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

Background:

Infrastructure Development Company Limited (IDCOL) need 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. The WB, GPOBA, ADB, BCCRF, JICA, KfW, USAID, and DFID.

Environmental Specialist of IDCOL have inspected four projects based at Jhenaidah district. **Action In Development** (hereinafter referred to as **"AID** "or **"the Project"** as applicable)**,** installed two (2) solar irrigation pumps in Sadar Upazilla and two (2) solar irrigation pumps in Kaliganj Upazilla of Jhenaidah district. AID's vision is to provide safe-water into the irrigation land, where three seasons' crops are cultivated throughout the year. Presently, the four projects covered at Chapri 1 & 2 (Union- Purahati, Jhenaidah Sadar, Jhenaidah district): 1,188 Decimal (36 Bigha each site) and at Hordebpur 1 & 2 (Union-Jamal, Kaliganj upazilla, Jhenaidah district): 1320 Decimal (40 Bigha each site) of irrigation land to cover 34, 37, 25 and 27 farmers respectively.

Technical Description:

Solar PV technology: Solar PV modules are used for producing electricity from sunlight. 128 units of PV modules of 300 Wp using at Chapri location and 162 units of PV modules of 230 Wp using at Hordebpur location.

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:

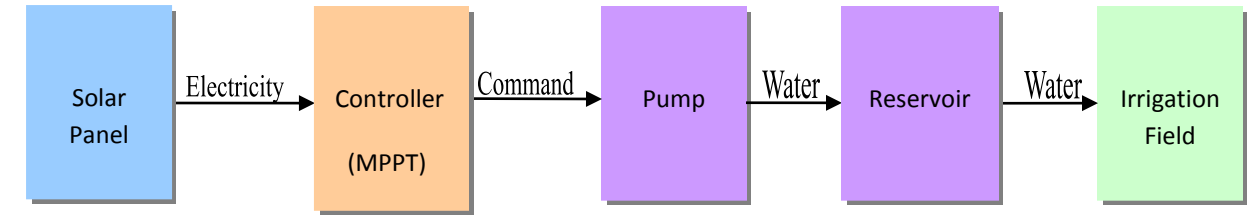

Figure: Solar Irrigation Process

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 four project areas. Farmers of the project areas are using water for irrigation purpose in their conventional manner to cultivate crops. There was 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.

The pH level, noise level and arsenic in water have been tested in the field and no significant noncompliance have been observed.

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:	**Chapri- 1 (Purahati union)**	**Chapri- 2 (Purahati union)**	**Hordebpur-1 (Jamal union)**	**Hordebpur-2 (Jamal union)**
Source of water-	Ground water	Ground water	Ground water	Ground water
Areas (decimal) to be covered under irrigation	1,188 Decimal (36 Bigha)	1,188 Decimal (36 Bigha)	1,320 Decimal (40 Bigha)	1,320 Decimal (40 Bigha)
Capacity of PV panel (Wp)	19.2 kWp	19.2 kWp	18.63 kWp	18.63 kWp
Maximum yield of pump (L/day)	971,000 L/day (On an average)	971,000 L/day (On an average)	1200,000 L/day (On an average)	1200,000 L/day (On an average)
Size storage of head tanker (Length, breath and height in m) Height:	Length: 3 feet, Height: 10 feet	Length: 3 feet, Height: 10 feet	Length: 3 feet, Height: 10 feet	Length: 3 feet, Height: 10 feet
Maximum volume of water (L/day) required in a given period of time in dry season.	971,000 L/day (On an average) [Reported by the Sponsor]	971,000 L/day (On an average) [Reported by the Sponsor]	1200,000 L/day (On an average) [Reported by the Sponsor]	1200,000 L/day (On an average) [Reported by the Sponsor]

Environmental Compliances:

Project area:	**Chapri- 1**	**Chapri- 2**	**Hordebpur-1**	**Hordebpur-2**
Queries Of the Projects	**Remarks**	**Remarks**	**Remarks**	**Remarks**
What is the depth of the pipe used for the extraction water?	The submersible pump is installed 50ft below ground. Column pipe of 240ft is used to draw water from boring. According to LGED ground water depth at an average of 15ft rest of the year	The submersible pump is installed 50ft below ground. Column pipe of 240ft is used to draw water from boring. According to LGED ground water depth at an average of 15ft rest of the year	The submersible pump is installed 50ft below ground. Column pipe of 240ft is used to draw water from boring. According to LGED ground water depth at an average of 16ft rest of the year	The submersible pump is installed 50ft below ground. Column pipe of 240ft is used to draw water from boring. According to LGED ground water depth at an average of 16ft rest of the year

Availability (Flow in L/day or water depth) of ground water source during dry season	18 feet have been observed by the sponsor during the dry (January to May) season.	18 feet have been observed by the sponsor during the dry (January to May) season.	17 feet have been observed by the sponsor during the dry (January to May) season.	17 feet have been observed by the sponsor during the dry (January to May) season.
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 have been observed	No issue have been observed	No issue have been observed	No issue have 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 environmental specialist IDCOL and *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 environmental specialist IDCOL and *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 Environmental Specialist, IDCOL and *Arsenic test result was found less than 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 Environmental Specialist, IDCOL and *Arsenic test result was found less than 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.*
Crop cultivation practice in the project area:	Three crops are cultivated in the project area during the year	Three crops are cultivated in the project area during the year	Three crops are cultivated in the project area during the year	Three 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 requirement have fulfilled by the project.	According to farmers- water requirement have fulfilled by the project.	According to farmers- water requirement have fulfilled by the project. *They advised to improve the water management by the sponsor.*	According to farmers- water requirement have fulfilled by the project. *They advised to improve the water management by the sponsor.*

Environmental Health and Safety Issues:

Project area:	Chapri- 1	Chapri- 2	Hordebpur-1	Hordebpur-2
Queries Of the Projects	**Remarks**	**Remarks**	**Remarks**	**Remarks**
Does the project create any health & safety issues for the villagers?	No	No	No	No
Does the water quality of the source meet the national standard?	Yes. Water was tested by environmental specialist IDCOL and *Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.*	Yes. Water was tested by environmental specialist IDCOL and *Arsenic test result was found 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.*	Yes. Water was tested by environmental specialist IDCOL and *Arsenic test result was found less than 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.*	Yes. Water was tested by environmental specialist IDCOL and *Arsenic test result was found less than 0.001mg/L, whereas Bangladesh standard for arsenic content is 0.05mg/L.*
Does the project create any significant negative effects on surrounding water, air or noise quality?	No. Because, withdrawn water is used for cultivation purpose.	No. Because, withdrawn water is used for cultivation purpose.	No. Because, withdrawn water is used for cultivation purpose.	No. Because, withdrawn water is used for cultivation purpose.

Social Compliances:

Project area:	Chapri- 1	Chapri- 2	Hordebpur-1	Hordebpur-2
Queries Of the Projects	**Remarks**	**Remarks**	**Remarks**	**Remarks**
Does the project, comply with the proposed water supply within the irrigation fields?	Sufficient water have been supplied to the required field (even during the dry season) but need proper water management systems to improve more.	Sufficient water have been supplied to the required field (even during the dry season) but need proper water management systems to improve more.	Sufficient water have been supplied to the required field (even during the dry season) but need proper water management systems to improve more.	Sufficient water have been supplied to the required field (even during the dry season) but need proper water management systems to improve more.
Does the project, comply with the committed charge	Yes	Yes	Yes	Yes
Any existence of hidden charges [If yes explain]	No	No	No	No
Is there any documented process of collecting charges?	Yes	Yes	Yes	Yes
Does the fees collection process is acceptable or not? [If not please explain]	Yes	Yes	Yes	Yes
Will the communities require awareness or training program on proper use and maintenance of water management? [If "Yes" – please explain]	According to Farmers, Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	According to Farmers, Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	According to Farmers, Sufficient training & awareness program (irrigation water management & utilization of electricity) has been organized by the sponsor.	According to Farmers, 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:	Chapri- 1	Chapri- 2	Hordebpur-1	Hordebpur-2
Queries Of the Projects	**Remarks**	**Remarks**	**Remarks**	**Remarks**
Does the project create improved quality of livelihood for the respective families?	Yes	Yes	Yes	Yes
Whether the project is useful to solve the uncertainty of water during the irrigation time?	Yes.	Yes.	Yes.	Yes.
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.

Annex-1

Project Name: Chapri (Pump-1 & 2), Union- Purahati, Jhenaidah Sadar, Jhenaidah district.
Implemented by **Action In Development (AID)**

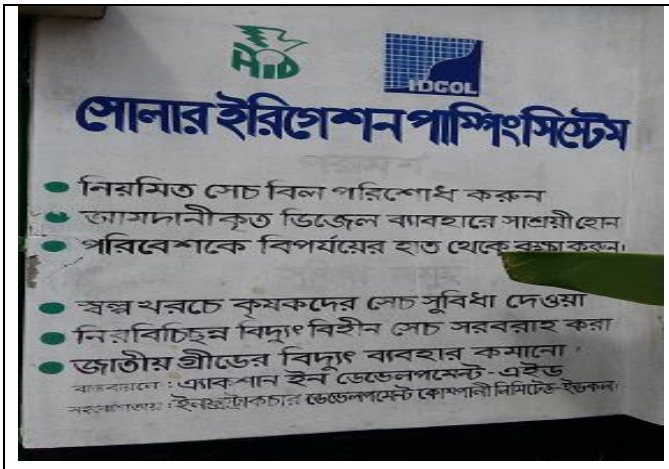

Figure 1: Project's signage

Figure 2: Project's view

Figure 3: Riser using for water management

Figure 4: Water served into the vegetable field and paddy field

Figure 5: Payment method

Figure 6: Discussions with Farmers

Figure 7: Group discussion with beneficiaries.

Figure 8: Improving villagers' livelihood.

Annex-2

Project Name: Hordebpur (project:1 & 2), Union-Jamal, Kaliganj upazilla, Jhenaidah district. Implemented by **Action In Development (AID)**

Figure 1: Projects' signage

Figure 2: Solar panel

Figure 3: Water served into the agriculture field

Figure 4: Pump room & Reservoir tanker

	
Figure 5: Discussions with Farmers	Figure 6: Group discussion with beneficiaries.

Annex-3: Water testing By IDCOL

Figure 1: pH testing at Chapri (1&2)

Figure 2: Arsenic test at Chapri (1&2)

Figure 3: pH testing at Hordebpur (project:1 & 2)

Figure 4: Arsenic testing at Hordebpur (project:1 & 2)