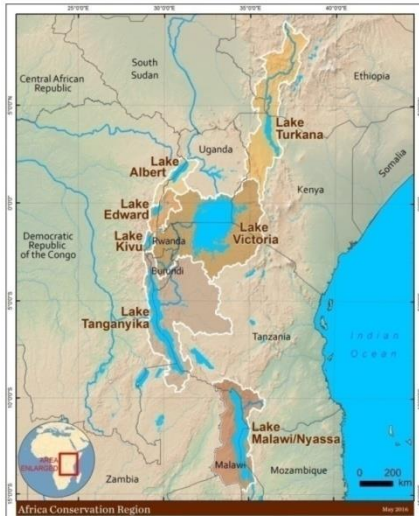


**PROMOTING ENVIRONMENTALLY, ECONOMICALLY  
AND SOCIALLY SUSTAINABLE CAGE AQUACULTURE  
ON THE AFRICAN GREAT LAKES (PESCA)**



**Map showing the African Great Lakes**

**Preamble**

PESCA is regional project developing a decision support tool (DST) and best management practices (BMPs) to guide improvement of policies to increase fish production through cage aquaculture with negligible impacts on the water environment of the African Great Lakes (AGLs) and promoting use of those practices through adaptive research.

The project is implemented in the Ugandan, Kenyan and Tanzanian parts of Lake Victoria, Lake Albert, Lake Edward, Lake Kivu, and the Malawian and Mozambican parts of Lake Malawi/Nyasa/ Niassa. It is coordinated by the National Fisheries Resources Research Institute (NaFIRRI) of the National Agricultural Research Organization (NARO) and implemented with partners from: Kenya Marine and Fisheries Research Institute (KMFRI), Kenya; Tanzania Fisheries Research Institute (TAFIRI),

Tanzania; Department of Fisheries, Malawi; Department of Fisheries, Zambia; IIP - Fisheries Research Institute, Mozambique; Rwanda Agriculture Board (RAB) / Research Department; and the Source of the Nile (SoN) Fish Farm Ltd, Uganda.

These are supported by experts from: Great Lakes Fishery Commission, USA; Cornell University, Atkinson Center for a Sustainable Future and Department of Ecology and Evolutionary Biology, USA; and Hull International Fisheries Institute (HIFI), University of Hull, UK.

The project is supported by the African Great Lakes Conservation Fund administered by The Nature Conservancy with funding provided by John D. and Catherine T. MacArthur Foundation to accomplish key priority issues coming out of the 2017 African Great Lakes Conference held in Entebbe, Uganda. Interested technical persons, institutions, and development partners are encouraged to join the project to contribute to development of this emerging industry.

**Rationale**

The AGLs are important sources of fish which supports livelihoods of about 1.8 million people and are hotspots of high fish biodiversity, especially Haplochromine cichlids of ecological and scientific importance. However most economically important capture fisheries of these lakes have declined due to overfishing and degradation of the fish habitats and can no longer meet the increased demand for fish by the rapidly increasing human population.

**Benefits and challenges of cage aquaculture**

Cage aquaculture which involves growing fish in cages suspended in water, while maintaining free exchange of water between the enclosure and the water body started on Lake Malawi in 2004 and Victoria in 2006 and has spread rapidly to other AGLs. There are over 5000 cages on Victoria, about 10 cages on Tanganyika, 400 cages on Kivu, 50 cages on Malawi/Nyasa/Niassa. Cage aquaculture has in less than 20 years, demonstrated capacity to increase fish production to more than 40 kg m<sup>-3</sup>

compared to less than 2 kg m<sup>-3</sup> from land based aquaculture which started in the AGL region more than 60 years ago. Cages have a higher production per unit volume and lower construction costs compared to land based systems targeting the same production. Fish survival rate is high. On-farm operations such as handling and harvesting are more efficient and there are high returns on investments.



The structure of a typical cage

Cage aquaculture can, however pollute the water body from uneaten feed, excreta and dead fish, may disrupt biodiversity, result in disease outbreak and interfere with other lake uses such as navigation. It therefore needs proper guidance to safeguard the integrity of the water body. There are, however, no lake-specific BMPs and adequate policies to ensure long-term socio-economic and environmental sustainability cage aquaculture on the AGLs.

#### Objectives, Outputs, Outcomes and Impacts

PESCA established an AGL Cage Aquaculture Network (AGL-CAN) of partners to develop a BMP and DST to guide establishment, operation and monitoring of cage aquaculture in the AGLs. The

network will examine and share information from individual AGLs including: Tradeoffs between capture fisheries, other socio-economic uses of water bodies, the aquatic environmental health and cage aquaculture; Provide guidelines for planning and operation of cage aquaculture farms; Examine policy, regulatory, and human resources requirements and recommend improvements; Guide monitoring and management of the environment of cage aquaculture farms; Increase awareness; and Work with farmer groups to test the BMP and DST.

These efforts are expected to: Strengthen regional partnership and reduce costs; Improve planning and operations, policy and compliance; Provide lake-specific BMPs and DST and easily accessible awareness raising tools including a video tutorial and a mobile application for improvement of knowledge to increase the number of farmers with skills in cage aquaculture. The intervention is ultimately expected to increase fish production and employment, and improve nutrition from cage aquaculture with negligible negative impacts on other lake uses and the water environment.

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