West Bengal, India

Country Dialogue Brief

2009 - 2012

Introduction

This brief presents the outcomes of the stakeholder engagement activities, known as "The Dialogue," in the AgWater Solutions Project. A schematic diagram of all the meetings and events is given on page 2 and the key findings are presented.

Project overview

The **AgWater Solutions Project** aims to improve the livelihoods of poor and marginalized smallholder farmers in sub-Saharan Africa and South Asia through **agricultural water management (AWM) solutions**. The project is assessing where and how agricultural water management (AWM) can improve rural livelihoods and reduce poverty. Work focuses on five African countries (Ghana, Burkina Faso, Zambia, Tanzania and Ethiopia) and two states in India (West Bengal and Madhya Pradesh).

In each country the AgWater Solutions Project has followed a consistent methodology: initial research to understand the status of AWM (situation analysis) followed by a national consultation to discuss findings and distil priorities for field-level research and piloting. In parallel, FAO and IFPRI have been mapping the potential for AWM to contribute to poverty alleviation at national and subcontinental levels. A series of workshops (the AWM Dialogue led by FAO with National Dialogue Facilitators) have been held at national and subnational levels, to ground truth research findings and identify gaps and priorities for influencing AWM through policy, and links with private sector and farmer groups. The project is now finalized (September 2012) and project findings are packaged into investment recommendations for target stakeholder groups.

AWM Dialogue process

This Dialogue aims to consult, discuss and validate possible AWM solution options and suggest priorities for investment at the national level on the basis of scientific references and a good understanding of local knowledge, actors' needs and preferences. Discussions in the events aimed to understand the causes of adoption or abandonment of some of the AWM interventions, and enlarge the range of the "possible." They should help us find practical means to forge links between water, poverty and livelihoods in rural areas, in particular, by showing how access to agricultural water determines livelihoods and survival in rural areas.

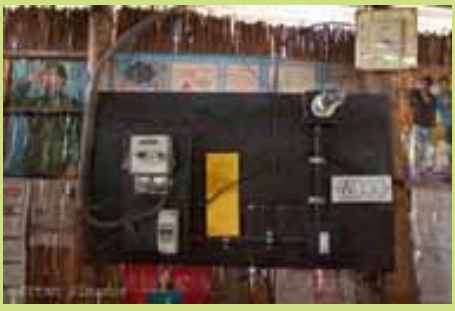
In West Bengal, well endowed with rains and groundwater, the main **constraints identified by the AgWater Solutions Situation Analysis** in 2009 were access to water (lack of storages, limited groundwater access) with irregular rains as well as rural electrification, which affect farmers using electric pumps. As such, to increase **water availability** the project is looking into means of supporting the proliferation of decentralized rainwater harvesting (on-farm ponds, also called ex-situ water harvesting) as well as improved access to groundwater where feasible and safe. To increase **water acces**s the project is analyzing how to facilitate low-cost water lifting options (e.g., pump rental) and drip irrigation to improve **water utilization**. Financial support measures to implement these AWM improvements are also being explored to facilitate private investment and improve targeting of existing government subsidies.

The **Agricultural Water Management (AWM) Situation Analysis** carried out at the end of 2009 found that nearly 70% of the population depends on agriculture. Productivity has stagnated and land has been fragmented into plots of less than 2 ha each. Better AWM to increase the productivity of small plots is key to improving livelihoods. The project found that farmers in 75% of the state rely on groundwater for agriculture but that access has been limited by state government policies such as groundwater use licensing. Electricity tariffs are also a factor as they are highest in the evening when irrigation usually takes place.

AWM project

The project is implemented by IWMI, FAO, IFPRI, SEI and IDE, with a number of partners in each country - see http://awm-solutions.iwmi.org/partnerts.aspx for more

FAO coordinates a multi-stakeholder dialogue process on AWM in close collaboration with national partners. Each country has a National Dialogue Facilitator who supports the appointed National Focal Point within the relevant government agency. Together, they ensure the events are prepared in line with country needs and preferences, receive the relevant inputs from country partners, and are effectively followed up.



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Dialogue Progress

Phase 1:
AWS
Assessment

2009 - Situation Analysis

2010
Kolkata (February)
State AWM Consultation

Kolkata (November)
Expert Consultation- Livelihood Zone Mapping

2011
Kolkata (July)
Validation- Livelihood Zone AWS potential mapping

Regional multi-stakeholder consultations
on AWM promising solutions and suitability domains

Phase 1:
Dialogue

July, Kolkata (zones14-15)
August, Cooch Behar (zones 02-03)
September, Bankura (zones 10-11)

2012
January, Hooglhy
April, Maldah (zone 4)

Phase 1:
Information
for Action

Kolkata (May)
Expert Consultation
Groundwater availability in the State

Coastal Delta, June 16-17: field visit by engineers of State Water Investigation Directorate (SWID) and Water Resources Development Directorate (WRDD) to test water quality for irrigation

Kolkata, June 18: State Level- final event to share findings and agree on next steps

Bankura, 25 June: exposure visit to rainwater harvesting structures (Hapas) organized by the NGO, PRADAN

10 Meetings at state and regional level &

Districts & Villages meetings

850 Stakeholders

KEY OUTREACH EVENTS AND THEIR ACCHIEVEMENTS

INTERNATIONAL and NATIONAL

2012

January

Learning route of the national facilitators & national focal points (Burkina, Ghana, Ethiopia, Zambia, Tanzania, India-MP, India-WB) to Madhya Pradesh to visit promising agriculture water management solutions.

March

World Water Forum, Marseille, France (presentation on small pumps ; and groundwater issues)

May

Land and water days @ FAO (presentation on small dams, presentation on individual water lifting devices, presentation on the Dialogue process in GH)

LOCAL

Planning Commission and Minister of Water Resources of West Bengal on Ag Water and Energy

September, 2011

- State Gov passed legislation that effectively reduces the cost of using electric motor pumps

Meeting with State Government on Rainwater harvesting and NREGA

April, 2012

NREGA agreed to pilot the integration of 35 rainwater harvesting ponds in its investment programme in South-24 Parganas

Production of visual materials:

a short documentary on voices from the dialogue

- webdocumentary *on key solutions for West Bengal (You Tubes)*

To discuss these research findings and inform the AWM mapping work, a series of meetings have been taking place since mid-2010; this brief summarizes this process and its findings.

Main findings from the dialogue events

TDiscussion on how to improve Agricultural Water Management (AWM) in West Bengal has been ongoing since 2010 in a series of events, especially concentrated from mid- 2011 to mid-2012. There was one initial and one final consultation at state level and five at regional level -- see box on the right. All meetings looked at what are the AWM constraints and discussed options for improvement. Project research was presented in regional events, as a basis for discussion.

This section summarizes the feedback received from participants during the various dialogue events on the feasibility and suitability of the AWM analyzed by this project, as well as financing needs and options to explore, together with investments required on information and training needs. For reference, the meeting in which a specific issue was raised is coded with the initials of the meeting -- Regional Consultation Kolkata= RC K.

At the State Consultation in February 2010, participants called for an overarching approach to promoting agriculture in their state that includes improving awareness of the water needs of various crops, the actual status of groundwater resources and financing options to allow access to existing water resources through water lifting technologies and rainwater storage.

In response to these requests, the AgWater Solutions Project carried out research on groundwater resources availability; strategies to facilitate access to it through various water lifting devices (including electrical, diesel and treadle pumps); and in the drier south western part of the country, on increasing in-situ rainwater harvesting (field bunding and other soil and water conservation techniques) and ponds and tanks for rainwater storage (ex-situ water harvesting). Scenarios for uptake of these AWM options at watershed scale were analyzed in Jaldhaka Basin in the north of the state. The suitability of these AWM options was mapped across the different livelihood zones of the state.

Water availability

Lack of water is mentioned as a critical cause for limited agricultural production. Only one rain-fed (kharif crop) or two irrigated crops are possible each year. Very few farmers are able to grow three due to lack of water, so land is left fallow during the dry period.

1. Groundwater

During all consultations, the common perception was that groundwater levels are gradually decreasing. Yet, project research findings show that due to plentiful rain, groundwater tables are easily replenished in most of the state. The Stockholm Environment Institute (SEI) watershed modeling confirmed this in groundwater availability scenarios at watershed scale, focusing on Cooch Bihar. IWMI research highlighted the constraints to accessing this water resource; rural electrification and diesel subsidies were two of the options explored.

Project findings were shared with the Agriculture University (BCKV), Uttar Banga Krishi Viswavidyalaya (UBKV) and Dept. Of Civil Engg. Jadavpur University and India Hydrologists Association (Kolkata, May 2012) research. Lack of clarity regarding groundwater recovery rates remains, and further research comparing the current rates with those of the past 10 years is needed.

In peak season in the regions, apart from North Bengal, groundwater level goes beyond centrifugal suction level; submersible pumps are then required, but their cost is too high. Contamination of groundwater with Arsenic, Fluoride and Iron is also a problem that may affect agriculture and health in the longer term in some areas (RC K, RC Cb, RC H).

2. Rainwater harvesting ponds (ex-situ water harvesting)

In the southern coastal band (RC K+ field visit to Sundarbans) and in the dryer western part (RC B), participants considered that AWM investment should be targeted to renovating existing rainwater harvesting structures (including desilting in RC B, RC M) and investing in new ones. Despite the high rainfall, it is concentrated in a couple of months, resulting in a long dry spell. This solution is also applicable in the coastal zone where the issue is that saline intrusion limits shallow groundwater use.

Regional multi-stakeholder consultations (2011-2012)

State consultation
SC1- Kolkata- February, 2010
SC2- Kolkota – June 2012

Regional consultations (RC)
July- Kolkata (RC K)
August- RC Cooch Behar (RC Cb)
September- RC Bankura (RC B)
January- Hoogly (RC H)
March- Maldah (RC M)

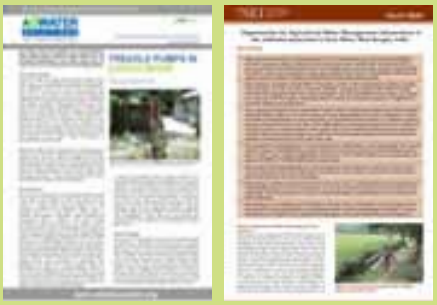
AWM Solutions briefs

Visit AWM Solutions website:

http://awm-solutions.iwmi.org/publications-and-outputs.aspx

-AWM Situation Analysis Brief
-AWM National Consultation Brief

- Agricultural Water Management Strategies in Paschimbanga: Where to Invest and How?
- Rainwater harvesting in Bankura, IWMI, AWM at watershed scale: scenarios for Jaldhaka Basin in Koch Bihar, SEI (policy brief)
- Water lifting devices: treadle pumps in Cooch Behar, IWMI (brief)
- Rural electrification to increase access to groundwater, IWMI (brief)
- Groundwater irrigation in West *Bengal, IWMI (brief)*



Building new rainwater harvesting structures is possible through communal investments to overcome the problem of small individual plots (RC K; B). MGNREGA is one financing channel suggested for this AWM option. It was very effective in Bankura district.

Where farmers are not prone to group investments, a system of rice intensification (SRI) would help to compensate for loss of land for the ponds/tanks (RC B), or growing crops that require less water (RC H): In Hoogly, it is reported that farmers have already adapted and are now growing less rice and more onion and mustard instead.

3. Field Bunding (for soil and water conservation/in-situ water harvesting)
Field bunding and other soil-water conservation options were proposed in all meetings. It was considered very relevant in Jalpaiguri and Cooch Behar due to the sloping terrain. In-situ water harvesting is proposed as a measure to increase the water holding capacity of the soil in the upper parts of the catchment (RC CB; RC B, RC M), especially for high-value crops (RC B, RC M).

MGNREGA is one financing channel suggested for this AWM option. However, similarly to Madhya Pradesh, the fact that MGNREGA only supports manual labor investments presents a problem in areas where soil characteristics would require the use of machinery (RC CB; RC B).

4. Improving water application
Interest was shown in the potential of SRI technology and in scaling up the use of drip and sprinkler systems (RC CB; RC B).

5. Renovating irrigation structures
Saline intrusion due to damaged sluice gates, especially in coastal Bengal causes severe damage to agricultural crops; these damaged sluices also cause waterlogging, damaging the kharif crop (RC K, RC Cb, RC H).

Financing AWM

6. Irrigation is costly due to the lack of private pumps, the increased cost of diesel combined with the absent or unreliable electricity supply. There is also inadequate capital to renew irrigation infrastructure. The following options were suggested to address these constraints:

- A government subsidy or loan system to purchase motor pumps.
- Better information is needed on government subsidies such as MGNREGA, combined with better performance of these schemes so that subsidy disbursement is not delayed. Low cost and environmentally friendly technologies for groundwater use, e.g., solar and electric power driven pumps.
- Add value to investment in rainwater harvesting (in-situ and ex-situ) by combining it with fish culture, duck-rearing, fruit cultivation and vegetable cultivation on bunds. This would provide incentives for investment (RC K and RC B).

7. Farming revenues are too low to allow for investment in improved AWM.

Productivity improvements are needed through:

- Technical assistance to select crops that are suited to seasonal water availability, (RC Kolkata; CB); for example, using low water consuming second crops like tori, linseed or pulses (RC B).
- Use of stronger means of plowing than power tillers or alternatives like CA techniques; (RC Kolkata; RC CB). Use of bio fertilizers and mulching in fields; better knowledge on input use (RC Kolkata).
- Improve knowledge on AWM requirements of different crops and SRI (RC CB).
- Support to landless farmers: Incentives for sustainable land management (SLM) in land leases; in its absence overuse of chemical inputs is leading to loss of soil fertility (RC Kolkata).

There is a need to improve market support by investing in roads, providing information on agricultural prices to increase farmgate prices and investing in storage facilities (RC CB, RC Kolkata).

West Bengal AWM SOLUTIONS team

The State Dialogue Facilitator is Saikat Pal, PRASARI. He is supported by Rajeev Kumar and the team at PRASARI implementing the AgWater Solutions Dialogue. PRASARI is an NGO established in 2007 working in rural development, promoting the adoption of System of Rice Intensification (SRI) as a means of improving food security amongst marginal farmers.

Good collaboration at State Level has been established with the State Water Investigation Directorate (SWID) and Water Resources Investigation and Development Department (WRIDD), with teams participating regularly in AWM Solutions Project events. Similarly, the Dept. of Agriculture has participated in all the regional workshops. The National Bank for Agriculture and Rural Development (NABARD) district heads and General Management (in charge of the Natural Resource Management Centre) have also attended various project events. Representatives from Mahatma Gandhi National Rural Employment Guarantee scheme (MGNREGA) have also been present and closer collaboration is being established.

Research to inform the dialogue process has been done by IWMI-Delhi and the Stockholm Environment Institute (SEI): Aditi Mukherji, IWMI-Delhi on sustainable groundwater use and rural electrification across the state. Ravinder P.S. Malik, IWMI-Delhi, on treadle pumps in Cooch Behar Monique Mikhail, Annemarieke de Bruin and Devaraj de Condappa, SEI on Watershed Assessment, focusing on Jaldhaka watershed in Cooch Behar.

The Project Ambassador for India is P.S. Vijay Shankar, founding member and director of research at Samaj Pragati Sahayog (SPS), and Mr. Manas Satpathy, Professional Assistance for Development Action (PRADAN), an NGO established in 1983. PRADAN works with rural communities to build sustainable livelihoods in seven of the poorest Indian states. They offer technical assistance on livestock, land, water and forest management and mobilizing finance to support the development of self-help groups and micro-enterprise development.

Information for action

The State Dialogue Facilitator and the research team are continuously engaging with State AWM Authorities on a series of issues, such as the limitation of groundwater use with the State Water Investigation Directorate (SWID) on the Department's policy and on the limitations of the current licensing process for rural electrification for irrigation with West Bengal State Electricity Distribution Company Limited (WBSEDCL) (September 2011). Subsequently the State Government passed legislation that effectively reduces the cost of using electric motor pumps:

- As of 9 November 2011, farmers with pumps up to 5 HP and water discharge of up to 30 m3/hour will no longer need a State Water Investigation Directorate (SWID) certificate. This was identified, by the AgWater Solutions Project, as one of the most important impediments to access groundwater by smallholder farmers. This bill was passed on 9 November 2011.
- The electricity department will now provide farmers with electricity connections upon a payment ranging from INR 5,000 to INR 30,000 depending on HP of the pump. Earlier, each farmer was given an individual estimate that covered costs of wires, poles and transformers and the average estimate varied from INR 75,000 to INR 200,000.

In April 2012, project team met with State Government on rainwater harvesting and MGNREGA. PRASARI, was successful in securing funding to pilot the construction of "five-square" rainwater harvesting structures, one of the AWM Solutions explored in the State. The piloting commenced in April 2012 with initial funding for 35 structures in South-24 Parganas District under the MGNREGA program, which was also examined by the project as a mechanism for upscaling AWM Solutions in India.

In February and March 2012, Jalpaiguri District Authorities and Panchayet (Gram Panchayet and Block Panchayet Samity Level) were informed about the need to raise awareness for NREGA investment in "permissible works predominantly include water and soil conservation, afforestation and land development work" as in the program's guidelines but rarely considered for implementation.

Information was brought up the national level to inform strategic planning with a first meeting the 11 April 2012 with the Planning Commission and the project ambassador on project findings and then on 19 June with also four Secretaries from GoWB (including Addl.Chief Secy). The Planning Commission was given a list of names of people involved in the latest groundwater estimation (2008-09) and were invited to a joint field visit along with the team (IWMI, PRADAN, PRASARI) was proposed.

The project came to an end. A final event in Kolkota the 18 June shared findings, finalized main messages and plans for mainstreaming into policy and partner investments.

Outreach and awareness

Raising awareness also takes place with informal groups such as water user groups, farmers' clubs and self-help groups, through village meetings and dissemination of information leaflets; informal platforms like Self-Help Groups, Farmers' clubs and water users group participating in the AWM seminars at village level. Information leaflets have been distributed on the basis of findings from the workshop and field validation in their regions.

AWM seminars were held at the State Agriculture Universities (BCKV and UBKV) have been held, and will follow with the Farm Science Centers/Krishi Vigyan Kendra (KVKs) of ICAR.

Representatives of the investors and donor agencies in the state were briefed on the project's findings: Tata Trust, Trickle Up International, TDH (Swiss), NABARD, and 12 international investors from EBTC (European Union Initiative) were present for a formal discussion on investment opportunities in support of smallholder farmers in West Bengal.

Project findings have already been shared in private audiences with high-level decision makers in WRIDD, SWID, Irrigation & Waterways, P&RD (with an emphasis on NREGA) and Agriculture as well as District Heads (DM and Sabhadhipati-Zilla Parishad) of districts viz; Jalpaiguri, South 24 Parganas, Malda, and North 24 Parganas.

Field visits are important to learn together and demonstrate results.

- Coastal Delta, June 16-17: Field visit by engineers of State Water Investigation Directorate (SWID) and Water Resources Development Directorate (WRDD) to test water quality Bankura, 25 June: Exposure visit to rainwater harvesting structures (Hapas) organized by the NGO, PRADAN. The State NREGS cell including the commissioner along with 10 Nodal officers from other districts visited the place. They are too convinced to invest on RWHS under NREGS in different districts.
- for irrigation

Mapping for Dialogue and decision Making

Maps can help stimulate discussion and visualize where to invest. The basis for the AWM potential mapping is the livelihood context (biophysical and socioeconomic determinants), captured in the Livelihood Zones (Map 1) through an iterative consultation, data gathering and desktop analysis process. The livelihoods context combined with hypothesis on conditions for success for AWM development allows to identify the "AWM Potential": areas where water constraints are a major factor affecting smallholder livelihoods and where AWM can be the entry point to boost the livelihoods of farmers (Map 2, in percentage of rural population; in dark green where there is higher potential).

Map 3a shows the biophysical suitability for on-farm rainwater harvesting ponds the south west and east. This is due to rainwater availability, limited groundwater, presence of impermeable soils. and proximity to markets, which provides an incentive for farmers to invest in building a pond. The Map 3b shows the livelihood base d demand where you have marginal farmers with enough lands to build a pond and the areas where groundwater is at risk to be depleted.

Mapping livelihoods and AWM potential reports

- Country Investment Brief. 2012. http://www.fao.org/nr/water/docs/Investment_Brief_West_Bengal.pdf
- Report Livelihood zones analysis, 2012. http://www.fao.org/nr/water/docs/WB_LZ_analysis.pdf

Map 1

Map 2

Map 3a Map 3b