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53

Ecolabelling and Certification in Capture Fisheries and Aquaculture



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Ecolabelling and Certification in Capture Fisheries and Aquaculture



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Preface

Ecolabelling, certification and traceability are becoming significant features of international fish trade and marketing. Their use is also becoming more common in efforts to ensure food safety, quality and environmental sustainability in the growing aquaculture industry. The importance of certification and ecolabelling is expected to increase with the expansion of supermarket chains for fish and seafood products and shift in their procurement policies towards contractual arrangements. The economic consequences of certification and how different standards and methods of certification, including requirements for traceability, influence the market for fish and fish products and affect the stakeholders, particularly in the small-scale sector, need to be studied in detail.

Taking cognisance of the growing importance of the market-driven conservation in international trade in seafood, the National Academy of Agricultural Sciences (NAAS) had organised a one-day Brainstorming Session on Fish Stock Certification and Ecolabelling to discuss various aspects of certification and ecolabelling, in the context of Indian fisheries, on 27th August 2011, at New Delhi. Twenty-six distinguished invitees including leading experts in the field of fisheries research, education, management and policy development and representatives from industry, Marine Stewardship Council (MSC), WWF-India and GS1-India had participated in the Session.

On behalf of the Academy, I would like to compliment Dr T.K. Srinivasa Gopal, Director, Central Institute of Fisheries Technology, Cochin for this contribution. Our thanks are also due to all distinguished participants of the Brainstorming Session and the Editors of the Policy Paper.



(R.B. Singh)
President, NAAS

Executive Summary

Seafood which includes fish and shellfish harvested from capture fisheries and aquaculture production in marine and freshwater environments is a significant source of protein for nearly 3 billion people and is the planet's most highly traded food commodity. Recent studies have indicated significant decline in the viability of fish stocks throughout the world and concerns have emerged regarding possible negative impacts of aquaculture on the environment, communities and consumers. The application of certification and ecolabelling is viewed as a trade-sensitive device for reducing market negativity and building up confidence and enhancing consumer and societal gains and trust in the process of capture fisheries and aquaculture production and marketing. There are close to 400 ecolabels concerning different products in operation in the world, of which nearly 50 are related to fisheries and aquaculture. Taking cognisance of the importance of market driven approach in fisheries conservation and its growing significance in the context of international trade in seafood, National Academy of Agricultural Sciences (NAAS) organised a one-day Brain Storming Session on *Fish Stock Certification and Ecolabelling* to discuss various aspects of certification and ecolabelling, in the context of Indian fisheries, on 27 August 2011, at New Delhi. The themes for brainstorming session included the world scenario in certification, ecolabelling and traceability; the relevance of certification and ecolabelling in Indian fisheries and initiatives in this direction so far, certification criteria, certification costs and chain of custody; institutional requirements for certification and ecolabelling schemes and their validation procedures. An overview of the fish stock certification and ecolabelling and recommendations which emanated during the NAAS Brainstorming Session and subsequent reviews by experts are presented in this Policy Paper.

In terms of their origin, the fisheries ecolabel schemes and seafood guides are promoted by national and regional governments, retailers, the fishing industry and the NGOs. Certification takes places against a standard. At one end of the spectrum is self certification and at the other is third-party independent certification. Credible certification schemes consist of three main components viz., standards, accreditation and certification. The impact of certification and ecolabelling is expected to increase, with the expansion of supermarket chains for fish and seafood products and shift in procurement policies towards contractual supply. The economic consequences of certification and how different standards and methods of certification, including requirements for traceability, influence the market for fish and fish products and affect the stakeholders, particularly in the small-scale sector, need to be studied.

The proliferation and variety of ecolabels has led to calls for international guidance in the area. In response, FAO has produced the guidelines for the ecolabelling of fish and fishery products from marine capture fisheries in 2005, inland capture fisheries in 2010 and aquaculture in 2011. Recent studies have indicated that the gains and losses of ecolabelling and certification vary among different stakeholders and retailers generally receive maximum benefits in terms of value-addition to their brand and reputation, risk management, ease of procurement, and potential price premiums while the fishers assume the main cost burden relating to certification.

The rise of certification and ecolabelling schemes are bringing together elements of the market, industry, environmental interests and communities and provide additional tools to move towards sustainability of capture fisheries and aquaculture. Adoption of certification and ecolabelling schemes for marine and inland capture fisheries and aquaculture will certainly be valuable for sustainable fish production in India. In order to be credible and successful, ecolabelling schemes need to be aligned and harmonised with FAO guidelines for ecolabelling of fish and fish fishery products from marine and inland capture fisheries and aquaculture; compliant with relevant international standards such as (International Organization for Standardization (ISO) and International Social and Environmental Accreditation and Labelling Alliance (ISEAL) Codes of Good Practice for setting social and environmental standards; have a robust and transparent governance structure, whether operated in public or private domain; be affordable with an acceptable cost structure and an equitable distribution of benefits across the value chain; should not lead to creation of indirect trade barriers; and have adequate training and outreach efforts to create awareness and sensitise stakeholders.

Recognising the unique characteristics of fisheries and aquaculture in the tropics, India should take initiative to facilitate formulation of principles and criteria relevant to tropical fish stocks and aquaculture, as per guiding principles enshrined in FAO guidelines for ecolabelling of fish and fishery products from marine and inland capture fisheries and aquaculture. Department of Animal Husbandry, Dairying & Fisheries (DAHD&F), MPEDA, ICAR fisheries Institutions, Fishery Survey of India (FSI), Export Inspection Agency (EIA), National Fisheries Development Board (NFDB) and State Departments of Fisheries should facilitate the implementation of fisheries management and improvement plans and fish stock and aquaculture certification and ecolabelling in collaboration with fishermen organisations, exporters, NGOs and other stakeholders. As a first step, the ecolabelling initiatives need to focus on fish stocks targeted at export markets and organized domestic markets.

Harmonisation of the ecolabelling schemes on international level is needed and equivalency is required to be established on compliance with relevant FAO guidelines. Seafood safety, quality and carbon footprint also need to be integrated into the ecolabelling schemes. Traceability is an important aspect both in terms of seafood safety and certification and due attention is needed in developing a system, which is viable, cost-effective and appropriate for Indian fisheries.

In the area of research, the knowledge base on status of fish stocks and the biological indicators need to be expanded in order to facilitate certification and ecolabelling process, through focused research on data-deficient fish stocks in Indian waters; the knowledge base for integrating aspects of seafood safety, seafood quality and carbon footprint into ecolabelling schemes need to be developed for capture and culture based fish and fish based products. Research on the impacts of fishing systems on environment and ecosystem and studies on the interaction between endangered, threatened or protected (ETP) species and fisheries and mitigation measures thereof, have to be continued. Value chain analysis of major commercial species need to be undertaken and good aquaculture practices so as to develop appropriate Standard Operating Procedures (SOPs) covering food safety and Sanitary and Phytosanitary (SPS) requirements, need to be strengthened.

It would also be desirable to conduct pilot level projects on fisheries certification, ecolabelling and traceability for selected fisheries, if necessary, in collaboration with leading players such as MSC and GS1 and to undertake case studies on fisheries certification projects attempted in different fisheries in the country in order to facilitate finding an acceptable model for certification.

Ecolabelling and Certification in Capture Fisheries and Aquaculture

1. PREAMBLE

Certification, ecolabelling and traceability in fisheries are rapidly moving to centre stage in fisheries sector and have increasing significance in international fish trade and marketing. Ecolabelling provides consumers with the opportunity to make informed choices about the seafood they purchase and consume and create a market based incentive to encourage products that can demonstrate that they are produced in an ecologically sustainable manner. There are a growing number of private and public standards and schemes for sustainability. They have acquired importance due to the perception that existing fisheries management frameworks are not achieving the desired outcomes in the context of long-term sustainability of fisheries and aquaculture, protection of biodiversity and environment and responsible fisheries management (Washington, 2008; Washington and Ababouch, 2011). A principal aspect of certification is to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing.

Seafood which includes fish and shellfish harvested from capture fisheries and aquaculture production in marine and freshwater environments is a significant source of protein for nearly 3 billion people and is the planet's most highly traded food commodity (FAO, 2009). As a source of livelihood, capture fisheries and aquaculture employed 43.5 million people in 2006, and 520 million people relied on income from seafood production (FAO, 2009). Seafood is the main source of omega-3 fatty acids that are essential for brain development (Hibbeln *et al.*, 2007) and is a source of important micronutrients for the poor (Roos *et al.*, 2007).

Recent studies have indicated significant decline in the viability of fish stocks throughout the world (Pauly *et al.*, 1998; 2005; Worm *et al.*, 2005; 2006) including India (Vivekanandan *et al.*, 2005; Bhathal and Pauly, 2008; Smith *et al.*, 2010). It is estimated that, in 2007, about 52% of the fish stocks monitored by FAO were fully exploited, 19% over-exploited, 8% is depleted, 1% is recovering from depletion and only 20% were under-exploited (2%) or moderately exploited (18%) (FAO, 2009). Traditional fisheries governance has been perceived as having limited success in terms of conservation (Hillborn, 2007). Although global capture fisheries production is unlikely to increase, aquaculture is growing considerably. Sustaining seafood's contribution to food security hinges on the adoption of ways and means to protect

and improve ecosystem health in the face of increasing pressures. Mechanisms to ensure the sustainability of fish stocks have been introduced by governments at the national, regional and international levels. In addition to these measures, market based mechanisms have also been introduced. Ecolabel and related fish stock certification is one such mechanism. Ecolabels are designed to influence the purchasing decisions of consumers and the procurement policies of retailers selling fish and seafood products, and to reward producers using responsible fishing practices. Considerable discussions have taken place on the effectiveness and potential trade implications of ecolabelling programmes (Gardiner and Viswanathan 2004; European Environment Agency 2005; FAO, 2005; FAO, 2006; EU, 2007; FAO, 2008a; NE (Nordic Swan), 2008; Ward and Phillips, 2008; Washington, 2008; FAO, 2009a; FAO, 2009b; FAO, 2010; Norden, 2000; Parkes *et al.*, 2010; Sainsbury, 2010; FAO, 2011; Potts *et al.*, 2011; Silas *et al.*, 2011; Washington and Ababouch, 2011; NAAS, 2011; OECD, 2011; Big Room Inc. 2012; FAO, 2012; NACA, 2012). There are close to 400 ecolabels concerning different products in operation in the world, of which nearly 50 are related to fisheries and aquaculture.

Taking cognisance of the importance of market driven approach in fisheries conservation and its growing significance in the context of international trade in seafood, National Academy of Agricultural Sciences (NAAS) organised a one-day Brain Storming Session on *Fish Stock Certification and Ecolabelling* to discuss various aspects of certification and ecolabelling, in the context of Indian fisheries, on 27 August 2011, at New Delhi. The themes for brainstorming session included the world scenario in certification, ecolabelling and traceability; the relevance of certification and ecolabelling in Indian fisheries and initiatives in this direction so far, certification criteria, certification costs and chain of custody; institutional requirements for certification and ecolabelling schemes and their validation procedures. An overview of the fish stock certification and ecolabelling and recommendations which emanated during the NAAS Brainstorming Session are presented in this Policy Paper.

2. BASIC CONCEPTS OF ECOLABELLING

Ecolabelling was first recognized internationally at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. This type of certification, originally defined simply as “making relevant environmental information available to appropriate consumers” (USEPA 1993), is meant to provide consumers with the opportunity to express their environmental and ecological concerns through choice of products. In recent years, ecolabels and related certification have become important aspects of international trade and marketing of fish and fish products. Ecolabels and related fish stock certification schemes

are designed to incentivize responsible fisheries practices and to influence the procurement policies of large retailers and brand owners, as well as the purchasing decisions of consumers.

Ecolabels are thus “seals of approval” given to products that are deemed to have fewer negative impacts on the environment than functionally equivalent or competitively similar products (Deere, 1999; Wessells *et al.*, 2001; Washington and Ababouch, 2011). The consumers’ preferences are expected to result in price and/or market share differentials between ecolabelled products and those that either do not qualify to be ecolabelled or come from producers who do not seek to obtain such labelling. The label is obtained through a certification process based on a set of criteria. Potential price and/or market share differentials provide the economic incentive for firms to seek certification of their products (MRAG/IIED/Soil Association, 1999).

The scope of assessment varies significantly between schemes. In terms of their origin, the fisheries ecolabel schemes and seafood guides are promoted by (i) National and regional governments, (ii) Retailers, (iii) the fishing industry and (iv) NGOs. Studies by Washington and Ababouch (2011) have suggested that the markets conducive to sales of ecolabelled fish and seafood typically have (i) an environmentally aware population with a strong civil society active in the environmental or sustainability area; (ii) retail of fish and seafood products dominated by supermarkets (typically large retailers in highly competitive markets) rather than fresh fish markets; (iii) consumption patterns based on a traditionally limited range of fish and seafood species leading to lower substitutability of product; and (iv) strong tradition and presence of highly processed fish and seafood products.

3. TYPES OF ECOLABELS

The International Organisation for Standardisation (ISO) has defined three main categories of environmental labelling (ISO 1999a; 1999b; 2000). These are:

- ◆ **Type I Ecolabels (ISO 14024: ISO 1999a)** - Type I ecolabels are based on environmental criteria selected by an independent third party entity. Criteria are typically developed for a specific product type. Products must be certified to these criteria through a third party entity to be allowed to display the ecolabel.
- ◆ **Type II Ecolabels (ISO 14021: ISO 1999b)** - Type II ecolabels include any kind of sustainable declaration made by manufacturers, importers, distributors or anyone else who is likely to benefit from the product’s environmental claims. Also referred to as “self-declarations”, ecolabels in this category are usually

not independently verified by a third party entity. They should however meet 'truth-in-advertising' or other product claim standards.

- ◆ **Type III Ecolabels (ISO 14025: ISO 2000)** - Type III ecolabels include comprehensive data lists that give environmental and social information on a product throughout its life-cycle (similar to nutrition labels on food). Independent bodies set the categories of information and verify the data given, but no specific criteria have to be satisfied in order to qualify for certification. This category of ecolabels is also referred to as "Environmental Product Declarations (EPD)".

Type I ecolabels, certified by a third party entity, are widely used. Type II ecolabels has relatively low credibility as they are not independently verified against specific standards. Lifecycle assessment and third-party verification are generally required for type III labels. Seafood ecolabelling schemes generally fall into three categories (Deere, 1999):

- ◆ **First party ecolabelling schemes** : This form of ecolabelling is usually a self declaration and can be considered to be ISO Type II environmental labelling system. These are typically established by individual producers or resellers based on their own product standards and can cover criteria related to specific environmental issues, food quality and health issues.
- ◆ **Second party ecolabelling schemes** : These are typically established by industry associations for members' products, and the criteria are determined by the organisation. Verification of compliance is normally conducted by certification procedures internal to the industry or association, or by use of external certifiers and these may fall either under ISO Type I or Type III.
- ◆ **Third party ecolabelling schemes** : These are usually created by organisations external to the relevant industry sector and therefore carry a perceived level of independence. The owner of the labelling scheme usually sets the criteria and awards a label to products that are independently verified through a certification process to comply with the criteria. Third party schemes are typically considered to be the most robust form of ecolabelling, because of the independence of the criteria and the verification process from commercial influences and usually fall under ISO Type I category.

Certification takes places against a standard. At one end of the spectrum is self certification and at the other is third-party independent certification. Marine Stewardship Council (MSC), Friend of the Sea (FOS) KRAV and Naturland are some of the well-known third party certification and ecolabelling schemes in fisheries. The procurement policies of large retailers typically include sustainability aspects such as certification

and ecolabelling, in order to offset criticism and boycotts from environmental groups (Washington, 2008; Washington and Ababouch, 2011). The impact of certification and ecolabelling is expected to increase, with the expansion of supermarket chains for fish and seafood products and shift in procurement policies towards contractual supply. Certification has also acquired importance in the expanding aquaculture industry, in the context of food safety and environmental sustainability. The economic consequences of certification and how different standards and methods of certification, including requirements for traceability, influence the market for fish and fish products and affect the stakeholders, particularly in the small-scale sector, need to be studied.

4. MANAGEMENT OF CERTIFICATION AND ECOLABELLING SCHEMES

Ecolabelling and certification schemes are generally initiated and managed by non-governmental organisations. Recently, some public authorities, most notably the Government of France, Iceland, and the EU have set up their own ecolabels. There are other schemes which originate from retailers and the fishing industry. Credible certification schemes consist of three main components *viz.*, (i) standards; (ii), accreditation, and (iii) certification. Standard setting processes to develop and review certification standards, accreditation systems to formally recognise credible institutions to carry out certification and certification bodies to verify compliance with certification standards are required to be developed.

The independence of certification is seen as a proxy for credibility. Being audited by an independent body offers a more credible judgment than a self-assessment. The proliferation and variety of ecolabels has led to calls for international guidance in the area. In response, FAO has produced the *Guidelines for the Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries* in 2005. FAO held an Expert Consultation to develop analogous guidelines for inland capture fisheries, in 2006. The Expert Consultation on the FAO Guidelines for Ecolabelling held in Rome from 3 to 5 March 2008 reviewed the existing marine and inland capture fisheries guidelines (FAO, 2008a). FAO has prepared Draft Technical Guidelines for Aquaculture Certification (FAO, 2008b; FAO, 2012). The knowledge of specific factors that encourage environmentally friendly behaviour is essential to set up public policy to favour sustainable consumption (Brécard *et al.*, 2009).

4.1 National and regional government-based ecolabels

In the last decade, several government-based national or regional fisheries ecolabels have been developed (Sainsbury, 2010; Corsin *et al.*, 2007; Washington and

Ababouch, 2011). The Government of France has developed own national ecolabel and related certification scheme that was consistent with the FAO guidelines but went beyond them with the inclusion of social and economic criteria. European Union (EU) has a generic voluntary ecolabel (the “Flower” label) which aims to reduce the environmental impact of products throughout their entire life cycle (EU, 2007). The Nordic swan is the official ecolabel in Nordic countries which uses a system of standards, applications for licenses, and independent verification (NE, 2008; Norden, 2000). In Iceland, the Icelandic fishing industry, in partnership with the government support, has developed an Icelandic logo based on Iceland’s Statement on Responsible Fisheries in Iceland. A fisheries ecolabel “Clean Green” was developed by the Australian southern rock lobster industry (ASRL, 2012), in which the government assessment of sustainability forms the sustainability requirements of the ecolabel. Thai Quality Shrimp is a certification system prepared by Department of Fisheries, Thailand, based on the Code of Conduct (CoC) developed and Good Aquaculture Practice (GAP).

4.2 Private ecolabels

There has been a proliferation of private certification and ecolabels in fisheries and aquaculture in recent years. A select list of fisheries related private certification and ecolabelling schemes is included in Annexure 1.

5. COSTS AND BENEFITS OF ECOLABELLING AND CERTIFICATION

Recent studies by Washington (2008) and Washington & Ababouch (2011) have identified the following potential costs and benefits of ecolabelling and certification:

Benefits

- ◆ Access to new markets;
- ◆ Consolidation or expansion of market share in existing markets;
- ◆ Greater credibility vis-à-vis retail buyers;
- ◆ Potential for more value-added products including through product differentiation (niche markets for environmentally friendly products);
- ◆ Improved management of fisheries resources and resulting guarantees of future production potential; and
- ◆ Increased earnings through an assumed price premium for ecolabelled fish.

Costs

- ◆ Actual costs of certification including experts' fees;
- ◆ Compliance costs related to adjusted management practices, data collection and record keeping, which is additional to existing government administrative requirements; and
- ◆ Costs related to potential adjustments in fisheries management to meet sustainability criteria.

The following socio-economic and governance issues in relation to ecolabelling schemes have also been identified:

- ◆ Transparency and participation: standards are set by 'outsiders' and imposed on fishers.
- ◆ Legitimacy: Ecolabelling schemes are typically developed and controlled by private sector operators or NGOs; some fishers would prefer to participate in a public scheme which they consider has more legitimacy and some public accountability.
- ◆ Applicability: concerns have been raised that current schemes do not lend themselves to multi-species or artisanal fisheries found in developing countries, and they do not take into consideration their special needs.
- ◆ Impacts on trade: ecolabels might be used as a barrier to trade by importing countries and become "back door" protectionism.
- ◆ Governance: certification and labelling depends on the effective public management of marine resources. Poor institutional infrastructures pose a barrier to the certification of fisheries in those jurisdictions.
- ◆ Fears that schemes that are initially voluntary will eventually become mandatory.

Recent studies have indicated that the costs and benefits of ecolabelling and certification vary among different stakeholders (Washington, 2008; FAO, 2011; Washington and Ababouch, 2011). Retailers generally reap maximum rewards in terms of value-addition to their brand and reputation, risk management, ease of procurement, and potential price premiums while the fishers assume the main cost burden relating to certification (Roheim and Seara, 2009; FAO, 2011).

Studies so far do not seem to indicate strong evidence of a price premium as a result of the certification of products (Washington, 2008; Asche *et al.*, 2009; Washington and Ababouch, 2011). However, a recent study by Roheim *et al.* (2011) in UK market

has indicated a market differentiation for ecolabelled products and evidence of price premium for MSC-certified frozen processed Alaska pollock products. Roheim (2003) suggested that certification could lead to a reduction in price volatility for fishers which is likely to level off as more certified producers enter the market. Most returns, to both retailers and processors, appear to be more indirect and related to reputation and brand value. Reported price premiums are typically associated with more secure supply relationships based on certification, consolidation of position in existing markets, and of new niche markets for environmentally friendly products. The experiences from the first 42 fisheries certified by MSC have indicated that the main beneficiaries of price premiums have been small-scale artisanal fisheries selling into niche markets (MSC, 2009). The economic benefits of ecolabelling need to be equitably distributed along the supply chain.

The cost of certification has been reported to vary from a few thousands to 250,000 USD or more, depending on the scheme chosen and on the size and complexity of the fishery (Roheim and Seara, 2009; Washington and Ababouch, 2011).

6. ECOLABELLING AND CERTIFICATION IN AQUACULTURE

Global aquaculture production and trade have increased substantially. However, concerns have emerged regarding possible negative impacts on the environment, communities and consumers. Aquaculture certification is a potential market-based tool for mitigating negative environmental impacts and enhancing societal and consumer benefits (FAO, 2012). The Article 9.1.5 of FAO Code of Conduct for Responsible Fisheries (FAO, 1995) prescribes that “States should establish effective procedures specific to aquaculture to undertake appropriate environmental assessment and monitoring with the aim of minimizing adverse ecological changes and related economic and social consequences resulting from water extraction, land use, discharge of effluents, use of drugs and chemicals, and other aquaculture activities. At present there are at least 30 certification schemes relevant to aquaculture and these include schemes promoted by retailers, aquaculture industry, governments and NGOs; organic certification schemes; fair trade certification schemes and other schemes (Corsin *et al.*, 2007; WWF, 2007). The number of certification and ecolabelling schemes for aquaculture products has significantly increased over the years.

6.1 Non-organic aquaculture certification

Non-organic aquaculture ecolabelling schemes on a regional or global scale are offered by Alter Trade (Japan), Australian Certified Organic (Australia), Aquaculture Certification Council/Best Aquaculture Practices/Global Aquaculture Alliance/

Aquaculture Certification, Hong Kong Fish Farm Accreditation Scheme Organic Production (Hong Kong), Crianza del Mar (España) (Spain), Pêche responsable of Carrefour (France), Worldwide Freedom Foods (UK), Tartan Quality Mark (Scotland), Thai Quality Shrimp/Good Aquaculture Practice (Thailand), Label Rouge (France), Shrimp seal of quality (Bangladesh), Aquaculture Certification Council (ACC), GLOBAL GAP Integrated Farm Assurance Standard; Aquaculture Base; ISO 14001/Environmental Management System, Safe Quality Food Institute, Malaysian Aquaculture Farm Certification Scheme (Malaysia), SIGES Fundacion Chile/CBPA (Chile) and Aquaculture Stewardship Council (ASC) (Annexure 1).

6.2 Organic aquaculture certification

Australian Certified Organic (Australia), Agriculture Biologique (AB) (France), National Association for Sustainable Agriculture (Australia), Bioland (Germany), Bio-Gro (New Zealand), Bio-Suisse (Switzerland), Bio Austria, KRAV (Sweden), Debio (Norway), The Soil Association (UK), Naturland (Germany) are some of the ongoing certification schemes in organic aquaculture (Annexure 1). In general, organic fish is perceived to be more “natural” and therefore healthier, or even tastier. The market share for organic products is globally on the rise. This growth, however, is focused on the higher income strata. In some regions the emphasis is on local production, in part to reduce food miles but also to support regional production. Organic certification endeavours to address the issues of genetically modified organisms (GMOs), feed, chemotherapeutics, stocking densities, breeding, environmental impact and social aspects in aquaculture practice. The International Federation of Organic Agriculture Movements (IFOAM), an international association of organisations and agencies that are working to further organic production, drafted the Basic Standards for Organic Aquaculture Production in 2000 which became fully accepted basic standards five years later (IFOAM EU Group, 2010). Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No. 2092/91 has established the legal framework for all levels of production, distribution, control and labelling of organic products which may be offered and traded in the EU (EC, 2012).

7. FAO GUIDELINES FOR FISH STOCK CERTIFICATION AND ECOLABELLING OF FISH AND FISHERY PRODUCTS

7.1 FAO Guidelines for marine capture fisheries

In 2005, the United Nations Food and Agriculture Organisation (FAO) created a set of “Guidelines on Ecolabelling of Fish and Fishery Products from Marine Capture

Fisheries” (FAO, 2005). The FAO Ecolabelling Guidelines contain 151 specific points which need to be addressed in an ecolabelling scheme. The guidelines, which are voluntary in nature, apply to ecolabelling programmes focused on certification, and also elaborate principles, assessment criteria and governance. Within each category metrics are provided in order to achieve compliance. These establish minimum standards for operating and implementing credible and robust fisheries ecolabelling schemes. The guidelines were in tune with other international norms, standards and instruments such as those established by the International Organisation for Standardisation (ISO), the International Social and Environmental Labelling and Accreditation Alliance (ISEAL) and the World Trade Organisation (WTO). The FAO guidelines include minimum substantive requirements and criteria for any fisheries ecolabelling scheme. As reproduced and rephrased below, the FAO guidelines stated that ecolabelling should satisfy the following:

- ◆ Be consistent with the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the United Nations Fish Stocks Agreement (UNFSA), the FAO Code of Conduct for Responsible Fisheries (CCRF) and the World Trade Organization rules and other international instruments.
- ◆ Recognise the sovereign rights of states and comply with all relevant laws and regulations.
- ◆ Be of a voluntary nature and market-driven.
- ◆ Be transparent, including balanced and fair participation by all interested parties.
- ◆ Be non-discriminatory, do not create unnecessary obstacles to trade and allow for fair trade and competition.
- ◆ Provide the opportunity to enter international markets.
- ◆ Establish clear accountability for the owners of schemes and the certification bodies in conformity with international standards.
- ◆ Incorporate reliable, independent auditing and verification procedures.
- ◆ Be considered equivalent (with other schemes) if consistent with these guidelines.
- ◆ Be based on the best scientific evidence available, also taking into account traditional knowledge of the resources provided that its validity can be objectively verified.
- ◆ Be practical, viable and verifiable.

- ◆ Ensure that labels communicate truthful information.
- ◆ Provide for clarity.
- ◆ Be based, at a minimum, on the minimum substantive requirements, criteria and procedures outlined in these guidelines.

They also define the procedural and institutional aspects of any scheme. Any scheme should include the requirements that:

- ◆ The fishery is conducted under a management system that is based on good practice including the collection of adequate data on the current state and trends of the stocks and based on the best scientific evidence;
- ◆ The stock under consideration is not over-fished; and
- ◆ The adverse impacts of the fishery on the ecosystem are properly assessed and effectively addressed.

In terms of procedural and institutional aspects, any ecolabelling scheme should encompass:

- ◆ The setting of certification standards;
- ◆ The accreditation of independent certifying bodies; and
- ◆ The certification that a fishery and the product chain-of-custody are in conformity with the required standard and procedures.

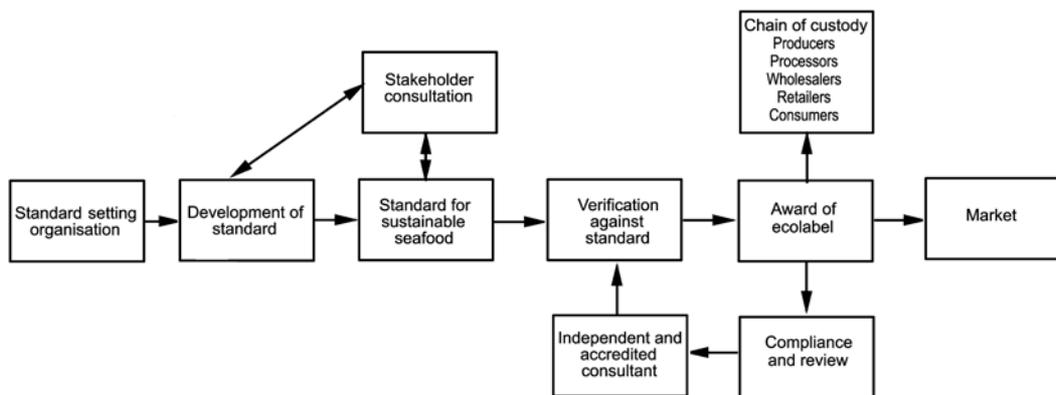


Fig. 1. A simplified block diagram of the ecolabelling process

Certification is rarely carried out by the standard-setting organisation because this would compromise impartiality. The organisation will usually accredit an independent consultant to ensure they have the capacity to carry out the verification of a candidate against the standard. This process, as well as any decisions that are made, occurs independently of the standard-setting organisation. Assessment teams use site visits, panels, scoring indicators, and consultations to score the fishery against the standard. Often the process will have a conflict resolution mechanism where parties can challenge decisions. After the awarding of an ecolabel to a product, a supply chain assessment is performed to ensure that the products from the certified operation are traced through processing and transport logistics to the shelf. Traceability throughout the supply chain from 'ocean to plate' aims to reduce fraudulent claims and increases the legitimacy of the label. Another outcome is the implementation of compliance and review mechanisms. Initiatives will specify a series of corrective actions to be fulfilled over time and hold regular audits to determine compliance. Due to the various mechanisms that attempt to build credibility and transparency (e.g. independent verification) the certification process can often be costly. Such costs can be prohibitive for smaller operators who wish to enter the market.

Certification and ecolabelling processes include the processes of developing and administering an independent standard (certification process) from awarding and managing a labeled product (ecolabelling process). Functional instruments are the documented tools and apparatus that implement the policies of the organisation and are the means to implement certification processes and administer and manage the ecolabel, including the methodology to define and measure performance against the standard (verification methodology) or the process of establishing traceability of labeled product. Governance refers to the broader rules and behaviours by which interests are articulated, resources are managed, and power is exercised in the organisation. The conceptual framework for the certification-ecolabelling system in terms of functional instruments and governance is given in Fig. 2.

Certification System	Ecolabelling System
Functional instruments	
<ul style="list-style-type: none"> ✦ Objective and scope of the standard. ✦ Structure of the standard. ✦ Resourcing required for certification. Accreditation of assessors. ✦ Verification methodology. 	<ul style="list-style-type: none"> ✦ Chain-of-custody and traceability. ✦ Corrective measures and compliance audits. ✦ Application and regulation of label. ✦ Contractual arrangements.

Contd...

Certification System	Ecolabelling System
Governance system	
<ul style="list-style-type: none"> ✦ Organisational objectives. ✦ Organisational governance and decision making. ✦ ISO standards. ✦ Stakeholder consultation. ✦ Mechanisms for credibility (consistency, independence and transparency). ✦ Review of the standard. 	<ul style="list-style-type: none"> ✦ Conflict management and appeals. ✦ Monitoring and effectiveness of labels. ✦ Creating demand, marketing and branding. ✦ Revenue generation. ✦ Label complementarity.

(After Potts *et al.*, 2011)

Fig. 2. The conceptual framework for the certification-ecolabelling system

7.2 FAO Guidelines for inland capture fisheries

FAO Guidelines for *Ecolabelling of Fish and Fishery Products from Inland Capture Fisheries*, was adopted on 27 May 2010 (FAO, 2010) to facilitate certification and ecolabelling of products from well-managed inland capture fisheries, with focus on sustainability.

7.3 FAO Guidelines for aquaculture certification

FAO Technical Guidelines on Aquaculture Certification (FAO, 2008b) was approved by the Sub-Committee on Aquaculture in 2010 and approved by the 29th Session of the FAO Committee on Fisheries in February 2011 (FAO, 2012). Minimum substantive criteria for developing aquaculture certification standards are provided for (i) animal health and welfare, (ii) food safety and quality, (iii) environmental integrity and d) social responsibility. The extent to which a certification scheme seeks to address the issues in all or some of these four areas depends on the objectives of the scheme, which should be explicitly and transparently stated by the scheme. Development of certification schemes should consider the importance of being able to measure performance of aquaculture systems and practices, and the ability to assess conformity with certification standards.

8. CHAIN-OF-CUSTODY AND TRACEABILITY

Chain-of-custody and traceability are integral parts of any successful ecolabelling schemes. Traceability has been defined as “the ability to systematically identify a unit of production, track its location and describe any treatments or transformations at all

stages of production, processing and distribution” (AMRL, 2005). According to ISO 9000:2005 traceability is the ability to trace the history, application or location of that which is under consideration (ISO, 2005). In addition to its requirements in seafood ecolabelling schemes, the traceability system is necessary in the context of a number of regulatory and non-regulatory requirements such as in food safety and access to international markets (Petersen and Green, 2004). Traceability provides food safety, inventory management, operational efficiency, customer value and quality, product availability, low product cost through lower logistics cost, availability of fresher products on the shelf, health protection through product recalls, faster checkouts at point of sale and assured billing. A number of initiatives have been undertaken nationally and internationally to address traceability information requirements for the seafood industry such as Tracefish in the European Union, Can-Trace in Canada and Young’s Trace in UK (AMRL, 2005). Many of these initiatives focus on use of a systematic data management system based on the European Article Numbering and the Uniform Code Council (EAN.UCC) standards including bar codes to trace food products through the supply chain. A traceability system requires (i) a means of identification for the product (product identifier), (ii) information about the product (item information) and (iii) a traceability linkage between the identifier and item information.

According to FAO guidelines the chain-of-custody involves a set of measures which is designed to guarantee that the ecolabelled product put on the market is really a product coming from the certified fishery concerned (FAO, 2005). MSC Chain-of-custody standards specify the procedures implemented by a fishery and subsequent entities handling fish and fish products to ensure that products from a certified fishery are not mixed with products from any other fishery and remain fully traceable during processing, storage, distribution and sale (MSC, 2011). The GS1 Global Traceability Standard is a business process standard describing the traceability process which enables companies to implement tracking and tracing of products as they move across the chain of custody and includes (i) identification of parties, items and events, (ii) labelling and/or marking and/or tagging of products, (iii) the nature and type of data to be captured and collected, (iv) record keeping including archiving / data storage, (v) communication and sharing of information, (vi) links identification and management and (vii) retrieval/search of information which enables to track and trace a traceable item from creation to the point of sale, use or destruction depending on the industry (GSI, 2009).

9. INDIAN INITIATIVES IN FISH STOCK CERTIFICATION AND ECOLABELLING

As a first step towards certification In India the pre-analysis was conducted by WWF in the coastal states of Kerala, Tamil Nadu, Gujarat, and West Bengal. Based on the pre-

analysis report, two potential candidate species, namely, Indian oil sardine (*Sardinella longiceps*) and needle squid (*Doryteuthis sibogae*) in Kerala were identified for certification against the Guidelines for Assessing Small Scale Data Deficient Fisheries (GASS/DD). Oil sardine was assessed against this methodology and the certifier identified gaps to be filled for the fishery to be certified. A Fishery Improvement Plan (FIP) for the oil sardine has been prepared for moving the fisheries into certification. In 2010, the pre-assessment of the short neck clam (*Paphia malabarica*) fishery of Ashtamudi estuary, Kollam (Kerala) was completed (Malayilethu, 2011). Marine Products Export Development Authority (MPEDA) also made attempts to get the tiger shrimp, skipjack tuna and yellowfin tuna into certification. Gaps related to data deficiency, bycatch quantification etc. were identified in the pre-assessment report.

In a National Workshop on Ecolabelling and Sustainable Fisheries Management: the Road Ahead for India, 30 March 2010, organized by National Agricultural Innovation Project (NAIP) on A Value Chain on Oceanic Tuna in Lakshadweep Fisheries and SEETTD, CMFRI, it was recommended that considering the need to sustain the marine fisheries resources and the potential demand for ecolabelled marine products in the Indian and global markets, it is necessary that India should promote and support initiatives to certify ecologically viable fisheries. Recognising the difficulties in applying the principles and criteria of the existing ecolabelling schemes for tropical fisheries, it is recommended that India should undertake an initiative to develop an ecolabel of its own by formulating benchmarks and principles relevant to tropical fish stocks. Recognising the fact that certification will not be effective in an open access fishery, the workshop recommended the formation of a Task Force for Sustainable Marine Fisheries Management by the Department of Animal Husbandry, Dairying & Fisheries (DAHD&F) with representatives from state and central governments, MPEDA, Export Inspection Agency (EIA), Fishery Survey of India (FSI), research organizations such as Central Marine Fisheries Research Institute (CMFRI) and Central Institute of Fisheries Technology (CIFT), fishermen organisations, exporters, and NGOs for implementing Fisheries Management Plans inclusive of ecolabelling. It was also recommended that CMFRI would take initiative to carry forward the above recommendations in consultation with the user groups.

The National Task Force constituted by the Marine Products Export Development Authority (MPEDA) has finalised the guidelines for green certification of ornamental fisheries (Silas *et al.*, 2011). The guidelines were drawn up partly based on the International Workshop on Green Certification of Ornamental Fishes, 14-18 October 2008, organized by MPEDA in association with United Nations Conference on Trade and Development (UNCTAD) and project PIABA Brazil. The guidelines stressed the need for developing a traceable value chain approach from collection/culture all

the way up to export of ornamental freshwater fishes. The issue of Geographical Indication (GI) of species is also addressed in the guidelines.

The Agricultural and Processed Food Products Export Development Authority (APEDA), New Delhi, has developed a facility known as TraceNet which is an internet based electronic service for facilitating process certification for export of organic products from India which comply with the National Programme for Organic Production (NPOP), India and the National Organic Program (NOP) technical standards (USA). TraceNet collects, stores and reports - forward and backward traces and quality assurance data entered by the operators/producer groups and certification bodies within the organic supply chain in India (APEDA, 2012). The sole responsibility for verification and validation of the genuineness and correctness of the data captured and certifications issued lies with the operators / producer groups and accredited certification bodies.

10. RECOMMENDATIONS

A. Policy

- i. The rise of certification and ecolabelling schemes are bringing together elements of the market, industry, environmental interests and communities and provide additional tools to move towards sustainability of capture fisheries and aquaculture.
- ii. Adoption of certification and ecolabelling schemes for marine and inland capture fisheries and aquaculture will certainly be useful for supporting fisheries conservation efforts in India. In order to be credible and successful, such ecolabelling schemes (i) need to be aligned and harmonised with FAO guidelines for ecolabelling of fish and fish fishery products from marine and inland capture fisheries and aquaculture, (ii) compliant with relevant international standards such as (International Organization for Standardization (ISO) and International Social and Environmental Accreditation and Labelling Alliance (ISEAL) Codes of Good Practice for setting social and environmental standards, (iii) have a robust and transparent governance structure, whether operated in public or private domain, (iv) be affordable with an acceptable cost structure and an equitable distribution of benefits across the value chain, (v) should not lead to creation of indirect trade barriers and (vi) have adequate training and outreach efforts to create awareness and sensitise stakeholders.
- iii. Recognising the unique characteristics of fisheries and aquaculture in the tropics, India should take initiative to facilitate formulation of principles and criteria relevant

to tropical fish stocks and aquaculture, as per guiding principles enshrined in FAO guidelines for ecolabelling of fish and fishery products from marine and inland capture fisheries and aquaculture.

- iv. Department of Animal Husbandry, Dairying & Fisheries (DAHD&F), MPEDA, ICAR fisheries Institutions, Fishery Survey of India (FSI), Export Inspection Agency (EIA), National Fisheries Development Board (NFDB) and State Departments of Fisheries should facilitate the implementation of fisheries management and improvement plans and fish stock and aquaculture certification and ecolabelling in collaboration with fishermen organisations, exporters, NGOs and other stakeholders.
- v. Traceability is an important aspect both in terms of seafood safety and certification and due attention is needed in developing a system, which is viable, cost-effective and appropriate for Indian fisheries.
- vi. As a first step, the ecolabelling initiatives need to focus on fishes targeted at export markets and organized domestic markets.
- vii. Harmonisation of the ecolabelling schemes on international level is needed and equivalency is required to be established on compliance with relevant FAO guidelines.
- viii. Seafood safety, quality and carbon footprint also need to be integrated into the ecolabelling schemes.

B. Research

- i. The knowledge base on status of fish stocks and the biological indicators need to be expanded in order to facilitate certification and ecolabelling process, through focused research on data-deficient fish stocks in Indian waters.
- ii. The knowledge base for integrating aspects of seafood safety, seafood quality and carbon footprint into ecolabelling schemes need to be developed for capture and culture based fish and fish based products.
- iii. Research on the impacts of fishing systems on environment and ecosystem; studies on the interaction between endangered, threatened or protected (ETP) species and fisheries and mitigation measures thereof, have to be continued.
- iv. Value chain analysis of major commercial species need to be undertaken.
- v. Strengthen good aquaculture practices so as to develop appropriate Standard Operating Procedures (SOPs) covering food safety and Sanitary and Phytosanitary (SPS) requirements.

C. Pilot level projects and case studies

- i. Pilot level projects on fisheries certification, ecolabelling and traceability need to be facilitated for selected fisheries, if necessary, in collaboration with leading players such as MSC and GS1.
- ii. Case studies on fisheries certification projects attempted in different fisheries in the country need to be documented in order to facilitate finding an acceptable model for certification.

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Seafood related Certification and Ecolabelling Schemes

Sl. No.	Name and web address	Geographical range	Species covered	Certification logo or ecolabel
	Wild capture fisheries			
1.	Marine Stewardship Council (MSC) www.msc.org	Worldwide	All	
2.	Friends of the Sea www.friendsofthesea.org	Worldwide	All	
3.	KRAV www.krav.se	Worldwide	All	
4.	Naturland www.natureland.de	Worldwide	Salmonids, arapaima, milkfish, mussels, penaeid shrimp	
5.	Australian Southern Rock lobster Clean Green Program www.southernrocklobster.com/cleangreen	Australia	Rock lobsters	
6.	Earth Island Institute (EII) www.earthisland.org/	Pacific Ocean	Tuna	
7.	Ecofish www.ecofish.com	Worldwide	Crabs, spiny lobster, halibut, mussels, yellowfin tuna	
8.	National Marine Fisheries Service http://dolphinsafe.gov	USA	Tuna	

Sl. No.	Name and web address	Geographical range	Species covered	Certification logo or ecolabel
9.	Pacific Rivers Council www.salmonsafe.org	USA	Salmon	
10.	RecFish Australia www.recfish.com.au	Australia	Species caught in recreational fishing tournaments.	
11.	Royal forest and Bird Protection Society www.forestlandbird.org.nz/bestfishguide/index.asp	New Zealand	Wild-caught fish	
12.	Flipper Seal Approval www.earthtrust.org/fsa.html	USA	Tuna	
13.	FishWise, Santa Cruz, California,US www.fishwise.org	USA	Fish with Monterey Bay Aquarium's science-based rankings	
14.	Sealord, New Zealand www.sealord.co.nz/	New Zealand		
15.	Marine Ecolabel, Japan www.melj.jp/eng/index.cfm	Japan	All	
16.	IFFO Global Standard for Responsible Supply http://www.iffonet.net/	Worldwide	Fish meal and oil	
17.	Seafish Responsible Fishing Scheme www.seafish.org/rfs/	UK	All	

Sl. No.	Name and web address	Geographical range	Species covered	Certification logo or ecolabel
	Aquaculture			
1	Alter Trade www.altertrade.co.jp	Japan	Shrimp	
2.	Australian Certified Organic www.australiancertifiedorganic.com.au	Australia	Fish, crustaceans, molluscs	
3.	Aquaculture Certification Council (ACC)/Best Aquaculture Practices/ Global Aquaculture Alliance/ Aquaculture Certification www.aquaculturecertification.org , www.responsibleseafood.org , www.gaalliance.org	Worldwide	Penaeid shrimp, salmon, tilapia, Pangasius, channel catfish, molluscs	
4.	Agriculture Biologique (AB) (French Ministry of Agriculture)	France	Organic products	
5.	Hong Kong Fish Farm Accreditation Scheme Organic Production www.hkaffs.org	Hong Kong	Farmed fish, fish fry	
6.	Crianza del Mar (Espana) www.ipacuicultura.com	Spain	Good aquacultural practices	
7.	Pêche responsable Carrefour France www.carrefour.org	Worldwide	Salmonids, penaeid shrimp, oysters	
8.	Freedom Foods www.rspca.org.uk	UK	Salmon	

Sl. No.	Name and web address	Geographical range	Species covered	Certification logo or ecolabel
9.	Tartan Quality Mark www.scottishslamon.co.uk	Scotland	Salmon	
10.	Thai Quality Shrimp/Good Aquaculture Practice www.thaiqualityshrimp.com	Thailand	Penaeid shrimp, Macrobrachium	
11.	Label Rouge www.aqualabel.fr/web/p266_label-rouge.html	France, Scotland, Madagascar	Seabass, oysters, salmon, turbot, Macrobrachium penaeid shrimp	
12.	Shrimp seal of quality www.cdcbd.org/ssq/ssq_brief.htm	Bangladesh	Penaeid shrimp, Macrobrachium	
13.	GLOBAL GAP Integrated Farm Assurance Standard; Aquaculture Base www.globalgap.org	Worldwide	Salmon, trout, tilapia, Pangasius, penaeid shrimp	No ecolabel for consumer
14.	ISO 14001/Environmental Management System www.iso.org	Worldwide	Any species	No ecolabel for consumer
15.	Safe Quality Food Institute www.sqfi.org	Worldwide	Any species	No ecolabel for consumer
16.	Malaysian Aquaculture Farm Certification Scheme www.fishdept.sabah.gov	Malaysia	Penaeid shrimp, Macrobrachium, fish ornamentals, molluscs	No ecolabel for consumer
17.	SIGES Fundacion Chile/ CBPA www.orgfoodfed.com	Chile	Salmonids	No ecolabel for consumer
18.	Naturland www.natureland.de		Salmonids, arapaima, milkfish, mussels, penaeid shrimp	

Sl. No.	Name and web address	Geographical range	Species covered	Certification logo or ecolabel
19.	Soil Association Scotland, UK www.soilassociationscotland.org	Scotland, EU	Atlantic salmon, trout, shrimp	
20.	National Association for Sustainable Agriculture www.nasaa.com.au	Australia	Fish, crustaceans	
21.	Bioland www.bioland.de	Germany	Freshwater fish	
22.	Bio-Gro www.bio-gro.co.nz	New Zealand	Fish, crustaceans, molluscs	
23.	Bio-Suisse www.bio-suisse.ch	Switzerland	Fish	
24.	KRAV www.krav.se	Sweden	Organic products	
25.	Debio www.debio.no	Norway	Organic products	
26.	Aquaculture Stewardship Council (ASC) www.ascworldwide.org	Worldwide	Abalone, bivalves, cobia, freshwater trout, pangasius, salmon, seriola, shrimp, tilapia	
27.	EU organic http://ec.europa.eu/agriculture/organic/home_en	EU	Organic products	

(Source: Ward and Phillips, 2008; Lee, 2008; Big Room Inc. 2012; NACA, 2012; UNCTAD, 2012)

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