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Environmental Impacts and their Socioeconomic Consequences of Shrimp Farming in Bangladesh

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INTRODUCTION

Commercial shrimp culture in Bangladesh has expanded dramatically over the last two decades for its´ high demand in the international market and its potential for making quick profit. This study was carried out to investigate the environmental impacts and to identify their socio-economic consequences for horizontal expansion of shrimp farming in southwest coastal belt of Bangladesh.

MATERIALS AND METHODS

The study was conducted in 5 selected villages of Paikgacha Upazila (sub district) of Khulna District, in 2006. The area is close to the Sundarbans mangrove forest. Information was collected from 180 respondents using land-use survey, PRA and questionnaire survey techniques. Field observation based on the perception of local people was carried out and recorded documents of relevant studies were examined. Changes in the land-use pattern, socio-economic status and the environmental condition of the area were recorded for three time periods: 1980, 1990 and 2006.

Figure 1. No feed for livestock. The cow is grazing `Algae´ in the`*gher´*

Figure 2. People who are suffering from malnutrition are expressing their views to the enumerator

RESULTS

Environmental impact of shrimp farming

• The practice of shrimp culture needs saline water as an input to the shrimp pond. In Bangladesh, thousands of hectares of mangrove forests have been cleared to make room for shrimp farms. Mangrove forests help control flooding, preserve water quality, protect shorelines from storms and erosion. When mangroves are cleared, saltwater pumped into shrimp ponds destroys the soil, salinizing nearby areas. When saline water intrusion occurs, sedimentation from upstream water settles in riverbed and canal bed, cause waterlogging in the shrimp ponds and on agricultural land.

• The shrimp-processing industry drain their pollutants into the river, causing water pollution. Water in the shrimp ponds is also polluted because of the application of feed and fertilizer for the shrimp. Thus, the by-products of the shrimp ponds and shrimp industry pollute water and soil and degrade the quality of the overall environment. Vegetation, crops, fish and livestock are seriously damaged by the process of shrimp cultivation. The conversion of agriculture to shrimp farming created a physical and ecological imbalance, which has largely destroyed the natural ecosystem of the study area. Table 1, 2, 3 and 4 illustrate some of the environmental impacts of shrimp farming.

Land area	% of gher households		
	1980	1990	2000
<0.2	0	66.2	70
0.21–1.0	66.7	16.2	11.6
1.1–3.0	16.7	10.3	8.6
3.1–6.47	16.7	4.4	5.9
>6.47	0	2.9	4.0
Total	100	100	100

Table 1. Size of shrimp *ghers* according to the household respondents in Paikgacha Upazila from 1980 to 2006 (field survey,2006).

Type	Number of animals		
	1980	1990	2000
Cattle	2856	1065	379
Buffalo	243	104	26
Goats	759	389	64
Ducks	12543	4816	796
Chickens	6378	3765	879

Table 2. Changes in numbers of livestock and poultry in Rampal Upazila from 1980 to 2006 (field survey, 2006).

Name of trees	No. of trees		
	1980	1990	2006
Mango	3,302	1833	928
Jackfruit	1,369	629	197
Guava	1770	654	146
Neem	649	283	143
Palm	1087	560	49
Coconut	5025	653	313
Bamboo	3454	687	456
Lemon	760	316	105
Banana	9337	2675	1945

Table 3. Changes in numbers of trees in homestead gardens in Paikgacha Upazila (field survey, 2006).

Distance from homestead (m)	Percentage		
	1980	1990	2006
<10	0	0.9	46.0
10–24	0	3.5	24.1
25–50	0.3	8.7	15.8
51–100	0	4.0	5.3
101–300	0.7	5.6	3.5
301–500	17.6	16.9	4.2
>500	81.4	61.4	3.1
Total	100	100	100

Table 4. Encroachment of homestead land by shrimp farms in Paikgacha from 1980 to 2006 (field survey, 2006).

Socioeconomic consequences of those environmental impacts

•These ecological imbalances again create negative impact on socioeconomic environment at surrounding areas like as lower production from crops and vegetables, loss of valuable fruit trees, fresh water crisis for drinking and related diseases like diarrhoea and dysentery, loss of grazing lands as well as livestock and poultry resources, lack of fuel wood, decline in household incomes from both on-farm and off-farm sources, extra burden on women and children for collecting drinking water and fuel wood from far places.

•Those who live in the affected areas are left without livelihoods and eventually forced to migrate. Protests are often met with violence. In Bangladesh alone, more than 100 people have been killed in conflicts with commercial shrimp farmers (Karim,2001).

CONCLUSION

Shrimp cultivation is no doubt economically beneficial for a selected group of people as well as for Bangladesh, but it has negatively affected the livelihoods of landless and marginal farmers, making difficulties for them to survive in the area.

References: 1. Karim, M.R. and Shah, M.S. (2001) *Brackish Water Shrimp Cultivation Restricts Coastal Agriculture*. Khulna University Studies, Khulna, Bangladesh 2. MOFL (Ministry of Fisheries and Livestock) (1997) Fisheries resources development and management. Paper presented at National Workshop, 29 October to 1 November 1997, MOFL, Dhaka, Bangladesh.

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