

**Development of Sustainable Shrimp Production:  
Issues and Policy Options**

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*The document bases itself on the main findings of the study on “Better Practices for Shrimp Farming” which was carried out in the Puttlam and Chilaw Districts of Sri Lanka and review of literature.*

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**Introduction**

The significance of shrimp exports to the national exchequer is growing rapidly. It is one of the few areas in which much of the coast is effectively linked into the global system. It is now widely recognised that shrimp production is going to continue and, as such, the key question is no longer whether there should be shrimps, but replaced by how to make shrimp production more sustainable, less environmentally damaging and more equitable in terms of the benefits that go to local people. This would require actions by the state and entail enacting legislations, developing guidelines and effective enforcement leading to give more control to local people.

In this backdrop, the GPA commissioned a study<sup>1</sup> to make in-depth analyses of various farming practices, and to suggest policy options concerning sustainable production of shrimp from environmental and socio-economic perspectives. The specific objective of the study has been;

*to recommend a set of better practices, which could be adopted by large and small-scale shrimp farmers under acceptable legal conditions to facilitate the delivery of quality products profitably, without damaging the environment and the living conditions of the fisher communities.*

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<sup>1</sup> The study was carried out in the Puttlam and Chilaw Districts of Sri Lanka and based its analysis on the data collected from seventy shrimp farms of various sizes with different management practices. In addition to the farm level information, the study team had discussions with various stakeholder namely; local population, officials of various government departments, office bears of Shrimp Farmers Association, NGO workers and the local government officials.

## The Issues and Concerns

As to the development of shrimp farming, respondents of various stakeholder groups expressed their concerns with diverse contents and interpretations. While many emphasised the high economic potential of the activity, concerns were raised as to

- location of shrimp farms,
- regulations relating to siting of shrimp farm and their operations,
- poor co-ordination among and between the agencies responsible for issuing permits, and
- monitoring of shrimp farms

These context specific local level responses are consistent to responses and concerns raised in many other circumstances. A FAO publication based on review of literature and experiences of shrimp aquaculture under different social and institutional contexts noted that without some form of intervention, short-term financial perspectives tend to dominate development decisions to the detriment of environmental and social objectives (FAO 2001: 5). This is more so due to the fact that often visible costs are insignificant when an individual farm is considered but they may be highly significant in relation to the sector as a whole. In consideration of the above, the need for better planning and management of the shrimp aquaculture sector is recognised, and policy options are discussed.

### Land Use Zoning and Siting of Shrimp Farms

Policies should address sustainability of the soil and water, which create specific conditions for fulfilment of the critical ecological functions. This calls for careful delineation of areas in the form of **land zoning** keeping in view the main functions of the system. Estimation of the *environmental capacity*, taking into account the cumulative impact of the shrimp aquaculture is of particular relevance to promote sustainable development. **Land use zoning**, if adhered to, could address multiple uses of land to accommodate potentially antagonistic activities and limit those with cumulative environmental effects.

**Siting of shrimp farm** must take into account environmental, technical, managerial and social considerations. If the carrying capacity is exceeded, and water quality and ecological degradation ensue, this will affect both shrimp farmers and other users. Shrimp farms are often developed close to human settlements, agricultural lands, fresh/ground water sources and irrigation schemes, without taking any preventive measures for saline contamination of water resulting from withdrawal, discharge or seepage. **Legislation and guidelines should be put in place to regulate siting of farms.** Appropriate siting of shrimp farming should therefore be such that they

- minimise critical natural habitat destruction;
- minimise destruction of, or adverse effects on other productive land;
- prevent saline contamination of ground water, agricultural land, and fresh water irrigation systems, which can result from withdrawal, discharge or seepage;
- minimise the impacts of shrimp farm effluents
- minimise the spread of disease (by maintaining adequate separation between farms and adequate separation between influent and effluent waters);
- maximise the production of the shrimp farm itself (by siting on suitable soils)

### ***Issuance of Permit***

To ensure appropriate siting of farms would require introduction and **issuing of permits or licenses** by competent authority. Keeping in view the functions and sensitivity of the coastal ecosystem, and the criteria of land use zoning, the government must oversee the planning and authorisation of setting up shrimp farms. Issuance or renewal of annual permits, licenses, or other type of authorisation should not be granted to shrimp farm projects that might result in the degradation of resources, loss of mangrove areas and wetlands, which are key to the livelihoods of coastal inhabitants.

While issuing permits bio-physical and social environment of the area where farms are proposed must be taken in to considerations. Priority should be given to shrimp aquaculture projects that employ local residents and give them an equity position in local production and processing facilities. **Governments should frame legislation, develop guidelines and a transparent mechanism of implementation and enforcement** to resolve conflicts arising from the use of resources held in common, or to which there are competing claims. This entails:

- shrimp aquaculture conducted within a multi-stakeholder based coastal resources management plan developed with participation of the local communities that critically depend on this particular resource base for their livelihoods.
- shrimp aquaculture planning must include protection of future generations of common property resources, productive assets of the area and biological diversity, which offers opportunity for the local people to meet their economic and social goals.
- Shrimp cultivation should be embedded in the integrated coastal resources development/management plan (often refereed as ICM/ICZM).
- the government departments responsible for issuing permits for shrimp farms must subscribe the vision of ICZM and keep this in perspective while issuing permits.

### ***Environmental Impact Assessment***

No license or permit should be issued for shrimp farms without prior environmental impact assessments (EIA) by multi-disciplinary team. Adequate attention must also be paid to ascertain that the suggested recommendations in the form of Environmental Management Plan (EMP) are adhered to.

### ***Design, Operation and Management of Farms***

Along with siting, there is a **need for better planning and management practices** of the industry at the implementation stage. Among others, better management would entail:

- inclusion of settling ponds or alternative wastewater treatment areas in the pond layout.
- provision of suitable biological filter system in the design of settling ponds if water supplies contain high sediment loads
- mandatory reservation of 10 per cent of the total cultured farm area land as sedimentation area
- maintaining effluent standards and provisions for wastewater management
- sealing off the effluent dissemination and minimising the effects of effluents on surface and groundwater quality by excavating cut-off trenches

- mandatory construction of reservoirs (25 per cent of the total pond area) for water storage with necessary treatment facilities and introduction of water recycling systems in farms especially those exceeding 4ha surface area.
- limiting saline contamination of soil and water through use of sound technical solutions (to minimise seepage) or by management solutions (better disposal of saline material or contaminated water) including effective land use planning.
- minimising and/or prevention of sludge disposal by leaving pond fallow to enhance the decomposition of organic matter by bacteria. Pond bottoms may be dried and tilled to allow oxidation and mineralization of sediments.
- proper disposal of pond sediment or sludge on high ground or where it does not result in polluted runoff. Sludge may be used as landfill, but should never be disposed of in drainage canals or in fresh water.

### ***Global Moratorium: A Step Towards Greener Production***

It is strongly recommend that there should be a global moratorium on any further expansion of shrimp aquaculture in coastal areas until the criteria for sustainable shrimp aquaculture are put into practice. Bio-security should be a prime consideration along with food safety in enforcing the code of conduct. An important criterion of assessing bio-security would be **'production without net loss of mangrove and other important variables of the coastal ecosystem'**. Based on the codes of practice a system of certification or labeling (e.g., "Green label") could be introduced.

To make green labeling effective lessons from enforcement mechanisms of 'Health Analysis at Critical Control Point' (HACCP) could be of use. It may be worth noting that countries that failed to reach the standard defined under HACCP principle, their products were denied access to EU and US markets. This embargo was effective to introduce changes in the production and processing system of shrimp production.

### ***Awareness Raising, Outreach and Monitoring***

A programme of awareness raising and training has to be developed to reach the shrimp farmers and their representative organization to disseminate the guidelines and codes of practice. A well-structured dialogue on a continued basis, at least during the initial phase of the process would be a pre-requisite to facilitate the implementation of better practices, encourage shrimp farmers to take greater responsibility for environment and create conditions to change people's perception and strengthening enforcement mechanisms.

**Monitoring the implementation of the codes of conduct** would call for the formation of independent bodies at national, regional and international level with representation of competent independent professionals (e.g., academic and practitioners), international agencies, non-governmental organisations and core agencies of the government. UNEP in collaboration with FAO based on the earlier work of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) and drawing from the HACCP implementation mechanisms may take the lead to create public awareness and mobilise support to facilitate the process.