



GODAWARI GREEN ENERGY

GOLD STANDARD MONITORING REPORT

Version 3, 21/10/2015

Solar Thermal Power Plant by Godawari Green Energy Limited

UNFCCC Ref. Number: 7379, GS Ref: 3429

Monitoring Period: 19/06/2013-30/06/2015 (both days included)

One single Monitoring Report is prepared for this Monitoring Period.

The Monitoring of Sustainable Development Indicators was conducted in accordance with the GS passport. According to requirements of the Gold Standard, the project activity must be assessed against a matrix of sustainable development indicators. Indicators that were not scored neutral must be monitored.

The SD Matrix as in the passport is as follows:

Indicator	Mitigation measure	Relevance to achieving MDG	Chosen parameter and explanation	Preliminary score
Gold Standard indicators of sustainable development.	If relevant copy mitigation measure from "do no harm" – table, or include mitigation measure used to neutralise a score of ‘–’	Check www.undp.or/mdg and www.mdgmonitor.org Describe how your indicator is related to local MDG goals	Defined by project developer	Negative impact: score ‘–’ in case negative impact is not fully mitigated score 0 in case impact is planned to be fully mitigated No change in impact: score 0 Positive impact: score ‘+’
Air quality		The interventions will reduce dependence on grid supplied	In the absence of project scenario, the	+



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		<p>electricity (predominantly coal generated) thereby reducing national outdoor emissions due to non-renewable sources of fuel used for power generation. Improvement in air quality will reduce GHG emission and acid rain which affects terrestrial ecology, biodiversity and human health. These two issues have direct impact on environmental sustainability (MDG 7)</p>	<p>equivalent amount of electricity is being generated by the power plants connected with the NEWNE grid. These plants are dominated by the use of fossil fuels to generate electricity. This leads to substantial emission of particulate matter (PM), sulphur dioxide (SO₂) and Nitrogen Oxides (NOx) resulting in adverse impact on human health and flora/fauna. Further, fossil fuel power plants generate significant amount of fly ash which is very challenging to address in the country.</p>	
Water quality and quantity	<p>1. Soil and water conservation and water quality improvement drive 2. Rain water harvesting and ground water recharge drive 3. Drive for effective natural resource</p>	<p>The project abstracts water from canal. The project is state of art technology include lesser equipment, higher equipment reliability, higher power cycle efficiency, lesser parasitic and pumping</p>	<p>Quantity of water withdrawal from the canal is being monitored on monthly basis.</p>	0



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	development/agriculture yield improvement programme	losses and sourced by reputed international suppliers leading to transfer of technology. There is no waste water discharged outside the plant. Treated water is used for cleaning and horticulture.		
Soil condition		MDG 7 of environmental conservation	Construction of solar power plant and generation of solar power doesn't lead to any significant alteration of the soil condition. Land tilling was done inside the construction area only and any dug land was used to create elevated location only. There was no waste in installation of Solar panel or demolition to create debris or excavation waste. Since land was elevated after digging of land inside the plant premises, there was no land displacement from the surrounding plant boundary. Also no debris	0



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			was disposed or waste was dumped to the surrounding location or outside the plant location. Land dug for pond was used to elevate the land where solar field are installed.	
Other pollutants	N.A.	MDG 7 of environmental Conservation	level of noise: Solar systems do not generate any pollutants which are harmful to the environment . However, disposal of batteries and used solar equipment may pose a problem if not done in the right manner. The disposal of the used and waste batteries is done through a proper vendor who ensures it is recycled. GGEL performs a Proper disposal of waste or	0



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			used battery through a vendor and taking this as an important parameter is put in the Monitoring plan of the Passport.	
Biodiversity	N.A.	MDG 7 of environmental conservation	The project will not lead to any change in biodiversity as the project is installed in the barren land. No animals, plants or habitats are affected by the project activity. The ecosystem surround the project area is not endangered, the impact deriving from the project is not significant on biodiversity so, it scores '0'.	0
Quality of employment		Employment creation assist in achieving MDG 1	The project has employed nearly 1000 people during the construction phase & post commissioning, 169 persons are employed. At present, 169 persons are	+



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			<p>employed in this project out of which, 60 people are for mirror cleaning hired from local areas. These include management, sales personnel, technicians, and administrators . All personnel will receive extensive training in the GGEL by technology providers and internally by power plant experts. Through training, the quality of employment in India will be improved Also, the employees hired are qualified. The training performed includes that of fitter, welder, soft skill and technology.</p>	
Livelihood of the poor		Employment creation assist in achieving MDG 1	Project activity created direct and indirect employment opportunities during construction and operation	0



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			<p>stages. Such opportunities lead to higher income levels leading to removal of social disparities prevalent in the region. As the project activity is located in rural areas, the project activity would help in improvement of necessary basic infrastructure, such as roads. The project provides direct and indirect employment opportunities to skilled and unskilled labourer in turn eradicating poverty by creating a source of income. The project would lead to improved living condition of the end users by saving money spent on fuel usage in DG sets to produce electricity.</p>	
Access to affordable and clean energy services		The contributes to MDG 7a through increased access and use of renewable and	The project will deliver large quantity of electricity generated through solar	+



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		<p>clean energy, reduced per capita CO₂ emission and reduction of forest destruction associated with energy provision. It also contributes to MDGs 3 and 2.</p>	<p>energy to the tune of 50 MW. Solar energy generates clean source of energy and affordable energy at a large scale. Solar energy is seen by government and businesses as one of the best solutions to provide clean and affordable electricity. In the absence of the project activity the same amount of energy would have been produced by either coal based power plant. Any clean additional electricity to existing location would add environmental greenness and reduce the price of power.</p>	
Human and institutional capacity		<p>The project contributes to MDGs 2 and 3 and could also have a neutral impact on MDG 1</p>	<p>The exposure to new technology for the employees in particular and country in general, aids in their capacity development. The same is ensured by conducting</p>	0



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			training sessions at multiple levels regarding operation and maintenance, environmental aspect, health and hygiene. Also, it increases the capacity to implement renewable solar thermal and photovoltaic units. Hence the parameter is considered to be neutral	
Quantitative employment and income generation		MDG 1 is achieved through the project creating an avenue for enhancing income-generating activities in addition to direct jobs.	The project preferred staffs from local residents, so the rate of employment in the community is increased. Since the activity of GGEL focuses on rural areas, a lot of employees are local as they know the local language. Remuneration offered by GGEL for its employees is at par with market standard. By creating jobs in rural areas,	+



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			<p>it further helps to generate economic activity and stem urban migration. The project has employed nearly 1000 people during the construction phase & post commissioning, 169 persons are employed. Local people who are both skilled and unskilled are part of the temporary and permanent employees. The employees hired are qualified and equal opportunities are offered to local people with equal remuneration. The employees from local community are in majority of employees.</p>	
Balance of payments and investment		Saving foreign exchange ensures that individuals, companies and the country will have more funds for investing in other sectors of the economy which will	Equivalent savings on fossil fuels from the use of solar energy. The project will help in saving foreign exchange	0



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		help the country's economy to grow and this will ensure that poverty levels are reduced (MDGs 1 and 8).	which would have been otherwise used for buying fossil fuels for use in the generation of electricity which the solar thermal project will displace from the national grid. There is no investment involved in foreign currency or investment from any other country. All investments for the project activity has been envisaged to be met domestically.	
Technology transfer and technological self-reliance		MDG 8	The project will help in the dissemination and adaptation of solar technology in rural areas of India. The exposure of new technology to the similar companies	0



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			aids in replication of technology and further technological development. However it does contribute to technological self reliance as solar units are designed and manufactured indigenously. As it is difficult to monitor the same therefore the parameter is deemed as neutral.	
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ID 1: Air quality

Table as in the passport:

No		1
Indicator		Air Quality
Mitigation		No mitigation measure required
Repeat for each parameter		
Chosen Parameter		Electricity generation from the project
Current situation of parameter		Emissions from the combustion of fossil fuels
Estimation of baseline situation of		Stakeholder consultation with inhabitants near the project sites about the changes in air quality in terms of dust, odor and particulate conditions.

Future project target for parameter		Promotion of renewable energy based power generation
Way of monitoring	How	Interviews with the inhabitants of the area near the project site about dust, odour and particulate conditions of the environment
	When	Every Year
	By who	GGEL i.e. the project developer's authorized personnel as identified during the project lifetime

Monitoring Result:

Local Stakeholders were interviewed for Air Quality improvement and asked for the environmental friendliness. The stakeholder response is captured every year in feedback form shared where they vouched on reduced noise, reduced dust and reduced particulate matter due to project activity, the same power would have been generated through fossil fuel otherwise.

The feedback has been positive not only on amount of electricity they are getting to their homes but also resulting in saving environment which would had been polluted by DG sets in the absence of the project activity.

ID 2: Quality of employment

No		2
Indicator		Quality of employment
Mitigation		N/A
Repeat for each parameter		
Chosen Parameter		Number of trainings provided to unskilled, semi-skilled and skilled people
Current situation of parameter		People are recruited without been properly trained, with unsafe work practices
Estimation of baseline		NA
Future project target for parameter		Hiring of skilled and unskilled personnel in the plant and providing specific trainings to them
Way of monitoring	How	Employment training record
	When	Continuous
	By who	GGEL HR & training department

Monitoring Result:



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Before the start of the project activity, the local people had few odd jobs of to earn their livelihood. The locals were involved during the plant erection and training were provided to them in the running plant for both skilled and unskilled people.

Training is being provided to increase human and institutional capacity and records are being maintained. The Human Resource department keeps the record and promotes for the welfare of the personnel.

ID 3: Access to affordable & clean energy sources

No		3
Indicator		Access to affordable & clean energy sources
Mitigation		N/A
Repeat for each parameter		
Chosen Parameter		Net energy generation by solar energy power plant
Current situation of parameter		Energy sources are expensive and not affordable to the poor and those living in rural areas have erratic power supply. A lot of them are dependent on expensive energy source either from grid, fossil fuel or wood.
Estimation of baseline situation of parameter		Change in traditional fuel consumption of the villagers living nearby the project site, reduced blackouts and electricity quality
Future project target for parameter		To increase the share of renewable energy in the country's total energy generation & provide good electricity quality supply to people
Way of monitoring	How	Interviews with the local inhabitants near the project sites about change in fuel consumption pattern and quality of electricity supplied
	When	Ongoing, shall be monitored at least annually
	By who	GGEL personnel

Monitoring Result:

The electricity locals use to have was through DG sets and burning of fuels. Since the start of the project activity locals are getting clean energy and don't have to spent on the fuels or maintain their DG sets. Also electricity through grid is cheap and affordable to the poor.

ID 4: Livelihood of the poor

No		4
Indicator		Livelihood of the poor
Mitigation		NA

Repeat for each parameter		
Chosen Parameter		Number of people employed and other employment opportunities created in unskilled jobs.
Current situation of parameter		Unskilled employs are dependent upon daily wage jobs.
Estimation of baseline		NA
Future project target for parameter		Hiring of skilled and unskilled personnel in the plant and providing them wages as per government norms
Way of monitoring	How	Employment training records
	When	Every year
	By who	GGEL HR & training department

Monitoring Result:

In the project activity before and during the running of the plant involves a lot of the skilled and unskilled people. The locals use to work on odd jobs to earn their livelihood and were dependant on the availability of work before the project activity as the location of the project is quite remote. With jobs in their hand they are earning they are earning on regular basis.

The livelihood has changed the perspective to work and earn. The records are being maintained by the HR of GGEL on minimum wages they should get as per the government rules.

ID 5: Quantitative employment and income generation

No		5
Indicator		Quantitative employment and income generation
Mitigation		NA
Repeat for each parameter		
Chosen		Number of jobs created
Current situation of parameter		NA
Estimation of baseline		NA
Future project target for parameter		Hiring more skilled and unskilled employees for the project operation at the plant and thus increasing the number of jobs created by the company
Way of monitoring	How	Employment record
	When	Every year
	By who	GGEL HR and admin department

Monitoring Result:

The locals used to do odd jobs to earn their livelihood. Number of jobs has been created which involved skilled and non skilled people which help them to earn income and earn knowledge of technology. The records in being maintained for the number of employment generated.

ID 6: Civil work during construction phase

No		6
Indicator		Soil
Mitigation		Civil work during construction phase
Repeat for each		
Chosen		State of soil at project site
Current situation of parameter		No erosion
Estimation of baseline		No erosion
Future project target for parameter		No erosion
Way of monitoring	How	Pictures
	When	Once during the first verification
	By who	GGEL Personnel

Monitoring Result:

The project activity does not involve any erosion while running of the plant and is monitored through the pictures taken while the plant is in operation.

ID 7: Water quality and quantity

No		7
Indicator		Water quality and quantity
Mitigation measure		Waste water is treated through wastewater treatment facility or is used for gardening
Repeat for each		
Chosen		Quantity of water withdrawal from the canal
Current situation of parameter		N/A
Estimation of baseline		Waste water will not be discharged without treatment
Future project target for parameter		Waste water will not be discharged without treatment
Way of monitoring	How	Check the wastewater treatment facility
	When	Every month



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	By who	GGEL i.e. the project developer's authorized personnel as identified during the project lifetime.
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Monitoring Result:

The waste water before discharge is being treated and used for domestic purpose. The records are being maintained for all the water procured monthly for the project activity. Water that is being procured from the canal in the project activity has records with a bill.

ID 8: Used battery

No		8
Indicator		Used battery
Mitigation measure		The used battery is being disposed through a proper vendor
Repeat for each		
Chosen		Waste or used battery
Current situation of parameter		N/A
Estimation of baseline		No recycling of used batteries was done
Future project target for parameter		GGEL shall continue to send the used battery to vendor for disposal.
Way of monitoring	How	Record keeping
	When	Every month
	By who	GGEL will be monitoring the disposal of the waste or used battery.

Monitoring Result:

From the start of monitoring period, there has been no waste battery to be recycled. Godawari Green Energy Ltd. has already registered EHV Engineers for equipment maintenance services which include replacement of batteries after expiry of its life by taking back used batteries.

EHV Engineers provides maintenance services which included periodic inspections, routine, scheduled repairs and replacement of expired used batteries.

ID 9: Safety training

No		9
Indicator		Safety training
Mitigation measure		Proper training procedures for all laborers
Repeat for each		
Chosen		Training

Current situation of parameter		N/A
Estimation of baseline		N/A
Future project target for parameter		GGEL shall continue to train the laborers.
Way of monitoring	How	Record keeping
	When	Every month
	By who	GGEL will be monitoring the working of laborers. The laborers are trained by GGEL safety officer and under constant supervision of him work is performed.

Monitoring Result:

Training is being provided to the laborers under the supervision of GGEL safety officer. These training helps laborers to work without being the in the risk of getting injured, proper kits are given to the laborers to use their skill and have proper protection.

The records are maintained for all the training activity.