environmental benefits of power generation from renewable solar energy. Socio economic benefits from the project activity have also been appreciated. A summary of the questions raised can be found in Table 10.

Attendance Sheet

India One Solar Thermal Power Project
Village - Talheti, Tehsil - Abu Road
District - Sirohi (Rajasthan)
Date: 27/09/2012

Sr. No.	Name	Age	Sex (M/F)	Occupation	Village	Signature
1	Ajad Shrestha	56	M	Business	Nepal	
2.	Anju Shrestha	53	F	Housewife	"	Anju
3	Subramanian	36	M	Electrician	Madurai	
4)	Anil Mathuria	30	M	Elec. engg	Nagpur	
5	S K Saini	38	M	Business	Ludhiana	
6	Dharam Pal	48	M	Business	Chandigarh	
7	[illegible]	58	M	Business	Ahmedabad	
8	B S Pant	28	M	Aurangabad	Mumbai	
9)	A. R Ubale	29	F	Aurangabad	Mumbai	
10)	Anita Tobre	29	F		Aurangabad	Anita
11)	Shraddha Shirke	38	F	Aurangabad		
12)	Anantraj Pai Khot	44	M	Business	GOA	
13)	Deepali Pai Khot	36	F	Housewife	GOA	Pai Khot
14)	Siddharth Pai Khot	12	M	Student	GOA	
15)	Manjunath Bhat	65	M	B.K. Swadhaya	Abu Road	
16)	Vidhi J. Kaonu	27	F	Housewife	Sillod	
17)	Jitendra S. Kaonu	29	M	Bisnes	Sillod	
18)	Jeevan Sharma	22	M	Engineer	Pathankot	
19)	Saket Mudgal	21	M	"	Delhi	

Figure 11: LSC Attendance sheet page 1/2.

Attendance Sheet

India One Solar Thermal Power Project
Village - Talheti, Tehsil - Abu Road
District - Sirohi (Rajasthan)
Date: 27/09/2012

Sr. No.	Name	Age	Sex (M/F)	Occupation	Village	Signature
20	[illegible]	63	M	[illegible]	[illegible]	
21	[illegible]	67	M	-	-	
22	[illegible]	42	M	-	-11-	
23	Pratham Pawar	27	M	Business	Hiranyakund	
24	Ashok. M. Barcate	44	M	Engineer	Sirohi	
25	SATISH	32	M	-	Mt. Abu (Gorat)	
26	Amul s. Joshi	24	M	Job.	Hiranyakund	
27	IMTIYAZ Ali	35	M	Physiotherapy	Abu Road	
28	Vinayak Pantar	46	M	Social Scientist	Mt Abu	
29	Shivanand Hosamani	31	M	Service	Abu Road	
30	S.B. Malenahalli	40	M	Farmer	Umaraya	
31	Rahul Misra	26	M	Service	Lucknow	
32	Yogendra Hingar	31	M	Service	Talheti	
33	Jordan Pk	52	M	Advisor	Abu Road	

Figure 12: Attendance sheet page 2/2.

D.3. Report on how due account was taken of any comments received and on measures taken to address concerns raised:

>> Please discuss how the stakeholder's comments have been addressed and include the changes to the design of the programme based on their feedback.

The questions asked by the stakeholders and the answers given by the project proponent during the LSC meeting are summarized below:

Table 10: Summary of Questions asked by the Stakeholders and Answers given by Project Proponent.

Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
Will jobs be created for the local people?	Yes	The project activity will give direct employment to the skilled people for the installation, operation and maintenance of the power plant and indirect employment during supply of consumables/materials/equipment/ machineries for the plant.
Is the electricity generated provided to the local people free of coast?	No	No, the electricity generated by the solar thermal power plant will only be used for the electricity requirements in Brahma Kumaris Campus and thus will avoid and displace the use of equal quantity of grid electricity. But due to the project activity, the availability of power in the local area will increase.
When will the project start generating electricity?	NA	It is expected that the project will start generating electricity by 01st October 2016.
Considering the cost of the project to be USD 1.29 million for 1 MW electricity generation, don't you think that the investment cost is too high?	No	The project activity is a R&D initiative into solar thermal technology. This is the reason why the electrical power generation capacity is 1 MW. Upon successful demonstration of this prototype, this technology can be executed on large scale and thus shall scale down electricity generation cost per unit to match with the conventional electricity generation cost per unit. Our forecast is that in the next 5 years the electricity power generation cost per unit solar energy shall match with the conventional fuel based electricity power generation.

No alteration to the basic project design or project implementation will be done because there were no negative comments or feedbacks from the local stakeholders.

D.4. Report on the Continuous input / grievance mechanism:

Table 11: Means of continuous input/grievance mechanism.

	Method Chosen (include all known details e.g. location of book, phone, number, identity of mediator)	Justification
Continuous Input / Grievance Expression Process Book	Input can be given continuously by calling or sending an E-Mail. Contact details are given below. Furthermore, a book will be maintained to record continuous inputs from the stakeholders that can´t give their input via phone or E-Mail.	Telephone and email access are considered by the project participants as a reliable method to allow continuous input from stakeholders. For everyone else a book will be on display in which grievance can be expressed by hand. The grievance book will be placed at the video Room department at Brahmakumaris Shantivan Campus, Talheti, Abu Road, Rajasthan, India. The room is always open for visitors and there is plenty additional information regarding the project to be found.
Telephone access	+91 (0) 2974-228298 +41 (0) 22 788 7080	
Internet/email access	info@india-one.net machnik@atmosfair.de info@goldstandard.org	
Nominated Independent Mediator (optional)	Not applied/Not asked for during LSC.	Stakeholders agreed that no mediator would be necessary.

Up till now no negative comments have been received from the stakeholders. Issues identified during the crediting period through any of the methods will result in mitigation measures that would be added to the monitoring plan.

D.5. Report on stakeholder consultation feedback round:

Still to be done. For the stakeholder consultation feedback round the following steps are planned:

- The Local Stakeholder Consultation report will be uploaded onto the Gold Standard Registry
- Project documentation including LSC Report and PDD will be made available on the atmosfair Homepage
- In addition project documents will be sent out to all stakeholders for the stakeholder feedback round

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	World Renewal Spiritual Trust (WRST)
Street/P.O.Box:	121 Mahatma Gandhi Road,
Building:	1st Floor, Above Bank of Baroda, Fort,
City:	Mumbai
State/Region:	Maharashtra
Postfix/ZIP:	400023
Country:	India
Telephone:	+91-22- 22625825
FAX:	+91-22- 22623919
E-Mail:	info@wrst.in
URL:	www.wrst.in
Represented by:	Joachim Pilz
Title:	Project Head, India One Solar
Salutation:	Mr.
Last Name:	Pilz
Middle Name:	
First Name:	Joachim
Department:	
Mobile:	+91-9413384877
Direct FAX:	
Direct tel:	
Personal E-Mail:	golobhai@gmx.net

Organization:	atmosfair gGmbH
Street/P.O.Box:	Zossener Strasse 55-58
Building:	Aufgang A – 1. OG
City:	Berlin
State/Region:	Berlin
Postfix/ZIP:	10961
Country:	Germany
Telephone:	+49 30 627 3550-0
FAX:	+49 30 627 3550-29
E-Mail:	machnik@atmosfair.de
URL:	www.atmosfair.de
Represented by:	
Title:	CDM Project Manager

Salutation:	Mr.
Last Name:	Machnik
Middle Name:	
First Name:	Denis
Department:	CDM department
Mobile:	
Direct FAX:	
Direct tel:	+49-(0)30-6273550-15
Personal E-Mail:	machnik@atmosfair.de

Annex 2 - **Information regarding Public Funding**

Annex 3 – **ODA Declaration Form**

ANNEX D - OFFICIAL DEVELOPMENT ASSISTANCE DECLARATION

Date: October 10th 2016

The Gold Standard Foundation

79 Avenue Louis Casai

Geneva Cointrin, CH-1216

Switzerland

RE: Declaration of Non-Use of Official Development Assistance by Project Owner of [GS 1304]

Project Representative: Denis Machnik, Project Manager, atmosfair gGmbH

I hereby declare that I am duly and fully authorized by the Project Owner of the above-referenced project to act on behalf of all Project Participants and make the following representations:

I. The Gold Standard Documentation

I am familiar with the provisions of The Gold Standard Documentation relevant to Official Development Assistance (ODA). I understand that the above-referenced project is not eligible for Gold Standard registration if the project receives or benefits from Official Development Assistance with the condition that some, or all, of the carbon credits [CERs, ERUs, or VERs] coming out of the project are transferred to the ODA donor country. I hereby expressly declare that no financing provided in connection with the above-referenced project has come from or will come from ODA that has been or will be provided under the condition, whether express of implied, that any or all of the carbon credits issued as a result of the project's operation will be transferred directly or indirectly to the country of origin of the ODA.

II. Duty to Notify Upon Discovery

If I learn or if I am given any reason to believe at any stage of project design or implementation that ODA has been used to support the development or implementation of the project, or that an entity providing ODA to the host country may at some point in the future benefit directly or indirectly from the carbon credits generated from the project as a condition of investment, I will notify The Gold Standard immediately using the Amended ODA Declaration Form provided below.

III. Investigation

The Gold Standard reserves the right to conduct an investigation into any project it reasonably believes may be receiving ODA with the condition that some or all of the carbon credits from the project will be transferred to the ODA donor country.

The Gold Standard®
Premium quality carbon credits

IV. Sanctions

I am fully aware that the sanctions identified in The Gold Standard Terms and Conditions may be applied to me or the above-referenced project in the event that any of the information provided above is false or I fail to notify The Gold Standard of any changes to ODA in a timely manner.

I swear that all of the statements contained herein are true to the best of my knowledge.

Signed: D. Machnik

Name: DENIS MACHNIK

Title: /

On behalf of: WORLD RENEVAL SPIRITUAL TRUST

Place: BERLIN, GERMANY 10th of OCTOBER 2016

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