

## **Sluice gate operation, outcomes and trade-offs: BayFish - Bac Lieu, a model for integrated management of inland coastal resources in southern Vietnam.**

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### **Abstract**

BayFish – Bac Lieu is a Bayesian model aimed at identifying trade-offs and optimal water control options for improved management of water-dependent resources in the inland coastal area of Bac Lieu (southern Vietnam). This report presents the methodological aspects of the development of a Decision Support System based on Bayesian networks, then details the consequences of four sluice gates operation modes on rice, fish, crab and shrimp production in the province, with a focus on financial, food security and environment outcomes. The model development process actually highlighted conflicts between income generation, food security and environmental protection. Households income derived from shrimp farming, as well as fish production, benefit directly from open sluice gates. However, this option has an opposite effect on food security and its most important variable, rice production. The model showed that an optimal operation schedule would be a compromise with at least one sluice open at all times.

**Keywords:** *Water management, Bayesian modelling, BayFish models, saline intrusion, aquatic resources, Bac Lieu, Vietnam delta.*