

Observation report for environmental, social and health safety compliance of Solar Irrigation Project (Operational)

Background:

Infrastructure Development Company Limited (IDCOL) needs to monitor the environmental, health and social compliances for the operational solar irrigation pumps financed under IDCOL solar irrigation projects. The sources required fund from various development partners i.e. WB, GPOBA, ADB, BCCRF, JICA, KfW, USAID, and DFID. For that reason, personnel of IDCOL have inspected seven projects based at Panchagarh district.

Npolymer Construction Limited (NPCL) total installed 54 solar irrigation pumps among which the seven inspected solar irrigation pumps are located in different project area (Sorkerpara (Baropatiya-2), Degholgram (Radhabollov), Amtola Kazipara, Purbo Bongram Kharija Kandor, Chapaidighi Kandor, Kamat Kajoldighi 2 No Sheet Kandor, Pachviga Kandor) at Panchagarh district. NPCL's vision is to provide safe-water into the irrigation land, where three or four crops are cultivated throughout the year. Presently, the seven projects covered 98 bigha, 98 bigha, 98 bigha, 129 bigha, 137 bigha, 122 bigha, and 135 bigha of irrigation land to cover 72, 56, 53, 75, 54, 49, and 87 farmers respectively.

Technical Description:

Solar PV technology: Solar PV modules are used for producing electricity from sunlight. Through utilizing solar PV modules, 18.5 kW pumps are installed in the project locations.

Pumping Technology: Electricity from solar module is used for the operation of the pump. By using pump water is being stored in a heading tank for a time being afterwards water supplied to the adjacent land for agricultural purpose.

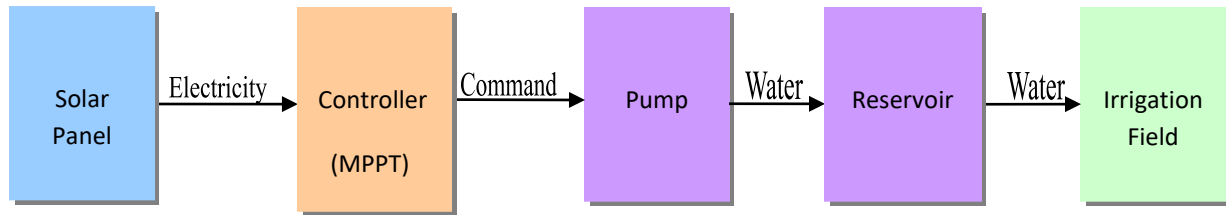
Steps Involved:

Figure: Solar Irrigation Process

Alternate Usage:

The pump controllers will have a provision for alternate usage, mainly rice husking at all the sites. This will allow the sponsor to utilize the idle electricity of the system to be used at loads similar to that of the pumping motor. The husking machines will be operated only during idle hours of the pumps and hence, there is no competing use of pumps and the husking machine.

Monitoring Methodology:

The observation report been followed the field primary data, visual scenario (environmental, health and social issues) and group discussions with the farmers in the project areas.

Observation:

No issues have been observed in the surrounding (forests, wetlands, creeks, streams, undeveloped areas, residential areas, industrial areas, environmentally sensitive areas) environments of the project areas. Farmers of the project areas are using water for irrigation purpose in their conventional manner to cultivate crops. No depletion of underground water table in the project areas have been reported during the year of cultivation. Also, there was no major health and safety concern observed in the project areas during the field visit.

No issues of resettlement in implementation of the projects were observed during the visit of the field areas. From the indigenous people's perspective- the site has no impact as no occupancy of indigenous people has been recorded.

Overview of the Project area:

Queries Of the Projects	Remarks						
Project area:	Sorkerpara (Baropatiya-2)	Degholgram (Radhabollov)	Amtola Kazipara	Purbo Bongram Kharija Kandor	Chapaidighi Kandor	Kamat Kajoldighi 2 No Sheet Kandor	Pachviga Kandor
Source of water-	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water
Areas (decimal) to be covered under irrigation	98 bigha	98 bigha	98 bigha	129 bigha	137 bigha	122 bigha	135 bigha
Capacity of PV panel (Wp)	33 kWp	33 kWp	33 kWp	39 kWp	39 kWp	39 kWp	39 kWp
Maximum yield of pump (L/day)	1.62 million L/day (On an average)	1.8 million L/day (On an average)	1.71 million L/day (On an average)	2.2 million L/day (On an average)	2.41 million L/day (On an average)	2.4 million L/day (On an average))	2.4 million L/day (On an average)
Size storage of head tanker (Length, breath and height in m) Height:	Length: 3.54 feet, Height: 9 feet	Length: 3.54 feet, Height: 9 feet	Length: 3.54 feet, Height: 9 feet	Length: 4.11feet, Height: 9 feet	Length: 4.11 feet, Height: 10 feet	Length: 4.11 feet, Height: 9.3 feet	Length: 4.11 feet, Height: 10.6 feet
Maximum volume of water (L/day) required in a given period of time in dry season.	1.62 million L/day (On an average) [Reported by the Sponsor]	1.8 million L/day (On an average) [Reported by the Sponsor]	1.71 million L/day (On an average) [Reported by the Sponsor]	2.2 million L/day (On an average) [Reported by the Sponsor]	2.41 million L/day (On an average) [Reported by the Sponsor]	2.4 million L/day (On an average) [Reported by the Sponsor]	2.4 million L/day (On an average) [Reported by the Sponsor]
Lowest ground water table in the locality during dry period?	8.4 ft. Dry season (January to May)	8.4 ft. Dry season (January to May)	8.2 ft. Dry season (January to May)	9.0 ft. Dry season (January to May)	8.2 ft. Dry season (January to May)	8.0 ft. Dry season (January to May)	9.0 ft. Dry season (January to May)

Environmental Compliances:

Project area- Sorkerpara (Baropatiya-2), Degholgram (Radhabollov), Amtola Kazipara

Project area:	Sorkerpara (Baropatiya-2)			Degholgram (Radhabollov)			Amtola Kazipara		
1	2			3			4		
Queries Of the Projects	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks
Surrounding environment: Indication of presence of forest, wetlands, creeks, streams, undeveloped areas, residential areas, industrial areas, environmentally sensitive areas, recognized or protected area etc. within 200m periphery of the project command area:		×	No issue has been observed		×	No issue has been observed		×	No issue has been observed
Is there any future possibility to use the irrigation water for drinking purposes of the local community?		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE). Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE). Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE). Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.
Crop cultivation practice in the project area:			Three or four crops are cultivated in the project area during the year			Three or four crops are cultivated in the project area during the year			Three or four crops are cultivated in the project area during the year
Does the project fulfill water requirement for the cultivated fields? [If “No” explain]	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.

Project area: Purbo Bongram Kharija Kador, Chapaidighi Kador, Kamat Kajoldighi 2 No Sheet Kador, Pachviga Kador

Project area:	Purbo Bongram Kharija Kador			Chapaidighi Kador			Kamat Kajoldighi 2 No Sheet Kador			Pachviga Kador		
1	2			3			4			5		
Queries Of the Projects	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks
Surrounding environment: <i>Indication of presence of forest, wetlands, creeks, streams, undeveloped areas, residential areas, industrial areas, environmentally sensitive areas, recognized or protected area etc. within 200m periphery of the project command area:</i>		×	No issue has been observed		×	No issue has been observed		×	No issue has been observed		×	No issue has been observed
Is there any future possibility to use the irrigation water for drinking purposes of the local community?		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE). Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE). Arsenic test result was found 0.001mg/L, whereas		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE).		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Department of Public Health Engineering (DPHE). Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.

			0.05mg/L.			Bangladesh standard for arsenic content is 0.05mg/L.			Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.			
Crop cultivation practice in the project area:			Three or four crops are cultivated in the project area during the year			Three or four crops are cultivated in the project area during the year			Three or four crops are cultivated in the project area during the year			Three or four crops are cultivated in the project area during the year
Does the project fulfill water requirement for the cultivated fields? [If "No" explain]	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.	√		According to farmers- water requirements have been fulfilled by the project. Water demand is high.

Environmental Health and Safety Issues:

Project area: Sorkerpara (Baropatiya-2), Degholgram (Radhabollov), Amtola Kazipara

Project area:	Sorkerpara (Baropatiya-2)			Degholgram (Radhabollov)			Amtola Kazipara				
1	2			3			4			Mitigation Measures	Follow up actions
Queries Of the Projects	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks		
<i>Does the project create any health & safety issues for the villagers?</i>		×			×			×			
<i>Does the water quality of the source meet the national standard?</i>	√			√			√			Sponsor was tested the withdrawing water by the Department of Public Health Engineering (DPHE). The test result was found arsenic free.	
<i>Does the project create any significant negative effects on surrounding water, air or noise quality?</i>		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air or noise quality.		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air or noise quality.		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air or noise quality.		

Project area: Purbo Bongram Kharija Kandor, Chapaidighi Kandor, Kamat Kajoldighi 2 No Sheet Kandor, Pachviga Kandor

Project area:	Purbo Bongram Kharija Kandor			Chapaidighi Kandor			Kamat Kajoldighi 2 No Sheet Kandor			Pachviga Kandor				
1	2			3			4			5			Mitigation Measures	Follow up actions
Queries Of the Projects	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks		
<i>Does the project create any health & safety issues for the villagers?</i>		×			×			×			×			
<i>Does the water quality of the source meet the national standard?</i>	√			√			√			√			Sponsor was tested the withdrawing water by Department of Public Health Engineering (DPHE). The test result was found arsenic free.	
<i>Does the project create any significant negative effects on surrounding water, air or noise quality?</i>		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air or noise quality.		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air		×	Withdrawn water was used for cultivation purpose. There were no negative effects observed on surrounding water, air		

						or noise quality.			or noise quality.			or noise quality.		
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Social Compliances:

Project area: Sorkerpara (Baropatiya-2), Degholgram (Radhabollov), Amtola Kazipara

Project area:	Sorkerpara (Baropatiya-2)			Degholgram (Radhabollov)			Amtola Kazipara				
1	2			3			4			Mitigation measure	Follow up action
Queries Of the Projects	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks		
Does the project, comply with the proposed water supply within the irrigation fields?	√	×	Sufficient water has been supplied to the required field (even during the dry season)	√	×	Sufficient water has been supplied to the required field (even during the dry season)	√	×	Sufficient water has been supplied to the required field (even during the dry season)		
Does the project, comply with the committed charge	√			√			√				
Any existence of hidden charges [If yes explain]		×			×			×			
Is there any documented process of collecting charges?	√			√			√				
Does the fees collection process is acceptable or not? [If not please explain]	√			√			√				

Will the communities require awareness or training program on proper use and maintenance of water management? [If “Yes” – please explain]	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		
Does the operator require awareness or training program on proper use and maintenance of water management? [If “Yes” – please explain]		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		

Project area: Purbo Bongram Kharija Kandor, Chapaidighi Kandor, Kamat Kajoldighi 2 No Sheet Kandor, Pachviga Kandor

Project area:	Purbo Bongram Kharija Kandor			Chapaidighi Kandor			Kamat Kajoldighi 2 No Sheet Kandor			Pachviga Kandor				
1	2			3			4			5			Mitigation measure	Follow up action
Queries Of the Projects	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks		
Does the project, comply with the proposed water supply within the irrigation fields?	√		Sufficient water has been supplied to the required field (even during the dry season)	√		Sufficient water has been supplied to the required field (even during the dry season)	√		Sufficient water has been supplied to the required field (even during the dry season)	√		Sufficient water has been supplied to the required field (even during the dry season)		
Does the project, comply with the committed charge	√			√			√			√				
Any existence of hidden charges [If yes explain]		×			×			×			×			
Is there any documented process of collecting charges?	√			√			√			√				

Does the fees collection process is acceptable or not? [If not please explain]	√			√			√			√				
Will the communities require awareness or training program on proper use and maintenance of water management? [If “Yes” – please explain]	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	√		Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		
Does the operator require awareness or training program on proper use and maintenance of water management? [If “Yes” – please explain]		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		×	Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.		

Gender Compliances:

Project area: Sorkerpara (Baropatiya-2), Degholgram (Radhabollov), Amtola Kazipara

Project area:	Sorkerpara (Baropatiya-2)			Degholgram (Radhabollov)			Amtola Kazipara		
1	2			3			4		
	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks
Does the project create improved quality of livelihood for the respective families?	√			√			√		
Whether the project is useful to solve the uncertainty of water during the irrigation time?	√			√			√		
Any valuable comments to improve the project? [While monitoring the project, personnel of IDCOL are consulted with a numbers of stakeholders. Some of their suggestions/comments seem to be noteworthy]			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.

Project area: Purbo Bongram Kharija Kandor, Chapaidighi Kandor, Kamat Kajoldighi 2 No Sheet Kandor, Pachviga Kandor

Project area:	Purbo Bongram Kharija Kandor			Chapaidighi Kandor			Kamat Kajoldighi 2 No Sheet Kandor			Pachviga Kandor		
1	2			3			4			5		
	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks	Y E S √	N O ×	Remarks
Does the project create improved quality of livelihood for the respective families?	√			√			√			√		
Whether the project is useful to solve the uncertainty of water during the irrigation time?	√			√			√			√		
Any valuable comments to improve the project? [While monitoring the project, personnel of IDCOL are consulted with a numbers of stakeholders. Some of their suggestions/comments seem to be noteworthy]			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.			Saves money in comparison to diesel based shallow pump, also reduce the carbon emissions.

Annexure

Project Name: Sorkerpara (Baropatiya-2); Implemented by Npolymer Construction Limited (NPCL)



Views of the projects



FGD with the farmers



Arsenic test