AGWATER SOLUTIONS
Improved livelihoods for smallholder farmers

Ethiopia
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 on 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 Ethiopia, less than 10% of the land that could be irrigated is taking advantage of this possibility. In 2009, an AWM Situation Analysis was conducted to identify a range of AWM options that could help improve this situation. This review identified options that are technically feasible, affordable and practical for smallholder farmers in the different livelihood zones to adopt. These were discussed during the National Consultation in November 2009 and the most promising were:

- **Nationwide** – river/stream diversion; irrigation with groundwater; river/lake pumping.
- **Hyperarid** areas – tanks (storage); irrigation with groundwater; watershed management (gulley reclamation).
- **Arid** areas – irrigation with groundwater; in-situ water soil conservation; river diversions; small reservoirs.
- **Semiarid** areas – small reservoirs; irrigation with groundwater; river diversions; pond systems; spate irrigation.
- **Moist-humid** – river/stream diversions; river pumping; watershed management (gulley reclamation) and shallow ground water.

Research and dialogue exchanges focused on increasing water availability through integrated watershed management and water storage in small reservoirs. Increasing the use of groundwater, where it is available, is also being explored. To increase

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.

Ethiopia AgWater Solutions team

The National Focal Point is Dr. Hune Nega, Natural Resource Management Directorate (NRMD), Ministry of Agriculture.

The National Dialogue Facilitator is Girma Medhin, independent consultant.

Project research has been coordinated by Dr. Gebregziabher Gebrehawaria (IWMI-Ethiopia) who lead in particular the case study on water lifting technologies; on watershed management (including water harvesting ponds, micro-dams and soil and water conservation) by Mekelle University; and on Manual Well Drilling by iDE.

The AgWater Solutions Ambassador is Prof. Nuhu Hatibu, Chief Executive Officer of The Kilimo Trust (Uganda) and Bancy Mati, the founding regional coordinator of the Soil and Water Management Network for East, Central, and Southern Africa.

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Dialogue Progress

2009 - Situatio Analysis
Addis Ababa (November)

State AWM Consultation

2010
Mekelle (August)

Technical Seminar on Small Dams

Addis Ababa (September)

Expert Consultation- Livelihood Zone Mapping

2011
Addis Ababa (July)

Validation- Livelihood Zone AWS potential mapping

***Regional* multi-stakeholder consultations**

on AWM promising solutions

August

- Sebeta, Oromia
- Hawassa, SNNP

September

- Baheridar, Amhara
- Mekelle, Tigray

Expert technical consultations, Addis Ababa

- Groundwater mapping and shallow well development (March)
- Water Lifting technologies- making them accessible and affordable (April)
- Watershed management (April)

2012

Addis Ababa, June 19- Final workshop to agree on next steps

13 Meetings

400 Stakeholders + Many more

Interviewed or reached out

OUTREACH ACTIVITIES

REGIONAL and INTERNATIONAL

2011

November

ICID regional conference in Bamako (presentation on motor pumps)

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 ET)

June

Exchange visit of Burkina Faso National Focal point rep/ to Ethiopia.

LOCAL

2012

February

Exposure visit on AWM to Self Help Africa's (NGO) program site in Sodo,

January and March

AWM findings mainstreaming- Meeting with Agricultural Transformation Agency (ATA) in Addis Ababa

Achievement: launching a country-wide survey to map groundwater

May

Exhibition of water lifting technologies in Ziway

August

Radio progran on agricultural water management

water access, options to expand the use of low-cost water lifting technologies, such as manual and motor pumps, were also discussed. Findings centred on the need to lower costs, improve access to finance to purchase pumps and to markets to enable quick repayment.

Main findings from the dialogue events

Discussion on how to improve Agricultural Water Management (AWM) in Ethiopia has been ongoing since 2009 in a series of events, especially concentrated from mid-2011 to mid-2012. The Dialogue started with an initial consultation at state level and was intensified with five at regional level – see box on the right. All meetings looked at what the AWM constraints are and discussed options for improvement and their suitability in the territory. Project research was discussed in the events from 2011.

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 in Amhara= RC A.

Water availability

Ethiopia is endowed with a substantial amount of water resources. The surface water resource potential is impressive, but little developed. The following issues were raised in the debates.

- Insufficient knowledge of where groundwater is available and where salinization could create problems, for example in Abrha Atsbaha watershed in Tigray where there is intensive irrigation (RC T). More research is needed in such locations.
- Mapping the potential areas will facilitate work in this area (RC A).
- The quantity of water available in ponds is usually insufficient for motor pump use (RC A).
- Competition for water exist between farmers in the upper and lower parts of watersheds (RC T).
- Water is sometimes only available far from cultivated land or in an inconvenient location to allow its use (RC T). Efficient water application: drip irrigation adoption rate is affected by high labor requirements, product availability and high prices. Only small drip systems are available and they are not flexible for people with different land sizes. Most farmers who were supplied with family drip did not make effective use of the technology (RC T).

Discussions on, the Mekelle University study on watershed management programs, showed agreements that community-based initiatives work best and that water allocation responsibility should be devolved to avoid conflict and ensure fair sharing of surface water and groundwater (RC S).

Pump availability

AgWater Solutions research on water lifting technologies (WLTs) found very high demand for motorized water pumps – about 85% of the respondents in the survey are aware of the technology while only about 29% use the technology indicating that the issue is not lack of awareness or exposure but rather inability to adopt.

Major obstacles to adoption discussed during the dialogue events were:

- Frequent breakdown, insufficient supply of spare parts; and poor maintenance services are all problems (RC A, RC S, RC T).
- There is a mismatch between the number of pumps imported into the country and adoption rates, probably due to illegal imports from Sudan that are not registered (RC T).

Proposed investment options

IWMI research on WLTs proposed a solution: establishment of enterprises in which graduates of Technical Vocational Educational Training (TVETS) import and distribute pumps and provide spare parts and services, as well as the collect and market agricultural produce. If this is to happen it is possible that entrepreneurs would gradually move towards assembling pumps locally and even manufacture them.

National multi-stakeholder consultations (2011-2012)

NC1-First National Consultation (November 2009)

NC2-Final National Consultation (June 2012)

Regional Consultations on AWM options

August 2011

RC S - Sebeta, Oromia Region

RCH - Hawassa, SNNP Region,

September 2011

RC A - Baheridar, Amhara Region

RC T - Mekelle, Tigray Region

National Technical Brainstorming Workshops

TBW 1- Small reservoirs- sharing of early findings of IWMI research , Mekelle (Tigray), May 2010

TBW 2- Groundwater mapping and shallow well development (March 2012)

TBW 3- Water Lifting technologies-making them accessible and affordable (April 2012)

TBW 4- Watershed management (April 2012)

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- AWM Situation Analysis in Ethiopia, 2009
- AWM National Consultation, November 2009, Addis Ababa

- There was concern in the meetings in Oromia and SNNP regions that this solution could lead to a monopoly. The participants suggested focusing on improving the performance of existing institutions rather than creating new institutions. The project team clarified that the TVETS model would be an additional investment in parallel with enhancing the efficiency of existing situations.
- Another concern was that combining the input and output chains would be too large an endeavour (RC T).

Pump affordability

Pump prices are high and farmers fear that it may not be worth the investment but participants suggested that pumps could be initially subsidized and once small enterprises are supported and linked to markets there would be no reason for failure. There was consensus on the importance of addressing the whole chain from the supply of the technology to product marketing (RC S).

Motor pump prices are high due to:

- Different government taxes (VAT, surtax, etc.), which constitute about 38% of pump prices. It is suggested that that the reduction of tax on imported water pumps should only be considered an interim solution to avoid discouraging local manufacturing of pumps (RC S).
- Pumps are sold mainly via brokers without whom the prices would go down; private-sector engagement will be key to increase supply and competition to reduce prices and allow for widespread adoption (RC S).
- Access to credit is constrained.
- Operation costs are high, especially fuel, (RC T; RC A; RC S) and infrastructural costs to access water such as shallow wells and ponds.

Treadle pumps were proposed as low-cost options (RC S) but it was noted that:

- Experience shows there were some efforts to introduce treadle pumps but many of them remained unsold. Where they were introduced there were tendencies of abandoning them because only small areas could be irrigated as they were labor-intensive. Experiences with low quality treadle pumps and lack of manufacturing standards has also negatively affected wider adoption.
- Other obstacles were: lack of shallow groundwater, poor pump quality and high labour requirements. Yet iDE trials on suction pumps, rope and washer, as well as treadle pumps that have been modified to suit local conditions are showing highly promising results. It was also noted that motor pumps should not be considered sophisticated technologies beyond the comprehension of farmers but one should carefully consider under which specific conditions they will help to make small-scale farmers profitable (RC T).
- Famers should be offered a range of WLT's options (manual and motorized) to choose from.

Pump profitability: Improving returns on investment in irrigation

Farmers cannot benefit from their investments in WLTs due to lack of direct access to markets which exposes them to exploitation by middlemen or to losing their crops. As a result:

- Farmers continued to grow staple crops rather than developing high-value crops. Technical support and advice on the best cropping patterns are needed (RC A).
- Market for irrigated products is not always there and farmers receive a low price for their crops (RC T).
- Crop diversification stays limited, mainly around cities where there is a guaranteed market and infrastructure to bring the crops.

The AgWater Solutions' WLTs study revealed an increase in yields from irrigation with a motor pump when compared with rain-fed production but it was noted that this does not account for the increased costs of irrigating in this way (pump and fuel costs) and that would be important for farmers' decision to invest.

Watershed Management

Discussions on the Mekele University study on watershed management programs concluded that community-based initiatives work best as demonstrated by the study.

Case studies & piloting

IWMI and Mekelle University AWM Research

- Small reservoirs (cross-country)
- Water lifting devices (range of options of pumps)
- Watershed assessment (water harvesting; micro-dams; soil and water conservation)
- Abandoning Rainwater Harvesting Technology: the case of Ethiopia
- Groundwater exploitation feasibility
-

iDE and MoA AWM Piloting

- Manual well drilling
- Farm water storage

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).

Mapping reports

Report Livelihood zones analysis, 2012. http://www.fao.org/nr/water/docs/ETH_LZ_analysis.pdf

Country Investment Brief. 2012. http://www.fao.org/nr/water/docs/Country_Investment_Brief_Ethiopia.pdf

While, in the past, experiences involved large watershed sizes which ranged between 10,000 and 50,000 ha, smaller watershed sizes are appropriate from the management point of view, the smaller watersheds need to be integrated systematically for better impact. However there are no institutional arrangements other than the woreda backup to care for the integration.

Factors that determine success in watershed management span from the physiographic to geological formation. The national participatory watershed development guideline can be enhanced in this respect and this requires action on the part of the MoA and other Sustainable Land Management (SLM) stakeholders.

Outreach activities and Achievements

Exposure visits

In February 2012 project site visits were made to Self Help Africa's (SHA) program site in Sodo. It was learnt from the visit that some of the simple water lifting technologies could be effectively used to enhance water for irrigation as well as for domestic use. The challenges of variability in groundwater require however the attention of government as well as other development actors. SHA has benefited from the AWM dialogue by getting useful information on a wide spectrum of simple WLTs and also on watershed development.

Awareness activity on water lifting devices for small holders

In May 2012, an exhibition on water lifting technologies gathered 120 policymakers and farmers to show and test devices available on the Ethiopian markets and in the selection of the range to be proposed for fairs and for demonstration.

The event took place in Ziway and was targeted at different stakeholders groups, in particular implementers and NGOs about WTL characteristics with relevance for different situations to help in the choice of technology.

Stakeholder engagement in all events is being monitored closely to tailor information on AWM options specifically to raise interest and inform decisions of key stakeholders. This includes a monthly presentation at the donor partner group on the project findings.

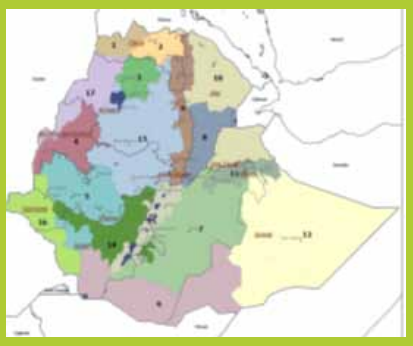
Awareness activity on watershed management and water storage/ capture options for smallholders

It was recommended to engage technical experts in the review of assessments and guidelines on watershed development (the national watershed development guidelines were prepared a few years back) and in particular the component aiming at water harvesting. Such a workshop would produce a technical catalogue of storage/capture options (in particular water harvesting) targeted at farmers, agro-pastoralists and pastoralists, technical services and revised guidelines for construction of water harvesting systems. In parallel to these activities, cooperation is strengthened with the Nile Basin focal project (Challenge program on water for food) that is managing stakeholders' platforms at national and local levels as well as preparing a documentary on rainwater management in the Nile Basin.

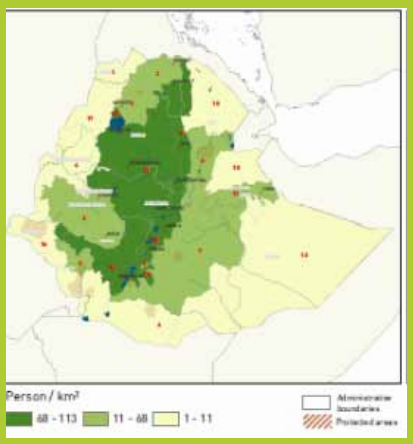
The final event held on 18 June 2012 in Addis Ababa presented the project findings to key stakeholders and gathered the AWM community with the Ministry of Environment, FAO, IWMI, iDE, as well as the main stakeholders interested in AWM. It was an opportunity of the importance to continue the process and work on small-scale irrigation led by the Ministry of Agriculture with FAO and IWMI. There is a strong opportunity for building synergies with the new Agricultural Transformation Agency (ATA) to take some of the processes forward. The event has also created opportunity to link to the Nile Basin Development Challenge program (NBDCP) to ensure continuity of efforts.

Map 3 shows the biophysical suitability for small pumps. This is due to availability of surface or ground water and proximity to markets, which provides an incentive for farmers to invest in pumps.

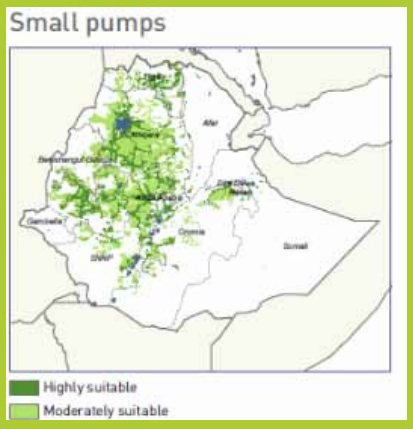
Map 1 – Livelihood Zones



Map 2 – AWM potential beneficiaries (persons / km^2)



Map 3 - biophysical Suitability for small pumps



Photos: Domitille Vallée