

A community-oriented project for aquaculture in Kenya

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Aquaculture in Africa



- Important component of rural livelihood
- Alleviates food insecurity, malnutrition and poverty
- Provides food of high nutritional value
- Generates income and employment
- Increases farming sustainability
- Complements catches from traditional fisheries



Aquaculture development needs

- Global knowledge not available to farmers
- Weak rural extension and lack of local examples
- More emphasis required on:
 - readily available species
 - use of local materials
 - improvement of culture systems
 - education of farmers

Sustainability issues

- Provision of an enabling environment of technology, policy and legal frameworks
- Involvement of stakeholders in decisions, planning, development and management
- Access to key resources of information, materials and money
- Culture of species low down in the food chain to provide low cost product to poor communities

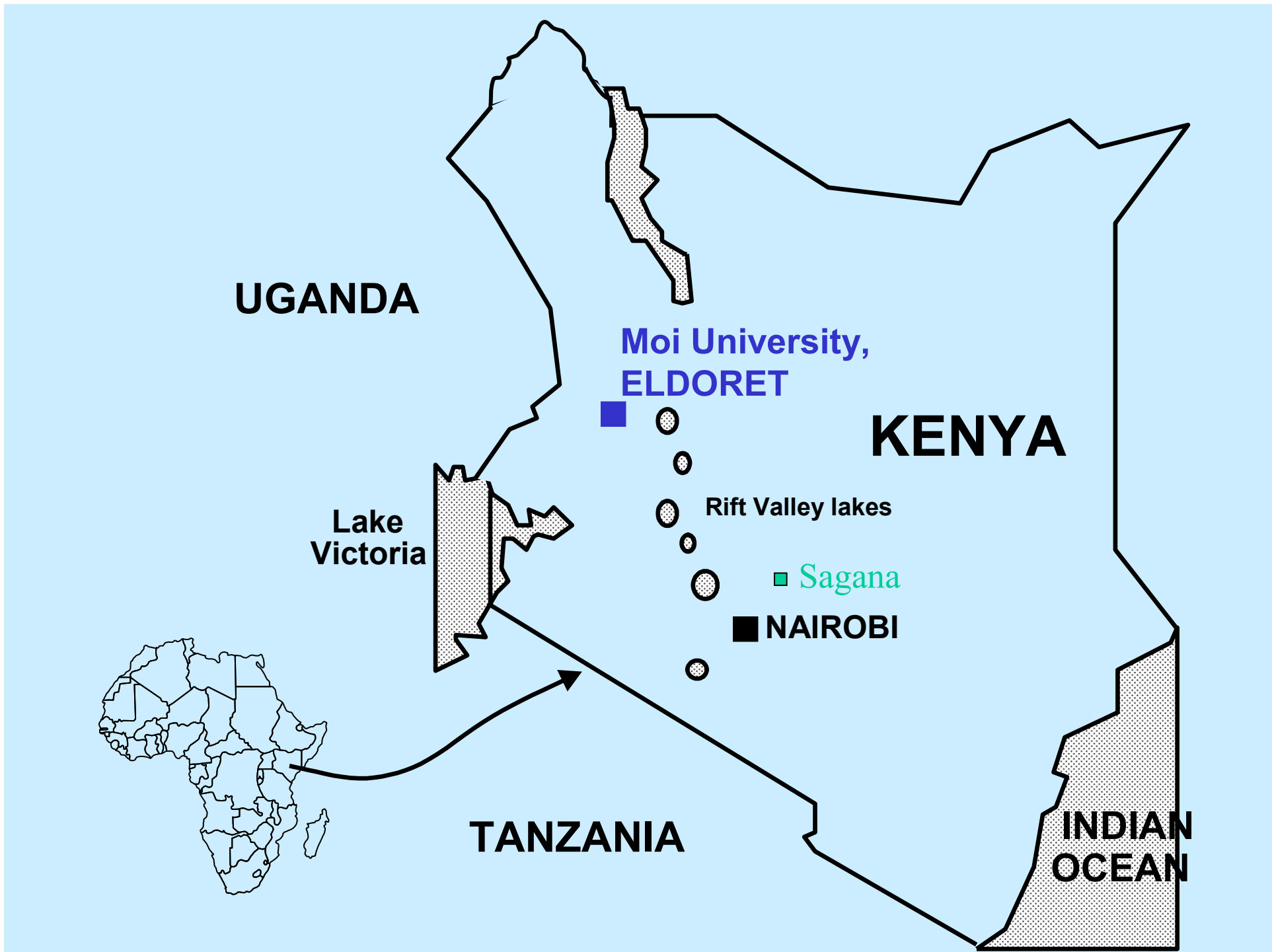
Fish farming in Kenya

- Small scale fish farming has had many false starts
- Poor economic return on cash and labour
- Low fish yields at subsistence level only
- Fifty year history but potential not realised

but...

Recent transformation in success

facilitated by Moi University Fish Farm





Moi University

- Established in 1984 to meet science and technology needs
- Mandated to train via teaching, research and outreach
- Recognised need for locally proved methods
- Now hosts largest teaching and research fish farm in East Africa



Fish farm objectives

- To support training of aquaculture students
- To promote fish farming amongst community leaders, Government officials and entrepreneurs
- To serve as a regional centre for research and development of culture methods
- To supply juvenile fish to farmers in the region
- To provide research facilities for faculty members and visiting scientists

Fish farm design

- Farm comprises hatchery, quarantine unit and fish ponds
- Groundwater supply via 1.2 ha spring-fed reservoir
- Ponds
 - Filled by gravity inflow
 - Fully drainable
 - Effluent intercepted by papyrus swamp
- Total pond area 2.5 ha
 - 25 x 100 m²; 6 x 300 m²; 4 x 1000 m²; 2 x 2000 m²

Funding

- Moi University capacity development fund
- Lake Victoria Environment Management Project (LVEMP) - World Bank
- Aquaculture Collaborative Research Support Program (CRSP) - USAID
- Department of Fisheries, GoK – Fisheries personnel training funds
- Canadian International Development Agency (CIDA)

Fish farm construction

- Constructed by manual labour
 - Employment and income
 - Experience and involvement
 - Ready market for fish produced
- In-house project management for staff development
- 2001: 22 ponds completed and feeder pipes started
- 2002: Reservoir and remaining ponds completed

Start of digging



Digging in progress



Completed ponds



Header reservoir



Pond drainage - outflow pipe



Pond drainage - outflow channel



Predator exclusion



Participatory projects* - SCIENCE

- Economically feasible feeds for tilapia using local agriculture by-products
- Production of catfish fingerlings as baitfish for Lake Victoria Nile perch longline fishery
- Growth, reproduction and production of different tilapia strains
- Enterprise budget, business plan and economic risk analysis for tilapia production in Kenya

*These projects funded by Aquaculture Collaborative Research Support Program

Participatory projects - OUTREACH

- Aquaculture training for
 - fisheries officers
 - undergraduates
 - extension workers
 - fish farmers



- On-farm trials for evaluation of alternative aquaculture technologies by local farmers

EXAMPLE - Community benefit

- Employment for >80 young workers during construction
- Fish available for the local market
- Wages of 6000 Ksh enabled a 22 year old girl to pay a debt of 4000 Ksh to release previous school examination results



EXAMPLE - Research extension

- Induced spawning of African catfish
- Quality catfish fry now available for fish farmers
- One farmer raising 10,000 fingerlings in 8 m x 12 m pond
- Sold as baitfish for Nile perch longline fishery of Lake Victoria
- Income greater than any other type of farming available in the neighbourhood

EXAMPLE - Training

- Lack of technical training cited as reason for poor success of aquaculture
- Three-week training sessions provided for more than 200 officers of Kenya Fisheries Department
- Courses focus on pond design, construction, management and business planning
- Fisheries officers cascade expertise to fish farmers
- Five education days provided annually in which up to 100 farmers and extension workers participate

EXAMPLE - On-farm trials

- Logical step in transferring research results to fish farmers
- Able to assess costs and benefits under local conditions
- 28 pond sites stocked following pre-trial workshops
- Average annual production = 7.4 t ha⁻¹
- 80% participants achieved improved results
- Feeding and fertiliser techniques were most important

EXAMPLE - On-farm trials *continued*

- Over 1000 people observed trials and 24 farmers in the region began culturing fish
- e.g. Jimmy Nabwera expanded his two-pond operation to include a reservoir, new ponds and a hatchery



Participants in an A-CRSP sponsored course were shown Nabwera's facilities during a field trip in May 2003

Success measures

- Subsistence aquaculture turning into profitable small-scale enterprises
- Adoption of improved technologies
- Low-yield fish ponds transformed into productive units
- i.e. increased
 - *income*
 - *knowledge*
 - *food*



Lessons learned

- The participatory approach has enabled
 - Information transfer
 - Collaborative funding
 - Stakeholder support
 - Best practice
 - Social welfare
 - Economic growth



Delivering Community Benefits Through Fisheries Partnerships

The participatory approach used by Moi University has shown potential benefits which should be applicable to any community development initiative - whether it be a fish farm in Africa or an urban fishery in Italy.



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