

## Development Finance Working Paper Series<sup>1</sup>

### The economic evaluation of aquaculture as a climate change adaptation option in fisher communities of Zimbabwe

**Admire Tongowona  
Ailie Charteris**

**No. DEFWPS170011**

**December 2017**

---

<sup>1</sup> **Note:** The findings from this working paper does not in any way reflect the views of the Development Finance Centre (DEFIC). The views are only representative of the authors.

©Development Finance Centre (DEFIC), GSB, UCT – 2017

**Editorial Board**

Dr Sean Gossel – Graduate School of Business, UCT  
Dr Latif Alhassan – Graduate School of Business, UCT  
Ms Ailie Charteris – Graduate School of Business, UCT  
Dr Mundia Kabinga – Graduate School of Business, UCT  
Dr Steven Rogers – Graduate School of Business, UCT  
Lungelo Gumede – Graduate School of Business, UCT

**Advisory Board**

Professor Nicholas Biekpe – Graduate School of Business, UCT  
Professor Charles Adjasi – University of Stellenbosch Business School, SU  
A/Prof Odongo Kodongo – Wits Business School, University of Witwatersrand

**Published by:**

The Development Finance Centre (DEFIC),  
Graduation School of Business, University of Cape Town,  
9 Portswood Rd, V & A Waterfront, Cape Town, 8002  
Centre webpage: <http://www.gsb.uct.ac.za/s.asp?p=791>

All rights reserved. Any reproduction, publication and reprint in the form of a different publication, whether printed or produced electronically, in whole or in part, is permitted only with the explicit written authorisation of the DEFIC or the authors.

# The economic evaluation of aquaculture as a climate change adaptation option in fisher communities of Zimbabwe

Admire Tongowona and Ailie Charteris

## Abstract

This paper investigates the economic viability of aquaculture as a climate change adaptation option in rural fisher communities of Zimbabwe. The southern lowveld district of Mwenezi was used as a case study in the economic evaluation of pond culture and cage culture as a climate change adaptation strategy from a baseline position. Data was obtained from secondary sources which include the private sector involved in aquaculture, civil society organisations and the fishers practising aquaculture in both Mwenezi and another district, Kariba. The cost benefit analysis method of economic evaluation was used to assess the economic viability of pond and cage culture forms of aquaculture. The net present value, internal rate of return and benefit cost ratio were used as the decision criteria. Two scenarios were considered depending on the type of funding for the initial investment - scenario one was built on donor funding support while scenario two relied on a bank loan with interest for financing. A sensitivity analysis was also performed to determine the extent to which different factors affect the economic viability of both pond and cage culture. Both pond and cage culture were found to be economically viable as climate change adaptation options in fisher communities of Zimbabwe. Cage culture was found to have a higher net present value under both scenarios when compared to pond culture. However, under scenario two, pond culture was found to have a higher internal rate of return and benefit cost ratio. The inconsistencies were due to the variations in the scale of upfront investments between pond and cage culture where the latter requires a higher initial investment. Key factors that affect the viability of aquaculture as an adaptation strategy in Zimbabwe include the market price of fish, the cost of fish feeds and the price of fingerlings. While these factors are primarily economic, there are other factors which may affect the viability such as the increasing frequency of natural disasters.

**Keywords:** Economic Viability | Aqua Culture | Climate Change | Zimbabwe |