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Bangladesh Water Development Board (BWDB)
Department of Agricultural Extension (DAE)



Blue Gold

Blue Gold QPR on Water Management & Productive Sectors Innovation Fund

October –December 2015

March 2016



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Blue Gold Program

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List of Abbreviations

BGP	Blue Gold Program
EKN	Embassy of the Kingdom of the Netherlands
BWDB	Bngladesh Water Development Board (BWDB)
DAE	Department of Agricultural Extension (DAE)

Executive Summary

The Blue Gold project

In Bangladesh, about 38% of the population in the coastal regions lives below the poverty line. They face high vulnerabilities in terms of insecurity of food, income, water and health. There are ample opportunities to harness the resources of the coastal areas that, if successfully achieved, can raise the population from poverty, create a sustainable environment and provide security and quality of life to present and future generations. The objective of Blue Gold is to reduce poverty of the people in the coastal areas by enhanced productivity of crops, fisheries and livestock and increasing incomes by improved processing and marketing of agricultural products including value chain development.

The Blue Gold Innovation Fund

Accelerating the development inside the Blue Gold polder areas requires new innovative approaches focused on the empowerment of communities, the management of water resources, improvement of agriculture practices, and the creation of business opportunities.

The Blue Gold Innovation Fund makes it possible for Blue Gold to try and test new innovative approaches and discover new ways to realize socio-economic development in the polders of Bangladesh. New innovative technologies and approaches can be financed with support from the Blue Gold Innovation Fund, as long as the innovation proposals submitted contribute to the outcome and results of the Blue Gold program.

1. Introduction

Blue Gold wishes to provide regular quarterly updates from the Innovation Fund, and showcase the innovative approaches and initiatives that have a positive impact on the lives of the people in the polders. This quarterly report, covering the period between October – December 2015, provides an overview of the activities of the Blue Gold Innovation Fund and catches up with the developments since the last quarterly report of July – September 2015.

To provide an accurate description of the developments of the Innovation Fund, the Blue Gold team has chosen to include a general overview of all developments up to the publication date of the report (4 March 2016). However, the report will only provide detailed descriptions on activities taken place during the report period (October – December 2015).

1.1 General activities in the last quarter (Oct – Dec 2015)

1.1.1 Completion of the Innovation Fund Procedure Manual

The Procedures Manual of the Innovation Fund has been finalized as per December 2015. The procedures manual provides clear instructions on how to apply for funding from the Innovation Fund; it describes the application process, the criteria for submitting proposals and process of proposal review. In order to guide applicants through the application process in an uncomplicated way, a step-by-step application guideline has been included. Additionally, we launched a separate email address for applications to the Innovation Fund: bluegold_innovationfund@bluegoldbd.org.

The Procedures Manual is accessible via the Blue Gold website: <http://bluegoldbd.org/more-information/innovationfund/>

1.1.2 Development of hydroponics proposal

Exciting news from the Blue Gold agriculture component! Together with the Bangladesh Agriculture Research Institute (BARI) a proposal for a practical field trial of hydroponics has been developed. Hydroponics concerns a soilless method of growing plants using mineral nutrient solutions in water instead of soil / land. This innovative approach to agriculture will be implemented in collaboration with farmers from the Blue Gold polders. This technique could prove to be a valuable alternative for traditional agriculture, as it doesn't depend on the availability of suitable and fertile land and nullifies the problem of increasing salinity in the polder areas. Blue Gold is currently finalizing the contract terms with BARI, and expects to start the field trial at the beginning of Q3 in 2016.

1.1.3 GreyShack completes scoping study on energy use in the polders

It is universally accepted that access to electricity not only improves livelihoods and quality of live, but also stimulates economic development at a broader lever. Electricity provides income opportunities to parents, allows children to invest in their education and offers access to basic applications that improves livelihoods (think about charging your phone, or storing your medicines in a fridge). For the people living in the Blue Gold polder, the lack of access to electricity forms a great problem. Blue Gold has commissioned GreyShack to conduct a scoping study on how renewable energy can be utilized for electricity provision in the Blue Gold polders, which was completed in December 2015.

The conclusions of the GreyShack scoping study have stimulated the Blue Gold project to think about possible solutions for access to electricity in the polders. The study report will be uploaded on the Blue Gold website in order to make it publically accessible and also shared with all relevant stakeholders.

More detailed information on the GreyShack scoping study can be found under Chapter 6.

1.1.4 World Fish completes action research on Women Managed Household Ponds

Imagine you are a smallholder farmer and living in the polders and you want to supplement your income and diet outside of the regular small scale farming activities that you conduct. How would you approach this? WorldFish introduced the concept of household ponds to the Innovation Fund, in which women take are trained to become small scale fish producers.

World Fish has produced a lively report on the outcome of the action research on women managed household ponds, which is to be published on the Blue Gold website. The approach is currently implemented by World Fish in two other projects. As a follow up to this research, Blue Gold has requested World Fish to develop a curriculum that would enable low-cost replication of the women managed household ponds approach by local NGOs.

1.1.5 NICE Foundation visits Vietnam for knowledge exchange

With support from the Blue Gold Innovation Fund, the NICE Foundation is implementing a research pilot on blending the traditional indigenous knowledge of pig rearing with modern (hygienic) pig rearing practices. In order to introduce modern practices to existing and new pig farmers, the NICE Foundation team (including a local pig farmer, also a member of a Blue Gold Water Management Group) visited the National University of Hanoi, Vietnam, during 22 – 27 December 2015. The team visited the University research center, meso- and micro level pig farming systems and also reviewed a household level pig rearing system.

More information on the developments of the NICE Foundation project can be found under Chapter 2.

2. Projects under implementation

Table 1
Summary of projects under implementation

Name of applicant	Proposal topic	Component	Fund type	Budget	Status	Contract signed	Date Contract Awarded	Payment details	Amount paid	Date last payment	Amount Due	Deliverables
NICE Foundation	Kawra pig rearing Khulna	C3	Productive Sector Fund	€ 49,967	1 Aug 2015: Project started 13 Aug 2015: Inception workshop 11 Nov 2015: Quarterly report 18 Nov 2015: Visit by FP DLS (Lutfor Rahman) 22-27 Dec 2015: Knowledge-sharing visit to Vietnam 27 Jan 2016: Half yearly progress meeting 28 Feb 2016: Half yealy progress report	YES	30/07/2015	09 Aug 2015: first payment €11,283.90 11 Nov 2015: second payment €11,283.90	€ 22,568	11/11/2015	€ 27,399	ONGOING
BARI	Hydroponics	C3	Productive Sector Fund	€ 20,333	23 Dec 2015: email to DG BARI requesting concurrence and signature on MoU. 17 Jan 2016: follow-up email to DG BARI 2 Mar 2016: vsit to BARI headquarters	NO	-		€ -		€ 20,333	ONGOING

During the reporting period October – December 2015, the Blue Gold Innovation Fund had two projects under implementation; an action research project on pig rearing by the NICE Foundation, and a pilot on hydroponics technology from BARI . The developments around both projects are discussed on the next page.

2.1 NICE Foundation action research – project developments

Pig rearing has traditionally been part of the lifestyle of the Hindu-communities living in the Southern coastal regions of Bangladesh. The traditional pig rearing practices that are currently used offer both room for improvement as well as a potential to develop into an economic opportunity, taking into consideration the rising demand for pork meat from both the Hindu community as well as the international hospitality industry in Bangladesh.

Blue Gold approved the NICE Foundation proposal on pig-rearing research with the Kawra community in July 2015. The action research pilot started in August 2015 and will run till April 2016. This proposal proves particularly interesting for Blue Gold because it combines Blue Gold's community empowerment approach with a focus on the practicalities of livestock rearing and the value chain of pork meat in Bangladesh.

The action research project of the NICE Foundation focuses on one of the most disadvantaged communities of the world, the Kawra community of 'untouchable' pig rearing Hindus in the Jessore and Khulna districts of south-west Bangladesh. The Kawra communities are the untouchable among the untouchables. They are neglected because of their profession. They are used to rear/cultivate pigs, eat pork and trade those in and outside of the country. They are deprived of fair justice and social status. Many basic rights are non-existent, including education, water sanitation and space for animal husbandry.

The action research project aims to identify the root causes of the Kawra's socio economic livelihood pattern, and the possibility of blending of indigenous knowledge with modern (hygienic) pig rearing technology to ensure their livelihood security. The action research will focus on identifying the life style, social barriers of Kawra community that hinder their development, confidences of these communities and livelihood patterns with their coping mechanism to develop their livelihoods.

Part of the research pilot is an exchange visit to Vietnam, which took place between 15- 19 December. The NICE Foundation team is currently drafting a plan to distribute the new ideas, technologies and lessons learned from the Vietnam visit and working on the final steps of the spreading of knowledge and new practices amongst existing pig farmers. In this process the NICE Foundation might change some of their existing approaches. This plan is expected by the end of January 2016.

An increased demand for more knowledge and an increased willingness to start household level pig-rearing are the two most prominent outcomes already visible. The final report of the project is expected in Q2 of 2016.

2.2 BARI hydroponics feasibility study – project developments

The agriculture component of Blue Gold is continuously interested in testing and implementing innovative technologies and approaches to crop production. One such approach is hydroponics; a soilless method of growing plants using mineral nutrient solutions in water. When terrestrial plants are grown in a hydroponics system an inert medium is used to replace soil or plant roots are growing directly in nutrient solutions.

In broad terms, the Blue Gold program aims to improve water management (through institutional capacity building and improved water resource engineering) and increase agricultural output for food security and

economic development. The hydroponics concept fits perfectly into the scope of the Blue Gold program, as it:

- Focuses on optimal use of fresh water resources, reducing pressures related to competitive uses of fresh water (for irrigation);
- Provides an opportunity for off-season cultivation, supporting both diversification and increase of production (this relates to the specific targets of Blue Gold's Component 3);
- Allows for higher rates of production per area, supporting production intensification (this relates to a specific target of Blue Gold's Component 3);
- A successful outcome of the hydroponics feasibility study might lead to the adoption of this technology within the Blue Gold polders, which could create strong business options for local farmers. New business can be developed based on the regional demand for high value crops. Opportunities may also exist for input retailers to start new businesses (specifically for the nutrient solutions and coco dusk substrate, important ingredients for hydroponics). (this specifically relates to targets of Blue Gold's Component 4).

Apart from this, farmers throughout the Blue Gold polders have repeatedly indicated the general deterioration of soil fertility on their lands, which is a trend that has been increasing in severity over the past decades. With current levels of agricultural production intensification along with farmers' practices in (often imbalanced) application of inorganic fertilizers and pesticides, soil fertility may be expected to further deteriorate over the future. The combined salinization of soils and reduction of soil fertility especially threatens field crop production over the longer term. Hydroponic cultivation is a potential viable adaptation strategy for mentioned changing environmental conditions, and possibly provides for an alternative to traditional field farming.

Introducing the hydroponics technology into the Blue Gold polders also brings with it specific challenges. The main challenge with hydroponic cultivation concerns the system's vulnerability to technical errors; the success rate of growing hydroponically heavily depends on the correct monitoring and management of the system. Another challenge concerns the (usual) high start-up costs, which may discourage farmers to choose for using this system, especially when they are not familiar with the technology and the opportunities it provides.

In view of the above, BARI-HRC has been approached by the Blue Gold team to become the partner for incorporating a practical field trial on hydroponics, to be funded by the Innovation Fund. BARI-HRC has experimented with hydroponic technologies for nearly a decade, and amongst others implemented the "Identification of Production Package for High Value Horticultural Crops through Hydroponics Culture" research project between 2011 and 2014.

The combined proposal was finalized on 10 December 2015; the proposal activities are geared towards testing and possibly identifying hydroponics as a feasible technical option for further development in Blue Gold polders. In case of a proof of concept at the farmers' level, hydroponics may be a viable option for development beyond Blue Gold polders on the longer term.

Blue Gold has finalized the ToR and contract for the collaboration with BARI and is waiting signing by BARI.

3. Projects under review

Table 2
Summary of projects under review

Date received	Name of applicant	Proposal topic	Component	Fund type	Budget	Status	Details
23/12/2015	Witteveen & Bos	Scoping mission on small scale dredging	C2	Water Management Fund	€ 9,720	27 Aug 2015: Proposal received 20 Sep 2015: Comments TA team shared 08 Feb 2016: Revised proposal received 09 Feb 2016: Proposal under review TA team	-
10/02/2016	GIZ	Collaboration on improved cookstove dissemination	C5	Productive Sector Fund	€ 24,442	10 Feb 2016: Proposal received 25 Feb 2016: Comments TA team shared	Waiting for revised proposal

During the reporting period October – December 2015, the Blue Gold Innovation Fund had one projects proposal under review from Witteveen & Bos. The proposal consists of a on the potential of a business case for mechanical dredging conducted by local communities, with a total budget of € 10,000, as a preliminary for launching the Blue Gold tender on small scale dredging. The proposal is currently being reviewed by the Blue Gold TA-team.

4. Projects under Development

Table 3
Summary of projects under development

Date received	Name of applicant	Proposal topic	Component	Fund type	Budget	Status	Details
06/07/2015	MetaMeta	Roads for Flood Protection and Water Management	C2	Water Management Fund	€ 73,000	16 Aug 2015: Proposal received 21 Sep 2015: Comments from TA team shared 26 Oct 2015: Revised proposal received 10 Feb 2016: Revision of proposal requested according to the new IF guidelines	Waiting for revised proposal
13/07/2015	Moringa Ltd	Moringa value chain development	C3 + C4	Productive Sector Fund	€ 25,000	29 Nov 2015: Meeting on concept development	Waiting for proposal
03/12/2015	Matrix Consultancy	Strengthening cattle supply chain	C3	Productive Sector Fund	€ 50,000	03 Dec 2015: Concept note received 14 Dec 2015: Comments from TA team shared	Waiting for revised proposal
08/02/2016	Grameen Intel	Piloting of agriculture software for farmers in BG	C3	Productive Sector Fund	€ 25,000	08 Feb 2016: Concept note received 23 Feb 2016: Comments from TA team shared	Waiting for proposal
08/02/2016	Consiglieri Consulting	Follow-up study on access to energy in the polders	C5	Productive Sector Fund	€ 25,000	08 Feb 2016: Concept note received 11 Feb 2016: Comments from TA team shared	Waiting for proposal

During the reporting period October – December 2015, the Blue Gold Innovation Fund received three project proposals that are currently still under development. These proposals were sent to the TA-team of Blue Gold for review and feedback purposes. The proposals include:

4.1 MetaMeta

This proposal aims to study the influence of road on flood protection and water management in the polders and pilot an approach for management of the culverts. The TA-team has requested MetaMeta to revise the existing proposal to a feasibility study on the internal roads in the polder; firstly identifying to what extent these roads actually form a problem for the drainage of the polder. Afterwards an implementation approach can be implemented based on the outcome of the study. Additionally, the TA-team has asked MetaMeta to adjust the proposal according to the final version of the Innovation Fund's Procedures Manual.

4.2 Moringa Ltd

Moringa Limited is a small company run by a Bangladeshi couple that aims to create business out of the versatile moringa tree. Moringa Ltd is interested in upscaling their production capacity in moringa powder and targeting the cosmetics industry in Europa and the United States, as well as the fertilizer and insecticide market in Bangladesh. They are currently receiving the support of Niels van den Berge in the development of a business plan, which will form the basis of their application for funding for a market study from the Innovation Fund.

4.3 Matrix Consultancy

Matrix Consultancy is currently developing training programs for the Blue Gold program, and has also submitted a proposal to the Innovation Fund for piloting a beef fattening business. The focus of the proposal lies on strengthening the cattle supply chain through the use of ICT and contract farming. Although the proposal does not provide a radically new model, it would be new for the polder areas of Bangladesh. The TA-team has requested Matrix to revise their proposal and scale down the pilot from 2,000 farmers to a smaller size.

5. Projects rejected

Table 4
Summary of rejected projects

Date received	Name of applicant	Proposal topic	Component	Fund type	Budget	Status	Details	Amount paid
08/03/2015	Acacia Water	Feasibility study Aquifer Recharge for Agriculture and Proposal for Pilot Project	C2	Productive Sector Fund	€ 5,000	5 Apr 2015: Draft feasibility proposal received 25 May 2015: Proposal rejected by EKN; business model remains unclear. 1 Sep 2015: Business case calculations received by BG 3 Nov 2015: Business case of proposal rejected by BG 14 Jan 2016: Payment €5,000 on concept note work approved	Both the EKN and the BG IF found that the commercial viability of using water for irrigation during the dry season is not sufficiently proven.	€ 5,000
24/03/2015	EcoStories	Improved Cooking Stoves	C5	Productive Sector Fund	€ 30,500	16 Jun 2015: Received draft proposal 31 Aug 2015: Received revised proposal 6 Sep 2015: Comments from TA team shared 25 Feb 2016: No follow up	After 5 months of inactivity from the applicant the BG IF decided to reject the proposal.	€ -
22/06/2015	Winning Agro	TA on calf rearing and product placement	C4	Productive Sector Fund	€ -	15 Jun 2015: Meeting with Winning Agro and Sloten 22 Jun 2015: Concept note presentation by WA 02 Sep 2015: Comments TA team on concept note shared 08 Dec 2015: WA withdraws proposal	WinningAgro did not see a possibility to introduce their livestock feed product without the BG IF directly subsidizing the price of the product. Therefore the BG IF rejected the proposal.	€ -
22/07/2015	Twijnstra Gudde	Study wind and tidal energy	C2 + C5	Water Management Fund	€ 125,000	23 Jul 2015: Proposal received 14 Sep 2015: Comments from TA team shared 14 Sep 2015: Proposal declined by BG	The TG proposal does not fit within the funding structure of the BG IF. The proposal focuses on research only and has a budget of €125,000.	€ -
17/09/2015	MetaMeta	Biological rodent control	C2	Water Management Fund	€ 84,500	15 Sep 2015: Proposal received 21 Sep 2015: Comments from TA team shared 26 Oct 2015: Revised proposal received 10 Feb 2016: Proposal declined by BG	As the Blue Gold polders are not experiencing any hindrance from rodents the BG IF declines the proposal for biological rodent control.	€ -

During the reporting period October – December 2015, the Blue Gold Innovation Fund rejected two project proposals from ACACIA Water and Winning Agro. A description of both proposals and the reason why they were rejected is provided below:

5.1 ACACIA Water

Between September 2014 and February 2015, Acacia Water and Dhaka University conducted a feasibility study on the application of MAR technology for agriculture water inside polder 22 of the Blue Gold program. The outcome of this feasibility study showed that the adaptation of MAR technology could provide significant benefit to farmers in polder 22.

The benefits of the MAR technology would not only extend to farmers being able to grow an additional crop, but can also have a substantial impact on gender relations, as it allows for a bigger role of women in homestead farming. Additionally, polder 22 could play a role in the production of fodder. Already the surrounding areas feed their cattle with fodder from polder 22, as the shrimp production there limits the growth of sufficient fodder crops. As such Blue Gold proposed to pilot the implementation of the MAR technology and field test the practical application.

However, during the concept note development phase it became clear that the MAR water infiltration system is too expensive for the limited quantity of water that can be stored in the subsoil. The timeframe of utilizing the MAR system for irrigation during the three month long dry season was too short to generate enough income for farmers to be able to offset the costs of the irrigation water by rowing cash crops. This led Blue Gold to conclude that the MAR technology is too expensive to use for small scale agriculture.

LESSONS LEARNED

The window of opportunity for alternative irrigation and crop systems in the polders is only three months. This leaves little space for capital intensive alternatives to existing agriculture and irrigation practices. Realistic business model calculations should form the principal decision making tool.

5.2 Winning Agro

The Dutch firm Sloten B.V. and the Bangladesh-based company Winning Agro approached Blue Gold in July 2015. Sloten is a Dutch company (part of Nutreco) that produces a cow milk replacement product called SPRAYFO, which stimulates the growth of calves and improves the milk production of cows. Winning Agro is a Bangladeshi company that provides agriculture services to farmers in Bangladesh, and the agent for SPRAYFO in Bangladesh. Winning Agro was interested in submitting a proposal to the Blue Gold Innovation Fund in order to expand their operations in Bangladesh and create a demand for the SPRAYFO product.

According to Winning Agro, farmers in Bangladesh lack awareness and knowledge regarding cattle rearing. With the right inputs and treatment the production of both meat and milk from cows can be significantly increased. The proposal of Winning Agro focused on training farmers from the Blue Gold program area in modern calf rearing techniques and promoting SPRAYFO as an alternative to the traditional calf feed (cow's milk) and a solution to healthier and more productive livestock.

The Blue Gold TA-team welcomed the proposal Winning Agro, but was surprised to see that the business model of the proposal revolved around subsidizing the price of the SPRAYFO product. As Winning Agro explained it, *'Calf milk replacer is vital part to the proper rearing method, since the concept and the product is unknown to Bangladesh the farmers will be hesitant to invest on it, so the method and the product need to be subsidized somehow someway. As an organisation Winning Agro will subsidize its' margin to the farmer, and hope the farmer will see the results and will buy the product in future, but besides our margin the rest of the amount needs to be financed by the donor as an aid to the farmers.'*

However, direct product subsidy does not contribute to a sustainable business model, and falls outside of the policy of the Blue Gold Innovation Fund. One of the criteria for approving an innovation proposal for Blue Gold is that there should be a viable business case, without subsidizing the product and/or business. For this reason the Blue Gold TA-team rejected the Wining Agro proposal.

| LESSONS LEARNED

Direct (product) subsidy is never a sustainable approach to establishing a viable business. Expectations from applicants for subsidy from the Innovation Fund need to be addressed in the Procedures Manual. The primary selection criteria of the manual can be updated to include this notion.

6. Projects completed

Table 5
Summary of completed projects

Date received	Name of applicant	Proposal topic	Component	Fund type	Budget	Status	Contract signed	Date Contract Awarded	Contract office	Payment Details
01/04/2014	WorldFish	Women-managed small household ponds (SHHP)	C3	Productive Sector Fund	€ 45,000	05 Apr 2014: Start of project 08 Mar 2015: No cost extension June 2015 18 Jun 2015: No cost extension Dec 2015 28 Dec 2015: Final report received	YES	05/04/2015	DHAKA	16 Sep 2015: first payment €12,240 23 Feb 2016: final payment €41,822.25
01/05/2014	Neelen en Schuurmans	Development and introduction of a web-based GIS information platform	C2	Water Management Fund	€ 48,000	01 May 2014: Start of project 22 Aug 2015: Training mission BG staff completed 03 Sep 2015: Final report received	YES	21/05/2014	ARNHEM / DHAKA	Payments processed by Arnhem office
01/07/2014	IMARES	Pearl cultivation	C4	Water Management Fund	€ 10,000	01 Jul 2014: Start of desk study 01 Jan 2015: Final report received	YES	01/07/2014	ARNHEM	Payments processed by Arnhem office
11/03/2015	DWA - YEP	YEP consultant via DWA Rijnland	C2	-	€ -	11 Feb 2015: Start of YEP recruitment procedure 09 Sep 2015: Contract signed with DWA 17 Sep 2015: Start date Ruud Leibbrand	YES	-	-	Value of BG contribution to YEP is € 34,510. This is funded outside of the IF
10/04/2015	GreyShack	Scoping study on energy use in BG area	C5	Productive Sector Fund	€ 7,316	25 Aug 2015: Start project 11 Dec 2015: Initial study report received 14 Jan 2016: Workshop and discussion on report conclusions 25 Feb 2016: Received the revised final report	YES	11/08/2015	DHAKA	25 Aug 2015: first payment €3,658 Waiting for final invoice

During the reporting period October – December 2015 two project of the Blue Gold Innovation Fund were completed. These are the Word Fish project on fish cultivation in women-managed small household ponds, and the GreyShack scoping study on the potential for energy in the Blue Gold polder areas. A description on both completed projects is provided below:

6.1 World Fish completes action research on Women Managed Household Ponds

Imagine you are a smallholder farmer and living in the polders and you want to supplement your income and diet outside of the regular small scale farming activities that you conduct. How would you approach this? WorldFish introduced the concept of household ponds to the Innovation Fund, in which women take are trained to become small scale fish producers.

In Bangladesh fish culture (the production of fish) has rapidly grown as an alternative source of income due to recent technological advancement, allowing for higher profit, nutritional benefit and employment opportunities. This growth has concentrated mainly on large ponds, and has created an industry dominated by men where women are excluded because of social and cultural barriers. However, many women in rural areas have access to backyard ponds, which are used to store water for irrigation and household purposes, but which are overlooked for their potential to culture fish. With the help of the Innovation Fund, WorldFish has developed an approach which offers women an opportunity to increase the productivity of ponds and undertake fish culture in small homestead ponds and therefore, enhance household nutrition. The World Fish pilot on women-managed small household ponds (SHHP) started in of April 2014. World Fish submitted a no-cost extension request twice, both in March and June 2015.

World Fish has produced a lively report on the outcome of the action research on women managed household ponds, which can be downloaded from the Blue Gold website ([insert link](#)). The SHHP approach that was made possible by funding from the Innovation Fund is currently implemented by World Fish in two other projects. Recognizing the success of the SHHP approach, Blue Gold has expressed interest to World Fish for the development of a SHHP curriculum that would enable low-cost replication of the women managed small house hold ponds approach by local NGOs.

6.2 GreyShack completes scoping study on energy use in the polders

It is universally accepted that access to electricity not only improves livelihoods and quality of live, but also stimulates economic development at a broader lever. Electricity provides income opportunities to parents, allows children to invest in their education and offers access to basic applications that improves livelihoods (think about charging your phone, or storing your medicines in a fridge). For the people living in the Blue Gold polder, the lack of access to electricity forms a great problem. Blue Gold has commissioned GreyShack to conduct a scoping study on how renewable energy can be utilized for electricity provision in the Blue Gold polders, which was completed in December 2015.

The idea for a scoping study came to life during a visit of the Dutch/German company PWRBRIDGE to the Blue Gold office. PWRBRIDGE is a manufacturer of off-grid power solutions (battery systems that can store power produced by renewable sources, such as solar- tidal, wind or generators). The PWRBRIDGE system provides utilizes the stored power to provide energy to households and/or industries based on the balance between the supply and demand sides. In Bangladesh PWRBRIDGE partners with GreyShack.

GreyShack and PWRBRIDGE approached the Blue Gold Innovation Fund to identify the needs of Blue Gold with respect to power provision in the polder areas, and the possibility to include solutions designed by PWRBRIDGE. Blue Gold is very interested in the impact that power provision can have on the population of the polders, but has no clear insight into the socio-economic consequences that a lack of access to power poses for the polder population.

In order to address Blue Gold's need for more insight, GreyShack submitted a proposal for a feasibility study that assess the electricity needs of the communities in the Blue Gold polders on the socio-economic nexus. Secondary, the study also aims to lead on a sustainable solution of electricity to overcome the various challenges surrounding infrastructure, technology, environment and finance. The feasibility study proposal was approved by Blue Gold on 2nd August 2015. GreyShack started the feasibility study on 7 September 2015.

The study report was presented to Blue Gold on the 21st of December 2015. The outcome of the study was discussed during a workshop on 14 January 2016, where representatives of PWRBRIDGE, GreyShack, Blue Gold, MottMacDonald and Consigliere Consultancy were present. The goal of the workshop was to provide more clarity on a follow-up trajectory for Blue Gold on sustainable power provision in the polder areas.

The conclusions of the GreyShack scoping study have stimulated the Blue Gold project to think about possible solutions for access to electricity in the polders. The study report is to be uploaded on the Blue Gold website in order to make it publically accessible and also shared with all relevant stakeholders.