CPD Occasional Paper Series

ENVIRONMENTAL CONSEQUENCES OF STRUCTURAL ADJUSTMENT: TOWARDS SUSTAINABLE SHRIMP CULTURE IN BANGLADESH

Paper 2

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The Centre for Policy Dialogue (CPD), established in 1993, is an innovative initiative to promote an ongoing process of dialogue between the principal partners in the decision making and implementing process. The dialogues are designed to address important policy issues and to seek constructive solutions to these problems. The Centre has already organised a series of such major dialogues at local, regional and national levels. These dialogues have brought together ministers, opposition front benchers, MPs, business leaders, NGOs, donors, professionals and other functional groups in civil society within a non-confrontational environment to promote focused discussions. The expectation of the CPD is to create a national policy consciousness where members of civil society will be made aware of critical policy issues affecting their lives and will come together in support of particular policy agendas which they feel are conducive to the well being of the country. The CPD has also organised a number of South Asian bilateral and regional dialogues as well as some international dialogues.

In support of the dialogue process the Centre is engaged in research programmes which are both serviced by and are intended to serve as inputs for particular dialogues organised by the Centre throughout the year. Some of the major research programmes of CPD include **The Independent Review of Bangladesh's Development (IRBD), Governance and Development**, **Population and Sustainable Development, Trade Policy Analysis and Multilateral Trading System** and **Leadership Programme for the Youth**. The CPD also carries out periodic public perception surveys on policy issues and developmental concerns.

Dissemination of information and knowledge on critical developmental issues continues to remain an important component of CPD's activities. Pursuant to this CPD maintains an active publication programme, both in Bangla and in English. As part of its dissemination programme, CPD has decided to bring out **CPD Occasional Paper Series** on a regular basis. Dialogue background papers, investigative reports and results of perception surveys which relate to issues of high public interest will be published under its cover. The Occasional Paper Series will also include draft research papers and reports which may be subsequently published by the CPD.

The present paper published under the CPD Occasional Paper Series is entitled **Environmental Consequences of Structural Adjustment: Towards Sustainable Shrimp Culture in Bangladesh** and been prepared by Dr. Debapriya Bhattacharya, Executive Director, CPD, Professor Mustafizur Rahman, Research Director, CPD and Dr. Fahmida Akter Khatun, Research Fellow, BIDS. The paper was presented at the national dialogue organised by the Centre held at CIRDAP Auditorium, Dhaka on May 13, 1999.

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PREFACE

In February, 1998 the Centre for Policy Dialogue (CPD) in association with the United Nations Environment Programme (UNEP) and the United Nations Conference on Trade and Development (UNCTAD) initiated a study on the theme of ***Environment Consequences of Structural Adjustment: Towards Sustainable Shrimp Culture in Bangladesh***. The objective of the study was to (i) study the nexus between SAP and the growth of export-oriented shrimp culture in Bangladesh, (ii) analyse the environmental implications of shrimp culture, (iii) quantify and evaluate the environmental impacts and (iv) put forward an actionable policy agenda to stimulate and promote an environmentally sustainable shrimp culture in the particular context of Bangladesh. The present dialogue report captures some of the major findings of the aforementined CPD-UNEP/UNCTAD study which were presented at a *National Workshop* organised by the CPD on May 13, 1999. The workshop was participated by a large number of high level policy makers, leaders of shrimp producers' and exporter' associations, experts, environmentalists and representatives of NGO and the donor community.

As is commonly recognised, reforms under the SAP pursued by Bangladesh since the mid-1980s has led to important structural changes in the economy with resultant shifts favouring tradable sectors compared to non-tradable sectors of the Bangladesh economy. One of the manifestations of this shift had been the increasing importance of export-oriented shrimp sector in the economy in recent years. Shrimp is currently the third-most important foreign earning sector of the country with foreign exchange accruals of more than 300 million dollars, and employment of more than a million people.

However, in recent years concern has been raised as to the environmental and socio-economic implications of commercial shrimp farming in the particular context of Bangladesh. A large number of stakeholders and environmental groups and NGOs have come up with strong opposition to shrimp culture in the coastal regions of Bangladesh on grounds of its negative consequences in terms of loss of bio-diversity, increased salinity, destruction of mangroves and other negative socio-economic consequences. Thus, given the role of the sector for the country's economy, the search for appropriate policies to stimulate environmentally sustainable shrimp culture has acquired added importance for the policy

makers of Bangladeshi. From this perspective the CPD-UNFPA/UNCTAD programme to examine and explore modalities for designing an environmentally sustainable shrimp culture in Bangladesh has high practical significance.

The first workshop in connection with the aforementioned study was organised in May, 1998 in collaboration with the UNEP/UNCTAD. In the first workshop a detailed discussion took place on issues related to conceptualisation and design of the study, the methodology to be adopted and the variables to be studied. The workshop proved to be very useful in terms of providing the authors important insights into how the study should be designed, which issues should be brought within its ambit and what methodology was to be followed (interested readers will be able to access detailed information on this workshop from CPD Dialogue Report No. 18).

As was mentioned, the present dialogue report covers the proceedings of the Second National Workshop. The workshop was mainly focused on a discussion on the draft report of the study which was prepared by Dr. Debapriya Bhattacharya, Professor Mustafizur Rahman and Dr. Fahmida Aktar Khatun. This report covers four broad areas: (a) it traces the evolution of the shrimp sector in Bangladesh, and establishes the linkages between graduation of subsistence shrimp farming in Bangladesh into an export oriented sector and the policy reforms under SAP which stimulated this transition; (b) it presents a profile of the export-oriented shrimp culture in Bangladesh as it stands today; (c) it reviews the existing literature to get insights into the positive and negative socio-economic consequences of shrimp culture in Bangladesh; (d) it develops and presents a methodology to capture the environmental dimensions and resultant consequences of shrimp culture in the particular context of Bangladesh, (e) it presents a review of evidence on environmental implications of shrimp culture including economic and social costs and presents an estimate of the impacts, and (f) finally, the report presents a policy framework towards sustainable shrimp culture in Bangladesh and identifies a set of market based instruments and regulatory measures to ensure sustainable development of the sector. A summary of the study report which was circulated amongst the participants of the workshop for discussion is presented in the present dialogue report. Whilst broadly endorsing the findings and recommendations presented in the report the workshop participants also made a number of observations and suggestions for incorporation in the final version of the report. In this connection the authors would like to

put on record their deep appreciation to the participants of the workshop for their insightful comments which has been very useful for the purpose of subsequent revision of the report. A list of the workshop participants is annexed to this report.

The dialogue was also participated by Mr. Hossain Abaza, Chief, Economics and Trade Unit, UNCTAD and Dr. Veena Jha, Consultant, UNEP/UNCTAD. I would like to put on record our deep appreciation of the constant support which the team has received from both of them, for their participation at the workshop and for their contribution towards its success. The report contains a summary of their interventions at the workshop (see Appendix ii and iii).

I would like to express my sincerest thanks to the Honourable Minister for Environment and Forest Begum Syeda Sajeda Chowdhury, M.P. whose sustained interest in this programme was manifested by her presence as Chief Guest in both the workshops organised by the CPD. The inaugural speech is appended here (see Appendix i).

Finally, on behalf of the study team I would like to express my profound gratitude to Professor Rehman Sobhan, Chairman, CPD for his guidance and support during the course of this study. Professor Sobhan has moderated both the CPD workshops and his comments and inputs have contributed substantially towards successful execution of this study.

It is hoped that the present dialogue report which contains an executive summary of the report will help disseminating the findings of the aforementioned CPD-UNEP/UNCTAD study and sensitise the readership about pertinent issues as regards developing an actionable policy agenda towards sustainable shrimp culture in the context of Bangladesh.

Professor Mustafizur Rahman
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EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT OF STRUCTURAL ADJUSTMENT POLICIES: THE CASE OF EXPORT ORIENTED SHRIMP CULTURE IN BANGLADESH

Debapriya Bhattacharya
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Chapter I : Environmental Dimensions Of Structural Adjustment Policies In Bangladesh: The Frame Of Reference

The "structural adjustment programmes" (SAPs), promoted by the Bretton Woods institutions, had been instrumental in defining the development strategies of the developing countries during last one and half decade. Thus, appraisal of this policy package in the context of a particular country may constitute an appropriate point of departure for assessing the environmental consequences of the revealed development efforts. The outcome of such inquiries may serve as an input for future policy making with a view to integrate the economic and environmental concerns in the development strategies.

Design of SAPs in Bangladesh

During the period 1979/89-1995/96, the World Bank's adjustment leading to Bangladesh amounted to $1.76 billion (i.e. 30% of IDA's commitment to the country). This amount was channeled through fifteen structural and sectoral adjustment credits (SALs and SECALs). Bangladesh was one of the very first countries which the Structural Adjustment Facilities (SAF) and Extended Structural Adjustment Facilities (ESAF) of IMF in 1986 and 1989 respectively.

The principal policy instruments of the structural adjustment programmes in Bangladesh included, *inter alia*, cutback in public sector expenditure, reduction of anti-export bias in the tax structure, tariff rationalization and overall trade liberalisation, incorporation of flexibility in the exchange and interest rates, privatisation, price decontrol and desubsidisation. Besides macro-economic management, almost all the major areas of the economy including agriculture and manufacturing, energy and communication, finance and trade were targetted for policy shocks under the adjustment package. Thus, the overarching goal of the reform measures under SAPs in Bangladesh was to stimulate the country's growth performance through creation of a market

based economic management structure reflecting the comparative advantages of the country.

Outcome of SAPs in Bangladesh

In terms of implementation, a large part of the contemplated policy measures under SAPs has been realized on the fund. However, according to a number of evaluative exercises, the outcome of SAPs in Bangladesh had been, at best, mixed. At the aggregate payments level the current account deficit and domestic resource balance improved and inflation remained under control. Growth of export in the post-reform period accelerated, although the commodity base remained narrow. However, the declining trend of investment rate could not be halted and savings could not be increased. Consequently, the macro-economic stability reviewed in the country did not get translated to micro level dynamism. The social impact of SAP in Bangladesh has been judged to be, by and large, negative in a number of studies.

Environmental Issues and SAP in Bangladesh

With Bangladesh being increasingly exposed to the global economy due to implementation of the adjustment policies, there is a growing apprehension that adjustment policy induced changes taking place in the economy are precipitating adverse environmental impact. Moreover, as resources switch from non-tradables to tradables sectors of the economy and as major shifts occur in production and cropping patterns in response to the adjustment policies, resource degradation has manifesting itself as by-products of this particular pattern of growth.

The Trade-Environment Linkages

Review of literature on trade-environment nexus in the context of SAP suggests that (a) there is a strong substitution effect of adjustment policies favouring the export sector; (b) export-led growth induces structural changes, and the concomitant shifts in allocative efficiency and relative prices may result in environmental degradation, and (c) future access of least developed countries (LDCs) in markets of developed countries will critically hinge on how the entwining of trade and environmental factors is resolved.

Trade-Environmental Nexus: The Bangladesh Case

Protection of environment as a policy objective in the context of Bangladesh was first incorporated in the SAP's Policy Framework Paper (PFP) for 1990/91-1992/93. Incidentally, shrimp culture in Bangladesh received crucial support from the World Bank when it extended a

credit amounting to SDR 20.6 million to Bangladesh for "Shrimp Culture Project" in 1985. In the project document it was mentioned that the project could not have any detrimental effect on the environment. But the coastal shrimp farming areas in the south have suffered environmental degradation; increased salinity of soil, canals and the ponds within the polders; reduction in grazing land and a consequent reduction of livestock; destruction of mangrove forests; adverse affect on the potential crop-mix, cropping intensity, crop calendar and the overall cropping pattern in the areas concerned and reduction in soil quality. Also the shrimp cultivating areas experienced increase in unemployment and aggravation of social and economic conflicts and tensions.

Framework of the Study

The objective of the present study is to examine the environmental consequences of trade-related SAP policies, particularly in shrimp culture. It will seeks to (a) the trend and structure of export-oriented shrimp culture in Bangladesh in the backdrop of trade policy reform in the country, (b) undertake a simple cost-benefit analysis to assess the environmental impact of shrimp cultivate and (c) evolve a policy package for sustainable shrimp culture, integrating the environmental concerns and trade expansion objectives. The research methods are: literature review; discussion of policy evolution, consequences and intervening factors; interpretation of empirical evidence based on statistical techniques and integration of site/sub-sector specific information. Thus, the study is largely based on secondary data, selectively supplemented by primary evidence.

Chapter II: Export-Oriented Shrimp Culture In Bangladesh: An Environmental Perspective On Policy Choices

The graduation of subsistence shrimp culture to an export-oriented activity can be traced back to the period when Bangladesh initiated important policy changes under the structural adjustment programme in the mid-1980s. As is commonly recognised, both productive forces and production relations undergo crucial changes when an economic activity is transformed from a subsistence-oriented to a market-driven one. The emergence of commercial shrimp culture in Bangladesh may be viewed from three vantage points; viz. (a) transaction of traditional shrimp farming into export oriented activity, (b) the interface between the transition of shrimp cultivation and changes in regime, and (c) environmental implications and consequences stemming from the transformation of shrimp culture. The last

aspect is critical in view of the fact that while open capture fisheries are deemed to be self-producing and self-sustaining, closed culture fisheries, as commercial shrimp culture tends to be, generates a wide range of externalities which make sustainability an important issue of concern.

Emergence of Commercial Shrimp Culture in Bangladesh

Bangladesh is world's fourth largest producer of fish sourced from inland water bodies. Although subsistence shrimp culture had been a constituent of the country's fisheries sector for hundreds of years, shrimp culture as an export-oriented activity is a phenomenon of recent origin. Exports of shrimp from Bangladesh was worth only $ 2.9 million in 1972-73, accounting for 1% of the country's total exports. Export of shrimp increased to $ 33 million in 1980 and to $90.0 million in 1985. However, till the mid-1980s shrimp culture was principally dependent on open-water catches of shrimp. Thus, the culture of shrimp through commercial farming is predominantly a development of the period beginning from the mid-1980s.

The policy initiatives and the incentives, many of which were implemented under the SAP in mid- and late 1980s, set the context in which shrimp culture in Bangladesh started to attain the characteristics of major, export-oriented economic activity. Exports of shrimp registered an increase from $ 90.8 million in 1986 to $ 197.6 million in 1994 and to $ 260.4 million in 1998. A visible shift is discernible in the trend line for shrimp exports during the post-SAP period which adduces to a structural change induced by the reform policies.

Evolution of the Trade Policy Framework

The above mentioned structural shift in the export of shrimps from Bangladesh may be explained by a number of factors – policy induced as well as market driven. A closer look at the policy changes under the SAP and the growth of commercial shrimps farming would indicate that there was a strong linkage between the reforms which were implemented under the SAP in Bangladesh and the evolving incentive structure in the context of which shrimp was being cultivated in the country. Fiscal and financial incentives and institutional support provided under the reforms undertaken in connection with the stabilization and structural adjustment programmes played an important role in terms of putting in place an export-friendly conducive environment which stimulated commercial shrimp farming in Bangladesh.

Under the reforms the average tariff rates for imported inputs was brought down from 88% to 21%, anti-export bias in the trade and investment regime was substantially removed, and private sector was encouraged to invest in export-oriented activities.

Taking Advantage of the Policy Reforms and Global Opportunities

Along with the readymade garments (RMG) indenting the shrimp sector happens to be the other sector which was able to take advantage of the policy changes encouraged by the SAP. Within the overall policy frame of export-led growth, such provisions as zero-tariff access of imports, fiscal incentives for direct and deemed exports, income tax rebates, subsidised credit, lease of land - both private and khas (government) under favourable terms, and various institutional support for setting up downstream factories created a policy environment which stimulated private investments in shrimp culture, shrimp processing, and shrimp exports. The provisions of duty drawback, cash compensation schemes, concessional interest rates etc. stimulated investment in export-oriented activities such as shrimp culture and contributed to their better performance compared to the rest of the manufacturing sector, particularly with respect to labour productivity, capital productivity, capacity utilisation and returns to capital. Increasing returns in the fish processing enterprises promoted upstream activities in the shrimp culture sector of the country.

The conducive domestic policy environment in this period was also reinforced by the emerging global market opportunities. The growing demand for shrimp in high income countries came at a time when (a) there was a significant fall in shrimp production in some of the major exporting countries, and (b) capture of wild ocean shrimp was becoming more expensive and erratic.

Profile of Shrimp Farming in Bangladesh

Bangladesh accounted for 4.1% of global production of commercial shrimp in the mid-1990s (global production at the time was 721 thousand tons). Total shrimp area of Bangladesh under coastal aquaculture covers about 130 thousand hectares which is 12.7% of total global area under shrimp culture. The area under shrimp culture registered a three-fold increase over the last decade. The 750 km coastline provided a conducive natural environment for commercial shrimp culture in Bangladesh. Two areas in the south, the Chittagong-Cox's Bazar belt and Khulna, Shatkhira-Bagerhat belt accounts for 95% of total

acreage of shrimp in the country. Production of shrimp by coastal aquaculture accounted for about 30% of annual shrimp production, while the relative shares of marine capture and fresh water capture were 23% and 47% respectively. The production of shrimp by aquaculture method is a 100% export-oriented activity, taking place in about 9000 farms. While shrimp from fresh water is destined predominantly for the domestic market, a part of the marine capture is also processed in the shrimp processing units operating presently, in the southern regions of the country. The major part of the shrimps exported from Bangladesh is destined for USA (31.8%), Japan (18.3), Belgium (16.2%) and U.K. (11%). Shrimp culture in Bangladesh is predominantly carried out by non-local entrepreneurs on leased-in lands. Semi-intensive method of shrimp culture is mainly practised in the country, with an average yield rate as low as 130-250 kg/hectare/annum.

Evolving Scenario and Policy Debate

In recent years culture of shrimp as an export-oriented commercial activity has come under close scrutiny motivated by varying perspectives. It is often underscored that negative externalities generated by commercial shrimp culture, e.g. destruction of the irreplaceable mangrove resources in the south, increasing salinity, declining productivity of land, increasing deforestation, growing landlessness and increasing shrimp related violence far outweigh the tangible incremental economic gains. Consequently, some have maintained that shrimp culture runs contrary to the very concept of sustainable development and have, thus, argued that this “global cosino” based on “blue death” ought to be closed altogether. Those who question the desirability of commercial shrimp farming in Bangladesh have highlighted that the sector has developed without any sensitivity to local knowledge, practices, preferences and resource use. Control over local resources has shifted from communities to external institutions. Some have questioned the production relations in the sector, arguing that private property regimes are not the most suitable ones for sustainable management of aquatic resources, including coastal aquaculture.

Conversely, those advocating support for export-oriented commercial shrimp farming are of the view that the sector should be provided with additional incentives in order to induce the entrepreneurs to factor-in environmental concerns and also to enhance their competitive strength in the global market.

However, recognising the negative externalities generated by shrimp culture; in Bangladesh there is position which reckons that a set of environmental policy instruments may be available to ensure that free trade does not reduce overall welfare. Absence of appropriate environmental policies and proper enforcement of such policies, conventional estimates of incremental gains accrued from export-oriented activities may overstate the gains to society, which in turn puts a short term perspective on a phenomenon which inherently has long term implications and consequences.

Policy Choices

The policymakers of Bangladesh are obviously faced with a choice. The choices lie in (a) continuing the "business as usual" to the detriment of the environment, (b) closing down commercial shrimp culture at the cost of export deceleration loss of employment and income as well as other negative socio-economic consequences, (c) incorporating environmental concern-induced policy measures in order to strike a balance between short and long term consequences as well as private and social welfare.

Obviously, if the third choice suggests to be the most desired option, then the issue of developing the shrimp sector with an in-built environmental sensitivity in the policy package, incentive systems and regulatory framework should be the focus of government attention and action. Admittedly, a consultation process participated by all the stakeholders in the sector would be critical in better understanding the related issues which alone can generate feasible and practicable solutions to problems encountered both at the stage of farming as well as at the stage of processing in the shrimp sector.

Chapter III: Export-Oriented Shrimp Culture In Bangladesh: A Review Of Evidence On Environmental Implications

Manifestations of Environmental Concerns in Bangladesh

As the shrimp sector underwent rapid expansion over the past years, voices expressing concern over real and possible adverse consequences and negative externalities of shrimp culture for Bangladesh began to be raised with increased frequency. Such concerns originated from four sources:

(a) "warning calls" from some of the local NGOs having close links with international development community who are actively involved in global campaign for sustainable development and, more specifically, in the campaign against unregulated expansion of

export-oriented shrimp cultivation in other countries (e.g. as Philippines and Thailand);

(b) "wake-up calls" from political activists, NGO workers and media people from coastal regions of Bangladesh as negative externalities became increasingly evident subsequent to shrimp cultivation over relatively long periods of time (i.e. 4-5 years);

(c) research studies undertaken to assess and evaluate the socio-economic impact of shrimp culture in the coastal regions of Bangladesh; and

(d) scientific examination reports pertaining to the extent of environmental degradation in particular areas which gave rise to serious concern and alarm.

Diverging Views

Three strands of opinions can be identified by reviewing the relevant documented evidence:

(a) The first line of argument underscores the environmentally unsustainable character of shrimp culture in the coastal-ecological conditions of Bangladesh on the grounds that the negative externalities are systemic, endemic and irreversible and, hence, there is a need to impose an outright ban on shrimp cultivation.

(b) The second line of argument highlights the potential opportunities of the sector specially in terms of its income, employment and foreign exchange earning capacity, and maintains that the benefits accrued from shrimp cultivation in Bangladesh far outweigh the costs incurred owing to the possible negative consequences;

(c) The third line of argument, whilst not undermining the negative environmental externalities in general, tends to stress that the environmental concerns with respect of shrimp culture may be satisfactorily addressed through purring place an effective set of policies and instruments.

The Emerging Issues

The concerns raised as regards export-oriented shrimp culture in Bangladesh encompasses political, socio-economic as well as environmental issues. Some of these are: (a) absentee entrepreneurs having no stake in sustainable shrimp farming; (b) increased salinity leading to drastic decrease in soil fertility; (c) irreparable damage to traditional economic activities such as cattle grazing, poultry keeping; (d) damage to household vegetation and social forestry; (e) loss of common property rights; (f) aggravation of income erosion and

income inequality; (g) irreversible damage to the (Sunderban) mangroves and coastal vegetation; (h) irreparable damage to flora and fauna and bio-diversity.

The opposing views generally tend to emphasize the potential role of the sector in the economy, pointing out its growing importance as the country's second largest non-traditional export-earning activity. According to this view, the benefits in terms of foreign exchange earnings, incremental employment and income generation far outweigh any short, medium or long term negative externalities. They further underscore that the benefits are not limited to entrepreneurs only; there is substantial multiplier impact which accrue to the local community as a whole.

The role of the Government of Bangladesh (GOB) has figured prominently in the discourse over shrimp cultivation in the country. As is known, the GOB's favourable disposition to shrimp cultivation played a critical role in stimulating entrepreneurial activities in the shrimp sector. At the initial period the government provided crucial support to the sector in terms of acquisition of land, leasing of khas (state-owned) land to shrimp farmers and providing fiscal and financial incentives in the production and processing of shrimp. When the negative consequences and implications gradually emerged and ecological-environmental concerns precipitated a debate as to the future of the sector, the government initiated a number of measures to contain the negative impacts. These included enactment of laws governing lease of land, designing guidelines for setting up of shrimp farms, provision for consent of local farmers in setting up of shrimp farms, formation of Shrimp Culture Steering Bodies at national, regional and local (thana) levels etc. However, government regulations have been criticised on grounds of their inadequacy, weak enforcement and non-sensitivity to the real environmental concerns.

Four major views with respect to role of the GOB are the following: (a) many of the negative environmental consequences originate because of government's flawed policies; (b) existing provisions, regulations and laws do not adequately address the environmental concerns; (c) weakness of enforcement has led to violation of rules enacted by the GOB itself; (d) there is a need for a comprehensive shrimp policy in Bangladesh which should be designed, implemented and monitored in collaboration with the major stakeholders.

Chapter IV: Export Oriented Shrimp Culture In Bangladesh: A Review Of Evidence

On Environmental Implications

The Approach

Given the debate regarding environmental consequences of export-oriented shrimp cultivation, a partial cost-benefit analysis has been done to compare the gains and losses from shrimp culture. The types of *costs*, which have been looked into are: (a) land degradation due to salinity, (b) health impact in terms of mortality and morbidity, and (c) mangrove destruction. The *benefits* are estimated on the basis of the income of the sector received through the export of processed shrimp.

Cost-benefit analysis of all environmental problems as well as economic benefits arising from shrimp cultivation is clearly impossible, either because of lack of data or usable methodology. The exercise done here is based on many critical assumptions on tentative data. These will be discussed as we go along the process of cost and benefit estimation. The reference year in this study is 1994.

Land Degradation: Production Loss

Total area under shrimp cultivation is estimated to be 145 thousand hectares, which is about 1% of total land area of Bangladesh. In Khulna, Satkhira, Bagerhat, Barisal, Patuakhali, Jessore and Noakhali districts 80% of the total shrimp cultivating area are located and the cultivation of crops has totally or partially been eliminated. If agricultural production is to be carried out in these lands using the same level of inputs and similar methods of management, the land-output ratio will not be the same as prior to shrimp culture. The difference between the outputs during the two periods is the loss in production.

A moderate degree of land degradation, which results in a production loss of 45%, the loss is estimated to cause a loss of 146,160 Mt. of rice in physical terms and Tk 1237.6 million in monetary terms. This is 0.35% of the agricultural GDP and 0.11% of the total GDP of the country at current prices in 1994.

Land Degradation: Restoration or Reclamation Cost

Salinization and waterlogging can be reversed, and the productivity of land partly restored, by reclamation. The main elements of the technology involved here are: (a) installation of deep drains, to lower the water table, (b) leaching of salinized areas, requiring

the application of non-saline water in amounts considerably in excess of the irrigation requirement, and (c) treatment of sodic soil with gypsum. In Pakistan, soil salinity could be reduced from 40 to 28 percent during 1969-85 using such technology, and 80,000 hectares of lands are being restored to production each year. The cost of such reclamation has been estimated to be $500. Assuming that the cost would be similar for Bangladesh given the similarity in socio-economic situation of the two countries, the reclamation cost for degraded land in shrimp cultivating area (except Chittagong) would be Tk 2331.6 million., which is about 0.22% of the total GDP of the country and 0.66% of the total GDP of the districts under this study.

Loss of Livestock

It has been claimed elsewhere that there has been drastic reduction in the number of livestock owning households following introduction of commercial shrimp culture. On the basis of "recall method" among 607 households, it was estimated elsewhere that the rate of reduction in cattle per household is (-) 8.9% year during this period. This rate has been used in this study for estimating the value of livestock loss. The number of cattle loss in the area under study is equal to 22,792. Taking Tk 4000 as the average market value of the local variety cattle of different types, the loss of income due to cattle reduction as a result of shrimp cultivation is found to be Tk 91.2 million. This is equivalent to 0.01% of the total GDP of the country and 0.03% of the total GDP of the seven districts in the reference year.

Health Impact

Polluted water due to shrimp cultivation causes premature deaths (mortality) and increases the occurrence and incidence of diseases (morbidity). The economic value of mortality is estimated on the basis of the value of statistical life (VOSL). The VOSL is the marginal willingness to pay (WTP) to reduce the risk of a fatal accident or willingness to accept (WTA) for increased risk aggregated over a large number of people. The cost of morbidity has been estimated in terms of treatment cost and wages lost.

As epidemiological data on water-borne diseases induced by shrimp culture are not available it is assumed that half of the attacks and deaths due to diarrhoea and dysentery (only water-borne diseases estimated) are due to shrimp induced water pollution.

Adjusting the VOSL in the U.K. to capture the income difference the mortality cost is

estimated to be Tk 925.6 million. This is 0.09% of the total GDP of the country and 0.26 percent of the total GDP of the districts concerned.

The treatment cost is estimated by multiplying the number of morbidity cases with the treatment cost per person. Taka 97.05 per person is taken as the treatment cost following a CPD survey. The total treatment cost in this study is estimated to be Tk 4.7 million. Those days when the workers cannot go for work due to illness and loose income are equivalent to Tk 3.9 million.

Mangrove

The present study estimates only the direct use value of Chokoria mangrove area, which has been totally lost due to salinity and human intervention. The area of this mangrove is 8750 hectares, which is 1.5% of the total mangrove area in Bangladesh (577 thousand hectares) and 0.46% of the total forest area (1,908,600 hectares). An annual income could have been earned from the products extracted from the area if it was not destroyed. The contribution of forestry sector was Tk 42,626 million at current prices in 1994. So the amount of income lost from this mangrove is Tk 196.1 million. This is 0.02 percent of the total GDP of Bangladesh in 1994.

Biodiversity benefit from the affected mangrove is valued here only in terms of the value of medicinal plants transferring the estimate from an Indonesian study on the assumption that the same benefit would be derived from Chokoria mangrove area. Taking a net benefit of $15 per hectare for medicinal plans from mangrove, the total value for the Chokoria mangrove is estimated to be Tk 5.3 million.

Benefits of Shrimp Culture

In 1994 the total income from shrimp export was Tk 13210 million, which is 10% of total export income, and 1.22% of total GDP in the reference year. Since it is local resource based oriented industry 90% of the income can be taken as value added, and the rest will be machinery and production costs. Therefore, the export earning from shrimp cultivation is Tk 11,889 million, which is 1.1% of total GDP of the country and 3.39 percent of the total GDP of the districts where shrimp cultivated. Admittedly, there is a distributional issue involved with respect to this earnings.

Comparison of Costs and Benefits of Shrimp Culture

The comparison of costs and benefits of shrimp culture is difficult at this stage since the estimates of this study are partial and based on a number of assumptions. Nonetheless an approximation of the costs and benefits is worth estimating from policy perspective. Total cost of shrimp cultivation varies from 0.23 to 0.33% the GDP of the country in the reference year. This gives a Cost-Benefit Ratio of 0.21 (production loss basis) and 0.30 (restoration cost basis). In other words the cost is 21% (production loss) and 30% (restoration cost) of the benefit derived through shrimp cultivation.

Social Costs

Apart from economic costs, various social costs are associated with shrimp cultivation, which cannot be measured in monetary terms. Most of the shrimp farms are cultivated by the entrepreneurs who are non-residents in the area without having any social obligations. Those who resist shrimp cultivation are often subject to torture and violence, and even, killing. Small and marginal farmers are not allowed to work in the shrimp fields, as the entrepreneurs are afraid of theft of shrimp. As a result they have to look for employment somewhere else, often outside the village leaving the family, which may result in family dislocation.

As this sector is captured primarily by the urban dwellers, and the benefits are not distributed equally among all sections of the society who are involved in the sector, the degradation of the environment in the affected region is, in fact, acting positively for the urban interest.

As a vulnerable group of the society women are the worst victims of environmental degradation. Not only they are engaged in the collection shrimp fries and the processing of shrimp, they also have to perform household activities in the degraded environment, which poses serious threats to their health. They are also harassed and tortured by the owners of the shrimp farms. Children, on the other hand, miss their classes during the season when shrimp fries are collected.

It is maintained that even after accounting for such social costs, the benefits accrued from shrimp cultivation will be more than the costs incurred.

Concluding Observations

As the estimates are not complete, they should be interpreted carefully for policy

interventions. Notwithstanding the partial nature of the estimates they give indication of the damage done due to environmental degradation induced by shrimp cultivation as well as the benefits exhibited from this sector. Though economic gains outweigh the environmental costs, conclusions have to be made carefully because environmental costs are far-reaching, and the impact may be observed later over a long period of time. Moreover, some of the environmental impacts, such as biodiversity loss are irreversible. The value of this is far greater than any quantifiable amount since these are essential for human existence. Keeping these limitations in mind one can argue that some of the damages, especially those estimated in this chapter can be avoided and benefits can be increased with the right type of measures and interventions.

Chapter V: Promoting Environment-Friendly Export-Oriented Shrimp Cultivation: Policies And Instruments

Policy Framework for Sustainable Shrimp Culture: The Underlying Premises

Environmental problems precipitated by export-oriented shrimp cultivation in Bangladesh, as in other types of environmental problems, arise due to market failures, policy failures and institutional failures.

Overcoming the market, policy and institutional failures in shrimp cultivation calls for a judicious mix of *market based* and *non-market based* measures. The *market based* instruments are easier to implement as they usually entail provision of fiscal and financial incentives. However, given the limited efficacy of the incentives in certain cases, *command and control* type of instruments need to be deployed to address the situation. The policy instruments suggested below for promoting an environment-friendly export-oriented shrimp culture sector includes only price- and technology-related instruments, and exclude quantity-related instruments (e.g. tradable permits) as they do not seem to be appropriate in case of shrimp cultivation in Bangladesh. As the direction of changes in resource use will depend to a large extent on the nature of intervening institutional factors, role of the *institutions* in implementation of the policies have been discussed separately.

Instruments and Regulations for Sustainable Shrimp Cultivation

Bangladesh has traditionally used restrictions and regulations to contain environmental damages from an economic activity. This command-and-control approach gave rise to standards-driven environmental policy which espoused quantity constraints on the level of pollutants and depletion of resources. However, experience of the developed

countries suggests that mandated environmental standards and technologies may act as a drag on economic growth and the costs may not be within the means of a low-income economy like Bangladesh.

Thus, the challenge of integrating environmental and economic (sectoral) policies in the context of sustainable shrimp culture may be largely addressed through identification and adoption of instruments for environmental management. Such instruments motivate behavioural change, inducing differential response by economic units and allowing them to adjust flexibly to evolving circumstances. Use of instruments may also generate financial resources to underwrite development of financial infrastructure.

This is not say that command-and-control regulations have to be abandoned and replaced by economic instruments altogether, as it is neither desirable nor possible. Accordingly, what has been suggested below entails improving efficiency and flexibility of existing regulations through selective introduction of economic instruments.

Market-Based or Economic Instruments

(i) The first group of market-based instruments is related to *price related measures and fiscal incentives*. If used properly, price related measures and fiscal incentives can be mutually beneficial for the entrepreneurs, workers and the community at large. Three specific instruments, *viz.* land use tax, affluent charge on water pollutants and Soil Conservation Fund have been discussed below in this regard.

Land Use Tax:

Since there is no tax on agricultural land it is considered as free good and, therefore, tends to be misused. This can be reduced through a tax imposed on the users of land for shrimp cultivation. This would make certain land unprofitable for shrimp culture. This measure has relatively lower monitoring and enforcement cost and may raise substantial revenues. The revenue earned can be used for financing technological adaptation that would reduce shrimp cultivation induced natural resource degradation.

Effluent Charge on Pollutants of Water:

The shrimp farms should pay for polluting the water through effluent charges on

pollutants such as BOD (biochemical oxygen demand) and COD (chemical oxygen demand). This charge may vary according to the size of the farms in order to account for their varying pollution intensity. Apart from the positive revenue effect, this will provide the entrepreneurs the incentive to go for more environment-friendly production practices. However, the revenue raised may be used for water treatment plants. The change rate can be increased gradually over time so that prices are corrected.

Soil Conservation Fund:

The shrimp farms can be encouraged to conserve lands by providing loans. Loans may be given on flexible terms to the shrimp farms for adapting appropriate technologies to reduce salinity and waterlogging. However, one needs to take into account that (subsidized) soil conservation loans for adapting appropriate technologies is not a dynamically efficient instrument, since it might make shrimp more profitable, and induce additional entrants in the sector, making things worse in the long run.

Appropriate Technology

(ii) The second group of market-based instruments are to designed to promote appropriate technologies in shrimp cultivation. The technology requirements in shrimp cultivation are mostly indigenous by nature. Two specific, but complementary, means can be thought of in this regard. This two means are rice-shrimp mix and semi-intensive shrimp farming.

Rice-Shrimp Mix:

A pilot (model) project may be designed for semi-intensive shrimp culture during the first half of the year and then marine/brackish water fin fish culture or sweet water fish culture or rice cultivation depending on the land type. By encouraging this traditional practice, the long-term gains will be maximized in terms of productivity as well as land quality. There may be shared leasing between the crop farmers and the shrimp farmers for the shrimp-rice cultivation cycle. In this practice, since the farmers have to maintain the quality of their land to produce rice, they will therefore have to take measures to stop land degradation and also the shrimp farmers will have to allow the monsoon sweet water to wash away the salinity of the shrimp cultivating lands. It may serve the dual interests of the land owning small farmers and landless poor people of the area as well as the protection of the environment quality.

As a principle, semi-intensive shrimp cultivation may be encouraged with necessary safeguards. The pilot project may also seek to understand the hydromorphological changes and to envolve a practical technology to overcome the situation problem.

Regulatory or Command and Control Based Measures

The command-and-control measures discussed below simply draw on the existing policies and regulations. These measures include land zoning, mandatory forest development, ban on trawler shrimp catch, licensing, strenghening of property rights and legal reforms.

Land Zoning: There is a tendency of horizontal expansion of shrimp farming which is responsible for destruction of mangrove forests and agricultural lands. There should be definite guidelines for use of the resources of brackishwater area for culture of marine and freshwater shrimp including other suitable species of shrimp and fish. Criteria for selection should be on the basis of topography, tide fluctuations, salinity, soil quality etc. Government should decide which are the areas for shrimp cultivation after extensive survey of the geographical and environmental features of the location. Accordingly, there should be a clear area demarcation and land zoning for shrimp cultivation with a view to minimize the conflict between shrimp culture and agriculture and also to protect the environment.

Licensing: Licensing of shrimp farms should be reintroduced. This will help to control the indiscriminate and unplanned expansion of shrimp cultivation.

Mandatory Forest: It should be made mandatory for the shrimp cultivators to develop a green belt of mangrove forest to maintain the biodiversity of the area. It may be at least 30% of the total cultivated area. It will maintain the aqua and plant diversity of the coastal area. Tradable mangrove conservation obligations may be introduced and developed.

Ban on Trawler Shrimp Catch: Trawlers contribute only about 3.5% of total shrimp production and they catch mainly the matured and gravid shrimp. Shrimp catch of trawlers should be banned to increase the supply of broods for hatcheries and to enhance the natural breeding.

Strengthening of Property Rights: Land use rights being in favour of the local people is one

of the pre-requisites for sustainable shrimp culture. At present *khas* government lands are leased out to the shrimp cultivators on flexible terms, leading to inefficient use of land. Expanded programmes in land registration and titling are needed for clarification of property rights. Adequate compensation for the people losing lands for shrimp cultivation should be ensured. Government can introduce a minimum level of per unit leasing cost of agricultural land to the shrimp farm.

Securitisation of property rights will reduce institutional constraints which prevent "buy-outs" or integration of the shrimp and-rice activities. Strengthening of security rights can be also convincingly for its equity implications.

Legal Reforms: Apparently, there is no dearth of policies and regulations which directly concerned with environmental consequences of shrimp cultivation. These include, Fish Act (1950), Shrimp Mohal Management Policy (1992), Tiger Shrimp Cultivation & Pond Regulation Policy for Bagerhat District (1993), Shrimp Cultivation Tax Act (1992) and National Fish Policy documents, such as Bangladesh Environment Conservation Act (1995), national Environment Management Action Plan (NEMAP), National Conservation Strategy etc. have also relevance for developing sustainable.

Most of these policies and regulations are never implemented properly. Often there is a dearth of necessary supportive legislative action. At the same time, rules have not been ever formulated as provided under these policies. Thus, there is a need to review all these documents and come up with a comprehensive law (e.g. Sustainable Shrimp Culture Act) which encompasses all aspects of the activity.

Institutional Initiative for Sustainable Shrimp Culture

Currently, a plethora of public agencies are involved in one way or another in regulating shrimp culture in Bangladesh. These include first of all, the Ministry of Fisheries, Ministry of Land and Ministry of Forests and Environment. While Ministry of Industries is involved in shrimp processing phase, when Ministry of Commerce is deals with exports of shrimp. Present support with respect to shrimp cultivation is supposed to be forthcoming from Fisheries Research Institute (FRI), Bangladesh Agricultural University (BAU), Khulna

University. Law Enforcing agencies quite often set involved in mitigating shrimp cultivation related violence.

Besides the public institutions, a most of private bodies and NGOs are actively engaged in the sector. The Bangladesh Frozen Food Exporters Association (BFFEA) is the most representative trade body of the entrepreneurs. The NGOs (e.g. Nejera Kori) and the political parties are involved in mobilizing the small and marginal cultivators as well as landless labourers for protecting land rights and often against shrimp cultivation as such.

In the backdrop of overall problem of governance, the inter-dependence and complementarities of these institution may be achieved through a tripartite initiative involving the government, private sector and NGOs. For such an initiative to yield results, the Department of Environment has to emerge in a lead role, whereas the private sector has to commit itself to a socially responsible (environment sensitive) code of conduct. Last but not the least, local community is to be involved through a social mobiliztion process which may be catalyzed by the NGOs.

If undertaking a pilot scheme on sustainable shrimp culture under a tripartriate initiative seems to be a difficult exercise, the proposed joint initiative may launch a voluntary eco-labelling project which may ensure quality standards at all levels of production and protect the country against possible loss of overseas market due to poor image of Bangladesh shrimp exports.

Concurrently, building social institutions like schools, health care centers for the local people near the *ghers* and ensuring sanitary and safe drinking water facilities. Also there should be some provisions that the shrimp farms have to employ 70% of their workers from the locality. It will decrease the social tension as well as the rising unemployment due to loss of land to the shrimp cultivators.

Annex A

Programme of the CPD-UNEP Workshop on
Environmental Consequences of Structural Adjustment:
Towards Sustainable Shrimp Culture in Bangladesh

10:00 – 10:10 hrs	***Introductory Statement by the Chairperson*** ***Professor Rehman Sobhan*** *Chairman, Centre for Policy Dialogue*
10:10 – 10:25 hrs	***An Overview of Issues*** ***Dr. Debapriya Bhattachary*** *Executive Director, Centre for Policy Dialogue* *& Study Director, Environmental Impact of* *Structural Adjustment Programme*
10:25 -10:45 hrs	***Statements*** ***Dr. Hussein Abaza*** *Chief, Economics Unit* *United Nations Environment Programme (UNEP), Geneva* ***Dr. Veena Jha*** *Consultant, UNEP-UNCTAD Project on Capacity Building* *For Integrating Environmental Considerations in Planning* *and Decision-Making*
10:45 -11:00 hrs	***Inaugural Speech*** ***Syeda Sajeda Chowdhury, MP*** *Hon'ble Minister for Environment and Forest* *Government of the People's Republic of Bangladesh*
Floor Discussion	
13:15 – 14:00 hrs	*Lunch*
14:00 – 16:30 hrs	**SECOND WORKING SESSION** Towards Sustainbale Shrimp Culture in Bangladesh: Policies and Instruments
Chairperson:	*Ms. Khushi Kabir* Chairperson, Coalition of Environmental NGOs (CEN)
Presentation:	*Dr. Debapriya Bhattacharya*, Executive Director, CPD

Designated:	*Mr. Riazuddin Ahmed*, Director, Department of Environment
Discussants:	*Dr. Aftabuzzaman,* Managing Director, Sundarban Fish Processing (Pvt) Ltd *Dr. Saleemul Huq,* Executive Director, Bangladesh Centre for Advance Studies (BCAS) *Dr. Atiur Rahman*, Senior Research Fellow, BIDS *Mr. Mahfuzur Rahman*, Director, Department of Fisheries Dr. Kamal Siddiqui, Chairman, Land Appeal Board
Floor Discussion:	
16:30 hrs	*Tea/Coffee*

Annex B

List of Participants
(*in alphabetical order*)

Dr. Hussein Abaza	Chief, Economics Unit, UNEP, Geneva
Mr. Ahsan Uddin Ahmed	
Mr. Imtiazuddin Ahmad	The World Bank, Dhaka
Mr. Firoze Ahmed	US Embassy, Dhaka
Dr. Debapriya Bhattacharya	Executive Director, CPD
Mr. Iftekhar A. Chaudhury	Policy Research Dept. Proshika
Mr. S.N. ChowdhUry	Department of Fisheries, Matsya Bhaban
Ms. Syeda Sajeda Chowdhury	Minister for Environment and Forest, GOB
Mr. Subrata S. Das	The World Bank, Dhaka
Mr. Robert Domaingue	US Embassy, Dhaka
Mr. Akhtar Ahmed Farouk	Free Lance Reporter
Mr. Philip Gain	SEHD
Dr. Abdul Ghafur	Former Research Director, BIDS
Dr. Mahfuzul Haque	Programme Coordinator, SEMP Ministry of Environment and Forest, GOB
Dr. Moazzem Hossain	Assistant Chief, Planning Commission
Mr. Kazi Enayet Hossain	SCOPE, Save the Coastal People
Mr. Fazlul Huq	Additional Secretary Ministry of Commerce, GOB
Mr. Saleemul Huq	BCAS
Mr. Syed Mahmudul Huq	Ex-President Bangladesh Frozen Foods Exporters Association
Mr. Aminul Islam	UNDP, Dhaka
Ms. Sylvia Jahan	

Dr. Veena Jha	Consultant, UNDP-UNCTAD, New-Delhi
Mr. Azmal Kabir	Policy Research Department, IDPAA, Proshika
Dr. Mahmudul Karim	Shrimp Programme Coordinator, ATDP/IFDC
Mr. Mamunul Hoque Khan	HRD Specialist SEMP Ministry of Environment and Forest, GOB
Dr. Mizan Khan	Policy Analyst, SEMP Ministry of Environment and Forest, GOB
Dr. Fahmida A. Khatun	CIDA, Canidian High Commission, Dhaka
Mr. Paul Martin	The World Bank, Dhaka
Mr. M.A. Momen	Managing Director, Toka Ink (Bd) Ltd.
Mr. Golam Mostafa	Former President Bangladesh Frozen Foods Exporters Association
Mr. A.M.A. Muhith	Former Finance Minister, GOB
Mr. Ashraf Ibn Noor	Dhaka Chamber of Commerce and Industries
Dr. Atiur Rahman	Senior Research Fellow, BIDS
Dr. Atiq Rahman	Executive Director, BCAS
Mr. Atiqur Rahman	The World Bank, Dhaka
Mr. Azizur Rahman	Bangladesh Frozen Foods Export Association
Mr. Habibur Rahman	USAID, American Embassy, Dhaka
Mr. Masudur Rahman	Director, Department of Fisheries
Professor Mustafizur Rahman	Research Director, CPD
Mr. Z.H. Razi	European Commission, Dhaka
Mr. Reazuddin	Department of Environment Govt. of Bangladesh
Mr. Richard Rousseau	USAID, American Embassy, Dhaka
Mr. Kazi Shahnewaz	President Bangladesh Frozen Foods Export Association

Dr. Kamal Siddique	Chairman, Land Appeal Board Govt. of Bangladesh
Mr. Joan Silver	Director, Program office, USAID
Prof. Rehman Sobhan	Chairman, CPD
Mr. M. Syeduzzaman	Former Finance Minister, GOB and Chairman BOC
Mr. Syed Shah Tariquzzaman	Development Law Services
Mr. Rashed A.M. Titumir	Assistant Professor, Bangladesh Open University
Mr. Kazi Ali Toufique	Research Fellow, BIDS

List of Journalists
(In alphabetical order)

Mr. Nazmul Ahsan	The Daily Sangbad
Mr. Ahmed Nure Alam	The Janakantha
Ms. Mahmuda Chowdhury	The Daily Dinkal
Ms. Jahnubi Das	The Bangladesh Observer
Mr. Monjur Mahmud	The Daily Star
Mr. Sultan Mahmud	The Banglar Bani
Mr. Sawkat Hossain Masum	The Daily Ittefaq
Mr. Sohel Manzur	The Financial Express
Mr. Fazle Rabbi	Sr. Information Officer, PID
Mr. Shawkat Osman Rachi	The Daily Manav Zamin
Mr. Abdus Sattar	Press Information Department (PID)

Appendix i

Inaugural Speech by the Chief Guest, Hon'ble Minister for Environment and Forest, Syeda Sajeda Chowdhury

Professor Rehman Sobhan
Ladies and Gentlemen
Assalamu alaikum

It is indeed a great pleasure for me to be here today at this workshop on ***"Environmental Consequences of Structural Adjustment: Towards Sustainable Shrimp Culture in Bangladesh"***, organized by the Centre for Policy Dialogue (CPD) in association with the United Nations Environment Programme (UNEP). I happily recall that I was also present at the launching of this study about a year back.

As we know by now from the introductory presentation of the Study Director, Dr. Debapriya Bhattacharya, the present workshop is focused on examining the environmental consequences of export-oriented commercial shrimp cultivation in Bangladesh. The issue is no doubt of much significance in the context of the reform measures currently being pursued by Bangladesh as part of the structural adjustment policies which puts high emphasis on export promotion.

During the first eight months of the current financial year, i.e. the period between July, 1998 and February, 1999, Bangladesh has exported about $ 160.0 million worth of shrimp which accounts for about 86 per cent of total frozen food export from the country during the corresponding period. A significant portion of this export, about 30 per cent, comes from the coastal brackish water aquaculture sector.

In global terms, in the 1990s, Bangladesh supplied more than 4 per cent of world production of commercial shrimp; however, Bangladesh commanded about 13 per cent of total global area under commercial shrimp culture. This underpins the need to enhance the productivity in this sector. On the other hand, it was all the more necessary to incorporate environmental considerations when we talk about an effective, people oriented adjustment policy.

Unfortunately, experience shows that growth of export oriented shrimp culture in Bangladesh had not been an unmixed blessing, particularly in terms of its environmental implications. Prolonged inundation of land by saline water leading to decreased soil fertility and scarcity of fresh water, elimination of *rabi* crops and shrinkage of agricultural and grazing lands along with destructions of valuable mangrove forests are some of the negative consequences of the growth and expansion of the export oriented shrimp sector of Bangladesh in the recent past. The Government of Bangladesh is fully aware of such negative impacts. Accordingly, for this reason, the *Bangladesh Environment Conservation Rules* of 1997 has placed shrimp culture in the *Orange-B* category of activities.

In order to make the commercial export-oriented shrimp culture environment friendly, it was of critical importance that the stakeholders in the process, particularly the public agencies, trade bodies and local communities, were closely involved in the designing and implementation of the policy package. I am confident that a trade-environment linkage will be established to help enforce such a process in the multilateral trading system which will also be sensitive to LDC concerns in this area.

My sincere thanks are due to the organizers for holding this workshop. I conclude with the hope that the discussion which is to take place on the findings of the CPD-UNEP study will help to develop an environment-friendly export-oriented shrimp sector in Bangladesh.

Thank you once again.

Appendix ii

Comments by Hussein Abaza, Chief, Economics and Trade Unit, UNCTAD, at the inaugural session of the dialogue

(Transcript)

"Sustainable environment for sustainable development"

Let me first express my appreciation for being here today. I also extend my appreciation to the presence of the Hon'ble Minister of Environment. This really shows her commitment to what we shall discuss there today. I would also like to thank CPD Chairman Professor Rehman Sobhan and the current Executive Director Dr. Bhattacharya for their sustained support to this particular project.

UNEP is delighted to be associated with this project and we would like to continue working with CPD in future. UNEP prefers to be engaged in projects where the process involves policy dialogues and which is not merely an exercise that is carried out by an outside/external agency and does not involve the main stake holders of that particular activity.

The presentations made by Professor Sobhan, Dr Bhattacharya and Dr Veena Jha have focus on the objectives of this project and have also outlined the major outcomes of similar projects in other countries. In early June '97 when we started off this project, we organised a meeting where we had invited a number of institutions from around the world- i.e. Asia, Africa, Latin America and Europe. In this meeting we gave an outline of what UNEP and UNCTAD would have liked to do in terms of looking at the relationship to the environment and what kind of policy packages we should be coming up with. We ended up by having five different institutions expressing their enthusiasm and commitment to this kind of activity.

As highlighted earlier this is not a research focused project; rather more of an action-oriented research which is implementable with practical policy options and could be taken up by governments.

Regarding the current workshop we first had a review meeting in October 1998. The initial draft of the work was done by the Centre here. The basic objective of the present

meeting was to hear from the participating experts, around the table regarding views on the pertinent issues based on their extensive experience we would like to know what is of relevance to the particular situation in Bangladesh, what is feasible and the modalities of implementing sustainable development policies in Bangladesh as far as shrimp culture activity is concerned.

From our experiences elsewhere we have come up with a number of priority projects in the various countries: in Romania, forestry and water sector was selected, in Uganda the fisheries sector, in India automobile sector, and in Philippines forestry sector was again selected.

Let me emphasis here that the sectors chosen by the above mentioned countries were not selected by UNEP or UNCTAD. The selection originated from the collaborating institutions in those countries. They felt that these were the sectors which needed particular attention in the context of the respective countries. UNEP appreciated this prioritisation and went along with what has been identified as requiring immediate attention in the countries concerned.

The purpose of the meeting was to get candid comments of the participants their criticism and feedback as constructive inputs to this workshop. The report was intended to be revised based on the comments which we expected to receive from you here. This was what the CPD was committed to do. That is why we went through this extra mileage to have a number of meetings and consultative process through which we wanted to involve you in our study and intended to have our report revised accordingly.

The report will once again be submitted for a review by a group of experts who are going to provide their input into this exercise. Subsequent to this the final report will be published.

Let me highlight one important event. In November, 1999 there will be a high level meeting at WTO (World Trade Organisation) which will take up a number of related issues for discussion. The governments are aware of this project and they are looking forward to the outcome of these studies. One can expect that Bangladesh will feature prominently on the

agenda at the WTO meeting and the experience gained here will be closely monitored.

We plan to publish the reports of all the eight countries which are participating. We also intend to synthesise the findings of all these reports and this will be widely disseminated.

Let me reiterate that we have been focusing on linkage of trade and environment and environment and development. This linkage have been placed high on the UNEP agenda. UNEP is not just interested in environment for the sake of environment. UNEP is interested in looking at the nexus between the environment and health, in this relation of environment to human welfare. Poverty considerations of environment, its equity considerations, issues of sustainable environment, its effect on the natural resource base of developing countries, its implications in terms of trade and in maintaining sustainable development - these are some of our major focus. One need to appreciate that we take a holistic approach to the discourse on environment, in other words, we scrutinise the issue from the perspective of sustainable environment for sustainable development.

I wanted to highlight the above since there have been concerns in the developing countries such as Bangladesh as regards the issue of sustainable environment. We are interested in maintaining the resource bases of developing countries through environment friendly development policies which will be based on scientific studies. It was pointed out rightly here that even if we fail to give due priority to environmental issues the reality on the ground was such that we might be subjected to external environmental standards imposed on us by international markets and important trading partners. This will definitely have important implications in terms of our own production process and the export potentials of our commodities.

We should make the best use of the current opportunity in order to improve our environmental standards lest we are caught unprepared by the dynamics of the global markets. We must be equipped to face the new challenges in this area.

Thank you

Appendix iii

Comments by Dr. Veena Jha, Consultant UNEP/UNCTAD project at the inaugural session of the dialogue

(Transcript)

"Integrated approach to arrest negative environmental impacts should be built in the policy design process"

I would like to thank the Centre for Policy Dialogue for inviting me to this important meeting and would also like to thank the Honourable Minister for Environment Syeda Sajeda Chowdhury for participating in this meeting and making it a meaningful exercise. I am sure Dr. Abaza shares the same feeling.

This workshop on ***Environmental Consequences of Structural Adjustment: Towards Sustainable Shrimp Culture in Bangladesh*** is not only meant to be a mere academic exercise. Neither is it envisaged to be a research which would be relegated to library bookshelves. This it is designed to be a living project and its' recommendations will need to be implemented, at least to a certain degree, so that we could try out some measures which would address some of the environmental problems associated with shrimp expansion in the particular context. That is why the presence of the Minister of Environment is so critical to the success of this project. We hope she will take on board some of the recommendations of the study whilst designing an environmentally sustainable shrimp policy for Bangladesh.

I would like to share with you some of the experiences we have had in the course of carrying out this project in other countries. Whilst concentrating on the impact of trade and investment liberalization on environment, we found out that three factors were very important:

i) *Scale factor:* Trade and investment liberalization lead to an increased scale of exploitation of a resource. In other cases, it leads to excessive domestic production of a particular commodity which was stimulated through investment and trade liberalization.

ii) *Technology factor:* Openness leads to improved and increased technology choices which can have a beneficial impact on the environment.

iii) *Product effect:* Trade and investment liberalization inevitably lead to changes in

the environment. In Uganda, increased fishery exports changed the PC composition of fisheries. The implications, in general, tends to be positive; however, these could be negative in some cases.

Both trade and investment liberalization processes are irreversible. In view of this, the project should place more importance on mitigating the negative effects and enhancing the positive effects of trade and investment liberalization. As aggregation of the net environmental effects of trade liberalization is difficult to accomplish, the best approach is to develop an integrated process by which the negative environmental effects, if any, could be adequately addressed.