Post-harvest improvements in fisheries

20–40% of fish catch is lost post-harvest. Some post-harvest techniques like smoking in huts can be detrimental to the health of processors.

Current strategies: involve the introduction of alternative post-harvest technologies including ice storage; drying facilities; alternative smoking kilns; alternative transportation to market.

Assumptions for resilience:

a) Improved post-harvest processing can improve the amount available, quality and price of post-harvest catch, which in turn improves livelihoods;

b) improved post-harvest processing can decrease pressure on coral reefs and mangroves for fuel; and

c) improved processing can have significant health benefits, particularly for women who tend to be involved in smoking and cooking.

Ecological impacts

Positive

Limited evidence indicates that:

- Improved smoking kilns reduce mangrove fuel use by 50%.

Negative

- No documented evidence was found that improved post-harvest processing reduces fishing effort.

Implications for ecological resilience

Reduced use of mangroves for fuel supports:

- Their role as nursery grounds and refugia for coral reef species.
- Their ability to provide coastal protection against storms and sea-leave rise.
- Their ability to reduce siltation rates from land-use change and assimilate pollution.

Social impacts

Positive

Limited evidence demonstrates:

- Increase in amounts of fish post-processing with improved drying / smoking technologies.
- Mixed evidence of income benefits - some studies suggest 105% improvements, other studies show only up to 3.5%.
- Perceived health benefits from new smoking kilns.

It has been suggested that the introduction of post-harvest technologies can:

- Produce safer food products with implications for health.
- Support food security as less fish is wasted and the increased shelf-life of fish products means they can be stored and made available when catch is limited.

Negative

No documented evidence was found, although:

- Anecdotal evidence suggests that beneficiaries, such as women, are reliant on other community members (i.e. fishers who supply them with fish) for the success of the strategy, which can fail as a result.

Implications for social resilience

- Improvements to incomes are relatively minor with the technologies discussed (adapted traditional technologies). Nevertheless, consistent but small improvements may still be valuable for social resilience.
- Potential health benefits from new processes are more significant in terms of long-term social resilience.

Spatial scale: Benefits manifest at the local level and are relatively minor. Authors argue that if you scale up minor improvements they amount to significant development benefits.

Temporal scale: Income benefits occur in the short-term; health benefits will be realised in the medium- to long-term.

Case study: Fish drying technology and Kipini Women Group, Kenya

The Kipini Women Group, through the EU-funded SECUREFISH project (2012–2014), were supported to improve the post-harvest processing of fish. The group received a solar dryer from the Kenya Marine and Fisheries Research Institute, combining a solar tunnel drier with windmill generated electricity to ensure continuous drying for 24 hours irrespective of weather or light conditions. Extracts from water hyacinth as well as turmeric were introduced as sources of antioxidants to preserve dried fish and extend shelf-life. Improved packaging, including vacuum packing were introduced to reduce microbial counts. In addition the group received training on determining fish freshness, filleting, hygienic handling, value addition, fish drying, operation of the drying system, packaging and labelling. Trained members then train their colleagues. The project aimed to dry fish to international standards, opening up opportunities for accessing markets worldwide.

Has it been successful? Whole and dried fish fillets were successfully produced for local and regional markets. The drier extends the shelf-life of fish from six to twelve months. Use of the dryer has spread along the coast of Kenya and to the inland fishery of Lake Turkana. No evidence is available for the impact of the drier on local livelihoods.

Challenges: the cost of the solar tunnel dryer is quite high due to the solar panels, but work is on-going to reduce the cost.

Future application: The dryer also has potential for use with other produce such as fruit and vegetables. Other post-harvest techniques are also being developed. For example, a women's group in Kuruwitu, Kenya are filleting fish and freeze-packing it for flights direct to Nairobi.

Further reading

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