

## **MEASURING THE ECONOMIC IMPACTS OF AQUATIC ANIMAL DISEASES: THE CASE OF CATFISH FARMING**

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Aquatic fish diseases create economic hardships among fish farming households and owners and operators of backwardly- and forwardly-linked businesses. Economic recovery requires long-term remedial measures to restore healthy and productive fish populations and allow the resumption of harvesting, processing, distribution, and consumption of fish products. Estimates of the adverse economic impact of aquatic animal diseases are necessary information to justify the implementation of appropriate government programs for the fish farming industry.

Economic impact analysis is an attempt to estimate the change in economic activity in a specified region, caused by a particular business, organization, policy, program, project, activity, or other economic events, e.g., disease outbreak. Total economic impact is the sum of direct, indirect and induced impacts. Direct effects express the economic impacts in the sector in which the expenditure was initially made. Indirect effects result from changes in the economic activity of other industrial sectors which supply goods or services to the industry being evaluated. Induced effects are the result of personal consumption expenditures by industry employees.

Economic impact analysis estimates output or sales, employment or jobs, labor income, value added and tax revenues. The income, value-added, and output impacts are expressed in dollars for the year specified by the user. Output or sales are the gross sales by businesses within the economic region affected by an activity. Labor income includes personal income including wages and salaries and proprietors' income or income from self-employment. Employment impacts are expressed regarding a mix of both full-time and part-time jobs. Value-added is the contribution made to the value of aquaculture products at each stage of harvesting, processing, and distribution.

The overall goal of this project is to develop a methodology for assessing the economic impacts of aquatic animal diseases and estimate the adverse effects of aquatic fish diseases. The major tasks involved in evaluating the adverse economic impact of aquatic animal diseases are as follows:

1. Identify the types and causes of mortalities of aquatic animals.
2. Compile estimates of mortalities associated with aquatic animal diseases.
3. Compile estimates of annual production and values of aquatic animals.
4. Estimate direct economic losses due to aquatic animal diseases.
5. Measure the economic impacts of aquatic animal diseases.