

Observation report for environmental, social and health safety compliance of three Solar Irrigation Project (Operational) April 2015

Background:

Infrastructure Development Company Limited (IDCOL) needs to monitor the environmental, health and social compliances of solar irrigation projects financed by IDCOL and currently in operations. IDCOL's environmental expert has inspected three projects implemented in Enayetpur and Toulukup unions at Jessore district and Damuderpur union at Jhenaidah district by **MAZAND Consortium Ltd. (MCL)**, under IDCOL finance.

MCL's vision is to provide safe-water into the irrigation land, where three or four crops are cultivated throughout the year. Presently, the three projects are covering 2,211 Decimal (61 Bigha), 1,389 Decimal (45 Bigha) and 891 Decimal (27 Bigha) of irrigation land and supporting 67, 45 and 22 farmers respectively. By the next crop cultivation season, all these three projects may cover more agriculture lands.

Technical Description:

Solar PV technology: Electricity is produced when solar PV modules are exposed to sunlight. 80 units of PV modules of 250 Wp each have been used in each of 3 locations at MCL projects site.

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

Steps Involved:

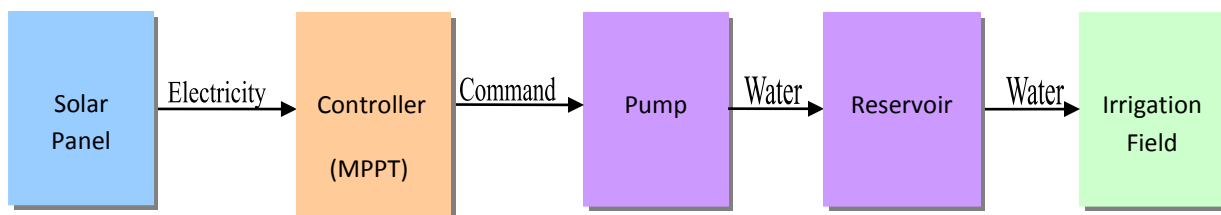


Figure: Solar Irrigation Process

Alternate Usage:

The pump controllers have a provision for alternate usage, mainly rice husking at all the sites. The husking machines will operate 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 is based on the collected data, visual observations (environmental, health and social issues) and group discussions with the farmers and villagers 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) environment of the three project areas. Farmers of the projects area are using water for irrigation purpose in their traditional manner to cultivate crops. There was no depletion of underground water table in the project areas have been observed during the cultivation time and there was no major health and safety concern 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:

Query's Of the Projects	Remarks		
<i>Project area:</i>	Enayetpour (P.O: Sadarthana, Jessore)	Toulokup (P.O: Bagharpara, Jessore)	Damuderpur (P.O: Kaliganj, Jhinaidaha)
<i>Source of water-</i>	Ground water	Ground water	Ground water
<i>Areas (decimal) to be covered under irrigation</i>	2,211 Decimal (61 Bigha)	1,389 Decimal (42.5 Bigha)	891 Decimal (27 Bigha)
<i>Capacity of PV panel (Wp)</i>	15 kWp	15 kWp	15 kWp
<i>Maximum yield of pump (L/day)</i>	1,500,000 L/day (On an average)	1,498,000 L/day (On an average)	1,670,000 L/day (On an average)
<i>Size storage of head tanker (Length, breath and height in m) Height:</i>	Length: 4 feet, Height: 10 feet	Length: 4 feet, Height: 10 feet	Length: 4 feet, Height: 10 feet
<i>Maximum volume of water (L/day) required in a given period of time in dry season.</i>	1,500,000 L/day (On an average)	1,500,000 L/day (On an average)	1,500,000 L/day (On an average)

Environmental Compliances:

Project area:	Enayetpour (P.O: Sadarthana, Jessore)			Touloup (P.O: Bagharpara, Jessore)			Damuderpur (P.O: Kaliganj, Jhinaidaha)		
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
<i>Lowest ground water table in the locality during dry period Or What is the depth of the pipe used for the extraction water</i>			Lowest ground water table in the locality given by the LGED: 13 feet. Also measured by the sponsor and IDCOL appointed personnel.			Lowest ground water table in the locality given by the LGED: 13 feet. Also measured by the sponsor and IDCOL appointed personnel.			Lowest ground water table in the locality given by the LGED: 13 feet. Also measured by the sponsor and IDCOL appointed personnel.
<i>Availability (Flow in L/day or water depth) of ground water source during dry season</i>			20 feet have been observed by the sponsor			20 feet have been observed by the sponsor			20 feet have been observed by the sponsor
<i>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:</i>		×	No issues have been observed		×	No issues have been observed		×	No issues have been observed
<i>Is there any future possibility to use the irrigation water for drinking purposes of the local community?</i>		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Environmental Laboratory, Asia arsenic Network. Please see annexure 4		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Environmental Laboratory, Asia arsenic Network. Please see annexure 4		×	Some of the farmers were found drinking water from the pump during the cultivation time. Note: Water was tested by Environmental Laboratory, Asia arsenic Network. Please see annexure 4
<i>Crop cultivation practice in the project area:</i>			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 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
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Environmental Health and Safety Issues:

Project area:	Enayetpour (P.O: Sadarthana, Jessore)			Toulakup (P.O: Bagharpara, Jessore)			Damuderpur (P.O: Kaliganj, Jhinaidaha)				
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		
Does the project create any health & safety issues for the villagers?		×			×			×			
Is there any future possibility to use the irrigation water for drinking purposes of the local community?		×	Some of the farmers were found to drink water from the pump.		×	Some of the farmers were found to drink water from the pump.		×	Some of the farmers were found to drink water from the pump.	Sponsor was tested the withdrawing water by Environmental Laboratory, Asia Arsenic Network at Jessore. The test result was found arsenic free.	Please see annexure 4.

Does the water quality of the source meet the national standard?	√			√			√			Sponsor was tested the withdrawing water by Environmental Laboratory, Asia arsenic Network at Jessore. The test result was found arsenic free.	Please see annexure 4.
Does the project create any significant negative effects on surrounding water, air or noise quality?		×	Withdrawn water was used for cultivation purpose. There was no negative effects observed on surrounding water, air or noise quality.		×	Withdrawn water was used for cultivation purpose. There was no negative effects observed on surrounding water, air or noise quality.		×	Withdrawn water was used for cultivation purpose. There was no negative effects observed on surrounding water, air or noise quality.		

Social Compliances:

Project area:	Enayetpour (P.O: Sadarthana, Jessore)			Toulukup (P.O: Bagharpara, Jessore)			Damuderpur (P.O: Kaliganj, Jhinaidaha)				
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 have been supplied to the required field (even during the dry season)	√		Sufficient water have been supplied to the required field (even during the dry season)	√		Sufficient water have 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.		

Gender Compliances:

Project area:	Enayetpour (P.O: Sadarthana, Jessore)			Touloup (P.O: Bagharpara, Jessore)			Damuderpur (P.O: Kaliganj, Jhinaidaha)		
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]			➤ If the weather is cloudy – then the solar pump is being stopped, which creates problem for the respective farmers ➤ Saves money in comparison to diesel based shallow pump.			➤ If the weather is cloudy – then the solar pump is being stopped, which creates problem for the respective farmers ➤ Saves money in comparison to diesel based shallow pump.			➤ If the weather is cloudy – then the solar pump is being stopped, which creates problem for the respective farmers ➤ Saves money in comparison to diesel based shallow pump.

Annex-1

Project Name: Enayetpour, P.O: Sadarthana, Jessore. Implemented by MAZAND Consortium Ltd. (MCL)



Figure 1: Operational mode



Figure 2: Reservoir in operation mode



Figure 3: Water covering in to agricultural field



Figure 4: Improving their livelihood.

Annex-2

Project Name: Toulukup, P.O: Bagharpara, Jessore Implemented by MAZAND Consortium Ltd. (MCL).



Figure 1: Solar panel



Figure 2: Agricultural field at the project area



Figure 3: Benefited farmers



Figure 4: water served into the agricultural field

Annex-3

Project Name: **Damuderpur, P.O: Kaliganj, Jhinaidaha** Implemented by **MAZAND Consortium Ltd. (MCL).**



Figure 1: Project view



Figure 2: Water point served into the field

Annex-4: Water testing report from Environmental Laboratory Asia Arsenic Network



Asia Arsenic Network

Jessore Office
(NGO Registration No.1609)

Environmental Laboratory

Arsenic Center, Jessore-Benapole Road, Krishnobati-Aminnagar, Pulerhat, Jessore. Tel / Fax: +880-0421-68663
Web: <http://www.aan-bangladesh.com>

AAN / Jes /Lab/Report-188/2015

Date: 03-4-2015

Water Quality Report

**Solar Irrigation Project,
Green World Environment Foundation,
Shekhhati, Bablatata, Jessore.**

Name: Jalal Uddin/Faruq Hossain
Village: Enayetpur.
Union: Lebutala.
Upazila: Jessore Sadar.
District: Jessore.
Depth: 250ft.
Date of Sampling: 2nd April, 2015.
Date of Analysis: 3rd April, 2015.

Parameter	Unit	Bangladesh drinking water standard	Results (STW)	Method
1 Arsenic (As)	mg/L	0.05	0.025	Field Kit

Recommendation: This tube well water is safe for drinking and cooking.




Md. Abu Shamim Khan
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Environmental Laboratory
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Asia Arsenic Network

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AAN / Jes /Lab/Report-189/2015

Date: 03-4-2015

Water Quality Report

**Solar Irrigation Project,
Green World Environment Foundation,
Shekhhati, Bablatala, Jessore.**

Name: Joynal Abedin
Village: Telkup
Union: Jahurpur
Upazila: Bagharpara
District: Jessore.
Depth: 250ft.
Date of Sampling: 2nd April, 2015.
Date of Analysis: 3rd April, 2015.

Parameter	Unit	Bangladesh drinking water standard	Results (STW)	Method
I Arsenic (As)	mg/L	0.05	0.009	Field Kit

Recommendation: This tube well water is safe for drinking and cooking.




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Date: 03-4-2015

Water Quality Report

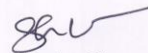
Solar Irrigation Project,
Green World Environment Foundation,
Shekhhati, Bablatala, Jessore.

Name: Moinul Hossain (Milon)
Village: Damodarpur
Union: Kola
Upazila: Kaligang
District: Jhenaidah.
Date of Sampling: 2nd April, 2015.
Date of Analysis: 3rd April, 2015.

Parameter	Unit	Bangladesh drinking water standard	Results (STW)	Method
1 Arsenic (As)	mg/L	0.05	0.009	Field Kit

Recommendation: This tube well water is safe for drinking and cooking.




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