CGIAR Challenge Program on WATER & FOOD Nile

Brief 9

Rainwater management for resilient livelihoods February, 2012

Evolving Nile Basin research: From livestock-water to rainwater management solutions

Globally, the agricultural sector is one of the largest users of water resources; Pressures on this limited resource can be exacerbated by increasing water demand to feed people and animals, and by climate change.

This brief explains how water-focused research in Ethiopia by the International Livestock Research Institute (ILRI) and the International Water Management Institute (IWMI) has evolved over the past 8 years. It started with research on livestock-water linkages during CPWF Phase I (2004-2008), continued through further analysis of crop-livestock production systems within a BMZ-supported project on water productivity in crop-livestock systems (2007-2009), and now has a broader rainwater management (RWM) focus on landscapes and the institutional linkages needed to achieve change through the Nile Basin Development Challenge (2010-2013).

We have seen the research agenda move from water productivity to crop-livestock-water system productivity that strives for an optimal balance in allocating water resources for crops and livestock.

Why these changes?

Initially, it does not look very complicated to understand the relationship between water and livestock. Like all living things, animals drink water, they consume fodder and feed (containing water) to survive and to produce livestock products and services. The bombshell appeared in 2006 with the publication of an FAO report - 'Livestock's Long Shadow –Environmental Issues and Options.' This disproportionally identified livestock as one of the major causes of water depletion and greenhouse gas emissions. The debate on how much water is used by livestock to produce a liter of milk or a kilogram of meat became a global issue. It further attracted the attention of environmental groups and politicians worldwide.

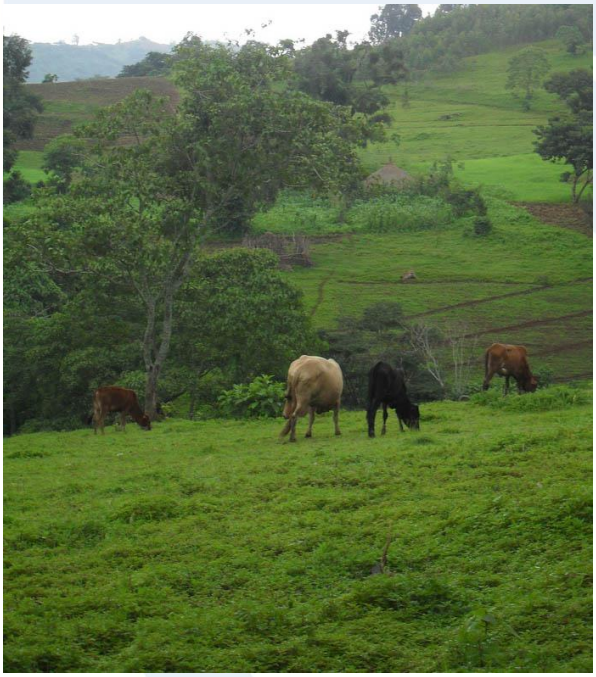
Research focus and findings

In the years that followed, research focused on a number of issues, including:

Work to expand our understanding of the negative and positive effects of livestock in agricultural land and water management as well as the water productivity of livestock under various management practices. While the CPWF–supported project developed a livestock-water productivity (LWP) framework, the associated BMZ-supported project quantified the potential contributions of these components to water productivity, and identified the key drivers (policies, institutions and markets) affecting the adoption and integration of these interventions.

Research findings revealed that water productivity is beyond the animals themselves. It is intricately caught up in market incentives, institutional mechanisms, upstream-downstream relationships, collective action provisions, and wider policy frameworks that largely influence the decisions of individual livestock keepers.

The Nile BDC is capitalising on these lessons and aims to further link innovation with practice. So far, NBDC researchers found that increasing production is not always sustainable. A growing demand for crop and livestock products drives 'extensification' - extension of agriculture into low potential areas throughout the Blue Nile basin; it drives intensification in a very few cases.



Both 'extensification' and intensification are increasing pressure on water and other natural resources and threatening to undermine long-term productivity. We conclude that approaches to improve livelihoods and resilience need to take into account the complex linkages between different components of agricultural and livelihood systems at the household and landscape scales. Connectivity to markets or finance and the institutional coherence with which water and land resources are shared have a major impact on performance.

This long period of research on water productivity has led to the emergence of integrated rainwater management strategies that include:

- Strategies to improve water management at landscape and basin levels;
- Processes of engagement and co-learning with broader partners – and the communities – through networking and the formation of innovation platforms at landscape and national levels;
- Continuous monitoring, adjustment and learning on landscape management that influences change in the management of water, livelihoods, ecosystems and their integration at various scales.

Rainwater management as integrating framework

This 'rainwater management' concept, comprising the capturing, storing, managing and efficient use of water at landscape scales, is attractive to people and organizations in Ethiopia. In particular we see uptake by those who promote watershed management as a key natural resources management strategy but end up doing soil conservation structures, without due emphasis to the total water budget of the system. RWM strategies also help national institutions move from a rainwater harvesting focus towards integrated rainwater management, and from surface water management towards integrated blue and green water in the landscape.

This broader concept, with institutional, technological and political dimensions, calls for a wider participation of actors at farm, landscape, national and regional scales. Beyond the wider involvement of different actors, it calls for a greater emphasis on overall sustainable landscape productivity that addresses water depletion, land degradation, low productivity and institutional capacity. It has inserted new thinking in ongoing national programmes, including the multi-donor forum on 'Sustainable Land Management' which is integrating water in the national land management agenda.

Closer to home, this emerging RWM concept is influencing members of the NBDC team - in terms of methodology and working approaches, particularly by moving people away from disciplinary-based research towards integrated landscape management. Shifting the focus away from research and landscape components towards wider system approaches has also brought scientists at IWMI and ILRI together in a particularly long-lasting and productive collaboration, to the extent that the two groups in Ethiopia operate as one in several projects.

This brief is based on a 'most significant change' story prepared for the CPWF in late 2011.

The Nile Basin Development Challenge (NBDC) is funded by the CGIAR Challenge Program on Water and Food (CPWF). It aims to improve the resilience of rural livelihoods in the Ethiopian highlands through a landscape approach to rainwater management. It comprises five linked projects examining: 1) Learning from the past; 2) developing integrated rainwater management strategies; 3) targeting and scaling out of rainwater management innovations; 4) assessing and anticipating the consequences of innovation in rainwater management systems; and 5) catalyzing platforms for learning, communication and coordination across the projects.

The NBDC is implemented by a consortium comprising the International Livestock Research Institute, International Water Management Institute, World Agroforestry Centre, Oversees Development Institute, Nile Basin Initiative, Stockholm Environment Institute, Ethiopian Economic Policy Research Institute, Catholic Relief Services – Ethiopia, Oromia Regional Research Institute, Amhara Agricultural Research Institute, Bahir Dar University, Ambo University, Nekemte University, the Ministry of Agriculture and the Ministry of Water and Energy.

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