Solar irrigation

Investment case - Bangladesh

February 2019

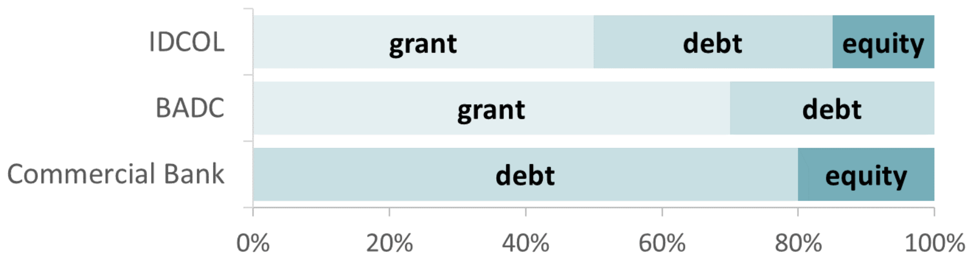
Executive Summary

This investment case document sets up the opportunities that solar irrigation projects present to project sponsors, public financiers and government stakeholders. It presents the financial returns to solar irrigation pump (SIP) projects based on cash flow modelling for a typical SIP project, and presents sensitivities for key uncertainty parameters facing investors in Bangladesh.

Irrigation plays a vital role in Bangladesh at least for half of the year when water scarcity would otherwise present a major challenge for farmers. Different crops are grown in different seasons through year, so irrigation has potential to be used year-round. However, so far it has been most valuable the *'BORO'* rice season only, and irrigation pumps are often not well utilized outside of this *BORO* season. Solar irrigation pumps (SIP) are a cost-effective alternative to diesel pumps that can deliver an attractive return to investors, while also delivering social and environmental benefits.

The Infrastructure Development Company Limited (IDCOL) has financed the vast majority of the 1,000+ SIP projects financed to date. IDCOL provides finance in a fixed structure, comprising 50% grant funding and 35% debt finance from IDCOL, plus 15% equity from the project sponsor, described by **Error! Reference source not found.**. The analysis in this investment case illustrates the impact of this, and alternative, financing structures to a project consisting of six pumps, covering around 100 hectares, with an initial capital investment cost of BDT 25 million (approx. $300,000).[1]

Figure 1. **Typical financing structures by principal lender for solar irrigation projects in Bangladesh**



Note: BADC stands for the Bangladesh Agricultural Development Commission.

Under the current business model and with a typical financing structure, SIP projects could generate an equity internal rate of return (IRR) of up to 21%.[2] This is based on the project acquiring customers within the first two years of operation, and retaining customers throughout the 20 year life of the asset. A number of factors could push this return higher or lower. For example:

— if customer acquisition takes six year instead of two it would reduce the equity IRR to 14%. If in addition the project only reaches 50% of its target customer base the equity IRR would fall to 3%.

[1] Chosen as a representative example, the project modelled was based on pre-investment data provided by Grameen Shakti Solar Irrigation project.

[2] The financial terms used are defined in Box 1.

— if operation and maintenance (O&M) costs were twice as high as expected it could reduce equity IRR to 18%. If the equipment replacement were also double, the equity IRR could fall to 9%.

While commercial finance will play an increasingly important role as the market scales to reach IDCOL's target of 50,000 SIPs by 2025, concessional finance will continue to play an important role. SIPs deliver important environmental and social benefits, which are not fully internalised in a private investment decision, and motivates a role for public sector finance. The government's ambition to introduce 50,000 SIPs to replace diesel irrigation pumps could represent between 0.4 and 0.9 mega tonnes of CO_2 abatement per year.

1 Introduction

This document summarises the potential for investment in solar irrigation projects for project sponsors, financiers and government (including support from donors and DFIs). It summarises indicative financial returns that may be available to investors, and analyses some of the key technical and financial parameters that are currently uncertain but have important impacts on the rate of return. It also discusses the potential role for both concessional and commercial financing structures, and comments on the broader environmental and social benefits these projects can generate.

Building from a current market penetration of around 1,000 SIPs to date, IDCOL plans to roll-out 50,000 pumps in the next seven years. These are expected to be predominantly financed and implemented under the 'fee-for-service' model where project sponsors source the equipment and recover the costs by charging farmers an on fee-for service basis, per hectare of land irrigated. This model applies to pumps with solar peak capacity ranging between 8 kWp and 30 kWp and is the current dominant model in the market. IDCOL is additionally exploring an ownership model for smaller pumps (2 to 10 kWp) where the funding is given to an investor that purchases equipment and then sells it at credit to farmers who own the equipment after completing payment.

Error! Reference source not found. **describes the metrics used to assess financial returns.** The analysis presents only financial returns to the investor, and does not include broader benefits from which the investor does not directly benefit. These broader benefits are discussed separately in Section **Error! Reference source not found.**.

Box 1. **Metrics to measure financial return**

— **Net present value (NPV)**
The net present value of a project is the current value of all cashflows less the initial investment. The current value is calculated by discounting future inflows and outflows, capturing the delayed consumption. This analysis uses the Bangladesh Bank inflation rate (5%) as the discounting rate, as an estimate of a risk free national cost of capital.

— **Internal Rate of Return (IRR)**
The internal rate of return is the discount rate that results in the NPV being zero. For an investor, this would need to be higher than their 'hurdle' rate, which is the rate of return they would expect from a project with a similar risk profile

— **Equity IRR**
The return on equity is similar to the IRR, but calculated only on the equity portion of the investment. It indicates the return on the initial equity investment into the asset.

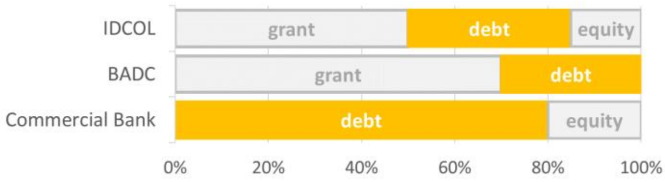
— **Payback period on equity**
The payback period is the length of time required to recover the initial equity outlay.

Section 2 describes the role of financial institutions in mobilising resources. While the majority of solar water pumps have been financed by IDCOL, other financiers and commercial banks will also play a key role in driving the market to scale.

Section 3 describes the financial returns to investors and presents a stylised cashflow model showing how changing some key technical and financial modelling assumptions can affect the project's returns.

Section 4 describes the environmental benefits delivered as a contribution to the Nationally Determined Contribution (NDC) and wider social outcomes delivered.

2 Opportunities for debt financiers



The vast majority of SIPs financed to date have raised capital through a fixed financing structure provided by IDCOL. Eligible solar irrigation projects can receive finance through IDCOL comprising 50% grant, 35% concessional loan with the remaining 15% provided as equity by the project sponsor. To access IDCOL loans, the project sponsor must provide a bank guarantee for 100% of the loan, or alternatively provide collateral (such as land). IDCOL typically grants solar-irrigation project sponsors a grace period of 9 months before they are expected to begin repaying the loan, to allow for construction and, under the dominant fee-for service model, customer acquisition.

IDCOL has financed around 1,000 pumps, and plans to roll-out 50,000 solar irrigation pumps in the next seven years, which will require an acceleration in the pace of market development. Most SIP are financed and implemented under the 'fee-for-service' model where project sponsors own and operate the equipment and recover the costs by charging farmers an irrigation fee. IDCOL is additionally exploring an ownership model where the funding is given to an investor that purchases equipment and then sells it at credit to farmers who own the equipment after completing payment. There is therefore a large and important opportunity to achieve a far larger scale for this technology than the current 1,131 pumps in operation.

An alternative financing model is provided by the Bangladesh Agriculture Development Committee (BADC) which has offered grant-based finance for 60 solar irrigation projects since 2009. These are implemented in regions where IDCOL is not working and are a highly concessional mode of finance. BADC provides all of the initial capital to install the system and seeks to recover around 30% of this initial cost through nominal fees from farmers over a period of 20 years. It also installs the system and trains farmers on how to make optimal use of the irrigation enabled by the pumps. BADC intends to install another 400 pumps by 2021. This financing structure may be helpful in supporting roll-out of solar irrigation in very low-income rural areas but does not present an opportunity to crowd in private sector finance, as there is no equity investment and BADC can only implement government financed projects.

Commercial banks can lend for solar water pumps, and some sponsors use commercial loans for small pump systems. There are limited examples of this approach, which has typically been used for smaller pumps between 2 and 10 kWp solar capacity, where project sponsors have already identified their target customers. Increasing the role of commercial banks will be important in scaling up the market, and could support achievement of the 50,000 target by 2025.[3]

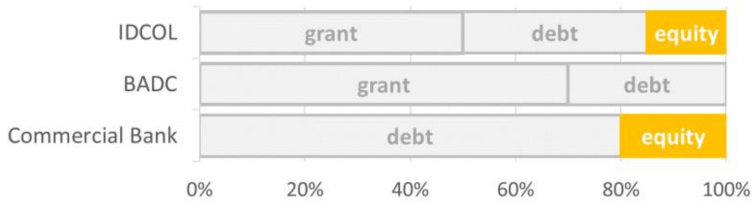
Accessing finance provided by DFIs potentially through commercial banks may also be a possibility as the market evolves. The Asian Development Bank is developing a programme of finance for solar irrigation. The business model and implementation plan for this finance has not been finalized, but it is likely to be operationalized through the ADB's sovereign lending portfolio through the Rural Electricity Board (REB),

[3] IDCOL 2018, http://idcol.org/home/solar_ir

with 50% grant and 50% loan. The ADB is targeting the installation of 2,000 solar irrigation pumps with an estimated 19 MWp of solar capacity.[4]

[4] https://www.adb.org/news/454-million-spur-grid-solar-driven-pumping-irrigation-bangladesh

3 Financial returns to private investors



3.1 A typical solar irrigation investment yields approximately 21% equity IRR

This section presents the opportunity to the project sponsors, who invest equity in the project. This example investment has been modelled on the basis of the project consisting of six pumps, covering around 100 hectares, with an initial capital investment cost of BDT 25 million (approx. $300,000). A system of this size would typically have the irrigation capacity of around 1,600 m3/day per pump. Approximately half-way through the 20-year life of the asset, the submersible pump and controller will have to be replaced at a cost of BDT 9 million.

Project sponsors can expect to make an equity IRR of around 21% on a solar irrigation investment. This is consistent with a project IRR of 16%. In the indicative project, presented in Table 1, the sponsor invests 15% of total project costs as equity, equating to a total of 4 million BDT upfront, with periodic equipment renewal costs throughout the life of the project. Following IDCOL's financing structure, the project sponsor invests 15% of the project costs, receiving 50% as grant funding and 35% as a concessional loan (with 6% interest rate). Under this structure, the initial capital outlay is recovered over time, with the debt repaid over the initial eight years of the project following a two-year grace period.

Table 1. **Financial indicators for a typical solar irrigation project offer investors a 21% return on equity (2018 BDT millions, unless otherwise stated)**

Year	**0**	**1 - 2**	**3 - 10**	**11 - 20**
	Initial investment period	*Customer acquisition period*	*Loan repayment period*	*Stable revenue generation period*
Loan income [1]	*9*	*0*	*0*	*0*
Grant income	*13*	*0*	*0*	*0*
Equity expenditure	*(4)*	*0*	*0*	*0*
Total capital investment	25	0	0	0
Operating expenditure [3]	0	(0.5)	(2)	(11)
Financing cost	(0)	(3)	(9)	(0)
Revenue		3	22	42
Net total cash flow	**(4)**	**(0.5)**	**11**	**31**
NPV of net cash flow (using 5% discount rate) [2]	**17**			
Internal rate of return (IRR)	**16%**			
Equity IRR	**21%**			
Payback period	**7 years**			

Source: *Vivid Economics*

Notes: *[1] all financial units are given in 2018 BDT millions, pre-tax. [2] The NPV of the investment is calculated using a discount rate of 5%, as a representation of the opportunity cost of a 'risk free' investment. The hurdle rate for investors in this type of project and risk level is not known at this early stage of the market, which would provide a more appropriate measure of the NPV from an investors perspective.[3] Replacement costs for components that need replacing within the 2- year asset life are included in operating expenditure. It is then assumed that the asset has zero terminal value at the end of the 20 year period.*

3.2 Ensuring maximum usage of the irrigation pumps is critical to generate stable cashflows over the lifetime of the project

This section presents three potential scenarios that yield different returns depending on different customer acquisition and market penetration presented in Figure 2:

— a baseline scenario describes a situation in which the project acquires all potential customers within two years and retains 100% of this customer base throughout the 20 years lifetime of the project.

— a conservative scenario illustrates a situation in which although there is 100% customer penetration after six years of operation, it will take the project six years to acquire the customer base.

— a pessimistic scenario presents a case in which the project never reaches 100% of customer base penetration, remaining at 50% of potential customers from year 4 of operation.

In the baseline scenario, customers are acquired quickly and capacity is reached during the *BORO* season (February to May), generating an equity IRR of around 21%. However, if it takes six years to acquire the demand of 100% of potential customers, then the equity IRR falls to 14%, as shown under the conservative scenario in Figure 2**.** This stylised scenario reflects from of the anecdotal difficulties that are reported in acquiring customers on account of the technology and benefits being unclear to the farmers.

Critically, if the SIP project does not reach full target demand in terms of total hectares irrigated by farmers, the equity IRR falls quickly. If the project only reaches 50% of its potential demand by the end of the customer acquisition period, the equity IRR would drop to 3% as shown under the pessimistic scenario. It could be that total market penetration of the remains at 50% of total potential if farmers prefer other irrigation services. They could be unwilling to switch into solar irrigation from diesel irrigation due to lack of awareness of the benefits and trust in a new technology. Additionally, if the grid arrives, they could choose to purchase electric irrigation pumps and connect to the grid.

Since *BORO* rice irrigation will account for around 75% of annual revenue generated, it is crucial to ensure that the irrigation systems are fully utilised during this period of the year. There is a high variation in demand for irrigation across the agricultural cultivating seasons, with the maximum usage only being reached for a few months of the year during the *BORO* season. The value of the SIP services must be clearly demonstrated to farmers during the first year of operation to ensure customer retention in future years. In addition, farmers should be supported in developing alternative revenue generating sources outside of the main *BORO* season, as discussed below.

It may also be possible to investigate alternative sources of revenue when the pumps are under-utilised. Bangladesh recently published its 'Net Metering Policy', which allows sale of surplus power to the grid.[5] In its current form, it is targeted at rooftop solar from existing utility household customers. It allows for sale of surplus power from solar panels installed by customers of the utility, in return for credit on the customer's account, which can be offset against consumption from the national grid. In principle, this policy could be amended to allow other sources to be eligible such as small-scale solar PV installations. This would smooth revenue throughout the year, mitigating the risk from relying on the Boro season to generate the majority of annual revenue. This solution and the steps required to implement it is considered in detail as part of a separate implementation roadmap for investment mobilising measures.

[5] Policy available on the SREDA website, published July 2018

Figure 2. **Customer acquisition has an important effect on the IRR and the IRR on equity of projects.**

Customer acquisition

	Baseline	Conservative	Pessimistic
Initial customer acquisition rate	Fast	Slow	Slow
Total demand reached after six years	100%	100%	50%
Internal rate of return on equity:	21%	14%	3%
Internal rate of return:	16%	12%	4%
Payback period:	7	12	18

Source: Vivid Economics

3.3 Managing operating costs and lowering investment costs will help ensure sustainable commercial viability of solar irrigation projects

This section presents four different scenarios varying the costs involved and described how project returns are affected, shown in Error! Reference source not found.**:**

— The baseline scenario represents the returns associated with the realised costs matching the pre-investment models.

— The 'High O&M' scenario shows the impact on return if operation and maintenance costs are twice as high. These costs include salary expenses, pump maintenance expenditures.

— The 'High Cost' scenario models the impact on returns of expecting both higher operation and maintenance costs, as well as higher equipment renewal costs. The latter is the cost of replacing the pump equipment after 10 years of operation.

— The 'Low Cost' scenario models an alternative where the project realises lower investment, renewal and O&M costs. This reflects the possibility that a project sponsor can chose to by-pass IDCOL approved equipment for cheaper alternatives if they source financing elsewhere. Box 2 presents a case study.

Project costs need to be managed carefully, as cost runs either on the initial investment or on operations and maintenance (O&M) will have a large impact on financial returns. As shown in **Error! Reference source not found.** ('High O&M' scenario), doubling operation and maintenance costs lowers the equity IRR by three percentage points and increases the payback period by three years. These costs include salaries for staff as well as upkeep and maintenance of pump equipment. These may be higher than expected due to adverse natural conditions such as damages inflicted by wild animals. Salary costs may also need to be higher to employ workers to protect the equipment against theft and vandalism.[6] These costs depend on the specific geographical and social conditions of the site, which therefore must be carefully evaluated to accurately anticipate costs. The modelling captures these risks by considering a situation in which O&M costs double.

If, in addition to higher O&M costs, the cost of equipment renewal doubles, the equity IRR falls from 18% to 14% and the payback period increases to 16 years. The cost associated with renewing equipment could be higher than anticipated since the technology may have incurred more damage over the course of the project life than anticipated. Upon assessment of equipment in need of renewal, it has been found that the number of components that need replacing is higher than anticipated. The likelihood of this will depend on weather conditions as well as on maintenance practices. Making sure the technical specifications and components are appropriate for the selected site, and the O&M assumptions made are robust is therefore very important.

Figure 3. **If costs are twice as high as expected, the equity IRR could be seven percentage points lower.**

Project costs

	Low Cost	Baseline	High O&M	High Cost
Operation and maintenance cost factor	50%	100%	200%	200%
Investment cost factor	50%	100%	100%	100%
Equipment renewal cost factor	50%	100%	100%	200%
Internal rate of return on equity:	**35%**	**21%**	**18%**	**14%**
Internal rate of return:	**32%**	**16%**	**14%**	**11%**
Payback period:	**5**	**7**	**12**	**14**

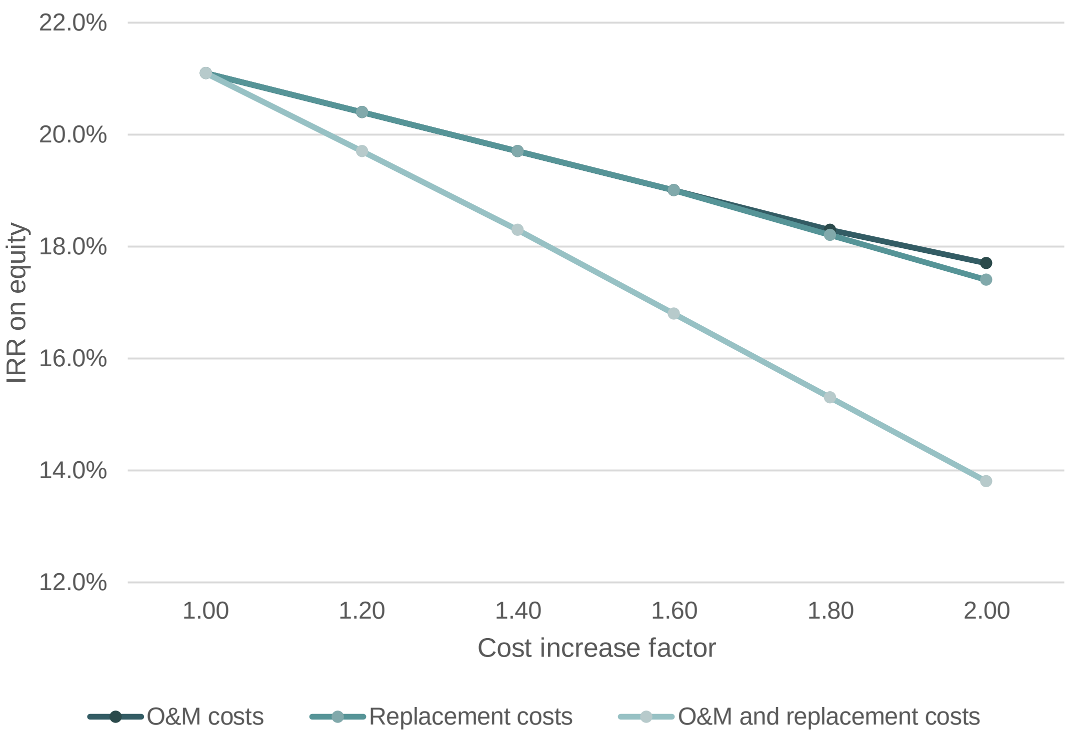
Source: Vivid Economics

As shown in Figure 4, higher than anticipated O&M costs or replacement costs will have a similar effect on the equity IRR. Increasing O&M costs, keeping replacement costs constant has a very similar effect to having higher than expected replacement costs keeping O&M costs level.

[6] FAO (2018) *The benefits and risks of solar irrigation.* A modelling assumption is made that the identified cost increase risks could account to up to a 100% increase in costs.

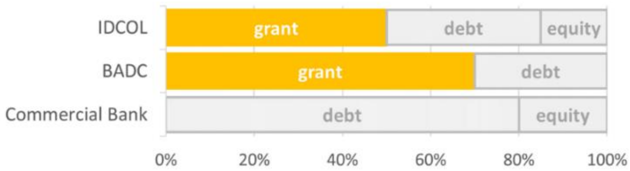
Continuing to bring down investment and operation costs will help improve investment potential and can reduce reliance on concessional finance. Under the IDCOL financing structure, halving all costs (holding the technical effectiveness of the project the same) would raise the equity IRR to 35%, as shown in **Error! Reference source not found.**. Investments costs are largely driven by the cost of the SIP equipment including the pumping technology as well as the solar panels. Since IDCOL demands certain technical standards before committing any funding, sponsors have limited ability to source cheaper technology that would bring down investment costs. However, if they were to raise financing from commercial banks, they would not be subject to technical standards requirements and could lower their investment costs. However, this will have to be balanced against an increase in financing costs as the cost of debt will be higher relative to IDCOLs concessional financing.

Figure 4. **O&M costs and replacement costs have a similar impact on the equity IRR**



Source: *Vivid Economics*

4 Justification for concessional financing



Concessional finance will continue to play a role in scaling up the market for SIPs. This is motivated by delivery of environmental and social outcomes, which are not monetised and therefore not fully considered by private investors.

SIPs have the potential to abate between 8 tonnes and 18 tonnes of CO_2 annually. A diesel irrigation pump will emit an average of 0.75 kg of CO_2 per kWh generated. Since SIP replace diesel pumps, they represent an abatement potential of 0.75 kg of CO_2 per kWh generated. The range of total annual abatement will therefore depend on the generation potential of the SIP. The ADB is planning to deploy SIP with an average peak capacity of 10 kWp and an annual potential abatement potential of 9 tonnes of CO_2. Larger systems ranging between 20 and 30 kWh, such as the ones deployed through the IDCOL model, have an abatement potential ranging between 12 and 18 tonnes of CO_2 per year.

The government's ambition to introduce 50,000 SIPs to replace diesel irrigation pumps could represent between 0.4 and 0.9 mega tonnes of CO_2 abatement per year. This will be a contribution towards lowering emissions from the agriculture sector, which contributes approximately 40% of national emissions.[7] If Bangladesh achieves its goal of introducing 50,000 solar pumps by 2025, they could contribute between 4% and 8% of the NDC target to abate 12 MtCO2 by 2030.

[7] USAID 2016, *"GHG Emissions fact-sheet Bangladesh"*. Accessed: https://www.climatelinks.org/sites/default/files/asset/document/GHG%20Emissions%20Factsheet%20Bangladesh_4-28-16_edited_rev08-18-2016_Clean.pdf

Box 2. **Profile of Solargao solar irrigation project development**

Solargao was formed in 2004, with an initial focus on waste management, before turning to solar PV opportunities. Its initial interest in solar energy projects began in 2008 as lower technology costs started to make the technology a viable prospect. International development partners and financiers such as the World Bank, JICA and ADB also started looking for opportunities to support the sector.

Its first solar irrigation projects, around 2012, focussed on technical demonstration of the technology, rather than commercial viability. Solargao carried out its own research, with a first pilot in 2012, and identified the Northern areas of Bangladesh as the most suitable for solar irrigation projects.

In 2013-14, the company started operating small solar water pumps in five sites. Most pumps were around 5kw-7kw, with the largest 12kw covering 12-15 acres. Since then Solargao has developed over 700 (2019) pumps, with systems up to 30kw, 45kw (Hybrid) covering larger tracts of arable land. A major driver of this market growth has been the ability to bring down costs.

An early challenge faced is the seasonality of demand for irrigation in Bangladesh. Revenue models based on other countries, and in particular sub-Saharan Africa, proved misleading, as they assumed a relatively constant (and high) utilisation of the pumps throughout the year. By contrast, in Bangladesh the usage of the pumps is highly dependent on the crop cycle, and is only utilised at or near capacity for a few months during the BORO season.

A second important challenge has been the potential role of grid based connections for irrigation. On the one hand, the possibility to sell surplus power to the grid can provide a good opportunity for project developers to provide an alternative source of revenue, especially outside the BORO season. On the other hand, while solar irrigation pumps have proved to be a cost-effective alternative to diesel pumps, they will be less competitive than (subsidised) electric powered pump connected to the grid.

To respond to these challenges, Solargao has been working with farmers to generate alternative sources of income year-round. This includes growing, and finding alternative uses for the energy generated by the solar panels when not required for irrigation, such as for production of fertiliser etc. Solargao is also developing pilots of mechanised agriculture using batteries which can be charged using the panels from the pump, to replace diesel mechanised units.

In order to ensure take up in the crucial initial years of operations, Solargao supports farmers by reducing cost and providing training. Often, the first season of use – during the highest demand BORO season – is provided for free, to demonstrate the technical potential and gain trust in the technology. Solargao also works closely with farmers on how best to use the pumps and generate income from crop sales, in order to incentivise farmers to continue use of the pump systems in future irrigation seasons.

It is also investigating a hybrid approach combining the best of solar mini-grid and solar irrigation pump business model. This entails building a small generating grid of c. 44-55 kWp – which lies in between the current SIP capacity of c. 20 kWp, and SMG capacity of 100+ kWp. The services are then sold to farmers for irrigation, on a per-hectare basis. Additional services including electricity are then sold to households and businesses, to maximise revenue generation throughout the year.

Solar Gao is currently engaging in alternative activities to supplement irrigation revenue including:

— bio-composting in SIP sites in Rangpur and Dinajpur, converting organic waste into bio-compost, to create fertilizer used to grow organic vegetables and supply partners (farmers).

— design and construct solar cold storage units of various sizes that are ideal for short-term and long-term storage of food. This extends the capacity of farmers to store their produce for longer.

— using company designed cold storage technology, and the Cold Tissue lab they are successfully growing button, shitake, oyster, ganoderma and milky white mushrooms in Dinajpur district.

— introducing mechanized farming in its project locations to assist farmers with land preparation such as tilling, planting and harvesting. However, they provide these services mostly through diesel-powered machineries. Mr Sufi and the Solargao team are working to convert these diesel-powered machineries to run on batteries charged with solar-power.

— assisting farmers with banking, through a partnership with The City Bank Limited Agent Banking Services, to provide banking and financial services to rural communities. Services include cash deposits, withdrawals, remittance disbursement, small value loan disbursement and recovery of loans, and cash payments under the government's Social Safety Net Programmes. Three outlets are operational so far.

Annex: List of Key Sources for Solar Energy Projects

	Institution	Role	Relevant personnel and Contact information
1.	Power Division	Policy maker for Power Sector, renewable energy generation and energy efficiency. Oversees all activities related to power generation, transmission and distribution, incentive mechanisms and R&D	Mohammad Alauddin, Joint secretary (Renewable Energy) Biddut Bhaban, Power Development Board, Abdul Gani Road, Dhaka Tel: 02-9574406 Email: mohammad_alauddin4124@hotmail.com
2.	Sustainable Renewable Energy Development Authority (SREDA)	Coordinates, conducts R&D on renewable energy and energy efficiency and mobilizes investment for renewable energy projects	Siddique Zobair, Additional Secretary, Energy Efficiency & Conservation IEB Building (9 & 10th floor) Ramna, Dhaka-1000 Tel: +8802-55110340/+88-02-55110335 Ext -130 Email: siddique.zobair@gmail.com
3.	Infrastructure Development Company Limited (IDCOL)	Promotes, develops and finances infrastructure including renewable energy, and energy efficient projects	Farzana Rahman (Senior Vice President and Unit Head (Investment) Renewable Energy) UTC Building, 16th Floor, 8 Panthapath, Kawran Bazar, Dhaka-1215, Bangladesh Tel. 88-02- 9102171-8/261 Email: frahman@idcol.org
4.	Bangladesh Bank	Central bank and apex regulatory body for the country's monetary and financial system, finances renewable energy projects	Qazi Mutmainna Tahmida (Joint Director, Sustainable Finance Department) Motijheel, Dhaka Bangladesh Tel: 88-02-55665001-20 Email: qm.tahmida@bb.org.bd
5.	Bangladesh Agricultural Development Corporation (BADC)	Promotes agriculture development, including financing of solar irrigation pump projects	Md. Shah Alam Siddiqui (Chief Engineer) Krishi Bhaban 49-51, Dilkusha Commercial Area Dhaka-1000 Tel: 9556080-7 E-mail: info@badc.gov.bd
6.	Bangladesh Rural Electrification Board (BREB)	Distributes electricity to rural communities, shareholder of solar energy and, contracts, finances and sets up solar energy projects	Sayed Mahbubur Rahman, Director (Technical) Head Office, Nikunja-2, Khilkhet, Dhaka-1229 Tel: 88-02-8916424-28 Email: rebdirpp@gmail.com
7.	Bangladesh Infrastructure Finance Fund Limited (BIFFL)	This Non-Banking Financial Institution issues bonds and debt instruments and equity offerings for infrastructure projects	S. M. Farmanul Islam, Executive and CEO, Borak Unique Heights, Level-3, 117 Kazi Nazrul Islam Avenue, Eskaton Garden, Dhaka Tel: +880-2-8333238-9Email: ceo@biffl.org

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Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

This document is an output from the Mobilising Investment project, an initiative of the Climate and Development Knowledge Network (CDKN) and Low Emission Development Strategies Global Partnership (LEDS GP) contracted through SouthSouthNorth (SSN).

The Mobilising Investment project is funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), on the basis of a decision adopted by the German Bundestag. Delivery partners for the project include the National Renewable Energy Laboratory (NREL), Overseas Development Institute (ODI) and PriceWaterhouseCoopers UK (PwC).

Contact us:

Vivid Economics Limited
163 Eversholt Street
London NW1 1BU

T: +44 (0)844 8000 254
E: enquiries@vivideconomics.com

Company Profile

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