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Product certification and ecolabelling for fisheries sustainability

Food and Agriculture Organization of the United Nations

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Preparation of this document

This document brings together information on the theoretical foundations, institutional aspects, relationship with international instruments including trade law, and current experiences on product certification and ecolabelling applied to fish and fisheries products. The document also includes an extensive list of related Internet sites.

The document has been prepared in order to provide up to-date information on these complex subject matters to FAO members and others interested in them.

The document is a synthesis of the work of a number of authors. They are Dr Cathy Roheim Wessells, Professor, Department of Environmental and Natural Resource Economics, University of Rhode Island; Kevern Cochrane, Senior Fishery Resources Officer, FAO Fisheries Department; Carolyn Deere, Assistant Director, Global Inclusion, The Rockefeller Foundation (formerly Trade and Biodiversity Policy Fellow at the World Conservation Union-IUCN); Paul Wallis, Senior International Advisor, New Zealand Ministry of Fisheries and Rolf Willmann, Senior Fishery Planning Officer, FAO Fisheries Department. The material authored by Deere, and Cochrane & Willmann has been in some parts published elsewhere. Helpful comments on earlier drafts have been received form Angel Gumy, Audun Lem, Purwito Martosubroto and Erhard Ruckes from the FAO Fisheries Department.

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Abstract

Product certification and ecolabelling are tools that can be used to support fisheries management. These tools, while inter-related and serving the same goal, have important differences as currently applied in fisheries. Product certification is commonly a measure mandated by governments, often mutually agreed upon by regional fisheries management organizations, in order to ensure that only legally harvested and reported fish landings can be traded and sold in the domestic or international markets. The principal objective of product certification (and catch documentation) is to prevent, deter and eliminate illegal, unreported and unregulated fishing in accordance with the 2001 FAO International Plan of Action. Product certification does not necessarily involve a product label at the retail level. Where product certification comes with a label to inform consumers, however, it can influence consumers' choices. This technical paper provides information on important institutional features and characteristics of product certification schemes including: the linkage with management objectives; the level of government involvement; their validation procedures; and, in the international context, how they deal with non-participants of regional fisheries management organizations and arrangements.

Product labels can be mandatory or voluntary and may refer to different kinds of product characteristics or attributes including the product's composition or contents, product quality or form, as well as environmental or social aspects of the product's production process or method. The focus in this publication is on voluntary product labelling that conveys environmental information to consumers. The principal objective of an ecolabelling scheme is to create a market-based incentive for better management of fisheries by creating consumer demand for seafood products from well-managed stocks. This technical paper provides information on the theoretical foundation, institutional arrangements and relationship with international trade law of ecolabelling programmes for fish and fishery products. It also discusses trade access concerns with ecolabelling programmes and examines their operational features including certification criteria, certification costs and chain of custody. The document includes a list of related sites on the Internet.

Executive Summary

It is well understood that fisheries resources are renewable resources. However, many fisheries are overfished, and many others are in danger of becoming overfished. Product certification and ecolabelling are tools that can be used to support fisheries management. These tools, while inter-related and serving the same goal, have important differences as currently applied in fisheries. Product certification is a measure mandated by governments, often mutually agreed upon by regional fisheries management organizations, in order to ensure that only legally harvested and reported fish landings can be traded and sold in the domestic or international markets. Such certification (and catch documentation) does not necessarily involve a product label at the retail level. Where product certification comes with a label to inform consumers, however, it can influence consumers' choices similar to a voluntary ecolabelling programme.

Product labels can be mandatory or voluntary and may refer to different kinds of product characteristics or attributes including the product's composition or contents, product quality or form, as well as environmental or social aspects of the product's production process or method. The focus in this publication is on product labels that convey environmental information, in particular whether the product comes from well-managed fisheries. Different types of environmental labels are distinguished in the literature. The International Organization for Standardization (ISO), for example, distinguishes between three different types of environmental labels. Type I environmental labels are those based on voluntary multi-criteria product life-cycle assessment of environmental effects with verification through a third party. Type II environmental labels are based on self-declared environmental claims by producers, importers and retailers on products and services, and Type III environmental labels provide quantified product information according to pre-set indices, similar to general consumer information on product packages. While ISO's general guidelines for environmental declarations and labels call for product life-cycle assessments (from 'cradle to grave'), in fisheries there are examples of so-called single issue labels such "dolphin-safe" to indicate that dolphins were not killed or seriously injured in the capture of tuna. The focus of this publication is on ecolabels that seek to lead to well-managed fisheries. Occasional reference is also made to current efforts to establish ecolabelling schemes for aquaculture products.

The goal of ecolabelling programmes is to create market-based incentives for better management of fisheries by creating consumer demand for seafood products from well-managed stocks. Ecolabels are seals of approval given to products that are deemed to have fewer impacts on the environment than functionally or competitively similar products. The goal of ecolabelling initiatives is to promote sustainably managed fisheries and highlight their products to consumers. Product claims associated with ecolabelling aim at tapping the growing public demand for environmentally preferable products. Usually a claim appearing on a product must be preceded by a chain of custody exercise that documents that the product was derived from, for example, a fishery certified as being 'sustainably managed'.

Important institutional aspects of ecolabelling schemes are: the scope of the certification process; its procedures to assure chain of custody; the standards for accreditation of certifiers; standards for the certification process; accountability of certifiers; and the costs of certification. This paper

illustrates these aspects and refers to existing schemes and proposals such as the Marine Stewardship Council (MSC) and the Nordic Technical Working Group as examples where appropriate. The criteria that are used for the accreditation process will reflect a compromise between the demands of the consumers and the capabilities and willingness of the producers, and intermediates, to meet those demands. The following matters should be explored when developing criteria: are we assessing the process or assessing the result; what is the consistency with the existing legal framework (domestic and international); is there an appropriate institutional framework for fisheries management, are stocks monitored and assessed; is there consultation and joint decision-making; and are management measures selected and implemented in an appropriate way.

Fisheries managers are using product certification to support their management and conservation efforts. Product certification is being used as an extension of the normal monitoring and enforcement activities. In some circumstances, managers realize that control in the post-harvest sector is also necessary. Where there are particular problems in regulating access (e.g. high value international fisheries), product certification schemes offer possibilities for reducing illegal, unreported and unregulated (IUU) fishing and rewarding fishers that comply with conservation and management rules. If product certification information is passed onto consumers, then prices may also increase.

Product certification schemes also impose a burden on sector participants. To minimize such burden and reduce incentives for non-compliance, governments should try to keep product certification schemes simple with minimal compliance costs. To give security to those later in the process who need to comply with the certification requirements, schemes should be closely connected, from the outset, to the activity of fishing. Important characteristics of product certification schemes include: the linkage with management objectives; their mandatory nature; the level of government involvement; their validation procedures; and, in the international context, how they deal with non-participants of regional fisheries management organizations and arrangements.

Some countries and industry groups have expressed concern that ecolabelling schemes in importing countries add another layer of constraints and competitive challenges. There is recognition nonetheless that ecolabelling can be a useful tool to bring about better resource management. Furthermore, it may create market access opportunities in premium markets as well as making it easier to get development finance and technical resources. But concerns about ecolabelling remain, in particular about the lack of transparency and opportunity for participation in the development of standards that might play a role in the later sustainability assessments. For developing countries that are exporting to developed countries, there are concerns that ecolabelling schemes: are an attempt at disguised protection of domestic industries; restrict market access; and erode national competitiveness for those less able to meet or afford foreign labelling and certification standards.

There is no unanimous view on how ecolabelling schemes fit within international trade rules, including the WTO Agreements. An important area of divergent opinions is the extent to which WTO rules encompass production processes and methods that are not product-related. There are also concerns associated with the establishment procedures and characteristics of international

standards. Ecolabelling will affect international trade. The concerns of developing countries foreshadow the impact of these schemes. The key will be to ensure that the only effects are positive ones: those that converge with the objectives of sustainable fisheries and healthy aquatic ecosystems.

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1. Introduction

Recent FAO assessments of the precarious state of many of the world's fisheries resources seems to have galvanized some non-governmental organizations and private industry toward environmental labelling, or more specifically ecolabelling, as a complement to traditional fisheries management programmes currently in place. Similarly, in order to promote sustainable aquaculture practices and maintain market shares in eco-sensitive export markets, the aquaculture industry is developing ecolabelling schemes for some products such as cultured shrimp.

In parallel, national and international efforts are underway to apply mandatory product certification and catch documentation schemes in support of fisheries management and conservation and to prevent and deter IUU fishing in accordance with the International Plan of Action (FAO 2001). Monitoring has always been a key component of effective fisheries management. But now initiatives are being made to extend monitoring and enforcement into the post-harvest sector. Mandatory product certification schemes now exist, or are under consideration, for several valuable species that are managed by regional fisheries management organizations (RFMOs).

This technical paper provides a general overview of product certification and ecolabelling for fisheries sustainability. It is divided into six sections. The first section "Why Label for Sustainability" looks into the reasons for the recent emergence of labels in the fisheries context. A brief survey of the different types of labels in use is provided. The second section on "Ecolabelling" seeks to define consumer ecolabels, their economic rationale and their key institutional characteristics. Possible criteria for ecolabels are outlined and some experiences from other sectors are recounted.

Section three discusses product certification looking at its origin and economic rationale. Some characteristics of product certification schemes are explored, as are some experiences with them.

The concerns and opportunities that ecolabelling schemes can create in general, and for developing countries in particular, are looked at in section four. Section five looks at the relationship between sustainability labels and international trade rules, in particular the WTO Agreement on Technical Barriers to Trade. The trade implications of seafood ecolabelling are then discussed.

Some concluding thoughts are offered in section six. Ecolabels have the potential to create a suite of positive incentives for fishers and fisheries authorities. These incentives will exist only as long as the consumers have sufficient concern for fisheries to financially support their improvement through higher prices. More importantly, the incentives will exist as long as participants trust the ecolabelling scheme. Maintaining credibility and public engagement will be a critical challenge for providers of ecolabels.

Product certification systems are being used to support fisheries conservation and management initiatives. The value of such systems appears to be high in international fisheries, where there are particular challenges with high value stocks (e.g., bluefin tuna, Antarctic toothfish). Care needs to be taken to keep compliance costs low while maintaining clear custody chains that are validated by the appropriate authorities. It will also be important to ensure that these systems remain closely connected to management measures and, most importantly, the activity of fishing.

2. Why Label for Sustainability?[1]

There already is a common global understanding of the need for improved fisheries management and conservation of marine biodiversity. This follows from the 1982 UN Convention on the Law of the Sea and ensuing instruments, notably, the 1995 UN Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement), the 1995 FAO Code of Conduct for Responsible Fisheries, and the 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement). In addition, Agenda 21 of the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil and the 1992 Convention on Biological Diversity gave additional political support to the goals of improved fisheries management as well as to the conservation and sustainable use of marine biodiversity. Finally, the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) highlights international support for the principle of protecting endangered species.

The potential usefulness of ecolabelling schemes to create market-based incentives for environmentally friendly products and production processes was internationally recognised at UNCED. At Rio, governments agreed to "encourage expansion of environmental labelling and other environmentally related product information programmes designed to assist consumers to make informed choices."[2] Moreover, consumer organizations in many countries, and some international consumer unions, argue that consumers have a right to get information about products offered on the market that is relevant to their values and preferences, especially information pertaining to product safety or impacts on health or the environment.

Recent FAO assessments of the precarious state of many of the world's fisheries resources seem to have galvanized some non-governmental organizations and private industry toward environmental labelling, or more specifically ecolabelling, as a complement to traditional fisheries management programmes currently in place. Similarly, in order to promote sustainable aquaculture practices and maintain market shares in eco-sensitive export markets, the aquaculture industry is developing environmental labelling schemes for some products such as cultured shrimp.

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[1] This section contains material prepared by Cathy Roheim Wessells and Carolyn Deere. The latter's material was prior published jointly by FAO and IUCN (Deere, 1999).
[2] Paragraph 4.21 of Agenda 21.

The goal of ecolabelling programmes is to create market-based incentives for better management of fisheries and aquaculture by creating consumer demand for seafood products from well-managed stocks and aquaculture farms. The increased demand is expected to result in a higher price and/or market share of such products thereby creating an incentive for producers to supply them. Positive incentives can also be created for fisheries managers and international organizations (see Box 1).

Box 1. Incentives Created by Ecolabelling

The Nordic Technical Working Group on Eco-labelling Criteria identified the following positive incentives that are created by ecolabels for products from capture fisheries:

- The fishing community is provided with a market incentive to request that authorities manage fish stocks in a responsible precautionary way.
- Governments are given an incentive to upgrade their fisheries management practices to improve the market situation for national fisheries products.
- FAO is given a further incentive to continue work on adapting the precautionary approach to different situations.
- Authorities… are given an incentive to improve research and the monitoring of their fish stocks and fisheries.

Source: Nordic Technical Working Group on Eco-labelling Criteria. 2000.

Another basis for international ecolabelling efforts is also provided by the FAO Code of Conduct for Responsible Fisheries and other international and national instruments that emphasise the importance of achieving sustainability objectives through market-based measures and improving the identification of the origin of fish and fishery products traded (Box 2).

In recent years, there has been a proliferation of voluntary ecolabelling programmes for various products and sectors, many of which were initiated by NGOs and private industry as well as governments. All ecolabelling schemes share the common assumption that consumers' product choices are not just motivated by price and mandatory product information (e.g. composition; nutritional contents). Other product attributes taken into account by consumers can relate to environmental and ecological objectives as well as economic and social objectives (e.g. fair trade; support to small farmers; discouragement of child labour).

Environmental labelling, in general, has been in existence around the world for many years and is defined as "making relevant environmental information available to appropriate consumers" (U.S. EPA. 1993, 1998). Environmental labelling may be mandatory or voluntary, and covers a wide range of product attributes. Environmental labelling may reflect the impact of the life cycle of a product on the environment, or some portion of the life cycle, such as the impact of the production process, the product's use and/or disposal on the environment.

Box 2: Excerpts from Environment and Trade-related Provisions of Article 11 of the FAO Code of Conduct for Responsible Fisheries

- *Article 11.1.11.* States should ensure that international and domestic trade in fish and fishery products accords with sound conservation and management practices through improving the identification of the origin of fish and fishery products treated.

- *Article 11.1.12*. States should ensure that environmental effects of post-harvest activities are considered in the development of related laws, regulations and policies without creating any market distortions.

- *Article 11.2.3.* States should ensure that measures affecting international trade in fish and fishery products are transparent, based, when applicable, on scientific evidence, and are in accordance with internationally agreed rules.

- *Article 11.2.4.* Fish trade measures adopted by States to protect human or animal life or health, the interests of consumers or the environment, should not be discriminatory and should be in accordance with internationally agreed trade rules, in particular the principles, rights and obligations established in the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade of the WTO.

- *Article 11.2.13.* States should cooperate to develop internationally acceptable rules or standards for trade in fish and fishery products in accordance with the principles, rights, and obligations established in the WTO Agreement.

- *Article 11.3.2.* States, in accordance with their national laws, should facilitate appropriate consultation with and participation of industry as well as environmental and consumer groups in the development and implementation of laws and regulations related to trade in fish and fishery products.

A subset of environmental labelling is ecolabelling that rely on independent third-party verification that the products meet certain environmental criteria or standards (U.S. EPA 1998). Once the product meets those criteria or standards, a "seal-of-approval," or an ecolabel, may be affixed to the product.

Environmental labelling may be conveyed in several forms, including seals-of-approval, single attribute certification, report cards, information disclosures or hazard warnings (U.S. EPA 1993). Such labelling has many potential societal benefits, including environmental improvement, accurate information dissemination to consumers, improved market share for producers, and increased awareness and interest by the public about environmental issues (Kuhre, 1997; Morris and Scarlett, 1996). Accurate information dissemination is necessary for consumers to make informed decisions regarding their purchases, and may lead to increased awareness of and interest in environmental issues. As consumers grow increasingly aware of environmental issues and the role their purchases may play in environmental degradation, market shares of products with some

form of environmental labelling may grow at the expense of products without environmental labelling. This may be true even if the labelled product is more expensive, because informed consumers may be willing to pay more for the product they feel has the least impact on the environment.

The primary focus of environmental labelling has been on manufactured products, exclusive of food. As MacMullen (1998) and Deere (1999) note, little environmental labelling applies to fisheries products. However, that is changing. There are already several national, international, industry-sponsored, NGO-led and consumer-supplier partnership certification and standards schemes under development in the fisheries sector. The range of possible labels is broad. The focus of claims can range from "not over-fished, to no marine mammal by-catch and not over-fished, to no by-catch of any sort and not over-fished, to ecosystem friendly where the entire ecosystem with its complicated food chain is not harmed".[3]

The number of institutions and the diversity of their interests guarantee conflicts in the definition of what constitutes sustainable use of fisheries. This is all the more true since criteria for sustainability of fisheries are complex. Moreover, labels may be labelling entirely different things. For example, a standard indicating that a management system for sustainable fisheries is in place is not the same as certifying that a given consignment of fisheries products was sustainably produced, but both may appear on labels. The risk is that competing claims or conflicting labels will confuse consumers, causing them to lose confidence in the scheme and thus depriving the approach of its value.

The below provides information on current labelling and product certification initiatives relevant to the fisheries sector. These relate to voluntary as well as mandatory labels.

Mark of Origin

In many instances, producers have sought to gain competitive advantage by drawing attention to the origin of fish through labels (see Box 3). Moreover, governments in some instances mandate the labelling of fish by origin and species as a way to enable more effective tracking and identification of fisheries products to aid fisheries management.

Product certification and catch documentation

Mandatory product certification (catch documentation) is sometimes used as a natural extension of normal monitoring and enforcement in fisheries. In some instances catch documentation and certification schemes are accompanied by trade-related measures (such as import and export controls or prohibitions) to reduce or eliminate trade in fish and fish products that do not meet the approved certification requirements. The Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the International Commission for the Conservation of Atlantic Tunas (ICCAT) use trade certification to encourage compliance with conservation and management decisions.

[3] Cathy Roheim Wessells. 1998. *Barriers to International Trade in Fisheries*, Discussion Paper prepared for the First FAO E-Mail Conference on Fish Trade and Food Security, October-November 1998.

Box 3. Labelling for Origin in Spain

The Spanish central and regional governments promote the development of denominations of origin. These denominations are registered with the Ministry for Agriculture, Fisheries and Livestock. Recent examples include:

- *Bonito del Norte*, for Atlantic Bonito caught using traditional gear in the Cantabrian coast.
- *Mexillon de Galicia*, for mussel production cultivated on the coast of Galicia.
- *Rodaballo de Galicia,* for turbot production cultivated on the coast of Galicia.
- *Llagostins de Delta de l'Ebre*, for the triple-grooved shrimp cultivated in the Ebro river delta.
- *Peix blau de Tarragona*, for pelagic fish (sardines, anchovies, etc).

Source: OECD. 2000b.

European Community's Common Organisation of Markets

The European Community has introduced new rules on the minimum level of information to be made available to the consumer for certain fishery products in the Community (Articles 4)[4]. The commercial designation, the production method (aquaculture or wild caught) and the area of capture will have to be marked or labelled on fish products. The new rules are to be implemented as from 1st January 2002.

The European Commission suggests that these rules could stimulate demand because consumers will be less likely to be misled on the origin and value of the product. Furthermore, consumers will be able to avoid fish that may have been produced or marketed in a way that harms conservation (e.g. undersized fish, or fish from certain origins/stocks). Finally, the details regarding the origin of the fish can be used by inspectors to cross check the data with data collected when the fish is landed at port.

'Dolphin Safe' Labels

A variety of producers in the United States have made self-declarations that their tuna is 'dolphin safe'. The Dolphin Protection Consumer Information Act (DPCIA) of 1991 established criteria for the manner in which tuna must be caught. On a voluntary basis, companies can then label their tuna to be 'dolphin safe'. More recently, in June 2001, the countries and regional economic integration organizations participating in the Agreement on the International Dolphin Conservation Program (AIDCP) announced the creation of a unique and far-reaching programme to certify and label tuna caught in the eastern Pacific Ocean consistent with the AIDCP and without mortality or serious injury to dolphins.[5]

[4] Council Regulation No 104/2000 of 17 December 1999 on the common organization of the markets in fishery and aquaculture products. Published in *Official Journal of the European Communities*, No. L 17, 21.1.2000, p. 22.

[5] Countries and regional economic integration organizations participating in the AIDCP include Colombia, Costa Rica, Ecuador, El Salvador, the European Union, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, United States of America, Vanuata and Venezuela.

Organic Seafood Labels

There are also efforts underway by fishing or food companies in some parts of the world to label fish as farmed or wild, and more recently to win marketing niche with so-called 'organic seafood'. Organic labelling usually signifies that food has been produced without artificial inputs—especially synthetic fertilisers and pesticides—and has been grown using environmentally sound farm management techniques.[6] There are currently two pilot projects monitoring Alaska seafood to help set standards to certify wild salmon as organic with the hope of breaking into the organic foods market.[7] There are also ongoing initiatives and pilot projects for organic aquaculture (see Annex B for related sites in the Internet).

Nordic Technical Working Group on Fisheries Eco-Labelling Criteria

The Nordic Technical Working Group on Eco-Labelling Criteria proposed an arrangement for the voluntary certification of products of sustainable fishing that was adopted by the Nordic Ministers of Fisheries in August 2001. The Working Group's recommendations are based on the FAO Code of Conduct, the FAO's Technical Guidelines for Fisheries Management and the Precautionary Approach, and the Biodiversity Convention.

The Working Group developed criteria for use in the North-eastern Atlantic region. The main elements of the proposed criteria are: a fisheries management plan; the availability of regular scientific advice; the existence of pre-agreed management actions when precautionary reference points are reached; efficient monitoring and control systems; destructive fishing practices are not used; discards are at a minimum; and that ecosystem issues are duly considered.

Marine Stewardship Council (MSC)

The MSC is an independent, not for profit, international body headquartered in London, UK. Initiated by the World Wide Fund for Nature (WWF) and Unilever, a large fish retailer, MSC aims to promote sustainable and responsible fisheries and fishing practices worldwide. The MSC has, in collaboration with a selected group of parties interested in and experiences with fisheries issues, established a broad set of Principles and Criteria for Sustainable Fisheries. Fisheries meeting these standards will be eligible for third party

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[6] International Guidelines for the Preparation, Processing, Labelling and Marketing of Organically Produced Foods have been approved by the Codex Alimentarius Commission in July 1999. The Codex Alimentarius Commission is the body responsible for compiling the food standards, codes of practice, guidelines and recommendations that constitute the Codex Alimentarius; it operates under the auspices of the Food and Agriculture Organization (FAO) and the World Health Organization (WHO); see: http://www.fao.org/WAICENT/FAOINFO/ECONOMIC/ESN/codex

[7] Proponents of organic labels for wild salmon argue that Alaskan salmon is intrinsically organic and that, provided it is free of prohibited additives throughout its life cycle, it should qualify as organic under the criteria for certification set out by the U.S. federal Organic Food Production Act of 1990. Already, some farmed salmon has been labelled organic because farmers could demonstrate a controlled environment and a diet consistent with the salmon's natural food. The organic food industry has been growing 20-24 percent annually over the last nine years compared to 3-5% growth of the conventional grocery industry. In October 2001, the U.S. National Organic Standards Board recommended against allowing fish harvested from the wild to be labelled "organic." The decision is likely to have been based on the fact that as wild fish swim about freely their diet and possible exposure to contaminants cannot be controlled. For further information see www.fis.com (October 18, 2001) and Dan Joling. 1999. "Organic Seafood Cooking: State Backs efforts to Win Marketing Niche", Associated Press, June 1999.

certification by independent certifying bodies accredited by the MSC. On a voluntary basis, fishing companies and organizations are expected to contact certifiers in order to have a certification procedure carried out. Fish processing, wholesaling and retailing companies will be encouraged to make commitments to purchase fish from certified fisheries only. Unilever, for example, has pledged to buy only MSC certified fish by 2005. By opting to use the MSC logo, producers of fishery products are expected to give consumers the option to buy fishery products that have been derived from sustainable, well-managed sources. The MSC offers stakeholders the opportunity to publicly endorse the organization's mission, by signing a Letter of Support.[8]

Box 4. Certification by the Marine Stewardship Council

Fisheries certified: US Alaska salmon; UK Thames herring driftnet; South West (England) mackerel handline fishery and Burry Inlet cockle fishery (South Wales); Western Australia rock lobster; and New Zealand hoki;

Fisheries undergoing full assessment as part of the MSC Certification Process: US Alaska pollock; Mexico's Banco Chinchorro lobster and Baja California spiny lobster; Canada's British Columbia salmon; and South Georgia Patagonian toothfish fishery.

Additional fisheries are at different stages in the certification process.

Source: www.msc.org

The Marine Aquarium Council (MAC)

MAC, a non-profit international organization based in Hawaii (U.S.A.), brings together representatives of the aquarium industry, hobbyists, conservation organizations, government agencies and public aquariums. MAC aims at conserving coral reefs by creating standards and educating and certifying those engaged in the collection and care of ornamental marine life from reef to aquarium. MAC has established and published best practice guidance and core performance standards for the ecosystem and fishery management, the collection, fishing and holding and the handling and transport of marine aquarium organisms. MAC does not directly undertake certification to its core standards. Instead it accredits independent third-party organizations (certifiers) to undertake this work. While no certifier is yet accredited under the MAC Certification Scheme, several certifiying firms have expressed interest in becoming accredited.[9]

Global Aquaculture Alliance (GAA)

GAA, a U.S. based non-profit international aquaculture industry alliance, has developed the Responsible Aquaculture Program (RAP) to provide certified products to those who want assurance that it is environmentally responsible to buy farm-raised seafood. The

[8] See www.msc.org. Information on the MSC's Principles and Criteria for Sustainable Fishing are available on that website including a list of companies and organizations that support the MSC's mission.
[9] http://www.aquariumcouncil.org/

Program is also intended to improve the efficiency and long-term sustainability of the aquaculture industry. RAP's core is a system of certifiable standards for sustainable aquaculture farming. The Program encourages both small- and large-scale producers, processors, marketers and retailers to implement management practices that address these standards. While RAP's initial focus is on shrimp aquaculture, many of its elements are expected to be applied to other species in future. GAA has developed nine individual codes of practices for responsible shrimp farming ranging from pond siting and management to the use of chemicals and community and employee relations. A label stating Certified - Best Aquaculture Practices is obtained in a 3-stage process from a self-assessment audit, to an environmental management plan and inspection, to certification and labelling. RAP is nearing completion in the near future. [10]

International Organization for Standardization (ISO)
General guidelines for environmental labels and declarations not addressed to any specific product category or sector are being developed by ISO, a non-governmental organization. ISO is a worldwide network of national standards institutes from some 130 countries, one from each country, with a central office in Geneva, Switzerland. For each country, the member body of ISO is the national body "most representative of standardisation in its country". This national body may be from either the private or government sector. ISO's mission is to promote the development of standardisation and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity.

Environmental labels and declarations are one of the tools of environmental management, which is the subject of the ISO 14000 series.[11] This series does not prescribe environmental performance levels. Rather, to claim compliance with ISO 14000 standards, firms are required to establish an environmental policy and to set targets and objectives for environmental management performance.[12] ISO tends to be attractive to industry because it supports voluntary, market-based, measures as against traditional government command-and-control measures.

The ISO Sub-Committee on Environmental Labelling is responsible for developing standards in the field of environmental labels and declarations. The objective of the ISO 14 020 series is to set standards for the design and implementation of different types of environmental labelling programmes but not to lay down specific certification standards.

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[10] See http://www.gaalliance.org/

[11] ISO 14000 is a series of international, voluntary environmental management standards. Developed under ISO Technical Committee 207, the 14000 series of standards address the following aspects of environmental management: Environmental Management Systems (EMS), Environmental Auditing & Related Investigations (EA&RI), Environmental Labels and Declarations (EL), Environmental Performance Evaluation (EPE), Life Cycle Assessment (LCA), and Terms and Definitions (T&D). (For further details, see http://www.tc207.org/faqs/index.html)

[12] Additional incentives to ISO 14000 implementation are: reduced environmental management costs due to the efficiencies of a systemic approach; potentially fewer regulatory violation and penalties since business would in theory better understand its environmental performance; improved management of environmental risks and liabilities possibly leading to reduced insurance premiums; meeting customer demand; and improving public image.

ISO has published general principles for environmental labels as well as specific guidelines for three different types of environmental labels: Type I labels are based on voluntary multi-criteria product life-cycle assessment of environmental performance with third party verification and certification. Type II labels are based on self-declared environmental claims by producers, importers and retailers on products and services. Type III labelling is based on a specialised third party scheme using quantified product information labels and pre-set indices. [13] In the literature, the term "ecolabel" or "ecolabelling" is often confined to ISO Type I labels (e.g. OECD 1997).

3. Ecolabelling

3.1 What are Ecolabels?[14]

Ecolabels are seals of approval given to products that are deemed to have fewer impacts on the environment than functionally or competitively similar products.[15] The rationale for basic labelling information at the point of sale is that it links fisheries products to their production process.

The goal of ecolabelling initiatives is to promote sustainably managed fisheries and highlight their products to consumers. Product claims associated with ecolabelling aim at tapping the growing public demand for environmentally preferable products. Ecolabels generally rely on life-cycle assessment to determine the environmental impact of a product 'from cradle to grave'.[16] Usually claims appearing on a product must be preceded by a chain of custody exercise that documents that the product was derived from, for example, a fishery certified as being 'sustainably managed'.

Prior to certification, a set of 'sustainability' standards or criteria against which a fishery is to be evaluated must be developed. Achieving and identifying 'sustainability' in fisheries is a complex process. The acceptance and credibility of standards is closely related to how the standards were developed, the standards themselves, and the

[13] ISO. 1998. Environmental labels and declarations- General principles. ISO 14020, Geneva; ISO. 1999. Environmental labels and declarations – Type I environmental labelling – Principles and procedures. ISO/DIS 14024. Geneva; ISO. 1999. Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling). ISO/DIS 14021. Geneva; ISO.2000. Environmental labels and declarations – Type III environmental declarations. ISO/WD/TR/14025. ISO has also published related materials such as on life cycle assessment procedures. ISO standards pass through a number of stages prior to publication. These include the Working Draft (WD), Committee Draft (CD), Draft International Standard (DIS), Final Draft International Standard (FDIS), and approval and publication stages. At the DIS stage, standards are submitted to ISO Members for a vote. At the FDIS stage, the standards that are submitted for a vote, are also made public. (http://www.iso.ch).

[14] This section contains material from Deere (1999).

[15] See OECD. 1991. *Environmental Labelling in OECD Countries,* OECD Report 12*,* written by James Salzman, OECD: Paris & Karen West. 1995. *Eco-labels: The Industrialisation of Environmental Standards*, *The Ecologist*, Volume 25, No. 1. See also Erika Preiss. 1997. *An Eco-label for Shrimp: Minimizing Potential Trade Barriers*, mimeograph prepared for International Environmental Law Clinic at NYU School of Law.

[16] See Elliot B. Staffin. 1996. "Trade Barrier or Trade Boon? A Critical Evaluation of Environmental Labelling and its Role in the 'Greening' of World Trade", *Columbia Journal of International Environmental Law*, Volume 21, No. 2, p221.

accrediting or certifying process by which organizations are evaluated against the standard.[17]

Ecolabelling programmes usually fall into one of the following categories:

1. *First party labelling schemes:* These are established by individual companies based on their own product standards. The standards might be based on criteria related to specific environmental issues known to informed consumers through the media or advertising. This form of ecolabelling can also be referred to as 'self-declaration'.

2. *Second party labelling schemes:* These are established by industry associations for their members' products. The members elaborate certification criteria, sometimes by drawing upon external expertise from academia and environmental organizations. Verification of compliance is achieved through internal certification procedures within the industry, or employment of external certifying companies.

3. *Third party labelling schemes:* These are usually established by an initiator (public or private) independent from the producers, distributors and sellers of the labelled products. Products supplied by organizations or resources that are certified are then labelled with information to the consumers that the product was produced in an 'environmentally friendly' fashion. The label (seal) is typically licensed to a producer and may appear on or accompany a product derived from a certified fishery or producer. Producers are usually expected to track the 'chain of custody' of their products in order to ensure that the products derived from the certified fishery are in fact those that are so labelled.

In some instances the initiator accredits other organizations to be the certifier. An accrediting body provides some degree of assurance that the certifier has been trained by an accredited training programme and is qualified to perform an evaluation against a specific set of criteria in a given field. While the criteria may be established through a negotiation process among the various interested parties, they are often motivated by the objectives of the initiators of such schemes. Environmental organizations and consumers generally prefer ecolabelling schemes of this type because of the heightened confidence that private commercial interests will not compromise the criteria applied to the schemes and strict compliance with them based on verifiable and impartial certification procedures.

Environmental labels can be either mandatory or voluntary. Mandatory labels are government-backed and could act as a trade restriction for foreign producers (i.e., imports may be rejected if they do not comply).[18] Imports of products that do not comply with voluntary labels are not restricted. In the case of voluntary labels, it is up to the

[17] EDF. 1997. *Global Deforestation, Timber and the Struggle for Sustainability: Making the Label Stick*, EDF: Washington, D.C.

[18] WTO. 1997. *Eco-labelling: Overview of Current Work in Various International Fora*, Note by the WTO Committee on Trade and Environment, WT/CTE/W/45, WTO: Geneva; OECD. 1997a. *Processes and Production Methods (PPMs): Conceptual Framework and Considerations on use of PPM-based Trade Measures*, OECD, Paris; OECD. 1997b. *Eco-labelling: Actual Effects of Selected Programmes*, OECD, Paris.

manufacturer to decide whether or not to apply for certification of the product, and the consumer's choice whether to buy (or import) an ecolabelled product. Voluntary ecolabelling programmes may be funded and supervised by the private sector. Some, however, are government sponsored.[19]

3.2 The Theoretical Foundation of Ecolabelling: Economics of Information[20]

The underlying economic theory for labelling products can be traced back to Stigler's (1961) work on the economics of information. In Stigler's work, information is portrayed as a valuable resource, in particular, information on prices. Different sellers may ask varying prices for the same product. Determining the pool of sellers, and prices demanded by each seller for a good, is a time-consuming task. Thus, there is a "search cost" attributable to time and energy expended by the consumer in finding the seller with the lowest price. Of course, the higher valued the good is, the greater might be the benefit of searching; conversely, the higher one's income, the higher the opportunity cost of searching. Hence, a consumer searches for information (lowest price) until the marginal benefit of additional information equals the marginal cost of obtaining the additional information. As a result, there is a market for information based on the consumer's willingness to pay for information (or demand), and producers' marginal cost of providing information (or supply).

Stigler specifically did not, however, discuss search costs in the context of finding the highest quality product. Nelson (1970; 1974) contends that the problem of determining quality levels in the market is even greater than that of determining price levels since information about quality is usually more difficult to obtain than information on prices. In addition, since it is often impossible for buyers to tell the difference between high quality and low quality products, there is an incentive in some markets for sellers to promise high quality products but market poor quality products, as pointed out by Akerlof (1970). Thus, the consumer's incentive to gather information may be greater for quality than for price in some markets since the consumer faces less uncertainty with respect to prices (Andrews 1992).

Nelson distinguished between two types of products: search goods and experience goods. One can determine the quality of a product by searching, where quality might be defined as price, size of package, or colour. These are search goods. Nelson's search goods are defined similarly to Stigler's definition, as those goods that consumers can determine quality of by examining or researching the product. Consumers' acceptance of producers' claims will vary by the nature of the characteristic advertised. Advertising may be used by producers to provide consumers with information on the lowest prices among grocery stores in their area and other information. This will lower the consumer's search costs. Search characteristics that can be readily checked by the consumer before purchase are hypothetically the most accurately advertised.

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[19] Germany became the first country with a government-sponsored ecolabelling programme when it began its Blue Angel label in 1977. The Blue Angel has appeared on products ranging from recyclable paper to detergents, vacuum cleaners and oil and gas heating appliances.

[20] Cathy Roheim Wessells wrote this section.

One also discerns quality by experiencing, such as taste, durability, or maintenance needs. These are experience goods. Now consumers cannot determine a product's quality until they buy and use it. Consumers will evaluate those goods they repeatedly buy in somewhat the same manner as search goods; bad-tasting food will quickly lose its share of the consumer's budget. The producer elects to undertake advertising as long as (s)he sees this as a means to increase market share. In addition, producers will generally disclose only information advantageous to them. This competitive disclosure process results in explicit claims for all positive aspects of goods, and causes consumers to be suspicious of goods without claims (Aldrich 1999).

Grossman (1981) assumes that consumers know producers will make the most favourable claim possible for their products. Furthermore, producers who can make a quality claim will do so and consumers will assume that any firm not making a claim has low-quality products.

Caswell and Mojduszka (1996) add credence goods to the list of definitions of goods. In the case of credence goods, one cannot determine quality either through search or experience, such as the nutritional value of a food or production process. Credence goods are more complicated in that consumers cannot determine the product's quality even after they buy and consume it. In this case we truly have an imperfect market because first, there is asymmetry in possession of knowledge between producer and consumer, and second, because it is not practical for consumers to assess the quality of the product. For example, food safety and nutritional information are considered to be attributes of credence goods, since an individual consumer will not find it practical to test the protein content or food-borne pathogen contamination level of food (Caswell and Mojduszka 1996). The environmental friendliness of a good is also an attribute of credence goods. According to Caswell (1998), labelling can transform credence attributes to search attributes, which allows the consumer to judge quality of the good before they purchase.

Labelling is often the means by which producers provide information to consumers to address the difficulties of a market for a good that has credence attributes, so that consumers may make an informed decision. However, because producers have information that consumers do not, often it is necessary that a third party intervene to ensure that the producer provides the consumer with truthful information. In this climate, either third-party certification is used, or there may be government regulations. Third-party certification is defined as certification done by a body that is not in any way involved in the production, marketing, or consumption of the good in question. This may be a private organization or a public organization. Governmental regulations can mandate labels, formats for labels or controls on voluntary industry claims.

The U.S. Nutrition Labelling and Education Act of 1990 (NLEA) mandates a standardised form of nutrition information with data on macro- and micronutrients found in food. In addition, voluntary claims such as "low fat" are required to conform to the official definition of low fat, such that "low fat" means the same regardless which

company claims it for their product and what product has that attribute (Caswell and Modjuszka 1996).

Within the seafood market, consumers may search for products with particular attributes by going to different markets and observing the difference in prices, and perhaps the visible differences in quality (cleanliness of counter, knowledge of wait staff, colour of product, etc). Experience is built up from tasting seafood; perhaps it tastes good to a consumer, or it does not. If one product has an ecolabel regarding its production process, an attribute not easily determined by the consumer, the consumer may choose to purchase the ecolabelled product, even if all other quality attributes are the same for the non-ecolabelled good. Similarly, the lack of an ecolabel on other seafoods may cause consumers to be suspicious of those products.

Recognizing that attributes of goods have value to consumers, Lancaster (1971) characterised consumer demand for products instead as consumer demand for a bundle of attributes, where each product has one or more attributes. The essence of Lancaster's framework is that a good by itself does not yield utility, but it possesses characteristics (attributes) that create utility.

Kinsey (1993) reflects this characteristic of goods as a bundle of attributes with the graph in the figure below. On the axes of this graph are the prices of different quantities of an attribute per unit of food, and quantity as measured by the quantity of an attribute per unit of food (A/Q).

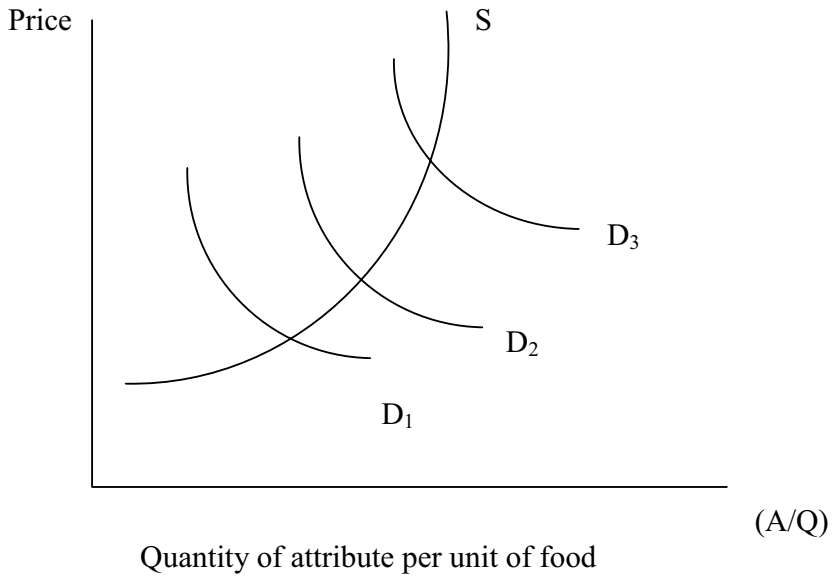

Figure 1. Demand and Supply of Attributes per Unit of Food

Supply, S, represents quantity of attribute per unit of food available in the market as price increases. The attribute might be increasing levels of quality as measured by environmental friendliness, and the growth of marginal cost implies an increase in marginal costs as the industry supplies increasing quantities of environmental friendliness. The demand schedule, D, represents consumers' willingness to pay for various amounts of attributes per unit of food, which reflects their perceptions of the benefits they will receive from those attributes (Caswell, 1998), at varying income levels. The demand curves are downward sloping to signify that for any level of income, the lower the price of quality per unit of food, the more consumers are willing to purchase. D_3 represents the highest income level, while D_1 represents the lowest income level. Thus, if improved quality is a superior product, then demand will shift up as the consumer becomes more affluent.

As Kinsey notes, if information on the quality per unit of food is evenly distributed between producers and consumers, then the intersection of the demand and supply curves will signal efficient market equilibrium. If, however, information is asymmetric (*e.g.* producers have more information than consumers), then this market equilibrium will not be efficient. An example might be when producers cheat on quality standards by making claims of high quality when it is not true. This is where mandatory, or third-party labelling, can create an efficient market by removing the asymmetry of information between producers and consumers.

Lancaster's work has been the underlying theory which is used as justification for much of the economic analysis that has been done evaluating consumers' preferences for seafood safety (Wessells and Anderson, 1995; Wessells, Kline and Anderson, 1996), seafood ecolabelling (Wessells, Johnston and Donath, 1999) and other seafood attributes (Holland and Wessells, 1998). By viewing the characteristics of a seafood product as quality, safety, price, production process, taste, colour, etc., one can evaluate the marginal value of each of these attributes to the consumer

The asymmetry of information on the environmental friendliness of goods between producers and consumers is often reflected by consumers who: 1) may not have sufficient information with which to make decisions; 2) may not know the limitations of the information they receive; or, 3) do not have the knowledge needed to evaluate the information.

Environmental labelling is used to provide information to the consumers. Often the information is presented in the format of self-declarations (Kuhre, 1997). Self-declaration labelling, or producer claims about environmental attributes of the product, is a form of advertising. However, there are several potential problems with self-declarations. For example, there may be confusion if there is not a common definition. "Environmentally friendly" or "sustainably harvested" have no clear meaning (Cude, 1993). Many of the environmental claims made by manufacturers are subject to interpretation; at worst, they are potentially deceptive or misleading. Recent focus groups conducted at the University of Rhode Island (Wessells, Donath and Johnston, 1999) indicated that any environmental labels on seafood must be specific and understandable. "No over-fishing" was

information that people felt comfortable with; other phrases, such as "eco-system friendly," were too vague.

Potential consumer confusion regarding environmental labels may result from a label that obscures other environmental damage done by the product. For example, use of cloth diapers rather than disposable diapers does reduce the amount of solid waste generated, but increases use of water and detergent. Looking at the dolphin-safe label, while we all now know that dolphins are protected from mortality by tuna fleets, one cannot say that this practice has led to a healthier marine eco-system. Dolphins may be protected because boats are avoiding tuna schools associated with dolphins; however, anecdotal evidence suggests that some of these boats are setting nets on juvenile tuna.

In the U.S. the Federal Trade Commission (FTC) has stepped in to regulate environmental advertising to assure truth in advertising; in other words, ensuring that the consumer is not deceived by environmental claims. The FTC has stipulated that environmental advertising must be factual and non-deceptive, verifiable, and scientifically relevant and non-trivial. Self-declarations are not easily verified by consumers. This is one of the reasons that the U.S. Congress passed the Dolphin Protection Consumer Information Act of 1990 after the canned tuna companies began using the dolphin-safe label. The Act requires that a firm using the dolphin-safe label must be able to verify that the tuna is indeed dolphin-safe (Wessells and Wallstrom, 1993). Thus, verification is not done by the consumer themselves, but by the government.

Thus, environmental labelling, in the form of self-declarations often preserves the information asymmetry between producers and consumers. An alternative to self-declarations is ecolabelling defined here as programmes which are voluntary and with independent third-party verification that a good meets specified environmental criteria or standards. If it meets those criteria, a "seal-of-approval" may then be affixed to the product (U.S. EPA, 1998). The criteria are publicly available and uniformly applied.

Third-party consumer ecolabelling can serve three functions in the marketplace: 1) it can provide independent evaluation and endorsement of a product; 2) it can act as a consumer protection tool; and 3) it can be a means of achieving specific environmental policy goals. An ecolabel organization may be a governmental agency, a quasi-governmental body, or a private entity. This organization owns its environmental endorsement symbol or trademark. It licenses the use of its mark for a specified period of time and a specific fee. An ecolabelling organization has usually three tasks: standard setting, certification, and marketing. Standard setting determines the environmental standards a product must meet to qualify for the ecolabel. Certification determines whether a given product meets those standards. Marketing develops consumer awareness of and trust in the claim. Marketing may of course also be done by the producer of the product that is ecolabelled, but the ecolabelling organization must also market the label to consumers so that they will demand to see it on the products they buy.

The effectiveness of ecolabels depends on consumer awareness of the label, and consumer acceptance of the label (trust and understanding). Awareness is generally the result of a successful promotion (National Wildlife Federation, 1996). Acceptance depends on: 1) public understanding of the relevant issues; 2) public understanding of the connection between relevant issues and product choices; 3) an accurate and clearly understood presentation of the product attributes; and 4) an understanding of what specific actions (*e.g.* purchase decisions) individuals can take in response to the information provided by the labelling programme (US EPA, 1994). For ecolabelling initiatives to be broadly accepted, the issues surrounding labelling must become prominent so consumers will actively look for the labels. Thus, ecolabelling programmes perform a public education role as well. A labelling programme is also more likely to be accepted if it is offered by a credible source.

3.3 Economic Analysis of Ecolabels[21]

There has been very little theoretical analysis of the economics of ecolabelling performed to date. Theoretical analyses include Mattoo and Singh (1994), Sedjo and Swallow (1998), Swallow and Sedjo (1999), Nimon and Beghin (1999a), and Gudmundsson and Wessells (2000). Empirical analyses include Nimon and Beghin (1999b), Wessells, Johnston and Donath (1999a, 1999b), and Johnston, Wessells, Donath and Asche (2001).These papers have investigated the effects of ecolabelling on the environment to determine if the ecolabels will achieve their stated objectives of having a positive environmental impact. Swallow and Sedjo (1998), and Sedjo and Swallow (1999) look at forest ecolabelling, while Gudmundsson and Wessells (2000), Wessells, Johnston and Donath (1999a, 1999b) and Johnston, Wessells, Donath and Asche (2001) focus on fisheries. Nimon and Beghin (1999a, 1999b) address ecolabelling of textiles.

Theoretical Analyses

Mattoo and Singh (1994) discuss ecolabelling in general, unattached to any particular commodity. They argue that, in certain cases, ecolabels can lead to an adverse effect on the environment. In a partial equilibrium model there is assumed to be a homogeneous product which can be produced by two methods; one environmentally friendly, one environmentally unfriendly. In addition, there are two types of consumers, those who are concerned about the environment and those who are not. The key assumption is that concerned consumers are willing to pay more for a product that they are sure has been produced by environmentally-friendly methods than for the same product produced in environmentally-unfriendly methods. Unconcerned consumers react strictly to price, purchasing whichever good is least costly.

If demand for the environmentally friendly product is greater than its supply, the price of the ecolabelled product will increase relative to the price of the environmentally unfriendly product. This will lead to the standard result where there becomes an economic incentive for producers of environmentally unfriendly products to switch to environmentally friendly production.

[21] Cathy Roheim Wessells wrote this section.

However, Mattoo and Singh find that, at a particular equilibrium price, if the proportion of consumer demand for the environmentally-friendly good is smaller than the proportion of supply of that good, then ecolabelling may lead to increased prices for unlabelled goods, and hence increased output of products produced by methods detrimental to the environment. In other words, if there is little demand for the environmentally-friendly good relative to the unfriendly good, then it is possible that the price of environmentally-friendly goods would, in equilibrium, be less than for environmentally-unfriendly goods. This would lead the unconcerned consumers to buy the friendly goods, until price arbitrage is created where the prices of friendly and unfriendly goods are the same. This new equilibrium price based on differentiated goods will be higher than the equilibrium price under no differentiation - causing increased production of both the friendly and unfriendly product.

Swallow and Sedjo (1999) use a general equilibrium framework to analyze the effects of mandatory ecolabelling of forest use on the amount of sustainably harvested acreage of forest. The focus of their analysis is whether ecosystem quality, on a regional or global scale, will necessarily improve after the economy adjusts sources of supply to the demands generated by the implementation of ecolabelling. While the authors admit the results from the general case are ambiguous, the analysis shows that there is a potential for certification to lead to reallocation of land away from forestry toward less ecologically sustainable uses, with the possibility of sufficient impact to diminish global biodiversity. If the forest owner is faced with the mandatory choice of becoming certified or removing his products from the market, the forest owner may well choose to reallocate his land to another productive use. That other use may or may not be beneficial to the forest ecosystem.

A conceptual analysis is done under a voluntary scheme in Sedjo and Swallow (1998). The focus is on whether the market will necessarily generate a price differential for labelled and unlabelled wood products. Sedjo and Swallow show that the average price of wood will increase if certification is costly or if eco-consumers generate a sufficiently large increase in demand. These factors could then result in a price increase in labelled wood, large enough to create an increase in demand for non-labelled wood through a substitution effect, putting pressure on supplies of non-labelled wood with potential negative consequences for forest ecosystems. Alternatively, given that certification is voluntary, the forest owner may choose to supply uncertified wood, and that practice may be less damaging to the ecosystem than the alternative use which would have been employed under mandatory certification. In that respect, voluntary certification may be better than mandatory certification; it prevents the land from being allocated to an even less sustainable ecosystem under something other than timber production.

Gudmundsson and Wessells (2000) investigate the role of existing fisheries management systems in success of voluntary seafood ecolabelling programmes, using two critical assumptions. First, it is assumed that there will be a price premium paid for ecolabelled seafood. Second, the products must be differentiable, only by the label (quality in every other sense is the same). Using a static framework, the authors find that if a simple price

premium exists for ecolabelled seafood, where that price premium is constant regardless of stock size, the ecolabel will not be effective in providing fishermen or fisheries managers with a greater level of resource sustainability. Even in the case of the optimally controlled fishery, the effort level increases leading to higher exploitation rates and lower stock size. If the premium is instead one in which the highest premium is paid at lower stock sizes, and diminishes as stock size grows, the optimally controlled fishery would decrease its effort levels, while the limited access fishery would either increase effort or increase costs by input stuffing.

The analysis is continued with a dynamic bioeconomic model, in which it is assumed that the fisheries manager's objective is to maximize consumer and producer surplus. In this case, if the profit margin of the fishery is low and the premium is high, the incentive to respond to the premium is great. If, however, the fishery is already profitable and the premium is relatively small, there is less incentive for the owner of the fish stock to respond to the premium (or the ecolabel).

One of the reasons for ecolabelling programmes is to create an incentive to restore overexploited fisheries, by rewarding management schemes that aim to rebuild fish stocks. The paper also looks at the results if an ecolabel is awarded to a fishery with a stock size below that associated with maximum sustainable yield, but at levels high enough to be paid a premium. The results from the analysis show that the rate of harvest is set lower for the labelled fishery, allowing the stock to rebuild faster, depending on the shape of the premium function and the relative magnitude of the premium to marginal revenue.

Awarding a label to a product from one fishery can cause adverse effects on other non-labelled fisheries. This happens if the premium causes an increase in demand for the non-labelled product, resulting in price increases for the non-labelled product.

Nimon and Behgin (1999a) provide a formal analysis of the welfare and trade implications of ecolabelling schemes. The analysis is of a textile market between an industrialized North and a developing South, and the ecolabelling involves production-process standards. In their stylized model, the North imports conventional textile goods from the South and produces conventional textile goods as well. It is also assumed that the North has a tariff in place on imports from the South. There are fixed costs of certification.

The results from their analysis of comparative statics is that a labelling programme in the North, without participation by the South, is detrimental to both Northern and Southern producers of conventional textiles. Consumers benefit from a larger choice set, but demand for conventional textiles, including imports, decreases. The presence of a specific tariff worsens the decline of imports of conventional textiles. Some of the negative impact on the domestic conventional textile industry can be mitigated by increases in the tariff.

If the South also implements an ecolabel, the South's producers of conventional textile are even worse off than before, but the South regains market share in aggregate. The issue then becomes harmonization of ecolabels and production-process standards. The analysis assumes that the quality of the ecolabelled good in the South is lower than the quality of the ecolabelled good in the North due to a lower marginal damage of pollution in the South's environmental quality. Given that divergence in quality, if both the North and South have ecolabels, suppliers in the South would rather harmonize upward, as long as the increase in demand dominates the loss caused by increasing marginal costs due to higher standards. Harmonizing downward would benefit the South's conventional textiles industry. Upward harmonization imposes further competitive discipline on the North's ecolabelling industry, thus benefiting consumers with lowered prices.

Empirical Analyses

There appear to be few empirical studies of the market for ecolabelled products, at least within the economics literature. Three of the most recent include Nimon and Beghin (1999b) investigating the market for ecolabelled textiles, while Wessells, Johnston and Donath (1999b) and Johnston, Wessells, Donath and Asche (2001) investigate consumer demand for ecolabelled seafood in the U.S. and Norway.

Nimon and Beghin (1999b) investigate the price premium for "organic cotton," "environmentally friendly dyes," and "no-dye" apparel. The data used are price and characteristic data for apparel from U.S. retail mail order catalogs and Internet catalogs, collected between May and October 1996. The data set contained 794 observations including 364 observations of conventional apparel and 430 observations of organic apparel. Of those observations, 117 contained both synthetic/cotton fiber blends.

The analysis is based on a hedonic price function, in which the price of the product is regressed on explanatory variables that account for the various attributes of the good. In this analysis, the variables used to explain price included type of item (pants, socks, T-shirts, etc.), catalog, gender (male, female, unisex), age (baby, youth, adult), dye type (low impact, no dyes), organic cotton categories and shares of organic cotton and synthetic fibers in total fiber content. The results identify a robust premium for organic cotton, with an average premium of 33.8% of total apparel price. The authors could not find any evidence of a premium associated with environmentally friendly dyes, however, there is a discount for the no-dye attribute which mostly reflects cost savings from simplified production.

Wessells, Johnston and Donath (1999b) investigate the demand for ecolabelled seafood (cod, cocktail shrimp and salmon, specifically) in the U.S. market. The methodology used involved gathering data with a survey administered to a random sample of 1,640 U.S. consumers by telephone. The survey was designed so that respondents compared certified (i.e. with an ecolabel) and uncertified (i.e. without an ecolabel) products, whose prices differed according to a premium paid for the certified product. With the exception of differences in certification and price, the two products were identical in all regards, including quality and freshness. Certification was described as a "program… that would

label seafood in order to guarantee that it is caught under strict controls that prevent too much fishing. Certified seafood will have [a] new label that guarantees no overfishing. Uncertified seafood will not have this guarantee."

Consumers were presented with three paired comparisons, in random order, for salmon, cod and cocktail shrimp. The base price varied for each species, depending on the range of common retail prices for each product at the time of the survey. Premiums ranged between -$2.00 and $5.00 per pound. The certifying agency alternated between the World Wildlife Fund (WWF), the National Marine Fisheries Service (NMFS), and the Marine Stewardship Council (MSC). It is important to note that certified salmon was compared to uncertified salmon, certified cod to uncertified cod, etc. The survey did not ask respondents to choose, for example, certified cod versus uncertified salmon.

Data were collected in the summer of 1998 on the household's geographic location, trust in specific agencies as providers of certification, seafood consumption habits, household seafood and grocery budgets, memberships in environmental organizations, perceptions of the status of Pacific salmon and Atlantic cod stocks, and a variety of other factors with potential impact on preferences for labelled seafood products. On average, about 70% of respondents chose ecolabelled shrimp, salmon or cod over non-ecolabelled.

Econometric analysis was performed to determine what the factors are that influence the choice of ecolabelled over non-ecolabelled products. Using a logit analysis, results suggested that respondents' preferences for ecolabelled fish are most affected by the size of the premium. As the premium increases, the likelihood that the respondent would choose the ecolabelled product over the non-ecolabelled product declines. In addition, the likelihood of choosing ecolabelled fish differed by species, geographic location of the household, consumer group and was slightly affected by certifying agency. For example, the effect of the premium was negative for all species, but smaller in magnitude for salmon, and greatest for cod. Households on the West Coast of the U.S. were more likely to choose certifying salmon than those in other parts of the nation. Households that were members of environmental organizations were more likely to choose certified fish over uncertified. Other factors found to influence choice of ecolabelled fish were gender - females were more likely to choose ecolabelled products than men ; and seafood budgets - those households with larger seafood budgets were more likely to choose uncertified products. These results also indicated that significant consumer education must take place, as fully two-thirds of respondent indicated that they were unsure of the status of Pacific salmon and Atlantic cod stocks.

Johnston, Wessells, Donath and Asche (2001) extend the paper by Wessells, Johnston and Donath (1999b) by examining cross-country differences in preferences. In addition to the U.S. data discussed above, the authors collected data from a virtually identical telephone survey administered to 2,039 Norwegian residents during the fall of 1999. The primary differences in information collected between Norway and the U.S. were that a) instead of cocktail shrimp, the Norwegian survey asked about the smaller coldwater shrimp; b) instead of using the NMFS as a governmental certifying agency, the

Norwegian survey used the Norwegian National Fisheries Directorate; and c) the premiums were specified in Norwegian kroner, not U.S. dollars.

Norwegian consumers were less likely to choose certified seafood products, averaging closer to a 50% preference for certified. Approximately 34% preferred uncertified, while a fairly large percentage, 15% gave no answer.

To test the hypothesis that consumer preferences for ecolabelled seafood differ across nations, econometric analysis of an equation similar to that discussed above was performed. In this case, the Norwegian and U.S. data were combined, with appropriate variables specified to determine if there are differences in the two sets of respondents. In order to do the comparison with premiums that were in both kroner and dollars, the premiums were converted into a percentage. Results indicate that there are differences. Again, results indicate that as the premium grows, consumers will be less likely to choose ecolabelled seafood. This effect is even stronger in Norway, thus consumers in Norway are more price sensitive. In addition, consumers in Norway are more likely than those in the U.S. to be influenced by the certifying agency. Those Norwegians who belong to an environmental organization are less likely to choose certified compared to U.S. respondents who are members of environmental groups.

There are several implications from the results of Johnston, Wessells, Donath and Asche (2001). Most importantly, respondents to these surveys were educated about what the product was being certified for, i.e. why it had an ecolabel. Once educated, they were then asked to make their choices between certified and non-certified. The results showed that the majority of respondents chose ecolabelled products, however, that was very dependent on the size of the premium. In addition, the sample of consumers who were surveyed in each country could be considered "educated" consumers - i.e. educated about the meaning of the ecolabel. In reality, when these choices are no longer hypothetical and consumers may be more or less educated about the ecolabels, consumers may be more or less likely to choose products from certified fisheries. That choice will certainly depend on the premium paid for ecolabelled fish over non-ecolabelled, but will also depend on how aware the consumer is about the issue the ecolabel addresses. Furthermore, the consumer must understand the content of the label, i.e. the link between their purchasing decision and effective management of stocks. The analysis of the paper does not provide the authors with the means to compare choices with and without the information on what certification means.

3.4 Institutional Aspects of Ecolabelling[22]

There are several components to the institutional aspects of ecolabelling processes: scope of the certification process, cost of certification, standards for accreditation of the certifier, procedures to ensure chain of custody, standards for the certification process, and accountability of certifiers. The Marine Stewardship Council is used to illustrate these aspects.

[22] Cathy Roheim Wessells wrote this section except for Box 5.

In the preamble to the Principles and Criteria of the MSC, a sustainable fishery is defined, for purposes of MSC certification, as one which is conducted in such a way that:

1. It can be continued indefinitely at a reasonable level;
2. It maintains, and seeks to maximise, ecological health and abundance;
3. It maintains the diversity, structure and function of the eco-system on which it depends as well as the quality of its habitat, minimising the adverse effects it causes;
4. It is managed and operated in a responsible manner, in conformity with local, national and international laws and regulations;
5. It maintains present and future economic and social options and benefits, and;
6. It is conducted in a socially and economically fair and responsible manner.

The Principles and Criteria at this stage apply only to marine fishes and invertebrates (including but not limited to shellfish, crustaceans, and cephalopods). Aquaculture, freshwater fisheries and the harvest of other species are not currently included (MSC, 1998).[23]

Award certification is a single certificate that can be displayed in the client's offices or with marketing materials. All public claims (*i.e*. product labels, brochures, etc.) must be reviewed by the certification body and/or the MSC for accuracy before release. The awarded certificate gives the right to use the MSC label on containers of fish or the product itself. The fee for the use of the MSC Logo is based on the value of the product at the first point of sale after application of the Logo and is payable by the company responsible for applying the Logo to the product. The fee has been set initially at 0.05% of the first-point product value (e.g. $500 per $1,000,000) but could increase to 0.1%. A minimum license fee of $500 applies. As the license agreement has to be renewed every year, the above are annual rates.

Scope of the Certification Process

The first institutional aspect of ecolabelling programmes to be addressed is the breadth of the certification process, i.e. determining if the production sector (fishery or farm) is the focus, or if the certification process includes the processing sector as well. Expanding from that, the process could cover the entire life cycle of the product.

The scope of the certification process of the MSC depends on the complexity of the fishery. In the initial review of a potential fishery assessment, the assessment team visits the fishery and solicits views of the stakeholder groups of that fishery. That review will determine if it is possible to clearly define a certifiable entity (MSC, September 1998). This may include a fishery or fish stock (biologically distinct unit) combined with fishing method/gear and practice (vessels pursuing the fish of that stock). Stocks of fish may be combined into a certification unit in mixed fisheries (MSC, September 1998). In the case of the Alaskan salmon fishery, the scope of the certification assessment covered all species, all gear types and all river systems (www.msc.org).

[23] In July 2001, MSC initiated a study to investigate the potential for ecolabelling of aquaculture products.

Procedures to Ensure Chain of Custody

In the cases of certification of fishery products from sustainable fisheries, agricultural products from organic production and forest products from sustainable forestry, once the product leaves the place of production there must be a means to follow it through to the processing, wholesale and retail stages. Thus, chain of custody becomes very important. This process requires that, in some fashion, the processing, wholesale, distribution and inventory management of the product must keep separation between certified products and uncertified products. Without chain of custody certification as well, certified and uncertified products could be blended. One of the perceived benefits of ecolabelling programmes is the higher return from consumers' preference for ecolabelled product and the premium consumers are willing to pay. It may be tempting to market products as ecolabelled when in fact they are not, to achieve the higher returns. Thus, chain of custody procedures must be in place to ensure the integrity of the product that reaches the marketplace.

With respect to fish catching and processing, chain of custody procedures are implemented at the key points of transfer (*i.e.* extraction from the sea, receipt on board, delivery to the dock, broker, wholesale dealer, processor, retailer). A contractual agreement is established between the recipient body and the certification body stipulating standard compliance guidelines and ongoing monitoring guidelines. Precisely established chain of custody procedures are to be implemented on a case-by-case basis. However, there are some basic requirements drawn up in the MSC documentation (MSC, September 1998).

1. From the boat to the dock:
   a. All containers of fish must bear a tag identifying the fishery of origin.
   b. At the dock, all certified fish must be segregated and identified separately from non-certified fish
2. From the dock to the processor, wholesale dealer or retailer:
   a. Upon arrival at the processor, wholesale dealer or retailer, all certified fish must be segregated from non-certified fish.
   b. All certified fish must be segregated and identified during storage and shipment.
3. From the processor to the wholesale dealer or retailer:
   a. Only certified fish may be run in a single production shift, or the certification body must approve some other precautions that are taken to ensure continued segregation and identification of certified from non-certified fish (for processors).
   b. All certified fish must be segregated and identified during storage and shipment.
   c. Until and unless automated coding mechanisms are employed only certified fish may be run within a single production shift (i.e. on a batch basis).

In the test case of Western Australian rock lobster, the primary mechanism being used is the application of a one-time use tag which will be applied to the base of the lobster antennae. The chain of custody assessment was done by Scientific Certification Services (SCS). SCS indicates that because of the strict product tracing systems required in order to meet Hazard Analysis Critical Control Point (HACCP) and other requirements, few

additional measures are required to satisfy the MSC chain of custody requirements (Jonathan Peacey, MSC, personal communication, Feb. 17, 2000).

The certifiers must also ensure that chain of custody of certified fish is documented with pertinent records, including as appropriate customs inspection documents, verification of species inspection documents, bills of lading with copies for all links within the transportation system, and invoices from all parties who took possession of the certified goods.

Furthermore, certification bodies shall as a minimum:
1. Review and reconcile all pertinent records.
2. Reconcile itemised bills of lading and invoices with the actual loads.
3. Establish that appropriate measures are being taken by recipient to segregate certified versus non-certified products.
4. Review physical parameters (i.e. marking of fish containers and established locations of certified versus non-certified sources).
5. Review administrative parameters (i.e. written protocols for maintaining segregation, employee training manuals, implementation of employee training, etc).

Standards for accreditation of certifiers

In evaluating certifiers for potential accreditation, all assessments are done by the MSC Secretariat. There are several general criteria that the certification body is assessed on, listed below. All are reproduced directly from MSC, February 1999a.

1. Compliance with MSC requirements
    - Certifiers must adhere to the MSC Principles and Criteria for Sustainable Fisheries, MSC Accreditation manual and MSC Certification methodology.
2. Independence
    - To maintain the credibility of fisheries certification, certifiers must remain independent from outside influence, and shall insulate the decision making process from those with vested interests in the outcome of the certification process.
3. Sound assessment procedures
    - Certifiers must maintain rigorous, consistent and independent assessment procedures.
4. Transparency
    - Certifiers must maintain complete transparency and openness to scrutiny by the MSC
5. Reciprocity
    - In the absence of exceptional, case-specific, and well-documented circumstances to the contrary, it is expected that certifications issued by an accredited certifier are mutually recognized by other accredited certifiers.
6. Public Information
    - Certifiers shall make appropriate information about their activities available to the public.

7. Verifiable chain of custody
    - Certifiers must document their procedures for verifying the chain of custody of fish and fish products.
8. Compliance with applicable laws
    - Certifiers must comply with all applicable local, national and international laws and agreements.
9. Equity of access
    - Certifiers must design assessment procedures so as to maintain a fair and non-discriminatory cost structure for large and small fisheries, while maintaining analytical credibility.
10. Maintaining adequate documentation
    - Certifiers must maintain up-to-date written records of their procedures and actions taken pursuant to those procedures.
11. Appeal procedures
    - Certifiers must have procedures for consideration of appeals against its decisions.
12. Integrity of claims
    - Certifiers must maintain proper control over the use of licenses, certificates, logo, certification marks and their name.

MSC (February 1999b) further defines standards against which the applicant certification firms are evaluated. The objective of the evaluation is to ensure that: 1) accredited certification firms conform with all the requirements of the MSC accreditation criteria; and, 2) systems are in place to enable the MSC to monitor the continued compliance by accredited certification firms with these requirements.

Several certification firms have applied to the MSC to become accredited, including firms in the U.K., Netherlands, U.S., Canada and Germany. As of October 2001, MSC has accredited five companies to act as certifiers of both the fishery and the chain of custody and three companies for certifying the chain of custody only (www.msc.org).

Standards for the certification process

It is extremely important the certification process be clearly defined, and applied to each individual case in the same fashion. In the case of normal manufactured goods, this may be relatively easy to achieve. However, there are aspects of the certification process that are very difficult when working with products from marine capture fisheries. In particular, the MSC requires that the certification body put together a team of their staff and specialists from relevant disciplines, including certification methodology, fisheries, fisheries management, marine biology, ecology, economics, wildlife conservation, sustainable resource management and decision sciences (MSC, September 1998). The purpose for this team is: 1) to be able to cover the complex issues involved in the certification process such as stock assessment, identification of habitat impacts, management plans, legal issues and economic consequences; and 2) to ensure that the MSC Principles and Criteria are assessed with equal rigor across fisheries and as objectively as possible. It is emphasized that the certification body's competence is partly

demonstrated by its ability to put together an appropriately competent team of assessors. An interdisciplinary team of experts is assembled to conduct an assessment.

Two potential difficulties present themselves here. First, it may be difficult to find individuals to serve on the assessment team who are sufficiently knowledgeable. Second, even with a team of knowledgeable experts, by simple virtue of the differences in complexity across fisheries of the world, it seems that it may be difficult to apply the criteria even-handedly.

Accountability of Certifiers

The MSC must be fully informed of the status and progress of a certification firm's programme. The MSC must be able to keep members of the public and other certification firms fully informed about the certification status of fisheries and suppliers of certified fish and fish products.

There are several steps in the certification process of the MSC. First, there must be an initial meeting of the certifying firm with the client. This review results in a few different outcomes. First, the client is informed in detail of the requirements of the MSC Principles and Criteria to make sure that the client understands what they are attempting to conform with. Second, the meeting produces a decision regarding whether it is possible to clearly define a certifiable entity and unit of certification. Finally, the estimated cost of the assessment will be provided to the client. This is a fixed fee, and depends on the estimated time necessary to conduct the assessment and prepare a peer-reviewed written report. There is also a stakeholder consultation. For example, in the Alaskan salmon certification process, the certification firm was required to contact stakeholders in the fishery for consultation to ensure the broadest possible range of views on issues pertaining to the sustainability of this fishery.

Costs of Certification

In any ecolabelling programme of marine capture fisheries, the costs of certification are of particular interest to economists, as well as to those involved with fisheries worldwide. Unfortunately little information is available on exact costs paid by fishers on the cost of certification. An account of certification costs for the Western Australia Rock lobster fishery is shown in Box 5. Full cost of certification is determined between the certifier and the client, and depends on the size and complexity of the production process. For fisheries certified by the MSC, the test cases so far suggest that pre-assessments are likely to cost in the range of US$3,000 to US$25,000, and a full certification could be from US$15,000 to US$150,000 (Jonathan Peacey, MSC, personal communication, Feb. 17, 2000).

Box 5. Assessment and Certification Costs in the Western Australian Rock Lobster Fishery

The Western Australian Rock Lobster Fishery is one of the most valuable fisheries in Australia with an annual export value of about A$ 370 million (US $ 185 million). It involves a fleet of 596 boats (12-18 m length) and generates direct employment for some 4000 people in mostly rural communities.

The pre-assessment of the fishery took place over a period of several weeks in 1997 while the full assessment was undertaken in the period July to October 1999. The final public summary of the assessment report was published in April 2000 and can be found on MSC's website (msc.org).

"The direct costs of the assessment process were in the vicinity of Aus$200,000 with at least a further A$100,000 in-kind contribution by the industry and the Department of Fisheries. The subsequent launch and promotion of the MSC accreditation also added a further A$100,000.

The rock lobster fishery operates under a cost recovery regime where fishermen's licence fees are used to cover the costs the Department incurs in managing the fishery. Therefore much of the costs to meet the requirements for ongoing accreditation will be met through industry's annual licence fees. It is anticipated that the next full assessment in 2005 will cost an additional A $100,000 – A $150,000. While the costs cannot be readily separated from other marketing and promotional costs, the industry itself, and particularly the processing sector, also continues to incur costs in promoting the MSC accreditation and labelling its product as MSC accredited. " (Cost information communicated by Mr Ross Gould, Supervising Fishery Manager Commercial Programs, Department of Fisheries, Government of Western Australia)

The license fee for the use of the MSC logo is currently set at 0.05% of the catch value at the point of labelling. This would add another cost of A$ 185,000. These direct assessment, auditing and logo licensing costs are very small in relation to the value of the fishery. There are some incremental management and assessment costs to fulfil the requirements for continued certification including the conduct of an ecological risk assessment, the development and operation of an environmental management strategy, and improvements in the collection of bycatch data. These additional costs are not expected to amount to a significant share of the fishery value.

The client may be a private firm (for chain of custody), but when certifying the sustainability of a fishery the client may be a public agency since fish stocks are typically managed by local or national governments. In other words, a farm produces organic apples; then the farm owner pays to be certified as producing organic apples. However, in the case of fisheries, the question of who is paying for the certification becomes a very interesting one. For example, for the Western Australian rock lobster, it appears that the industry and regional government split the costs of certification (Fiorillo, 2000). In the case of Alaskan salmon, the Alaska Department of Fish and Game is paying for the certification (Welch, 2000).

Generally, there are two costs of certification that are referred to: 1) pre-assessment costs; and 2) actual certification costs. However, there is potentially a third, and more significant, cost to certification, namely cost associated with changing fisheries management. That cost is much more difficult to quantify. In the case of those fisheries that do not qualify for certification, presumably there will be major changes needed in the management system. For those fisheries which do qualify, but whose continued status of certification is dependent upon further improvements in the fishery's management, the costs may be less. Those costs may include the costs of keeping better records of data (population assessments, harvest, etc.), as well as more fundamental changes in management procedures.

3.5 Criteria for Ecolabelling[24]

There are no *a priori* criteria that can be considered essential or can be automatically discounted for products arising from fisheries. Within any labelling scheme, the criteria selected for inclusion in an ecolabelling scheme will reflect a compromise between the demands of the consumers and the capabilities and willingness of the producers, and intermediates, to meet those demands. Hence, in principle, labelling schemes in fisheries could aim to encompass all or any subset of the environmental, biological, social, political or economic issues that enter into a fisheries venture.

As discussed earlier, environmental labelling, under which ecolabelling falls, attempts to identify "consumer products which are more environmentally friendly than other functionally and competitively similar products" (OECD 1991 p.12). This approach still leaves scope for interpretation, and clear agreement on what is fundamental to ecolabelling has not been reached. One of the more significant issues is whether or not to include factors relating to the social and economic circumstances of the fishers and shore-based workers. At the FAO Technical Consultation on the feasibility of developing technical guidelines for ecolabelling fisheries products[25], there was disagreement about whether or not to consider social and economic criteria in technical guidelines for ecolabelling. The Marine Stewardship Council has included in its definition of a sustainable fishery, the necessity for it to be conducted in a "socially and economically fair and responsible manner"[26]. Similarly, the National Fisheries Institute of the USA, representing the interests of its fish and seafood industry members, includes within its Principles for Responsible Fisheries, considerations for the safety of fishing vessel crew.[27]

Given the uncertainty concerning inclusion of social and economic criteria, in this review emphasis is placed on the sustainable use of the exploited natural resource. The

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[24] This section contains material from Cochrane and Willmann (2000).

[25] FAO. 1998. Report of the technical consultation on the feasibility of developing non-discriminatory technical guidelines for eco-labelling of products from marine capture fisheries. Rome, Italy, 21-23 October 1998. FAO Fisheries Report 594. 29pp.

[26] Marine Stewardship Council. 1998. Principles and criteria for sustainable fishing. Airlie House Draft. Issue 1, October 1998.

[27] National Fisheries Institute. 2000. U.S. Fisheries Industry Principles for Responsible Fisheries. http://www.nfi.org/organizations/rfs-prf.htm

discussion below is intended to put forward possible considerations in selecting criteria and not to be prescriptive. Representatives of the different interested parties, including the producers, processors, retailers and consumers, should jointly develop the set of criteria actually applied in any ecolabelling scheme. The criteria should be developed in a participatory and transparent process, and the criteria selected should be "practical, viable and verifiable"[28].

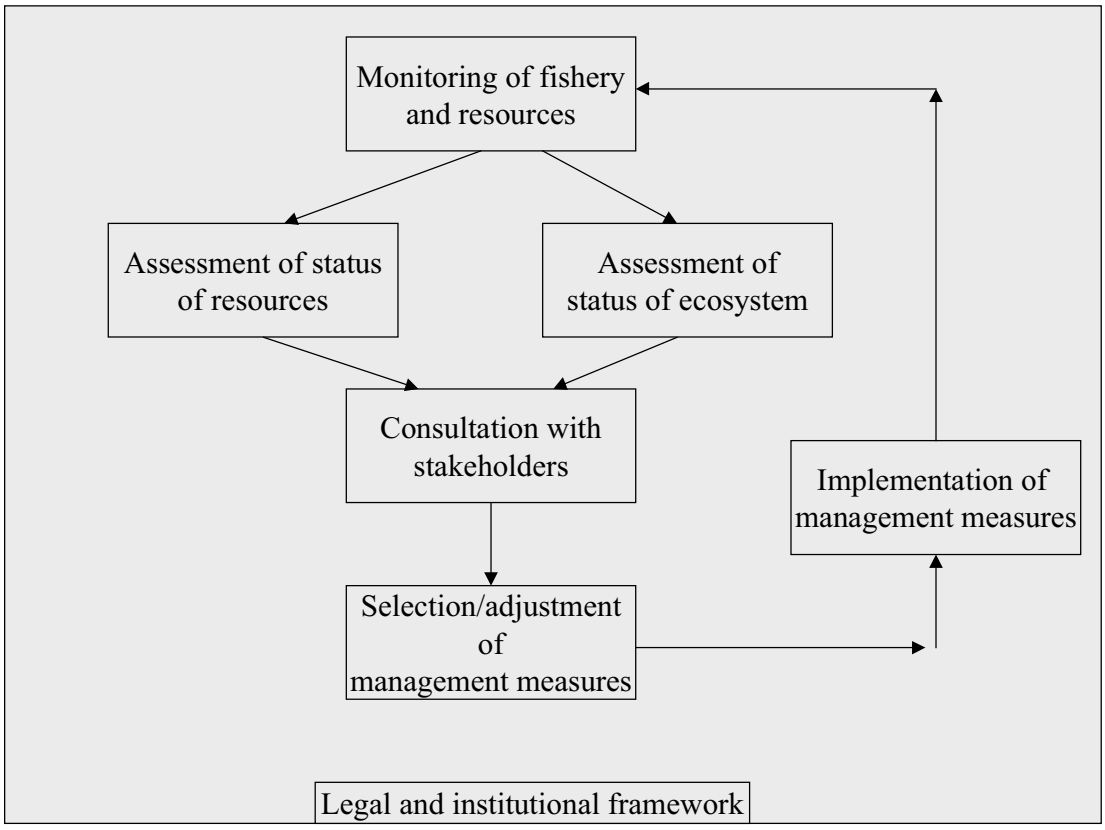

Figure 2. A Simplified Representation of the Fisheries Management Process

Practicality and verifiability are two very important requirements in assessing fisheries where high levels of uncertainty, arising from poor understanding of important ecosystem principles in aquatic systems, and the difficulties of measuring what is there and what is happening in the sea, commonly prevent totally objective interpretation of the status of stocks and ecosystems. This may prove to be a substantial obstacle to widespread application of ecolabelling schemes in marine capture fisheries.

With these provisos, the potential considerations in ecolabelling can best be illustrated by considering the fisheries management process itself (Figure 2). In this representation, the management system is considered as consisting of:

[28] FAO. 1998. *Op. cit.*

1. A legal framework;
2. An institutional framework;
3. A process of monitoring the status of the resources and the impact of fishing on them (and the socio-economic performance of the fishery);
4. The transformation of the data and information received into estimates of the abundance of the resources and their prognosis given different management strategies;
5. A consultative or joint decision-making process which should at least cover selection of management measures but could embrace the whole management system;
6. The actual selection of management measures such as setting the TAC, changing gear regulations, implementation of a closed season etc.;
7. Implementation of the management measures, leading back to step 3.

Assessing the Process or Assessing the Result

Within each of the sub-processes listed above and shown in Figure 2, an ecolabelling scheme could consider the theoretical effectiveness of the approaches used or the results achieved, potentially yielding markedly different results. For example, in many developed countries, sophisticated and theoretically adequate management systems and legislation are in place, which would lead to the award of an ecolabel if based on the process. However, in many of these cases and for different but, arguably, largely socio-economic reasons[29], the systems fail and the stocks are over-exploited. If the status of the stocks was the essential factor, such fisheries could not be granted an ecolabel. In reverse, while rare, there are still instances of under-exploited, and hence healthy, resources that are the subject of inadequate or non-existent management. However, in such cases it is unlikely that the data would be available to assess and monitor the status of the resources reliably, which should disqualify even healthy stocks from qualification for ecolabels.

The question of assessing the process or the result was discussed at the FAO Technical Consultation on ecolabelling, but no conclusion was reached.[30] Nevertheless, it is hard to envisage a set of criteria intended to give reliable information on the sustainability of a fishery that did not give consideration to both.

Consistency with the Legal Framework

For ecolabelling, all fisheries should take place within a legal framework embracing any national fisheries legislation and regulations pertinent to fisheries, any multilateral or regional legal arrangements, and the growing body of international laws and agreements, such as UN 1982 Convention on the Law of the Sea, the 1993 FAO Compliance Agreement and the 1995 UN Fish Stocks Agreement. A further consideration, which was accepted by the FAO Member States[31] and also by the National Fisheries Institute[32], is that fisheries should be consistent with the FAO Code of Conduct for Responsible Fisheries. While non-binding, the Code is the most comprehensive globally accepted

[29] Cochrane, K.L. 2000. Reconciling sustainability, economic efficiency and equity in fisheries : the one that got away? Fish and Fisheries 2000;1.
[30] FAO. 1998. *Op. cit.*.
[31] FAO. 1998. *Op. cit.*
[32] National Fisheries Institute. 2000 *Op. cit.*

consideration of the requirements for sustainable fisheries available and therefore provides a benchmark against which fisheries sustainability criteria could be measured.

Compliance with the international and national legal context in which a fishery operates must be seen as being essential for award of an ecolabel.

An Appropriate Institutional Framework

Much has been written about the importance of having the correct institutional framework for effective fisheries management[33], but there is still little clarity on the essential features of the institutions underlying the process. However, Noble (2000)[34] has attempted to summarise some general criteria. He lists the following principles.

1. Organizations involved in fisheries management should be interactive, facilitating coordination.
2. There should be local control. The argument for bottom-up management is that top-down control gives little power to the fishing community and hence encourages dissent and non-compliance[35]. Noble therefore suggests that ownership and control should be delegated to the "lowest, feasible territorial scale."
3. Effective fisheries institutional arrangements clearly require community support and Noble suggests that this is only likely to happen where the users participate in the management process.
4. Fisheries management must be a planned process, requiring goals, objectives and a strategy to achieve those goals. Noble also stresses the need for flexibility, or adaptive capacity in the institutions and management systems, and the fact that the planning process must be knowledge-based. The Code of Conduct emphasises that "Conservation and management decisions for fisheries should be based on the best scientific evidence available, also taking into account traditional knowledge… as well as relevant environmental, economic and social factors."[36]
5. Noble suggests that the institutions must also be marked by secondary characteristics related to equity, the economic development of the users and the sustainable use of fishery resources.
6. The institutional arrangements must be holistic, which incorporates inclusiveness and integration.

This list does provide a useful summary of the characteristics of fisheries management institutions that are conducive to success, and hence gives a practical perspective on characteristics that could be considered in determining ecolabelling criteria. The MSC has included most of these features in their ecolabelling principles, as indicated in Box 6. Eco-system considerations are also included in the final report of the Nordic Technical Working Group on Fisheries Eco-labelling Criteria that was adopted by the Nordic Ministers of Fisheries in August 2001 (Box 7).

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[33] OECD. 1997c. *Towards sustainable fisheries. Economic aspects of the management of living marine resources*. Paris. p123.
[34] Noble, B.F. 2000. Institutional criteria for co-management. *Marine Policy* 24:69-77
[35] OECD. 1997c. *Op. cit*. p124.
[36] FAO. 1995a. Code of Conduct for Responsible Fisheries. FAO, Rome. 41pp. Paragraph 6.4

The efficacy and appropriateness of different characteristics of fisheries management institutions are probably the criteria most affected by regional and national differences in culture and society, and such differences need to be carefully taken into account in designing and implementing the criteria. The FAO Technical Consultation on ecolabelling recognised this and highlighted "The need to take regional and national differences into account in any possible development of guidelines on ecolabelling …"[37]. Perhaps, considering this need and the difficulty of generalising, this is an area where the result, including in terms of user compliance and contentedness and probable sustainability, should be given considerably greater weight than the process itself.

Box 6. Excerpts From Principle 3 of the Marine Stewardship Council's Principles and Criteria for Sustainable Fishing: Marine Stewardship Council. 1998. *Op Cit.*

Numbering as used by MSC but some points have been shortened as indicated in each case.

The management system shall:

2. demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge….;

3. be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings;

4. observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability;

5. incorporates an appropriate mechanism for the resolution of disputes arising within the system;

6. provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing;

7. act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty;

8. incorporate a research plan…;

9. require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted;

a) specify measures and strategies that demonstrably control the degree of exploitation of the resource…

11. contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

[37] FAO. 1998. *Op. Cit.* p. 3

Monitoring and Assessing the Status of the Stocks

Sub-processes iii) and iv) of the management process will be treated together, as they are integrally related. As discussed above, social and economic performance of the fishery will not be considered here.

Defining the Unit Stock

The initial task in any ecolabelling scheme will be to define the unit stock to be certified. Ideally, the chosen stock should be consistent with the rigorous definition of a stock: the fished and managed unit should be a self-contained and self-sustaining sub-population with no emigration or immigration i.e. it should be effectively genetically isolated from any other stocks. In practice, more pragmatic definitions of a stock are frequently used and the objective in fisheries management is to identify and manage a spatially defined and functionally independent population unit such that the results of assessment and management will be much the same as if the unit were a true stock.

The problem becomes more complicated when one is dealing with a multispecies community but the approach to defining a multispecies "stock" remains similar. In such cases the multispecies "stock" should be defined as a functionally independent community of interacting single-species stocks or populations. Again, the criterion for determining whether the selected unit "stock" is appropriate is whether the assessment and management results are consistent with what would be expected if the multispecies "stock" was reproductively completely independent and genetically isolated. If immigrations and emigrations are of sufficient magnitude to generate significant deviations from the expected results, then the definition is inappropriate.

Monitoring and Collection of Data

The collection of reliable, timely and suitable data or information to enable the rigorous estimation of the status of the resources being affected by the fishery is fundamental to any assessment of the environmental impact of the fishery, and this will require a system which is statistically sound, functioning and sustainable and addresses the stocks affected by the fishery and their key parameters. The scale and level of sophistication of the data and information collected may vary and this is discussed further under the precautionary approach below.

Assessing the Status of the Stocks

Collection of data is not enough on its own, and the data and information collected must be periodically analysed to arrive at estimates of the status of the different resources. This requires use of appropriate statistical and mathematical tools, as encompassed by the subject of fish stock assessment. A principle of any scientific venture is that the process must be transparent and documented in a way that allows independent verification. Such independent verification should be a feature of the management system. The status of stocks is generally expressed in terms of biological reference points, which typically refer to desirable or undesirable levels of abundance in relation to some optimal level or to the average pristine level. The use of such reference points as guides to selecting appropriate management measures is essential in effective fisheries management and the Code of

Conduct calls for target and limit reference points to be used in guiding management action.[38]

Box 7. Nordic Fisheries Ecolabelling Criteria

The Nordic Technical Working Group on Fisheries Eco-labelling Criteria proposed a voluntary, consumer driven scheme for marine capture fisheries with state authorities establishing criteria that then can be used by private bodies and NGOs to ecolabel products. The group considers these criteria to be suitable for use in the North-eastern Atlantic region. The criteria are as follows:

Fish Stock:
1.1. The fishery must follow a fisheries management plan.
1.2. The fisheries management plan must be based on regular (e.g. annual) scientific advice on the state of fish stocks and recommendations for their sustainable exploitation.
1.3. The fisheries management plan must include pre-agreed management measures that come into force immediately when relevant precautionary reference points are reached.
1.4. Efficient monitoring and control mechanisms must be in place.

Ecosystem:
2.1. Destructive fishing practices, such as the use of explosives or poisons to kill fish, are not used.
2.2. Discards of fish, crustaceans and molluscs are minimised through the use of the best available technology for selective fishing methods. Discards are monitored through a sampling programme.
2.4. Management plans should exist for any other ecosystem issues properly identified, based on scientific advice, as being of serious concern in the fishery in question.

Source: Nordic Technical Working Group on Fisheries Eco-labelling Criteria. 2000. An Arrangement for the Voluntary Certification of Products of Sustainable Fishing, Final Report Copenhagen, June.

Most stock assessment techniques and biological reference points are based on single species assessments, and particular problems in evaluating whether or not a resource is being utilised sustainably are encountered when dealing with complex multi-species assemblages as typify, for example, tropical fisheries. Under such circumstances, it is frequently impractical, if not impossible, to assess the status of all the population groups within the community. Fisheries management has not yet devised rigorous methods of assessing, and indeed managing, such complex multispecies resources. However, in general terms, assessment of their status needs to look at changes over time in total abundance, productivity, age/size structure (at least of selected indicator species), mean trophic level and biodiversity, ideally in relation to pristine or some other known sustainable state. Under such circumstances, particular attention may need to be given to species within the community that are known to be particularly threatened.

[38] FAO. 1995a. *Op. cit.* Paragraph 7.5.3.

The difficulties in certifying multi-species fisheries are of course not confined to tropical waters. Some details of a multi-stock certification are given in Box 8 on the example of the U.S. Alaska salmon fisheries.

Box 8. MSC Certification of U.S. Alaska Salmon Fisheries: An Example of Multi-stock Certification

Alaska's statewide commercial salmon fisheries management program has been certified to meet the MSC Fishery Standard. Salmon management in Alaska is based on legal mandates and biological principles that apply throughout the State. The salmon program is uniformly escapement-based, using in-season stock assessment and monitoring, with harvests based on abundance measured in-season. Regulations require all stocks and fisheries to be periodically reviewed to assure sustained yield principles and criteria are met. MSC certification did not attempt to separately assess each of Alaska's many thousands of salmon runs and fisheries. However, the certifiers did consider evidence on the extent to which the statewide goal of sustainable management has been achieved in respect of salmon stocks. Statewide certification is only possible due to internal regulations, policies and procedures that assure each stock and fishery in the state is monitored, and any management or conservation deficiency is identified and addressed through management, research, or regulatory action as appropriate.

Salmon stocks are generally mixed until each stock reaches its spawning ground. Unless salmon are taken on spawning grounds, which would be a poor practice, virtually all salmon fisheries occur in mixed stocks. In mixed stock fisheries, stocks are subjected to harvest at a rate that is a function of their proportional distribution within the mixed stock. Alaska's mixed-stock fisheries policy requires that stocks, when mixed, be exploited in proportion to their occurrence.

Source: www.msc.org

Ecological Criteria

It has been recognised in recent years that the single-species paradigm which has and continues to dominate fisheries management is inadequate for optimal, sustainable and responsible utilisation and management of living marine resources, and there has been increasing emphasis placed on the need to adopt an ecosystem approach in fisheries management. Such an approach must clearly also be included in an ecolabelling scheme, with the over-riding interest in environmental impacts.

The incorporation of ecosystem criteria in a scheme will add substantially to the complexity of an evaluation, requiring attention to be given to:

1. The impact of fishing on bycatch species and whether or not such species are being harvested on a sustainable basis;
2. The level of discards and the extent of wastage in the fishery;
3. The impact of the gear on the physical environment and the long-term consequences of this;
4. The existence of ghost fishing by lost or abandoned gear and the attempts made to minimise this; and
5. The levels of any pollutants being released through the fishing activities.

Most difficult of these criteria to consider will be the impact of fishing on ecosystem structure and function. Ecosystems are dynamic and undergo natural changes, including frequently substantial fluctuations in abundances in constituent populations. It is and will be very difficult to distinguish such natural changes from fishery-induced changes. The only approach, especially in the absence of long time series of the abundance and size structure of at least indicator species, will be through evaluation of the impacts of the gear at the present time and using this to forecast likely trends. Such an approach will, however, be characterised by high levels of uncertainty.

Uncertainty and the Precautionary Approach

Estimates of the status of stocks and forecasts of their future trajectories under a given management regime are notorious sources of uncertainty and, directly or indirectly, explain many of the problems encountered in achieving sustainable fisheries.[39] The amount of uncertainty in any given assessment will be related to the quality of information and data available and should be expressed in the form of e.g. confidence limits around any variable estimates. The better the estimate the narrower the confidence limits. However, the question remains as to how to use the estimated uncertainty in arriving at management decisions.

The precautionary approach has been applied and developed in fisheries management as a guide to how to deal with uncertainty.[40] In essence, the precautionary approach can be summarised as requiring greater caution as uncertainty increases. Put another way, the more uncertainty that exists in an assessment of the status of a stock, the lower the target fishing mortality should be set in relation to the level that could be achieved if there was perfect knowledge on the status[41]. However, an operational strategy for applying the precautionary approach has yet to be developed and there is no clarity on exactly how to define uncertainty and no quantification of precaution. The application of the precautionary approach in practice therefore remains very subjective. Nevertheless, it has a critical role to play in an ecolabelling scheme, and effective means of relating uncertainty, related to the quality of the data and assessments of the status and dynamics of stocks, and a responsible level of fishing mortality will need to be applied in each case.

Consultation and Joint Decision-making

This was dealt with earlier in the section under An Appropriate Institutional Framework.

Selection of Management Measures

The management measures represent the only tools that the fisheries managers have to regulate the effect of the fishery on the target species and the ecosystem. Management measures can cover aspects such as the maximum allowable fishing effort or catch on a stock, vessel and fishing gear characteristics, closed seasons and closed areas. The Code of Conduct calls for management measures that:

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[39] Cochrane, K.L. 2000. *Op. cit.*

[40] FAO. 1995b. Precautionary approach to fisheries: Part 1: Guidelines on the precautionary approach to capture fisheries and species introductions. FAO Fisheries Technical Paper 350(1):51p.

[41] Cochrane K.L. 1999. Complexity in fisheries and limitations in the increasing complexity of fisheries management. ICES Journal of Marine Science 56.

1. Avoid excess capacity;
2. Provide for economic conditions which promote responsible fisheries;
3. Take into account the interests of fishers;
4. Conserve and protect biodiversity and ecosystems;
5. Allow recovery of depleted stocks;
6. Avoid adverse environmental effects and correct them where appropriate;
7. Minimise pollution, waste, discards, and catches by lost or abandoned gear, resulting in the use of selective, environmentally safe and cost-effective fishing gear and techniques.[42]

All of these, or at least those reflecting environmental concerns, should be incorporated in ecolabelling criteria for fisheries.

Implementation of Management Measures

Of course, no matter how good the management plan and how carefully selected are the management measures, they will not achieve the objectives for the fishery unless they are applied in practice. Hence compliance, backed-up by appropriate enforcement, is critical for sustainable fishing and for the award of an ecolabel. Compliance should, in large measure, follow-on from good institutional frameworks as discussed above. Nevertheless, compliance needs to be monitored and, where necessary, coerced through enforcement. The existence of a monitoring, control and surveillance (MCS) system appropriate to the nature and scale of the fishery should therefore be seen as an essential pre-requisite for award of an ecolabel.

3.6 Experience with Ecolabels[43]

As pointed out by the CEC (1999)[44], there are three possible outcomes to the introduction of an ecolabelled product (p.3):

1. Market Standard: Ecolabel is widely accepted and becomes standard in the marketplace. Labelling is the "price of entry" for the competition.
2. Market Niche: Ecolabel is viable, but not as widely accepted. A profitable market niche for labelled goods develops.
3. Failure: Ecolabel is not accepted by consumers and fails.

Consumer acceptance of the ecolabels will to some extent determine which of these outcomes occur. Availability of supply of ecolabelled product will also be an important determining factor.

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[42] FAO. 1995. *Op. cit.* Paragraph 7.2.2.

[43] This section was primarily written by Cathy Roheim Wessells.

[44] The Commission for Environmental Cooperation (CEC) was established by the North American Agreement on Environmental Cooperation (NAAEC) between Mexico, the United States and Canada in 1993. This agreement is the so-called "environmental side- agreement" to the North American Free Trade Agreement (NAFTA). The CEC has as its mandate to avoid trade disputes arising from environmental concerns and to evaluate the environmental impacts of NAFTA.

Recent surveys have shown that many consumers are likely to choose one brand or product over another if they believe that it will help the environment. Jha (1993) quotes survey evidence which suggests that slightly over half of the consumers in North America had purchased a product that they felt was better for the environment, boycotted a specific product that they felt was bad for the environment, or boycotted products made by a company that they felt was damaging the environment. In addition, consumers in developed nations are more likely to react favourably to companies that are thought to be responsive to environmental concerns (Chase and Smith 1992; Bremmer 1989; Kirkpatrick 1990; Weber 1990). In a study of the market feasibility of Mexican shade-grown coffee, the CEC found that, on average, one in five customers in Canada, Mexico and the U.S. were "very interested" in purchasing Mexican shade-grown coffee (CEC 1999a). However, there was reluctance among consumers to commit to paying more for shade-grown coffee. Paying US$1 more per pound for shade-grown coffee would reduce consumer interest by approximately 50% in Mexico City and by almost 75% in the U.S. Fewer than 10% of consumers surveyed in the U.S. and Mexico were willing to pay US$2 more per pound for shade-grown coffee.

The success of a label may be higher if the focus on the labels is on the direct health implications of the product, as is borne out in a study by the CEC (1999a) on shade-grown coffee. The data collected in North America for that study indicated that consumers were more receptive to paying a price premium if the advertising for the product focuses on human health and taste benefits over the environmental advantages.

Wright (1998) reports on the gulf between what U.S. consumers tell pollsters they will do (pay premium prices for greener goods) and what they do in practice. This calls into question the results of a recent consumer survey in the U.S., where the majority of consumers surveyed indicated they would buy ecolabelled salmon, cod and shrimp over non-labelled, even if prices of labelled products are somewhat higher (Wessells, Johnston, Donath, 1999). The number who actually will pay more for ecolabelled seafood is likely to be less.

Cude (1993) concludes that restoring consumer confidence in environmental claims is a necessary ingredient to allow consumers' purchase decision to reflect their environmental concerns. Several U.S. studies point to an increased scepticism by consumers regarding environmental claims on products. For example, Mayer, Scammon and Zick (1992) report that 55% of their sample agreed that "a lot of the brands that claim to be better for the environment are no better for the environment than brands that do not make such claims," and that environmental claims are not well understood.

According to the OECD, there is some scattered anecdotal evidence among OECD nations that sales of a particular product increased when an ecolabel has been obtained (OECD, 1997). Ecolabelling programmes in OECD countries are more successful in countries where its consumers had a high level of environmental awareness. However, there is no statistical data providing quantitative evidence of the actual market penetration of green labels, nor the average market power that an ecolabel is likely to confer on a product (OECD, 1998).

Box 9. Shade Coffee

One of the current work programmes of the CEC is to promote green marketing. Toward this goal, the CEC investigated the market possibilities of shade grown coffee, as a product that Mexico might export.

Shade grown coffee has several environmental benefits:

- Maintenance of forest cover resulting in reduced erosion of mountain sides and watershed conservation
- Trees sequester carbon and produce oxygen
- Trees provide a habitat for bird species (both residential and migratory) and coffee plots shelter numerous species of mammals, reptiles and flora
- Shade coffee areas serve to conserve biological diversity

The term "shade grown" is open to interpretation, as the degree of shade, and hence the amount of forest cover maintained, can be flexible. Producers of shard coffee will most likely seek some form of standardised criteria for certification of what constitutes true shade-grown coffee, as they will be the one who will benefit directly from being able to charge a price premium for the certified product.

On a social and economic level, shade coffee production is feasible for small landholders and their families, who cannot afford the high volume of chemical inputs and hybrid seeds necessary for full-sun coffee production. By maintaining the forest cover, these small producers may also harvest other forest products, such as medicinal plants, fruits and firewood to supplement their incomes and provide for their survival needs.

According to market research, there is no consumer demand, at present, for certified shade-grown coffee, and the benefits of certification are unknown to the majority of consumers. The demand for certification is far more likely to originate with importers and roasters. Certification of shade coffee will require some form of chain of custody monitoring. This may be accomplished in one of two different ways, costs of certification are borne by the producers, or costs of certification are borne by the roaster. In the case of Mexican shade coffee producers, the second approach is favoured, as they tend not to have the capital necessary to pay for an audit of their product. Although the costs of certification may be recouped through price premiums, the initial capital outlay is beyond the means of most small producers.

Among roasters there is often a reluctance to pay any type of license fee for the use of a certification label. In much of North America, the degree of consumer awareness of what such labels mean is low, reducing or negating consumers' desire to pay a premium for the shade product. This means that the roasters must promote the product themselves, a costly undertaking, in addition to having to pay the certification fee. This situation explains the lack of participation of most large- and medium-scale roasters in shade coffee certification efforts in North America.

Source: CEC 1999a, 1999b

There is some evidence world-wide that many ecolabels have a large recognition factor. For example, in a 1988 survey of 7,500 German households, 79% were familiar with the Blue Angel ecolabel (U.S. EPA, 1993). A June 1992 survey of Canadians found that 42%

of consumers recognised Canada's EcoLogo. In contrast, only 22% of the Japanese public polled were aware of Japan's EcoMark in July 1990 (U.S. EPA. 1993).

Organic food sales have grown an average of 24% annually in the U.S., with an estimated retail market share of 1% - 1.5% (Raterman, 1997). In Denmark, market share has grown to 3 – 4% of the retail market (Michelsen). Organic food market shares are even lower in France, Canada, Japan, and Australia (Thompson, 1998). There is significantly more market data available on consumption of organic foods than consumption of ecolabelled forest or marine products. Many studies of organic food markets in the U.S. focus on characteristics of organic food shoppers as opposed to, for example, determining price elasticities of demand for organic produce. Within the U.S., consumers of organic produce tend to be: 1) higher income families; 2) affected by the choice of stores at which they shop; 3) older than 40 years of age; and, 5) have attained higher levels of education (Thompson, 1998).

The U.S. is the largest single-country market for organic foods, with US$4.2 billion in sales for 1997 (Scott, 1998). The main markets for U.S. organic products include high-income countries in northern Europe, Canada, Australia, and Japan (Lohr, 1998). The organic food market in the EU is estimated to be worth US$4.5 billion. Germany (US$1.6 billion), France (US$508 million) and the U.K. (US$445 million) have the largest organic retail sales (Lohr, 1998). Consumer commitment to organic products is strong throughout the EU, with 20% to 38% regularly or occasionally purchasing organic foods. Retail price premiums in Europe average from 10% to 50% above conventional products.

4. Product Certification[45]

Mandatory product certification (and catch documentation) is used as a natural extension of normal monitoring and enforcement in fisheries. Product certification is most commonly applied in fisheries where there are particular monitoring and enforcement problems (e.g., in regulating access to a fishery). It has gained heightened importance with the adoption by the FAO Council in 2001 of the International Plan of Action (IPOA) to prevent, deter and eliminate IUU fishing that encompasses, inter alia, internationally agreed market-related measures including the possible adoption of multilateral catch documentation and certification requirements (Box 10).

4.1 Origin and Need

Fisheries managers have always used information for monitoring fisheries and as a basis for enforcing policies. Information is used as a basis for assessing economic, biological and social parts of fishery systems. Responding to changes in these parts of the fishery systems, managers use policies with a view to improving performance. The activities of fishers are monitored and the information collected is used to encourage increased compliance with rules (e.g. by apprehending rule-breakers) as well as to identify where

[45] Paul Wallis wrote this section.

further policy changes may be required. The solid lines in Figure 3 show a simple representation of these information flows.

Box 10: Excerpts from the 2001 FAO IPOA to Prevent, Deter and Eliminate IUU Fishing

68. States should cooperate, including through relevant global and regional fisheries management organizations, to adopt appropriate multilaterally agreed trade-related measures, consistent with the WTO, that may be necessary to prevent, deter and eliminate IUU fishing for specific fish stocks or species. Multilateral trade-related measures envisaged in regional fisheries management organizations may be used to support cooperative efforts to ensure that trade in specific fish and fish products does not in any way encourage IUU fishing or otherwise undermine the effectiveness of conservation and management measures which are consistent with the 1982 UN Convention.
69. Trade-related measures to reduce or eliminate trade in fish and fish products derived from IUU fishing could include the adoption of multilateral catch documentation and certification requirements, as well as other appropriate multilaterally-agreed measures such as import and export controls or prohibitions. Such measures should be adopted in a fair, transparent and non-discriminatory manner. When such measures are adopted, States should support their consistent and effective implementation.
70. Stock or species-specific trade-related measures may be necessary to reduce or eliminate the economic incentive for vessels to engage in IUU fishing.
71. States should take steps to improve the transparency of their markets to allow the traceability of fish or fish products.

In the real world, obtaining adequate information for fisheries management is difficult. Managers are often seeking ways to find out how the fishery is performing and what are the important challenges that need to be addressed. Imposing information keeping and reporting requirements further down the product chain is being seen as a way to help support fisheries management policies. In Figure 3 the solid lines show the traditional information flows. Countries have tended to track the flow of fish to the first point of sale. Information from this first point of sale is used for crosschecking to assure compliance with management rules.

Box 11. Examples of Product Certification to Assist Fisheries Management Initiatives

- CCAMLR's Catch Documentation Scheme for Toothfish
- CCSBT's Trade Information Scheme for Southern Bluefin Tuna
- ICCAT's Bluefin Tuna Statistical Document Programme
- USA's Certification of Origin of Tuna and USA Tuna Tracking and Verification System
- Japan's reporting requirements (including area of capture) for all imports or transportation of tunas into Japan by boat
- EU's labelling of all fish products (including area of capture)

Recently countries have shown an interest in moving fisheries monitoring and enforcement beyond the first point of sale and into the marketplace. The application of

tracing systems into the market for fish and fish products is shown on Figure 3 by the dashed lines. Tracing systems are now being used to support fisheries management efforts. For example, ICCAT uses import data collected by its bluefin tuna statistical document programme to check against catch data provided by contracting and non-contracting parties. In cases where discrepancies between the two sets of data occur, the party concerned is required to provide a suitable explanation to the Commission.[46] Schmidt (2000) lists a range of other uses that tracing systems have been put to in various industries. These uses include food safety, marketing (e.g. for product differentiation) and legal requirements (e.g. for truth-in-labelling).

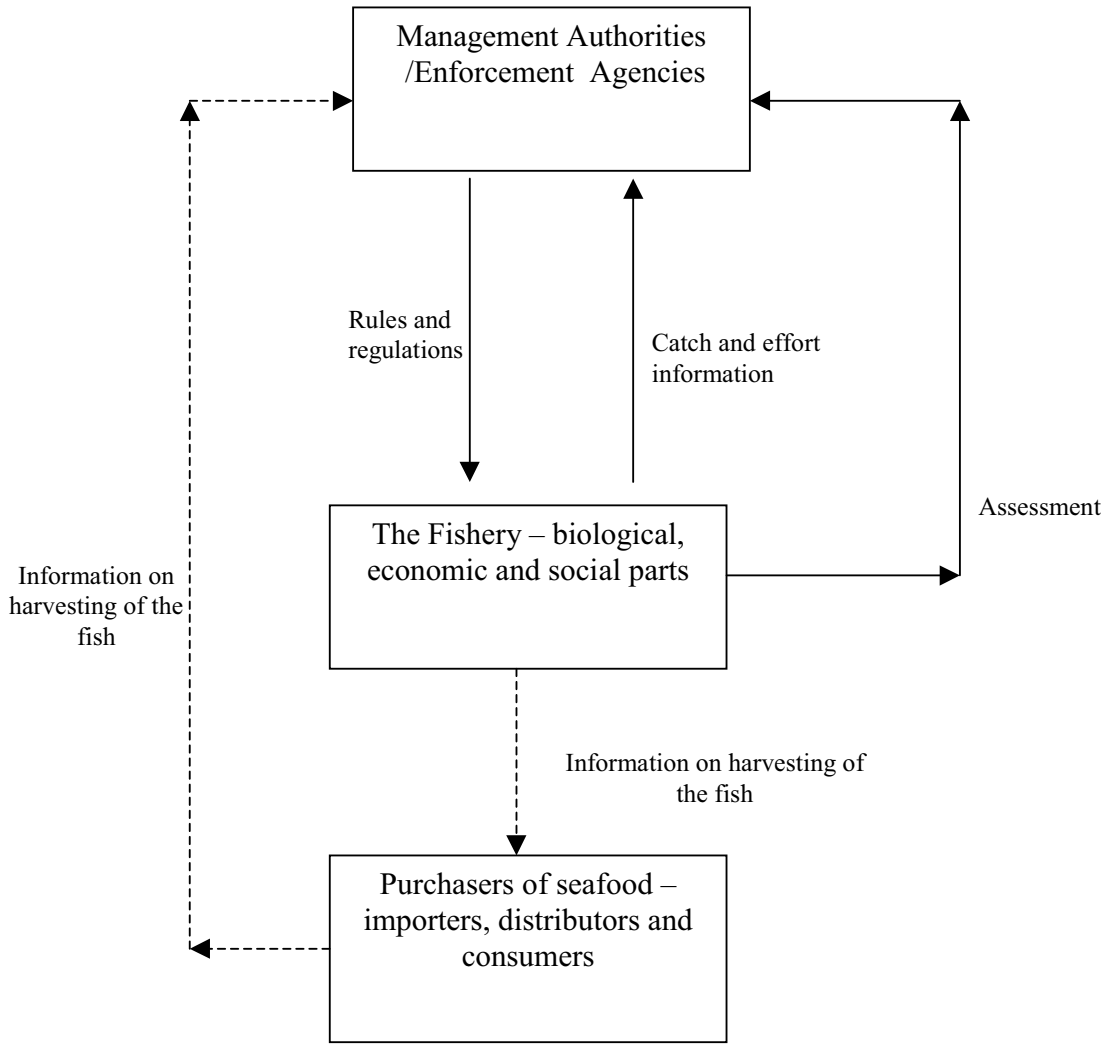

Figure 3. Information Flows in a Fishery

[46] ICCAT Recommendation 97-3-BFT.

The interest in product certification stems from a recognition that it can be a valuable tool to help achieve conservation and management objectives. The value of this tool is enhanced in certain fisheries. Such fisheries may have particular enforcement problems or there may be difficulties in restricting fishers' access. These will be discussed in more detail in the next part of this section.

4.2 Economics of Product Certification

In this part the benefits and costs of product certification are discussed. Benefits include the rewards from assuring responsible fishing and from a possible increase in prices where relevant information is passed on to consumers. The costs are those incurred by fishers, governments, importers, exporters, distributors and merchants in maintaining and complying with these schemes.

Benefits of certification

Rewarding responsible fishing
A variety of objectives underpin the management of fisheries. These objectives relate to the culture of country and usually comprise economic, social and biological factors. The objectives are also derived from international obligations (e.g.1982 UN Convention). In most fisheries, laws and regulations are used to facilitate the achievement of these objectives. These laws and regulations usually allocate access to fishers (e.g., permits, licences, quotas). Fishers take on these access rights, subject to rules and conditions that are designed to meet other fishery objectives.

In some fisheries, there can be strong incentives to cheat on these laws and regulations. The higher the economic gain from avoiding the management controls, the greater the incentive for illegal behaviour. Furthermore, for fisheries where the risk of detection is low, fishers will be tempted to circumvent management controls. Three of the product certification schemes identified in Box 11 relate to fisheries that are high value but, due to their characteristics, are located where it is difficult to detect illegal behaviour. Antarctic toothfish, Atlantic bluefin tuna and southern bluefin tuna are all very high value species. The fishing is carried out in areas of the Atlantic, Indian, Pacific and Southern Oceans where monitoring and enforcement is expensive and difficult. The results of this combination of factors are sobering: 90,000 tonnes of Antarctic toothfish have been taken by IUU fishers over the past three years – more than twice the level of catches taken in CCAMLR regulated fisheries. Reporting on a survey conducted by the FAO on IUU fishing, Bray (2000) notes the significant economic gains available through IUU fishing. In a perverse sense, the more legal fishing is constrained by catch and effort limits the greater the motivation for and gains from IUU fishing.

The losses associated with illegal and unregulated behaviour penalise responsible fishers and can cause irreversible damage to fish stocks. Both current and future generations are therefore affected. Product certification offers a way to mitigate these losses. If conducted effectively, it can remove the economic incentive for illegal behaviour. Fishers who

cannot demonstrate that their product has been caught in accordance with fisheries conservation and management measures will not be able to sell it. While not overcoming the problems of detection of illegal behaviour at sea, product certification can choke off the high revenues resulting from such practices.

We can identify two important economic benefits from product certification:

- Retaining fishery value for the fishers who comply with conservation and management initiatives; and
- Stopping "free-riders" from reaping the benefits of conservation and management initiatives.

Increasing prices
Because of its fisheries management orientation, product certification is mandatory. Fishers don't have a choice as to whether or not they comply with these schemes. As a consequence, it is often argued that product certification may not offer opportunities for price premiums to be realised. It will not be possible for consumers to choose between certified and non-certified because of the mandatory nature of the scheme and, in some cases, the certification information may not be made available.

Nevertheless, by applying the analysis developed above in the section on ecolabelling, it is possible that an appreciation of the price of the certified product may occur. Lancaster (1971) characterises consumer demand for products as demand for a bundle of attributes, where each product has one or more attributes. The argument follows that a good by itself does not yield utility, but that it possesses characteristics (attributes) that create utility. If demand represents consumers' willingness to pay for various amounts of attributes, then the provision of information about new attributes – e.g. through product certification – may lead to an increase in demand. An improvement in prices should result. Again, this argument presupposes that the information on product certification is made available to consumers. In introducing its new policy on labelling of fish products in the Common Organization of Markets, the European Community suggests that better labelling and information will lead to an increase in demand.[47]

The Community also suggests that product certification will lead to more certainty for consumers in buying fish. Apparently this can be a problem for live, fresh and chilled products that are not packaged. If certification can reduce the likelihood of consumers being misled, or having to make decisions on insufficient information, then an additional product attribute will be created. As discussed above, attributes create utility. Provision of new fish product attributes may lead to an increase in demand and price.

Costs of certification
Product certification systems impose a burden on all who are associated with their implementation: governments, fishers, merchants, distributors, exporters, importers and retailers. This burden includes the establishment of the system and its operation and is a

[47] www.europa.eu.int/comm/fisheries/

strong function of the system design. The more complicated the system, the greater the burden for all involved.

Government costs
The costs to the government are incurred in:

- New documentation systems – developing forms, information collection, and information storage;
- Verification arrangements – arrangements with other agencies (e.g., Customs), authorising people to verify documents; and
- Decision systems – action to be taken for non-compliance with the system, implementing and enforcing sanctions.
- System monitoring – ensuring the system continues to meet its objectives. New commercial arrangements may prompt changes in the certification system to ensure that the "chain of custody" is not broken.

Taxpayers may have to pay most of the costs associated with these government activities. In some situations, the costs of acquiring forms and transmitting information may be passed onto fishers.

Fishers' Costs
Fishers' costs can arise from increased reporting requirements in:

- Acquiring forms;
- Filling out statistical documents; and
- Obtaining verification of statistical documents from government officials (or equivalent).
- In some cases, from carrying government officials (or equivalent) on board to verify documents.

Unlike government costs, the burden placed on fishers has important implications for the success of a product certification programme. Fishers always have an incentive to reduce costs and the costs associated with a product certification system are no exception to this rule. Further, the greater the burden of compliance then the larger the incentive to avoid complying with the system. A system that minimises the above costs will therefore have a greater likelihood of voluntary compliance by fishers.

Low levels of voluntary compliance create costs that governments presumably wish to avoid. The first cost is the undermining of the objectives the system is working towards (e.g., conservation and management of fish stocks). This first cost leads to a second cost: increased government costs of monitoring and enforcement. It is therefore normally preferable that a system be designed in a way that minimises compliance costs for fishers. That way, fisheries authorities have made their best efforts – within the constraints of the system's objectives – to reduce incentives for non-compliance. As product certification systems gain favour as a way to support management initiatives in international fisheries, consistent and – where appropriate – similar approaches will assist voluntary compliance.

Costs incurred by merchants, distributors, exporters and importers
The costs incurred by merchants, distributors, exporters and importers are similar to those incurred by fishers. Filling out statistical documents and having them verified by an authorised person are the additional tasks that these sector participants have to undertake. When dealing with a valuable perishable product (e.g., fresh bluefin tuna), a system that causes delays can reduce the product value. Merchants, distributors, exporters and importers face similar incentives to fishers when it comes to compliance with product certification schemes. That is, the greater the burden and cost of complying with product certification, the larger the incentive for non-compliance.

Recognising that product certification can have beneficial effects, the International Coalition of Fisheries Associations nonetheless notes that "…the proliferation of different forms, reporting to differing government agencies, at differing points in the chain of custody is creating confusion among seafood dealers in the global marketplace and may begin to place an undue restriction on trade. Such schemes, if standardised, would generate familiarity and comfort for seafood traders and thus create an incentive towards compliance." (Justin LeBlanc, ICFA, e-mail communication, 17 Jan. 2001).

4.3 Characteristics of Product Certification Schemes

In this part the characteristics of product certification schemes are discussed. These are: the linkage of these schemes with management objectives; their mandatory nature; the level of government involvement; their validation procedures; and, in the international arrangement context, how they deal with non-participants.

Closely Linked with Management Objectives
Many product certification schemes are closely linked to a specific management objective. The example quoted above of the ICCAT bluefin tuna statistical document illustrates this point. Information collected from the document was used to encourage correct reporting of catches and to improve overall compliance. Box 12 outlines the objectives of the CCAMLR catch documentation scheme.

Box 12. Objectives of the CCAMLR Catch Documentation Scheme

i. To monitor the international trade in toothfish;
ii. To identify the origins of toothfish imported into or exported from the territories of Contracting Parties;
iii. To determine whether toothfish imported into or exported from the territories of Contracting Parties, if caught in the Convention Area, was caught in a manner consistent with CCAMLR conservation measures; and
iv. To gather catch data for the scientific evaluation of the stocks.

Source: http://www.ccamlr.org/

Under this scheme all landings, trans-shipments and importations of toothfish into the territories of CCAMLR Contracting Parties have to be accompanied by a completed

Catch Document. The document specifies information relating to the volume and location of catch, and the name and flag state of the vessel. Two of the objectives of the scheme are closely related to management objectives. Objective (iii) seeks to determine that toothfish is caught in a manner consistent with CCAMLR conservation measures. Objective (iv) envisages the data collected being used for assessment of the state of toothfish stocks.

The origin of product certification schemes is often a need to support specific conservation and management initiatives. Fisheries managers are frustrated with the inadequacy of traditional monitoring and enforcement tools, particularly in high value international fisheries. A specific management need, therefore, often shapes the product certification scheme. For example, the United States of America tracks trade in tuna so that it can meet its obligations under the IATTC's International Dolphin Conservation Programme. Here IATTC member countries need to be able to substantiate the origin of the tuna and how it was caught. In meeting its obligations, the USA requires that people wanting to export to it provide a certificate of origin. That certificate includes information on area of catch, gear used, vessel flag, and *whether the tuna has been harvested in a "dolphin safe" manner*.

Some schemes are not closely linked to specific management objectives. But nonetheless the schemes are seen as providing a valuable source of additional information to support conservation and management. For example, the EU's new rules on labelling of fisheries products do not appear to be linked to specific management objectives. But the labelling process is intended to provide valuable information regarding the origin of the fish that can be used to cross check against that collected when the fish is landed at port.

Mandatory

All product certification schemes listed in Box 11 are compulsory in nature. This compulsion arises from the origin of the need for the scheme. To effectively support fisheries management, coverage of the scheme should be as complete as possible. Incomplete coverage has negative consequences:

- It undermines the ability to monitor and enforce specific management initiatives.
- It creates incentives for people – who otherwise would comply with the scheme – to change their behaviour so as to avoid compliance. Seeing other participants not having to comply with the requirements of a product certification scheme encourages those previously abiding to those requirements to operate outside the scheme as well.
- It can degrade the value of information collected from those complying with the product certification scheme. For example, incomplete coverage makes it difficult to determine total removals from the fishery. Even estimating the degree of unrecorded removals is hard to do.

Incomplete coverage of product certification schemes is an issue confronting international conservation and management arrangements. Participants in these arrangements can address the mandatory element of the schemes by passing laws in

respect of their own jurisdictions (fishers, importers, etc). But the problems of non-participant fishing, unauthorised and illegal fishing remain. Overcoming these problems can effectively be done by ensuring that final market countries also agree to adopt mandatory compliance with the product certification scheme. In the case of the CCAMLR, major importing markets like Japan and the United States of America require verified catch documentation to accompany the toothfish imports. The same applies for bluefin tuna and swordfish from ICCAT fisheries that is imported into the European Community, Japan and the United States of America.

Government-administered

Product certification schemes are generally administered by governments. The schemes usually come from a need identified by fisheries managers, either in a domestic or international context, and governments usually implement and manage the schemes. The degree of involvement was indicated above in the discussion on government costs: developing documentation systems; verifying documents; making decisions; and monitoring systems. A range of government agencies that cover fisheries management, international affairs, customs, and law enforcement conducts these activities.

Some documentation systems allow certain government functions to be delegated to another entity. This allowance reflects the difficulty with having a government person on hand to verify every transaction, whether it is on the high seas or at a fish landing point before being transported to a fresh fish market. For example, in the CCSBT statistical document, validation of catch documents has to be done by the "competent authority" of the flag state of the vessel that harvested the southern bluefin tuna. This requirement can however be met by an entity delegated such authority by the flag state. Any CCBST member country that uses this option is required to submit a certified copy of such a delegation to the Commission.

Chain of Custody and Validation

Ensuring that the chain of custody of the products, from harvest to importation into final market, is critical to the effectiveness of a product certification scheme. To ensure chain of custody of the product throughout the transactions in the global fisheries marketplace, validation by appropriate authorities is required. Without such assurances, it is impossible to know if the product being sold into the final market has been caught according to conservation and management measures. Some product certification systems do not assure, by government validation, the chain of custody along the line of product transactions. It could be argued that such approaches undermine confidence in the product certification system.

One of the most comprehensive product certification schemes is that used by CCAMLR for Antarctic toothfish. Contracting parties to CCAMLR have agreed not to import toothfish that do not have an accompanying catch document. A simple representation of the CCAMLR scheme is provided in Figure 4.

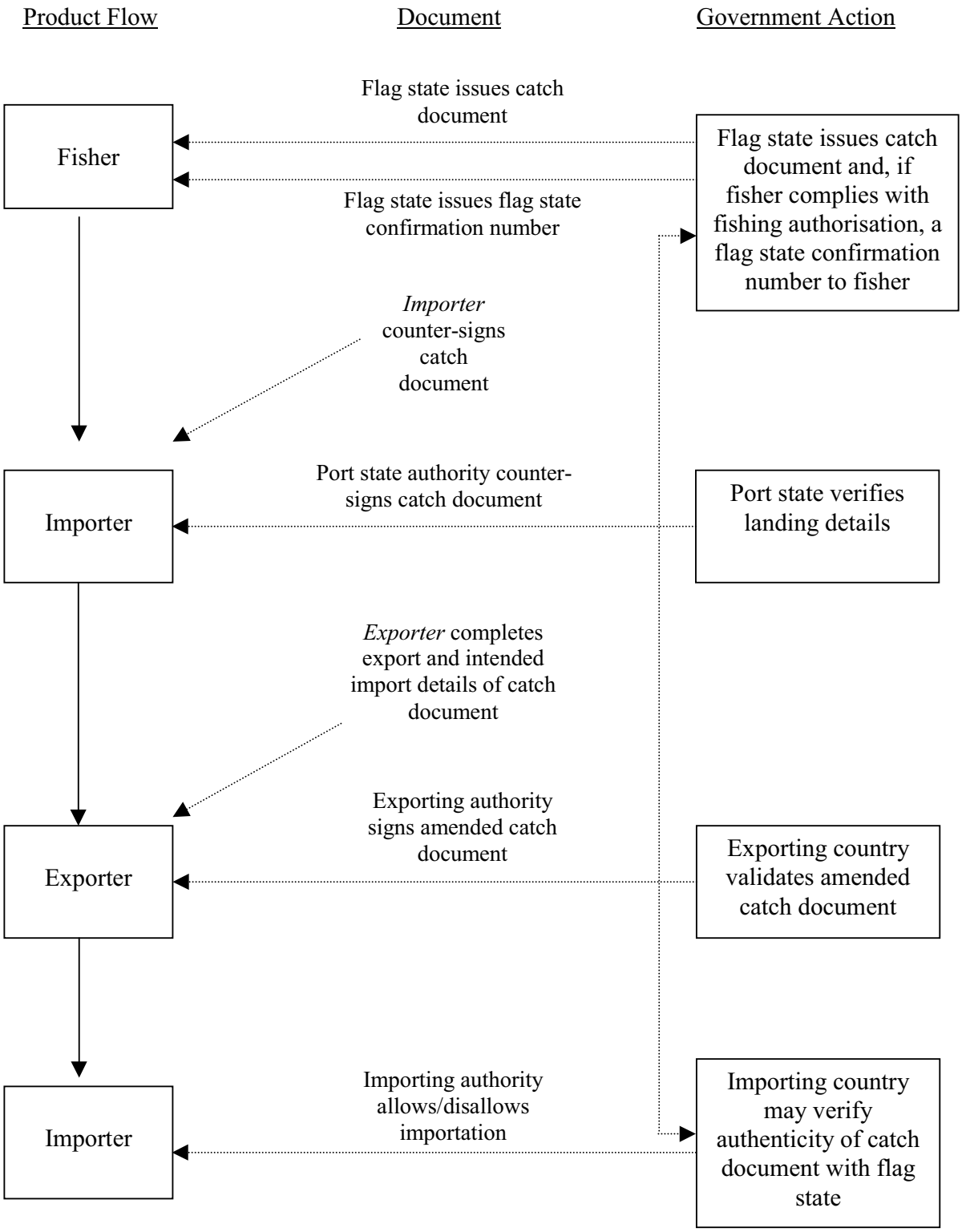

Figure 4. Simple Representation of CCAMLR Catch Documentation Scheme

Throughout the process, transactions between fisher, importer, exporter (and even re-exporter, if necessary) are verified by flag state, port state and exporting authorities. A fisher authorised to fish for toothfish by his or her flag state will also receive a catch document. When the fisher wants to land the catch, the flag state will determine whether the toothfish have been caught in accordance with its authorisation. If it has, then the flag state will give the fisher a unique flag state confirmation number. When the fish is landed the catch document is then countersigned by a port state official. In doing so, the port state official confirms that the catches landed agree with those specified on the document. By this method the flag state assures itself that the fisher has acted in accordance with the authorisation.

As the product is traded onwards, the catch document (or copies of it) goes with it. Along the way, relevant authorities check and verify the accuracy of the document *vis-à-vis* the product it is associated with. Importing countries have the opportunity to go back to the flag state referred to in the catch document to establish the legitimacy of the document. If the flag state does not verify the legitimacy of the document, the importation of the toothfish can be refused. Thus, validation by appropriate authorities occurs throughout the product life of the toothfish.

Schemes that generate proof of compliance with management and compliance measures *early in the product certification process* appear to be useful. If the document is closely aligned to fishers' activity, then the greater the chance of useful information being generated that enables people further down the chain to act in an appropriate way. Generating such documentation early in the process makes it easier for importers and traders who have to comply with mandated import requirements. For example, it may be possible for a country to prohibit the import of a fish product unless that product was caught in compliance with an international management measure. However, it creates difficulties for importers, exporters and traders if there is no system that can provide a verification stretching back to the harvester. Unless backed up by verification systems that are connected to the fishers' activities, importers and exporters can be placed in a difficult situation. Often they have to act in accordance with unwieldy systems that try to trace *back* from the marketplace the origin of the product and whether it has been caught in accordance with a particular management regime or specific management measures. Such unwieldy systems can unduly restrict trade and, as consequence, encourage non-compliance.

Engagement with Non-contracting Parties

Engagement with non-contracting parties is of particular importance in fisheries where management is conducted through international fisheries organizations or arrangements. Parties to these organizations normally undertake to discharge their obligations under product certification schemes. The issue is: how do non-contracting parties interact with these schemes? There appears to be three ways this interaction can occur:

i. If they want to import into the territory of a contracting party, the non-contracting party needs to be able to provide the required documentation.

ii. If they want to tranship their product onto a contracting party flag vessel, the non-contracting party needs to be able to provide the required documentation.
iii. If they are involved in importing, exporting, re-exporting or trans-shipping, the non-contracting party agrees to use the product certification system.

In (i) and (ii), contracting parties are able to exert pressure by requiring certain documentation to be produced. If a non-contracting party wishes to sell to an operator from a contracting party, it has a strong interest in voluntarily complying with the product certification scheme. For this to be effective, contracting parties need to make their vessel operators, trans-shippers and importers well aware of their obligations through education and information programmes.

For (i) to provide a significant lever to encourage non-contracting parties to use the product certification schemes, the involvement and commitment of major seafood importing countries is critical. For example, international product certification schemes currently apply to bluefin tuna, swordfish, and Antarctic toothfish. These species are mainly sold into the markets of Japan, United States of America and the European Community.

Some schemes further refine the interaction with non-contracting parties. Even if non-contracting parties meet the obligations of a product certification scheme, they can face further examination. ICCAT uses information collected by its bluefin tuna statistical document programme (and from other sources) to assess whether the non-contracting party's activities have undermined the effectiveness of the bluefin tuna conservation programme. If the non-contracting party doesn't take action to try and rectify these activities, actions can be initiated that may result in contracting parties using trade restrictive measures against imports from that non-contracting party.

International organizations and arrangements adopt approaches to try to actively engage non-contracting parties in conservation and management initiatives. And the application of product certification systems is no exception to this way of working. As part of its policy to enhance co-operation with non-contracting parties, CCAMLR:

- Informs non-contracting parties of the development and implementation of the catch documentation scheme and provides them with a copy of the conservation measure and an explanatory memorandum.
- Encourages non-contracting parties to participate in the catch documentation scheme and draws their attention to the consequences for them of not participating.

This approach provides a useful model for dealing with non-contracting parties to a product certification scheme. The goal is always their participation. Education and information need to be provided to the non-contracting parties so that they can clearly understand how they could implement the scheme. Once this is understood, it may then be prudent to explore the consequences of them not complying with the scheme.

5. Opportunities and Concerns with Ecolabels[48]

Ecolabelling schemes have provoked concerns among some countries, particularly developing countries about market access. To date, only little hard evidence has emerged on this subject.[49] In respect to organic labelled food products, farmers, often small-scale, of several developing countries have taken advantage of the rapidly growing markets in economically advanced countries. However, for the fisheries sector, developing countries already have concerns about the impact on their competitiveness of rules related to fish additives and food safety, fish health and technical standards.[50] The concern of some countries is that ecolabelling schemes in importing countries could simply add to the layer of constraints and competitive challenges they face. Four areas of concerns and several opportunities can be articulated.[51]

5.1 Opportunities

Many industry groups, civil society organizations and governments acknowledge the economic and ecological opportunities that ecolabelling could offer.

Environmental Opportunities

Many governments and industry groups recognise that ecolabelling could provide needed economic incentives for better long term stewardship and availability of natural resources important for national economic welfare. Ecolabelling schemes can provide countries one tool to help them fulfil commitments made under international agreements on important environmental imperatives such as responsible fisheries and the conservation and sustainable use of biological diversity. The fundamental rationale for ecolabelling is, after all, to generate political support for improved environmental management and to raise environmental standards through consumer choice.

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[48] This section is largely drawn from material in Deere (1999).

[49] Market access effects of ecolabels were the subject of studies and/or discussions by the Economic and Social Commission for Asia and the Pacific (ESCAP, 1997), the International Trade Centre (ITC (UNCTAD/WTO), 1996), UNCTAD (Zarrilli, Simonetta, Jha, Veena & René Vossenaar (Eds.),1997), and the Organization for Economic Co-operation and Development (OECD, 1997b). No conclusive evidence has been established by the few available studies on trade effects. The OECD 1997 study notes that overall, ecolabelling has only been moderately successful with the individual consumer. However, ecolabels may have important market impact when retailers specify that they want to purchase ecolabelled products, or when they become a tool for identifying environmentally preferable products for government procurement and other institutional purchasers. The ESCAP study finds that although there was no documented evidence that developing countries had been adversely affected by ecolabelling, labour-intensive exports of South Asia, and timber-based exports of South-East Asia had been particularly sensitive to ecolabelling. For more details, the reader is directed to WTO (1998d).

[50] Technical standards have been frequently used in the fisheries sector and have at times raised concerns about protectionist intents. There are strong fears that the introduction of Hazard Analysis Critical Control Point (HACCP) systems will represent potential non-tariff barriers to trade for some developing countries, especially in the case of non-modern production facilities. Fears that such measures can disguise protectionist intent led the members of the WTO to negotiate a series of agreements that regulate the use of non-tariff measures, including the Agreement on Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade.

[51] An excellent overview of the issues for developing countries is provided by Zarrilli, Simonetta, Jha, Veena & René Vossenaar (Eds.). 1997. Eco-Labelling and International Trade, United Nations Conference on Trade and Development (UNCTAD): New York. The book brings together the papers presented by UNCTAD in June 1994 on possible effects of eco-labelling on export competitiveness and developing country firms' access to markets in developed countries.

Economic Opportunities

Voluntary ecolabelling provides one of the least-coercive market-based mechanisms to improve conservation outcomes.[52] Private sector interest in ecolabelling for fisheries products in both developed and developing countries is growing, especially given the business and export opportunities ecolabelling has generated in some other sectors. Moreover, the potential for growth in the market share of ecolabelled products makes ecolabelling a compelling business choice. If fisheries management improves in response to efforts to comply with certification criteria, the potential benefits to fisheries in both industrial and developing countries could go far beyond higher revenues that ecolabelled products may generate. In fisheries, there are clear win-win options, even if the task of fisheries management is daunting in many places.

Ecolabelling is seen by some as an important element for gaining access to new premium green markets. For those producers willing and currently or potentially able to meet the sustainability requirements, ecolabelling presents an opportunity to add value to existing products, expand reach in existing markets, or maintain market share in a competitive environment.[53] Product differentiation could be a way for some exporters to enhance their export earnings and ecolabels could be one source of such product differentiation.

Box 13: Namibian Support for Guidelines for Ecolabelling.

"…There are still interesting challenges in the area of trade and environment. One of these is the issue of eco-labelling…. Quite reasonably, some consumers are concerned as they approach fish counters and supermarket freezers and wondering whether their fish purchases are supporting similar disastrous exercises of overfishing. To the extent that customers are interested in being assured that the products they buy are harvested by sustainable fishing practices, and are prepared to pay more if necessary to buy products carrying the assurances they seek, we think they are entitled to reliable information in that direction. In this way, eco-labelling can harness consumer preferences through trade to strengthen sustainable fisheries management. For this reason, Namibia is supporting work by FAO towards the development of guidelines for eco-labelling."[54]

The Honourable Abraham Iyambo, Minister of Fisheries and Marine Resources, Namibia.

There are also hopes that ecolabelling could provide new opportunities for attracting capital investment and joint ventures in developing countries. For example, some developing countries hope to enhance their chances at meeting criteria for the certification of their fisheries through cooperation among several countries in their region or through joint ventures with fishing enterprises from industrial countries. Ecolabelling

[52] *Ibid.*

[53] See for example, UNCTAD. 1994. *Eco-Labelling and Market Opportunities for Environmentally Friendly Products*, TD/B/WG.6/2. UNCTAD: Geneva.

[54] Iyambo, Abraham. 1999. "Fisheries, Trade and Environment: The Namibian Perspective", Paper presented at the ICTSD-ZERO-ART Regional Trade and Environment Seminar for Government and Civil Society, Harare, Zimbabwe, 10-12 February, 1999.

can also provide an opportunity for innovative producers to benefit from the use of more environmentally friendly production methods. [55]

There are hopes too that countries may be able to mobilise additional financial and technical resources through their participation in ecolabelling schemes. Conceivably, ecolabelling schemes could comprise specific support programmes to facilitate compliance by the private sector with the labelling criteria, especially in developing countries, as well as temporary measures to compensate individuals and households who may be negatively affected. Finally, some entrepreneurs hope to carve out a distinct market niche based on the promotion of the sustainable nature of some artisanal modes of fish harvesting to both socially and environmentally conscious Northern consumers.[56]

In the future, consumer consciousness of environmental concerns is likely to grow in both North and South. This point is clearly recognised by many producers in both developed and developing countries. In both developed and developing countries, producers are working to comply with broad trends in environmental standards, such as ISO 14 000, in order to become more competitive in international markets.

In both North and South, one can argue that labelling that responds to consumer interest is likely to grow. Thus, at the global level, it makes sense for producers to get on board, one way or another, with environmental considerations in order to maximise their long-term competitiveness. Moreover, it is notable that there are several producer organizations and NGOs that recognise the opportunities that ecolabelling can present and that have had significant and productive involvement in the discussion of and development of ecolabelling schemes.

5.2 Concerns

Despite these opportunities, some governments, producers and civil society groups have expressed various concerns about ecolabelling.

First, an overriding complaint is of lack of transparency and opportunities for participation in the development of product standards such as those that might play a role in assessments of sustainability. This is of particular concern in the fisheries sector where governments have primary management responsibility for fisheries within national exclusive economic zones and, moreover, are obliged under international law to cooperate with governments of other countries in the management of shared fish stocks and of fish stocks on the high seas. Effective participation of governments in the product standard setting process may therefore contribute to strong implementation of ecolabelling programmes.

Second, there are concerns among some governments and industry groups, particularly those from countries with strong fish export interests, that ecolabelling schemes could a)

[55] Downes, David and Brennan Van Dyke. 1998. *Fisheries Conservation and Trade Rules: Ensuring that Trade Law Promotes Sustainable Fisheries*, Center for International Environmental Law and Greenpeace: Washington, D.C. p.33.
[56] Beatrice Chaytor. 1999. "International Trade and Legal Rules to support Marine Biodiversity", *Fisheries, International Trade and Biodiversity*, draft manuscript, IUCN: Gland.

disguise underlying intentions to protect domestic industries, b) restrict market access; and c) erode national competitiveness for those less able to meet or afford foreign labelling and certification standards.[57]

Possible discriminatory effects of national and regional ecolabelling schemes can be attributed to a number of factors, including: 1) ecolabelling tends to be based on domestic environmental priorities and technologies in the importing country and may overlook acceptable products and manufacturing processes in the country of production; 2) the definition of product categories, and the determination of criteria and limit values may favour domestic over foreign producers; 3) ecolabelling may require foreign producers to meet criteria which are not relevant in the country of production; 4) environmental infrastructures may differ widely across countries; and 5) certain parameters used for calculating the environmental effects of products throughout their life-cycle may be based on information collected in the importing country or countries with comparable conditions, and may overestimate the environmental impacts in the actual country of production.[58] Furthermore, given the influence of the voluntary purchasing decisions of large wholesale, retail and restaurant chains that control large market shares in large fish consuming and importing regions, particularly in Europe and North America, these schemes could effectively lead to reductions in the capacity of non-ecolabelled products to be exported to or simply sold within those markets.

Third, there are fears that the costs of bringing fisheries management practices into compliance with the criteria and principles of transnational or foreign ecolabelling schemes, going through the certification process, and maintaining certifiable status could be prohibitive.[59] One challenge is that the quantity and quality of fisheries data is often low in developing countries and this factor may be a constraint to certification.[60] Also, the burden of complying with foreign product standards may fall disproportionately on small suppliers to the market for whom the cost of acquiring information about, and achieving, certifiable status and standards is relatively higher.[61] There have also been

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[57] See Downes and Van Dyke. 1998. *Op. cit*. p.145.

[58] See Rene Vossenaar. 1997. *Eco-Labelling and International Trade: The Main Issues.* In, Zarrilli, Simonetta, Jha, Veena & René Vossenaar (Eds.). 1997. Eco-Labelling and International Trade, United Nations Conference on Trade and Development (UNCTAD): New York.

[59] See Amjadi, Azita & Alexander Yeats. 1995. *Nontariff Barriers Africa Faces: What did the Uruguay Round Accomplish, and What Remains to be Done?,* World Bank Research Working Paper 1439, World Bank: Washington, D.C; Gupta, R.K. 1997. *Non-Tariff Barriers or Disguised Protectionism*, Consumer Unity & Trust Society (CUTS): Calcutta; Matthew, S. 1997. *When Sandals Meet Suit*: Letter from Sebastian Matthew, Executive Director of ICSF to Michael Sutton, Director, Endangered Seas Campaign, WWF International, 7 August, 1997.

[60] Efforts are being made to address this problem by governments and through bilateral and multilateral assistance. The MSC has also stated its goal of ensuring that its Principles and Criteria can be applied in an appropriate manner in fisheries where there is limited information and where management and compliance regimes may be based on traditional community structures. Personal e-mail communication from Jonathan Peacey, Fisheries Director, MSC, October 1, 1999.

[61] The WWF Endangered Seas Campaign and WWF US Marine Program have recently developed a proposed methodology for certification in community-based fisheries in part to address criticism that initiatives such as the MSC may disadvantage small-scale fishers from developing countries. They seek to generate 10 certified fisheries in marine eco-regions of broad geographical distribution in the next 3 years. Explicit goals are to test the potential of certification to create incentives for rationale resource exploitation and biodiversity conservation and to reward small-scale fishers for sustainable marine resource management. For more information see WWF. 1999. *Community-Based Fisheries Certification; A Proposed Methodology*, WWF, Washington, D.C.

complaints that the lack of auditing/certification/ecolabelling infrastructure in developing countries will leave them dependent on expensive foreign consultants. As a result, developing countries have emphasised their need for greater financial and technical assistance for the improvement of fisheries management systems. The challenge of attaining sustainability is not at all unique to developing countries. Many fisheries in developed countries are depleted and unlikely to achieve certification in the near future. In developing countries, there are many fisheries that are less developed/depleted and for which certification might be more easily achieved. Therefore, in terms of the state of a fish stock, some certification programmes may in fact favour fisheries in developing countries over those in some developed countries.

Fourth, the voluntary nature of ecolabelling can raise challenges. While voluntary schemes need not result in explicit restrictions as some mandatory schemes might, they may indirectly affect trade due to institutional factors in producing countries. Institutional factors could include difficulties faced by producers in some countries in obtaining adequate supplies of materials, environmentally friendly technologies and other materials, which are acceptable for use in, or necessary to comply with standards for, ecolabelled products. Other institutional constraints could be inadequate and unequal financial and technical capacity within domestic regulatory agencies to facilitate sustainable fisheries management. Without the support of governments, many private industries cannot reasonably be expected to become sufficiently organised to independently institute effective management schemes and achieve certifiable status. In cases where governments either fail to act (or act inappropriately) to manage fisheries, the fishing industry may be penalised due to lower sales prices in the absence of certification.[62]

Finally, it can be argued that even if participation in ecolabelling schemes is voluntary, the definition of criteria for certification could clearly influence the impact of the schemes on countries with varied environmental and socio-economic conditions and interests. In the absence of some common international understanding, governments could be required to try to monitor, intervene or improve each individual scheme that arises to ensure the interests of their countries are not compromised. Internationally agreed guidelines on ecolabelling could reduce this potential burden of monitoring. Otherwise, there is the possibility that promoters of voluntary competing ecolabelling schemes, for example at the national level, are likely to seek to discredit the schemes of competitors.

[62] It is possible that sufficient pressure from industry should induce governments to act. It is also possible, however, that industry has difficulty getting organised, and that government is unresponsive to industry pressure. Willmann, R. 1997. *Certification and Eco-labelling in Marine Fisheries: A Preliminary Assessment*, unpublished mimeograph.

6. Ecolabelling and International Trade Law Implications[63]

Fish and fishery products are among the most widely traded natural resource based goods. More than 40 percent of global fish production enters international trade. For many developing countries, foreign exchange revenues from fish exports make a major contribution to their balance of payments and are thus of strategic macro-economic importance. On the other hand, for the three major global fish importers, namely, Japan, the EU and the U.S.A., processing, wholesaling and retailing of imported fish are of considerable economic significance, in addition to satisfying consumer demand not met by domestic production (Cochrane and Willmann, 2000).

The large and increasing trade of global fish production and the fact that much of the trade flow is from developing countries to industrialized countries indicate the potential of ecolabelling to both creating an incentive for improved fisheries management and causing a barrier to trade. Presently, much of the 'green-conscious' consumer demand is concentrated in the main fish importing countries, with the exception of China, which has become in recent years a major fish importing country (Cochrane and Willmann, 2000).

6.1 Ecolabelling and General International Law [64]

The principle of sovereign equality among States is the cornerstone of general international law. In respect to environmental issues, the emphasis is on reciprocal rights and obligations rather than the traditional notions of sovereignty that are incompatible with global environmental interdependence. The principle of reciprocity, however, could cause injustices if rights and obligations are set without reference to economic, social, cultural and environmental differences between States. Appleton notes that "conflicting sovereignty considerations …. suggest that it may be difficult to formulate a rule that is always applicable to judge the legality of environmental labelling schemes pursuant to general international law." Instead, he lists factors that would seem to influence legality including the voluntary or mandatory nature of the labelling scheme, the stages of the product cycle targeted, whether the environmental problems addressed are of a transboundary or global nature and the risks associated with them, and the development interests of the respective States.

The distinction between voluntary and mandatory schemes is most relevant from a perspective of sovereignty. Voluntary schemes leave it entirely at the discretion of producers to join a scheme and to consumers to choose a labelled product. The State does neither oblige domestic or foreign producers to participate in the scheme nor consumers to purchase them. Appleton notes, however, that the more a government successfully promotes a voluntary scheme, the more complicated the problem becomes, especially if

[63] Unless otherwise stated, this section is largely drawn from material in Deere (1999). For a broad overview of the intersection of international trade, fisheries and marine conservation issues, please see Deere (2000).

[64] This section, drawing upon Appleton, Arthur, E. (1997) Environmental Labelling Programmes: Trade Law Implications. Kluwer Law International, has been reproduced from Cochrane and Willmann (2000).

certification criteria include non-product related production methods and processes (NPR-PPMs), i.e., production methods and processes that do not alter the physical characteristics of the product itself but cause less environmental impact in production and/or distribution. In case the environmental impact is entirely restricted to the producing country's territory, its sovereignty is arguably influenced if the foreign importing State were to promote an ecolabelling programme incorporating such NPR-PPMs, especially if criteria would be established without consultation. This is reflected in Principle 12 of the 1992 Rio Declaration on Environment and Development which states: "Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus."

6.2 Ecolabelling and WTO Agreements

The objective of this section is to clarify what the Agreements of the WTO do and do not say about ecolabelling and to suggest that the respective roles of the WTO and other international organizations could be complementary with regard to ecolabelling.

The issue of the interaction of ecolabelling schemes and international trade rules often confuses international discussions of ecolabelling questions.[65] There appears to be a perception in some quarters that ecolabelling discussions at the World Trade Organization should be concluded prior to the development of international guidelines on this matter in other international fora.[66] However, it should be noted that the WTO does not claim to be the appropriate forum for discussions on the general usefulness of ecolabelling schemes or what constitutes appropriate criteria for assessing sustainability. Indeed, as the discussion below suggests, the WTO explicitly defers such issues to international agreements or bodies with appropriate expertise.

The Agreement on Technical Barriers to Trade

The WTO Agreement that directly addresses ecolabelling is the Agreement on Technical Barriers to Trade (TBT).[67] WTO Members negotiated the TBT Agreement to ensure that members do not use technical regulations or standards as disguised measures to protect

[65] The analysis of the TBT Agreement included in this section draws heavily from Downes, David R. 1999. *Integrating Implementation of the Convention on Biological Diversity and the Rules of the World Trade Organisation*, IUCN Environmental Law and Policy Discussion Paper, IUCN: Cambridge. For a detailed discussion of WTO rules and their implications for the fisheries sector and fisheries management, see Deere (2000).

[66] International organization's currently engaged in ecolabelling include the Organisation for Economic Co-operation and Development (OECD), the International Organization for Standardisation (ISO), the International Trade Centre (ITC), the United Nations Conference on Trade and Development (UNCTAD), and the Food and Agriculture Organization of the United Nations (FAO). For an overview of recent work undertaken by several of these organizations see WTO. 1998a. *Eco-packaging; overview of recent work in other International Fora*, Note by Committee on Trade and Environment, WT/CTE/W/75, WTO: Geneva. A similar note, WT/CTE/W/45 (15 April 1997) was prepared by the WTO Secretariat on Eco-labelling. See www.wto.org.

[67] The WTO Secretariat notes that "well-designed eco-labelling programs can be effective instruments of environmental policy" so long as the key requirement of non-discrimination between foreign and domestic products is honoured. See WTO Webpage on Eco-Labelling: www.wto.org/wto/environ/eco.html.

domestic industries from foreign competition. The TBT is also intended to reduce the extent to which technical regulations and standards operate as barriers to market access, primarily by encouraging the development of international standards. International standards are expected to reduce the obstacles to international trade that can be created by the proliferation of numerous different standards and regulations in various countries.

The TBT Agreement distinguishes between technical regulations and standards. ”Technical regulations” are defined as mandatory requirements for products or related process and production methods (PPMs). “Standards”, in contrast, are defined as voluntary requirements for products or related process and production methods.[68] Both regulations and standards may also relate to “terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method” (TBT Agreement, Annex I).

The rules of the TBT Agreement, including its Code of Good Practice for the Preparation, Adoption and Application of Standards (the Code of Good Practice), prohibit both regulations and standards from discriminating between domestic products and foreign products that are alike (the national treatment principle) and between ‘like products’ from different WTO Members (the ‘most-favoured-nation’ principle).[69] ‘Like products’ has been defined in past GATT and WTO dispute panel decisions to mean products with the same or similar physical characteristics or end uses. As a result, environmental trade measures based on distinctions between products based on their production or processing methods (PPMs) that do not in any way influence the physical characteristics of the products themselves have been found to violate these obligations (See Section 1.6.4.).[70]

The rules of the TBT also stipulate that Members shall ensure that technical regulations and standards do not create unnecessary obstacles to trade (TBT Article 2.2 and Annex 3). Furthermore, States are required to ensure that technical regulations use international standards that already exist (or that are near completion), or relevant parts of them, as a basis for their technical regulations, except when the international standards would be an ineffective or inappropriate means for the fulfilment of the regulations objectives.[71] In the case of technical regulations, if a regulation is applied in accordance with a relevant international standard, it is presumed not to create an unnecessary obstacle to trade (TBT Article 2.5).[72]

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[68] It is important to note that the TBT definition of standards differs from the definition of standards utilized by the ISO. Standards as defined by ISO may be mandatory or voluntary.

[69] The National Treatment Principle (Article III) forbids Members from treating foreign products less favourably (for example through more stringent regulation) than domestic "like products". The Most-Favoured Nation (MFN) principle (Article I) aims to prevent Members from treating products imported from one WTO Member less favourably than “like products” from another Member (Articles III and I).

[70] For more discussion of this point see Steve Charnovitz. 1994. “Green Roots, Bad Pruning: GATT Rules and Their Application to Environmental Trade Measures*, Tulane Environmental Law Journal*, Vol. 7.

[71] For instance, because of fundamental climatic, geographical, technological and infrastructural factors; national security requirements; the prevention of deceptive practices; and protection of human health and safety, animal or plant life or health, or the environment. (TBT, Article 2.4. and 5.4.).

[72] On the question of whether a particular standard is in accordance with relevant international standards, the TBT does not indicate with whom the burden of proof lays. If a dispute did arise, there could be questions about: 1) whether a standard is in accordance with the relevant international standards; and 2) what constitutes a relevant international standard.

International standards that could be recognised by the TBT include those set by central government, local government or non-governmental standardising bodies.[73] International voluntary certification/labelling schemes and industry-led initiatives could possibly evolve to the point of serving as de facto international standards, without intervention from any inter-governmental process. The International Federation of Organic Agricultural Movements (IFOAM), a non-governmental body, for example, has established standards that are the basis for national organic labelling in several countries, and has publicly accepted the TBT's Code of Good Practice.

In terms of standards, Members must ensure that standardising schemes operated by national governmental or intergovernmental agencies accept and comply with the Code of Good Practice (TBT Article 4.1). The extent to which the Code of Good Practice applies to local government and non-governmental standardising bodies depends on them accepting and complying with it.[74] However, Members are required to take such reasonable measures as may be available to them to ensure that local government and non-governmental standardising bodies as well as regional standardising bodies accept and comply with the Code of Good Practice, irrespective of whether or not those standardising bodies have accepted it (TBT Article 4.1).

The Code of Good Practice's substantive provisions require a standardising body to, *inter alia*, 1) adopt existing or imminent international standards, except where they would be ineffective or inappropriate, 2) make reasonable efforts to harmonise standards at the international level, 3) make every effort to avoid duplication or overlap with the work of other standardising bodies and achieve a national consensus on the standards they develop,[75] and 4) make available to any interested party within the territory of a Member a copy of a draft standard submitted for comments, its most recent work programme and standards which it has produced (TBT Annex 3). While the TBT includes a specific statement that a technical regulation is applied in accordance with a relevant international standard is presumed not to create an unnecessary obstacle to trade (TBT Article 2.5), there is no similarly specific statement in the TBT or its Annexes on this issue with respect to standards.[76]

Finally, the TBT includes several specific provisions calling on all countries to ensure transparency in the development and application of standards and regulations in particular through the open dissemination of information about them.[77] It also calls on

[73] Downes and Van Dyke. 1998. *Op. cit*. p.34.

[74] Appleton, Arthur, E. .1997. *Environmental Labelling Programmes: Trade Law Implications*. Kluwer Law International. p. 123-124.

[75] TBT Annex 3 does not specify precisely among whom the national consensus needs to be achieved. Presumably, the consensus should be among other relevant national standardizing bodies, but also with government, industry and NGOs (such as environmental and consumer organizations).

[76] On the question of whether a particular standard is in accordance with relevant international standards lies, the TBT does not indicate with whom the burden of proof lays. If a dispute did arise, there could be questions about: 1) whether a standard is in accordance with the relevant international standards; and 2) what constitutes a relevant international standard.

[77] This would include ensuring that an enquiry point exists which is able to answer all reasonable enquiries from other Members and interested parties and to provide documentation at an equitable price (if any) regarding adopted or proposed standards and technical regulations as well as conformity procedures (Article 10.1 and 10.4.). If a Member

developed countries to recognize difficulties that developing countries may encounter in the formulation and application of technical regulations and standards, and to provide them advice and technical assistance for their endeavours in this regard (TBT, Article 11.). Developing country members are also to be provided differential and more favourable treatment given their special development, financial and trade needs (TBT, Article 12).[78]

The TBT Agreement and the Environment

The text of the GATT clearly states that some trade restrictions in the interest of conservation and animal and plant health are permissible, even though they violate the general principles of the GATT. The key Article of the GATT/WTO Agreements in terms of environmental issues is Article XX.[79] Article XX (b) of the GATT permits trade actions that are "necessary to protect human, animal or plant life or health". Article XX (g) provides for actions "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption". To qualify for any of these exceptions, a measure must also satisfy the requirements of the chapeau to Article XX.

While the TBT Agreement does not contain an explicit environmental exception, its preamble contains language paralleling that found in Article XX of the GATT. The preamble of the TBT Agreement recognises that "no country should be prevented from taking measures necessary to ensure . . . the protection of human, animal or plant life or health, [or] of the environment . . . at the levels it considers appropriate."[80] In addition, Article 2.2 of the TBT Agreement provides that the "legitimate objectives" of technical regulations include "protection of human health or safety, animal or plant life or health, or the environment."[81]

The TBT Agreement and Ecolabelling

There is ongoing debate about how the TBT Agreement's different but related obligations on technical regulations and standards apply to ecolabelling initiatives. The WTO Secretariat suggests that the TBT agreement exerts "stronger control" over mandatory

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reaches agreement with another country or countries on issues related to technical regulations or standards that may have significant effects on trade, they are required to notify the Secretariat of the products covered by the agreement and provide a brief description of the Agreement (Article 10.7.).

[78] For example, in the preparation and application of standards and technical regulations, Members shall take account of the needs of developing countries with a view to ensuring they do not create unnecessary obstacles to the expansion and diversification of exports from developing country Members (Article 12). This may involve the provision of technical assistance, ensuring the active participation of developing country representatives in international standardizing bodies, and granting, upon request, specified, time-limited exceptions to obligations under the TBT.

[79] For a historical review of the world community's response to the link between trade and environment consult WTO Trade and Environment Division. 1999. *High Level Symposium on Trade and Environment, Geneva 15-16 March 1999, Background Document*, and IISD Linkages: Trade & Sustainable Development, www.iisd.ca/linkages/trade.

[80] This language goes beyond the language of Article XX(b) in that it refers explicitly to the environment. Article XX(b) has, however, been interpreted by GATT and WTO panels to encompass measures generally considered environmental within its language referring to measures "necessary to protect human, animal or plant life or health."

[81] Also see Cameron, J. & H. Ward. 1993. *The Uruguay Round's TBT Agreement*. WWF International: Gland; Vaughan, Scott & Ali Dehlavi. 1998. *Policy Effectiveness & Multilateral Environmental Agreements*, UNEP Environment and Trade Series, No. 17. UNEP: Geneva; WTO. 1995. *Negotiating History of the Coverage of the Agreement on TBTs with Regard to Labelling Requirements, Voluntary Standards, and PPMs Unrelated to Product Characteristics*, WT/CTE/W/10, WTO: Geneva.

labels (those required by governments) than on voluntary or private ecolabelling schemes. However, the extent of control on each type of scheme is unclear.[82]

Ecolabelling schemes that are mandated by governments come clearly within the TBT's rules on technical regulations and other relevant WTO rules.[83] Voluntary, government and non-governmental labelling schemes also appear to be indirect targets of certain trade disciplines.[84] Members are required to take 'reasonable' measures to ensure that voluntary standardising initiatives (which could include both government or non-governmental voluntary ecolabelling schemes) within its territory comply with the Code of Good Practice. (Analogous language found in the GATT requiring countries to take such 'reasonable' measures as are available to them has, in the past, been interpreted by dispute panels to require governments to take all constitutionally-available measures.[85])

Voluntary ecolabelling schemes for fisheries products do not appear, in principle, to contravene existing multilateral trade rules. The 1991 Tuna Dolphin decision of the GATT Arbitration Panel is instructive in this regard. While the panel found U.S. import restrictions adopted by the United States on tuna caught in association with dolphin to be GATT-illegal, it accepted the U.S. voluntary 'dolphin safe' tuna labelling scheme.[86] The panel noted that the voluntary label did not illegally restrict the sale of tuna since tuna products could be freely sold both with or without the 'dolphin safe' label, and because any competitive advantage conferred by the label depended on the free choice of consumers to give preference to tuna carrying the "Dolphin Safe" label.[87] While one could assume that a similar logic would apply to voluntary transnational ecolabelling schemes, to date, there is no similar precedent regarding the application of WTO rules to them.

The TBT Agreement and PPMs

Another unresolved issue is how the TBT Agreement applies to regulations or standards that invite consumers to discriminate not only on the basis of product characteristics, but also according to PPMs.

Two kinds of PPMs with significant environmental impacts can be distinguished. First, a process or production method can affect the characteristics of a product so that the product itself may pollute or degrade the environment when it is consumed or used (product-related PPMs). Alternatively, a process or method itself can have negative impact on the environment through, for example, the manner in which natural resources

[82] WTO. 1998c Regional Seminar on Trade and Environment for Developing Countries, Santiago, Chile, Trade and Environment Division, WTO: Geneva. p12.
[83] Importantly, the TBT Committee of the WTO has decided that mandatory labelling requirements are subject to the notification provisions of Article 2.9 of the TBT Agreement, regardless of the kind of information that is presented. See G/TBT/1/Rev.3.
[84] Downes, David and Brennan Van Dyke. 1998. *Op. cit.*
[85] There is ongoing concern and debate about what the term all "constitutionally available" measures actually requires of governments.
[86] GATT, Dolphin-Tuna Panel. 1991. WL 771248 at *43.
[87] See GATT. 1991. *Op. cit*.

are harvested or extracted in the production phase (non-product-related PPMs).[88] These production externalities do not affect the product characteristics.

Under WTO rules, the sovereign power of countries to restrict imports if they fail to meet domestic product regulations and standards relating to the physical characteristics of a product is left undisturbed. However, the power to make distinctions based on standards and regulations pertaining to PPMs, which do not show up in the physical characteristics of the product, is contested. This is important because, in the context of ecolabelling, the most relevant regulations or standards are those relating to PPMs and their environmental impacts. Criteria for ecolabels for fisheries products are likely to be based on life-cycle analysis, whereby assessments of sustainability consider all phases of a product—production, processing, use and disposal. That is, ecolabels in the fisheries sector are likely to be predominantly awarded based on non-product-related criteria, particularly those related to harvesting methods (including type of gear used, level of by-catch, impacts on the marine habitats, compliance with management system and health of the stock of origin).[89]

At present, the applicability of the provisions of the TBT Agreement to either mandatory or voluntary ecolabelling schemes that are based on non-product-related PPMs is also unclear, at best ambiguous and continues to be hotly debated.[90] Indeed, this has been an issue of much discussion in the WTO's Committee on Trade and Environment and Committee on Technical Barriers to Trade.[91] One issue on which there is broad agreement is that transparency plays a pivotal role in avoiding potential trade difficulties and increasing the legitimacy of such programmes and participation in them by parties interested in their development.

Opposition to distinctions between products based on PPMs is often a strategy to guard against disguised protectionism. Within the CTE, there is recognition that standards related to non-product related PPMs will differ between countries due to a variety of factors. However, there are concerns that distinctions between products based on PPMs could be based on: a) arbitrary rationales that could undercut the principle of comparative advantage (for instance, regulations prohibiting products produced by workers earning less than a certain minimum wage); and b) well-intended but parochial understandings of what is environmentally sound that are derived from domestic ecological conditions which may not apply to conditions in distant countries. The prospect of distinctions based on PPMs also raises fears that some countries will be able to impose unfair economic pressure on other countries (frequently less developed than the importer) to match domestic environmental standards in their own jurisdiction or lose market access.[92] Developing countries, in particular, are often concerned that by broadening the scope of the GATT to permit distinctions based on environmental PPMs, they could be venturing toward a slippery slope whereby pressures for discrimination between products based on

[88] WTO 1998c. *Op. cit.*
[89] Downes and Van Dyke, 1998. *Op. cit*. p.1
[90] See, for example, WTO. 1996. *Report of the Committee on Trade and Environment: Background, Analysis, Discussions and Proposals*, WT/CTE/1, WTO: Geneva.
[91] *Ibid.*
[92] Downes, David R. 1999. *Op. cit.*

social PPM considerations (such as labour standards and human rights) might also intensify with even more significant potential trade ramifications.

Another argument presented against PPMs is that whereas conformity with product characteristic based standards can be assessed in either the producing country or the importing country, PPM-based requirements could be evaluated only on the site of production which could make this kind of assessment more expensive. Finally, there are concerns that PPM-based regulations might compel producers to use less efficient or costly technologies/methodologies, and/or restrict foreign suppliers' choice of technology.[93]

From a conservation perspective, the reluctance to permit PPM-based measures is problematic due to the increasing importance of PPM-based standards and regulations for effective environmental management. Domestic PPM-related measures are aimed at preventing environmental degradation caused by production processes, and as noted in a 1997 OECD Report, Domestic PPM-related requirements are important policy tools for promoting sustainable development.[94] Indeed, the conservation and sustainable use of fisheries depends on regulatory and management methods in the production phase (e.g., harvesting), as this is when considerable environmental impact occurs. PPM-related regulations and measures can be essential for controlling the environmental impact of consumption decisions. They also respond to the right of consumers to be informed about products they buy.[95] Finally, they offer the chance for greater efficiency because producers can compete to comply with standards in the most efficient way.

6.3 Trade Implications of Seafood Ecolabelling[96]

Trade implications of voluntary non-regulatory initiatives are related to efficiency, market share, and new market opportunities. Increased efficiency stems from the ability of individual companies to make cost-effective decisions regarding methods used to achieve objectives. If consumers easily recognize the certification, and subsequent label, then companies may protect and even enhance their market share (Mullett, 1997). New markets can come about. For example, the Body Shop International company, through their ethics of fair trade and community development, have led to a number of new product lines sourced out of developing nations (Kerr, 1998). In Germany, for example, the environmental label criteria are being increasingly included in specifications set by the public procurement agencies of the Federation, Laender and local authorities when tendering offers (OECD, 1992). Thus, significant positive trade implications are possible under ecolabelling programmes.

"Non-discrimination is the cornerstone of secure and predictable market access and undistorted competition: it guarantees consumer choice and it gives producers access to

[93] TBT Annex 3 does not specify precisely among whom the national consensus needs to be achieved. Presumably, the consensus should be among other relevant national standardizing bodies, but also with government, industry and NGOs (such as environmental and consumer organizations).
[94] See OECD. 1997b. *Op cit*., p.7
[95] *Ibid*, p.3
[96] Cathy Roheim Wessells wrote this section.

the full range of market opportunities. Subject to that requirement being met, WTO rules place essentially no constraints on the policy choice available to a country to protect its own environment against damage either from domestic production or from the consumption of domestically produced or imported products," (WTO 1998). Most trade concerns can be met by ensuring transparency and non-discrimination in the preparation, adoption and application of ecolabelling schemes.

The Committee on Trade and the Environment of the WTO produced a report on ecolabelling, which endorsed the use of ecolabels as a means to encourage the development of environmentally conscious consumers (WTO/CTE 1996). It was recommended that all ecolabelling programmes, even private programmes, should maintain transparency. In addition, harmonization across nations is highly desirable to ensure non-discrimination. Achieving credibility as an ecolabel requires several things be true in international trading with a diversity of potential suppliers (MacMullen, 1999). These include:

- Objectivity in assessment of environmental performance including use of predetermined criteria which can be measured through quantitative and/or qualitative indicators;
- The outcome of the process should be the same in similar situations;
- The certifying firms should be independent of parties having vested interests;
- The evaluation process should allow for external judgement on the standards and their application;
- The programme should be developed through an open and transparent consultation process involving all stakeholders.

If the above criteria for credibility are not achieved, and harmonization and transparency of ecolabelling programmes for marine capture fisheries are not achieved because of stakeholder disenchantment, then it is likely that there will be a growth in the number of ecolabelling programmes worldwide. If this occurs, there are additional implications for trade (Morris and Scarlett, 1996):

- The cost of ensuring that a product meets the different criteria necessitated by different schemes would most likely be higher than the cost of meeting only one set of criteria. There may even be instances were the criteria of two or more schemes are mutually exclusive.

- When several ecolabels could be applied to an individual product, this would require manufacturers to either package their goods differently for each country where an ecolabel had been awarded or to include an array of ecolabels on the same package.

- Ecolabelling programmes are likely to reflect the concerns of pressure groups in the country where the label is developed. As a result, ecolabel criteria are likely to favour goods produced locally, and so discriminate against foreign produced goods.

- If national governments include ecolabelling as a requirement in their procurement policies then, in the absence of an international ecolabel, the requirement may specify that only the ecolabel issued by the purchasing country's authority is acceptable.

Larger firms in developed countries may possess an unfair advantage in the practice of ecolabelling seafood products from marine capture fisheries because they may absorb more readily the compliance costs and licensing fees associated with ecolabelling programmes. Many types of costs are incurred, including the cost of certification, costs of chain of custody certification, as well as possibly maintaining two separate inventories of ecolabelled and non-ecolabelled products.

Furthermore, developed countries may be in a position to make significant and costly changes to management systems as required by the principles and criteria. A significant concern arises from the fear that developing countries are not able to meet the environmental standards other countries set for product groups, afford the costs of certification, or find it more difficult to comply with all of the ecolabelling programmes' chain of custody requirements. Imports from countries that cannot meet the labelling standards may sell their products in other developing nations where there are fewer consumers willing to pay more for environmentally friendly seafood. In addition, in developed nations where consumers have higher average incomes, and may have a willingness to pay additional for products with an ecolabel, products without an ecolabel will be *de facto* discriminated against. This certainly seems to be the case with organic agriculture products. The majority of the production and consumption of organic produce is in developed nations.

7. Conclusions[97]

Product certification and ecolabelling can be valuable tools for achieving sustainable fisheries and healthy aquatic ecosystems. They can complement and strengthen conventional regulatory measures to achieve conservation and management outcomes.

Ecolabelling of fish and fishery products has the potential to create a market incentive to manage fisheries and aquaculture farms sustainably. Several benefits can accrue to the world community if this potential is realized:

- There will be environmental improvement in the aquatic ecosystems, reducing societal costs of the reduction in global biodiversity.
- Consumers will benefit as they receive more information concerning the products they purchase, are able to choose from more products of varying environmental qualities, and are able to make informed choices regarding the purchase of those

[97] This section is drawn from material prepared by Cathy Roheim Wessells, Carolyn Deere, Kevern Cochrane, Rolf Willmann and Paul Wallis.

seafood products. Consumers also benefit in the long run by continued availability of their favourite seafood products.

- Producers of ecolabelled seafood benefit from being able to extract that additional willingness to pay from consumers that they would not ordinarily be able to do in an undifferentiated market.
- The fisheries industry will benefit as the move from an unsustainable fishery to a sustainable fishery preserves production and jobs over the long run.

But there are potential problems as well. With a growth in ecolabelling programmes comes even more possibilities for technical barriers to trade, particularly affecting developing countries, as each programme will have its specific requirements that may or may not apply equally well to all exporting nations. The growth in ecolabelling programmes implies a growth in the number of ecolabels. An increased number of ecolabelling programmes will mean the burden of costs each programme undertakes to educate the consumer, and to differentiate the ecolabels, becomes larger. With those increased costs, ecolabelling programmes may no longer be effective in educating the consumers regarding the meaning and credibility of the ecolabel. Consumers, when faced with a growing number of ecolabels on the products they choose from, may become confused and decide that none of the labels is credible. There may also be confusion if there is not a common definition. “Environmentally friendly” or “sustainably harvested” have no clear meaning. Many of the environmental claims made by manufacturers are subject to interpretation; at worst, they are potentially deceptive or misleading.

Within any labelling scheme, the criteria selected for inclusion in an ecolabelling scheme will reflect a compromise between the demands of the consumers and the capabilities and willingness of the producers, and intermediates, to meet those demands. Hence, in principle, ecolabelling schemes in fisheries should aim to encompass all or any subset of the environmental, biological, social, political or economic issues that enter into a fisheries venture.

The criteria used for ecolabelling should be developed in a participatory and transparent process, and the criteria selected should be “practical, viable and verifiable”. Practicality and verifiability are two important requirements where high levels of uncertainty, arising from poor understanding of important ecosystem principles in aquatic systems, and the difficulties of measuring what is there and what is happening in the sea, commonly prevent totally objective interpretation of the status of stocks and ecosystems. This may prove to be a substantial obstacle to widespread application of ecolabelling schemes in marine capture fisheries.

Developed countries may be in a position to make significant and costly changes to management systems as required by the principles and criteria. A significant concern arises from the fear that developing countries are not able to meet the environmental standards other countries set for product groups, afford the costs of certification, or find it more difficult to comply with all of the ecolabelling programmes’ chain of custody requirements.

Fisheries managers are using product certification schemes to support conservation and management efforts. These schemes exert monitoring and control over the product as it moves from the fisher and onto the marketplace. They appear to meet an acute need in high value international fisheries, where access controls are difficult to enforce by traditional means. Product certification can reward responsible fishing and potentially lead to higher prices, thus creating incentives for fishers to behave in an appropriate manner.

Like ecolabelling schemes, a key component of a product certification scheme is the confidence of its users. Schemes involving international fisheries therefore benefit from validation by government officials or people with delegated authority. Such an arrangement is a common occurrence in any case, as these schemes are often government administered, some having been initiated in inter-governmental fisheries fora.

When developing product certification schemes, fisheries administrations need to be careful not to imposing excessive burdens on sector participants. These burdens can create incentives for non-compliance – an unintended and unwelcome result. The growth in number of product certification schemes should therefore raise concerns not just amongst sector participants. Governments should try to minimise the burden of these schemes, trying instead to make them as consistent as possible with the approach of existing schemes and seeking common reporting procedures and standards. Such efforts can simplify matters for sector participants, reducing costs and improving the prospects for compliance.

Labelling for sustainability is here to stay. It is being increasingly recognised as a valuable tool to help bring about responsible fisheries. Ecolabelling offers the potential to harness market forces so that incentives are created in support of sustainability outcomes. Fisheries managers are using labelling to support their regulatory efforts to conserve fish stocks. Both approaches seek to reward responsible fishing. The challenge for the future will be to retain and expand the positive incentives of these approaches, and not diluting them by inconsistencies, ambiguities and unnecessary complexities.

8. Bibliography

Akerlof, George A.1970. "The market for 'lemons': Quality uncertainty and the market mechanism," *Quarterly Journal of Economics*, 84:488-500.

Aldrich, Lorna. 1999. "Consumer Use of Information: Implications for Food Policy," Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Handbook No. 715.

Amjadi, Azita & Alexander Yeats. 1995. *Nontariff Barriers Africa Faces: What did the Uruguay Round Accomplish, and What Remains to be Done?,* World Bank Research Working Paper 1439, World Bank: Washington, D.C.

Andrews, Rick L. 1992. "Economics of Information and Heterogeneous Products," *Journal of Economics Psychology* 13:399-419.

Antle, John. 1996. "Efficient Food Safety Regulation in the Food Manufacturing Sector," *American Journal of Agricultural Economics*, 78:1242-1247.

Appleton, Arthur, E. 1997. *Environmental Labelling Programmes: Trade Law Implications*. Kluwer Law International. p.123-124.

Banks, Kevin M., Esq. 1994. "How Green is My Product and Package: The Federal Trade Commission's Environmental and Marketing Guidelines." *Food and Drug Law Journal.* Vol. 49.

Blackman, Ted. 1999. "Who'll Pay for Certification." *Wood Technology* (CA). August.

Braile, Robert. 2000. "Australian rock lobster wins environmental seal of approval," *The Boston Globe*, March 9.

Bray, K (2000), " A Global Review of Illegal, Unreported and Unregulated (IUU) fishing", Paper prepared for the Expert Consultation on Illegal, Unreported and Unregulated Fishing, Government of Australia/FAO, Sydney, 15-19 May 2000.

Bremmer, B. 1989. "A New Sales Pitch: The Environment," *Business Week*, (July 24):50.

Cameron, J. & H. Ward. 1993. *The Uruguay Round's TBT Agreement*. WWF International: Gland.

Caswell, Julie A. 1998. "How Labelling of Safety and Process Attributes Affects Markets for Food," *Agricultural and Resource Economics Review*, (October):151-158.

Caswell, Julie A. 1998. "Valuing the Benefits and Costs of Improved Food Safety and Nutrition," *The Australian Journal of Agricultural and Resource Economics*, 42:409-424.

Caswell, Julie A. *&* Eliza M. Mojduszka. 1996. "Using Informational Labelling to Influence the Market for Quality in Food Products*," American Journal of Agricultural Economics* 78:1248-53.

Charnovitz, Steve. 1994. "Green Roots, Bad Pruning: GATT Rules and Their Application to Environmental Trade Measures*, Tulane Environmental Law Journal*, Vol. 7.

Chase, D. *&* T. Smith. 1992. "Consumers Keen on Green, but Marketers Don't Deliver," *Advertising Age*, 63(June29):s2-s4.

Chaytor, Beatrice. 1999. "International Trade and Legal Rules to support Marine Biodiversity", *Fisheries, International Trade and Biodiversity*, draft manuscript, IUCN: Gland.

Clover, Charles. 2000. "Thames herring given a seal of ecoapproval," *The Daily Telegraph*, March 4.

Cochrane K.L. 1999. Complexity in fisheries and limitations in the increasing complexity of fisheries management. *ICES Journal of Marine Science*, 56.

Cochrane K. and R. Willmann. 2000. *Eco-labelling in fisheries management.* In, Current Fisheries Issues and the Food and Agriculture Organization of the United Nations, edited by Myron H. Nordquist and John Norton Moore. Martinus Nijhoff Publishers. The Hague/Boston/London. pp. 583-615.

Cochrane, K.L. 2000. Reconciling sustainability, economic efficiency and equity in fisheries: the one that got away? *Fish and Fisheries*, 2000:1.

Codex Committee on Food Labelling. 1996. *Draft Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods*. CL 1996/23-FL. Rome, Italy, June.

Commission for Environmental Cooperation. 1999a. *Supporting Green Markets: Environmental Labelling, Certification, and Procurement Schemes in Canada, Mexico and the United States*, Montreal, Canada (www.cec.org).

Commission for Environmental Cooperation. 1999b. *Measuring Consumer Interest in Mexican Shade-Grown Coffee: An Assessment of the Canadian, Mexican and US Markets*. Montreal, Canada (www.cec.org).

Cook, Gary, David Downes, Brennan Van Dyke & John B. Weiner. 1997. *Applying Trade Rules to Timber Eco-labelling: A Review of Timber Eco-labelling and the WTO Agreement on Technical Barriers to Trade*, Center for International Environmental Law, Washington, D.C., February.

Cude, Brenda J. 1993. "Consumer Perceptions of Environmental Marketing Claims: An Exploratory Study," *Journal of Consumer Studies and Home Economics*, 17:207-225.

Dawkins, K. 1995. "Eco-labelling: Consumers' Right-TO-Know or Restrictive Business Practice?" Institute for Agriculture and Trade Policy, Minneapolis, MN, September.

Deere, Carolyn. 1999. *Eco-labelling and Sustainable Fisheries*. IUCN - The World Conservation Union and the Food and Agriculture Organization of the United Nations (FAO). Washington and Rome.

Deere, Carolyn. 2000. Net Gains: Linking Fisheries Management, International Trade and Sustainable Development. Washington, D.C.: The World Conservation Union (IUCN).

Donath, H., C.R. Wessells, R. Johnston, & F. Asche, 2000, "Consumer Preferences for Eco-labelled Seafood in the United States and Norway: A Comparison," paper presented at the biennial meetings of the International Institute of Fisheries Economics and Trade, Corvallis, Oregon, USA, July.

Downes, David R. 1999. *Integrating Implementation of the Convention on Biological Diversity and the Rules of the World Trade Organisation*, IUCN Environmental Law and Policy Discussion Paper, IUCN: Cambridge.

Downes, David & Brennan Van Dyke. 1998. *Fisheries Conservation and Trade Rules: Ensuring that Trade Law Promotes Sustainable Fisheries*, Center for International Environmental Law and Greenpeace: Washington, D.C.

EDF. 1997. *Global Deforestation, Timber and the Struggle for Sustainability: Making the Label Stick*, EDF: Washington, D.C.

Fiorillo, John. (2000). "Eco-labelling could benefit fishermen," Fishmonger.com, March 13.

FAO. 1998. Issues related to the feasibility and practicability of developing globally applicable, non-discriminatory technical guidelines for eco-labelling of products from marine capture fisheries. FAO Secretariat document prepared for the Technical Consultation on the Feasibility of Developing Non-Discriminatory Technical Guidelines for Eco-Labelling of Products from Marine Capture Fisheries, Rome, Italy, 21 – 23 October 1998.

FAO. 1998. Report of the technical consultation on the feasibility of developing non-discriminatory technical guidelines for eco-labelling of products from marine capture fisheries. Rome, Italy, 21-23 October 1998. FAO Fisheries Report 594. 29pp.

FAO. 1995a. Code of Conduct for Responsible Fisheries. FAO, Rome.

FAO. 1995b. Precautionary approach to fisheries: Part 1: Guidelines on the precautionary approach to capture fisheries and species introductions. FAO Fisheries Technical Paper 350(1): 51p.

Forest Stewardship Council. .1999, Jan- last update. *Principles and Criteria*, (Online). Available http://www.fscoax.org/ (1999, October 10).

Forest Stewardship Council. 1999, Jan- last update. *Forest Stewardship Council AC By-Laws*, (Online). Available http://www.fscoax.org/ (1999, October 10).

Forest Stewardship Council. 1999, Jan- last update. *List of FSC Members*, (Online). Available http://www.fscoax.org/ (1999, October 3).

Forest Stewardship Council Acadian Working Group (March 1999- last update). *FSC Acadian Working Group*, (Online). Available http://www,canadian.forest.com/fsc.about (1999, October 3).

General Agreement on Tariffs and Trade (GATT). 1991. United States –Restrictions on Imports of Tuna. GATT-Document. DS21/R. Geneva.

Grossman, S.J. 1981. "The Informational Role of Warranties and Private Disclosure about Product Quality," *Journal of Law and Economics*, 24:461-489.

Gudmundsson, Eyjolfur *&* Cathy Roheim Wessells. 2000. "Eco-labelling Seafood for Sustainable Production: Implications for Fisheries Management," *Marine Resource Economics*, 15:97-113.

Gupta, R.K. 1997. Non-Tariff Barriers or Disguised Protectionism, Consumer Unity & Trust Society (CUTS): Calcutta.

Holland, Daniel *&* Cathy R. Wessells. 1998. "Predicting Consumer Preferences for Fresh Salmon: The Influence of Safety Inspection and Production Method Attributes," *Agricultural and Resource Economics Review*, 27:1-14.

Hooker, Neal H. *&* Julie A. Caswell. 1996. "Regulatory targets and regimes for food safety: A comparison of North American and European approaches," in Caswell, J.A. (ed.), *The Economics of Reducing Health Risk from Food*, Food Marketing Policy Center, Storrs, CT, pp.1-17.

International Federation of Organic Agriculture Movements. 1999. *IFOAM Homepage,* (Online). Available http://www.ecoweb.dk/ifoam/ (1999, October 20).

International Federation of Organic Agriculture Movements. 1998. International Organic Accreditation Services: Implementing the Accreditation Programme re. USDA National Organic Program Proposed Rule. 27 April - www.nina.dk/ifoam/action/980506.html

International Trace Centre UNCTAD/WTO (ITC). 1996. Eco-labelling and Other Environmental Quality Requirements in Textiles and Clothing - Implications for developing countries. Geneva. Pp. 159.

ISO. 1998. *Environmental labels and declarations- General principles*. ISO 14020, Geneva.

ISO. 1999. Environmental labels and declarations – Type I environmental labelling – Principles and procedures. ISO/DIS 14024. Geneva.

ISO. 1999. Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling). ISO/DIS 14021. Geneva.

ISO.2000. Environmental labels and declarations – Type III environmental declarations. ISO/WD/TR/14025. Geneva.

Israel, Glenn. 1993. "Taming the Green Marketing Monster." *Boston College Environmental Affairs Law Review*. Vol. 20:303-333.

Iyambo, Abraham. 1999. "Fisheries, Trade and Environment: The Namibian Perspective", Paper presented at the ICTSD-ZERO-ART Regional Trade and Environment Seminar for Government and Civil Society, Harare, Zimbabwe, 10-12 February, 1999.

Jha, V., A. Markandya and R. Vossenar. 1999. *Reconciling trade and environment – Lessons from case studies in developing countries.* UNCTAD, Geneva. Edward Elgar, Cheltenham. Northampton, MA.

Jha, V. 1993. "Green Consumerism, Eco-labelling and Trade," mimeo, UNCTAD.

Johnston, Robert J., Cathy Roheim Wessells, Holger Donath, and Frank Asche. 2001. "A Contingent Choice Analysis of Ecolabelled Seafood: Comparing Consumer Preferences in the United States and Norway," *Journal of Agricultural and Resource Economics*, 26(1):20-39.

Joling, Dan. 1999. Organic Seafood Cooking: State Backs efforts to Win Marketing Niche, Associated Press, June 1999.

Kerr, Robert, Aaron Crosby, Ron Yachnin. 1998. *Beyond Regulation: Exporters and Voluntary Environmental Measures*. International Institute for Sustainable Development, Winnipeg, Manitoba, Canada.

Kiekens, Jean-Pierre. 1999. *Certification: International Trends and Forestry and Trade Implications*, (Online). Available http://www.ulb.ac.be/assoc/iff/study/summary (October 5).

Kirkpatrick, D. 1990. "Environmentalism: The New Crusade," *Fortune*, 122(February 12):44-55.

Kuhre, W. Lee. 1997. *ISO 14020s Environmental Labelling Marketing: Efficient and Accurate Environmental Marketing Procedures*. Upper Saddle River, NJ: Prentice Hall, Inc.

Lancaster, Kevin J. 1966. "A New Approach to Consumer Theory," *The Journal of Political Economy*, 74:132-157.

Landis, John (jlandis@smartwood.org). 1999, October 20. *RE: Questions about FSC*. E-mail to R. Hopkins (rhop2566@postoffice.uri.edu).

Landis, John (jlandis@smartwood.org). 1999, October 22. *RE: Questions about FSC*. E-mail to R. Hopkins (rhop2566@postoffice.uri.edu).

Lohr, L. 1998. "Implications of Organic Certification for Market Structure and Trade," *American Journal of Agricultural Economics*, 80(December):1125-1129.

MacMullen, P.H. 1998. "A Report to the Fish Industry Forum on the Marine Stewardship Council and Related Topics," Sea Fish Industry Authority, Technology Division, Consultancy Report No. CR 152, November.

Marine Stewardship Council. 1998a. "MSC Certification Methodology," www.msc.org, September.

Marine Stewardship Council. 1998b. "Principles and Criteria for Sustainable Fishing: Arlie House Draft," www.msc.org, October.

Marine Stewardship Council. 1999a. "Guidelines for Certifiers," www.msc.org, February.

Marine Stewardship Council. 1999b. "Accreditation Program: Accreditation Manual Part 3, Requirements for Certifiers," www.msc.org, February.

Marine Stewardship Council. 1999c. "Performance Criteria and Scoring Guideposts against the MSC Principles and Criteria: Western Australian Rock Lobster Fishery Issues," www.msc.org, November.

Matthew, S. 1997. When Sandals Meet Suit: Letter from Sebastian Matthew, Executive Secretary of ICSF to Michael Sutton, Director, Endangered Seas Campaign, WWF International, 7 August, 1997. In, International Collective in Support of Fishworkers (ICSF).1998: Fish stake – the pros and cons of the Marine Stewardship Council initiative: a debate from the pages of SAMUDRA Report. Chennai, India.

Mattoo, Aaditya & Harsha Singh. 1994. "Eco-labelling: Policy Considerations," *Kyklos*, 47:53-65.

Mayer, R.N., D.L. Scammon, & C.D. Zick. 1992. "Turning the Competition Green: The Regulation of Environmental Claims." In*: Proceedings of the 1992 Marketing and Public Policy Conference* (Ed. P.N. Bloom & R.G. Starr, Jr.) University of North Carolina, Chapel Hill, North Carolina, :152-165.

McDorman, Ted L. 1992. "The 1991 US-Mexico GATT Panel Report on Tuna and Dolphin: Implications for Trade and Environment Conflicts", *North Carolina Journal of International Law and Commercial Regulation, Vol 17.* p461, p473.

Michelsen, J.1996. "Organic Farmers and Conventional Distribution Systems: The Recent Expansion of the Organic Food Market in Denmark," *American Journal of Alternative Agriculture* 11:18-24.

Mojduszka, E.M. & J.A. Caswell. 2000. "A Test of Nutritional Quality Signaling in Food Markets Prior Implementation of Mandatory Labelling," *American Journal of Agricultural Economics*, 82:298-309.

Morris, Julian & Lynn Scarlett. 1996. *Buying Green: Consumers, Product Labels and the Environment*, Reason Foundation, Policy Study No. 217, Los Angeles, CA, November.

Mullett, Genevieve. 1997. "ISO 14000: Harmonizing Environmental Standards and Certification Procedures Worldwide." *Minnesota Journal of Global Trade*. Vol. 6:379-400.

National Fisheries Institute. 1999. "News from RFS and GAA," www.nfi.org/pressreleases/1999/pr9940.htm; (October 14).

National Fisheries Institute. 2000. U.S. Fisheries Industry Principles for Responsible Fisheries. http://www.nfi.org/organizations/rfs-prf.htm

National Wildlife Federation. 1996. *Guarding the Green Choice: Environmental Labelling and the Rights of Green Consumers*, Washington, D.C.

Nelson, P. 1970. "Information and Consumer Behavior," *Journal of Political Economy* 78:311-29.

Nelson, P. 1974. "Advertising as Information," *Journal of Political Economy* 81:729-54.

Nimon, W. & J. Beghin. 1999a. "Eco-labels and International Trade in the Textile and Apparel Market," *American Journal of Agricultural Economics*, 81: 1078-83.

Nimon, W. & J. Beghin. 1999b. "Are Eco-labels Valuable? Evidence from the Apparel Industry," *American Journal of Agricultural Economics*, 81: 801-11.

Noble, B.F. 2000. Institutional criteria for co-management. *Marine Policy* 24:69-77

Nordic Technical Working Group on Fisheries Eco-labelling Criteria. 2000. *An Arrangement for the Voluntary Certification of Products of Sustainable Fishing*, Final Report, Copenhagen, June.

OCIA, Inc. 1999, February- last update. *International Certification Standards 1988-1999*, (Online). Available http://www.ocia.org/ (1999, October 19).

Organisation for Economic Co-operation and Development (OECD). 1991. *Environmental Labelling in OECD Countries*, Paris, France.

Organisation for Economic Co-operation and Development (OECD). 1997a. *Processes and Production Methods (PPMs): Conceptual Framework and Considerations on use of PPM-based Trade Measures*, OECD, Paris;

Organisation for Economic Co-operation and Development (OECD). 1997b. *Eco-labelling: Actual Effects of Selected Programmes,* Paris, France.

Organisation for Economic Co-operation and Development (OECD). 1997c. Towards Sustainable Fisheries – Economic Aspects of the Management of Living Marine Resources, Paris, France.

Organisation for Economic Co-operation and Development (OECD). 1998. *Towards Sustainable Consumption Patterns: A Progress Report on Member Country Initiatives.* Paris, France.

Organisation for Economic Co-operation and Development (OECD). 2000a. *Transition to Responsible Fisheries – Economic and Policy Implications*, Paris, France.

Organisation for Economic Co-operation and Development (OECD). 2000b. "Transition to Responsible Fisheries – Post-Harvesting Practices and Responsible Fisheries: Case Studies", Directorate for Food Agriculture and Fisheries, Paris, France.

Preiss, Erika. 1997. *An Eco-label for Shrimp: Minimizing Potential Trade Barriers*, mimeograph prepared for International Environmental Law Clinic at NYU School of Law.

Raterman, K. 1997. "Market Overview '96: Contradictions Propel Industry Growth," *Natural Foods Merchandiser* 28(June):126-30.

Roberts, Donna, Timothy E. Josling, & David Orden. 1999. *A Framework for Analyzing Technical Trade Barriers in Agricultural Markets*, Market and Trade Economics Division, Economic Research Service, U.S. Department of Agriculture. Technical Bulletin No. 1876, March.

Schartzman, Stephan & Molly Kingston. 1997. *Global Deforestation, Timber and the Struggle for Sustainability: Making the Label Stick,* Environmental Defense Fund, Washington, D.C.

Schmidt, Carl-Christian. 2000. *Traceability and Fisheries: Consumer wants and government needs – Lessons learned from past experience*, Paper presented to the International Conference on Fisheries Monitoring, Control and Enforcement, Brussels, 24-27 October.

Scott, M. 1998. "Natural Foods Grow in Expanded Channels," *National Foods Merchandiser*, (June):46-50.

Staffin, Elliot. 1996. "Trade Barrier or Boon? A Critical Evaluation of Environmental Labelling and its Role in the 'Greening' of World Trade." *Columbia Journal of International Environmental Law*. Vol. 21:205-286.

Stigler, George. 1961. "The Economics of Information," *Journal of Political Economy*, 69:213-225.

Sedjo, Roger A. & Stephen K. Swallow. 1998. "Eco-Labelling and the Price Premium," working paper, Department of Environmental and Natural Resource Economics, University of Rhode Island.

Swallow, Stephen K. & Roger A. Sedjo. 1999, "Eco-Labelling Consequences in General Equilibrium: A Graphical Assessment," forthcoming, *Land Economics*.

Sykes, Alan. 1995. *Product Standards for Internationally Integrated Goods Markets*, The Brookings Institution, Washington, D.C

Tietje, Christian. 1995. "Voluntary Eco-labelling Programmes and Questions of State Responsibility in the WTO/GATT Legal System," *Journal of World Trade*, 29;123-158.

Thompson, Gary D. 1998. "Consumer Demand for Organic Foods: What We Know and What We Need to Know," *American Journal of Agricultural Economics*, 80(December):1113-1118.

Tsamenyi, Martin & Alistair McIlgorm. 1999. *International Environmental Instruments: Their Effect on the Fishing Industry*, 2nd edition, Fisheries Research and Development Corporation, Australia, January.

United Nations Conference on Trade and Development (UNCTAD). 1994. *Eco-Labelling and Market Opportunities for Environmentally Friendly Products*, TD/B/WG.6/2. UNCTAD: Geneva.

United Nations Conference on Trade and Development (UNCTAD), 1996. *Organic Production in Developing Countries: Potential for Trade, Environmental Improvement, and Social Development*. UNCTAD: New York.

United States Code Service Lawyers Edition. 1997. "Organic Certification." Rochester, NY: Lawyers Cooperative Publishing,. Agriculture, 7 USCS, pp.233-56.

United States Congress, Office of Technology Assessment, 1992. *Green Products by Design: Choices for a Cleaner Environment*, OTA-E-541, Washington, D.C.: US Government Printing Office, October.

United States Environmental Protection Agency. 1993. *Status Report on the Use of Environmental Labels Worldwide*, Office of Pollution Prevention and Toxics, EPA 742-R-9-93-001. September.

United States Environmental Protection Agency. 1998. *Environmental Labelling: Issues, Policies, and Practices Worldwide*, Office of Prevention, Pesticides and Toxic Substances, EPA 742-R-98-009, December.

United States Federal Trade Commission. 1992. "Guides for the Use of Environmental Marketing Claims." *U.S. Federal Register*. Vol. 57, No. 157, (August 6): pp. 36363-69.

Van Ravenswaay, Eileen O. & Jeffrey R. Blend. 1997. "Using Eco-labelling to Encourage Adoption of Innovative Environmental Technologies in Agriculture." East Lansing, Michigan: Department of Agricultural Economics, Michigan State University, June.

Vaughan, Scott & Ali Dehlavi. 1998. *Policy Effectiveness & Multilateral Environmental Agreements*, UNEP Environment and Trade Series, No. 17. UNEP: Geneva.

Vaupel, S., & K. Cummins. 1997. *Guide to Regulatory Requirements for Exporting Organic Foods into International Markets*. Jamestown, ND: IOAS.

Viscusi, W., J. Vernon, & J. Harrington, Jr. 1995. *Economics of Regulation and Antitrust*, 2nd edition, MIT Press, Cambridge.

Weber, P. 1990. "Green Seals of Approval Heading to Market," *World Watch*, 3(July-August):7-8.

Welch, Laine. 2000. "Look for the eco-label: Council's approval could aid Alaska salmon marketing," *Alaska Journal of Commerce*, March.

Wessells, Cathy R. & James L. Anderson. 1992. "Innovations and Progress in Seafood Demand and Market Analysis," *Marine Resource Economics*, 7:209-228.

Wessells, Cathy R. & Petter Wallstrom. 1993. "New Dimensions in World Fisheries: Implications for U.S. and E.C. Trade in Seafood," in *Agricultural Trade Conflicts and GATT: New Dimensions in North American-European Agricultural Trade Relations*, eds. Anania, G., C.A. Carter, & A.F. McCalla, Westview Press, Boulder, p. 515-536.

Wessells, Cathy R., Holger Donath, & Robert J. Johnston. 1999. "U.S. Consumer Preferences for Eco-labelled Seafood: Results of a Consumer Survey." http://www.riaes.org/resources/library (2000, June).

Wessells, Cathy R., Robert J. Johnston, & Holger Donath. 1999. "Assessing Consumer Preferences for Eco-Labelled Seafood: The Influence of Species, Certifier and Household Attributes," *American Journal of Agricultural Economics*, 81:1084-89.

Wessells, Cathy R., Jeffrey Kline, & Joan Gray Anderson. 1996. "Seafood Safety Perceptions and their Effects on Consumption Choices under Varying Information Treatments," *Agricultural and Resource Economics Review*, 25:12-21.

Wessells, Cathy R. & Joan Gray Anderson. 1995. "Consumer Willingness to Pay for Seafood Safety Assurances," *Journal of Consumer Affairs*, 29:85-107.

West, Karen. 1995. "Eco-labels: The Industrialization of Environmental Standards." *The Ecologist*. Vol. 25 No. 1.

Willmann, Rolf. 1997. *Certification and Eco-labelling in Marine Fisheries: A Preliminary Assessment*, unpublished mimeograph.

World Trade Organization. 1995. *Negotiating History of the Coverage of the Agreement on TBTs with Regard to Labelling Requirements, Voluntary Standards, and PPMs Unrelated to Product Characteristics*, WT/CTE/W/10, WTO: Geneva.

World Trade Organization. 1996. *Report of the WTO Committee on Trade and Environment*. Committee on Trade and Environment. Geneva:WTO.

World Trade Organization. 1997. *Eco-labelling: Overview of Current Work in Various International Fora*, Note by the WTO Committee on Trade and Environment, WT/CTE/W/45, WTO: Geneva;

World Trade Organization. 1998a. *Eco-packaging; overview of recent work in other International Fora*, Note by Committee on Trade and Environment, WT/CTE/W/75, WTO Geneva.

World Trade Organization. 1998b*, Trade and Environment in the WTO: Background to WTO Work on Trade and Environment,* (www.wto.org)

World Trade Organization, 1998c. Regional Seminar on Trade and Environment for Developing Countries, Santiago, Chile, Trade and Environment Division, WTO: Geneva. p12.

World Trade Organization. 1998d. Market access impact of eco-labelling requirements. WT/CTE/W/79. Geneva. p.11

World Trade Organization. 1999. *High Level Symposium on Trade and Environment, Geneva 15-16 March 1999, Background Document*, Trade and Environment Division. Geneva.

Wright, Martin. 1998. "You say goodbye and I say hello," *Tomorrow*, Number 6, Vol. VIII, December.

WWF. 1999. *Community-Based Fisheries Certification; A Proposed Methodology*, WWF, Washington, D.C.

Yale University Environmental Protection Clinic. 1999. *Green Products Projects*, Section 3.4 (Online). Available http://www.climate.org/misc/GreenProducts/34 (November 16).

Zarrilli, Simonetta, Jha, Veena & René Vossenaar (Eds.). 1997. *Eco-Labelling and International Trade*, United Nations Conference on Trade and Development (UNCTAD): New York.

Annex: Internet Sites of Interest on Ecolabelling[98]

www.ecofish.com

Ecofish.com is an e-business selling ecologically responsible seafood directly to the consumer, from its distribution facilities in Portsmouth, New Hampshire. Their mission is to "make a positive impact on helping reverse the decline of marine biodiversity, by providing the consumer with seafood choices which [our] Seafood Advisory Board deems to originate from ecologically sound fisheries" www.ecofish.com/mission.htm. Species currently for sale include Oregon Dungeness crab; Indonesian yellowfin tuna; Alaskan halibut; rope-cultured mussels from Prince Edward Island, Canada; South African spiny lobster; Alaska coho salmon; and Nebraska rainbow trout.

magazine.audubon.org/seafood/guide/

The National Audubon Society (www.audubon.org) has published "The Audubon Guide to Seafood." The Audubon Society was founded in 1905 by John James Audubon, a famed ornithologist, explorer and wildlife artist and has about 550,000 members, predominately in the United States. Compiled by Carl Safina, Ph.D., director of the National Audubon Society's Living Oceans Program, the purpose of publication is to allow consumers to make informed choices. There is a colour spectrum ranging from red (most problematic) through yellow to green (least problematic). The species are evaluated based on their population status, management success, and bycatch and habitat concerns. This list also evaluates aquacultured species, such as Atlantic salmon regarding which it states that salmon farming pollutes, displaces wild fish, and prompts the shooting of predatory seals near farms.

www.environmentaldefense.org/pus/FactSheets/s_fishchoices.html

Another non-governmental organization (NGO) Environmental Defense (www.environmentaldefense.org) has selected fifteen of the best and worst seafood choices. A national non-profit organization representing more than 300,000 members in the U.S., their mission is to protect the environmental rights of all people, including future generations. The lists of species to choose and avoid are longer than that of the Audubon Society.

www.mbayaq.org/efc/efc_oc/seafood_chart.html

The Monterey Bay Aquarium (www.mbayaq.org - Monterey, California) views its mission to inspire conservation of the oceans. When the Monterey Bay Aquarium buys seafood, they want to support sustainable fisheries - those managed so that there will be plenty of fish for the future, so that marine habitats stay healthy, and so there's little wasted catch of animals other than the target species. The list they have compiled focuses

[98] Cathy Roheim Wessells wrote this annex.

on level of fishing, and other information. The list is divided into those species to choose, those to avoid, and those with which to proceed with caution. This "Seafood Watch Chart" is also available in a wallet-sized pamphlet for consumers to take with them when they shop or eat at a restaurant.

http://www.msc.org/

The MSC is an independent, not for profit, international body headquartered in London, UK. Initiated by the World Wide Fund for Nature (WWF) and Unilever, a large fish retailer, MSC aims to promote sustainable and responsible fisheries and fishing practices worldwide. The MSC has, in collaboration with a selected group of parties interested in and experienced with fisheries issues, established a broad set of Principles and Criteria for Sustainable Fisheries. Fisheries meeting these standards will be eligible for third party certification by independent certifying bodies accredited by the MSC.

www.seaturtles.org/prog_camp.cfm

The Sea Turtle Restoration Project (www.seaturtles.org) has launched a Turtle Safe programme, Certified Turtle-Safe® Shrimp is a consumer-based tool for protecting endangered sea turtles. The Sea Turtle Restoration Project is dedicated to protect and restore populations of endangered sea turtles to healthy conditions. It was founded in 1989 as a project of Turtle Island Restoration Network, a non-profit environmental organization incorporated in California.

www.gaalliance.org

The Global Aquaculture Alliance (GAA) is an international, non-profit trade association dedicated to advancing environmentally-responsible aquaculture. As its primary goal, GAA is working with producers, processors and major users to develop certifiable standards for responsible aquaculture.

www.seaweb.org/campaigns/swordfish/000801release.html

SeaWeb (www.seaweb.org) is a multimedia public education project designed to raise awareness of the world's oceans and the life within it. On January 20, 1998 SeaWeb and the National Resources Defense Council (www.nrdc.org) teamed up to begin the "Give Swordfish a Break" campaign, to help replenish depleted North Atlantic swordfish populations. This was the second large effort to mobilize consumers in support of fish conservation (dolphin-safe tuna being the first). Initially the campaign had the support of 27 prominent chefs. Over the course of the campaign, SeaWeb claims that over 700 chefs signed the Give Swordfish a Break pledge, while others -- the Peabody Hotel chain, cruise lines, grocery stores, airlines -- agreed to remove North Atlantic swordfish from their menus.

www.pacrivers.org/salmonsafe/index.html

The Pacific Rivers Council (www.pacrivers.org) launched a Salmon-Safe programme in 1997. This programme works to restore water quality and salmon habitat in the agricultural watersheds of the Pacific Northwest in the U.S. The mission is to create a community of concerned farmers, retailers, and consumers, working together to recover imperilled salmon runs. Salmon-Safe does this by evaluating farm operations that are using conservation practices benefiting native salmon. Operations endorsed by their independent professional certifiers are promoted with the Salmon-Safe label.

www.lei.or.id

Lembaga Ekolabel Indonesia (LEI) was officially founded in 1998 as an independent, non-profit institute in Indonesia. Since 1994, LEI ha worked together with the Indonesian Ministry of Forestry, The Association of Indonesian Forest Concession Holders and with non-governmental organizations to develop a forest certification system. In Sept. 1999, the LEI and Forest Stewardship Council (FSC - www.fscoax.org) signed a Memorandum of Understanding that FSC-accredited certifiers working in Indonesia should be using Indonesia's forest certification standard that has been developed by LEI.

www.smy.fi/certification/eng/esittely/etusivu/main_e.htm

Forest certification in Finland has been established under the Finnish Forest Certification System. At least 180,000 Finnish forest owners have already committed themselves to certification. The system includes requirements for forest management, wood chain of custody certification, and the carrying out of external auditing. The system is voluntary for forest owners and it requires an audit to be carried out by a third, impartial party.

www.fscoax.org

The Forest Stewardship Council (FSC) is an international, non-profit organization founded in 1993 to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests. The FSC has introduced an international labelling scheme for forest products, which provides a credible guarantee that the product comes from a well-managed forest. All forest products carrying their ecolabel have been independently certified as coming from forests that meet the internationally recognized FSC Principles and Criteria of Forest Stewardship.

www.scs1.com/scs.shtml

SCS Marine Certifications (www.scs1.com) was established in 1984 as the U.S.'s first third-party certified for testing pesticide residues in fresh produce. In the past 15 years, the company has evolved to become a certifier of multiple facets of the food industry, and of environmentally sound management of forests, marine habitats, and a wide variety of businesses. As the first MSC-accredited certifier of marine fisheries, SCS has issued

certification of the Western Australian rock lobster fishery to the Western Australian Fishing Industry Council.

www.envronmentalchoice.com

Canada's Environmental Choice Program (ECP) encourages the supply of products and services that are more environmentally responsible, and to help consumers and organizations buy "green." Run by Environment Canada, the ecolabelling programme provides a market incentive to manufacturers and suppliers of environmentally preferable products and services, and thereby helps consumers identify products and services that are less harmful to the environment. Established in 1988, the ECP is one of 25 such programmes worldwide.

www.gen.gr.jp/whats.html

The Global Eco-labelling Network (GEN) is an international association of ecolabelling programmes, including the Environmental Choice Program above. It was founded in 1994 to improve, promote, and develop the ecolabelling of products and services. GEN provides information and technical assistance to developing countries.

www.eco-label.no/eco-label/english/

The Nordic Swan label is the official ecolabel in Norway, Sweden, Denmark, Finland and Iceland. The label is a neutral, independent label that guarantees a certain environmental standard. Only products that satisfy strict environmental requirements on the basis of objective assessments are allowed to display the environmental product label. Each of the participating countries has a national body to administer the label. Each body has a board with representatives from the government, workers' unions, industry, trade, environmental and consumers' organizations. A total of more than 3,000 products carry the label. The primary products are household chemicals, paper products, office machinery, and building materials.

www.iso.ch

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from 130 countries. It is a non-governmental organization founded in 1947 and its mission is to promote the development of standardisation and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing cooperation in the spheres of intellectual, scientific, technological and economic activity.

www.transfairusa.org

TransFair USA is a non-profit monitoring organization that certified that participating traders are following fair trade guidelines. It works with producer co-operatives that use democratic principles to ensure working conditions are safe and dignified, and that

producers have a say in how their products are created and sold. Products covered currently are coffee and tea.

www.consumerscouncil.org/OrgList/sort.cfm

The Consumers' Council, in the U.S., has on its web page a handy list of organizations involved in ecolabelling for food and agricultural products, and forest and wood products. It also lists ecolabel certifiers of food, agricultural, forest and wood products.

europa.eu.int/eco-label/ see also www.ecosite.co.uk/Eco-label-UK/scheme.html

The European Union ecolabelling programme does not include food products. Criteria for a product group are developed by the application of a life cycle assessment to gauge the impact on the environment at every stage of the product's life cycle, from raw materials, through the manufacturing process, distribution and consumer use, to its final disposal.

www.wwf.org

The World Wildlife Fund (WWF) is an international environmental organization claiming membership of 4.7 million people in over 100 countries. It is involved in several labelling efforts, including: certified timber production with the Forest Stewardship Council; certified fishery products with the Marine Stewardship Council; and environmentally-friendly potato labelling with the Wisconsin Potato and Vegetable Growers Association.