



Application of improved fish solar drier technology for sustainable fisheries: A solution to post-harvest fish losses in drought and famine tolerant remote villages of Lake Turkana, Kenya.

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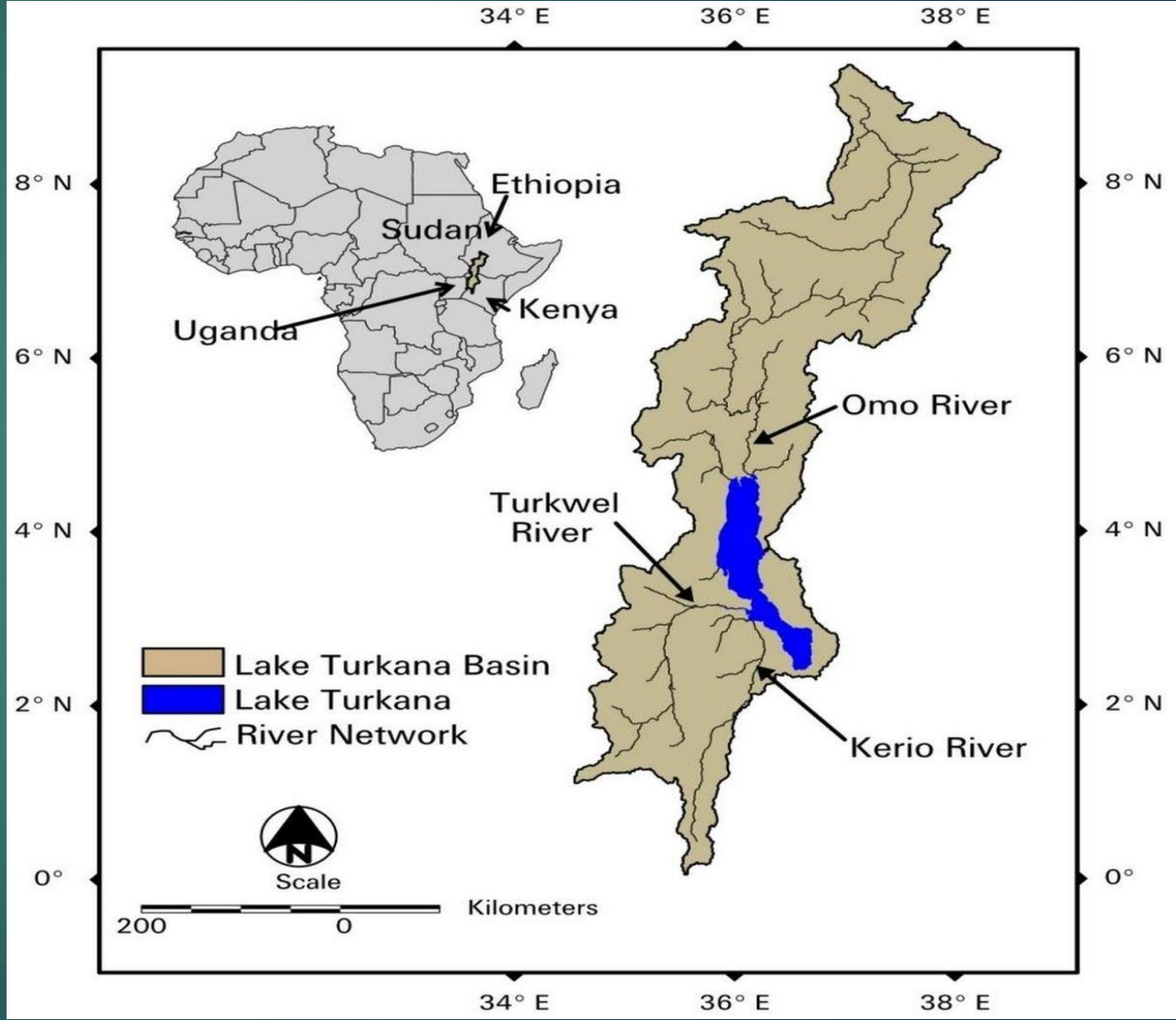
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Outline

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1. Introduction: Location



2. Challenges: Life within L. Turkana region



- ❖ Very remote with high poverty levels
- ❖ It experiences drought and famine
- ❖ It receives intense solar radiation of high potential [Government of Kenya [GOK], 2009; Johnson and Malala, 2009; Avery, 2013].

3. Solution: Fisheries as an alternative



❖ The Lake's fisheries potential is enormous

❖ The lake's fisheries has become an alternative source of food security to the rising population within this climatically challenged area [Ojwang et al., 2016; Emily 2016].

❖ Switching from pastoralism and nomadism to fisheries is recommended [Kenya Marine and Fisheries Research Institute (KMFRI) 2017].



4.0 Poor Fish handling techniques



- ❖ Poor post-harvest fish handling methods has been a risk to the quality of fish from this lake [SmartFish, 2013].



- ❖ High incidences of post-harvest fish spoilages (KMFRI, 2017)



- ❖ Infestation of harvested fish by pathogens and pests.
- ❖ Poor sanitation and hygiene conditions

5. Environmental and socio-economic Impacts



- ❖ Destruction of few available desert forests
- ❖ Low pricing and rejection of fish at market [Richard, 2003].
- ❖ More time spent on collecting wood fuel for fish smoking (children and women)
- ❖ Reduced schooling time and hard labour related health problems (GOK, 2009).

6. Solution: Solar drier as an alternative



- ❖ The technology is Kenya Marine and Fisheries (KMFRI) Scientists' research idea to sustainably address the high post-harvest fish losses.
- ❖ The fish solar drier has proved to be a better alternative to the cultural fish preservation methods like water preservation, sand drying, line drying, smoking and open rack drying [KMFRI 2017].

6.1 Construction and Use



- ❖ It is made up of timber, transparent PVC sheeting, wire-mesh rack and black gravels.
- ❖ The structure is 1.5m in width x 1m in Length x 2m in height and erected 1m above the ground.
- ❖ The roofing frames are hinged to allow easier opening during the drying process
- ❖ Procedure (Catch, Gutting, Filleting, Rinsing, Solar drying, Packaging)



Comparative analysis

PARAMETERS	PRESERVATION METHODS		
	Smoking	Open Rack drying	Solar Drying
Moistures content on 2 days drying	10 to 20 %	20 to 30 %	< 10 %
Market Durability	Short	Short	High
Construction Cost	Cheaper	Cheap	Expensive
Operation Cost	Expensive	Cheap	Cheaper
Impact on Environment	Negative	Positive	Positive
Social Impact	Negative	Negative	Positive
Fish taste	Bad	Bad	Good
Market preference	Low	Low	High
Market cost	Low	Low	High

6.2 Justification: Benefits of fish solar drying

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- ❖ Highly beneficial- With the current impact of climate change phenomena, where food sources are diminishing, and the situation being worst in desert areas.
- ❖ Reduced spoilage and Improved fish quality for high pricing and wide market acceptability [KMFRI 2017].
- ❖ Improved Water Sanitation and Hygiene (WASH) within the beaches.
- ❖ Created humble school time for both young boys and girls and reduced hard labour on women
- ❖ Has greater potential in contributing to sustainable fisheries, social well being and environmental conservation.

7.0 Conclusion

Existing Impediments

- ❖ Inadequate funding
- ❖ Inadequate solar driers for all the Beach Management Units (BMUs)
- ❖ Conflict on the ownership
- ❖ Inadequate information on usage and maintenance
- ❖ High cost of construction materials

Way Forward

- ❖ Seek for more funding to support further upscaling of the driers in all the BMUs
- ❖ Continued engagement with the BMU through monitoring of usage and technology adoption
- ❖ Train the beneficiaries on usage and maintenance
- ❖ Encourage community based ownership

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