SYNTHESIS REPORT WITH PRO-POOR TRADE RESEARCH FINDINGS AND POLICY RECOMMENDATIONS

SEPTEMBER 2005

International Seafood Trade: Supporting Sustainable Livelihoods Among Poor Aquatic Resource Users in Asia (EC Prep Project EP/RO3/R14)

This report is Output 3, and a synthesis report, of the project "International Seafood Trade: Supporting Sustainable Livelihoods Among Poor Aquatic Resource Users in Asia (EP/R03/014)". The project was implemented by Poseidon Aquatic Resource Management Ltd (UK), the Network of Aquaculture Centres in Asia-Pacific (NACA) and the STREAM Initiative, in partnership with stakeholders in the seafood and marine ornamental fish trade in Asia and Europe. The project ran from October 2003 to September 2005.

This research project is one of 23 projects funded by EC-PREP, a programme of research sponsored by the UK Department for International Development. All EC-PREP research studies relate to one or more of the six focal areas of EC's development policy in the context of their link to poverty eradication. EC-PREP produces findings and policy recommendations which aim to contribute to improving the effectiveness of the EC's development assistance. For more information about EC-PREP and any of the other research studies produced under the programme, please visit the website www.ec-prep.org.

The report should be referenced as: Macfadyen, G., Phillips, M, Haylor, G., 2005. International Seafood Trade: Supporting Sustainable Livelihoods Among Poor Aquatic Resource Users in Asia (EP/R03/014). Output 3 Synthesis Report with Pro-Poor Trade Research Findings and Policy recommendations. Poseidon Aquatic Resource Management Ltd, Network of Aquaculture Centres in Asia-Pacific (NACA), and the STREAM Initiative.

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ACRONYMS

AKKII	Indonesian coral shell and Ornamental Fish Association
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASEM	Asia-Europe Meeting
BIP	Border Inspection Posts
CCRF	Code of Conduct for Responsible Fisheries
CIF	Carriage, Insurance and Freight
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSR	Corporate Social Responsibility
DFID	UK Government, Department for International Development
EC	European Commission
EC-PREP	European Community's Poverty Reduction Effectiveness Programme
EJF	Environmental Justice Foundation
ESAF	Enhanced Structural Adjustment Facility
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FOB	Free on board
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GE	General Exception List
GSP	Generalised System of Preference
Ha	Hectares
HACCP	Hazard Analysis Critical Control Point
IL	Inclusion List
ILP	Import Licensing Procedures
IMF	International Monetary Fund
(I)PRSP	(Interim) Poverty Reduction Strategy Paper
ISO	International Organisation for Standardisation
MEA	Multilateral Environmental Agreements
MFN	Most Favoured Nation
NACA	Network of Aquaculture Centres in Asia-Pacific
NTM	Non-tariff Measure
OATA	Ornamental Aquatic Trade Association
PTFEA	Philippines Troplical Fish Exporters Association
RTA	Regional Trade Agreement
SCM	Subsidies and Countervailing Measures
SCM	Subsidies and Countervailing Measures
SL	Sensitive List
SPS	Sanitary and Phytosanitary Measures
STREAM	Support to Regional Aquatic Resources Management
TBT	Technical Barriers to Trade
TEL	Temporary Exclusion List
UK	United Kingdom
UNEP	United Nations Environment Programme
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation

1 Introduction and Background

The global export value of fisheries products has grown significantly in recent years in response to consumption trends, and is currently around € 60 billion a year. Developing countries are increasingly important suppliers of fisheries products, with the EU a major importer, consuming 63% of internationally traded seafood. This trade has significant implications for the livelihoods of poor people in Asia, where fisheries and fisheries products provide food and income for some of the poorest and most marginalized people in the region.

The European Community's Poverty Reduction Effectiveness Programme (EC-PREP) is a programme of research to enhance collaboration between the European Commission and the UK Department for International Development (DFID). Its main objective is to enhance the poverty impact of the European Community's development assistance and contribute to achieving the International Development Target of halving the number of people living in extreme poverty by 2015.

This report has been prepared by Poseidon Aquatic Resource Management Ltd / Network of Aquaculture Centres in Asia-Pacific (NACA) / Support to Regional Aquatic Resources Management (STREAM) Initiative[1], and represents Output 3 of an EC-PREP Project (EP/R03/014) funded by DFID and entitled "The International Seafood Trade: supporting sustainable livelihoods among poor aquatic resource users in Asia". The project focused specifically on exports to the EU of shrimp from Vietnam (especially to the UK, and BeNeLux countries), and of marine ornamental species from Philippines and Indonesia (especially to the UK and France), and possible pro-poor trade mechanisms related to this trade.

The purpose of the project was to investigate international trade in fisheries products and its relationship to poverty alleviation and livelihoods of poor aquatic resource users in developing countries in Asia, and to identify options to improve the effectiveness of poverty reduction through international seafood trade. The project directly addressed the EC-PREP priority area of trade and development, and indirectly provided valuable insight to two other priority areas: food security and sustainable rural development; and institutional capacity building.

This report (Output 3) follows other reports previously produced by the project.

Output 1 (December 2003) took the form of a background overview report based on a literature review and interviews with supply chains in the EU. The overview included: (i) a description of seafood market supply chains and trade volumes; (ii) the policy and institutional contexts relating to trade and poverty reduction, at global, regional and national levels, and their implications for poverty reduction; (iii) ongoing trade initiatives aimed at poverty reduction; and (iv) some initial ideas about pro-poor trade initiatives to be explored by the project.

Output 2 (August 2005) reported the findings of field-based case studies in Vietnam, Indonesia and the Philippines conducted over the course of 2004 which (i) mapped the market chain and identified stakeholders; (ii) identified poor stakeholders and

[1] www.consult-poseidon.com / www.enaca.org / www.streaminitiative.org

analyzed their livelihoods; (iii) provided understanding of the influence of trade on the livelihoods of poor people in the market chain; and (iv) identified pro-poor options for trade in aquatic animals and plants.

Output 3 provides a synthesis report and combines the key findings of the overview report and the field-based investigations, to draw together key research findings and policy recommendations.

Project Outputs can be obtained in CD version from either Poseidon or NACA (see websites for contact details), and are also available on the organizations' respective websites. The CDs also contain a) planning workshop reports, b) information on selected participatory tools used for the livelihood analyses, and c) trade media monitoring reports that have been collected during the course of the project.

2 Methods

2.1 Introduction

Given that the contents of this synthesis report are based on Outputs 1 and 2 of the project, a short description of the methodology used to generate these two previous Outputs is pertinent.

2.2 Methodology for Output 1 Background/Overview Report

The project began in September 2003, with Output 1 produced in December 2003 and based on work done primarily in Europe. A literature review and web-search was conducted, and data sources consulted, to obtain background information on: seafood market supply chains and trade volumes; policy and institutional contexts relating to trade and poverty reduction, at global, regional and national levels, and their implications for poverty reduction; and ongoing trade initiatives aimed at poverty reduction.

This literature review was further supported by telephone and face-to-face interviews, and in some cases the use of written postal questionnaires, in the UK, France and BeNeLux[2] countries with key operators in the supply chain i.e. importers, and fish buyers for retailers and food service companies. These interviews and questionnaires provided additional information on market supply chains, key issues of concern for those involved relating to regulatory frameworks for trade, and their initial ideas about the feasibility of ongoing and potential pro-poor trade initiatives.

The research team contacted institutions and organisations involved with ongoing trade initiatives aimed at poverty reduction described in the Output 1 report. Initial contact was also made during work on Output 1 with key exporting associations in Indonesia, Philippines and Vietnam, as well as with representative trade organizations in Europe.

2.3 Methodology for Output 2 Field-Based Investigations

Case studies were conducted in three countries over the course of 2004:

- Indonesia
- Philippines, and
- Vietnam

The detailed methodology is provided in the individual country case study reports (Output 2), and the following provides an overview of the main aspects of the methodology. The following process was followed for each case study.

2.3.1 Team building and planning workshop

National teams were formed for each case study, coordinated by the STREAM Communications Hub Manager in each country. The teams were drawn from government, NGOs and national research agencies with experience in aquatic resources, trade and livelihoods, and included both men and women (Table 2).

[2] Belgium, the Netherlands, and Luxembourg

Table 1: Case study teams

Case study country	National team members
Indonesia	Two local NGOs: - Yayasan Palu Hijau (YPH) for the Sulawesi Case Study; and Yayasan Bahtera Nusantara (YBN) for the Bali/Java Case Study Key project implementing personnel: - Ir Samliok Ndobe M.Si as Team Leader for the YPH Sulawesi Study, assisted by Abigail Moore MSc and Drs Akhdary Dj Supu - Arsonetri as Team Leader for the YBN Bali/Java Study, assisted by Indrawati - Aniza Suspita S.Pi from STREAM Indonesia as Indonesia Co-ordinator responsible for communication with the regional STREAM-NACA office on the progress and implementation of the study
Philippines	Monica Picquero, MAC - Region 7 Community Organizing, Reuben C. Ranay BFAR 7- Director's Office Training Coordinator, Josephine Savaris Program Officer for CRM, Local Gov., Agrarian Reform PhilDHRRA (Visayas region), Elizabeth M Gonzales Communications Hub Manager STREAM PHIL, Meddy dela Torre Training Coordinator Guian Foundation Region 8, Isabelle Cruz Philippine Program Assistant MAC – Manila
Vietnam	Four provincial teams conducted the studies, involving participants from government and mass organizations such as the Women's Union: - Ca Mau team (Mr Nguyễn Thông Nhận (team leader), DOFI, Mr Phan Văn Út, DOFI, Ms Hồng Thị Kiều Nga, FEC and Ms Cao Thị Như, FEC) - Quang Tri team (Mr Nguyễn Thanh Tùng, FEC Director, team leader, Mr Trần Quốc Tuấn, FEC, Ms Trương Thị Quyết, FEC and Ms Nguyễn Thị Hạnh, Trieu An Commune Women's Union, Trieu Phong District) - Nghe An (Mr Cao Bá Hiền, Fisheries Extension Centre, Mr Trần Đăng Tuấn, DOFI, Mr Nguyễn Đại Điện, Quỳnh Lộc commune. - Thua Thien Hue (Ms Võ Thị Tuyết Hồng, Team leader, DOFI, Ms Văn Thị Thu Vinh, FEC, Mr Hồ Giáp, Chairman of Phu Da Commune Farmers' Association, Mr Huỳnh Công Trai, Viễn Trình village headman, Phú Đa commune The case study was coordinated by a team from Research Institute for Aquaculture in Hanoi (Mr Trần Văn Nhường, Mr Trần Long Phượng, Ms Trần Thị Ánh Nguyệt and Ms Bùi Thị Thu Hà) and STREAM communications hub in Vietnam (Mr Nguyễn Song Hà and Ms Nguyễn Thị Minh)

A planning and orientation workshop was held at the start of each case study, including the national study team and resource persons from NACA and STREAM, to:

- Understand socio-economic, trade/market and livelihoods issues of interest to poor people whose livelihoods include aquatic resources management.
- Review and develop the survey methods, including statistical and qualitative research methods.
- Become familiar with resources and tools to support market chain and livelihoods analysis (e.g., semi-structured approaches using questionnaires and interviews)
- Experience the use of participatory tools for market chain and livelihoods analysis, and
- Develop detailed workplans for the case studies.

The participants in each workshop built shared understandings of "livelihoods" and associated terms, by considering questions such as:

- What do you mean by "livelihoods"?
- What are "livelihoods approaches"?
- What is "livelihoods analysis"?

The workshops also clarified the roles of different team members, and considered how they would work together.

2.3.2 Framework for understanding market chains and influences

The cases studies followed a similar process and framework for market chain and livelihoods analysis that was further developed and modified for each country during the planning workshops. A six-step process for market chain and livelihoods analysis evolved, and during each workshop, there was a day of fieldwork to try out the six-step process and tools.

Step 1: Stakeholder Identification

In each case study area, the study team selected villages or communes as starting points for the study. With support of local participants, the study team identified and diagramed stakeholders involved in the market chain and people in the villages or communes related with, or positively and negatively affected by, the market chain (e.g., fishermen, rice farmers).

Step 2: Preparation for Stakeholder Investigation and Understanding

For each of the stakeholder groups, the study team collected as much secondary information as possible on status and characteristics and identified what further information needed to be collected to understand each ones place in the chain. A second line of questioning ask about how poor people link in the chain and how are they involved? By what criteria are they poor? How do we do the wealth ranking of those groups?

Step 3: Understanding of Stakeholders

Based on information about the identified stakeholders, the study team arranged focus group discussions with representatives of each of the stakeholder links in the chain, including people who are poor. These interviews used a livelihoods framework (see box) as the structure for discussion to get a deeper understanding of stakeholders livelihoods in relation to markets and trade, and to investigate how specific grouos such as poor people and women are involved in the market chain. In addition, stakeholders perspectives were sought on the following:

Livelihoods Framework

1. Resources
   - Human (e.g., labour, enthusiasm and motivation, technical skills)
   - Social (e.g., cooperation, collectiveness, local governance, associations, mass organisations)
   - Physical (e.g., electricity, roads, irrigation, schools)
   - Natural (e.g., water, soil)
   - Financial (e.g., savings, credit, subsidy)

2. Vulnerability (e.g., natural calamities, disease, epidemics)

3. Influences (e.g., market, prices, wars, terrorism, trade barriers)

- What are other stakeholder links that should be in our draft market chain diagram (for example, service providers)?
- What are the loops (influences?) in the chain?
- What resources come into the chain at that point?
- What contractual relations exist at that stakeholder link in the chain (both domestic and international)?
- What are the livelihoods issues regarding the aquaculture production chain at that point?
- How to best address and meet the livelihoods needs of the poorest people at that point in the chain?

Step 4: Livelihoods Analysis

Steps 1-3 allowed the study team to identify people who are poor in each link in the market chain. In step 4, following the interviews with stakeholders, a comprehensive livelihoods analysis was carried out with representative groups of poor people in the market chain.

Step 5: Market Chain Diagram Revision

The study team worked together to revise the market chain diagram based on what was learnt from the interviews. As there are a lot of stakeholders in step 3, the study teams needed to split up the work among team members to cover the stakeholders. For step 5, it was not only the stakeholder information that was revised, but also complementary material that was added.

Step 6: Feedback and Recommendations

The study team held various meetings with stakeholder representatives to give feedback on the revised market chain diagram and complementary information on influences of trade on livelihoods. These meetings also proposed recommendations and came to agreements on how to support poor stakeholders in the market chain.

2.3.3 Tools for understanding market chains and influences

The teams used various participatory tools to understand the livelihoods of poor people and the influence of markets and trade on livelihoods. These were illustrated during the planning workshops with examples from previous livelihoods studies supported by STREAM and included, transect walks, seasonal calendars, Venn diagrams, wealth ranking, key informant interviews, timelines, resource mapping and SWOT analyses. The Vietnam workshop report gives particularly detailed information on the tools used.

2.3.4 Case study locations

The case studies covered a range of different locations, although were "anchored" in a small number of locations selected with poor stakeholders. The following table lists the main locations.

Table 2: Case study locations

Case study country	Locations
Indonesia	Four villages in Banggai District (Bone Baru, Tinakin Laut, Monsongan and Tolokibit), two in Bokan Kepulauan District (Panapat and Toropot) in Banyu Wangiand Denpasar, Bali (export point to Europe)
Philippines	Batasan Island, Bahol and Saban Olango Island Lapu Lapu
Vietnam	Selected villages in the four provinces of Ca Mau, Quang Tri, Thua Thien Hue and Nghe An

2.3.5 Consultation and communication

The case studies, in keeping with the participatory approach, involved extensive communication with stakeholders, from village and commune to central level. Several workshops were conducted at various stages. There was regular communication with the regional office of NACA/STREAM in Bangkok, and also with Poseidon in Europe, including use of web conferencing.

2.3.6 Anthropological inputs

An anthropology team at Durham University reviewed fieldwork methods and offered practical suggestions where appropriate. They looked at the specific tasks of the teams conducting stakeholder and livelihoods analysis, and suggested further reading which helped place the research in a broader development context and also provided the researchers with opportunities to reflect on their activities.

3 Synthesis of Output 1 report[3]

3.1 Overview of the importance of the fisheries sector, and trade in fisheries products, for the poor

There are no precise estimates of the number of people engaged in the fisheries sector who are defined as "poor". However, numbers of small-scale fishers are available, and are illuminating as they can be used as a rough proxy to illustrate the magnitude of the numbers of poor people involved in the sector; while not all small-scale fishers and related workers are poor, a very high proportion certainly are.

Around 90% of the 35 million people recorded globally as fishers are classified as small-scale, and an additional 20 million people are estimated to be involved in the small-scale post-harvest sector. In addition, there are millions of other rural dwellers involved in seasonal or occasional fishing activities that are not recorded as 'fishers' in official statistics. When numbers of fishers and fish workers are combined with those involved in activities supplying inputs to fishing and post-harvest activities, and their household dependents, it is likely that more than 200 million people worldwide depend in some part on small-scale fisheries for their livelihoods. These people include many millions, especially in Asia and Africa, living in remote rural areas where there are few other sources of alternative income or employment offering significant potential to contribute to livelihood strategies.

As noted in the introduction to this report, the global export value of fisheries products has grown significantly in recent years and is currently around € 60 billion a year. Increases in trade have been driven strongly by exports and imports from, and to, developing countries. The net receipts of foreign exchange by developing countries (i.e. deducting their imports from the total value of their exports) increased from US$3.7 billion in 1980 to US$18.0 billion in 2000 - a 2.5-fold increase in real (corrected for inflation) terms.

Global trade remains contentious yet both domestic and international trade has the potential to generate enormous direct and indirect benefits, and offers huge potential to contribute to poverty alleviation. At the macro level, exports generate tax and foreign exchange, and contribute to GDP growth. At the local level wealth generated through trade can make significant contributions to rural development through income and employment multiplier effects. And at the household level, catching/harvesting of fish and associated post-harvest activities (processing and trading) generates livelihoods, employment and income to millions of people around the world.

Increasing levels of exports by developing countries have been supported by a trend towards greater exports by small-scale fisheries and poor producers contributing to poverty alleviation. Furthermore, the post-harvest sector provides significant income and employment opportunities for women, who make up 70% of the world's poor, and who may otherwise have limited options available to them, especially in remote rural locations.

[3] Note that this section is based on work completed at the beginning of the project in 2003, so many dates relate to 2001/2002.

However, the extent to which people who are poor actually benefit from increases in international trade is strongly affected by certain key factors and trends. These include: changing demand for different types of fish products; increasing moves towards Corporate Social Responsibility (CSR), certification and traceability; increasingly strict health and hygiene regulations; and other characteristics and requirements of the regulatory framework for international trade. All these factors, while offering potential protection and opportunities for the poor, also present certain risks in terms of their marginalisation from the benefits of trade.

3.2 Trade in shrimp

3.2.1 Global Trade

Global farm gate sales of shrimp are valued at around US$7 billion. Most farmed shrimp is traded internationally with total export sales around $8 billion. Direct full time equivalent employment is 1.2 to 1.5 million and probably around three times that in associated businesses.

3.2.2 EU Trade

Imports of shrimps and prawns into the EU accounted for € 2,101 million in 2001, with 57% of the value (149,000 tonnes at a value of € 1,176 million) attributed to *Penaeus* or other warm water shrimps. Approximately half of the total value of imports is attributed to cultured fisheries. In terms of volume, 60% of imports comprised green tiger shrimps, 25% giant river prawns, and 15% others (White-legged Shrimp, Banana Prawn, Indian White Prawn and *Metapenaeus*). Imports to the EU are sourced from a wide variety of countries, with Bangladesh, China, India, Indonesia and Thailand being the most important in value terms. Vietnam ranks as the 8th most important nation to the EU, accounting for 6% of the value of imports. Imports to the EU from Vietnam have grown by four-fold in the period 1992-2001.

The principal countries of the EU which import warm water shrimps are identified in Table 3. This data includes supplies of trawl caught species. Countries such as France and Spain tend to rely more heavily on trawl caught products, the principal supplies coming from South and Central America East and West Africa.

Table 3: Imports of Warm Water Shrimps into EU countries, 2001

Country	tonnes	€'000
Spain	59,801	440,394
France	26,427	225,782
Netherlands	**17,345**	**146,302**
United Kingdom	**13,886**	**108,398**
Belgium	**11,773**	**92,711**
Italy	10,190	70,393
Germany	5,440	58,028
Portugal	1,836	16,842
Denmark	1,269	9,774
Greece	606	5,463
Sweden	135	1,433
Ireland	13	115

Source: Eurostat, 2002

The principal EU destination countries of shrimp from Vietnam in 2001 were: the UK, 2,019 tonnes (€ 12.35 million); Germany, 1,677 tonnes (€ 12.62 million); Netherlands, 787 tonnes (€ 4.99 million); Italy, 781 tonnes (€ 3.61 million) Belgium 390 tonnes (€ 14.29 million). All the shrimp imported from Vietnam to the EU is Green Tiger prawn.

At present, shrimp exports play a key role in Vietnam and increase annually, representing 50 percent of the total annual export turnover of aqua products (2004). Shrimp exports have been continually rising and by 2003, export values hit record levels of US$ 1 billion for the first time, equivalent to as much as 10% of export value worldwide for both warm and cold water shrimp. This achievement pushed Vietnam to rank within the top five countries in shrimp export.

3.2.3 UK Trade

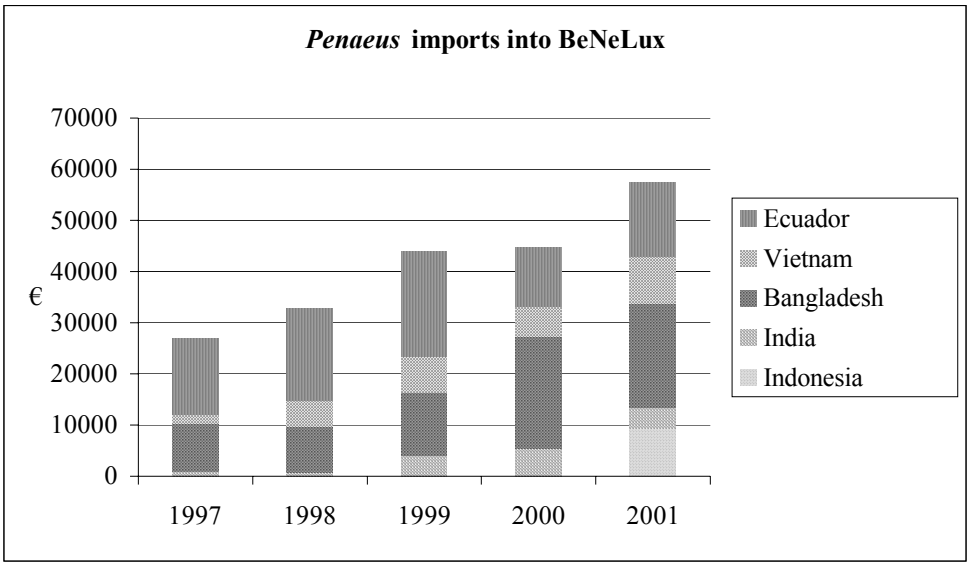
Shrimp imports (all species) into the UK amounted to 25,100 tonnes in 2001, with a value of € 213 million. Strong links exist between the UK and India and Bangladesh, and Indonesia has also recently increased its penetration into the UK market. When considering '*Penaeus*' only, the principal supplying countries are: Indonesia, India, Vietnam and Thailand. Prices recorded are above average for Bangladesh, Ecuador and Indonesia, but are below average for Vietnam, Thailand and India, as shown below.

Table 4: Imports of Penaeus into the UK, 2001

Country	tonnes	% vol	€'000	% val	€/kg	deviation from the mean
India	2,951	25.20	19,858	21.03	6.73	-16.55%
Bangladesh	807	6.89	8,446	8.95	10.47	+29.79%
Indonesia	4,645	39.67	39,545	41.89	8.51	+5.58%
Vietnam	**1,335**	**11.40**	**9,138**	**9.68**	**6.84**	**-15.11%**
Thailand	1,028	8.79	7,949	8.42	7.73	-4.11%
Ecuador	427	3.65	4,691	4.97	10.99	+36.24%
Malaysia	253	2.16	2,382	2.52	9.42	+16.76%
China	150	1.28	1,366	1.45	9.11	+12.94%
Madagascar	47	0.40	424	0.45	9.02	+11.88%
Iran	38	0.32	316	0.33	8.32	+3.11
Panama	27	0.23	293	0.31	10.85	+34.58
Total	11,708		94,408		8.06	

Source: Eurostat

Figure 1: Value of '*Penaeus*' imports from principal supplying countries into the UK



Source: Eurostat

Two thirds of the market for warm water prawns in the UK is via the catering trade. Sales to the catering trade include a range of grade sizes, with larger size grades more in demand in the high-quality restaurant trade. The wholesale value of this market is equivalent to €86 million. This compares with a value for retail sales of € 31 million (Seafish 2003), but value for money is seen as the one of the most important purchasing criteria in both sectors, and the market can be said to be heavily price sensitive (Seafish, 2003). Within the catering sector, the largest components are 'Indian' restaurants, followed by Chinese and "other Ethnic" establishments. These markets are supplied by companies specializing in this trade and source without full knowledge of traceability linkages. The bulk of the catering trade receives product from Bangladesh, India, Thailand and China. Traceability issues are not generally required but quality control remains strict. Buying patterns for example have been altered because of the appearance of chloramphenicol and nitrofurans. This has previously caused many traders to cease links with specific countries – notably India. Imports from Bangladesh have previously also been affected because of poor quality product, although this problem is reported now to be largely resolved.

Where traders have experience in dealing with Vietnam, quality is identified as being a strong asset for the country as a whole – also evidenced by strong Vietnamese/Japanese linkages given that the Japanese market is very focused on quality. However, Vietnam's old linkages to State Owned Enterprises is reported to have caused problems with respect to sales into the UK, especially to the retail sector. Vietnamese producers have not historically seen traceability as being a significant issue. This is because they have been geared up to three non-EU markets that have not historically required it. In Japan, quality is inspected but traders/consumers are happy provided that the product meets quality specifications. In the US quality is inspected on import and traceability issues are largely ignored because of a greater need to satisfy USDA requirements. And in China sales are limited to product from Northern Vietnam with little/no emphasis on traceability.

The supermarket chains generally demand full traceability and only purchase from suppliers who can assure independent audits. Consequently, supermarket chains normally require full traceability, which includes linkages with specific traders, farms, and hatcheries. Sales of Vietnamese shrimp into the retail sector appear to be largely limited to those few retailers less concerned about traceability issues. Full traceability does command a higher price at retail level, although some suppliers report that it cannot necessarily be assumed that guaranteed traceability and compliance with audits is rewarded with higher prices. The problems with traceability in Vietnam mentioned above are the reason why so little Vietnamese product is sold into the retail trade. This has significant implications given that the catering sector is also less sensitised to social issues.

Retailers perceive the market to be divided into two key groups, those offering price competitiveness/value for money versus those with superior quality/packaging. The latter group guarantees traceability and is likely to be found in all major supermarket chains at a higher price premium. The value for money market/product group is found in most but not all retailers as well as frozen food stores, with shrimps sold tending to be of smaller grades.

The issue of competition between cold and warm water shrimp, and preferences in different countries in the EU, also appear to be of considerable importance. Lower prices for cold water shrimp are a significant reason for higher product turnover at retail level in the UK.

In terms of price determinants the following factors are identified as being most significant in determining prices – sources of supply (specific to farm/hatchery), quality, grading (with an EU preference for smaller grades and quicker turnaround times e.g. up to 4 cycles per annum), and competition from cold water shrimps. Sourcing by country is believed to be important only if specific country reputations are improving because of quality and traceability audits. Buyers are always looking for alternative suppliers, and focusing on countries is seen as an initial step, but links are only taken a step further based on full traceability criteria and satisfaction of audits.

3.2.4 BeNeLux[4] Trade

The table below summarizes the import data for 'Penaeus' only. The principal supplying countries are: Bangladesh, Ecuador, Malaysia, Vietnam, Indonesia and Thailand. Prices recorded are above average for Bangladesh, Indonesia, Malaysia and Thailand but are below average for Ecuador and Vietnam.

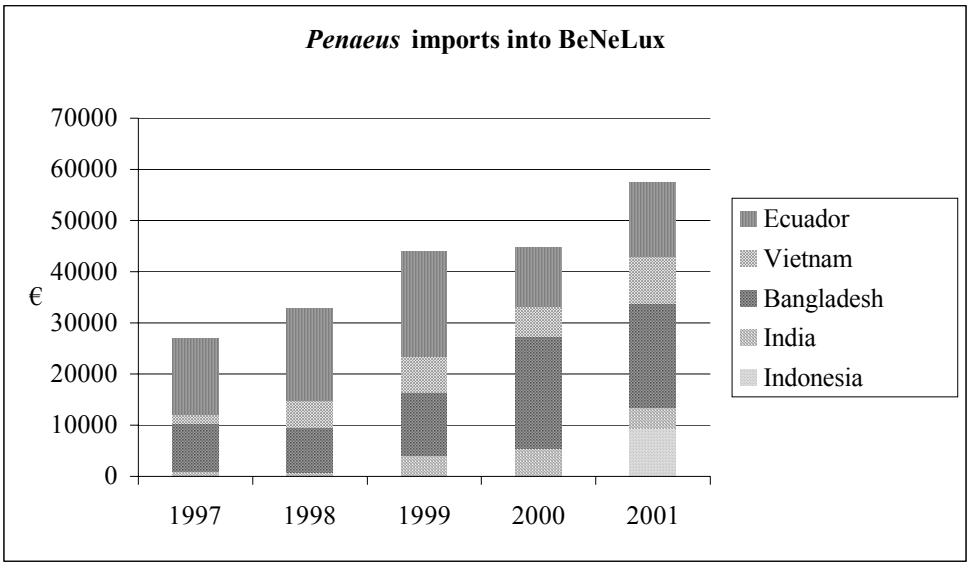
[4] Belgium, Netherlands and Luxembourg

Table 5: Imports of shrimp (*Penaeus*) into BeNeLux, 2001

Country	Tonnes	% vol	€'000	% val	€/kg	deviation from the mean
Bangladesh	4,234	26.44	46,317	32.54	10.94	+23%
Ecuador	3,414	21.32	20,987	14.75	6.15	-31%
Malaysia	1,926	12.03	17,836	12.53	9.26	+4%
Indonesia	1,425	8.90	13,600	9.56	9.54	+7%
Vietnam	**1,539**	**9.61**	**12,573**	**8.83**	**8.17**	**-8%**
Thailand	1,280	7.99	12,213	8.58	9.54	+7%
Madagascar	486	3.04	5,756	4.04	11.84	+33%
India	900	5.62	5,862	4.12	6.51	-27%
Iran	555	3.47	4,578	3.22	8.25	-7%
Sri Lanka	189	1.18	1,979	1.39	10.47	+18%
Philippine	42	0.26	524	0.37	12.48	+40%
Panama	21	0.13	99	0.07	4.71	-47%
Total	16,011	100	142,324	100	8.89	

Source: Eurostat, 2001

Figure 2: Value of '*Penaeus*' imports from principal supplying countries into the UK



Source: Eurostat

The above illustrates the fact that Vietnam's share of the market has increased significantly in recent years. But Bangladeshi supplies dominate along with those from Ecuador, and Indonesia also emerged as a main supplier in 2001.

The choice of supplier by buyers in BeNeLux countries is determined principally by the following considerations: (i) price-quality ratio (the decisive factor for selection of a particular supplier); and (ii) reliability especially in terms of quantity (minimum volumes of production as irregular contracts of small quantities are relatively expensive to administer), quality (incl. product form, size grades, etc.), and timing.

Large buyers at the end of the chain (supermarkets) offer to buy substantial volumes, but at prices for which the margin for the producer is reduced to a minimum.

3.3 Trade in ornamentals

3.3.1 Global Trade

Over 20 million marine ornamental fish are harvested each year in a global trade worth up to $330 million, supplying the marine aquarium market, predominantly in Europe and the United States. (Wabnitz et al, 2003) The annual harvest of fish includes 1,471 species. Damselfish (*Pomacentridae*) make up almost half of the trade, with species of Angelfish, Wrasses, Gobies and Butterflyfish accounting for approximately another 25-30%. A further nine to 10 million marine ornamental invertebrates (excluding coral), including molluscs, shrimps and anemones and involving some 500 species, are also traded each year. A total of 140 species of stony coral, nearly all *scleractinians*, are traded worldwide, with best estimates of annual global trade ranging between 11 and 12 million pieces. Sixty-one species of soft coral are also traded, amounting to close to 390,000 pieces per year.

Unlike freshwater aquaria species, 90% of which are now farmed, nearly all species found in tropical marine aquaria are taken from coral reefs. Southeast Asia is the main source of the trade, but species are increasingly being taken from several island nations in the Indian and Pacific Oceans. Between 1.5 and 2 million people worldwide are believed to keep marine aquaria.

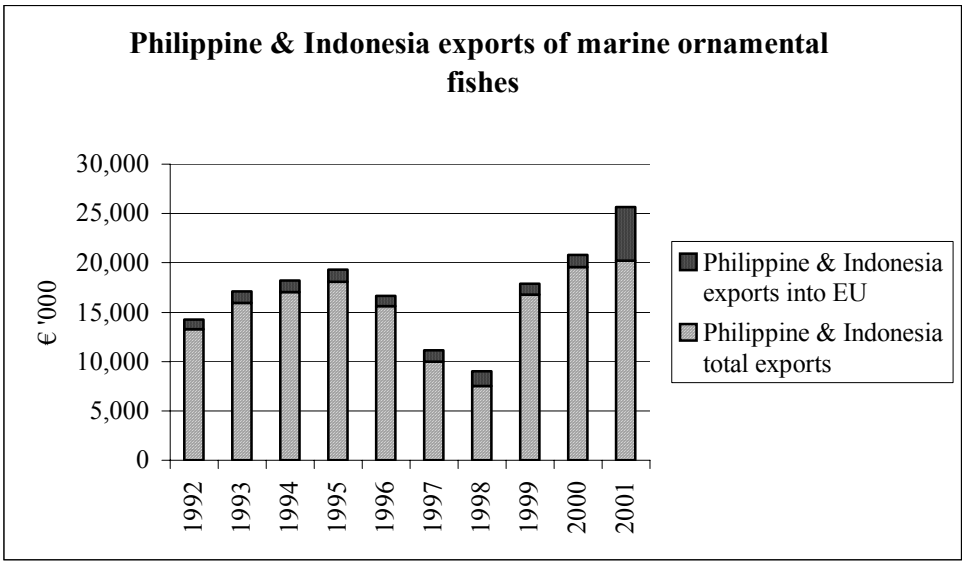
Indonesia and the Philippines are the two largest exporters of marine ornamental species in the world.

Of particular relevance to this project is the huge proportion of globally traded corals that originate in Indonesia – estimated at 70-90% of global trade. Indonesia is the world's largest exporter of both stony and soft corals. Prior to the early 1980's the Philippines was the world's major supplier of corals to international markets, but following a Presidential Decree banning exports of coral, exports are now negligible although the Philippines is one of the largest exporters of other invertebrates such as Seahorses.

3.3.2 EU Trade

Imports of live saltwater fish into EU countries were valued at € 17.5 million in 2002, with around € 7 million being intra-EU trade. The most important markets in terms of the value of imports in 2002 were (in order of importance): Belgium/Luxemburg (€ 4.9 million / 27% of total), Italy (€ 3 million / 17% of total), Germany (€ 2.5 million / 14% of total), France (€ 2.5 million / 14% of total), and the UK (€ 2.3 million / 13% of total).

Figure 3: Exports of marine ornamental fish from The Philippines and Indonesia, 1992-2001



Data on the value of marine invertebrates and corals for the ornamental trade is difficult to get due to Eurostat coding[5], but in most markets in Europe it is estimated that total fish imports represent 50-75% of the value of total marine ornamental imports (OATA Pers. Comm.). The EU typically accounts for around 100,000-200,000 stony coral pieces (15% of global imports), with the USA being the main market and importing around 75% of all imports (Wabnitz et al, 2003). The most important importing countries in the EU are, in order of importance, Germany, France, the Netherlands, and the UK (Wabnitz et al, 2003). Indonesia represents 70-90% of all global exports.

Soft corals represent a relatively small trade, and are estimated at only 7% of all coral exports (stony and soft), and again Indonesia is the world's largest supplier.
Other invertebrates (e.g. starfish, clams etc) are also imported to the EU, the most important importing countries being the UK, The Netherlands, France, Germany and Italy. Indonesia and the Philippines are the two largest exporting countries.

Exports to the EU from Indonesia in 2002 of live saltwater fish were around Euro/$ 4 million (CIF). France, Italy, Germany, Belgium/Luxembourg and the UK were the most important destination markets. Exports of live saltwater fish from the Philippines to the EU in 2002 were valued at around Euro/$ 1.1-1.3 million (CIF), with Italy, Germany, UK, and France the main destination markets.

3.3.3 UK Trade

The hobby of keeping ornamental fish in either aquariums or ponds is popular on a global basis. In the UK it is estimated that 14% (3-3.5 million households) of all households own either an aquarium or a pond. This makes them the third most

[5] EU code 050800 00 is defined as "coral and similar materials, unworked or simply prepared, but not otherwise worked, shells and cuttlebone, unworked or simply prepared but not cut to shape, waste and powder thereof" , and there is therefore no way of knowing how much coral as opposed shells and cuttlebone is being imported. Worked coral is recorded under a separate category (code 960190 10)

popular pet group after cats and dogs. The population of pet fish in the UK is in the region of 140 million. The average fish keeper in the UK has 22 fish at home, however just under 7% of hobbyists keep more than 100 fish and over 40% of the total number of pet fish owned.

The number of species entering the UK each year is significant, and includes around 20 types of coldwater species of Goldfish and Koi carp, up to 1,000 species of freshwater tropical fish and invertebrates, and more than 1,000 species of fish and invertebrates from marine tropical habitats. H. M. Customs and the State Veterinary Service figures indicate the UK imports approximately 350,000 marine ornamentals a year, which weigh around 235 tonnes (Abacus data services)[6].

The value of tropical marine fish imports in 2002 was Euro 2.3 million, with Indonesia the most important source country (Euro 467,000), then the USA (Euro 344,000), Sri Lanka (Euro 298,000), Maldives (297,000), and the Philippines (Euro 220,000). Data on the value of marine invertebrates and corals for the ornamental trade is difficult to get due to Eurostat coding, but in most markets in Europe it is estimated that total fish imports represent 50-75% of the value of total marine ornamental imports (OATA Pers. Comm.). This would value UK marine imports at between Euro 3.1 and 4.6 million. The total import value of marine and freshwater species is estimated to be around £14 million (~Euro 20 million) with a final retail sales value of all related sales such as dry goods, tanks, equipment, etc, of around £300 million (~Euro 450 million). Applying this relationship between import values (C.I.F.) and final retail sales (i.e. x 20), we can estimate that the total UK retail value of the marine ornamental market is between Euro 65-100 million. (Note this is not a mark up made in the UK on fish, but includes all related sales).

There are estimated to be around 2,000 retail outlets for ornamentals in the UK, with around 1,000 of these relying entirely on fish sales (OATA, Pers. Comm.). Around 750 are estimated to sell marine ornamentals. These retailers source product from around 10 importers/wholesalers. Some of these 10 do not import themselves, but source from other importers. Key importing companies include:

Knowledge of the source of imports by companies and sales outlets is generally good, with key reasons for sourcing from different countries being based strongly on quality (especially cyanide-free), availability, price and flight connections. Importing companies sell a varying proportion of product to other wholesales and to retailers. Other issues of interest identified during interviews included:

- Consumer profiles cover a whole range socio-economic groups, age, etc
- Consumers are increasingly concerned about the long-term health of fish, and less about social issues in source countries
- Regulatory costs of trade make small shipments increasingly difficult, and this may have implications for small producers or countries/areas which can produce smaller numbers of fish

[6] Previous reports have indicated much higher figures for the weights because their authors have failed to properly recognise the very small percentage of the weight of ornamental fish freight which is actually live fish, the remainder being water and packaging

- Cyanide (used illegally in fish capture) has been a specific problem previously in both Philippines and Indonesia, but is reported to be improving all the time.
- Some of those companies interviewed already sell Marine Aquarium Council (MAC) certified product from the Philippines.
- Scope for increasing prices may be limited, with reduced prices the best way to increase demand, although given the fact that purchasers are more "collectors" than "consumers" demand may also be relatively price inelastic, with purchasers keen to acquire a particular product/species based on their characteristics.

3.3.4 French Trade

French imports of live ornamental tropical marine fish in 2002 were valued at Euro 2.48 million. The most important source countries were Indonesia (Euro 904,000), USA (Euro 323,000), the Netherlands (Euro 240,000), Sri Lanka (Euro 224,000), Spain (Euro 164,000), and the Philippines (Euro 121,000).

Applying the same scaling factors as suggested for the UK, total annual marine sales of fish, coral and invertebrates can be estimated as Euro 3.2 – 5.0 million, with total final retail sales from species (marine and freshwater) and related equipment, dry goods etc, estimated at between Euro 70 and 106 million.

There are currently 7 main importers of marine tropical ornamentals to France, some trans-shipping, some involved in acclimatization and some firms doing both. All companies source product from Indonesia and almost all also buy product from the Philippines. Patterns of sourcing are not reported to have varied considerably in recent years, although one company recently expanded its range of products and therefore source countries, and also found that the Philippines had certified fish of better quality than Indonesia (as evidenced by an anti-cyanide test). The determination of source countries is based less on particular sourcing preferences, and more on the natural distribution of the species in sufficient quantities in particular locations, and therefore the supply into the international trading chain.

Knowledge of the exact location of product by the importing companies is generally quite good, and importing companies sell a varying proportion of product to other wholesales and to retailers, with the majority selling 80-100% direct to retailers. There are estimated to be around 400-600 retailers in France selling marine ornamental species. Importers almost all reported some specific problems with respect to imports, especially from Indonesia. They are, in order of importance:

- Cyanide
- Seasonality of supply with the monsoon
- Ramadan which disrupts supply
- General quality from poor equipment and handling

Other issues of importance in relation to the supply chain relating to some general trends were also identified during interviews. Firstly, there is an ever greater involvement of garden centres in the trade, placing pressure on traditional retailers. Secondly, there are increasingly successful attempts to rear species (fish and coral) in captivity – the location of such practices and the speed of uptake of new technology, could potentially have enormous impacts on poor collectors in developing countries.

And thirdly, there is greater awareness by buying groups of environmental/social issues, but not so much by small retailers and consumers. One importer also suggested that there has been a trend towards demand for bigger fish from more wealthy consumers – suggesting that producers in developing countries could pay more attention to understanding such niche markets.

3.4 Policy context

This section of the report presents a brief assessment of the policy and legislative context in which trade in marine products occurs. The section also makes some comment on policies on poverty.

3.4.1 Policies and commitments aimed at alleviating poverty

With regards to poverty alleviation, the United Nations **World Summit on Sustainable Development 2002, the 2000 World Development Report** published by the World Bank, **the UN Millennium Declaration** adopted in 2000[7], and the 1996 **UN World Food Summit**, all considered poverty alleviation as a central priority.

On 26 April 2000 the **European Commission** adopted a communication on the Community's development policy.[8] The communication, which included a joint statement of the Council and the Commission, confirmed the focus on poverty reduction as an overarching objective of EC development cooperation and the selection of the main priorities for EC support in this context.[9] It outlined a new framework for the Community's Development Policy, setting it in the international context, specifically the OECD/Development Assistance Committee (DAC), the World Bank Comprehensive Development Framework, and the IMF/World Bank Poverty Reduction Strategy Papers. The communication also established an integrated framework for Community Development Activities, identifying six priority areas where Community Action could offer added value: trade for development, regional integration and cooperation, support for macroeconomic policies, transport, food security and sustainable rural development, boosting institutional capacity, good governance and the rule of law.

Indonesia has presented a 50-page Interim Poverty Reduction Strategy Paper: A Process Framework of Strategic Formulation for Long Term Poverty Alleviation, which was adopted in March 2003[10]. As described in Law 22, 2000 on the National Development Programme, government has assertively stated that poverty reduction is the ultimate priority. The Poverty Reduction Partnership Agreement (PRPA) between the Government and Asian Development Bank also provides a framework for tracking progress toward shared development goals. In addition, at the Mid-Year

[7] The Millennium Declaration contains the commitment to halve, by the year 2015, the proportion of the world's population whose income is less than one dollar a day

[8] Commission of the European Communities, The European Community's Development Policy, communication from the Commission to the Council and the Parliament, Brussels, COM(2000)212, final, 26 April 2000.

[9] Commission of the European Communities, Measures Taken and to be taken by the Commission to address the poverty reduction objective of EC development policy, Commission Staff Working Paper, 26 July 2001, SEC(2001)1317.

[10] http://poverty.worldbank.org/files/14019_Indonesia_I-PRSP.pdf

Review Consultative Group on Indonesia[11] (CGI) Meeting - June 2, 2003, the Working Group Statement on Poverty Reduction reported on recent progress on poverty issues and actions. Since the January 2003 CGI Meeting, the Government has continued to reflect its stated commitment to poverty reduction.

In **Vietnam**, the government's primary goal is to reduce poverty incidence by approximately 12 percentage points between 2002 and 2010. This translates into reducing the proportion of people (households) below the international (national) poverty line from 32 to 19 percent (from 17 to 5 percent). The Government of Vietnam and the Asian Development Bank (ADB) have entered into an agreement that states that ADB's operations will be governed by the understandings in this Poverty Partnership Agreement (PPA). The Agreement reflects the Government's visions and goals for poverty reduction contained in its Socio-economic Development Strategy 2001-2010 (SEDS), the Interim Poverty Reduction Strategy (IPRSP), the draft Comprehensive Poverty Reduction and Growth Strategy (CPRGS), various sectoral strategies, and key priorities of the ADB's Country Strategy and Program (CSP).

Within the fisheries sector, the Decision No 21 of the Government in 1999 stated "Vietnam must quickly develop the aquaculture sub-sector on a large-scale, in order to create more jobs for improvement of people's living standard, better support coastal and rural areas, and contribute to solving the problems related to the ecological environment... for the betterment of the shrimp industry, step by step upgrade the shrimp farming from extensive to advanced extensive and semi - intensive practices meanwhile promoting concentrated intensive farming"[6]. In the national strategy for socio-economic development, aquaculture is regarded as "a sub-sector generating animal-protein products of high domestic and export demands, and possessing great potential to become the most advangtaged sector in agriculture" (Resolution No. 09/2000/NQ – CP by the Government on 15th June 2000). On 8th December 1999, the Prime Minister signed the Decision No 224/1999/QD - TTG approving the aquaculture development programme in the period of 1999 – 2010, which targets to develop aquaculture for the sake of ensuring food security and supplying inputs for export processing

In the **Philippines**, the Government's primary development objective is poverty reduction, supported by improved political and economic governance. These themes are highlighted in the revised Medium-Term Philippine Development Plan (MTPDP) 2001–2004. In October 2001, the Government and ADB signed the Poverty Partnership Agreement, and during the 2002 Consultative Group Meeting, the Government confirmed core strategies in "winning the war against poverty within the decade". The Government plans to accelerate rural development by modernizing agriculture, pursuing land reform, promoting better management of natural resources, and focusing poverty reduction efforts on the poorest areas in Mindanao, where many indigenous people live. The Philippines has an Export Development Plan (2002-2004), which is a rolling three-year plan that forms part of the Medium Term

[11] A donor forum

[6] Decision no. 251/1998/QD – TTG by the Prime Minister, dated 25/12/1998, approving Aquatic Product Export Development Program until 2005.

Philippine Development Plan. The Plan specifies product development, diversification and promotion as key strategic guidelines.

3.4.2 Trade frameworks and policy

The **World Trade Organization** is now the main international organization dealing with the rules of trade between nations, and there are currently 148 members. The multilateral trading system within the WTO is based on various agreements. In the context of the WTO, trade in fish and fishery products is not covered by the Agreement on Agriculture, but is treated as an industrial product, and therefore dealt with in the Negotiations on Market Access for Non-agricultural Products (NAMA). Aspects of the fish trade are dealt with under the various agreements outlined below.

- Tariff Schedules
- The Agreement on Sanitary and Phytosanitary Measures (SPS)
- The Agreement on Non-Tariff Barriers (NTBs)
- Agreement on Anti-Dumping Measures
- Agreement on Rules of Origin
- Agreement on Import Licensing Procedures (ILP)
- Agreement on safeguards
- Dispute Settlement
- Agreement on Subsidies and Countervailing Measures (SCM)
- Committee on Regional Trade Agreements

The **Codex *Alimentarius* Commission** was created in 1963 by FAO and WHO to develop food standards, guidelines and related texts such as Codes of Practice under the Joint FAO/WHO Food Standards Programme. The Codex *Alimentarius*, or the Food Code, has become a global reference point for consumers, food producers and processors, national Food Control Agencies and the international food trade. The standards have become an integral part of the legal framework within which international trade is being facilitated through harmonization.

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is a voluntary international agreement between Governments. CITES works by subjecting international trade in specimens of selected species to certain controls. These require that all import, export, re-export and introduction from the sea of species covered by the Convention have to be authorized through a licensing system. The species covered by CITES are listed in three Appendices, according to the degree of protection they need. One of the Resolutions passed at the CITES Conference of the Parties held in Chile in October/November 2002, stated that all Seahorse species (*Hippocampus* spp.) would be listed in Appendix II. The Seahorse trade represents the lowest volume/highest value aspect of the ornamental trade, and given that the Philippines does not allow exports of Appendix II species, the cessation of this trade is likely to impact significantly on collectors in the Philippines. Also of relevance are a) that both Indonesia and the Philippines are members of CITES, and b) related costs of CITES associated with running management authorities, and for the private sector in terms of purchasing export and import licenses, can potentially act as a Non-Tariff Barrier and run the risk of dissadvantaging people who are poor in terms of their impacts. Interestingly, the Philippines doesn't allow exports of corals listed under Appendix II, but Indonesia does.

The Association of Southeast Asian Nations (or **ASEAN)** Free Trade Area has now been virtually realized. The six original ASEAN signatories have reduced tariffs on all products listed in their 2002 Inclusion List (IL) to 0-5 percent. Since 1 January 2003, tariffs on 99.55 percent (44,160 tariff lines out of total 44,361 tariff lines) of products in the 2003 IL of the ASEAN-6 have been reduced to the 0-5 percent tariff range. The average tariff for ASEAN-6 under the CEPT Scheme is now down to 2.39 percent from 12.76 percent when the tariff-cutting exercise started in 1993. The newer members of ASEAN still have to reach the 0-5 percent tariff for intra-ASEAN trade – Vietnam in 2006. Ultimately, tariffs will be completely abolished by 2010 for ASEAN-6 and 2015 for the newer members with flexibility on some sensitive products until 2018.

Asia-Pacific Economic Cooperation, or **APEC**, operates on the basis of non-binding commitments, and unlike the WTO or other multilateral trade bodies, APEC has no treaty obligations required of its participants. APEC works to reduce tariffs and other trade barriers across the Asia-Pacific region. The key to achieving APEC's vision are what are referred to as the "Bogor Goals" of free and open trade and investment in the Asia-Pacific by 2010 for industrialized economies and 2020 for developing economies.

ASEM (the Asia-Europe Meeting) is an informal process of dialogue and cooperation bringing together the fifteen EU Member States and the European Commission, with ten Asian countries (Brunei, China, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Thailand, and Vietnam). A number of activities have already been given priority including a Trade Facilitation Action Plan.

The **European Commission's Communication on Trade and Development**, published in September 2002, is the result of recognition of the importance of the relationship between development, trade and integration of developing countries into the world economy. The Communication stresses the importance of trade in fostering growth and reducing poverty and as a catalyst for sustainable development. **The Commission's Sustainable Trade Action Plan** pulls together a set of actions to which the Commission committed at the WSSD (World Summit on Sustainable Development). On the 3rd of July, the **European Parliament adopted a resolution** setting out its view on the WTO Ministerial Conference in Cancun, 10-14 September 2003. Discussing the link between trade and development, the Parliament considered it essential that industrialized countries make substantial offers to developing countries in the areas of industrial and agricultural market access and implementation issues, including special and differential treatment.

Perhaps the most important **EU legislation** on fish and shellfish pertains to a) tariffs, and b) hygiene requirements. The EC average level of customs duty protection amounts to around 4% on industrial goods, taking into account Most-Favoured Nation rates. Imports from many of the EU's suppliers enter the Community at preferential rates under the terms of bilateral agreements, the Generalised System of Preference (GSP) or Tariff Suspension Regimes. The Lome Agreements, which allow products into EU markets without tariff or non-tariff barriers, have been an important aspect in the development of exports from many African, Caribbean and Pacific (ACP) countries to the EU.

The most important hygiene requirements for fish and shellfish produced in the EU are laid down in Council Directive 91/492/EEC and Council Directive 91/493/EEC. These lay down health conditions for the production and placing on the market of shellfish (including live bivalve molluscs), fish and fishery products respectively. As long as fishery and shellfish products are produced by approved establishments in the EU and comply with these Directives, these products are able to freely circulate amongst EU Member States. Consignments are required to be accompanied by Movement Documents, however no health certification is needed. Packaging and labeling of these products must comply with the Council Directives. Increasing outbreaks of food borne illness alongside consumer concerns over cross-regional disease transmission have driven the development of ever more stringent laws and regulatory frameworks. EU standards are enforced and regulated at the country level and thus a restriction of exports to the EU under the regulations affects all members of the export community.

In order to export fisheries products to the EU a third country must have public health legislation and controls for the fisheries sector which are equivalent to those existing in EU legislation. The list of third countries and territories from which fishery products (excluding the category bivalve shellfish and related species) can be imported into the EU is established by an Annex to Commission Decision 97/296/EC. In recent years, in order to export aquaculture products into EU, the United States and other markets, Vietnam has continuously upgraded the quality of its management systems, modernized the equipment used and organized training courses for technicians of administrative agencies and businesses[12]. Exports of shrimp from Vietnam to the US and EU markets increased substantially since companies succeeded in obtaining HACCP and EU code approvals[13].

In 2001, the EU decided to examine 100 percent of shrimp products imported from China, Thailand, Vietnam, Indonesia and other countries because they discovered residual antibiotics chloramphenicol (CAP) and nitrofurans (NF) in some products (Dey et al 2003). On 20 September 2002, EU's Veterinary committee decided to abrogate the compulsory examination policy on shrimps imported from Vietnam and some other countries. The abrogation was the result of efforts by Vietnam Government, MOFI, relevant Ministries and enterprises who implemented a series of measures such as banning the use of chemicals and antibiotics and carrying out a thorough examination the entire production process. These regulations can cause serious difficulties for exporters. The export turnover from Vietnam into the EU in the first 6 months of 2002 registered an 87 percent decrease in comparison to the year 2001.

For the **ornamental trade**, there are three main pieces of **EU legislation** that impact on the trade:

- The Fish Health Directive (91/67) deals with the placing on the market of live fish and gametes and is intended to eliminate barriers to trade in live

[12] Lam Quoc Tuan, 2003

[13] Japan has no trade certification system.

aquaculture products within the EU while preventing the spread of infectious diseases, in particular to parts of the community which are free of them. The legislation is based on the concept of risk, and requires all imports to have a health certificate stamp.

- The Vetinary Checks Directive (91/496) requires two days notice of all imports from third countries and impacts on importers because all fish must go through a border inspection post, and this increases clearing time, and therefore costs.
- The EU Wildlife Trade Regulations that put into place CITES in the EU, and mean that imports of listed species into the EU require an import permit, again with an extra cost. Failure to have an import permit can result in confiscation of product with corresponding loss of profits, and wasted overhead costs. The main concern of importers in EU involved with the ornamental trade is that the CITES regulations lumps the ornamental trade in with trade in species for edible purposes, when the ornamental trade usually represents a tiny fraction of the overall trade. For example, if CITES specify Sea Cucumber as a listed species, this would have associated costs on ornamental importers, but imports are negligible compared to imports for edible purposes. The same applies for the listing of Seahorses, aimed essentially at the dried seahorse trade (~99% of total trade, with an average import price of around $0.1 per 50mm Seahorse), but also impacting on the low volume (~1% of total trade), high value ornamental trade ($3 import price per 50mm seahorse).

In 1997, **Indonesian export quotas** were introduced, with quotas being broken down by species with a separate quota for each of the 10 provinces where collection takes place. However a **CITES Scientific Review Group for the EC** in 1999 questioned the scientific basis for the export quotas and the EU imposed a temporary suspension of the export species of stony coral. Since these import bans, exports have been switched to other markets such as the USA.

3.5 Certification and related trade activities aimed at poverty reduction

3.5.1 Different initiatives and their potential impacts

There is a wide range of certification schemes and initiatives related to standards, which are in various states of readiness – some dealing with social issues, and other concentrating more on sustainability and the environment. Some seek to provide accreditation (and allow the use of labels) while some establish best practices or Codes of Practice. For the remainder of this section, where referred to collectively, these are referred to as ‘initiatives’.

Natural resources and fisheries/aquaculture initiatives can usefully be divided into those that are organic in nature and those that are not.

Non-organic schemes

- Fundacion Chile
- Global Aquaculture Alliance
- Marine Stewardship Council
- Seafood Choices Alliance
- Marine Aquarium Council
- Industry Standards For The Live Reef Food Fish Trade
- Federation of European Aquaculture Producers Code of Conduct for European Aquaculture
- FAO Code of Conduct for Responsible Fisheries (CCRF)
- National Standards and Codes. E.g. Thai Marine Shrimp Culture Codes of Conduct

Organic schemes

- International Federation of Organic Agriculture Movements
- Naturland Organic Standards
- Soil Association Certification Ltd
- National Association for Sustainable Agriculture Australia
- BioGro New Zealand Production Standards
- KRAV Kontroll AB Organic Standards
- Debio Organic Aquaculture Standards

It is striking that only a very few of these initiatives, especially the organic ones, directly deal with social issues, and those that do almost unanimously place a far greater emphasis in reality on the environment, even if they mention social issues in policy statements and overall principles. There are also a wide range of social/environmental initiatives not specific to natural resources that may have relevance to fisheries. These include:

- International Social and Environmental Accreditation and Labeling Alliance
- ICFTU/ITS Basic Code of Labour Practice
- The International Labour Organisation
- Ethical Trade Initiative
- Fair Trade
- EUREPGAP
- ISO 14001 Environmental Management System (& EMAS14)
- Social Accountability International
- Dow Jones Sustainability Indices
- Traceability requirements of retailers, which often include environmental and social information on their suppliers
- National Standards and Codes. As with fisheries-specific initiatives, there are numerous national standards and codes of conduct that address non-fisheries specific environmental and social issues

While initiatives may offer the opportunity in some cases of higher prices and access to niche markets, many people have concerns (but little evidence to date) over the possible negative impacts on Developing Country producers. Concerns are based around a number of issues, as highlighted in many studies, and grouped in a recent study by Gardiner and Viswanathan (2004) into a useful classification of concerns used here. These concerns focus most strongly in the literature on environmental certification and labeling, rather than other types of initiatives.

[14] European Eco-Management and Audit Scheme

Legitimacy and credibility. Large-scale producers and retailers in developed country markets have driven many initiatives, with insufficient participation by small-scale and poor producers in developing countries. This lack of involvement has almost certainly meant that potentially negative impacts on such groups, and possible mitigating measures, have largely been ignored in the development of such initiatives.

A mismatch between certification requirements and the reality of tropical small-scale fisheries. The process of certification is felt by many to be far more relevant to developed northern countries, often with single species fisheries, than to tropical developing countries, many of which have mixed-species fisheries. Particular concerns relate to both the limited data available in many developing country contexts that are necessary for certification (and indeed other types of initiatives), and the fact that management issues are often more complex in developing country contexts.

Potential distortions to existing practices and livelihoods. Domestic markets in developing countries tend to be more sensitive to prices than export markets due to lower incomes of local populations, and if initiatives results in, or require price increases to make them justifiable to producers, increased sales to exports markets may reduce availability of fish for local consumption. A shift in emphasis towards export markets could impact on who benefits from the trade (Kurien 2000), and on food security. Generally, women comprise a significant proportion of post-harvest employment in the fisheries sector, especially where processing and marketing is small-scale and local in nature. Increased sales to export markets may have gender impacts, if larger-scale buyers (commonly men) out-compete small-scale (commonly female) buyers at landing sites, due the higher prices being paid for certified products. Initiatives which succeeded in the predicted price effects in developed country markets would be likely to reward middlemen and the post-harvest chain of custody, but not necessarily the fisher (Kurien 2000, SEAFDEC 2001).

Price differentials for certified/labelled product may actually increase pressure on particular stocks and diminish sustainability. On the one hand, higher prices for catches from a certified fishery could increase attempts by fishermen to increase catches in that fishery. On the other, successful effort limitation in a certified fishery may displace activity to another fishery, with associated negative impacts on that fishery. Ensuring increased sustainability of resource exploitation is, in many cases, likely to require limiting access, often to those vulnerable and poor groups who most rely on fisheries for subsistence and income-generating activities i.e. a short-term trade-off in livelihoods and resource exploitation in favour of anticipated longer-term benefits. In this study, collectors in the Philippines who are required to collect to order on the grounds of sustainability and have few other livelihood options suffer significantly from diminished access to collecting as a livelihood option.

However, in considering all of the above, it is important to stress that, as yet, there is little concrete evidence that eco-labelled product does in fact generate sustained price increases (even though short-term prices increases might be realised). However, the use of initiatives may result in prices being maintained if initiatives can guarantee the origin and quality of product, where for example, there may be media exposure of social issues of production, or regulatory bans such as SPS.

Equity and feasibility

The criteria and indicators set for initiatives should be equally achievable by both developed and developing country fisheries. It may be harder for smaller enterprises in developing countries exploiting lower value fisheries to participate in initiatives if these have high associated costs. This problem has two components. First, smaller-scale fisheries are less likely to find that any benefits from initiatives outweigh the costs, and second, costs must be paid in advance, while benefits will not accrue until after product is caught and marketed. Small-scale producers in developing countries are less likely to be able to 'front-up' the money required due to difficulties in accessing credit, and lower overall earnings/profits. Raising funds from government, and from stakeholders in developing countries, is likely therefore to be harder than in developed countries.

In addition, the potential for initiatives may not be equitable or feasible if local fisheries administrations lack the capacity to effect management improvements and comply with the requirements of different initiatives. Developing country managers are less likely to clear the main hurdles of compliance than their counterparts in developed countries. Such concerns appear to be justified based on the experience of other sectors e.g. the Forestry Stewardship Council.

3.5.2 The potential for social certification

A number of studies in recent years have considered the potential impacts of certification initiatives, but all have been theoretical in nature, and none have yet considered in any empirical form the actual impacts through case study field work, perhaps understandably as certification is a relatively new concept and is still building momentum. We have not identified any studies assessing the impacts specifically of traceability requirements on developing requirements, as opposed to environmental or social certification/branding. There are as yet no studies which attempt to quantify the actual market size in a particular country for fisheries products under particular initiatives, either as a total or broken down by species or market segment (e.g. retail or catering), and as pertaining to different customer types. Without such knowledge, and detailed economic analysis of substitution effects and price elasticities, it is almost impossible to say what the actual impacts (positive or negative) on poor developing producers in particular countries are likely to be. Most studies tend to generalise about the potential impacts without due recognition of the complex and varied marketing arrangements present in the fisheries sector. These marketing arrangements mean that such generalisations are rather meaningless in terms of assessing the potential impacts on producers in particular areas of particular countries, because the distributional impacts of initiatives are likely to depend greatly on the species concerned and the exact form and requirements of the supply chain, as well as on different demand factors in different developed country markets.

While it is possible that some lessons may be learned in relation to certification initiatives and fair trade from the experiences of other products, such as coffee and timber, direct applicability of these lessons is far from clear given the different and specific marketing arrangements for fisheries products. One thing that does seem clear however, is the requirement of retailers not to confuse consumers with multiple brands. This may require coherence at regional level between a multitude of different national initiatives, and indeed in the aquaculture sector efforts are now underway to explore the potential to harmonise a range of nationally-developed initiatives. The

other clear lesson is the need for reliable and significant volumes of product around which to build branding initiatives.

The country-specific findings reported below, suggest that market demand for environmentally certified product, and especially of socially certified product, may be limited at the present time, and that the scale of potential impacts (positive or negative) of such initiatives on developing country producers may therefore be overstated. There is a tendency from surveys of consumer attitudes to overstate support for such schemes and theoretical 'willingness to pay', compared to actual purchasing behaviour. And high profile campaigns by environmentally and socially concerned NGOs may not necessarily reflect consumer attitudes, especially if price premiums are to be required for certified product. However, it is of course very difficult to say how market demand might evolve in the future, and it is certainly the case that in some countries such niche markets for certified products are growing. As/if momentum builds for certification both as a result of increased demand, and increased interest by producers, a greater range of certified products would inevitably mean that impacts on developing country producers would/could become more likely, and more widespread.

What may be of far greater importance is the impact of traceability requirements on developing country producers. Traceability is a key issue for many retailers and processors, and already often includes both environmental and social issues as part of traceability audit requirements. Even if certification initiatives themselves remain a relatively small market, their presence could very well encourage retailers and processors to place more emphasis on social and environmental requirements as part of traceability requirements.

3.5.2.1 UK shrimp sector

Interviews conducted as part of this project suggest that almost all supermarket chains require, as a component part of traceability audits, investigation into environmental issues as well as guarantees of social/ethical conditions. However, much of this has been influenced as much by recent lobbying by environmental groups as by consumer demand. Generally supermarkets believe that the majority of customers are more interested in other factors influencing customer loyalty. These factors include:

- Value for money
- Speed at check out
- Quality of products

However, some supermarkets also report a growing awareness of environmental / social issues, with perhaps 15-25% of consumers conscious and concerned about such issues in their purchasing decisions. Most traders supplying the retail trade indicate that some (undefined amount) of these consumers might be expected to pay higher prices for products which have complied with a certification scheme, but that more consumers are aware of and concerned about environmental issues such as damage to mangroves, than social issues.

There was little/no support from those interviewed in the retail sector for specific social branding e.g. tradecraft related issues. Retailers are concerned about large numbers of brands confusing consumers and adding costs. There is however some

support for linking social/ethical issues into other certification schemes (e.g. environmental) and traceability (although the willingness of the schemes to expand into social issues remains another question), and most retailers request that social considerations – schools, access to welfare etc - be an integral part of the audit system.

There is no strong evidence in the catering sector of requirements to satisfy environmental or social/ethical issues. Bangladesh and China are the largest suppliers to the catering trade, and it is also believed that the bulk of Vietnamese product is sold to this sector, either via Thailand or direct. The lack of concern for social issues in this sector poses a problem for Vietnamese pro-poor trade, and may require Vietnam to make improvements in traceability so as to access the retail sector where awareness of social issues appears to be greater.

The regulatory framework is not currently seen as a major factor in determining prices in the retail sector, but could become an important issue if social certification brought with it additional tariff concessions, thereby encouraging trade in socially certified product. The reduction of tariff levels for socially certified products could therefore represent an important pro-poor policy tool.

The findings from our interviews agree with a recent Nautilus/IIED study. The Nautilus/IIED report (Nautilus/IIED 2003) states that market research consistently finds that social and environmental issues are low on the list of consumers' priorities when they purchase food. A recent survey concluded that "in relation to decisions about food and shopping, consumers were unashamedly selfish. Most decisions are based on self-benefit, e.g. value for money, taste and convenience, rather than being driven by altruistic motivations".[15] There is also a widely recognised gap between what consumers say they do on ethical issues and how they actually act – a Cooperative Bank survey found that of the 80% of consumers who claim to shop or invest ethically, only 30% 'practise what they preach'.[16] The project report finds that organic labels are recognised by consumers as highly differentiated brands which they can trust, especially in terms of health and safety (absence of chemicals) and for which they are prepared to pay a premium – commonly estimated at around 10%. However this inclination is less based on ethical considerations than self interest in terms of health.

The project report also states that for major retailers to be concerned with aspects of social equity and ethical trade, product volumes in a particular commodity have to be large enough to ensure a coherent market image – tropical shrimp is not such a high profile product.

The Nautilus/IIED report suggests that in the catering sector, which consumes around two-thirds of EU shrimp consumption, demand for sustainable/ethical shrimp is even more limited because:

- Consumers are less concerned and discriminating about the origin of food served in restaurants - although they may be very concerned about quality;

[15] IGD (2003) Consumer Attitudes to 'Eat the View', report for the Countryside Agency, Watford, IGD.

[16] Key Note (2002) The Green and Ethical Consumer, Key Note Ltd.

- Caterers/restauranteurs are typically smaller companies for whom certification issues would represent a higher relative cost.

3.5.2.2 BeNeLux shrimp sector

The following preliminary conclusions are based on interviews with importers / buyers of shrimp and / or marine products in the Netherlands and Belgium.

- The role of Vietnam as supplier of shrimp is small. Of the total imports, only a few percent comes from this country. This means that Vietnamese shrimp is in all respects a 'market follower'. It is not realistic to expect that even a concerted marketing effort based on the country of origin could have any impact on the shrimp trade in general or generate a price premium in particular.
- While several large shrimp traders are based in the Netherlands and Belgium, the consumption of tropical shrimp in these countries is very limited. Most of the imports are re-exported again towards other EU countries. Consequently the traders involved are only halfway to the final consumer and cannot play any role in promotional campaigns that would be required to create a pro-poor label at the consumer level.
- Achieving a premium price specifically for pro-poor shrimp from Vietnam, would require establishment of an accepted new A-label, with a clear positive image which would appeal to the consumer. Establishing such a label requires a large scale promotion campaign and a consistent presence and visibility on the market. Evidently, such effort implies costs probably going far beyond the total production value of Vietnamese farmed shrimp. In fact such effort goes contrary to the general marketing trends in food where: a) the market share of private labels (supermarket chain house products) is increasing; and b) large multinationals (e.g. Unilever) reduce the number of own brand labels.
- Some traders believe that there is a market for shrimp under an established Fair Trade label like "Max Havelaar'. As shrimp is a luxury product, a somewhat higher price should be acceptable to the consumer.

Labels are very exceptional for fish products on the Benelux market. Developing a special brand for Dutch fresh fish ('Silver sealed') has been attempted, but failed for many different reasons, primarily because the fish, which guaranteed extra quality / freshness, did not obtain structurally higher prices than fish without the label.

There exists a well-established Fair Trade label, under the name 'Max Havelaar'. This, originally Dutch label, has now been introduced into markets of various European countries. The label now brings products like coffee, tea, rice, bananas and other fruits as well as fruit juices. The label is very well known and special media campaigns are set up to maintain its high profile. Introduction of shrimp from small farmers under this label seems to offer the best chances of success. Max Havelaar focuses on coffee and bananas. Involvement in a new product would require a detailed study of its market potential.

3.5.2.3 UK and French ornamental sectors

The perception within the ornamental importers in the UK and France is mixed about the extent to which consumers would be willing to pay more for socially branded product. Some feel that very few consumers are interested, while others have

experience of price sensitivities between farmed and wild coral, with farmed coral not selling unless the price is equal or lower than wild coral – suggesting a lack of willingness to pay for environmental/social issues. However other companies felt that between 10 –20% of consumers would be prepared to pay more.

All companies were agreed that if socially branded/certified product is to raise prices, prices paid by consumers should not increase by more than 5-20% for such schemes to be successful, and the average maximum price suggested by the companies interviewed was 12.5%. However, within these price increases, some companies felt that improvements in quality would also have to be made – implying that efforts to increase benefits to the poor might just as well concentrate on quality issues. Indeed, the quality of product (in terms of survival rates) was considered an important determinant of price. This finding is interesting given that companies also generally felt that demand for products is fairly price inelastic given the "collector mentality" of consumers, suggesting that if they really want a product they may be prepared to pay for it even if prices rise. This anomaly suggests that the price elasticity of demand differs considerably depending on the reason for the price increase i.e. whether it is because of social certification, or because of scarcity or a consumers desire to satisfy his/her own requirements.

Importers were also not in agreement about the feasibility of national/regional promotion initiatives to increase demand and/or prices in Europe. Some felt that there was potential for such schemes through the use of TV and other forms of advertising, or through greater collaboration between importers/buyers, but others noted the problems of accessing supplies.

Importing/wholesale companies generally felt that while they are agreed in principle that moves towards environmental and social certification are desirable, and that the trend is in this direction, it is not the consumers who are most supportive or who are driving this trend, but rather the buyers and garden centres. Four of the five companies interviewed in France for example already purchase MAC product that is environmentally/socially certified, and feel that social certification does offer potential. Most companies interviewed also felt that Fair Trade has application in the marine ornamental market. Responses were mixed however about whether social certification should be best included within environmental certification schemes, or as a separate branding issue.

Some concerns were also raised over such certification schemes. They included:

- Problems of ensuring traceability
- Lack of volumes
- The time it takes to prepare the certification documents
- That a marketing advantage is quickly eradicated if other companies are also selling certified product, so that there is little/no extra value-added being made

Such thoughts again suggest that efforts to improve the quality and survival of product through improved handling techniques and better equipment for fishermen might be at least as effective in assisting poor producers, as efforts aimed at increasing the quantity of socially certified product. If such efforts were successful and mortality reduced, prices paid by the consumer would not have to be increased

(thereby potentially impacting on demand) but rather the greater benefits/value-added could be passed to fishermen/collectors.

4 Market chains, poor stakeholders, and the influence of trade, in Asia

4.1 Introduction

The following synthesizes lessons from three case studies on:

1. Market chains and the stakeholders involved
2. Poor stakeholders within market chains and their livelihoods
3. Understanding the influence of trade on the livelihoods of poor stakeholders

4.2 Vietnam

4.2.1 Market chain and stakeholders

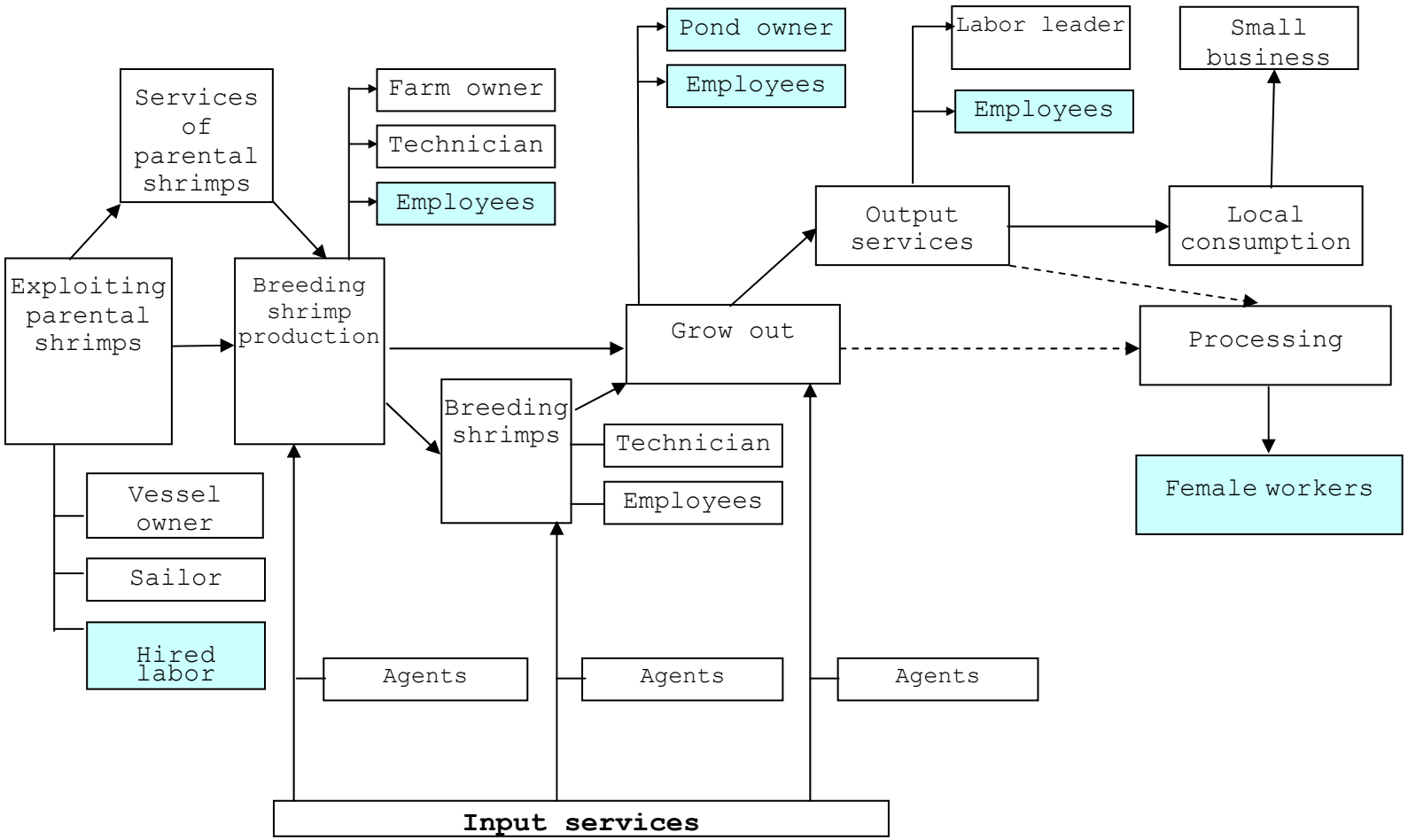
The market chain of production and export of shrimp products is rather complicated and at the same time, attractive to numerous groups of stakeholders. In general, Vietnam shrimp production and export process could be divided into three phases: (i) input service supply, (ii) primary production, and (iii) product marketing and consumption.

Table 6: Stakeholders in shrimp sector in Vietnam

Input service supply	Primary production	Product marketing and consumption
• Brood suppliers - capture fishers - supply services (from vessels to hatcheries) • Feed foraging (e.g. snails) for brood shrimp • Shrimp seed nurseries • Feed, finance, chemical, or medicine and other suppliers • Hatcheries	• Producers (households, businesses, and hired labour) involved in a range of farming intensities	• Small-scale buyers who purchase and sell to middlemen, restaurants or consumers • Larger scale middlemen (and their hired labour) who buy from farms and sell to processors or exporters • Processors and hired labour • Exporters and hired labour • Consumers

The relationships between these large number of different stakeholders involved with shrimp farming and trade in shrimp products in Vietnam is shown in the Figure below, with the poor groups highlighted in the shaded boxes.

Figure 4: Market chain for shrimp in Thua Thien Hue, Vietnam



4.2.2 Poor stakeholders and their livelihoods

Figure 4 provides an indication of the complexity of the market chain, and the people involved, including people who are poor. at various places along the chain (shaded boxes), with livelihoods influenced by market changes. Among the poorest people involved are:

- **Fishermen** on fishing vessels targeting broodstock shrimp are classified as poor. Most of these people are men in good physical health but their education level is quite low, and they typically earn around VND 300,000 (17 euros) /trip or around VND 20,000(1.1 Euros)/day.
- **Laborers** for shrimp farming households, hatcheries producing shrimp seed (to carry out heavy work), or service agents (as porters). Permanent employees who get a monthly salary have better living standards than seasonal labor. For hatchery workers, the average income is approximately VND 500,000 – 600,000 (28-33 euros).
- **Processing labour** (permanent or seasonal labor). 90% of the workers for processing companies are women. A worker's salary (VND 350,000 (19 Euros) – 1,200,000 (66.7 euros) /month) is not stable through the year as the processing company's business is seasonal, particularly in the northern coastal provinces. In the peak of harvesting season, they have to work 12 - 15 hours/day, but during idle period when no material shrimp is available, they become unemployed. Most of the women involved have limited education, from rural areas.
- **Poor shrimp-farmers** in Quang Tri and Thua Thien Hue have better housing conditions than other groups of poor stakeholders, but they face problems of debts with banks, and/or informal sources of credit such as financiers, relatives or friends. They are the least successful of shrimp farmers.

The livelihoods of poor people in the market chain are characterized by the following features, and consequently they are vulnerable in several ways to market changes:

- Financial resources - low income, limited savings, and access to credit to invest in lower risk farming, all serve to increase vulnerability to lost crops caused by disease or natural disasters and declining price trends.
- Human resources – generally low level of education, and seasonal labour
- Technology and services - limited access to and use of technology and extension services. The poorest shrimp farmers in Ca Mau often practice the extensive model of shrimp farming on forestry land without technical knowledge and hence the yield is very low. Poor farmers in Thua Thien Hue and Quang Tri report highest losses. The education level of these households is rather low, therefore information sources and fisheries extension services are out of their reach. These poorer farmers are mostly unaware of food safety and chemical concerns and therefore will in future be most vulnerable to demands for trace-ability and high quality product in response to EU demands for improved production standards.
- Physical resources - hired fishers/workers in both capture and culture stages do not have valuable properties and generally possess only cheap items (70%

have second-hand TVs, 85-90% have radios, 3-4% have old motorbikes) in their make-shift houses. Families of hired workers have limited access to agriculture land (usually around 3-4 *sao,* with 1 *sao* = 500 sq.m.), but the crop harvest is generally not sufficient to meet family needs. The poorest people in Hue are the boat people, and they do not possess farming land. Poor shrimp-farmers in Quang Tri and Thua Thien Hue have better housing conditions than other groups of poor stakeholders, and the principal problem for them is they cannot afford to pay the debts related to borrowing from banks, relatives, friends, etc. However, poor shrimp farming households in Ca Mau own neither land-use right (as they are migrants) nor considerable assets.

- Social resources – limited participation in groups, participation in networks, mass organizations or access to extension activities, further compounding risks and also making it difficult to voice the special concerns of the poor to supporting agencies.

Women are heavily involved with processing, and account for 90% of labour force working in export-processing factories. At other links of the market chains, women normally take part in housework management and financial book-keeping in the family.

4.2.3 Influence of trade on livelihoods of poor stakeholders

It is estimated that there are more than 3 million people in Vietnam who depend either directly or indirectly on fisheries for their income. Ninety percent of all fishers are artisanal and small-scale (Tuan, 2003), and most of them are very poor. The fisheries sector is a significant source of income, not only in the case of full-time fishers, but also for households that combine fishing as a component of their wider livelihood strategies. The biggest source of fishing and aquaculture income is generated from the Mekong Delta, where between 60% and 70% of households are involved in aquaculture. In this area the average income from aquaculture rearing ranges from US$36 (43 euro)- 79.00 (95 euro) per month. Almost all aquaculture producers are small-scale in their activities, and private households, although some co-operatives have recently been established.

The aquaculture sector provides employment for 668,000 workers, and shrimp aquaculture accounts for more than half of this. 80% of the raw material input in the south of Vietnam comes from aquaculture shrimp production. This sector has developed in four main areas: Nha Trang and Phan Thiet and the Mekong Delta in the south of Vietnam, Danang in the middle of the country and Hai Phong in the north. The fastest growing area is found in the Mekong Delta. Production in Hai Phong is limited by lack of processing capacity, inefficient marketing and distribution systems, lack of capital and exposure to risk, largely because inadequate use of inputs. This is expected to change as the tariff rates from neighbouring China decrease and the trade linkages expand.

In Vietnam, aquaculture production and the processing of aquaculture products for export supports the livelihoods of many poor people, and the rapid development of shrimp and other forms of aquaculture (such as catfish) have certainly contributed to the countries major achievements in poverty reduction during the last decade. The case study demonstrates though the influence of an increasingly competitive international trading system on the many poor people involved along the market

chain, highlighting both the challenges ahead and the opportunities for pro-poor options for trade. The case study found a strong influence of international trading issues on the livelihoods of poor people involved along the market chain with evidence that risks associated with international trade often fall heavily on the poorer people involved.

The major trade issues faced by the shrimp farming sector in Vietnam are:

- Declining price trends caused by increasing global production of shrimp, and competition with other countries.
- Trade restrictions caused by residues in shrimp products exported to the EU.
- US antidumping case, that resulted in 2004 in large duties being imposed on Vietnamese exporters to the US market.
- Increasingly high standards for food safety, particularly in EU markets.

Declining prices received for product, and consequently reduced income, represents perhaps the major influence noted by poor farmers. In Hue and Quang Tri, widespread diseases also forced farmers to harvest shrimp before the marketable size was attained. With the fall in shrimp price, shrimp farmers' income is also reduced as consequence, and farmers therefore find it difficult to generate funds for the next culture cycle. The fall in shrimp prices has resulted too in a negative impact on the net income of seed hatcheries as the intake of seed is lower. Impact on brood shrimp capture has not been significant, as the demand for broodstock is still high.

The US anti-dumping case is also worthy of some special mention as its impacts were felt during the period of the field study. It caused a significant decline in export and processing activities, and some fish export-processing companies have had to stop operations. The case has seriously affected export turnover and trading activities of those companies, especially the ones with established market ties with the US. Prices of material shrimp dropped quickly (by at least VND 10,000 (0.56 euros) /kg for every size compared to 2003). Product collectors may be affected most seriously because processing companies not only reduced the purchasing quantities but also stopped the pre-informing of purchase-prices, and it is common that many products are specified as lower class on delivery, especially when the product stock is stagnant for one to three days, leading to the lower downgrade of shrimp. As a result, many middlemen in Hue and Quang Tri who used to sell products to processors now seek to make contact with bigger traders in main cities.

The impact of the anti-dumping case on contractual labour is still unclear, for the daily wage remains stable, and even when suffering financial losses, employers are not in a position to refuse payment. When shrimp farming household gives up aquaculture option, hired workers will need to find alternatives.

The poorest shrimp farmers in Ca Mau often practice the extensive model of shrimp farming on forestry land without technical knowledge and hence the yield is very low. Poor farmers in Thua Thien Hue and Quang Tri report highest losses. The education level of these households is rather low, therefore information sources and fisheries extension services are out of their reach. These poorer farmers are mostly unaware of food safety and chemical concerns and are therefore most vulnerable to demands for traceability and high quality product. In consultation with processing plants in Ca

Mau, the most successful export businesses are already trying to avoid small-scale farmers producing small amounts of shrimp under what are perceived as risky culture conditions.

The producers also never know when and to what extent the market prices change. The continuously changing price makes producers think that middlemen and product collectors are the ones fixing the price. Market forecasts, if available, could be very useful to farmers.

4.3 General description of ornamental supply chain

The supply chain for exports of ornamental species involves collectors/fishers, wholesalers, middlemen and exporters. In the Philippines and Indonesia there are thousands of collectors spread over wide areas, hundreds of middlemen and numerous exporting companies. For the importing country, links in the supply chain involve import companies, wholesalers, retailers, and transhippers. Wood (2000) estimates that every direct employment in Colombia of one fisher/collector results in another indirect employment in support industries.

Collectors tend to be small-scale fishermen who work alone or in small groups using basic equipment such as 'tickler' sticks, hand nets and barrier nets. Scuba and hookah gear are also used.[17] Fish and invertebrates are usually brought back to shore the same day as they are caught, but in both Indonesia and Philippines, because collection sites tend to be fairly isolated, species may be onboard vessels for several days before being landed. Once ashore, species are placed in holding tanks, or immediately packaged for transport and/or export.

Ingredients for an economically successful fishery include access to popular species that can be supplied in high numbers, as well as species not available from other sources. Proximity of the collection sites to international air links is also important, especially in relation to ensuring that species can be exported that are not too stressed. Fishermen are usually paid by the number of fish they have collected, and the difference between the price they receive and the price to the end consumer appears to be greater the more middlemen there are employed in the supply chain in the exporting country. A recent study in the Philippines showed that of the price paid for fish by exporters, about 85% went to middlemen whereas only 15% went to collectors (Rubec et al 2000). Wood (2001) reports that if the collector is also the exporter (which occurs in some small ornamental fisheries) then he receives the full export value. If he sells directly to the exporter he may receive around half of the export price, but if he sells to a middleman then he may receive only one tenth of the export price. The f.o.b. price itself is strongly determined by the abundance and demand for the species concerned. F.o.b prices for small abundant species may be as little as $0.10, readily available but more interesting species may range from $1-5, with less common/more exotic species (e.g. ribbon eels, clown triggerfish, angelfish) selling for between $10-30. Rarities such as unusual hybrids or deepwater species may have an f.o.b. value of many hundreds of dollars. Prices are also strongly determined by the reputation of survival rates for species from different areas.

Middlemen/traders serve a number of important functions (Wood 2000). The principle one is to aggregate small collections of ornamental species into lots of sufficient size to supply the needs of exporters. This aggregation serves to increase the numbers available to exporters and to increase the range of species available.

[17] Wood (2001) reports that according to Rubec *et al.* (2000), many of the 300 collectors based on Olango Island (off the east coast of Cebu) are third generation cyanide users and they have destroyed the coral reefs for over 300 miles in every direction. The use of cyanide is universally outlawed for the capture both of aquarium and food fishes, but enforcing regulations is difficult. It continues to be used because it is easy to obtain, inexpensive and makes fish catching easier. Even though some collectors have been re-trained to use nets, the amount of cyanide being used is still substantial, and damage continues to be inflicted on fish and other reef life.

Middlemen may also serve to direct collection efforts to meet exporters needs, although information on expert prices is seldom passed on to collectors. In addition, middlemen may provide credit to collectors, sometimes in the form of goods and services, and therefore serve to bring in goods and cash into remote communities. However, as Wood notes, "this relationship is open to considerable abuse and it would not be correct to assume that the relationship between trade and collector is always mutually beneficial".

One at the exporters premises, consolidation usually takes place, and exporters often trade fish with each other to make up orders. Fish are quarantined and starved for at least 48 hours prior to export (to ensure they don't foul their bags). Most fish and invertegrates are packed in double polythene bags filled with one third water and two-thirds oxygen, sealed and placed in boxes for transport. A health certificate issued by the local veterinary services is required in most countries before a shipment can be exported.

Transport to importing countries takes place by plane, with international airline companies shipping species to the importing states. Shipping charges may correspond to around half to two-thirds of the landed price incurred by the importer, hence the large differences between export and retail prices. (Olivier 2001, Wood 2001). Fish are packaged according to criteria set by transport associations such as the International Air Transport Association (IATA) and the Animal Transportation Association (AATA).

In the importing country, species must be cleared through customs and receive another vetinary check. Traders in the EU must contact the appropriate national Ministry and file an application for technical certification as well as declare all imported and exported goods. Importers then quanrantine the species in wholesale facilities so that they can adjust to different water chemistry, feeding cycles etc. Fish are then sold other to other wholesalers, to retailers, directly to retail buyers, or re-exported. Traditional businesses are reported to be under increasing pressure from sales by garden centres and pet supermarkets, and also by transhippers. Transhipping started in the 1970s and early 1980s and involves several wholesalers or retailers grouping together orders and placing them directly with an exporter. The transhipper then deals with all the bureaucracy of importation and sends boxes to the purchaser without opening them. This activity is sometimes modified and known as 'consolidating' with transhippers taking responsibility for imported species for around 48 hours after import, and offering refunds for any fatalities. Consolidation can bring together a wide range of species from a wider geographical areas, and results in fewer shipments therefore keeping shipping costs lower.

These various steps in the supply chain, and the corresponding sales prices are demonstrated in the example below. It is important to note the doubling of price between export and import due to carriage, insurance and freight, and that final retail prices have to make allowances for the costs of running a business in the UK, and the differential value of one dollar in the UK compared to one dollar in Sri Lanka i.e. they don't take account of purchasing power parity. The figures therefore don't say anything quantitative about margins/profits or the benefits that result throughout the supply chain, or anything about the price structure being intrinsically anti-poor. Furthermore, the financial risks get greater the higher up the commodity chain one

goes (although this is not to say that the impacts of a lost collection would not cause real hardship for a collector) – collectors may spend little cash on financing a collection trip, while exporters may risk financial losses from exports which they have to pay for in cash without concrete guarantees of (full) payment.

Experience suggests that all stages of the supply chain operate on relatively fixed margins from their respective suppliers one step back down the chain, and that if ways could be found to increase the first sale price, reduce other business-related costs, and/or reduce mortalities, this would generate additional benefits throughout the supply chain.

Table 7: Example of price structure through ornamental supply chain

	Approximate prices (US$) paid for emperor angelfish *(Pomacanthus imperato*r), based on unpublished data from Sri Lanka, and UK dealers lists, 1998.		Example of typical price structure for marine aquarium fish (Perino, 1990)
	Small	Large	
Price paid by dealer to collector	6	9	2.5-12.5
Export price (i.e. fob price of fish without freight costs)	12	24	25
Wholesale price (cif cost of fish plus profit margin)	33	64	50
Retail price (price paid by hobbyist to retailer)	66	124	100

Source: Wood 2001

4.4 Indonesia

4.4.1 Market chain and stakeholders

The commodity chain is composed primarily of collector, chief collector, middleman or co-ordinator, and the exporter. The time interval between collection and export ranging from 2 days to 2 weeks. As suggested in the general description above, in Indonesia, the middlemen play an important role in terms of logistics and provision of operational costs, but this relationship is seldom balanced with middlemen forcing collectors to supply them at low prices in return for credit and provision of inputs (Lilley 2001).

The major stakeholders directly involved in the marketing chain for ornamental fish include collectors (Ornamental Fish Collectors, OFC) are fishers who catch ornamental fish. Collectors are not a homogeneous group. Based on equipment they can be divided into two categories, both of which frequently use cyanide as part of their equipment when fishing for certain species. Collectors can also be divided based on their status, as follows Independent Collectors, Semi-independent Collectors and dependent Collectors. Collectors can be further divided into full-time collectors, and part-time collectors, who have other occupations, including other types of fishing and/or land-based activities.

Stakeholders include those within the local community with a special interest in, or with the potential to affect, the OFT, such as other fishers/marine resource users, government agencies responsible for regulation and service providers, including Trade Relevant Associations.

Other major stakeholders are initial buyers and financiers, intermediary buyers, main traders and exporters and other related stakeholders, including packers and odd-job workers, screeners and aquarium cleaners.

There are around 35 large exporters in Indonesia, but more than 100 registered exporters of coral reef organisms throughout the country (Lilley 2001). A significant proportion (22) of the larger companies are represented in a trade association by the Indonesian coral exporters association (AKKII), and most are located in either Jakarta or Bali. These companies have export facilities in Jakarta, Surabaya and Bali, and have suppliers from 11 provinces.

AKKII accounts for around 85% of total exports of fish and invertebrates, and indeed only AKKII members are legally allowed to export live corals. AKKII has been given the responsibility by the Management Authority to split coral quota amongst its members, and the basis for distribution is the previous year's performance. While a significant proportion of fish collected may be destined for domestic aquaria, the domestic market for coral is not significant as domestic buyers generally wish to fill aquaria just with coral reef fish, and so almost all coral collected is exported.

4.4.2 Poor stakeholders and their livelihoods

Many collectors are among the poorest fishers. In general, these are people who were poor before entering the ornamental fish trade. Compared to other types of fishing, the necessary equipment and skills are relatively low, especially for shallow-water

species such as the Banggai Cardinalfish and clown fish. This means that fishers with few other options can take part, and the low price paid per fish means that there is not a general rush of every fisher in the area to compete, so numbers of fishers have remained relatively stable, on average around 20 fishers per collecting village in the case study areas.

Collectors are mainly from one of two ethnic groups: (i) Bajo (Sea Gypsy), an ethnic group usually totally oriented towards marine resource use, where traditionally the whole family is involved in both capture fishing and post-harvest activities, and collectors may be male or female and (ii) the native Banggai ethnic group, who tend to be equally at home on land or at sea, but only the men and boys will become collectors, while women and girls take part in post-harvest activities. In Banyuwangi, most collectors are of Madurese ethnic origin, and relatively recently moved to Banyuwangi. Madurese are traditionally long-distance seafarers, though many are also farmers.

The general traits of this group are that they:

- Are poorly organised and lack cohesion.
- Are under-financed and poorly equipped
- Have little formal education and extremely poor business management skills.
- Have poor technical skills in the capture and post-harvest care of ornamental fish.
- Have a tendency to use destructive methods (which are easier and quicker, and often also cheaper) including the illegal practice of cyanide fishing.

Other poor stakeholders include:

- **Crew of (non-collecting) initial buyer ships:** e.g. buyer boats from Tumbak. These people are not the poorest of the poor, but their average income and general livelihood conditions do not allow them to rise out of a position where they often cannot afford proper access to basic services such as health and education, and where they depend heavily on the boat owner (through a patron-client relationship). Most do not have other activities, but as permanent crew, are employed in whatever activities the boat owner organizes.
- **Staff in holding facilities:** at all levels from financier to exporter, including packers, cleaners and others. At the exporter level, the fringe benefits (food and lodging, over-time, health care) are generally high, and mean that most of these people do not count as the poorest of the poor. However, at the financier level, both income and security/benefits are much lower, so that these workers are often relatively poor. At intermediary levels, some staff may count as poor, depending on individual company practices.

Seasonality is an important issue for most collectors and their families. In addition to impacts on collection, seasonal variations (especially rainfall) in many cases greatly impact general well-being, e.g. lack of fresh water during drought months and high incidences of sickness (dysentery and malaria) during wet months. The main seasonal factor affecting collecting activity is market demand. In Banyuwangi, fluctuations in orders directly affected activity levels. In Banggai, the market demand at higher

market chain levels results in fluctuations in the frequency of visits from buyers and in quantities required. Other factors influencing seasonal levels of activity in the ornamental fish trade include:

- Other activities (e.g. Grouper spawning periods, farming seasons)
- Climatic variations (especially related to the main monsoon seasons. For example the highest demand form the export market often coincides with inclement weather. January and February (the Northern Hemisphere winter, a time of high demand) is the season of strong North winds around the Banggai Archipelago, which make it hard for Tumbak boats to return, reducing number of visits and increasing mortality. January, February are also the main bad weather months for Banyuwangi collectors, with adverse conditions in July also.
- Religion plays a role, as Muslim collectors in Banyuwangi and (though to a lesser extent) in Bangkep, are reluctant to go to sea or cease collecting altogether during the fasting month of Ramadan.

The range of monthly incomes for various stakeholder groups is shown in Table 8.

Table 8: Income from Ornamental Fish Collection and related activities in Indonesia

	Main Stake holder	Estimated Monthly Income in IDR
Banggai Kepulauan	Collector	300,000 - 1,500,000
Tumbak	Initial Buyer Boat Crew Initial Buyer	200,000 - 1,500,000 1,200,000 - 9,000,000
Banyuwangi	Financier Free dive Collectors (around 20 days fishing) Compressor Divers (around 15 -20 days fishing) Odd job wage worker Packers (twice a week) Food fishers using nets and *tongkol*	2,000,000 - 5,000,000 600,000 - 1,200,000 800,000 - 2,000,000 300,000 + Food 200,000 - 400,000 300,000 - 600,000
Denpasar (+ overtime & full board)	Exporter Packer & Odd-Job Man Exporter Aquarium Cleaner Exporter Sorter	500,000 - 1,000,000 300,000 - 500,000 750,000 - 1,000,000

The higher limits identified in this table are rarely reached. From this table it can be seen that incomes of the poor stakeholders identified are not dissimilar, and many are indebted in one way or another.

4.4.3 Influence of trade on livelihoods of poor stakeholders

The marine ornamental trade has various influences on the livelihoods of poor people.

Positive effects include:

- **Additional source of income.** The development of the ornamental fish business has opened an additional livelihood opportunity for fishermen (as collectors), which can be a source of valuable additional cash income or even become a full-time occupation. Collectors in Banggai Kepulauan and Banyuwangi can increase their earnings by 25-100% compared to the days before ornamental fish collection started.

- **Business and employment opportunity.** Ornamental fish trading in Indonesia has opened a business opportunity, especially in cities and towns such Denpasar, Banyuwangi, Manado, Palu, Surabaya, Makassar, Kendari dan Jakarta, which in turn creates new employment opportunities (as packers, screeners, cleaners, etc*)* and increases local Government revenue.
- **Changing perceptions.** Increased knowledge of collectors regarding the economic potential of coral reefs can change their attitude towards this valuable resource, including increased protectiveness. Local collectors tend to protect their fishing grounds from destructive fishing by others, both local and especially outside (non-local) fishers, whether for ornamental or food fish. Awareness of the value of the ornamental fish trade at the local Government level can give impetus to the creation of local policy and regulations for the management and (sustainable) exploitation of the coral reef ecosystem-based resources in their area.
- **International awareness**. There is an increase in understanding and caring about Indonesian coral reef conservation by buyer Nations in Europe and America. One practical outcome of this is the international community's support for the development of standards for sustainable trading of ornamental fish (certification). The impact of this on poor stakeholder livelihoods can be either positive or negative, depending on how certification or other interventions are designed and implemented. For example, there is a risk of poorer stakeholders being unable to comply, or being pressured into reduced income by higher-level players to recoup costs. But if well implemented could give poor stakeholders the chance of greater involvement and of a sustainable income.

Negative influences include:

- **Resource degradation.** The ornamental fish trade in Indonesia suffers from degradation of the resource base by others, but also causes degradation of the very resource on which it depends, the coral reef ecosystem, thereby impacting on the long term sustainability of livelihoods associated with the trade. There are two main types:
    - **Destructive fishing:** with little technical knowledge regarding proper capture techniques, many collectors resort to the use of destructive practices. The best known is the use of poisonous substances, especially cyanide. These substances not only result in high mortality of target fish, but also kill many non-target organisms, fish and invertebrates, including coral. Collecting often involves both accidental (e.g. trampling) and purposeful (with tools such as oars or crowbars and by hand) damage to the framework of the substrate, especially breakage of corals.
    - **Over fishing:** Driven by high demand levels, unreliability of orders, uncertain buyer schedules, and a desire to maximise (individual) returns, collectors tend to catch more fish than can be harvested sustainably. Often target species populations are not given time to recover (breed) between fishing events. One factor which affects the level of over fishing is the (often high) rate of mortality at all levels of the market chain.

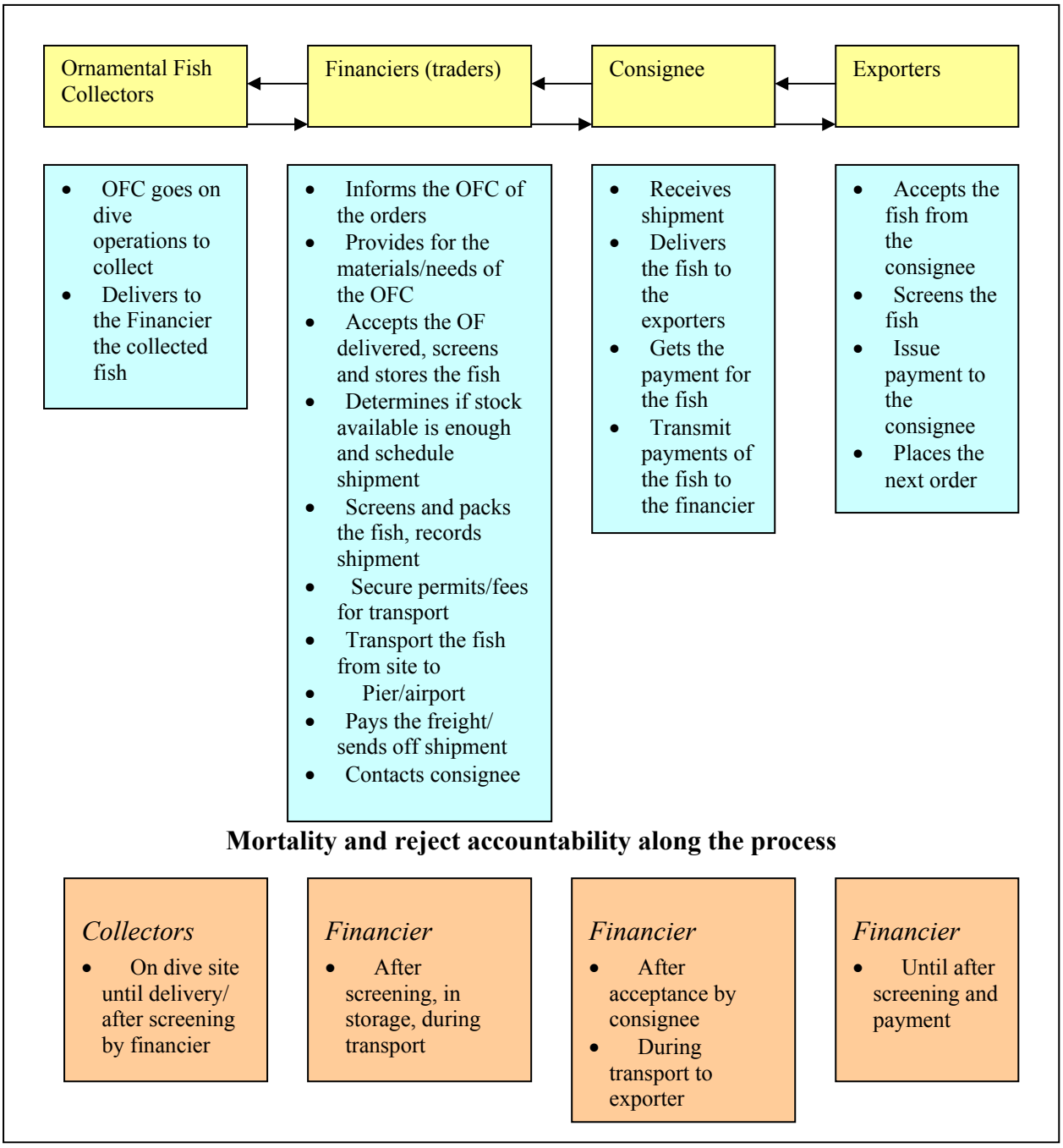
- **Unfair trading.** Trading in the ornamental fish market chain within Indonesia is often unfair and poorly organised. Two particular points are:
    - There is a process of creating or maintaining poverty at the collector level, whereby collectors are kept dependent upon the buyers, even where the initial buyers are not the financiers. For example in Banggai the payments are often delayed (and not paid in cash at the time of sale), and frequently in breach of the buyer's initial promises.
    - The collectors have little opportunity for bargaining as the buyers fix the price. As a result, prices paid to collectors in both Banggai Kepulauan and Banyuwangi per fish for most species, and prices to initial buyers in Tumbak, have hardly increased since 2000/2001 and have not kept pace with the rise in the cost of living.
- **Potential for conflict.** There is considerable potential for conflict directly related to ornamental fish collection and trading, though so far violence has only rarely occurred. There are three main types of potential conflict:
    - Conflict between collectors: fishing ground conflicts can arise between local collectors, between local collectors and collectors from other areas, and between groups of non-local collectors operating in the same collecting area.
    - There is potential conflict over (including spatial) resource use/access between collectors and other sectors, for example tourism (e.g. in Bali), and other fisheries activities (e.g. pearl farming and sea-weed farming in Banggai Kepulauan).
    - Conflict can occur between buyers and collectors (related to unfair trading and to the "coupling" of areas) and the competition between buyers is sometimes close to conflict (e.g. between Balinese and Tumbak buyers in parts of Banggai Kepulauan).
- **Opportunity for corruption.** Weaknesses in the basic legal framework and the implementation of regulations, especially regulations relating to the use of poisonous substances for the capture of fish (including ornamental fish) are often exploited by the fishermen who indulge in these practices. This opens many opportunities for bribery, corruption, extortion and protection racketeering, by officials at all levels. One effect is to significantly increase “overheads” and make ornamental fish trade less profitable than it should be.
- **Health impacts on collectors.** Diving activities (breath-held and even more so compressor-assisted) which are an integral part of ornamental fish collecting, carry a high risk of accidental injury, both pressure-related (e.g. burst lungs, decompression sickness or the "bends", and damaged eardrums) and others (e.g. propeller injuries) which are sometimes fatal. During the past 10 years, 25 collectors have died of diving-related injuries in Banyuwangi.

4.5 Philippines

4.5.1 Market chain and stakeholders

The trade in marine ornamental fish from the Philippines has grown from a modest industry, which began around 1957, into a multi-million dollar business. In 2002, live ornamental fish export of the Philippines reached 5,632 tonnes valued at US$505 million. Ornamental fish caught off coral reefs around the Philippine archipelago pass through a market chain involving a range of stakeholders. The following is a schematic diagram showing the flow of operations from the ornamental fish collectors to the exporters**.** It is interesting to note that the consignee does not have any responsibility as to mortality and rejects anywhere along the process.

Figure 5: Schematic of flow of ornamental fish trade in Philippines, from collectors to exporters



Marine ornamentals are sourced from more than 75 sites in about 23 provinces within the country with the bulk coming from the provinces of Cebu, Bohol, Palawan, Batangas, Quezon, Zambales, Zamboanga, Surigao, Tawi-Tawi, Mindoro, and Cavite. Supplies coming in from Cebu are usually sourced from collection sites in Cebu, Bohol, Leyte, Samar, Surigao and Zamboanga while those from Manila come from Batangas, Zambales, Quezon, Cavite, Mindoro, Palawan, and Tawi-Tawi.

In the Philippines there is an estimated 7,000 marine ornamental fish collectors in association with 30 export companies.

A good example of the market chain is shown in more detail in Figure 6, which tracks a Clownfish consignment from Mindanao to Manchester. A range of stakeholders play a role in the chain from collectors to financiers (also known as traders), well-boat operators, packers, exporters, consignees, freighting agents, airlines, importers and retailers. A typical shipment from Mactan International Airport to Heathrow International Airport, London via Singapore takes about 29 hours including packing, loading, travel and a stop in Singapore. The value of clown fish in retail outlets in Manchester is over 300 times that paid to collectors diving on reefs in Mindanao.

The example of Figure 6 can be further informed by a study by Mayne et al (1999), which reported a commodity chain analysis as follows.

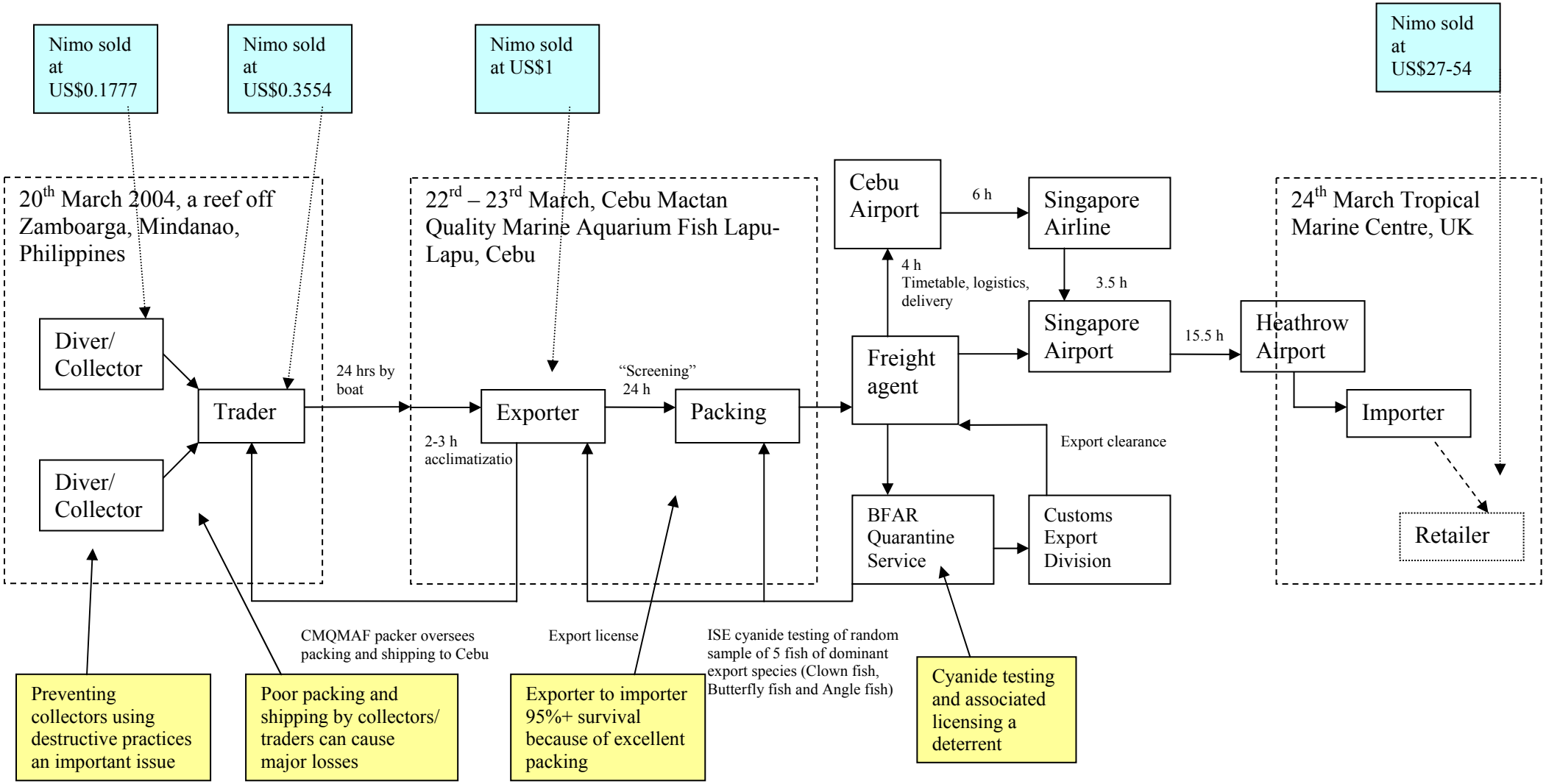
Table 9: Philippines ornamental commodity chain price analysis

Costs and profit as a percentage of export revenue	**Percentage build-up in price (industry average)**
Price paid to fishermen	22.9%
Freight and packaging to Manila	7.7%
Operational costs of manager	9.1%
Manager operating margin	14.9%
Labour costs	5.8%
Facility costs	7.9%
Taxes	6.3%
Exporter net profit	25.5%

Source: Mayne et al, 1999

NB: the price build-up was based on data provided by exporters, and there was evidence collected during the study that the percentage fishermen received could be as low as 10% while the profit margin for exporters could be closer to 40-50%.

Figure 6: 'Freighting *Nemo'* - from Mindanao to Manchester



4.5.2 Poor stakeholders and their livelihoods

There is a significant lack of alternative livelihood options for women and men in many of the areas in which fish are collected. The marine ornamental trade therefore provides income for poor people in coastal communities where few options for livelihoods exist. With the dwindling production from capture fisheries, the trade offers a potential option for sustainable development of the aquatic resources and for economic growth of remote parts the country.

Poor stakeholders include:

- The collectors who are an important link in the trade are primarily dependent on the trade to support their family's subsistence.
- Packers, part-time employed workers, sometimes minors.
- Aquarium cleaners.
- Women gleaning for ornamental fish

Collection is undertaken either by free divers (*manu-manu)* who do not use any breathing apparatus or by *hookah* divers or *busero* who use compressors to dive deeper - down to about 18 meters. The majority of the older collectors have attained elementary level education only (Olango) while some reached high school level (Batasan). Collectors are either organized or unorganized or part-time or full-time in this activity. Their diving trips are either self-financed as in the case of Batasan collectors or funded by financiers as in Olango and such advanced expenses are deducted from the income of their catch after each diving operation.

The income from ornamental fish collection of the *manu-manu* divers ranges from PhP 500.00 (US$9) to PhP1, 000 (US$18). Daily earnings of compressor divers range from PhP300 (US$ 5.40) to PhP1, 000 (US$18). A compressor diver usually spends 15 to 20 days diving in a month. If he spends 20 days in diving, gross income would range from PhP6, 000 (US$108) to PhP20, 000 (US$360). The total daily expense budget for ornamental fish collection is estimated at PhP100 (US$ 1.80). A boat crew is sometimes hired to serve as a watcher on board the boat and gets a 30% share out of the net sale of fish.

Ornamental fish collectors say their body cannot withstand the rigors of diving for long periods of time. They have to alternate this activity with fishing for food fish and other forms of livelihood. Income from food fish fishing ranges from PhP 100 (US$1.80) to PhP 400 (US$7.20) per day during calm weather, and a minimum number of days spent on fishing is 20 days. Food fish fishers do not go on fishing trips during bad weather and on Sundays.

One of the problems identified by collectors is the shortage of nets and jars for ornamental fish collection. Some collectors currently resort to borrowing barrier nets from fellow collectors in order to pursue their livelihoods.

Another problem is that many collectors feel that "the order system in ornamental fish collection is not good". The order system is derived from a Code of Good Conduct in keeping with MAC's standards of best practice, whereby collectors harvest and deliver only what is ordered by the exporters. Incomes cannot be sustained if

collection is dependent on intermittent orders from the exporters. At times the collectors are ordered by a coordinator to stop collection of some species because the exporters have stopped buying. This restricts the livelihoods of the collectors causing shortages in supplying their family needs. Lean months for fishing households are also lean months for women and children as well as for the "*sari-sari*" store owners patronized by fishers' families for credit.

Health cases associated with diving shared by collectors, as reported during interviews

- A participant has a brother who was paralyzed after five years of engaging in compressor-diving. He attributed this to the depth his brother dives and improper decompression
- Five cases and even one death caused by "air pockets" were reported. They explained that this happens because one's body seems to get smaller underwater and cause the veins to bulge." The person affected by bends loses strength, has an unbalanced body and cannot walk without crutches. They recommend that decompression should be done at half the depth of the water dived e.g. if the total depth dived is 30 meters at 15 meters one should decompress for a few minutes and slowly ascend afterwards to the surface.

Health (and human capital) is a major problem. In Olango, some of the health problems mentioned were "*panuhot*" (type of muscle pain believed to be caused by blockage of air in the blood vessel), *palanakit sang kabukugan*" (pain in the bones) due to the unfiltered air being breathed through the compressor (see Box). Bends, commonly referred to in Sabang as "air pockets" was also mentioned. The latter illness is believed to be due to improper decompression procedure. For a hookah diver surfacing from a depth of 18 meters, decompression procedure is done at 7 meters deep before surfacing. Decompression time takes about 30 minutes. The free divers reported no illness but they complain of over-fatigue due to the distance they cover in swimming (as far as 1,000 meters) while looking for ornamental fishes. The deepest that they reach is only about 7 meters.

The "*manu-manu*" divers feel over-fatigued after the daily dive operation because of efforts exerted in swimming against the current. There is great pressure to over-exert themselves as they cannot afford to go home without any catch at all. Diving in very deep waters without using proper diving gear can also cause deafness on the "*manu-manu*" divers.

Packers are men, women and children who comprise the temporary labor force hired by financiers or exporters during shipment. They are either paid on a per hour basis or per session or per shipment regardless of the volume. They usually work for about three to four hours and get paid by exporters for about PhP 150.00 (US$ 2.70) per session or PhP20 (US$0.36) per hour. In Sabang, financiers pay packers about PhP25.00 – (US$0.45) per shipment for minors below age15 and PhP50.00 (US$ 0.90) for adults. Packers are sometimes called *extradores* by exporters. Most of those working in Olango have elementary education only.

Packers are hired to do the final screening and packing which takes about four hours per shipment and is usually done from midnight until four o'clock in the morning. There are commonly about thirteen packing crew hired per shipment. Two or three of which are assigned as final screeners, three assigned to place oxygen into plastic bags and tying them up, and the rest served as runners, plastic bag classifiers and in charge of placing fishes in plastic basins for screening.

Aquarium cleaners at the exporter's level are regular men staff whose main function is to clean the aquariums and holding facility as well as replenishment of clean seawater in the aquariums. They usually get a monthly pay of about PhP4, 500 (US$81) with free board and lodging, and other mandatory compensation benefits.

Women gleaning for ornamental fish are usually wives of the collectors gleaning for shells in shallow waters along with other marine ornamentals they could find such as banded shark, egg shark, maroon clown fish, octopus and seahorse (now banned). Collection of marine ornamentals may not be their main source of livelihood but the daily earnings of about PhP30-50 (US$0.54-0.90) contribute to the family income. Other activities performed by these women in relation to ornamental fish collection include preparation of materials needed for the diving trip such as nets, paddle, masks, collecting jars, improvised flippers and food. Most wives take care of delivering the fish to the coordinator and collect the payment.

4.5.3 Influence of trade on the livelihoods of poor stakeholders

Many collectors have been notorious users of sodium cyanide (known in the Philippines as *kuskus*). There is pressure from European importers to abandon the use of cyanide for ornamental fish collection because this seriously diminishes the product life.

As a result there are experiments underway with the introduction of alternative collection measures including barrier nets for ornamental fish collection provided by the Haribon Foundation and International Marine Alliance (IMA) and certification of collectors who use them. Collectors now claim that most of them have stopped using *kuskus*, having learned the use of barrier nets and become aware that the law prohibits its use because of the harm it does to corals and its long-range effect to the fishes caught. But they also confirm that there are still a few food fish and ornamental fish collectors who use it.

At present the only agency initiating certification standards is the Marine Aquarium Council (MAC) and their area of operation is limited to several municipalities only such as the Batasan Island in Tubigon and Tangaran in the province of Bohol; and San Francisco, Camotes Island in Cebu. Other expansion areas include Tawi-Tawi and Palawan. However, the certification process initiated in the study site in Batasan Island has shown positive outcomes in terms of 1) better pricing; 2) better income for collectors due to reduced mortality rates and shortening of the chain of custody (by doing away of the consignees who get 10% cut from the potential profit in non-certified sites like Olango); 3) improved collection, handling, holding, packing practices; significant reduction of incidence of cyanide fishing ; 4) more regulated use of the resources in the area; 5) generating valuable data and information that could be used for management planning of the resource through installation of resource assessment, monitoring and recording systems; and 6) providing incentives to subsistence fishers to foster marine conservation.

Financiers at the community level hire boys to run errands during packing operations. Most of these boys are youth who were lured from school because of the money they get as packers. Parents give their consent to this practice because they need the additional income their children earn from packing.

5 Key research findings

Key research findings from Outputs 1 and 2 of this project can be summarized and divided into:

- Those that relate to fisheries trade in general, and its relationship to poor producers
- Those that relate specifically to pro-poor trade options

5.1 Key general research findings on fisheries trade and poverty

Finding 1: Trade in fisheries products between Asia and Europe involves many millions of poor people, providing income and food to some of the most marginalized and landless people in coastal communities in Asia.

Finding 2: Market chains between Asia and Europe for traded shrimp and ornamentals are complex, involving many different participants and stakeholders. Middlemen and women in Asia form an integral part of this chain and provide important services to the poor, such as credit and some limited market information. From large numbers of producers in Asia, exports tend to be channeled through a relatively small number of exporters, before being distributed in Europe through a wide variety of market outlets.

Finding 3: Poor people are involved with shrimp and ornamental trade at several points throughout market chains (typically, but not limited to, ornamental collectors and hired labour in both the shrimp and ornamental sectors). Trade in shrimp and ornamental marine species involves women and men, and sometimes children, who are often the poorest of the poor and are especially vulnerable to the influences of trade.

Finding 4: Many poor people associated with the trade in live marine ornamental animals are not well organized, suffer health deterioration and are solely dependent on the trade to support their family's subsistence. They cannot easily divert to other livelihoods because of limited alternatives, and are often engaged in ornamental fish collection as an "activity of last resort".

Finding 5: Factors and influences impacting on poor producers that can affect their vulnerability and poverty status, relate to both domestic and international trade. But importantly they also relate to wider non-trade issues reflective of societal structures in general, levels of governance, marginalisation, and levels of human and financial capacity.

Finding 6: The influences from international trade perhaps most importantly include declining prices, increasingly strict environmental, sanitary and phytosanitary (SPS) standards, technical barriers to trade, and increasing moves towards traceability and certification, the latter in response to demands in the EU for assurance of food safety and increasing concern over environmental issues. The application of international trading standards for food safety and environmental issues are generally considered as trade barriers by developing countries, and if applied generally are likely to lead to exclusion of poor producers from international market chains.

Finding 7: Shrimp farming and ornamental fish collection is risky, and without access to knowledge, finance and markets can expose the poor to greater risks. The risks inherent with much international trade are often passed on to the poorest stakeholders in the chain who are the least able to deal with them.

Finding 8: Institutions in developing countries with responsibility for aquatic resource and seafood sectors, as seen in these three country cases studies, are often poorly developed with limited capacity to manage the risks and influences of international trade. In Vietnam, the Philippines and Indonesia, institutions and policies do not reflect or address at all well the key influences on poor stakeholders. This situation places additional risks on poor people.

Finding 9: Inclusion of some ornamental fish species in CITES Annex listings could have a serious impact on the costs, and extent, of trade and therefore the distribution of benefits back down the chain to poor producers.

Finding 10: Whereas in the past, fisheries policy in many Asian countries was strongly technology and export-orientated with an implicit assumption that such policies would benefit the poor, there is now far greater recognition that fisheries and other sectoral and non-sectoral policies need to be more poverty-specific in their focus.

Finding 11: International market trends, particularly high quality standards, are driving the shrimp industry to consolidation along the market chain. This is likely to lead to smaller operators being squeezed out, unless specific support is provided to enable small-scale and poorer farmers to participate. Employment created throughout the market chain by shrimp farming for poor people is thus at risk from international market chain development, unless positive actions are taken towards assisting the small-scale sector.

5.2 Key findings relating to pro-poor trade options

A number of initiatives could help to ensure that trade in shrimp and ornamental fish is pro-poor. These are discussed below, with some important caveats

Finding 1: Specific capacity building of fisheries administrations in international trade issues is urgently needed, in terms of ensuring a) better information and outreach/extension to poor producers, b) increased ability to engage with the EU on trade issues, c) improved cross-sectoral integration of fisheries trade policies with other national policies and strategies on trade and poverty, and d) issues best practice in trade. However, the very real problems of limited administrational budgets, and competition with the private sector for high quality personnel are issues that provide constraints.

Finding 2: Capacity development of poor producers is urgently required to help with organizational and institutional development of local-level organisations. The model of self-help groups in Thua Thien Hue in Vietnam provides a good example of how such groups can operate effectively to mobilize financial resources to provide credit to members and to help to spread risk among members. Support to self-help groups through local access points (sometimes called “One-stop Shops”) for supporting media and service provision can act a beacons to help poorer producers to act together

and draw in the services and support which they need. Local One-stop Shops also help service providers to target larger numbers of disparate groups. Capacity development of poor producers in terms of technical and skills development, as well as issues of best practice, should also be supported. The long-term nature of capacity development initiatives aimed at institutional and organisation development must however be recognized.

Finding 3: Certification represents possible opportunities and possible threats to poor producers, but the extent of these opportunities/threats is not at all well understood. With respect to shrimp, the catering sector (where most warm water shrimp ends up) is less receptive to social issues and related branding than supermarkets, but both sectors generally believe that a large majority of customers are more interested in other factors such as value for money and the quality of products. We found little/no support from those interviewed in the shrimp sector for specific social branding, as there are concerns about large numbers of brands confusing consumers and adding costs. However there might be some potential for linking social/ethical issues into other environmental certification schemes (although the willingness of the schemes to expand into social issues remains another question), and into traceability requirements. Indeed traceability requirements may be of far greater importance in terms of their impact on poor developing country producers. Traceability is a key issue for many retailers and processors, and already often includes both environmental and social issues as part of traceability audit requirements. Even if certification initiatives themselves remain a relatively small market, their presence could very well encourage retailers and processors to place more emphasis on social and environmental requirements as part of traceability requirements. Special attempts should therefore be made to ensure that poor producers are able engage in increasingly stringent traceability requirements.

The Marine Aquarium Council scheme in the Philippines (which is principally environmental in its objectives) has demonstrated some price increases from certified ornamental products, and interviews in Europe suggested a reasonable level of support for the success of such initiatives. However, it should be noted that the MAC system is highly subsidized (by donors/foundations) and the real test will be whether such systems deliver benefits under a truly market based system, and/or whether the costs of certification just end up being a cost of doing normal business with poorer fishers involved then having to somehow pay for the cost of certification and getting a normal price for their products.

Finding 4: Relating to the issue of certification above, EU trade policy/legislation could be used to provide preferential tariff rates for socially certified products, or perhaps products otherwise identified as produced by small holders.

Finding 5: All the interviews conducted during the study revealed that perhaps the most effective way to support the poor is to concentrate on issues of quality and reliability of product, which in turn will increases prices and therefore the benefits of trade. Many businesses operate on fixed margins from suppliers, so ways to increase first sale prices through quality improvements may offer special potential. Such improvements can be ensured through education and extension work with producers and those involved in the post harvest sections of the supply chain, related to harvesting and post-harvest handling and transport. Shrimp processing plants need to

continue to make upgrades in SPS facilities to ensure product quality, but efforts at quality improvements are still required, especially at lower levels in the market chain. Branding by poor producers, not based on social issues but on quality and the reputation of product from particular areas in which the poor operate, could be considered. However, any form of branding requires sufficient volumes and reliability of supply, and in the case of ornamentals, variety – all factors that may be difficult for poor, small-scale producers. And other factors may limit the ability of poor producers to supply, and benefit from, better quality product. These include: a) the poor may be geographically distanced from supply infrastructure and networks, itself causing problems of quality; 2) low levels of education and lack of capital may both serve to make such initiatives difficult, and c) there may be problems in ensuring that the poor do actually benefit from any increased prices paid by the end consumer.

Finding 6: Improvements in communication and information are essential. These include better information to producers on EC trading and market access policies for shrimp and other aquatic products. For example, the market access problems faced by Vietnam because of contamination of shrimp products by aquaculture chemicals could have been reduced if more information had been quickly provided on regulations and ways to deal with the problem. In addition, the communication channels between Asian producers and governments and the EU on such issues should be improved to allow for quicker resolution of problems. And better communication between exporters and ornamental collectors regarding appropriate species and orders would help to avoid collection of species with overly high mortality rates, low demand etc. However, accessing the poorest of the poor to provide them with information can be difficult due to their levels of literacy, geographical isolation/marginalisation, and wariness of government officials.

Finding 7: Many of the poorer households involved in trade are vulnerable because of poor access to technology. Risks can be reduced through providing technical knowledge, for example of husbandry techniques for shrimp or collection methods for ornamental fish collectors, using easy-to-understand extension materials and mass media.

Finding 8: While decentralisation policies are in place in many countries, devolution of real power and resources to local levels remains a challenge. As a result, NGOs can and should be encouraged to play a vital role in supporting the poorest of the poor, acting as a communication bridge between the poor and government, assisting with data collection, in providing them with appropriate skills and information, and in lobbying and advocating on their behalf. It should be noted however, that in many countries Governments are still wary about the involvement of NGOs.

Finding 9: Generic (i.e. non pro-poor specific) regional and national export promotion initiatives can be used to benefit poor producers where such initiatives support trade in which poor producers are involved. However, good marketing campaigns and sales promotion can be expensive.

Finding 10: It is <u>not</u> felt that there are significant possibilities for re-distribution of benefits through the chain. No one link in the chain will voluntarily give up margins to the benefit of the poor, and power relations would make such initiatives problematic. In addition, attempts would be likely to alienate positive moves towards

pro-poor trade and traceability based on joint initiatives involving the whole supply chain, and are probably therefore not advisable.

Finding 11: It is also not thought advisable to attempt any initiatives to cut out links in the supply chain e.g. middlemen. There would almost certainly be problems with the ability of poor producers in Asia to organise and manage different aspects of the business, and to access capital to get involved directly with export trade themselves. And people or their dependents involved in the links cut-out may also be poor, or be supporting the poor in related activities.

Finding 12: Potential may lie in moving aspects of EU businesses to lower cost economies in Asia, thereby increasing margins and employment in developing countries. Examples might include more acclimatization of ornamentals in Asia therefore shortening holding times (and therefore costs) in the EU, and could be supported by tax-breaks in Asia.

Finding 13: The poor face special difficulties in terms of access to credit, and savings schemes. Initiatives aimed at pro-poor trade must therefore include support for programmes to increase the availability of micro-finance (both credit and savings), as well as access to more formal sources of credit and savings schemes.

Finding 14: While not strictly a pro-poor trade mechanism, increased household incomes and reduced vulnerability to the vagaries of trade can be supported by activities aimed at fostering complementary income generating opportunities for those engaged in trade.

6 Key Policy Recommendations

A number of key policy recommendations are provided based on the research conducted as part of this project. They are as follows:

Policy Recommendation 1: The importance of trade in aquatic resources for poor people needs to be more widely appreciated, with such trade specifically included in national poverty reduction strategies and with any trade promotion strategies specifically considering potential impacts on the poor. This will require support at a general awareness level, and also at the stage of researching and writing of PRSPs as the process is still new to many countries and the importance of the fisheries sector is not sufficiently appreciated outside of fisheries Ministries.

Policy Recommendation 2: Capacity development of developing country governments and fisheries administrations must be supported. Such support should include capacity development on issues such as:

- trade negotiation skills
- issues of product quality
- developing and following through marketing strategies and promotional tools
- analysis and understanding of people's livelihoods and how best to support them, which in turn would result in better policies
- how to be able to better adapt to SPS measures and to monitor and respond to ongoing developments in trade, and
- methods of dissemination of trade-related information and support to all links in the supply chain in their countries.

Importantly, such capacity development would help governments in developing countries in Asia to be more proactive in engaging with international trade issues (to ensure that trade is beneficial, and does not negatively impact on, poor producers), rather than being reactive to problems only once they have occurred.

Policy Recommendation 3: Capacity development of producer organizations at the local level must be supported. Such development should include efforts to:

- ensure sustainable group formation and social organisation (for the multiple purposes of ensuring a) sustainable capture and farming methods, b) better social security functions and increased savings and credit, and c) group marketing functions)
- improve access to market information, and
- ensure continued improvements in handling, storage and transport throughout the market chain, so as to improve quality

Policy Recommendation 4: The ability for developing countries in Asia, and poor producers in particular, to ensure traceability of product must be supported. Without such support trends towards requirements for traceability will almost certainly marginalize poor producers.

Policy Recommendation 5: Development of fisheries policy in general, fisheries export promotion strategies, and trade policy must be truly participatory and include poor stakeholders and their representatives. Failure to do so is likely to result in policy that does not adequately reflect the views of the poor, or provide for strategies to assist them. Poor people currently have limited input to national policy initiatives (see various STREAM literatures e.g. policy support studies from DFID NRSP projects R8100 and R8334 at www.streaminitative.org/virtuallibrary) concerning fisheries and aquaculture. Negotiating ways to support developing country administrations to engage more effectively with primary stakeholders during policy formulation is important.

When it comes to EU and international trade policy, developing country national fisheries administrations often have limited understanding of the issues, and limited international influence or engagement in standard setting. Given the importance of international trade in fisheries and aquaculture products, and significance for poor people, a much more active engagement of developing countries, and poor people in the process is required. This would help to ensure that standard setting processes consider the influence of higher standards on poor people, and specific actions to address the concerns included.

Policy Recommendation 6: SPS and technical barriers to trade can clearly place a significant economic burden on developing country producers. Such impacts need to be better documented so as to raise the profile of their impacts on the poor.

Policy Recommendation 7: Ensuring improved information on all matters related to international trade must be supported. Information on trade regulations, bureaucractic procedures and requirements, prices, etc is vital to ensure that poor producers are not excluded from trade and can maximize prices. Ensuring information reaches all appropriate stages of the supply chain is likely to require a very specific trade information strategy to be developed.

Policy Recommendation 8: Efforts to develop and implement pro-poor trade policies must be backed up by wider initiatives related to good governance, decentralisation and local management of resources. There is also considerable scope to increase the horizontal learning that could take place between countries, sharing common issues and aiming to address these. Support for regional learning and communications could be an important indirect support mechanism.

Policy Recommendation 9: Greater support is required for research and development on pro-poor trade in aquatic resources. As developed and less developed countries continue to upgrade the way they conduct research in support of development including in the aquatic resources sector, the outcomes of research will be more related to the objectives and livelihood contexts of those who are poor.

Policy Recommendation 10: Better information/justification is required on the scientific evidence for inclusion of ornamental species in CITES annex listings. The EU Scientific Research Group are influential in this regard. There is currently talk of adding some species to the Annex D listing. Annex D listing would add paperwork and costs, and could lead to confiscation of shipments in some cases if paperwork not

correct. This could have a serious impact on costs of trade and therefore payments back down the chain to poor producers.

EU policy on CITES should also be supported by analysis of the impacts of listing (and other trade related changes) on poor stakeholders. This analysis should specifically address a) the impacts and b) measures that might be taken to minimize impacts. Consideration of biological concerns alone is not sufficient, and does not comply with EU requirements for coherence between different aspects of EU policy.

Policy Recommendation 11: While rather obvious, it needs stating that the poor in developing countries could be expected to benefit significantly from reductions in tariffs on aquatic products imposed by the EU on both raw material and processed products. Tariff reductions could be tied to socially certified product, or product deemed to originate from small-scale producers.

Policy Recommendation 12: As inferred in a number of the policy recommendations above, assisting poor traders may be best achieved by focusing on quality and reliability of supplies, rather than specific attempts at pro-poor branding or certification. Ensuring better quality products can be achieved through capacity development, technological improvements, and education and awareness about the importance of quality and its impact on price, and should be linked with Recommendation 4 above on traceability.

Policy Recommendation 13: Caution is expressed about making policy recommendations on certification issues in the absence of any empirical research measuring/proving any actual impact on the poor in developing countries as yet, and in what form such impacts are manifested e.g. on whom, where, for which main products, etc. The first, and overriding policy recommendation on this issue, is therefore to support detailed empirical studies to explore (for a) environmental certification, b) social certification, and c) traceability) the actual and potential trade flows and potential market demand for products under different initiatives, and their relative positive and negative impacts.

However, in the meantime, the potential for the poor to marginalized by certification schemes should be specifically recognized and addressed, and policy recommendations include:

- Draw on lessons from existing non-fisheries initiatives (where possible) and growth in the Corporate Social Responsibility (CSR) agenda.
- Investigation into ways of bringing down the costs of certification and compliance with different initiatives, and support to cover certification/compliance costs in particular fisheries, or at least to provide credit to small-scale producers who may otherwise no have sufficient access to capital
- Focus efforts on increasing traceability of product (as per Recommendation 4 above), rather than social branding and/or certification
- Regional co-operation to work on harmonisation of initiatives (perhaps with Codex Alimentarius as an entry point), with appropriate consultation in developing countries

- Advocacy to increase the relevance of existing initiatives to developing country producers, perhaps by allowing for greater flexibility, and by work on community certification
- Putting in place appropriate mitigating measures to deal with the particular distributional impacts of initiatives in developing countries i.e. in terms of gender impacts and the impacts on producers of different species, in different locations, and accessing different supply chains.

Policy Recommendation 14: Governments and donors should benefit from the credibility and good access that many NGOs have with poor producers, and should work through such NGOs in their efforts to ensure pro-poor trade. An advocacy campaign to draw attention to the role of poor people in international fisheries, and market chains, could help raise the profile of this issue.

Policy Recommendation 15: Governments in Asia should explore and investigate whether there might be ways of attracting activities within the market chain currently located in the EU, which could potentially be lured to re-locate to Asia.

Policy Recommendation 16: Increasing the availability of micro-finance (to provide credit, savings and social security functions) should be urgently supported to ensure that the poor are provided with the opportunity to engage in trade, and to protect themselves from trade variations and vulnerabilities that might arise.

Policy Recommendation 17: Complementary activities should be investigated and supported for those engaged in trade who remain poor, so as to reduce their vulnerability and offer the potential for poverty alleviation.

Policy Recommendation 18: The health impacts associated with the livelihoods of some poor people involved in market chains, such as divers in ornamental fish, require urgent attention. These occupational health and safety issues should also be included in certification schemes.

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This report is Output 3, and a synthesis report, of the project "International Seafood Trade: Supporting Sustainable Livelihoods Among Poor Aquatic Resource Users in Asia (EP/R03/014)". The project was implemented by Poseidon Aquatic Resource Management Ltd (UK), the Network of Aquaculture Centres in Asia-Pacific (NACA) and the STREAM Initiative, in partnership with stakeholders in the seafood and marine ornamental fish trade in Asia and Europe. The project ran from October 2003 to September 2005.

This research project is one of 23 projects funded by EC-PREP, a programme of research sponsored by the UK Department for International Development. All EC-PREP research studies relate to one or more of the six focal areas of EC's development policy in the context of their link to poverty eradication. EC-PREP produces findings and policy recommendations which aim to contribute to improving the effectiveness of the EC's development assistance. For more information about EC-PREP and any of the other research studies produced under the programme, please visit the website www.ec-prep.org.

The report should be referenced as: Macfadyen, G., Phillips, M, Haylor, G., 2005. International Seafood Trade: Supporting Sustainable Livelihoods Among Poor Aquatic Resource Users in Asia (EP/R03/014). Output 3 Synthesis Report with Pro-Poor Trade Research Findings and Policy recommendations. Poseidon Aquatic Resource Management Ltd, Network of Aquaculture Centres in Asia-Pacific (NACA), and the STREAM Initiative.