

How women's access to small reservoirs can improve household livelihoods in northern Ghana

Results from the 'Supporting investment decisions in water and land management across the rural-urban continuum in the Volta - Niger focal region' (Invest in Water) project

Research team: Bedru Balana, Richard Appoh, Paulina S. Addy, Gideon Ashitei, Elsie Odonkor, Fred Nimoh



Women's focus group discussions in Winkogo community, northern Ghana. SOURCE: IWMI, 2015-11-02

KEY MESSAGES

- Invest in the creation, rehabilitation and maintenance of community based small reservoirs
- Support the development and use of gravity-based small reservoir schemes which are more accessible to women
- Include women more in the planning, implementation and ongoing management of small reservoir development projects
- Provide more opportunities for women smallholder farmers to access credit

Communities in northern Ghana are among the poorest and most food insecure in the country. Around 74% are employed in agriculture and 62% of households are smallholder farmers. Women play a critical role as primary producers of nutritious food such as leafy vegetables on small plots of irrigated land (around 0.1 ha) and staple food crops such as maize and millet. In areas such as these, agriculture, when driven by investment in small holder production systems, is recognized as the single most important pathway out of poverty. So how can small holder production be improved and increased to ensure greater food security and improved household incomes? What social or financial

investments need to be made to secure these benefits? Effective and inclusive irrigation systems, based on small reservoirs which are more accessible to women, may hold the key.

Without irrigation there is very limited economic activity outside the rainy season in many rural communities in northern Ghana. Farmers rely heavily on rainfall which is generally available for 5-6 months of the year followed by a long dry season of around 6-7 months. Between 80-85% of annual rainfall occurs in just three months (August to October) and many tributaries of the White Volta River dry out during the dry season. Large scale irrigation and water storage infrastructure such as deep

wells, requiring heavy water lifting labor or expensive pumping equipment, favor access by men in a variety of ways. So what options are there that would equally favor women's multiple water needs in ways that would improve both food security and household incomes?

Small reservoirs, as functioning fresh water ecosystems, can provide multiple ecosystem services to humans and the environment. They provide access to water for multiple uses including small scale irrigation, watering livestock, fishing, household needs and construction which help to generate employment opportunities, promote local entrepreneurship and livelihood

DEFINING SMALL RESERVOIRS

Small reservoirs are artificially-created aquatic ecosystems. The World Commission on Dams defines small reservoirs as “a structure that has a height less than 15 meters and a storage capacity that ranges from fifty thousand to one million cubic metres”. Defining small reservoirs by volume, height, irrigated area, type of infrastructure or mode of management, however, can be very site and situation specific and is often not easily comparable. For example, most reservoirs in Burkina Faso are large but very shallow with seasonal variations so storage capacity is not taken into account in the same way as for reservoirs in other locations. Small reservoirs often use small dams to harvest and store water that doesn't get quickly absorbed into the soil or evaporate after rains, for example from small streams.

They are often managed by Water User Associations and can serve up to 2,500 people (around 400 households). In Ghana there are estimated to be more than 1000 small reservoirs with irrigation potential, around half of these are in the north. Burkina Faso, Ivory Coast and Mali similarly have quite high numbers of small reservoirs.

diversification for women, the poor and the youth. They also provide important environmental functions that support ecosystems and wildlife. So investment in small scale water infrastructure, such as these, that enable easier access by smallholder farmers, particularly women, is a key strategy for enhancing livelihoods and food insecurity.

Methods and approach

Participatory approaches such as a series of focus groups and key informant interviews were conducted in the Upper East Region, northern Ghana, to identify ecosystem services provided by small reservoirs and to prioritize their relative importance. The series of field work activities including focus group discussions were conducted with men and women separately in the six project

communities: Kamega, Binaba, Winkogo, Pusu Namogo, Navrongo and Kajelo (see map).

These aimed to:

- identify and assess the multiple ecosystem services and dis-services (negative effects) communities receive from small-scale water infrastructure
- assess changes in the resource base and flow of ecosystem services over time
- understand adoption barriers to agricultural water management (AWM) interventions, especially for women
- evaluate the local management challenges of, and opportunities for, multi-purpose small reservoirs

Men and women, representing farmers with direct use of a small reservoir,

were selected from each community to participate in the focus group discussions. Many of the over 200 people who participated combined farming with other economic activities such as trading, carpentry, masonry and labor. Each discussion began with a short presentation on the aims, and was facilitated and recorded by moderators.

Results and conclusions

Small reservoirs have a number of positive impacts on the overall wellbeing of residents in the communities that have them, such as improved nutrition and hygiene, increased income, and reductions in out-migration.

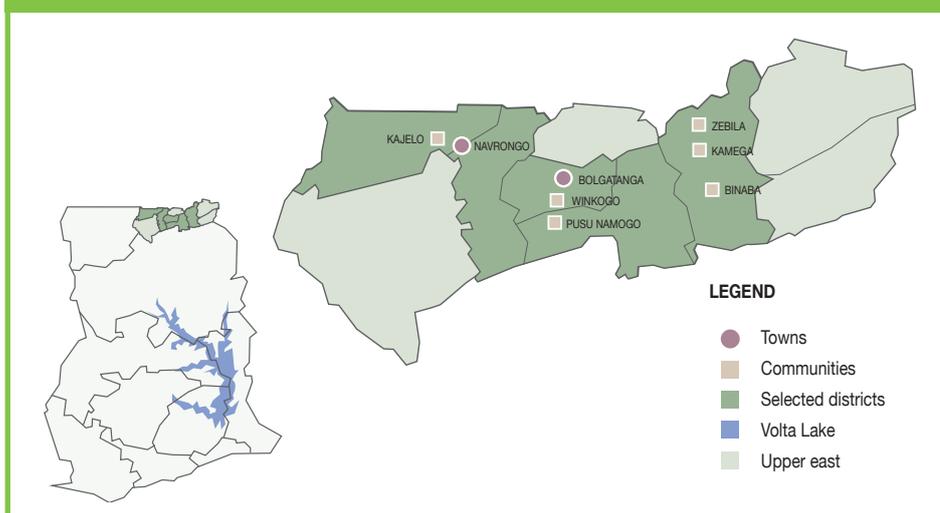
Participatory identification of ecosystem services and negative impacts

All focus groups identified dry season irrigation, livestock watering, and fishing or aquaculture as major ecosystem benefits obtained from small reservoirs. Availability of water for domestic use and for building and plastering houses, as well as fruit obtained from trees around the reservoir, were also identified by some groups as important ecosystem benefits. The most common negative impacts identified across groups were mosquitoes and people, especially children, drowning in the reservoirs.

Ecosystem service importance ranking

Provisioning ecosystem services connected with incomes and livelihoods (ie. the products obtained from ecosystems, including irrigated crops, water for livestock, fishing/aquaculture, domestic water and water for building were generally prioritized over socio-cultural or ecologically linked services. The perceived value of ecosystem services increased with an increase in the relative contribution of these services to household income and food security. For example, vegetable production in the dry season, was highly ranked across all communities because of the greater cash value these products offer in local and regional markets.

MAP OF THE STUDY AREAS: SIX COMMUNITIES IN THE UPPER EAST REGION, GHANA



Ways in which small reservoirs support women farmers

The availability of small reservoirs close to home reduces the time required for activities such as fetching water. Time saved can be spent on other more productive and developmental activities, such as crop production and education. Women in the focus groups prioritized domestic water supply as an important use of small reservoirs. Small reservoirs give women, and others in the community, the opportunity to farm during the dry season, and their proximity to the community itself boosts the supply of fresh vegetables improving both food security and household nutrition.

The livelihoods of women farmers in communities with small reservoirs are dominated by the production and sale of vegetables and fish in the dry season, as women increasingly adopt these activities. Small reservoirs provide a year-round supply of water, allowing farmers to irrigate their crops during both the dry and wet season (if required), thereby making a considerable contribution to income generation. A survey of 16 small reservoir sites in Ghana, for example, indicates that a woman farmer practicing dry season irrigated agriculture can generate on average an additional net income of USD 350 per year. The potential to generate this additional income is lost however if women's access to, or use of, a small reservoir is limited or if other factors are lacking such as access to credit, agricultural inputs (seeds, pesticides and fertilizers), or

post harvest infrastructure such as crop storage facilities. Because communities with small reservoirs retain opportunities for productive dry season farming their presence reduces the migration of women and young people to southern Ghana in search of work.

Small reservoirs – management issues

Many small reservoirs in northern Ghana were constructed over 20 years ago, and very few have a functioning management system. Therefore, most are not managed properly and are no longer working effectively due to siltation or dilapidated and unmaintained water distribution and drainage structures. Siltation has drastically reduced the storage capacity of most of the small reservoirs assessed in this study. Farmers have had to resort to pumping from reservoirs designed to distribute water by gravity, or have dug wells around the reservoir due to severe siltation in the water distribution canals.

Policy implications

Currently, small reservoirs are underutilized in northern Ghana but a high potential exists for improved use of these multi-purpose water resources.

Invest in the creation, rehabilitation and maintenance of community based small reservoirs

Foster an environment, in partnership with the private sector and local Water User Associations (WUAs), where investment in the creation, rehabilitation and

“Previously, this community became a ghost town during the dry season, but now no more. The youth no longer migrate to the south in search of work. This small reservoir has really helped us. Though the plot size is small and keeps getting smaller, it has helped to put a stop to this annual migration of our people to the south.”

(Lead farmer, men's focus group, Navrongo community)

maintenance of small reservoirs is more effectively supported. This would improve water availability for both domestic purposes and dry season farming, leading to household benefits such as better incomes and improved nutrition.

Provide more opportunities for women smallholder farmers to access credit

Research shows that women are significantly more credit-constrained than men in northern Ghana. Policies and initiatives that create more preferential and targeted opportunities for women to access credit will greatly improve their ability to farm productively, especially during the dry season.

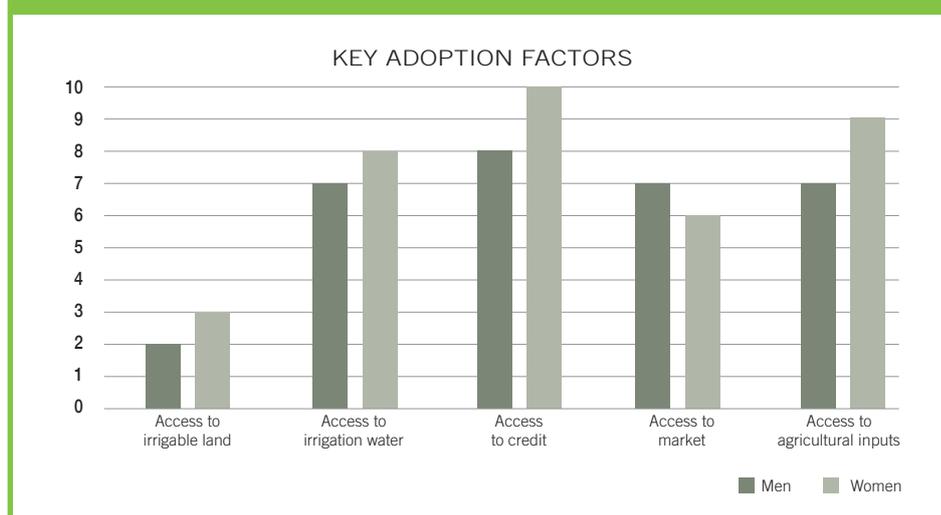
Support the development and use of gravity-based small reservoir schemes which are more accessible to women

Community surveys reveal that small reservoirs were more accessible to women for multiple purposes including small-scale irrigation and livestock watering. So policies and programs that support the use of gravity-based small reservoir irrigation schemes,

PARTICIPANTS IN NAVRONGO RANKING ECOSYSTEM SERVICES IN ORDER OF IMPORTANCE TO THEM. SOURCE: IWMI



GENDER-DIFFERENTIATED ADOPTION CONSTRAINTS IN THE USE OF SMALL RESERVOIRS IN NORTHERN GHANA





SMALL RESERVOIRS IN THE UPPER EAST REGION OF GHANA SHOWING (LEFT TO RIGHT) SILTATION, DYSFUNCTIONAL DISTRIBUTION CANALS AND DAMAGED IRRIGATION PUMP PIPES. SOURCE: BEDRU BALANA

that are more accessible to women, would encourage them to adopt high value, market-orientated cash crop farming in the dry season. This could significantly improve household incomes and nutrition.

Include women more in the planning, implementation and ongoing management of small reservoir development

Inclusion of women in planning and implementation of small reservoir development projects helps to ensure they meet women's multiple water needs. Finding innovative ways to involve women in the management of small reservoirs, and have their views represented in the decision-making process, helps them guide activities that enhance food security and household incomes.

A quota system where a number of seats on a community's WUA executive committee are reserved exclusively for women, could be one approach. The links between participation in WUAs and land ownership need to be loosened to allow women, and others who don't own land but who participate in farming using water from small reservoirs, to participate in water resource decision making.

Further information and references

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CGIAR Research Program on
Water, Land and Ecosystems

International Water Management Institute (IWMI)
127 Sunil Mawatha, Pelawatta, Battaramulla, Sri Lanka

Email: wle@cgiar.org
Website: wle.cgiar.org

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