



## IWMI Recommendations for Priority Action in the Dry Zone of Myanmar

### Introduction

Variability in water resources and insufficient capacity to manage that variability lies behind much of the prevailing poverty and food insecurity in the Dry Zone of Myanmar. Water scarcity, not just for agriculture, but also for domestic use, is a key constraint to livelihoods and peoples' wellbeing. Flooding also negatively affects livelihoods and economic development. The International Water Management Institute (IWMI)<sup>1</sup> was commissioned by the Livelihoods and Food Security Trust Fund (LIFT) to work with national partners to undertake a rapid review of access to and management of water resources in the Dry Zone, to assist LIFT and other potential donors and investors to identify the key issues and the priority actions for water management. The study had three main components:

- A water resources assessment (surface and groundwater) of availability, current use, and patterns, trends and variability at different spatial and temporal scales.

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<sup>1</sup> IWMI is an international research center of the Consultative Group for International Agricultural Research (CGIAR). IWMI is a non-profit organization with a staff of 350 and offices in over 10 countries across Asia and Africa and its HQ in Sri Lanka. IWMI's Mission is to improve the management of land and water resources for food, livelihoods and the environment. IWMI's Southeast Asia Regional Office (in Lao PDR) took the lead on this study in the Dry Zone of Myanmar.

- Community survey to evaluate issues of water availability, access and management for different livelihood types in 24 local communities, including evaluation of institutional arrangements in relation to farming strategies and water management practices
- Review and analysis of existing program investments in water in the Dry Zone

Feedback was sought from key stakeholders in consultation workshops at the beginning and end of the project. The research provided insights into the links between water related issues and livelihoods. Findings from the study are available in three reports (for details, see below).

## Recommendations

The heterogeneity of the Dry Zone in terms of physical environment, farming systems, access to water, and infrastructure means that there are no blanket solutions: the details of water-related interventions must be shaped with each community. It is important that water interventions are embedded into broader village livelihood strategies and take account of the full range of uses, rather than focus solely on domestic or agricultural supply separate to other needs. There is good understanding of issues and potential solutions within local communities and agencies: the need is not so much for new technologies, but for approaches to support implementation, and refine and target known technologies.

## Review Formal Irrigation Schemes



The effectiveness of existing formal irrigation is often low, due to a complex mix of physical, technical, policy and institutional challenges. Before engaging in major rehabilitation programs or construction of new irrigation schemes, an assessment is needed of the issues constraining current schemes and the relative effectiveness of different modes of irrigation (gravity-fed reservoir schemes, pumped irrigation projects, groundwater schemes) in terms of water and energy productivity as well as impacts on yields, farm incomes and livelihoods. This assessment is needed at two levels: comparison across existing large schemes; and community based analysis of requirements for and outcomes of irrigation at village level.

There is also the potential to work with the government to clarify how policies relating to irrigation and water resource management align with broader rural development objectives. An analysis of the overall effectiveness of irrigation investments in the Dry Zone to date would provide a wealth of information to policy makers and planners as well as for future programs.

## Support Groundwater Interventions



Groundwater was assessed as a moderate resource that, whilst extremely important for the Dry Zone, must be planned and developed carefully if it is to sustain communities in the long term. Groundwater investment should focus on two areas: securing village (including domestic) supplies using tube wells; and supporting development of small-scale supplementary irrigation. Deep tube wells provide reliable, high quality water in all seasons for domestic use, with benefits for the whole community. Farmers are already adopting groundwater irrigation using shallow tube wells in a

range of contexts. It is likely that an additional 110,000 to 330,000 ha of groundwater irrigation could be sustainably developed. A mix of technical and financial support is needed to overcome the hurdle of high establishment costs associated with installing tube wells and irrigation pumps. The first step is to identify priority areas for groundwater use based on availability and quality. Business models to assist communities to install and operate village pumps or small-scale ground water irrigation could be jointly developed with private investors, farmers, and village water committees. Microfinance, loans programs, and agronomic extensions can be provided to communities ; and investors can work with NGOs to develop and market appropriate and affordable pumps and equipment.

## Invest in Small Reservoirs for Rainwater Harvesting and Storage

Small reservoirs to store rainwater emerged as one of the preferred investment options to improve water supplies for villages in much of the Dry Zone. They are a simple, proven technology that has been useful in the past, especially to increase access to water for drinking, domestic use, and livestock.. However, type, design, and sitting of such reservoirs are very specific to each location. They can be expensive to construct and require on-going maintenance to remain effective and efficient.



There is potential to scale up existing projects to construct and/or renovate village ponds and small reservoirs which are being implemented by NGOs including ActionAid, Proximity, and ADRA. Prior to scaling up, a review is needed of the suitability and lifespan of current structures, maintenance requirements, and economic analyses of costs of construction, renovation, and maintenance. Technical support and guidelines could be provided to improve design. To protect inflows and water quality, watershed management programs in catchment areas of reservoirs could be initiated. It is also important to involve village communities and district/locl governmnetn agencies in planning, constructing, and managing village resevoirs.

## Pursue Soil and Water Conservation

Soil and water conservation (SWC) programs are important to help reduce and repair land degradation; to protect infrastructure from sediment damage; and to manage water at both field and watershed scales. SWC techniques enhance infiltration and water retention in the soil profile, stabilizing and increasing crop yields. One way to implement such projects is to provide information on conservation techniques for farmers with possible subsidies and incentives. On a larger scale, local workers can be trained and employed to incorporate watershed management techniques when constructing and rehabilitating ponds in villages. It is important to coordinate soil and water conservation efforts with government agencies in order to initiate watershed management programs across larger areas and to develop mechanisms to motivate communities to participate.



## Strengthen Water Resources Planning and Information

A comprehensive strategy is needed at all levels to guide future water resource development. This is the domain of the government, but targeted inputs could support this process. One approach would be to improve the management of water-related data by establishing centralized databases, held by the appropriate departments of government ministries in Nay Pyi Taw, and encouraging cooperation between governmental and non-governmental organizations. Continued development of groundwater without an assessment of the available resource runs the risk of lost investment through over-exploitation and inappropriate siting of wells. A comprehensive resource assessment would provide the basis for a strategic approach to groundwater development, as well as operational information for drilling of wells.

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**For the full project reports:**

**Component 1:** <http://publications.iwmi.org/pdf/H046133.pdf>

**Component 2:** <http://publications.iwmi.org/pdf/H046134.pdf>

**Component 3:** <http://publications.iwmi.org/pdf/H046135.pdf>

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