

## ANNEX AQ – MICRO-SCALE VALIDATION REPORT TEMPLATE

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## SECTION A. BRIEF PROJECT DESCRIPTION

Please indicate the scheme applicable to the micro-scale activity:

- |  |                          |
|--|--------------------------|
| 1. Project activity is applying under the micro-scale scheme     | X                        |
| 2. Project activity is applying under the micro-programme scheme | <input type="checkbox"/> |

Title of the Activity or VPA: India One Solar Thermal Power Project

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Title of the PoA: -

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Discuss the current status of the project activity and what will happen as per the project scenario. Briefly discuss the technology employed by the project activity.

### Timeline of the project activity

01<sup>st</sup> January 2011: Start of the project activity

Completed until May 2014: 450 reflectors erected; solar grade mirror curved for 650 reflectors; first 10 receiver in series tested with variable flow for thermal storage; turbine and generator installed and aligned by an engineer from Siemens; information dissemination centre for visitors established and operational on the project site.

Completed until November 2015: Completed the fabrication and erection of all 770 frames with mirrors in the field; all 770 receiver stands fabricated; 100 km of multistrand power cable for reflector cabling ready to be installed; 4000 motors for tracking and 770 tracking systems ready to be installed.

Ongoing in November 2015: Receiver fabrication and installation; Laying of 42km of piping, mounting and testing of about 5000 motors for tracking; installing, testing and commissioning of 800 solar trackers.

01<sup>st</sup> September 2017: Inauguration of the power plant and start of electricity and heat generation.

### The technology employed

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<sub>electrical</sub> (3.5 MW<sub>thermal</sub>) and a net electrical output of 4,360 MWh/year. The plant consists of 770 Scheffler parabolic reflectors with a total mirror surface of 46,200 m<sup>2</sup>, 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,

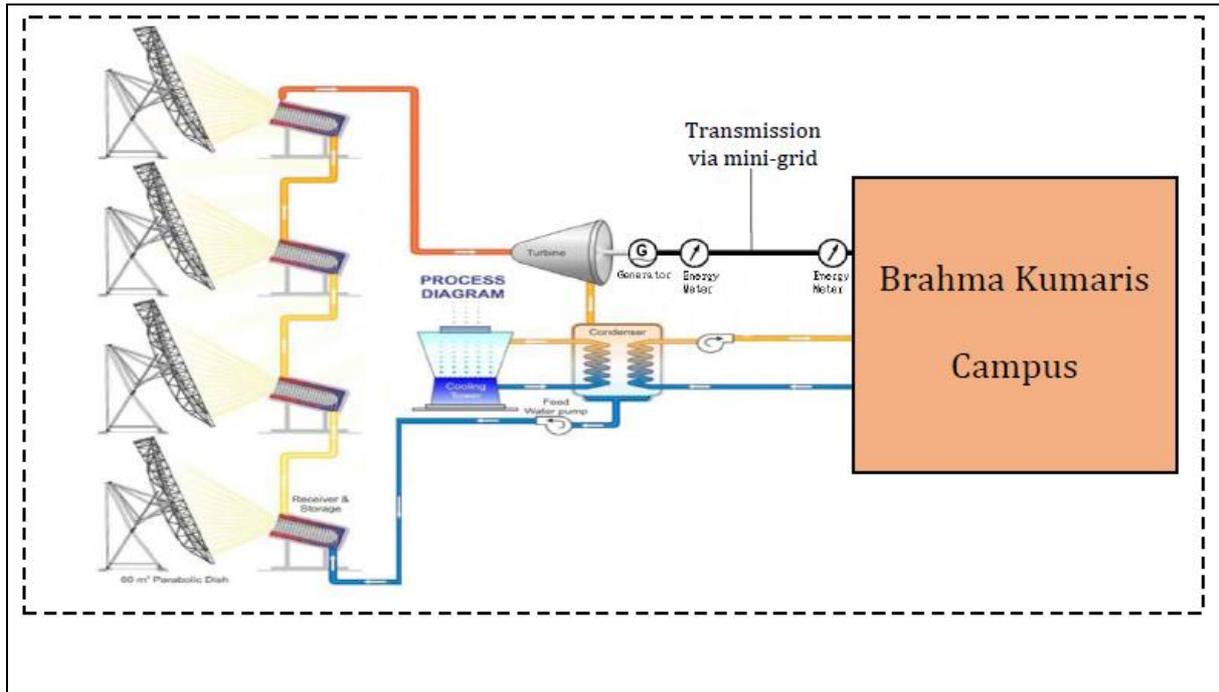
Manmohini and Anand Sarovar complexes present inside Brahma Kumaris Campus thus avoiding the use of carbon intensive NEWNE (Integrated Northern, Eastern, Western, and North-Eastern regional grids) grid electricity which is primarily dominated by fossil fuel based thermal power plants. In the pre project scenario the electricity requirements of Brahma Kumaris Campus are met through NEWNE grid.

The Solar collectors are of the proven and well established Scheffler Parabolic Dish type. The field will consist of 770 x 60 m<sup>2</sup> 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 losses and features an automatic shutter which shuts the opening in case of low radiation and/or night time.

During sunshine hours the iron core will be heated up to a maximum temperature of 450°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°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 liter 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°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.





## SECTION B. OBJECTIVE OBSERVERS' OPINION

Please provide an opinion as to whether the project activity is in line with The Gold Standard principles and should be validated.

*(To be filled only in the event of the use of an Objective Observer)*

**SECTION C. DETAILS ABOUT THE SITE-VISIT**

*(To be filled only in the event of the use of an Objective Observer)*

**i. Individual or team on site**

List Objective Observer(s) that went on site. Provide brief information about his/her (their) background and relevant skills.

**ii. Period of site-visit**

Time period during which Objective Observer(s) was (were) on-site.

**iii. People interviewed**

Provide the list of the individuals interviewed during the site visit and include relevant information on the group or organisation they represent.

**iv. Means for interviews**

Describe the means used to interview individuals during site visit; e.g. one to one interactions, telephonic conversations, etc.

## SECTION D. STAKEHOLDER CONSULTATION PROCESS

*(To be filled only in the event of the use of an Objective Observer)*

### **D. 1. Evaluation of the Local Stakeholder Consultation Process**

Please discuss whether attendance was representative enough (both qualitatively and quantitatively), whether the comments raised have been answered and addressed appropriately, and summarise what the main outcomes were.

### **D. 2. Evaluation of the Stakeholder Feedback Round**

Please discuss the comments raised or assess if any open issues raised by the stakeholders during the LSC have been addressed.

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.

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.

**D. 3. Evaluation of the Continuous input / grievance mechanism implemented**

Please evaluate whether the approved/selected methods of Continuous Input/Grievance Mechanism from the LSC report / other consultations have been implemented on site. For retroactive projects check that appropriate means were used by the PP to reach out to relevant stakeholders and seek their feedback on the Continuous Input / Grievance Expression methods as there was no LSC conducted for retroactive projects.

**SECTION E. EVALUATION OF THE RISKS ASSOCIATED WITH THE PROJECT ACTIVITY**

i. 'Do no harm' assessment

[See GS Annex H for guidelines on safeguarding principles]

Safeguarding principles associated with a medium to high risk	Assessment of project risks breaching it (medium, high)	Mitigation or compensation measure proposed by project proponents after discussion with Objective Observer(s)
1		
2		
Etc.		

➔ No safeguarding principles were assessed during the LSC with a medium or high risk.

ii. Evaluation of mitigation or compensation measures proposed by project proponents

Mitigation measure	Comments

**SECTION F. EVALUATION OF SUSTAINABLE DEVELOPMENT RELATED ISSUES  
POTENTIALLY ASSOCIATED WITH THE PROJECT ACTIVITY**

[See GS Annex I]

**i. Environmental issues**

Does the implementation of the project activity contribute to any negative environmental impacts, (e.g. on air quality, water quality and/or quantity, soil condition, biodiversity or any other pollutant) compared with the baseline situation (i.e. current situation or most likely situation in the absence of the project activity)?

Indicator	Mitigation measure	Relevance to achieving MDG	Chosen parameter and explanation	Final score
Air quality		Goal 7 - Ensure environmental sustainability	<p><b>Explanation:</b> Air quality will be improved substantially compared to emission levels related to fossil fuel combustion. Fossil fuels will be displaced by the use of electricity produced by the solar thermal energy power plant. The GHG emissions will also be reduced as a consequence of the project.</p> <p><b>Parameter:</b> Amount of gross electricity that is produced by the project activity.</p>	+
Water quality and quantity		Goal 7 - Ensure environmental sustainability	<p><b>Explanation:</b> Within the project area of 10 km radius, there is no significant surface water body which could be impacted due to the upcoming of the project.</p>	0

Soil condition		Goal 7 - Ensure environmental sustainability	<b>Explanation:</b> There is no significant impact on soil condition due to project activity.	0
Other pollutants		Goal 7 - Ensure environmental sustainability	<b>Explanation:</b> There is no significant difference compared with the baseline scenario for noise and other pollutants.	0
Biodiversity		Goal 7 - Ensure environmental sustainability	<b>Explanation:</b> There is no endangered / threatened plant / animal species or any habitat in the area of the project activity.	0

#### Justification of choices, data source and provision of references

Air quality	Project activity uses solar energy for power generation and in absence of project activity the same power will be generated using fossil fuel fired power stations located in the region since the Brahma Kumaris (consumer of produced electricity) is connected to the NEWNE grid. Producers connected to NEWNE grid are mostly GHG and air pollutant intensive thermal power plants. As a result of implementing solar energy, reductions in GHG emissions and emission of air pollutants are expected; detail on the calculation of the GHG reduction is available in the project design document (PDD).
Water quality and quantity	Within the project area of 10 km radius, there is no significant surface water body which could be impacted due to the upcoming of the project.
Soil condition	The project proponents do not expect to see significant impacts on the soil condition.
Other pollutants	There is no significant difference compared with the baseline scenario for noise and other pollutants.
Biodiversity	Project activity will not have significant impact on biodiversity.

## ii. Social and economic issues

Does the implementation of the project lead to any negative social and economic impacts e.g. was there any deterioration of livelihoods, or reduction in the quality and quantity of employment, compared with the baseline situation (i.e. current situation or most likely situation in the absence of the project activity)?

Indicator	Mitigation measure	Relevance to achieving MDG	Chosen parameter and explanation	Final score
Quality of employment		Goal 1 – Eradicate extreme poverty and hunger	<p><b>Explanation:</b> The workers will be trained, direct &amp; indirect employment opportunities will be generated for skilled and unskilled local population. The staffs would acquire technical skills, knowledge and quality of employment will improve.</p> <p><b>Parameter:</b> Number of trainings and/or workshops held for the workers at the site of the project activity and number of participants. One training or workshop per quarterly period is planned.</p>	+
Livelihood of the poor		Goal 1 – Eradicate extreme poverty and hunger	<p><b>Explanation:</b> The project will improve the livelihood of local people by creating employment opportunities for both skilled and unskilled people.</p> <p><b>Parameter:</b> No. of unskilled workers working at the project area.</p>	+
Access to affordable and clean energy services		Goal 1 – Eradicate extreme poverty and hunger	<p><b>Explanation:</b> The project will use solar energy (renewable fuel) to generate electricity in a country where installation of fossil fuel based power plants is the most common scenario.</p> <p><b>Parameter:</b> Amount of net electricity that is produced by the project activity and consumed by Brahma Kumaris</p>	+

			campus.	
Human and institutional capacity		Goal 1 – Eradicate extreme poverty and hunger	<b>Explanation:</b> Although the project will improve the human and institutional capacity through involvement of stakeholders in the LSC meeting, the overall benefits are not so significant. In practice, only the employees working on the project can be considered as the main beneficiaries. The scoring of this indicator is kept neutral to be conservative.	0
Quantitative employment and income generation		Goal 1 – Eradicate extreme poverty and hunger	<b>Explanation:</b> The participants all agreed that employment will be generated for the local population, resulting in an increase in personal and regional income. <b>Parameter:</b> Number of jobs created for 1) unskilled workers and 2) skilled workers by the project activity.	+
Balance of payments and investment		Goal 1 – Eradicate extreme poverty and hunger	<b>Explanation:</b> Overall, the participants did not have an idea whether the project will result in a reduction of fuel import through use of local energy resources. So, this indicator has been considered to be neutral.	0
Technology transfer and technological self-reliance		Goal 1 – Eradicate extreme poverty and hunger	<b>Explanation:</b> The participants agreed that this project was something new for their village or neighboring villages and would lead to improvement of technical knowledge of local population. However they thought that project activity does not lead to technology transfer or introduction of new technology.	0

Justification of choices, data source and provision of references

Quality of employment	The project will create employment, involving various jobs, for technicians, qualified and unskilled workers. In addition, safety procedures will be included in the operation manual in ensure safe working condition for the staff.
Livelihood of the poor	The project will improve the livelihood of local people by creating employment opportunities for both skilled and unskilled people.
Access to affordable and clean energy services	The project will use solar energy (renewable fuel) to generate electricity in a country where installation of fossil fuel based power plants is the most common scenario.
Human and institutional capacity	The project may not significantly contribute to local education, gender equality or social structure in the near future. However, local stakeholders had a feeling of empowerment brought about by the participatory process under which this project was developed.
Quantitative employment and income generation	The participants all agreed that employment will be generated for the local population, resulting in an increase in personal and regional income.
Balance of payments and investment	The project will have no impact on this parameter as it doesn't lead to direct substitution of any fossil fuel and hence doesn't result in any direct or positive impact on the net foreign currency savings.
Technology transfer and technological self-reliance	The participants agreed that this project was something new for their village or neighboring villages and would lead to improvement of technical knowledge of local population. However they thought that project activity does not lead to technology transfer or introduction of new technology.

### iii. Sustainability Monitoring Plan

[See Toolkit section 2.4.3 and Annex I]

(Copy Table for each indicator being monitored)

No	1	
Indicator	Air Quality	
Mitigation measure	n/a	
<i>Repeat for each parameter</i>		
Chosen parameter	Amount of gross electricity that is produced by the project activity.	
Current situation of parameter	The project activity is not producing any clean energy and the sole consumer, the Brahma Kumaris, is connected to the public grid. It is consuming carbon and air pollutant intensive grid electricity from Northern, Eastern, Western and North-Eastern (NEWNE) grid.	
Estimation of baseline situation of parameter	Carbon and air pollutant intensive electricity is consumed from the public grid. As on 31.03.2014, more than 65% of the installed capacity of the Indian power sector were coal power plants <sup>1</sup> . Among thermal power plants, coal based power plants are the highest in emissions of GHGs and air pollutants <sup>2</sup> .	
Future target for parameter	<p>The projects activity produces 6,132 MWh of gross electricity every year.</p> <p>In addition (not monitored): Already more than 2,500 trees around the solar installation were planted to reduce dust accumulation.</p>	
Way of monitoring	How	Report on monthly generation of electricity by the project activity based on meter readings at the point of generation (at generator).
	When	Electricity generated shall be measured continuously with energy meters at the point of generation. A report will be written at the end of the monitoring period summarizing the monthly and annual generation.
	By who	Report will be written by the plant manager supported by the shift in charge.

<sup>1</sup> [http://cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver10.pdf](http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver10.pdf)

<sup>2</sup> [http://www.ripublication.com/ijeem\\_spl/ijeemv4n6\\_09.pdf](http://www.ripublication.com/ijeem_spl/ijeemv4n6_09.pdf)

No	2	
Indicator	Quality of employment	
Mitigation measure	n/a	
<i>Repeat for each parameter</i>		
Chosen parameter	Number of trainings and/or workshops held for the workers at the site of the project activity and number of participants.	
Current situation of parameter	Before construction of the project activity, no unskilled or skilled workers were employed and no trainings were held.	
Estimation of baseline situation of parameter	Low income jobs in agriculture prevail, but employment in overall agriculture is declining. Growth in non-agricultural employment is not fast enough to compensate for this decline. <sup>3</sup>	
Future target for parameter	Free health checkups and de-addiction camps for the staff are organized on site. Meditation courses for the mental and physical well-being of the workers and the staff are conducted on a regular basis. One training or workshop per quarterly period is planned.	
Way of monitoring	How	All the measures will be documented in attendance sheets.
	When	Continuously
	By who	The shift- in charge will be responsible.

No	3	
Indicator	Livelihood of the poor	
Mitigation measure	n/a	
<i>Repeat for each parameter</i>		
Chosen parameter	No. of unskilled workers working at the project area.	
Current situation of parameter	Before construction of the project activity started no unskilled workers were employed.	
Estimation of baseline situation of	The district is economically underdeveloped, most jobs are in	

<sup>3</sup> [http://planningcommission.nic.in/plans/stateplan/sdr\\_pdf/shdr\\_raj02.pdf](http://planningcommission.nic.in/plans/stateplan/sdr_pdf/shdr_raj02.pdf)

parameter		<p>the agricultural sector, and many people work in low income jobs or are jobless. The Human Development Report 2002<sup>4</sup> describes the job situation In Rajasthan as follows:</p> <ul style="list-style-type: none"> <li>• agricultural sector is the predominant source of employment.</li> <li>• Employment in overall agriculture is declining, although growth in non-agricultural employment is not fast enough to compensate for this decline.</li> <li>• Under-employment is widespread especially in the rural agriculture sector and very significantly in the urban informal sector.</li> <li>• The industrial base of the labour force is quite thin. The share of labour force in industries (both household and non-household) is just 7.5 percent, which indicates industrial backwardness.</li> </ul>
Future target for parameter		Permanent as well as temporary jobs are created for skilled and unskilled workers. It is expected that around 15 unskilled workers will be permanently working at the project site.
Way of monitoring	How	All the unskilled workers and their hours will be written down in time sheets and attendance registers.
	When	Continuously since the same information is needed for payment of the workers.
	By who	Shift-in Charge

No	4
Indicator	Access to affordable and clean energy services
Mitigation measure	n/a
<i>Repeat for each parameter</i>	
Chosen parameter	Amount of net electricity that is produced by the project activity and consumed by Brahma Kumaris campus.
Current situation of parameter	The Brahma Kumaris is connected to the public grid. It is consuming carbon and air pollutant intensive grid electricity from Northern, Eastern, Western and North-Eastern (NEWNE) grid.
Estimation of baseline situation of	Carbon and air pollutant intensive electricity is consumed from

<sup>4</sup> [http://planningcommission.nic.in/plans/stateplan/sdr\\_pdf/shdr\\_raj02.pdf](http://planningcommission.nic.in/plans/stateplan/sdr_pdf/shdr_raj02.pdf)

parameter		the public grid. In 2014, more than 65% of the installed capacity of the Indian power sector are coal power plants <sup>5</sup> . Among thermal power plants, coal based power plants are the highest in emissions of GHGs and air pollutants <sup>6</sup> .
Future target for parameter		The projects activity produces 4,360 MWh of net electricity every year that is consumed by Brahma Kumaris campus.
Way of monitoring	How	Report on monthly generation of electricity by the project activity and consumption at Brahma Kumaris campus (net electricity). The data is based on meter readings after transmission via mini-grid to Brahma Kumaris Campus.
	When	Electricity consumed shall be measured continuously with energy meters at Brahma Kumaris Campus, the point of consumption. A report will be written at the end of the monitoring period summarizing the monthly and annually generation.
	By who	Report will be written by the plant manager supported by the shift in charge.

No	5
Indicator	Quantitative employment and income generation
Mitigation measure	n/a
<i>Repeat for each parameter</i>	
Chosen parameter	Number of jobs created for 1) unskilled workers 2) skilled workers by the project activity.
Current situation of parameter	People are unemployed or work in jobs with very low payment. Rajasthan is one of the largest and poorest states in India. It is the largest state in size <sup>7</sup> , ranks number 8 in population but only number 22 <sup>nd</sup> in GDP per person <sup>8</sup> . The average income is one of the lowest (below 30,000 IRS <sup>9</sup> ) in India. Its economy is primarily agricultural and pastoral. The Sirohi district, in which the project

<sup>5</sup> [http://cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver10.pdf](http://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver10.pdf)

<sup>6</sup> [http://www.ripublication.com/ijeem\\_spl/ijeemv4n6\\_09.pdf](http://www.ripublication.com/ijeem_spl/ijeemv4n6_09.pdf)

<sup>7</sup> [https://en.wikipedia.org/wiki/List\\_of\\_states\\_and\\_union\\_territories\\_of\\_India\\_by\\_area](https://en.wikipedia.org/wiki/List_of_states_and_union_territories_of_India_by_area)

<sup>8</sup> <http://www.economist.com/content/indian-summary>

<sup>9</sup> <http://www.mapsofindia.com/maps/india/percapitaincome.htm>

		is located, is ranked number 101 of the most backwards districts in India <sup>10</sup> and is one of the low fifteen per capita income districts of Rajasthan <sup>11</sup> .
Estimation of baseline situation of parameter		Low income jobs in agriculture prevail, but employment in overall agriculture is declining. Growth in non-agricultural employment is not fast enough to compensate for this decline. <sup>12</sup>
Future target for parameter		During construction phase 250 skilled workers in construction and maintenance were employed. It is expected that when operation of the power plant starts, 20 skilled and 15 unskilled workers are employed full time.
Way of monitoring	How	All the unskilled and skilled workers and their hours will be written down in time sheets and attendance registers.
	When	Continuously since the same information is needed for payment of the workers.
	By who	Shift-in Charge

### SECTION G. Sustainable Development eligibility criteria for inclusion of a VPA to the PoA

*(This section is applicable for micro-programme scheme only)*

Please discuss the compliance of the SD eligibility criteria for inclusion of the VPA as per the registered micro-programme.

<sup>10</sup> [http://www.nrega.nic.in/Planning\\_Commission.pdf](http://www.nrega.nic.in/Planning_Commission.pdf)

<sup>11</sup> <http://pubs.sciepub.com/ijefm/2/1/3/>

<sup>12</sup> [http://planningcommission.nic.in/plans/stateplan/sdr\\_pdf/shdr\\_raj02.pdf](http://planningcommission.nic.in/plans/stateplan/sdr_pdf/shdr_raj02.pdf)

## CONFLICT OF INTEREST DECLARATION

*(To be filled only in the event of the use of an Objective Observer)*

I, [insert full name], aged [insert age] years, residing at [insert full home address], and working for [insert company name], which is located at [insert company headquarters address], having been selected to serve as an Objective Observer on behalf of The Gold Standard Foundation, hereby certify and declare as follows:

Neither I nor anyone else having influence over me has an interest with any person or in any firm, corporation or other business entity that is involved in the assessed project activity “GS\_\_\_\_\_” nor have I participated, directly or indirectly, by committee or as a consultant, advisor, employee, officer, director, agent, trustee, or otherwise, in the development, implementation, or administration of GS\_\_\_\_\_. I further certify and declare that in no way do I have a bias in favor or against any person, firm, corporation or business entity involved with GS\_\_\_\_\_, and I understand that such bias would disqualify me as an Objective Observer. If at any time during the evaluation process I should become aware of any interest or bias, I will report it immediately to The Gold Standard Foundation.

For purposes of this declaration, I understand “interest” to include any consideration or other thing of economic value, including future consideration.

Name: \_\_\_\_\_

Signed this \_\_\_\_\_ day of \_\_\_\_\_ Year \_\_\_\_\_