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"Development on the margin"

From Marginal to Resilient Aquaculture Based Livelihoods in Coastal Mangrove Zones

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Abstract

Increasing welfare pushes the global demand for luxury food such as shrimp. This growing demand has to be reconciled with concerns for the environment. In many countries mangrove forest is still threatened by short term benefits from timber and unsustainable practices of shrimp farming. Financial returns of semi-intensive shrimp culture systems in former mangrove forests are often short lived. Following declines in productivity as a result of deteriorating quality of bottom and water, and outbreaks of shrimp disease such as white spot virus, farmers *e.g.* in free access mangrove forests of East-Kalimantan reverted to extensive systems. Contrastingly farmers in the Philippines intensified and developed the so-called green-water (GW) technology. Using mangrove to filter the effluent water, such systems contribute to sustainable livelihoods in resilient aquatic ecosystems.

In East-Kalimantan, mangroves recover in areas where shrimp production collapsed, but in search for a livelihood people turn to other virgin natural resources. Can we prevent the cycle of destruction and collapse by reorganising the sector and create resilient livelihoods? Though the GW system spreads rapidly over the Philippines it's dissemination to e.g. Indonesia requires convincing financial data.

Using bio-economic modelling we explore potential constraints hindering uptake of apparently more sustainable strategies, to generate information for policy makers. After presenting financial data of GW and non-GW farms in the Philippines, we model development options of extensive farms in East-Kalimantan. We discuss the outcomes of the financial assessment, and the implications for options of sustainable mangrove-shrimp agro-ecosystems management.

Keywords: Better management practices, bioeconomic modelling, East Kalimantan, Indonesia, integrated mangrove-shrimp culture, multiple-demands

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