

Project Launch: Harnessing Floods For Enhanced Livelihoods and Ecosystem Services

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Background, objectives and deliverables



Eyasu Yazew (PhD)
Associate Professor in Land and Water Development
Mekelle University

1 Background

- The conservation based agricultural development program launched by the regional government of Tigray within the framework of the national Agricultural Development-Led Industrialization (ADLI) policy adopted in 1992 has brought notable changes in all directions.
- The participatory integrated watershed management activities implemented by the regional government over the last two decades have resulted in the rehabilitation of hillsides (Figure).
- The focus of the integrated watershed management of the regional government of Tigray in the last 20 years can be characterized as:
 - Rehabilitation of the mountain ecosystems;
 - Provision of ecosystem services, especially improving the water supply to downstream areas and protection of downstream areas from erosion.



Change in land cover as a result of integrated watershed management in Tigray

- However, the government has recently shifted its strategy from rehabilitation to using them as major and direct sources of livelihood and economic development.
- Creating level farmlands to the landless youths from the steep mountain slopes through the construction of bench terraces is one of the notable practices in this regard.
- Some of the pilot projects are found in the mountainous watersheds of the Raya Valley known for its huge flood-based farming potential in the region.



Pilot bench terrace projects in the watersheds of the Raya Valley

- The construction of bench terraces in the watersheds of the potential spate irrigated Raya Valley has, however, resulted in two conflicting hypothesis:
- Group 1:
 - Bench terrace will:
 - Reduce the destructive power associated with extreme flood by minimizing its speed and elongating the time of concentration;
 - Decrease the erosion and subsequent sedimentation of flood diversion and conveyance structures and save maintenance/rehabilitation costs.
 - They also rate the impact of the bench terraces on the water supply of the spate irrigated lowland valley as insignificant compared to its benefits.
 - Bench terraces will retain most of the precipitation only during small rains which otherwise could not generate flood to the spate fields;
 - During medium to large rains, only a small fraction of the precipitation will be retained by the terraces and some part will be used by the crops while the remaining will recharge the groundwater and improve the water supply of the valley during the dry period.
- Group 2:
 - Bench terraces will have significant impact on the water supply and livelihood of the already vulnerable lowland communities;
 - Fear about the potential catastrophic damage on the spate irrigation infrastructures and fields due to erosion if the bench terraces, built by cutting and filling the soil, fail.

- However, both views are not supported by scientific facts as the bench terrace pilot projects are only two years old.
- It is also unknown how these:
 - Interventions at scheme level interact with other functions provided by floods at the local and landscape level; and
 - Interventions affect livelihoods of different stakeholders, particularly rural poor women.
- The regional government is very keen on carrying out **detailed evaluation and impact assessment studies** before scaling up the technology across Tigray.
- This project was, therefore, developed to address this top priority demand driven research agenda.

2 Objectives of the research project

- The research project will address three main questions:
 - **Question 1:** What is the impact of current investment plans of upstream agricultural development on downstream flood based farming systems and livelihoods, in particular for women?
 - Description of the baseline situation:
 - Developing map images and assessing the hydrologic situation;
 - The governance situation;
 - Different uses of floods;
 - Traditional adaptive management strategies in flood based farming by men and women.
 - **Question 2:** What is the added value of incorporation of gender and ecosystems perspective in investment plans in flood based farming? (**Comparison of impacts under baseline and alternative investment scenarios**)
 - Valuation of ecosystems functions with direct and indirect benefit to different stakeholders;
 - Participatory formulation and evaluation of alternative scenarios that incorporate gender and ecosystems;

- Evaluation of scenarios, including winners and losers and exploring trade-offs and synergies between benefits, costs and their distribution over stakeholder groups and the environment.
- **Question 3:** What is the most 'efficient' use of floods (from different angles) in the Raya watershed?

Thematic area	Issues to be addressed
Water balance and land use-land cover change	Rainfall-runoff analysis NDVI
Stakeholder analysis and gender study	Governance Adaptive management strategies Stakeholder analysis up and downstream Distribution of benefits/stakeholders
Economic and ecosystem valuation	Landscape transects Uses of floods Livelihood and ecosystem valuation
Scenario analysis	
Documentation, communication and networking	

Thematic area member from MU, BoWR and BoARD

3 Outputs of the project

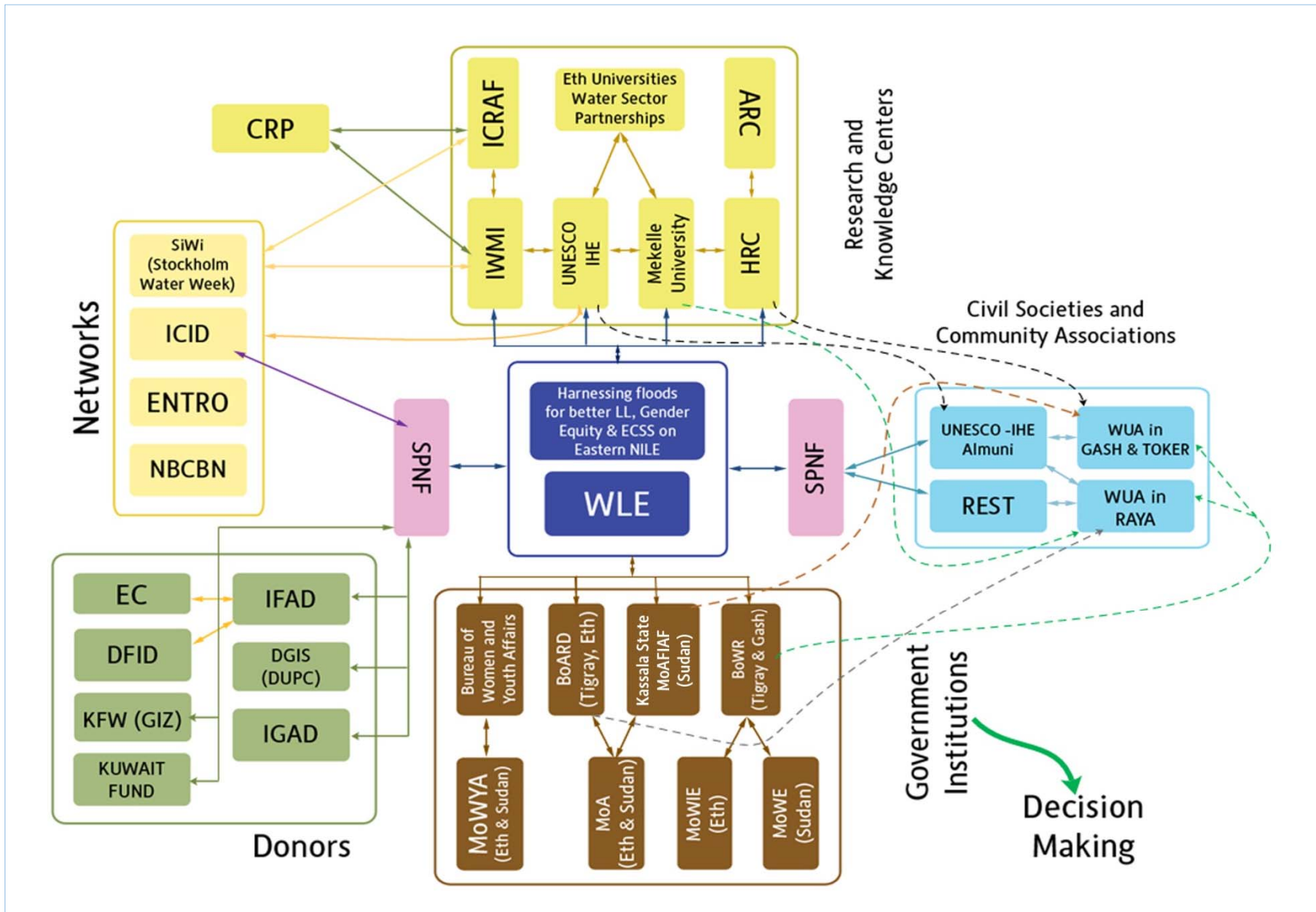
Knowledge products	Gender specific products	Methods and Tools	Forums and partnerships
<p>Two briefing notes on:</p> <ol style="list-style-type: none"> 1. Added value of gender and ecosystem approach - comparing current and new investment plans that incorporate gender and ecosystem perspectives. 2. Impact of upstream watershed management activities on downstream Flood-based Farming Systems (FBFS) and livelihoods. <p>Blog: Investing in FBFS from an ecosystems perspective: who wins and who loses?</p> <p>Briefing videos: before and after project implementation that gauge the change in perspectives among key project output and outcome users with regards to ecosystems services provided by FBFS and their importance for livelihoods.</p> <p>Three peer reviewed journal articles co-authored by non-researchers and local partners on: added value of ecosystems approach; added value of gender approach; and impact of upstream activities on downstream livelihoods.</p> <p>Course material such as case studies for the annual short courses at Mekelle University and UNESCO-IHE.</p>	<p>Three blogs on:</p> <ol style="list-style-type: none"> 1. What is the bargaining power of women who manage FBFS for livelihood 2. Are FBFS where women are actively involved in management performing better? 3. Importance of rehabilitating degraded lands by managing floods for productive use by landless women and youth. 3. Methodology for gender inclusive planning and implementation of investments in FBFS? 4) tested and updated gender module in MASSMUS 	<p>Methodology for:</p> <ol style="list-style-type: none"> 1. including gender and ecosystems perspective in FBFS investment and development programmes and evaluating the trade-offs and synergies. 2. Participatory scenario formulation and inclusive investment criteria development. <p>Tools:</p> <ol style="list-style-type: none"> 1. Floodwater assessment tools specific to Gash (Sudan) and Raya (Ethiopia) basins: identifying and quantifying the multiple use of floods. 	<p>Forums:</p> <ol style="list-style-type: none"> 1. Testimony videos by policy makers/farmers explaining the importance of gender and ecosystems perspective in FBFS investments 2. Articles in the media featuring our next users comparing benefits and costs of current and newly developed investment plans that include gender and ecosystem perspectives 3. Dissemination events including webinars on www.waterchannel.tv; Communities meetings bringing together farmers (male, female), practitioners, investors and policy makers; Farmer and local politicians' participation in conferences. <p>Partnerships:</p> <p>Expansion of the Spate Irrigation Network membership and website (www.spate-irrigation.org) to better represent farmers and policymakers, include different sources of knowledge and perspectives on ecosystems and gender.</p>

4 Outcomes of the project

- The Outcomes - within project period:
 - Importance of gender and ecosystem approach in FBFS development is endorsed by key institutions responsible for making investment decisions at all (national to local) administrative levels (by end of 2015);
 - The methodology applied in 2016 to plan, design and implement, monitor and evaluate FBFS development and investment programmes includes:
 - Gender and ecosystem services as well as identification of basin-wide winners and losers; and
 - Trade-off analysis.
 - Integration of gender and ecosystem approach into curriculum of UNESCO-IHE and Mekelle University (by end of 2016).
- Outcomes - 5 Years after project period:
 - Some 40 professionals per year develop skills in gender and ecosystems approach to plan and implement land and water programmes and investments;
 - New investments in land and water are guided by principles of gender equity and balanced ecosystem services.

5 How do we do it?

- Through partnership!!
- Local partners:
 - Mekelle University
 - Bureau of Water Resources (BoWR)
 - Bureau of Agriculture and Rural Development (BoARD)
 - Local stakeholders including TARI, communities, model farmers, associations
- International partners:
 - CGIAR Research Program on Water, Land and Ecosystems
 - Spate Irrigation Network Foundation
 - UNESCO-IHE Institute for Water Education
 - MetaMeta
 - IWMI
 - HRC-Sudan
- MSc and PhD students:
 - MSc and PhD students from Mekelle University and UNESCO-IHE



Project next users

Flood is not a threat, rather source of livelihood and ecosystem services to the most vulnerable communities and environments if properly managed





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Thank you