

Towards a Basin Approach for Sustainable Development of Climate Resilient Flood-Based Farming Systems



PhD Research Proposal
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This Presentation

- ❑ Status of my PhD Research
- ❑ Study site – brief profile
- ❑ Background to the Research
- ❑ The Problem statement
- ❑ Key Research Question
- ❑ The Methodology

Status and Planned activities of my PhD Research



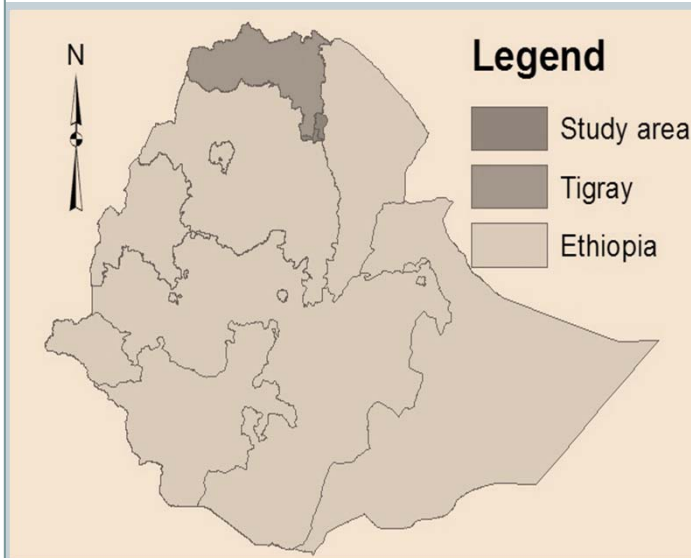
1. Status

- ❑ Started in January 2015 at UNESCO-IHE Institute for Water Education, the Netherlands
- ❑ have developed some initial research ideas – as integral part of the Project: Harnessing Floods for Enhanced Livelihoods and Ecosystem Services
- ❑ I expect to get more ideas and thoughts from this Workshop

2. Planned activities:

- ❑ June, 2015: finalize proposal
- ❑ July 2015 and December 2017: Field research, data analyses
- ❑ January to September 2018: Final thesis write-up
- ❑ December, 2018: PhD defense

Study Area – brief profile

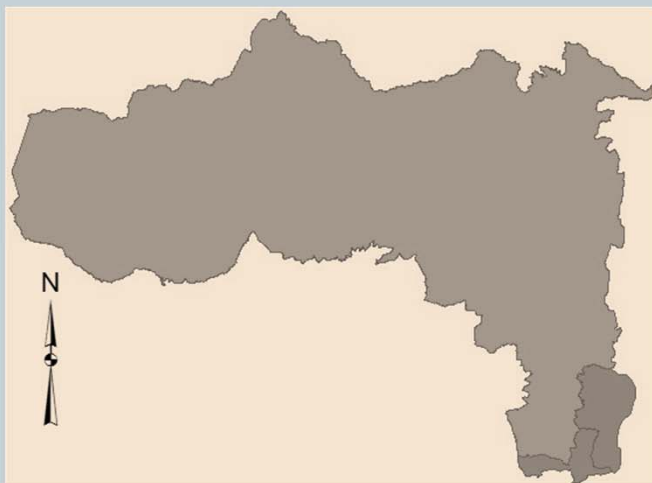


Tigray Region:

- Location : North Ethiopia
- 62% of the area is characterized as hillside
- Over 80% of the population depend on agriculture

Raya Valley:

- Focal study area
- Major bread basket for the Region
- 80,000 ha currently under FBF; potential estimated at over 250,000 ha
- Pilot site for government intervention in watershed & FBF development



Background to the Research



- ❑ Traditional hillside cultivation caused degradation of hillside
- ❑ In 1970's the government embarked on watershed management program to rehabilitate degraded hillside

Background to the Research ...



- ❑ A shift in government policy from rehabilitating degraded hillside to using them for agricultural production using bench terrace
- ❑ This policy is pilot tested in the Raya Valley in 2013
- ❑ Down stream FBF farmers started complaining that the bench terraces will reduce flood water to their irrigable land
- ❑ The government decided there is a need for detailed assessment on down stream impact before expanding the bench terrace program

The Problem Statement



- ❑ The Agricultural Development Programme in the Upper Catchment of the Raya Valley using bench terraces and other soil and water conservation practices is being implemented without detailed assessment of the costs and benefits to the ecosystem, and the different men and women user groups in the upstream, midstream, and the downstream area where FBFS are the major sources of Livelihood
- ❑ There is a conflicting view among scholars with regard to the impact of the bench terraces based agricultural development on flood water supply to the low-lying FBFS:
 - ✓ Some argue the impact will be positive as only the destructive large floods will be stopped from reaching the down stream
 - ✓ Others counter argue that the impact will be negative as the water supply to the down stream will be significantly reduced. And if the bench terrace fail there will be catastrophic damage to the FBFS infra structure

The Key Research Questions



- 1 How will the amount of floodwater supply to the FBFS be affected should the government implement its proposed bench-terrace based agricultural development programme in Upper Raya catchment?
- 2 Under the new scenario of floodwater availability what will be the costs and benefits to women and men beneficiaries from the FBFS
- 3 What are the costs and benefits to women and men Raya Valley FBFS beneficiaries under current floodwater availability, uses and management practices?
- 4 What, if necessary, adaptive floodwater management, agronomic and other technical measures can be recommended to mitigate the undesirable impacts?

Methodology



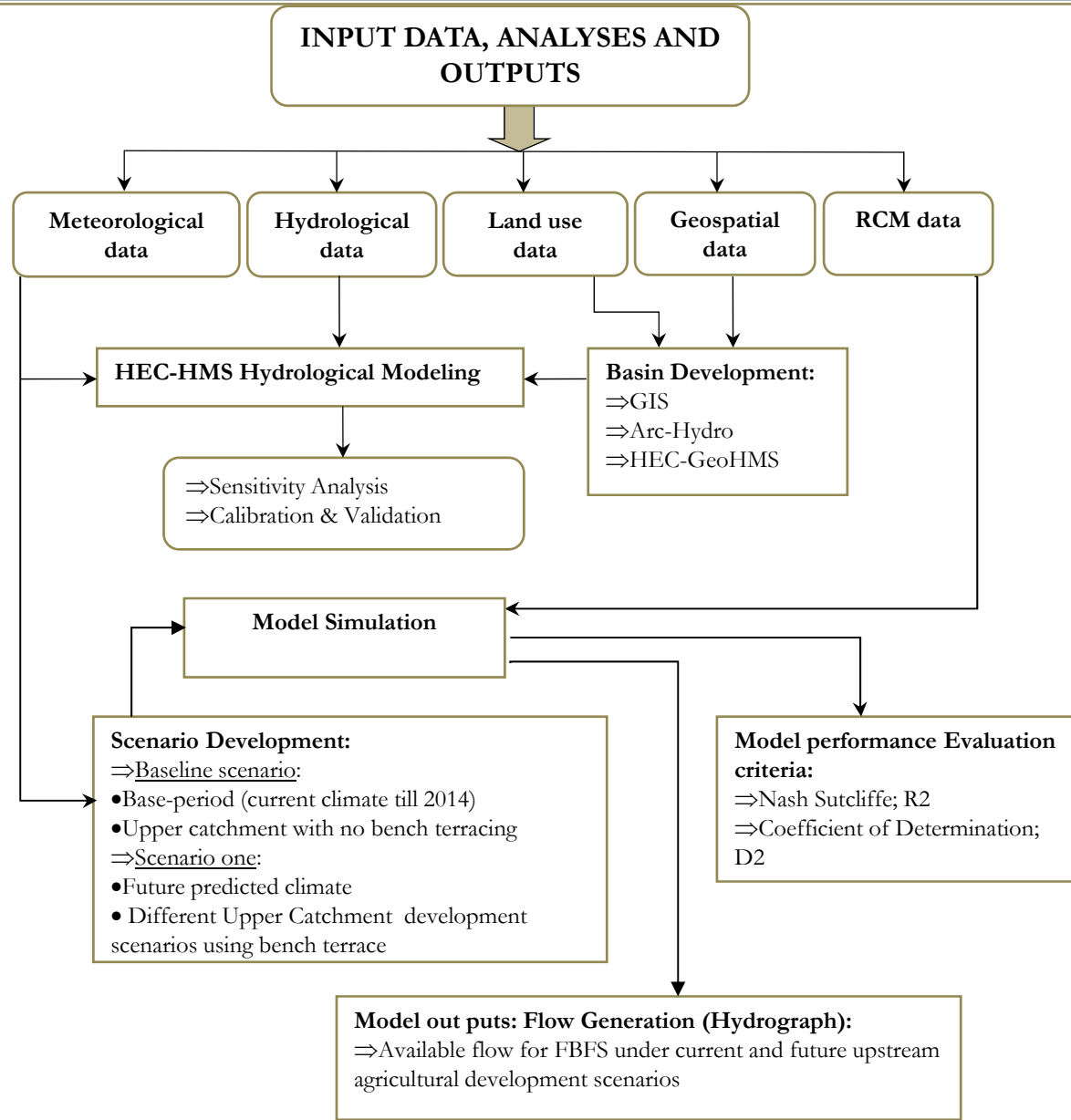
Question 1:

- ❑ **Participatory scenario formulation:** different levels of bench terraces and watershed management practices linked to regional agricultural development goals and plans
- ❑ Scenario Evaluation using HEC-HMS modeling

Question 2 and 3:

- ❑ Expert interview and stakeholder analyses,
- ❑ Focus group discussion
- ❑ Participatory resource mapping

General Conceptual Frame Work of HEC-HMS Hydrological Model:





Thank You Very Much!