# FROM FLOODING TO FLOURISHING

Experiences of a watershed management project in SW Uganda

Presented by

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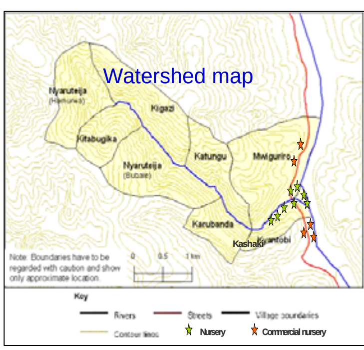
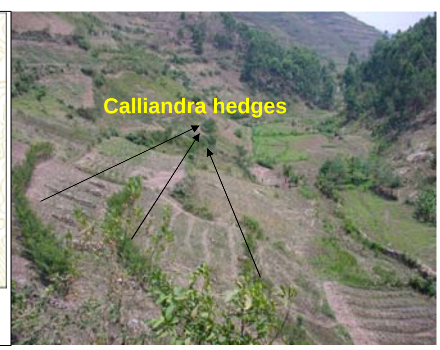
## 2. Landscape/watershed scale of intervention



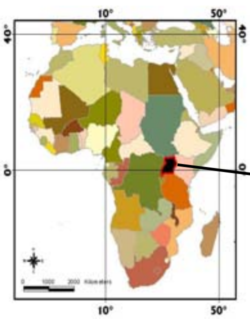




•Watershed approach provides a forum for farmers whose actions affect each other's natural resources to work together

•Approach allows linkage between upslope land use practices and down slope water and land resources.

•Allows biophysical monitoring of both on-field and off-field effects of land use practices

# Location





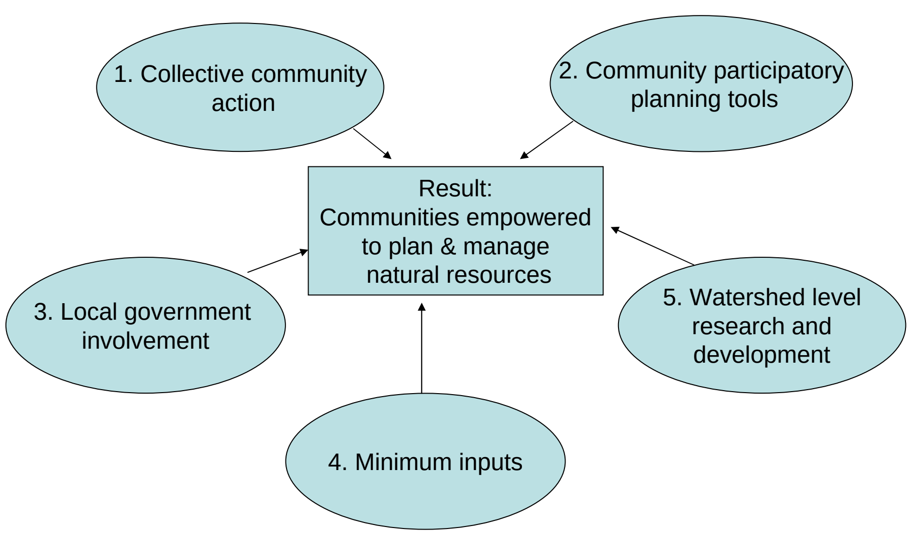
**Elevation:** 1500 to 3000 m.a.s.l
**Population**: 250-320 persons $^{km-2}$
**Annual rainfall**: 1006 mm
**Land holding**: Fragmented, 0.2 to 0.5 ha per house hold
**Soils**: Degraded, crop yields below potential

# Challenges

## Research and Development started with following objectives:

1. Support the community to plan and implement improved land use and management
2. Assess socio-economic changes resulting from community empowerment in natural resource planning and management.
3. Monitor the biophysical impact of improved land management practices on runoff, stream flow and overall landscape productivity

## Approaches used

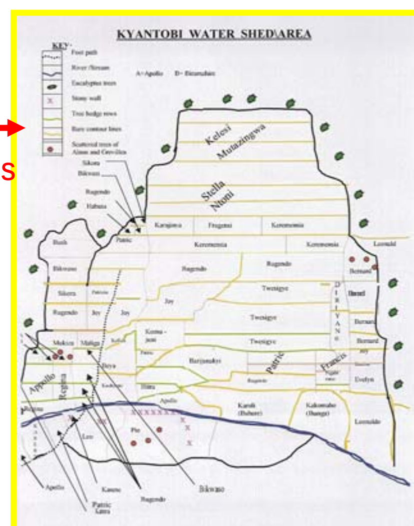


## 3. Participatory planning

- Farmers visualise their resources, its utilisation and potential through maps
- Farmers develop strategies to natural resource management
- Resources requirements are estimated by mapping e.g. length of fields determine number of tree seedlings and hence weight of seeds required which in turn determine funds.
- Responsibilities and time-frame for resource management allocated to community members

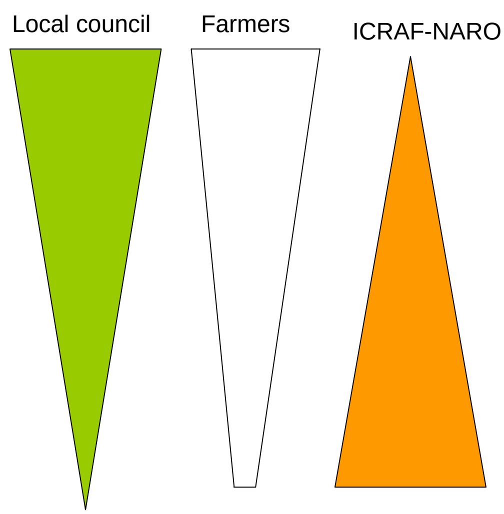
## Participatory planning tools


Planning Tools



## 4. Involvement of local councils: responsibilities and level of contribution

- Farmer mobilisation for community action
- Conflict resolution
- Enabling policy
- Long-term Dev’t plans
- Resource contribution
- Planting materials
- Training
- Planning tools
- Technology

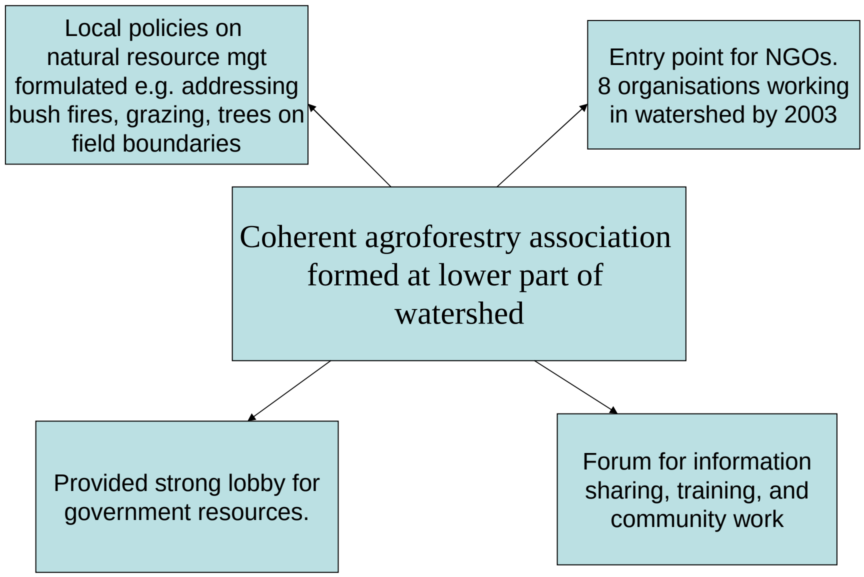


## Minimum input strategy

- Establishment and management costs minimised e.g. trees raised without wheelbarrows, watering cans, polythene bags etc
- Farmers encouraged to set up their own seed stands for sustainability
- Encourage the local government contribute towards input supplies.

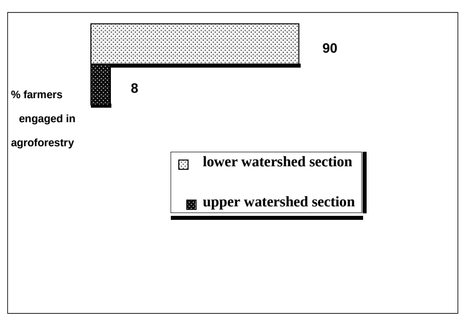
# Outcomes

## 1. Farmer institutional development

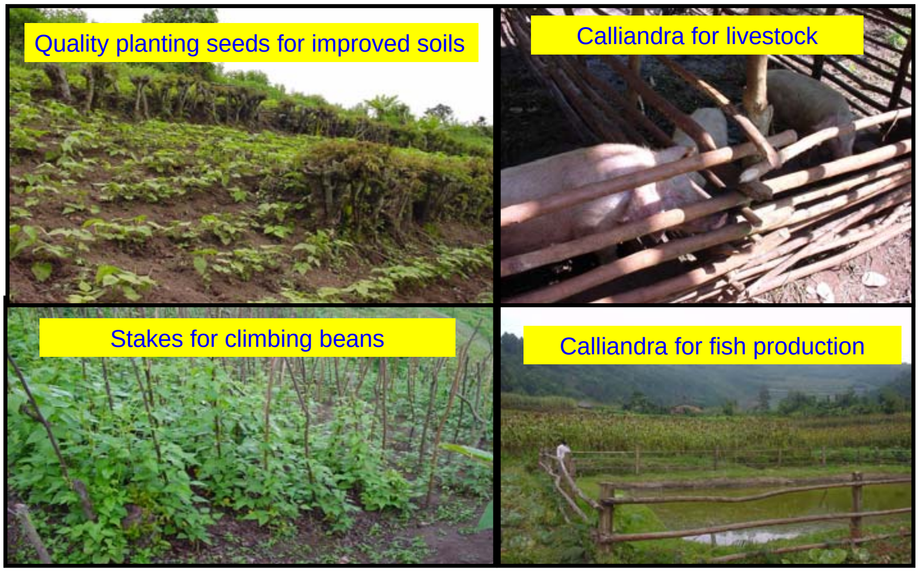



## 2. Adoption of agroforestry

- Adoption more on the downstream part of watershed than upstream. Due to:
  - Differences in magnitude of natural resource problems
  - Strong community leadership
  - Road accessibility and exposure to NGOs
- Integrating other enterprises leads to increased and sustained adoption of approach

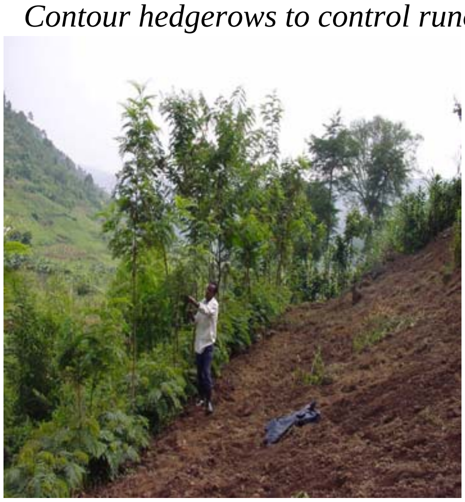


## Agroforestry - a platform for integrated watershed management




## Examples of technologies promoted

*Contour hedgerows to control runoff and soil erosion*



- 70% runoff controlled
- Over 400 tones of soil conserved by 1 million plants, saving nutrient worth US $ 1 million
- Source of fodder, stakes for climbing beans and mulch
- High adoption rate. Taken up by over 3,000 households in Kabale District
- Taken up by 17 NGOs in Kabale District

*Improved fallows and rotational woodlots*

- Rehabilitates degraded soils while producing wood
- Potential to generate net benefits up to US $ 200 ha-1 per season
- Over 200% crop yield increase after fallows
- Carbon sequestration potential: 70% more soil carbon

## 4. Development of a training facility

- One of the watershed communities, Kyantobi, became a model village
- A training facility initiated in Kyantobi for disseminating improved NRM practices
- Beneficiaries of the facility include: farmers, policy makers, NGOs, and students.
- Over 5000 people visited Kyantobi between 2002 and 2003.

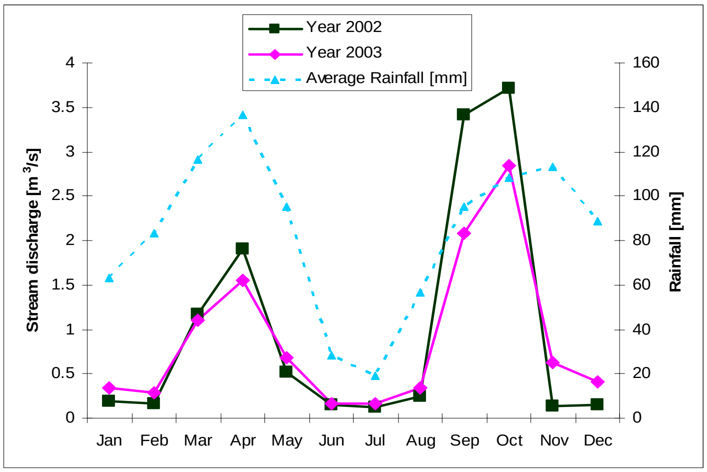
# Biophysical monitoring

- Characterize landscape using GIS and remote sensing
- Monitoring stream flow patterns in relation to land use, and assess impact of watershed based interventions.
- Monitoring runoff and erosion from various land use systems

# Preliminary data of runoff from different land use systems

| Land use system | Runoff [L $m^{-2}$] | Runoff [% of rainfall] |
|---|---|---|
| Cultivated no conservation | 0.8 | 10 |
| Cultivated with hedges | 0.15 | 3 |
| Natural fallow | 0.36 | 5 |
| Alnus woodlots | 0.26 | 3 |
| Eucalyptus woodlots | 5.63 | 61 |
| Grazing land | 1.21 | 12 |

## *Stream flow changes resulting from agroforestry*




## Results show

- Agroforestry land use systems have lowest runoff
- Most runoff is generated from Eucalyptus woodlots, accounting for 60% of incident rainfall
- Grazing land, cultivated plots without conservation hedges, and foot paths are the other land use systems with high erosion rates.

## Conclusions

- Farmers were empowered to manage their natural resources. Demonstrated collective responsibility within a watershed.
- Resource mapping a vital tool in planning, monitoring and evaluation of the watershed project activities by both farmers and extensionists.
- Difference in adoption exists between upslope and down slope resource users. More adoption downstream where runoff effects are most felt.

## Conclusions continued

- A watershed management approach as opposed to isolated farmer approach is effective for sustainable resource use in a watershed.
- By-laws developed at the local level are more effective that those from government structures
- Collective community action is a precursor to coherent farmer institutions and strong socio-capital
- Restoration of positive landscape functions is possible with agroforestry.