INTERNATIONAL SYMPOSIUM

KNOWLEDGE AND EXPERIENCE SHARING IN FLOOD-BASED LIVELIHOODS SYSTEMS

Strengths and Limitations of Farmer-led Floodwater Governance Systems in Flood-based Livelihood Systems

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VOI WILDLIFE LODGE, TAITA TAVETA COUNTY, KENYA

This Presentation

- Water governance: scope and definition
- Farmer-led Floodwater Governance
- Justifications for the PhD research
- Research questions
- Materials and methodology
- Preliminary findings and recommendations

Scope of Water Governance (UNDP, 2016)

The four pillars:

- **Social, Economic, Political and Environmental**

Definition:

Who gets what water, when and how, and who has the right to water and related services and their benefits.

Social: equitable distribution of water resources and services among various social and economic groups.

Economic: efficiency in water allocation and use and the role of water in overall economic growth.

Political: equal rights and opportunities for water stakeholders to take part in decision-making processes.

Environmental: sufficient flow of water of appropriate quality to maintaining ecosystem functions and services.

What is Farmer-led Floodwater Governance?

Adapted from FLID (Farmer-led Irrigation Development) Guide, SWA, 2019

Definition and interpretation 1

Farmers have taken own initiatives in developing the governance system, with or without the collaboration with other actors and sometimes building upon (earlier) investments by state, private or civil society actors

Definitions and interpretation 2

Initiatives to develop the water governance system comes from external actors (government, NGO, private sector) but farmers play a leading role in tailoring the system to the local contexts and needs and operationalizing it.

Own bottom line: **water governance systems primarily designed and implemented by farmers**

Rationale: The Justifications for the PhD Research

Largely forgotten

- For all the scientific interest on water governance, the topic is largely neglected in FBLS

Systematically overlooked

- Economic good debate emphasizes individual ownership not collective/public systems

Focus on process rather than impact

- There is too much emphasis on 'process' governance rather than 'impact' governance

Societal significance: FBLS cover about 25 million ha that can potentially provide livelihoods to an estimated 50 million rural poor smallholder farmers irrigating on average about 0.5 ha

Selected references:

Steenbergen et al., 2016: http://spate-irrigation.org/wp-content/uploads/2011/06/PN_26-Codifying-Rights-SF.pdf

Puertas et al., 2017 http://spate-irrigation.org/wp-content/uploads/2015/03/OP5_Flood-based-farming-in-Africa_SF.pdf

Research Objectives

1. Analyse the effectiveness of farmer-led floodwater governance system against expected impacts
2. Aassess the impact of institutional, infrastructural and farming system interventions on the effectiveness of farmer-led floodwater governance systems
3. Formulate alternative floodwater allocation scenarios together with the target group and simulate the impact of the scenarios on the competing upstream and downstream needs

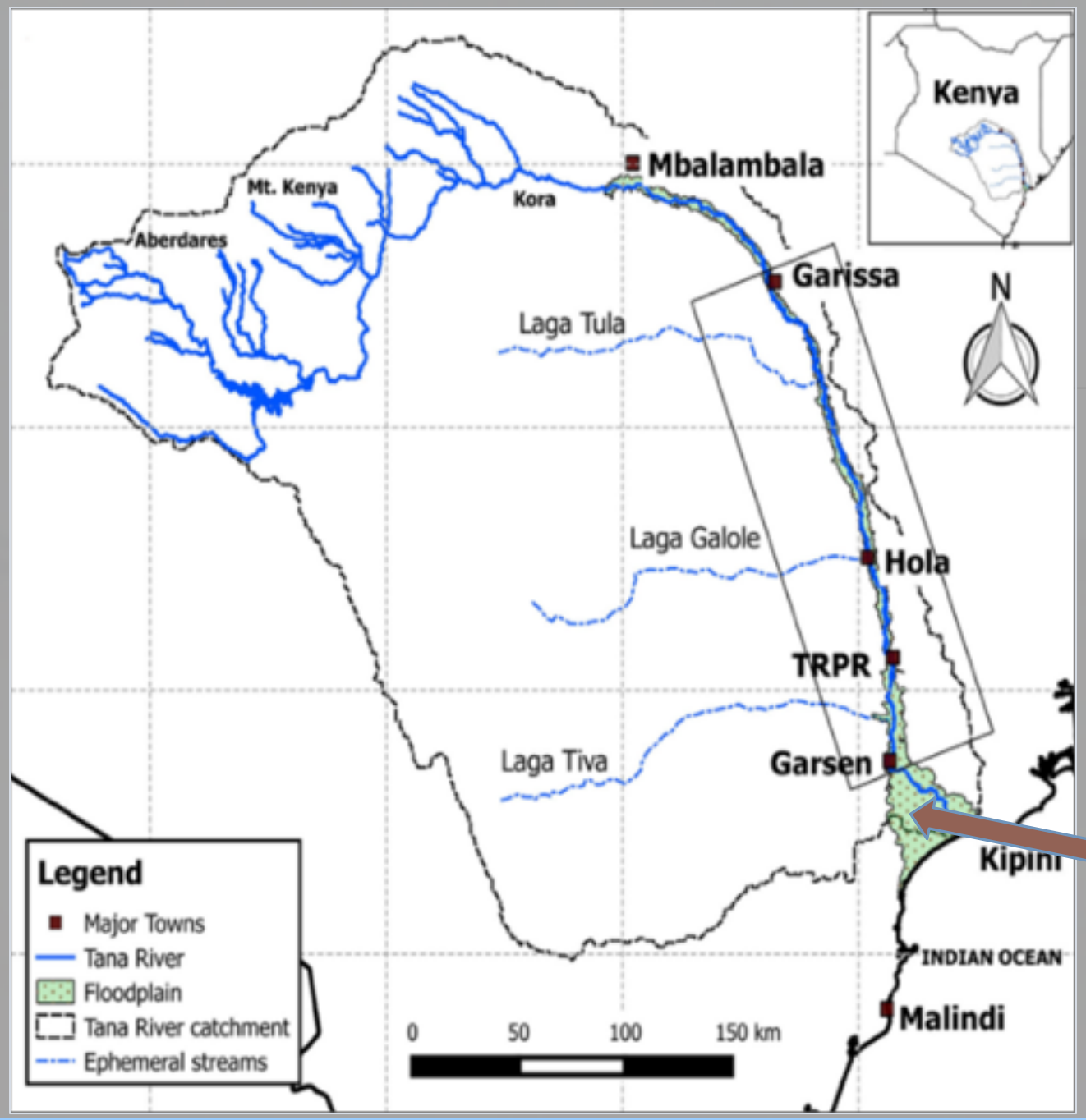
Materials and Methods

Method

- *Reconnaissance survey:* understand the target group, system infrastructure (all 3 objectives)
- *Focus group discussions:* gather responses and opinions of the target group (all 3 objectives)
- *Individual interviews:* address issues deemed sensitive for a public setting, individual perspectives (all 3 objectives)
- *Water allocation modelling:* Simulate impact of varied water allocation scenarios on the competing upstream and downstream needs (objective 3)

Study areas

- *Tana River flood inundation canal system (Kenya):* no major external interventions (Objective 1)
- *Fogera flood plain (Ethiopia):* limited government driven intervention that focused on introduction of rice crop (Objectives 1 and 2)
- *Gash spate irrigation scheme (Sudan):* extensive institutional and infrastructural interventions initiated by external forces – IFAD and the Africa to Asia project and there are major upstream and downstream issues (Objectives 2 and 3)



Facts and Information

Cultivated areas: 130,000 ha - 50% is intermittently flooded

Garissa-Garsen section (enclosed box): three ephemeral streams join Tana river within this reach

Focal study area: shorter but more expansive lower section (Tana River Delta) at the immediate downstream of Garsen

Study area in Kenya: Tana river flood canal inundation system *(Leauthaud et al., 2013)*

Study area in Ethiopia: Fogera flood plain, Ethiopia (*Gebey et al., 2012*)

- Flooding from Lake Tana and two main seasonal rivers, Rib and Gumera
- 15,000 cultivable land

Major crops

- Upstream: Rice (first introduced in 1990s)
  Mid stream: Maize, sorghum, teff
- Downstream: Green beans, onions and other vegetables (based on shallow groundwater recharged by floods)

Scope of methodology: Tana River flood inundation canal system, Kenya

15 focus group discussions:

- 3 farmer leader groups, 8 farmer groups, one elderly one youth and two pastoralist groups

- **Each focus group had:**
  - Eight members: 4 men and 4 women
  - Maximum of 12 guiding questions
  - Maximum of 2 hours duration
- Discussion was recorded

319 Individual Interviews

NO	Village	Number of Farmers	% of Farmers	Representative sample
1	Sera	150	0.0810	26
2	Fejji	50	0.0270	9
3	Maziwa	350	0.1891	60
4	Hidabaganda/ Kurole	250	0.1351	43
5	Kilelengwani	300	0.1621	52
7	Kilunguni	200	0.1081	34
8	Kau	160	0.0864	28
9	Ozi	150	0.0810	26
10	Sera	240	0.1297	41
	Total	*1850*		*319*

Scope of methodology: Fogera flood plain, Ethiopia

15 Focus group discussions:

- Four farmers leaders: 2 representing flood recession - maize, teff and sorghum cultivation, and the other 2 flood rise – rice cultivation
- Eight farmer group representatives of up, mid and down stream areas practising flood recession and flood rise agriculture
- One youth and one pastoralist groups
- One group representing relevant local authorities

Focus group members and implementation process is the same as in Tana River, K

enya

343 Individual Interviews

NO	Village	Farmer population	% of farmers	Representative sample
1	Shaga	355	0.1128	39
2	Wegetera	517	0.1643	56
3	Shina	555	0.1764	61
4	Nabega	550	0.1748	60
5	Kidist Hana	502	0.1595	55
6	Kokit	667	0.2120	73
	Total	*3146*		*343*

Pastoralist in Hidabaganda village, Kenya

Local officials in Garsen, Kenya

Preliminary Results: Effectiveness of the Farmer-led Floodwater Governance System in Tana River flood Inundation Canal System in Kenya

Tana river inundating

Secondary inundation canal system

Field inundation canal system

Field bunds to retain inundated floodwater

Expected impact of an Effective Floodwater Governance System?

1. 80% of each beneficiary farmer group (small, medium and large-scale) fully irrigate their land when the floodwater supply is not physically limited in amount and timing
2. A timely and coordinated removal of weeds and silt from all interconnected canal systems and structures - facilities smooth flow of floodwater to the irrigation fields
3. Conflicts are prevented and whenever they occur, they are settled fairly and at a lower financial cost
4. Release of water from upstream hydropower dams is timed to provide supplementary irrigation and avoid damage to standing crops, fields, canals and structures

Evaluating the Floodwater Governance System

1. Nearly 90% of the consulted small-scale farmers (they make up 80% of farming community) and about 70% of the medium and large-scale farmers informed that the traditional floodwater governance system needs major improvements to be considered effective:
   - In three of the recent past 5 years, almost 70% of the small-scale farmers and 25% of the medium and largescale farmers experienced floodwater shortage
   - There has not been any coordination in the release of floodwater from upstream hydropower dams
   - There was no well-coordinated removal of silt and sediment across all the interconnected canal network systems
2. On a positive note, conflicts have often been properly addressed by the Elderly group – but they need to have young people as members moving forward

Unpacking the Farmer-led Floodwater Governance System

Inclusive organizational structures

There are responsible bodies from the smallest unit (sub)village to the whole Tana River flood inundation system

Inclusive canal network system

Allows all categories of farmers - small, medium and large scale - to have an equal opportunity to access the Tana River

Inclusive floodwater sharing arrangement

Is based on the principle of equitable distribution of floodwater to all categories of farmers

Farmers defined three key pillars for an effective floodwater governance system

Status of the three pillars

1. Lack of inclusive **organizational structure** is cited as the **main reason** for the less effective floodwater governance
   - Some level of organization at (sub)village level, but lack of organizational structure to address inter-village and Tana river catchment level floodwater governance issues.

2. **No sufficient main inundation canals** supplying floodwater to the small-scale farmers in the **downstream area**:
   - The limited canals that exist do not get sufficient inundation to supply floodwater under gravity.

3. There are **no well-defined floodwater sharing rules:**
   - Farmers operate on upstream first basis and rely on social cohesion and trust rather than floodwater sharing rules/arrangements

Recommended Improvement Measures: Organizational Aspects

Extension support from public and private organizations or NGOs:

- Strengthen (sub)village organization
- Establish relevant organizations to facilitate floodwater governance among groups of villages
- Establish Tana River catchment level organization
  - Define and manage the floodwater use by different users along the Tana River
  - Coordinate the release of water from upstream dams with the needs of flood dependent farming downstream
  - Farmers informed that dam water is often released when they do no need it causing damage to their standing crops

Recommendations for Improvement: Floodwater Sharing and Farming

Extension support from public and private organizations or NGOs

1. **Floodwater sharing arrangements:**
   - Currently, it is up to upstream farmers to decide when to let floodwater go downstream. This could be improved:
     - *Irrigation-amount based guideline:* fully flooding the upstream field twice, then letting floodwater go to downstream.
     - *Irrigation-time based guideline:* during the peak flood month - priority is to upstream, and the other flood months to the downstream
2. **Improved Flood-based farming:** tillage, planting densities, certified seeds, etc..

Recommendations for Improvement: Infrastructure

1. **Technical and financial support from public, private organizations or NGOs:**
   - More **inundation canals** in the downstream area combined with **pumping facility** to abstract low-level Tana River flow
   - Introduce floodwater use efficient systems in upstream counties, areas – this will make more floodwater available to the downstream.


Thank You!