

Community-Based Irrigation Management in Ethiopia: Strategies to Enhance Human Health, Livestock and Crop Production, and Natural Resource Management

Don Peden

Lead Scientist

Berhanu Gebremedhin and Girma Tadesse

Principal Investigators

ILRI

Presentation Outline

- Irrigation and Rural Livelihoods
- Aspects of Irrigation Development
- Project Goal and Purpose
- Project Objectives and hypotheses
- Project Outputs
- Methodology
- Workshop objectives and expected outputs

I. Irrigation and Rural Livelihoods

- Livelihood: a set of capabilities, assets, and activities required for a means of living
- Irrigation development affects rural livelihoods mainly through its effect on capital assets
 - human, financial, physical, natural and social
- Water plays critical role in sustainable livelihoods of rural people
 - increased crop yields and outputs
 - increased livestock productivity
 - increased income
 - Diversification and risk reduction
 - reduced vulnerability
 - employment opportunities

Irrigation and Rural Livelihoods (cont'd)

- Water scarcity is not necessarily caused by inadequate rainfall, but by lack of conservation and sustainable use of available water
- Research results indicate that more than 70% of direct rain falling on crop fields is lost
- Most critical challenge, therefore, is how to deal with poor temporal and spatial distribution of rain water

II. Aspects of Irrigation Development

- **Engineering and Technical** → design, construction and equipment
- **Agronomic** → crop, livestock, land and water management
- **Institutional** → extension, input supply, credit, marketing
- **Policy** → Incentives, pricing, cost recovery,
- **Organizational** → water users associations, coordination among stakeholders

Aspects of irrigation development (cont'd)

- Key features of irrigation development in Ethiopia
 - emphasis on technical and engineering aspects, with little consideration of institutional, policy, and organizational aspects

III. Project Goal and Purpose

- Goal:
 - Improve the livelihoods of the poor in Ethiopia through better management of irrigation systems to improve human health, reduce poverty and improve NRM
- Purpose:
 - Identify socially desirable strategies to manage irrigation systems in Ethiopia to improve livestock and crop production, human health,, and natural resources

IV. Project Objectives and Hypotheses

- Assess the benefits, costs and impacts of different types of small scale irrigation schemes and their requisite water sourcing technologies
 - **Hypotheses:**
 - Traditional irrigation systems are more cost-effective and sustainable than imported technology intensive alternatives
 - Small-scale irrigation development that involves effective community participation are more cost effective
 - Distribution of benefits and costs of irrigation development varies according to gender, poverty level,, effectiveness of governance, and access to markets, resources, services and centres of power

Project objectives (cont'd)

- Assess the potential of integrated water, livestock and crop management to reduce poverty and to enhance environmental health in the Tekeze and Awash basins
 - **Hypotheses:**
 - Irrigation schemes that take an integrated approach to deal with crop, livestock, human health and the environment are more likely to be more effective in improving human welfare than those taking partial objective
- Strengthen Ethiopian Capacity for research on integrated water, livestock and crop management to impact poverty reduction

V. Project Outputs

- Impact assessment of alternative irrigation technologies on different production systems
- Recommendation for institutional linkages among stakeholders for better water management
- Options for water, soil, crop and livestock management
- Methodology for engaging communities for problem identification and community action
- Graduate students trained at MSc level

Methodology

- Focus on two geographic areas: Awash and Tekeze basins
- Community self-assessment of alternative irrigation technologies using participatory tools
- Economic evaluation of water use practices based on water accounting methodologies and participatory interaction with households
- Analysis of key informant and survey data to identify regularities in irrigation management and priorities
- Partial and whole farm budgeting to assess impact of irrigation on farm profitability

Methodology (cont'd)

- Programming models of crop-livestock systems to assess the optimal mix of enterprises and effect of irrigation on production risk
- Crop-water requirements in irrigated areas using FAOCRPWAT-model
- Assessment of integrated water resources management using Water Accounting tools and Concepts for Improved Water Management developed by IWMI

Methodology (cont'd)

- Assessment of soil loss and sedimentation using USLE
- Mapping complex relationships among numerous factors affecting water and food security using PODIUM
- Assessment of ecosystem health using the modified IUCN model for ecosystem accounting and the University of Guelph's agro-ecosystem health model

Workshop Objectives and Expected Outputs

- **Workshop objectives:**
 - Assess and improve project objectives
 - Evaluate the feasibility of project outputs and provide recommendations for effective implementation of the project
 - Examine critically the appropriateness of the methodology of the project and provide suggestions for improvement
 - Identify key priority issues of research on irrigation development in the Awash and Tekeze basins

Workshop Objectives and Expected Outputs (cont'd)

- Expected workshop outputs
 - Recommendations for effective implementation of project developed
 - Key priority research issues identified

Thank You So Much for Your
Attention !