Trade and export orientation of fisheries in Southeast Asia: Under-priced export at the expense of domestic food security and local economies

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Abstract

Much of Southeast Asia’s economic success is based on the under-priced export of valuable natural resources. Nowhere is this more evident than in fisheries—an important commodity in Southeast Asia, with significant export volumes contributing to the foreign exchange earnings of these countries.

Existing fisheries and aquaculture policy development have lead to increased export earnings over the last decade, but have also resulted in increased extraction rates and incurred huge costs in terms of decreased local economic productivity and destruction of natural coastal resources. What is worrying is that Southeast Asian governments intend to further stimulate the export of fishery products, in particular shrimp from aquaculture, thereby increasingly threatening both domestic food security and the economic opportunities of local communities.

This paper argues that: (1) current fisheries management and development policies are not contributing to domestic food security, are not profitable to the Southeast Asian macro-economy, and are doing much damage to coastal ecosystems and rural poor communities; (2) development of shrimp aquaculture has a negative impact and further expansion of the industry should be halted;

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1. Introduction

Many economists will claim that the rapid integration into the world economy through trade and import/export liberalization has been the main impetus for economic growth and poverty reduction. Citing economic theory dogmas that date as far back as Adam Smith and David Ricardo, the belief is that liberalized markets are the most efficient, and that if and when a country sells enough of its produce to other countries it will earn enough income to take care of the domestic needs of its population [1,2].

However, most economies in Southeast Asia did not start to liberalize until export growth was well established [3]. “Exports from behind protective barriers” were behind Southeast Asia’s economic success over the past 20–30 years, not “free trade”. In the 1980s, Southeast Asian countries were able to combine high growth with high degrees of protection [4]. It was only during the 1990s that import tariff walls were broken down and restrictions on foreign ownership of, or access to, domestic production resources (land, companies) were relaxed.

1.1. Fisheries and free trade

Globally, fish stocks are seriously being over-fished [5]. Fishery subsidies directed towards commercial fleets still, however, amount to US$20 billion annually. At the same time, industrialized countries are demanding more access to developing countries for both the sale of their subsidized fish, as well as investment in local fishery industries. In other words, having over-exploited their own fish resources, industrialized countries are now subsidizing their fleets to extract fish from the coastal waters of developing countries [6]. These subsidies are directly helping to annex a resource that provides a vital source of protein and income to poor communities in developing countries.

Fisheries are an important commodity in Southeast Asia—for both food security, as well as export earnings. There are an estimated 12 million registered fishers in the Association of Southeast Asian Nations (ASEAN) region [7], many of whom depend on part-time fishing for subsistence livelihoods. The total fisheries production in Southeast Asia is estimated at 15.1 million MT [7,8]. In 1998, ASEAN exported US$7.6 billion (net US$6 billion) in fishery products [7,8].

Much of Southeast Asia’s economic success is based on the under-priced export of valuable natural resources. Commodities are sold without including the real costs of production. And while protective walls are tumbling and exposing domestic communities to the rigors of harsh (and uneven) global competition, these communities have increasingly less resources available to build their domestic economy.

Unfortunately, biological estimates clearly indicate that natural fishery resources are depleted to a fraction of former standing stocks [9]. Thus, the likelihood that fisheries production will
remain important for national economies in the future is remote, and it seems unlikely that a fishery industry can continue to keep up with a growing domestic demand for fish. An estimated 65 million people in Southeast Asia remain undernourished [10].

1.2. Objective

Using official statistics, research findings, and documentation from various non-government organizations working in the region, the paper attempts to prove the following points:

1. policy development over the last decade has led to increased extraction rates and increased export earnings;
2. the apparent advantages in earnings from these examples are directly associated with huge costs incurred in decreased local economic productivity and destroyed coastal natural resources; and
3. the economic use of coastal resources has actually resulted in financial losses, and that these losses are carried primarily by the exporting countries and their local communities.

It argues for the: (a) responsible use and management of the considerable fisheries resources of the Southeast Asian region to ensure domestic food security and the economic development of the presently marginalized sectors of the population; (b) temporary halt to export-oriented economic policies; and (c) re-institution (where possible) and retention (in all cases) of the protection barriers that shield domestic economies from unequal competition on a global free trade market.

2. Fisheries management and trade: loss of fish and loss of food security in the region

2.1. Sell fish to buy fish?

Data on import and export of fishery products in the region (including aquaculture and inland fishery) are summarized in Table 1 and complemented with cursory and incomplete data on losses incurred as a result of coastal habitat conversions and insufficient fisheries management. The attempt to outline gains and losses in fish volumes for the regional market in the table shows that the region, despite an actual fisheries trade deficit in volume, can still make fisheries trade work for food security objectives by simply using some of the earnings from export to buy a larger quantity of (cheaper) import. It also indicates that the availability of fish for domestic markets may also be affected by insufficient fisheries management, which may still be compensated for if most of the export earnings are used to feed Southeast Asian populations.

The “best case” scenario assumes a minimum of loss due to management problems (e.g. all illegally caught fish still ends up on intra-regional markets) and assumes that all export earnings are used to import fishery products. The “worst case” scenario provides a warning signal, and shows how much loss in fish (and thus food and economic value) may be incurred when there is insufficient fisheries management and all net gains from trade are used for purposes other than feeding domestic populations. Potentially, this loss could reach 6.4 million MT (or 40% of current ASEAN fishery production)!
Although both the “best” and “worst case” scenarios are unlikely, this analysis is valuable as an attempt to link fisheries management issues and export-oriented policies with domestic food security and the availability of fishery products on the local markets. If Southeast Asian countries wish to manage the fishery for food security purposes, this can only be done if the export earnings are used to buy food (fish) for domestic populations. However, such a “sell fish to buy fish” policy is not immediately evident, since exports of fisheries products from Southeast Asia exceed imports [7].

In Fig. 1, two different trade balance graphs are presented: that of an “exporter”, and that of an “importer” of food and fish. Agricultural trade balances are shown in Fig. 1 for Indonesia (the “exporter”) and the Philippines (the “importer”). Indonesia is selling substantially more agricultural and fisheries products than it buys. The country appears to be earning money, but at the same time domestic market prices rise [11], people are getting...
hungry, and the Food and Agriculture Organization of the United Nations (FAO) has made calls for food aid to the country. The Philippines represents a totally different situation. The country is a net importer of fishery products. Moreover, the Philippine agricultural trade balance (for all agriculture products) shows that it imports large volumes of all kind of food products.

2.2. Losses in domestic food security

During the years when the Philippines switched from being a “seller” to being a “buyer” of food, domestic self sufficiency in fisheries products declined steadily from 100% in 1993 to 71% in 1997 [12]. To compensate for this, one would expect the import of fisheries products to increase. However, the net import of fishery products by the Philippines has remained relatively constant at a modest level of 50–100,000 MT (Fig. 1). Apart from the question about whether the country should be happy with this “food bill”, and notwithstanding the fact that the country is buying fish, it appears that import quantities are not related to the locally growing demand for fish.

It is speculated that much of the foreign exchange earned from the export of food is not devoted to purchasing low cost nutritive foods for the needy, but is diverted to the purchase of luxury foods and other products in demand by local elites [13]. The existence of huge shopping malls and luxury supermarkets in the big cities of the Philippines, and the increasingly short supply of fish in domestic markets in Cambodia¹ [14], suggests that this might be right and that the current fisheries-related trade and export policies in Southeast Asia do not work to alleviate food security problems.

¹Cambodia exports approximately 80% of its fishery products.
2.3. Losses in access to fishery resources

There is more evidence to back up the above conclusion, and there are grounds to speculate that the situation may actually become worse as the demand in the region for fish will only grow [7].

The conversion of productive coastal lands (only “valued” in terms of losses in fish biomass in Table 1) and the intrusion of foreign fishing vessels have led to livelihood and income losses of poor segments of the population. The lack of enforcement of existing fisheries policies is also imposing large costs on countries [15,16]. Between 1998 and 2001, an estimated 200,000 small-scale fishers in the Philippines lost their livelihoods due to massive conversion of fishing grounds to make land available for foreign investments and export processing zones [17]. In Indonesia, there are losses of possibly as much as US$4 billion (catch-value) per year [18,19] within its Exclusive Economic Zone, and local fishers have complained that they can no longer access their fishing grounds [20,21] due to illegal fishing—most of which is done by foreign fishing vessels. Cambodian officials have also acknowledged that they can only guess what other fleets are taking from the country’s fishing waters [14].

2.4. Liberalization despite “external costs”

Current trends to liberalize the fisheries economy by reducing tariffs for imports (e.g. in the Philippines, where many fisheries tariffs were reduced from 70–80% to 5%) and to create legal openings for more foreign investments in the fishery industry (e.g. the Aquaculture and Fisheries Modernization Act (AFMA) in the Philippines [22] and the Law on Foreign Investment in Indonesia [20]) will stimulate foreign investments and trade. It will also stimulate the conversion of coastal habitats, the displacement of fishers, and the export of “high value” fishery products. Thus, there are reasons to believe that liberalization will only reduce food security and the national economy, unless so-called “external costs” are included in economic cost-benefit analyses.

3. Shrimp aquaculture development in Southeast Asia: a “boom-bust” economy with huge costs

ASEAN governments appear to have turned to aquaculture as a way out of the apparent dilemma between losses in fishery resources and the need for food security. They regularly express high interest in the development of aquaculture as an industry for both domestic food needs, as well as foreign exchange earnings [23]. Shrimps are a particularly high value commodity with huge demand in rich markets and they currently account for 1% of the global trade in fishery products by weight, but about 20% of world fishery exports by value [8].

Trends over the last few decades show that what governments aim to achieve by engaging in aquaculture is not happening. The domestically available supply of aquaculture products has decreased, and the earnings appear to go mainly to a privileged few at the expense of the less fortunate. Ultimately, the shrimp producing countries are losing more then they gain from shrimp aquaculture.
3.1. Main trends in shrimp aquaculture development

Apparent early successes in shrimp aquaculture development have encouraged national policy makers and international agencies to invest in the industry [24]. The Asian Development Bank (ADB) and the World Bank have supported shrimp aquaculture development projects in Bangladesh, China, Indonesia, Malaysia, the Philippines and Thailand. Japan, the United States and the European Union (EU), have also added to bilateral development support packages.

Before the 1970s, small-scale aquaculture farmers produced shrimp for the domestic market [24]. However, since the 1980s, shrimp aquaculture has been increasingly promoted by governments as a major source of foreign currency earnings. Shrimp farms expanded rapidly in Indonesia, Philippines and Thailand. In the Philippines alone, development assistance given to shrimp aquaculture was close to US$2 billion during this period [25]. Despite the failures experienced in Ecuador and Taiwan in the late 1980s, the focus on shrimp aquaculture development has continued in Southeast Asia. In fact, the Philippines even established a law quite recently which literally calls for “aggressive promotion in all [Philippine] regions” of export-oriented aquaculture (the AFMA; [22,26]), even though the country has faced 10 years of declining production in shrimp aquaculture [25,26].

During the 1990s, the development of shrimp aquaculture became increasingly driven by public-private investments aimed particularly at generating earnings from export of the commodity. In Thailand, corporations invested over US$300 million in shrimp farming between 1986 and 1991, while the government invested US$84 million [13]. In Vietnam, the government embarked on a “blue revolution” program, hoping to earn US$2 billion in revenues from seafood exports in the 2000–2005 period. Shrimp farming operations, seen as a cornerstone for this ambitious target, produced 158,755 tons in 2001 and now cover 448,800 ha. Investments have been driven by government subsidies based on loans from various international financing institutions (reaching over US$4000/ha), as well as tax incentives for traders and foreign investors [27].

Indonesia has actively promoted shrimp aquaculture development since 1984. First through ADB and World Bank supported contract-farming enterprises, with little direct foreign investment, and later (since 1998) with an ambitious program aimed at increasing shrimp production to 670,000 tons by 2003. In financing this development, the program has relied mostly on private (domestic and foreign) investments [11,28]. The program was not deterred by virus attacks that virtually wiped out 90% of the shrimp farms in Java and Sulawesi in the early 1990s [11]. Currently, Southeast Asian shrimp exports stand at 424.8 million MT and US$4.2 billion (Table 2).

3.2. There are a few who profit

There is a large demand for Southeast Asian shrimps on the global market. Japan, the United States, and EU for instance, all import huge quantities of the commodity. In fact, the Japanese development assistance to aquaculture (bilaterally and through the ADB) appears to have been used to promote the flow of products to Japan, either as direct imports or by negotiating investment agreements (mostly directed at shrimp processing and trading, rather than farm pond operation) [13,29].

The motives behind the development support of European countries and the United States are a bit more obscure. In Vietnam, however, a clear relationship exists between
bilateral trade negotiations between the country and the United States on the one hand, and the assistance provided by the World Bank for shrimp aquaculture on the other [27], thereby establishing a clear export-oriented motive behind the development of the industry.

The private sector is apparently “hitching a ride” on this situation. A case in point may be the Charoen Pokphand (CP Group), a multinational that, in cooperation with Mitsubishi, made shrimp a truly global commodity. The CP Group now has three major shrimp aquaculture companies with businesses in China, India, Indonesia, Thailand and Vietnam. CP Feed Mills is the largest shrimp feed company in the region,² while the CP Aquaculture and CP Intertrade branches ensure that the CP Group is involved in the full cycle of production—“from inputs to overseas marketing” [13]. CP controls approximately 18% of Thai shrimp exports, and 60% of the Thai shrimp feed market [30]. CP is also 31% co-owner of the single largest shrimp aquaculture company in Indonesia, the PT Central Pertiwi Bratasena (PT CPB [31,32]). PT CPB is one of three companies that, together, control 90% of the production and export of shrimps. All three of these companies are involved in so-called “Nucleus-Estate Smallholder Schemes” or NESS (Fig. 2), a form of contract farming in which the company (Nucleus) does not actually own farm ponds, but provides credit to small scale farmers for the purchase, development and operation of ponds, while dictating the sourcing of inputs³ as well as the buying prices. In this way, large companies can access public land (“for development”), use government credit schemes (“to assist small-scale farmers”), and control the shrimp production process (via conditions posed in credit-schemes) without having to take the investment risks and establishing ponds themselves [24]. Ironically, much of the credit-funds involved originate from development loans of international financing institutions, and are administered as

²Feed accounts for approximately 50–60% of the total inputs in shrimp farming.
³PTCPB is also a feed provider.
being distributed to small-scale farmers. On paper, subsidiaries of the companies are merely seen as intermediary credit providers. In short, the number of players\(^4\) in the regional shrimp export market is quite small; most of the products are sent abroad, and much of the profit benefits only a few.

### 3.3. Serious doubts about benefits to domestic food security and employment

Aquaculture should, in theory, increase both employment and the supply for domestic food consumption. However, because most shrimps are exported, aquaculture makes little contribution to local food security\(^{[11,33]}\) and governments are aware of this. The Director General of Fisheries of Indonesia who attended a symposium in RO Korea in 1998 said, while introducing Protekan to his ASEAN colleagues, “To address the issue of food security, the government launched a crash program for boosting the export of fisheries commodities”. The “fish for fish” policy has been discussed above with the conclusion that fisheries and aquaculture earnings are not used to buy food for domestic populations. Shrimp aquaculture itself already expends more food than it produces—for every ton of shrimp, at least 1.5–2.6 tons feed are needed\(^{[11]}\).

The supply of shrimps for the domestic market appears secondary to export driven motives. Again, some examples from Indonesia and the Philippines may demonstrate this. During the Asian crisis of 1997 and 1998, domestic shrimp prices in Indonesia soared 600%, clearly keeping in line with the devaluation of the Rupia\(^{[11]}\). From 1993 to 1997, domestic shrimp consumption in the Philippines went down from 1.37 to 0.67 kg/capita\(^{[25]}\), while prices rose 24% and 20% during 2000 and 2001, respectively\(^{[26]}\). In sharp contrast, during the last decade shrimp has steadily become cheaper in Europe and the United States.

A commonly-used argument to “defend” shrimp aquaculture development is that it generates employment for the poor. However, this employment generation is limited to 1–5 persons/ha (from very extensive to very intensive aquaculture). Cursory estimates indicate that subsistence employment in 1 ha of mangrove or coastal wetland can range

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\(^{4}\)This paragraph is merely intended to illustrate that only a few make profits from the shrimp aquaculture industry. The names of particular companies are mentioned to provide evidence for that, and nothing more is intended by the authors.
between 10 and 40 persons [34,35]—much higher than that generated by the same area of a shrimp farm. Moreover, outsiders are usually employed by shrimp farm operations [17,34–36]. Loss of access to coastal habitats as a result of this so-called “profitable industry” is estimated to contribute substantially to the unemployment of millions of individuals.

3.4. There are many who lose

Aquaculture development comes at a huge cost to local populations, and it is usually the marginalized that pay the price. Documented effects of shrimp aquaculture development include a serious loss of production potential in surrounding rice fields in Bangladesh [37,38] and in Thailand and Vietnam [34–36,39]—up to 50% in a whole province [33]. Costs include displacements of people [17,34–36], as well as huge environmental and socio-economic opportunity losses. Soaring land prices directly attributed to shrimp aquaculture development [40] obviously benefited landowners, but made landownership unattainable to the poor.

Table 3 provides clear insights into the existing livelihood opportunities affected negatively by shrimp aquaculture development—i.e. losses in economic opportunities for subsistence and semi-subsistence communities in Bangladesh. Less detailed reports from rice growing areas in Thailand [33], coral reefs in Indonesia [11], and coastal areas in the Philippines [17,41,42] provide evidence that this is also happening all over Southeast Asia, in areas much larger than the shrimp farms themselves.

There is also the “hard cash” argument, derived from the science of ecological economics, which helps to estimate the real (“external”) costs derived from the mangrove conversion that often results from aquaculture development. Recent estimates of losses in economic value incurred by the conversion of mangroves include US$10,000/year/ha (Thailand [43]), and US$8–11,000/year/ha (Philippines, Table 4, [44]). These estimates include so-called “ecological footprint effects” of declined fish production and other ecosystem services over a larger area than the mangrove habitat itself. If these values are extrapolated to the total estimated loss of mangroves in Southeast Asia, the full amount is mind-boggling and certainly much larger than the direct cash gains from shrimp exports. Combining the estimated loss of mangroves of 692,450 ha (Table 2) with these data indicate that ~US$4.2 billion has been earned from shrimp aquaculture at the cost (in mangrove destruction alone) of ~US$5.5–7.6 billion, thereby resulting in a negative balance of US$0.8–3.4 billion/year for the region.

Feasibility studies on shrimp aquaculture development from international financing institutions and public investors are, albeit haltingly, beginning to include some external costs in their cost-benefit estimates. Granted, there are wide discrepancies in the use of data—a recent program of the United Nations Environment Programme [48], for example, estimates the total loss of mangrove area in the region at 70% (including China); while a recent advisory report to the World Bank on the issue used 1995 data pegging mangrove losses due to shrimp aquaculture at 402,199 ha [49] for 12 Asian countries (or slightly over 5% of historical mangrove areas). Even with this last figure, however, the external costs of shrimp aquaculture from mangrove losses alone would still exceed the financial profits.

The development of shrimp aquaculture industries then is not in the national interest of countries in Southeast Asia. The industry is not doing much to alleviate food shortages. Conversely, it is doing much damage by further marginalizing poor rural communities.
Table 3
An overview of previous and present livelihood opportunities for communities surrounding shrimp aquaculture farms in the southwest of Bangladesh

<table>
<thead>
<tr>
<th>Activity</th>
<th>Previous economic activities in the shrimp cultivation areas</th>
<th>Present economic activities in the shrimp cultivation areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Agricultural work in own land as well as on the lands of others. Opportunity to work in ploughing, planting, harvesting, threshing and other related works</td>
<td>Job opportunities have been vastly reduced due to the conversion of agricultural lands into shrimp ponds</td>
</tr>
<tr>
<td>Cattle</td>
<td>Previously cattle were kept in almost all households. The families had additional income from the sale of milk, calves, and cow dung</td>
<td>Due to two-thirds reduction in rice production, sufficient straw is not produced, resulting in fodder shortage. There is also shortage of grazing land and fresh water for the cattle</td>
</tr>
<tr>
<td>Poultry</td>
<td>There used to be poultry farming in the region. Women used to earn supplementary income from the sale of eggs and chickens</td>
<td>The shrimp cultivators have imposed a ban on poultry keeping, especially of ducks, because they eat the shrimps. Thus the women are deprived of a former source of income</td>
</tr>
<tr>
<td>Vegetables in the Homesteads</td>
<td>Most of the households used to cultivate vegetables on their homestead lands, and sell the surplus after meeting household needs</td>
<td>Due to salinity of the soil, vegetables cannot be cultivated. There is lack of nutrition as well as closure of a former source of income</td>
</tr>
<tr>
<td>Fishing</td>
<td>The fishermen and poor women used to catch fish in the canals and flood plains, and sell the surplus after meeting household requirements</td>
<td>All the water bodies are now saline. Due to destruction of scores of varieties of fish fry during collection of shrimp fry, fish populations have been drastically reduced. Many fishermen have lost their occupation</td>
</tr>
<tr>
<td>Handicraft</td>
<td>A marsh grass known locally as “meley” (CIPERUS) used to grow in the marshy areas. Women used to weave mats with flower stems of this grass</td>
<td>At present meley is not locally available, resulting in loss of part time occupation for women</td>
</tr>
</tbody>
</table>

Note: Adapted from [37].

Table 4
Valuation of mangrove ecosystem in Tagabinet, Palawan, Philippines, 2003

<table>
<thead>
<tr>
<th></th>
<th>Mangrove area (30–200 × 10 ha)</th>
<th>Shrimp pond area (10 ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas and climate regulation</td>
<td>22–996,000</td>
<td>0</td>
</tr>
<tr>
<td>Food and raw materials</td>
<td>142,000–7.6 million</td>
<td>131,000–295,000</td>
</tr>
<tr>
<td>Recreation/esthetics</td>
<td>66,000–3.5 million</td>
<td>0</td>
</tr>
<tr>
<td>Nutrient regulation/waste treatment</td>
<td>1–55.6 million</td>
<td>0</td>
</tr>
<tr>
<td>Disturbance regulation</td>
<td>0.2–14.5 million</td>
<td>0</td>
</tr>
<tr>
<td>Total value (per ha per year)</td>
<td>5000–41,000</td>
<td>13,000–30,000</td>
</tr>
</tbody>
</table>

Notes: In US$/year; Valuation methodology based on [45]; Valuation includes the application of ecological footprint estimates [46,47]; Adapted from [44].
4. Recommendations

Current fisheries management and fisheries trade and development policies are not contributing to domestic food security, are not profitable to Southeast Asia’s macro-economic development, and are inflicting much damage to coastal ecosystems and the poor communities that depend on them. The development of shrimp aquaculture, in particular, has negative impact. There is a need for an alternative approach to use and manage the considerable fisheries resources of the region to ensure domestic food security and to assist the economically marginalized sectors of society.

Governments in Southeast Asia should seriously consider a temporary halt to export-oriented and liberalization economic policies, and re-institute (where possible) and retain (in all cases) the protection barriers that shield domestic economies from unequal competition on a global free trade market. Instruments and safeguards need to be in place that would guarantee a more equitable and sustainable resource-based economy—i.e. an economy wherein external costs have become internalized and are paid by users and buyers of natural resource based products, to those who currently suffer those “external” costs.

It appears foolish to continue with liberalization and export-oriented development strategies in fisheries and aquaculture without taking full account of domestically-paid social, environmental and ultimately economic costs involved. It would be economic common sense to halt all further development of shrimp aquaculture ponds.

The recommendations below may help to ensure that fisheries and aquaculture resources will become profitable and be “economized” in an equitable manner.

4.1. Fisheries management: CB-CRM

Community-based Coastal Resources Management (CB-CRM) has developed in the region as a feasible alternative to many dilemmas facing Southeast Asian governments. Non-government organizations (NGOs), governments, and development financing institutions have successfully collaborated to develop this alternative approach to fisheries and coastal resources management. In essence, CB-CRM entails development of decentralized management systems wherein fishers and coastal communities (as primary stakeholders) take active roles as decision makers and implementers of management [50,51]. Though developmental programs indicate that transaction costs (transaction costs are measured more in time than in money [52]) towards this approach are high [53,54], successes that provide both restoration of ecosystems and income/livelihood improvements for small-scale fisher communities have been reported [55,56].

4.2. Economic instruments: mandatory use of instruments estimating external costs

CB-CRM development alone is not enough. It must be flanked with instruments that address the single most blatant flaw in economic theory: the “distortion” of the market. External costs to production are currently ignored—e.g. the Cobb Douglas production function, often used by economists and project developers in International Financing Institutions (IFIs), measures only labor and money as inputs, but ignores the value of natural resources as well as the “pollution” or destruction of such resources as the result of the economic activity under analysis [57]. As an alternative, the field of ecological economics has developed to a level of maturity that will allow application in the analysis
and feasibility study of economic activities involving natural resources. How the internalization of obvious external costs dramatically changes the picture from apparent profit to huge loss has already been shown above.

4.3. Policy principles: Code of Conduct, precautionary policy principles, corporate social responsibility

It also remains necessary to strengthen developing policy principles. The FAO has developed a Code of Conduct which should guide the more responsible use of fish resources. Adopted by a majority of countries, it still lacks legal (and therefore binding) application. With possible consumer preferences in mind, the Marine Stewardship Council has developed guidelines towards a more responsible tuna fishery. Similar codes of conduct and policy guidelines have been developed in aquaculture [36]. Thailand and the Global Alliance for Aquaculture each have one. Recently, NGOs like the Environmental Justice Foundation also proposed codes that can be used and applied.

On environmental aspects, the different codes are actually quite similar in language—a sign that all basically do know how to develop aquaculture more sensibly. Care must be taken, however, to address social impacts and human rights abuses, associated with fisheries and aquaculture activities, in such codes. The role of the private sector in the process must also be looked into. Public and social accountability of corporations, and so-called “chain responsibility” have developed beyond mere buzz words into policy principles that can be applied.

4.4. Good governance: law enforcement and public accountability

Law enforcement and public accountability need strengthening to govern the use and allocation of public resources. Regardless of the actual form of governance, a country’s government does have an implicit social contract with its population to take care of a country’s natural wealth and handle it responsibly. Law enforcement and public accountability cannot merely be practiced if and when a government has funds or political interest for it, but should be regarded as the cornerstones of a government’s mandate—especially if enormous economic resources and potential are at stake.

4.5. Trade related policy reforms and production-cost based negotiations in the global market place

While the global market place is still a very uneven arena in which basic assumptions behind free market economic ideologies are significantly flawed, Southeast Asian governments will do well to consider a more assertive stand towards the liberalization demands of developed countries and international financing institutions alike [4]. While developed countries continue subsidizing their own fishery industries and negotiate (in the World Trade Organisation) and/or “lend” (via international financing institutions) their way to cheaper access to the resources and markets of developing countries, Southeast Asia has ample social and economic incentives to protect its domestic fishery and coastal resource base and put food security issues and domestic equity concerns first.

Obviously, the implementation of these recommendations will have the short-term impact of making natural resource-based economic commodities (quite significantly) more
expensive, and in a global competitive market less attractive to buyers. It is nevertheless a price worth paying. Much of these costs can and should, in export, be deferred to the foreign buyers of the products. If developed countries want shrimp, they should pay the full cost and not be allowed to import them at “bargain” prices while “external” production costs are shouldered by those who do not have the money, or do not benefit from the export earnings. Current overfishing and environmentally destructive practices worldwide will, only a few years from now, lead to a situation wherein those who are careful with their natural resource base will be able to demand higher prices. It is more worthwhile to safeguard and sustainably manage fishery and coastal resources for domestic use and distribution because at the end of the day, it pays better than exporting them.

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