

**A Cost Benefit Analysis of the Fish Farming  
Enterprise and Productivity Program in Kenya:  
The Case of Implementation of the Aquaculture Development  
Component in Meru County**

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# INTRODUCTION

## The Fish Farming Enterprise Productivity Program

### ◎ The FFEPP Objectives

- FFEPP- Part of wider economic stimulus programs 2008-2012
- Increase aquaculture development and production in the midterm and long term
- Improve rural livelihoods: enhance food security; alternative source of income; employment; and rural enterprise development

### ◎ FFEPP Design and Components

- Implementation units
- Implementation model and deliverables
- Aquaculture production systems design
- Meru County



# INTRODUCTION



## Research Questions:

Is the FFEPP aquaculture component meeting its intended objectives?  
How is the economic performance of the project for now and in the future?

## Research Objectives:

Perform a cost benefit analysis of the FFEPP project as implemented in Meru County.  
Make policy recommendations based on the outcomes of the cost benefit analysis.

# METHODOLOGY

## Research Design

Descriptive research

Literature review- Verification with extension persons

## CBA

## Mode of Analysis

Midterm CBA

Financial and Economic CBA

## Steps

- 1) Scenario development (Determining referent groups and options)
- 2) Impact assessment and modelling
- 3) Valuation and 4 CBA evaluations performed
- 4) Sensitivity analysis

# METHODOLOGY

## Framework and Assumptions



<b>PARAMETERS</b>	<b>VALUE</b>
<b>Project Period</b>	<b>1) 15 Years, 2) PV Net Benefits=0</b>
<b>Discount rate</b>	<b>7%</b>
<b>Opportunity Cost of Land (400m<sup>2</sup>)</b>	<b>KSh 5,115/ annum</b>
<b>Opportunity Cost of Labour</b>	<b>KSh 6,000</b>
<b>Renovation</b>	<b>KSh 12,500/ 15 years</b>
<b>Scrap Cost</b>	<b>KSh 19,000</b>

# RESULTS AND DISCUSSION

## COST BENEFIT INDICATORS



<b>INDICATOR/ ANALYSIS</b>	<b>VALUE (15 Years)</b>	<b>VALUE (Extended)</b>
<b>NPV</b>	KSh 59 m (USD 578,200)	KSh 197.9 m (USD 1.9 m)
<b>IRR</b>	10%	13.2%
<b>BCR</b>	1.05	
<b>PAYBACK</b>	11 Years (2019)	

# RESULTS AND DISCUSSION

## Sensitivity Analysis



Change in variable	Corresponding Change in NPV					
	Market price	Cost of feeds	Pond production	Fingerlings price	Discount rate	Dropout rate
<b>-20%</b>	-452%	175%	-160%	65%	50%	0.57%
<b>-10%</b>	-226%	87%	-80%	33%	24%	0.34%
<b>Baseline Values</b>	<b>KSh 350</b>	<b>KSh 120</b>	<b>188.2 kg</b>	<b>KSh 10</b>	<b>7%</b>	<b>1.16%</b>
<b>10%</b>	226%	-87%	80%	-33%	-22%	-0.23%
<b>20%</b>	452%	-175%	160%	-65%	-43%	-0.46%

# RESULTS AND DISCUSSION

## **Other Direct Benefits**

- Improved food security and nutrition
- Improvement of livelihoods through new income sources and employment

## **Indirect Benefits**

- Rural economic development and economic multiplier effect along the value chain
- Increase agro-production and other positive externalities
- Reduced pressure on capture fisheries

## **Other Indirect Costs**

- Losses on related agro-based enterprises
- Negative externalities on agricultural and other sectors
- Indirect government costs

# LIMITATIONS

- Some direct and all indirect benefits were not valued
- Indirect costs not valued
- CBA based on secondary data



# CONCLUSIONS



## **CBA Outcome**

- Points out FFEPP performance and gains for households and the region
- Identifies the critical assumptions (variables) determining the performance of the project

## **Recommendations**

- The need to change the project model, production systems design and deliverables in future undertakings
- Strengthen the value chain and post harvest sector– market development
- Strengthen private sector roles through public private partnerships
- Development an implementation of BMP- best management practices
- Proper exit strategy and backstopping

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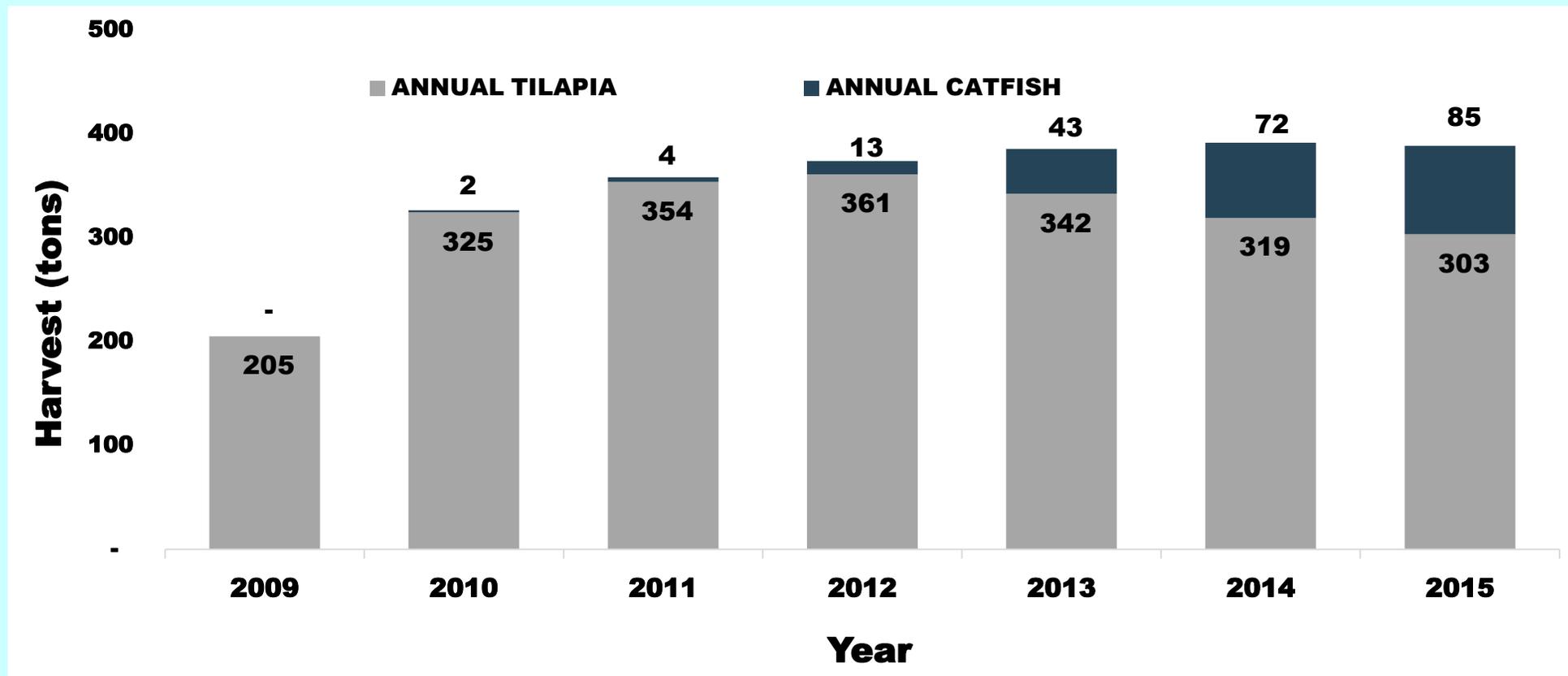
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# FISH OR MAIZE



# RESULTS AND DISCUSSIONS

## Annual Meru FFEPP Pond Production



# RESULTS AND DISCUSSION

## Sensitivity analysis

