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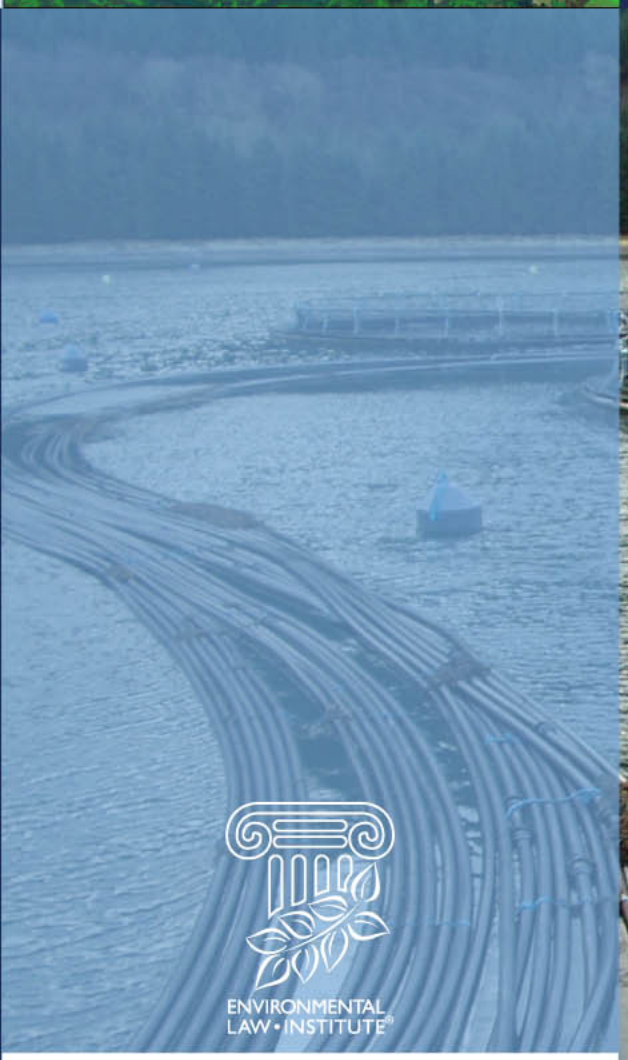
Gold Standard for Sustainable Aquaculture Ecolabel Design

Technical Report



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THE OCEAN FOUNDATION

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Technical Report

Environmental Law Institute®
The Ocean Foundation
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Executive Summary

The aquaculture industry is on the rise: since 1950, aquaculture production has grown 8.8 percent per year and shows no signs of slowing. In 2004, global production stood at 59.4 million tons, with a market value of $70.3 billion.[1] Proponents claim that this "blue revolution" reduces pressure on depleted wild fish stocks, provides a source of sustainable income generation for developing economies, and serves as an important food source to address protein deficits in developing regions. Unfortunately, these claims are undermined by serious environmental and social impacts caused by current aquaculture production practices. These impacts range from dependence on wild feedstocks to trade imbalances, and each must be addressed before aquaculture development can be considered sustainable over the long term.

The Marine Aquaculture Task Force has noted that "eco-labeling, and certification have the potential to significantly improve the sustainability of aquaculture production practices."[2] Ecolabels are intended to leverage consumer demand for sustainable products to provide incentives for adoption of improved environmental practices by producers. Certified producers can market their products with the ecolabel, indicating to consumers that the products meet certain production standards. Producers benefit from increased access to markets and price premiums for labeled products. This simple idea has been implemented through ecolabels in a wide array of industries ranging from forestry to capture fisheries. While the theory behind ecolabeling is the same from industry to industry, each label's institutional design differs, as does its success on the ground. Design differences affect the label's credibility and pragmatic benefits: labels must be properly designed to ensure that they produce their intended benefits.

A number of ecolabels have already been developed in response to increasing demand for an aquaculture label, and more are forthcoming in coming months and years. However, existing and planned labels all focus on incremental improvements to production processes rather than on sustainability. In these labels, sustainability is more a buzzword than a guideline for implementation. Moreover, an independent review has revealed that all existing ecolabels lack credibility due in part to a lack of institutional controls and inadequate consideration of key impacts of production and processing. In addition, it is not clear that these efforts have resulted in improvements in environmental or social practices on the ground.

The Environmental Law Institute (ELI) and The Ocean Foundation (TOF) seek to introduce a new paradigm for ecolabeling in which sustainability – not feasibility – is the basis for certification. Sustainability is a high bar – it seeks economic development that does not degrade natural systems or undermine basic human needs for either this generation or future generations.[3] Creation of an ecolabel that meets these disparate economic, environmental, and

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[1] FAO, STATE OF WORLD AQUACULTURE 2006 6 (2006).

[2] Marine Aquaculture Task Force, *Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks* 110 (2007) [hereinafter *Sustainable Marine Aquaculture*]. The Marine Aquaculture Task Force is a diverse panel of experts with scientific, regulatory, business and policy-making backgrounds. It was convened by the Woods Hole Oceanographic Institution, with support from the Pew Charitable Trusts, to develop a suite of protective, science-based standards to assure that aquaculture development poses minimal threats to the ocean environment.

[3] *See* John C. Dernbach, *Synthesis*, *in* STUMBLING TOWARD SUSTAINABILITY 1, 5-6 (2002); Michelle Allsopp et al., CHALLENGING THE AQUACULTURE INDUSTRY ON SUSTAINABILITY 19 (2008).

social goals requires careful and flexible institutional design to enable the evolutionary development of certification standards.

This Gold Standard describes a comprehensive framework for the design of an aquaculture certification that is based explicitly on environmental and social sustainability. The Gold Standard has been designed as efficiently as possible to ensure that it is both credible and practical. As a result, systems that follow the Gold Standard will comply with all established international design standards, will certify only sustainable operations and will provide economic benefits to producers over the long term. Through comprehensive consideration of effects on the environment, society, human health, and animal welfare, scientific standard-setting, careful controls on certification decisions, transparent review and reporting on performance, and robust objections procedures, consumers can be assured that Gold Standard-compliant ecolabels will successfully translate their rigorous standards into sustainable practices. Existing labels can also use the Gold Standard to evaluate their institutional design. These labels may improve the credibility of their systems by adopting elements of the Gold Standard.

The Gold Standard is based on the four elements of ecolabel design: (i) scope; (ii) governance structure; (iii) standards; and (iv) implementation methodology. Every ecolabel – based on sustainability or not – must consider each of these elements in order to design processes and substantive standards that are credible and offer incentives for producers to participate. The recommendations included for each of these elements in the Gold Standard are designed for optimal operation of a working sustainable aquaculture ecolabel given these requirements. We recommend:

A. Scope
- Develop a Written Scoping Document
- Address all significant effects of aquaculture production and processing
- Incorporate social, environmental, and economic stakeholders
- Incorporate stakeholders from developed and developing countries
- Adopt sustainability as the baseline for stringency

B. Governance

1. General Assembly
    - Engage stakeholders through a membership structure
    - Create a general assembly with limited governance responsibilities
    - Require balanced membership and powers in the assembly

2. Board of Directors
    - Require balanced representation in the board of directors
    - Limit size of board and term length of its members
    - Provide board with broad responsibilities
    - Require board to consider technical and stakeholder input
    - Create a board subcommittee for standard-setting

3. Secretariat
    - Develop a secretariat to manage the ecolabel on a day-to-day basis
    - Establish secretariat as a global presence with consumers and producers
    - Evaluate and report on the environmental and social performance of indicators

- Centralize management to minimize cost and ensure consistency across operations

4. Technical Advisory Board
    - Create a standing, independent technical advisory board
    - Authorize the technical advisory board to provide objective measures of sustainability
    - Authorize the technical advisory board to create sub-panels
5. Objections Panel
    - Create an independent objections panel
    - Allow secretariat to review and address grievances prior to appeal to panel
    - Allow stakeholders to challenge procedure and substance of standard-setting and certification decisions
    - Allow external organizations to object even if they are not members

C. Standard-Setting
- Comply with the ISEAL Alliance Code of Practice
- Use explicit standard-setting processes
- Use the TAB to determine stringency of criteria and indicators
- Base standards on both process and performance
- Develop indicators on a species or species-group basis
- Centralize development of principles, criteria, and indicators
- Allow secretariat to develop guidance

D. Implementation
1. Units of Certification
    - Establish individual facilities as the unit of certification
    - Provide for small-scale producer and group certification
    - Provide for provisional certification prior to construction of new facilities
    - Develop chain-of-custody certification
2. Certification Body
    - Create a pilot-scale independent certification body
    - Establish protections for certification body independence and consistency
3. Assessment Process
    - Create credible, explicit procedures for certification
    - Use preassessment, assessment, and review for certification
    - Carry out confidential, streamlined preassessment
    - Develop credible assessment processes that require on-site consultation
    - Allow limited conditional certification
    - Audit producers and processors annually
    - Collect performance data and report to secretariat

The Gold Standard is a workable, comprehensive design framework for those who propose to create an ecolabel for aquaculture products. It uses sustainability as the minimum requirement for certification because only with substantively sustainable standards will aquaculture live up to its promise without causing undue harm.

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I. Aquaculture Ecolabeling and the Gold Standard

Humanity has been practicing aquaculture for millennia. For most of history, aquaculture has been a sustainable, consistent source of food and income. The industrialization of aquaculture increased the economic efficiency and short-term profit of production, but the intensity and practices producing these benefits came at significant environmental and social cost. For example, modern aquaculture production may conflict with other uses of land and water, such as fishing and navigation, contribute to the overutilization of limited natural resources such as wild fish and groundwater, or alter ecosystems through the destruction of habitat or the introduction of nonnative species, and harm human health through the introduction of harmful chemicals into the food supply.

In recent years, environmentalists, consumers, regulators, and producers have begun to recognize the extent to which modern aquaculture practices conflict with other values. To minimize these conflicts, observers have recommended ways to improve the sustainability of aquaculture production. The World Commission on Environment and Development declared that sustainable "development [] meets the needs of the present without compromising the ability of future generations to meet their own needs."[4] As so defined, sustainability "recognizes the connections between humanity's social, ecological, and economic obligations, and it recognizes responsibility for future as well as present generations."[5] The environmental, social, and economic consequences of aquaculture production demand remedial action. As FAO has noted, "[t]here is growing understanding that sustainable development of the aquaculture sector requires an enabling environment, with appropriate institutional, legal and management frameworks guided by an overall policy."[6]

Voluntary private incentive programs, including ecolabeling, are likely to play an important role in the governance framework supporting sustainable aquaculture. As the Marine Aquaculture Task Force has noted, "[p]rivate sector initiatives, eco-labeling, and certification have the potential to significantly improve the sustainability of aquaculture production practices."[7] This conclusion is widely shared. Retailers, consumers, social and environmental NGOs, and producers have all supported certification and labeling of aquaculture products by non-state entities. The Global Aquaculture Alliance (GAA) is one of no fewer than seventeen existing labeling systems for species ranging from seaweed to marine finfish.[8] Governmental and multilateral bodies, including but not limited to FAO and the European Commission (EC),[9]

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[4] United Nations, Report of the World Commission on Environment and Development, General Assembly Resolution 42/187 (1987).

[5] John C. Dernbach, *Synthesis*, *in* STUMBLING TOWARD SUSTAINABILITY 1, 5-6 (John C. Dernbach ed., 2002). *See also* United Nations, Johannesburg Declaration on Sustainable Development: From Our Origins to Our Future (2002) (recognizing the "interdependent and mutually reinforcing pillars of sustainable development — economic development, social development and environmental protection…").

[6] U.N. Food & Agriculture Organization, State of World Fisheries and Aquaculture 2006 8 (2007) [hereinafter SOFIA 2006].

[7] Marine Aquaculture Task Force, *Sustainable Marine Aquaculture: Fulfilling the Promise; Managing the Risks* 110 (2007) [hereinafter *Sustainable Marine Aquaculture*].

[8] *See* WWF, BENCHMARKING STUDY: CERTIFICATION PROGRAMMES FOR AQUACULTURE: ENVIRONMENTAL IMPACTS, SOCIAL ISSUES, AND ANIMAL WELFARE (2007) (evaluating labeling programs).

[9] FAO is proceeding with the development of aquaculture certification standards in collaboration with the Network of Aquaculture Centres in Asia-Pacific (NACA), an intergovernmental body. *See* FAO & NACA, Report of the

have supported multi-stakeholder aquaculture certification and labeling programs. For example, the World Wildlife Fund (WWF), in partnership with FAO and the World Bank, has initiated a series of global stakeholder dialogues to develop best-practice standards to reduce the impacts caused by the production of ten common aquaculture species. Other projects are in development or implementation phases and are likely to be realized in the near future.

These fledgling efforts promise to yield one or more fully-realized ecolabels focused on certifying a range of aquaculture production facilities. Troublingly, none of the existing initiatives explicitly base their certification requirements on sustainability of production, instead choosing to focus on reducing the harm caused by existing production systems. These labeling initiatives, in their current form, may raise the bar for acceptable performance in the aquaculture industry but they are not designed to create sustainable production systems. For example, existing aquaculture labels are considering standards to certify salmon production despite the salmon industry's reliance on wild-sourced fish meal and fish oil. While nascent labels may require certified salmon production facilities to use feeds that are lower in wild-sourced material, the production of the salmon will nonetheless contribute to the protein deficit afflicting the developing world. Under the Gold Standard, by comparison, ecolabels may only receive certification if they are sustainable with respect to all significant social and environmental impacts, including at a minimum those identified in relevant international standards.

To facilitate the institutional design of a sustainable aquaculture ecolabel and to judge the credibility and effectiveness of existing or planned aquaculture labels, ELI and TOF developed this Gold Standard for sustainable aquaculture ecolabeling. The Gold Standard provides an institutional design framework that is a necessary first step to the development of an ecolabel that certifies only facilities that achieve environmental, social, and economic sustainability.

The success of ecolabels is determined by the degree to which they catalyze environmental and social improvement and convert sustainable production into standard practice. Environmental and socioeconomic improvement is a function of the number of producers who adopt the ecolabel's standards, which is in turn affected by consumer demand for certified products. Thus, the fundamental task of the ecolabel is to connect certified producers with institutional and individual consumers who buy their goods. The effectiveness of this process largely depends on the credibility of the label's institutional structures and substantive standards and the pragmatic benefits of ecolabeling for producers.[10] Together, the ecolabel's institutional design and the stringency of its substantive standards determine the label's credibility and pragmatic benefits. The institutional design of each ecolabel controls both the structures and processes used by the label and the stringency of its standards. The Gold Standard therefore addresses the impacts of its design recommendations on both substantive and procedural aspects of certification and labeling.

Bangkok FAO/NACA/Government of Thailand Expert Workshop on Guidelines for Aquaculture Certification (2007).

[10] *See* Olav Schram Stokke et al., *Ecolabelling and Sustainable Management of Forestry and Fisheries: Does it Work?, in* POLITICAL CONSUMERISM: ITS MOTIVATIONS, POWER, AND CONDITIONS IN THE NORDIC COUNTRIES AND ELSEWHERE 291, 303 (Magnus Boström et al. eds., 2005).

Structurally, every ecolabel is composed of four basic elements: its scope, governance structures, standards, and implementation methodology. The Gold Standard provides recommendations for the design of each of these elements based on an examination of six model certification and labeling initiatives, the existing GAA certification system, and the WWF-led aquaculture dialogues (Box 1: Existing Ecolabeling Systems Considered in this Report).[11] Other aquaculture labels – including but not limited to Friend of the Sea and GlobalGap – are currently operating but are not considered here because they are not global in scope and have been analyzed by a prior WWF study.[12] National organic standards are also excluded due to their governmental involvement and ongoing disputes over the feasibility and acceptability of organic standards for aquaculture in North America.

The analysis of the ecolabels considered in this report illustrates the diversity of potential institutional design characteristics, examines their strengths and weaknesses, and considers the practical consequences of institutional design on the success of the label. Comparative analysis of these systems provides a broad foundation for designing a new ecolabel.

Box 1: Existing Ecolabeling Systems Considered in this Report

- Global Aquaculture Alliance (GAA)
- WWF Aquaculture Dialogues
- International Organization for Standardization (ISO)
- International Social and Environmental Accreditation and Labeling Alliance
- Forest Stewardship Council (FSC)
- Marine Stewardship Council (MSC)
- Fairtrade Labeling Organization (FLO)
- Rainforest Alliance (RFA)

This report then applies the lessons learned from the case studies to the aquaculture context. Many aspects of institutional design are universal, applying equally to ecolabels that certify forests, fisheries, farms, and aquaculture facilities. Other variables are influenced by one or more contextual elements. The environmental impacts of aquaculture production, its regulatory environment, inter-label competition, the identities and interactions of existing stakeholders, and the availability of funding for the ecolabel will all affect the label's structures and substantive standards. In many cases, these contextual influences may conflict with each other or with abstract institutional design principles. The Gold Standard therefore attempts to balance the tensions between influences in order to produce an institutional design that is appropriate to sustainable aquaculture.

After presenting the Gold Standard, this report first considers how ecolabels function in practice and introduces the elements of ecolabel institutional design along with brief descriptions of the design of the existing ecolabels considered in this report. With this foundation, the report independently examines each element of institutional design – scope, governance, standards, and implementation – and provides the rationale for the Gold Standard's recommendations. With

[11] The included labels seek to catalyze social and environmental improvement in a number of sectors, including forestry, agriculture, and fisheries. Some labels were created by industry groups and others by a multi-stakeholder process, and some certify management systems while others measure actual environmental performance.
[12] *See* WWF, *supra* note 8.

these recommendations in hand, this report provides a step-by-step description of the steps required to create a Gold Standard-compliant ecolabel.

II. The Gold Standard

The creation of a working ecolabel requires a precise delineation of the scope and goals the label will attempt to achieve. This scoping determination permits the development of the three fundamental elements of ecolabel structure, including governance bodies, standard-setting procedures and resultant standards (including principles, criteria, and indicators), and implementation systems. In this Gold Standard, "standards" include principles, criteria, and indicators; specific terms are used where appropriate. This Gold Standard provides the optimal design recommendations for each of these design criteria.

A. Scope

Clear delineation of the scope of the ecolabel is necessary at the outset of a labeling program to ensure that stakeholders and designers understand the goals for which the label is created. Ecolabel scoping requires identification of relevant impacts and stakeholders and establishment of benchmarks for stringency of standards.

1. Develop a Written Scoping Document

The first task of a potential label should be to develop an explicit statement of principles. This statement should have several components, including:

- Identification of the impacts the ecolabel will address.
- Stakeholder groups that are affected by those impacts
- Stringency of standards to be adopted
- Key principles for ecolabel operation, including participation, transparency, and accountability
- Definitions of sustainability and other key terms.

If desired, the principles may also identify global requirements for certified entities, such as the use of management systems and legal compliance.

2. Address all significant effects of aquaculture production and processing

The general principles should address all significant types of social and environmental impacts (including harms to human health) caused by aquaculture production, including but not limited to:

- Siting conflicts, including interference with other uses of land and waters, including ecosystem services
- Workers' and indigenous persons' rights
- Feedstocks
- Chemicals and antibiotics
- Wastes
- Disease
- Escapes
- Animal welfare
- Human health
- Greenhouse gas releases

Failure to address significant impacts is likely to negatively affect the credibility of both standards and the ecolabel as a whole. Decisions to exclude impacts may be acceptable if they

are adequately addressed through other mechanisms, such as international conventions. Ecolabels should provide justifications for excluding known categories of impacts.

3. Incorporate social, environmental, and economic stakeholders

The creation of an ecolabel to address a broad range of impacts requires inclusion of a similarly broad array of stakeholder groups from the label's creation. These stakeholders should be consulted in the identification of impacts and structural elements of the label. Key stakeholder groups include:

- Producers
    - Large-scale (e.g. Marine Harvest)
    - Small-scale (e.g. family-farming operators)
- Supply Chain
    - Retail
    - Processing
- Environmental NGOs
- Community/Social NGOs
- Consumer groups
- Wild-capture fishery representatives (due to significant interaction)
- Independent Bodies (independent experts)
    - Academics
    - Multilateral organizations

Ecolabels are non-state, market driven structures that are designed to operate independently from government regulation to produce environmental and social benefits by voluntary, market-driven means rather than by prescription. As a result, the inclusion of government representatives as a protected interest group may distort the intentions and credibility of the ecolabel system as a whole. Multilateral organizations, including but not limited to FAO and the World Bank, do not raise the same issues and may therefore be valuable contributors or supporters due to their interest in developing programs for aquaculture.

4. Incorporate stakeholders from both developed and developing countries

A credible sustainable aquaculture certification organization requires engagement by producers and NGOs in developing countries, as many common species – notably shrimp and pangasius – are primarily produced in small scale operations in developing countries and the inclusion of these parties is vital for the credibility of the system.

5. Adopt sustainability as the baseline for stringency

In addition to identifying the important impacts of aquaculture production, scoping requires explicit delineation of the intended stringency of standards; if significant impacts are excluded, the reasons for the exclusion should be explicitly identified. Clarity of goals at the time of creation will reduce contention later in the labeling process. The scoping document for a comprehensive ecolabel should require that certification be based on environmental, social, and economic sustainability rather than on feasibility or current industry practice. Determination of sustainability should be based on the best available science, as determined by the Technical Advisory Board and implemented through appropriate criteria and indicators. Where current production practices are already sustainable, anti-backsliding provisions are required. Where scientific information is incomplete, the Gold Standard adopts a precautionary approach, calling

for the TAB to determine standards that err on the side of caution and allowing indicators to evolve as more complete information becomes available.

B. Governance

Ecolabel governance must be credible, incorporating all stakeholder groups in a balanced manner. Where not dictated by objective evidence, decisions must be based on consensus (as defined by the ISO), made within a prescribed time period, and made by accountable entities. Where consensus cannot be achieved within prescribed time limitations, the ecolabel's founding documents may allow decisions based on majority rule. The recommended governance structures meet these requirements and comply with all relevant international standards. While other institutional designs may also be credible, these recommendations are based on a comparative study of the strengths and weaknesses of past ecolabel design initiatives and are designed to be effective in the aquaculture context. In particular, this design is intended to achieve two goals: development of standards based on the best available science and consistent certification that produces the desired results in production facilities.

1. General Assembly

1. Engage stakeholders through a membership structure

The participation of members in ecolabel governance increases the label's credibility while also providing an ongoing forum that can be used to leverage the expertise of committed and diverse stakeholder groups during standard-setting. Limited membership fees, tiered based on ability to pay, can be used to offset the costs of operating the membership structure but should not be used to support the label's other operations. Tiered membership fees, however, should not result in limited opportunity to participate in ecolabel governance.

2. Create a general assembly with limited governance responsibilities

A general assembly with annual meetings provides a consistent forum to promote stakeholder communication and seek feedback on ecolabel activities. The general assembly should have explicit powers to:

- Elect the ecolabel's board of directors
- Make substantive recommendations to the board, independently or at the board's request, which the board must consider.

Delegation of additional powers to the assembly – notably, the sole power to alter the ecolabel's principles – is not recommended, as the debate required to achieve consensus may result in costly mechanisms. All board activities should rely on consensus (not unanimity), as defined by ISO and the ISEAL Alliance, and should be constrained by time limitations.

3. Require balanced membership and powers in the assembly

The assembly should include members from each of the stakeholder groups. Voting power for board elections should be normalized to take account of differences in the representation by each stakeholder group. The use of membership chambers is recommended to simplify this operation. The FSC system offers a model for establishing chambers and normalizing voting power by chamber. Membership chambers should include producers, supply chain interests, environmental interests, and social interests. Other interest groups, such as consumer groups and academics, should apply for membership in the most appropriate chamber.

Each chamber should elect its own representatives for the board independently. In addition, the assembly as a whole should elect the independent board members, as nominated by the board.

2. Board of Directors

1. Require balanced representation in the board of directors

The board should consist of one member from each assembly chamber and the CEO of the label. Independent members, from both developed and developing countries, should also be appointed to the board by the Assembly based on consensus. Membership of uninterested parties is vital to the board's transparency, and the inclusion of all stakeholder groups in their appointment ensures credibility. The board should include at least four independent members.

2. Limit size of board and term length of its members

The board of directors should include between nine and twelve members, each of whom should serve a two year term. Re-election of incumbents should be permitted for up to three terms to provide continuity between boards. If a staggered election process is used, half of the board should be elected each year.

3. Provide board with broad responsibilities

The board should be permitted to establish subcommittees as needed to carry out its responsibilities, but approval of their actions by the whole board is important to ensure accountability. The board of directors should have broad responsibilities, including:

- Final decisions on standards
- Financial decisions
- Strategic decisions
- Oversight of the secretariat
- Approval of technical advisory board and objections panel members

4. Require the board to consider technical and stakeholder input

As part of its mandate, the board and its subcommittees should be required to consider the technical advice and stakeholder input provided by the technical advisory board and assembly, respectively. This consideration should be "on the record" to provide transparency. Procedures for consideration and response to comments from the assembly and technical advisory board should be created as part of the board's bylaws.

5. Create a board subcommittee for standard-setting

A board subcommittee for standard-setting carries out the development of principles, criteria, and indicators in most ecolabels. In the Gold Standard, the substantive content of indicators is determined by the technical advisory board. The board's standards subcommittee is responsible for translating that substantive input into implementable indicators, as well as phrasing principles and criteria to carry out the label's purpose, as stated in its scoping document. The standards subcommittee should be balanced by interest group and should rely on the secretariat's standards unit for procedural support.

3. Secretariat

1. Develop a secretariat to manage the ecolabel on a day-to-day basis

The secretariat houses the ecolabel's permanent executive staff. It should be an independent organization led by a chief executive, who is also a member of its board of directors. The secretariat is responsible for overseeing development and implementation of the ecolabel's standards, consulting with facilities considering certification, evaluating performance by certified entities, and developing markets for labeled products. The secretariat should carry out these diverse tasks through a separate standards unit, producer unit, and business unit. Other units may be developed as needed.

2. Establish secretariat as a global presence with consumers and producers

As part of its producer unit, the secretariat should establish offices in each of the major aquaculture-producing regions to aid in compliance and adoption of indicators on a local level. Offices in Asia and Central/South America are of particular relevance. The majority of production occurs in China, with substantial additional production in Southeast Asia and the Indian subcontinent. Other species are produced in large quantities in the Americas (e.g. salmon, mollusks), so an office in the Americas is similarly important, depending on the species certified.

Offices in Europe, North America, and Asia (primarily Japan) are also important from a business perspective. The secretariat's business unit must focus on these markets to develop retailer support for market access and consumer recognition of the label.

3. Evaluate and report on the environmental and social performance of indicators

Existing ecolabels face a major challenge in determining whether standards based on sustainability are being translated into sustainable performance on the ground. The Gold Standard recommends the use of the secretariat to determine whether certification decisions based on existing indicators are producing environmental and social benefits. The standards unit, with data from the producer unit and certification body, can effectively evaluate how indicators translate into performance due to their experience in consultation and standard-setting, respectively. The secretariat should use this data to creat a rigorous annual report on ecolabel success, both providing metrics for evaluation of success and identifying areas where the effectiveness of indicators could be improved through revision of the indicator or certification body guidelines.

4. Centralize management to minimize cost and ensure consistency across operations

The use of independent national initiatives may be costly and may result in inconsistent application of criteria and indicators. While national standards and labels have been developed, none of these efforts are credible enough to serve as a preexisting national initiative for a Gold Standard-compliant labeling system. exists for aquaculture, so the development of national initiatives is not advisable. Instead, the ecolabel's management should be centralized to minimize costs and should provide central oversight over global operations to ensure consistency.

4. Technical Advisory Board

1. Create a standing, independent technical advisory board

The secretariat should establish and recruit members for a standing, independent technical advisory board composed of independent experts specializing in environmental sciences, sociology, and economics. These experts may be drawn from academia, government, or multilateral organizations, but should be free of conflicts of interest, including financial interest in the content of ecolabel standards. Sources of funding for members' research should be disclosed to the board prior to appointment to the technical advisory board. The inclusion of experts who may have some conflicts is acceptable if approved by the board.

2. Authorize the technical advisory board to provide objective measures of sustainability

The Technical Advisory Board's expertise, independence, and objectivity should be uniquely suited to the determination of the substantive requirements for sustainability. The board's responsibilities should therefore include:

- Provision of objective, peer-reviewed information regarding the requirements for sustainable standards (criteria or indicators, as appropriate)
- Advice to the board on initiation of standard-setting or review of existing standards.

The board's decision-making process should be transparent and objective. Where members do not agree on the contents required for sustainability, the board should apply a precautionary approach to determine requirements for certification. The board's decisions should govern standards development by the secretariat and board subcommittees unless the board of directors votes to reject a technical board finding.

3. Authorize the technical advisory board to create sub-panels

The production of each species in aquaculture has unique implications for sustainability. As a result, the technical advisory board should be authorized to create sub-panels composed of scientific experts on particular species and their impacts. These sub-panels should be authorized to determine the scientific measures of sustainability, but responsibility for the approval of these measures remains with the technical advisory board as a whole, as in the ISO system.

5. Objections Panel

1. Create an independent objections panel

Effective review of grievances is an important element of credible governance structures. The creation of a standing, independent objections panel is the most transparent system to ensure the credible review of grievances and is likely to be required by FAO guidelines. The panel's membership should be independent from all operations of the ecolabel but approved by the board to ensure accountability. Panel members should serve three year terms, but be eligible for reappointment. Decisions of the independent objections panel must be final.

2. Allow secretariat to review and address grievances prior to appeal to panel

The secretariat should be the locus for initially reviewing and addressing grievances. The secretariat is subject to stakeholder control through the board of directors and therefore is accountable and offers fewer conflict of interest concerns than certification bodies. In addition, the secretariat is not directly composed of stakeholders and makes no final decisions on approval or content of standards. Therefore, it is more suitable than a board subcommittee for reviewing substantive disagreements.

The initial secretariat review is intended to promote efficient dispute resolution, permitting some flexibility with respect to format and rules of decision. Where initial review does not resolve a difference, however, all complainants must be permitted to appeal to the formal objections panel to ensure the credibility of the dispute resolution process.

3. Allow stakeholders to challenge procedure and substance of standard-setting and certification decisions

Accountability fundamentally requires that stakeholders be permitted to challenge both substantive determinations and the procedures used to reach those determinations. Ecolabels should create a process for challenges based on both avenues for both determination of standards and certification decisions.

4. Allow external organizations to object even if they are not members

Membership is not a credible way to limit access to the dispute resolution process. Instead, any interested individual, organization, or multilateral entity should be permitted to lodge a complaint. Some limits on access are needed to avoid frivolous complaints, however. Limits should be tied to active participation in the decision-making process through a requirement for complainants to have submitted comments during the public comment phase of standard-setting or certification, as appropriate. Exceptions to the participation requirement should be allowed on a case by case basis where good cause is shown.

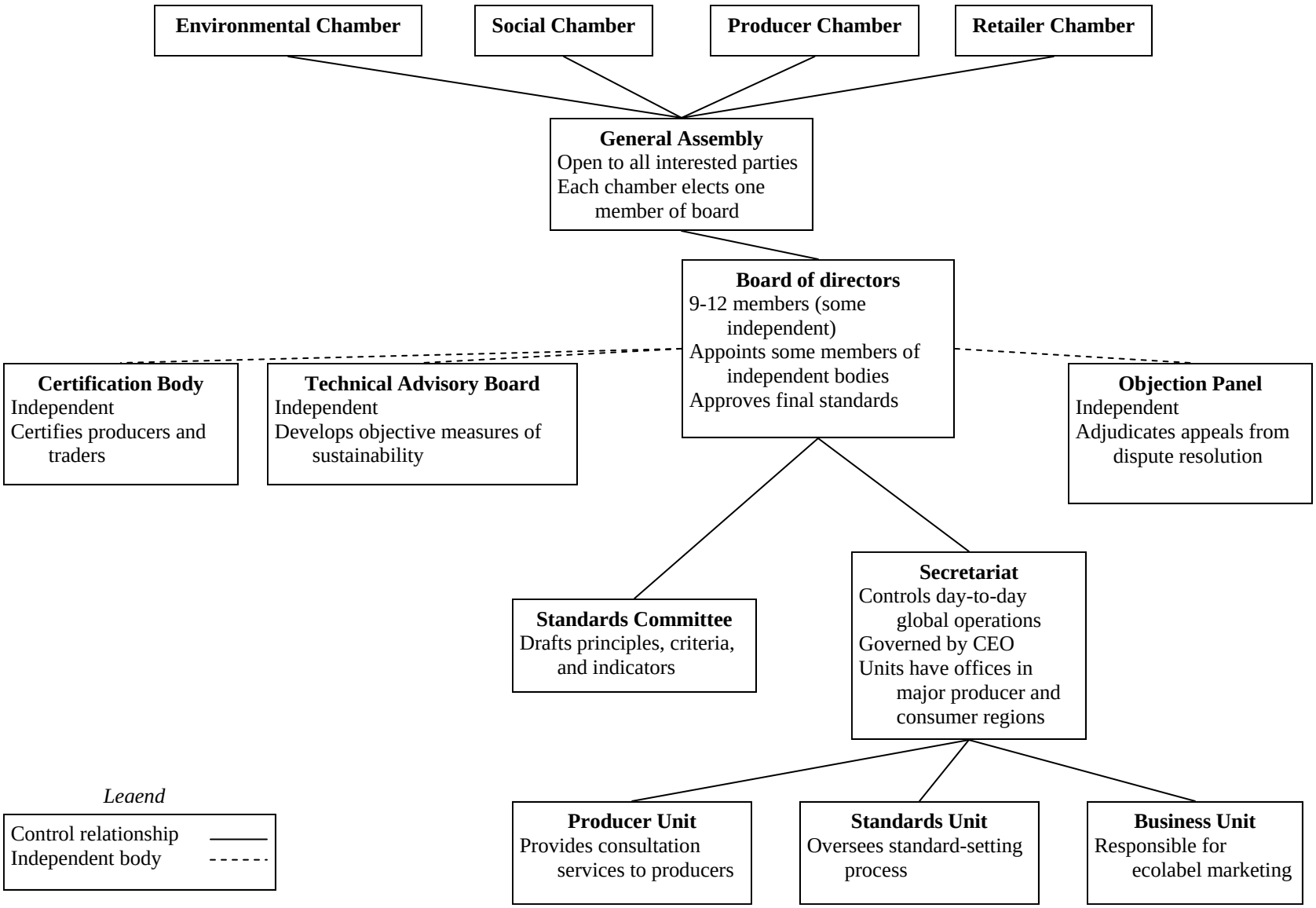

Figure 1: Gold Standard Organizational Structure

C. Standard-Setting

With a credible, efficient governance system in place, ecolabels can develop and implement credible standard-setting systems. All standard-setting should be based on written procedures. Ecolabels should develop three layers of standards, including overarching principles, criteria determining how each principle applies to particular impacts, and indicators that provide objective measures of compliance with each criterion that can be directly applied during certification. In this report, "standard" is used in a general sense to refer to all three of these levels. The specifics of standard-setting will differ depending on the type of standard under development or review. As a result, where more specificity is desired, a more specific term is used.

1. Comply with the ISEAL Alliance Code of Practice

The ISEAL Alliance has set forth a Code of Practice for Standard Setting that specifies minimum practices for the creation of credible standards. Gold Standard ecolabels should comply with the requirements of the Code, which is based on balanced and consensual decision-making and incorporates minimum standards for participation, transparency, and accountability.

2. Use explicit standard-setting processes

All standard-setting (including creation of criteria and indicators, as appropriate) should be based on explicit, public procedures for standard-setting. The use of this document is vital to the transparency and accountability of the standard-setting process. The processes should be used to develop both the ecolabel's guiding principles and standards and the criteria and/or indicators used to apply them. The processes must be developed and published prior to the initiation of standard-setting.

3. Use the Technical Advisory Board to determine stringency of criteria and indicators

Where sustainability can be measured by the technical advisory board (TAB), the board's standards committee must rely on the TAB determination when determining standards. Where the TAB cannot directly measure sustainability, however, it should provide baseline stringency determinations that reflect the TAB's estimate of minimum standards given the state of scientific knowledge. In such cases, the standards committee must rely on those baselines, which provide minimum stringency measures. It can, however, increase the stringency of such standards beyond the minimum level established by the TAB.

4. Base standards on both process and performance

Credible standards for assessment of the impacts of aquaculture production require consideration of both processes and actual performance. Process standards require the adoption of record-keeping and other necessary elements of effective and reviewable management systems. Performance standards are objective, verifiable measurements of the results obtained during the operation of facilities. The principles adopted should explicitly recognize that performance standards are required in addition to considering existing process standards in relevant areas, including environmental performance, quality, food safety, and occupational health and safety. Where possible, standards should avoid mandating the adoption of specific mechanisms for achieving sustainable levels of performance, in order to encourage innovation and allow facilities to reduce the costs of compliance: the use of certain techniques should not serve as a proxy for performance levels absent compelling justification.

5. Develop indicators on a species or species-group basis

Ecolabel must create indicators that elaborate on its global principles and criteria to enable certification bodies to evaluate producers. Indicators should be created for each species or group of related species (e.g. shrimp, tilapia), rather than on a country-by-country or regional basis. Production processes and impacts vary widely by species, and sustainable practices are unlikely to change based on geography. Ecolabels, however, must require compliance with national laws to comply with international standards. While such compliance may require producers to undertake more rigorous actions than are required by the ecolabel, this outcome is unlikely because the aquaculture industry is generally under-regulated.

6. Centralize development of principles, criteria, and indicators

The use of centralized standard-setting processes is the best way to create indicators for use during conformity assessment. Reliance on decentralized systems risks the development of inconsistent standards and indicators and increases costs. Centralized development can and should require input from stakeholders in specific regions. This requirement can be fulfilled through species-by-species indicator development, particularly as the production of many species is and should be localized based on the native ranges of species in production.

7. Allow secretariat to develop guidance

Even though the standard-setting procedure should be overseen by the ecolabel's central bodies, it will be a lengthy process requiring multiple rounds of consultation, drafting, public comment, and revision. As a result, a less formal method for development of guidance is needed. The secretariat's standard-setting unit should therefore be empowered to create guidance documents to enable quick responses to new developments in the aquaculture industry, such as the introduction of novel vegetable-based feeds.

D. Implementation

The third element of ecolabeling systems is the implementation methodology, which applies indicators at the production facility or processor level. Ecolabels use certification bodies to apply their indicators via set processes for facility evaluation.

1. Units of Certification

1. Establish individual facilities as the unit of certification

The appropriate unit of certification for aquaculture production is the single facility. Much like farm certification for agriculture labeling, aquaculture facilities are generally self-contained and many of their impacts can be measured effectively at each facility. This does not mean that impacts with cumulative effects – such as habitat modification – should not be considered; to the contrary, these factors can and should be explicitly considered on the individual level. Partial certification of facilities should not be allowed.

2. Provide for small-scale producer and group certification

Many aquaculture facilities, particularly in the developing world, are small, family-run operations. These facilities lack the institutional capabilities that are available to their large-scale peers. The cumulative impacts of these small producers are nonetheless extensive and they

should be encouraged to undergo conformity assessment. The aquaculture ecolabel should therefore develop group certification methodologies to permit certification of numerous producers on a collective basis and should consider providing monetary or in-kind assistance (through the secretariat's producer unit) to groups seeking certification. This procedure should be modeled on that used by the FSC, which has proven effective. The Fairtrade system also provides a model for creation of democratic systems to share costs and benefits of group certification.

3. Provide for provisional certification prior to construction of new facilities

Sustainability is a high bar for certification that will require the use of cutting-edge producer technologies. The potential expense of such systems may not be worthwhile for some producers unless they can determine prior to construction whether their facility is likely to be eligible for certification or whether certification may increase profit margins. Pre-certification would therefore be useful to evaluate siting and other variables. In such cases, full certification would still be required following construction.

4. Develop chain-of-custody certification

In addition to producer certification, the Gold Standard label must include traceability provisions. To that end, a chain-of-custody certification should be introduced to trace cultured fish from producer to table. While primarily intended to ensure that labeled products at retail originated with certified producers, traceability standards also offer opportunities for certification of food safety standards and greenhouse gas emissions associated with transportation. These elements represent opportunities to add substantive value to chain-of-custody certification, but the label should be careful to limit its liability for labeled products that prove unsafe. Use of existing ISO food quality management system standards may prove useful in this context.

2. Certification Body

1. Create a pilot-scale independent certification body

At least at a pilot scale, conformity assessment should preferentially be carried out by a single, specialized certification body that is independent from but may be purposefully created to carry out certification for the ecolabel. While subject to some credibility challenge, a system modeled on the Fairtrade Labelling Organization's certification body would conform to international standards. Other labels use similar systems, including the Global Aquaculture Alliance and Rainforest Alliance. Benefits from such a system would include consistent certification decisions, elimination of pressures for the certification body to reduce the rigor of certification, cost limitation, and simplification of the certification process through elimination of the accreditation requirement. These benefits outweigh the potential credibility shortfalls of such a system in the short term. In addition, this system can be used to grow the ecolabel slowly, allowing an evolution of practices and requirements as the label and its certifier gain experience for each species and facility type.

As the label expands, demand for certification services may require the use of a free-market certification system similar to that used by the Forest Stewardship Council and Marine Stewardship Council. A free-market model may therefore be used either at the outset or due to expansion in the number of species and facilities eligible for certification. This model requires accreditation of all certification bodies to ensure compliance with international standards.

Accreditation should be carefully monitored due to recent recognition that existing accreditation system processes may not be credible. The preexisting single-party certification body may evolve to handle accreditation when the ecolabel shifts to a free-market system. Use of an existing accreditation body would also be acceptable, but would require care to ensure that accreditation is sufficient to ensure consistency across geographic regions and facility types.

2. Establish protections for certification body independence and consistency

Credibility losses in a single-certification-body system can be minimized by establishing firewalls to protect the independence of the certification body and its employees from the secretariat. The certification body should be legally and financially independent from the ecolabel, although the entities may share a parent organization. In addition, certification personnel should be barred from producer consultation, standard-setting, or grievance determinations, instead leaving these duties to the secretariat's producer unit. The certification body should also review its employees periodically for conflicts of interest.

3. Assessment Process

1. Create credible, explicit procedures for certification

The certification process, like the standard-setting process, should follow set procedures that have been developed in compliance with the ecolabel's standard-setting procedures and the ISEAL Alliance Code of Practice.

2. Use preassessment, assessment, and review for certification

An efficient certification process proceeds through three phases, including preassessment, assessment, and review. This three-step process encourages producers to participate while also providing credibility.

3. Carry out confidential, streamlined preassessment

Preassessment is not intended to be onerous, but rather to encourage producers to participate by providing them with a basic understanding of their standing vis-à-vis the standard for a low cost. Preassessment should therefore be confidential and inexpensive. It should occur after an initial consultation with the secretariat's producer unit, which can provide assistance with achieving the standard but which must remain independent from the certification process.

4. Develop credible assessment processes that require on-site consultation

In comparison with preassessment, the assessment process must be transparent and should include stakeholder input. The importance of developing-world producers in the aquaculture context demands on-site meetings with local communities, which are unlikely to have access to internet-based comment outlets. Public comment periods should antedate issuance of initial audit reports, and audit reports should explicitly address all stakeholder comments. The initial audit report should be opened for public comment, and the final report should be publicly available and subject to review should an objection be lodged. Effective systems require objections to be filed within set time periods and provide time limits on the completion of review by the objections panel. The MSC objections process is a good model for aquaculture certification.

5. Allow limited conditional certification

In the best case, producers will comply fully prior to certification audits as the result of assistance from the secretariat's producer unit. This is unlikely in all cases, however – particularly in developing countries. Where major violations of criteria are discovered during the audit, certification should be denied. However, minor violations that can be redressed quickly need not foreclose certification. Conditional certification may therefore be permitted, with compliance to be assessed during the following year's audit. If conditions are not met at that time, certification should be revoked.

6. Audit producers and processors annually

Inspections are important for ensuring that certified facilities remain in compliance. These audits should occur at least annually, either as part of a full recertification process or independently, and ideally would be unscheduled or be performed on short notice. Audits should include solicitation of comments for the facility. Audits should be used to determine compliance with conditions on certification, and additional minor violations discovered during audits must be remediated before the next year's audit. Discovery of major violations may result in revocation of the facility's certificate.

Full recertification may occur annually or after up to five years. Within these limits, the timing of recertification should vary by species in accordance with predicted developments in technological sophistication. Thus, for species that are developing quickly, recertification should be required on a shorter term than for species for which production practices are relatively stable.

7. Collect performance data and report to secretariat

The certification body plays an important role in ensuring that the ecolabel's indicators translate into effective on-the-ground performance. The certification body's inspections during the certification and audit processes allow for data collection across all of the ecolabel's indicators. All performance metrics should be collected and reported to the secretariat's standards unit for use in that body's annual report on performance.

III. Ecolabels and Environmental Change

A. How Ecolabels Catalyze Environmental and Social Improvement

Ecolabels are created to increase the social and/or environmental sustainability of production.[13] They accomplish this improvement indirectly, by providing consumers with information about how labeled products were produced. The provision of information to consumers is translated into direct environmental improvement by producers through two primary causal mechanisms (see also Box 2: Standardization and Ecolabeling: A Third Causal Mechanism?).

Ecolabeling produces *pragmatic* benefits in the form of financial incentives for producers to participate. Consumers – both institutional and individual – may be willing to pay a price premium for labeled products or may prefer them to unlabeled items. Consumer choice of labeled products results in increased prices paid to producers and/or increased producer market share. Similarly, certification may provide producers with political benefits or good publicity, which may provide less obvious benefits. These pragmatic influences are generally seen as the main incentive for producers to comply with ecolabel production standards. Consumers may also have pragmatic incentives to prefer labeled goods, such as a belief that labeled goods are healthier or of superior quality; institutional consumers may also prefer to purchase labeled goods for financial reasons.

Ecolabeling also has *moral* benefits. Consumers may purchase labeled goods when they see that as "the right thing to do." While consumers may be most influenced by moral considerations, producers may also choose to comply with labeling standards for moral reasons. For example, seafood company Chicken of the Sea recently began using the MSC logo on its packaging, citing moral benefits to explain its decision.[14]

Table 1: Causal Mechanisms

	Pragmatic	*Moral*
Description:	Compliance enhances material well-being	Compliance is the "right thing to do"
Measurement:	Economic	Credibility
Design Influences:	Marketability Efficiency	Participation Transparency Accountability
Substantive Influences:	Increases with decreased stringency	Increases with increased stringency Increases with measurability of environmental and social benefit

[13] This may not be true for "ecolabels" that base their standards on existing practices. Where labeling is used to legitimize unsustainable production, it may justly be criticized as greenwashing. The use of external criteria – such as sustainability – for certification and labeling protects against claims of greenwashing. In this report, the term "ecolabel" refers to systems that catalyze actual environmental change.

[14] *See* Ben DiPietro, *Chicken of Sea: MSC Certification 'Right Thing'*, INTRAFISH MEDIA, Oct. 4, 2007.

The balance of pragmatic and moral mechanisms affects an ecolabel's effectiveness at catalyzing environmental and social change. Labels whose institutions are both credible and pragmatically beneficial are expected to be more widely accepted – and may be more effective – than those with shortcomings in one or both of these areas (Table 1: Causal Mechanisms). Determining the pragmatic and credibility characteristics of a label is difficult, however, and the translation of institutional design into on-the-ground effectiveness is still less certain. While pragmatic benefits are generally measured in financial terms, a variety of intangible variables affect ecolabel credibility. These variables include the environmental/social improvements required for certification, consumer faith in the efficacy of labeling, and stakeholder support. As a result, credibility analysis is largely qualitative. Further research on the effect of credibility on consumer preferences is needed.

Box 2: Standardization and Ecolabeling: A Third Causal Mechanism?

The political science literature indicates that *standardization* is a third causal mechanism for environmental and social improvement. In this mechanism, producers comply with an ecolabel's standards because the standards codify expected or standard practices or levels of performance, whether required by law or merely accepted in an industry. Similarly, consumers may expect goods to have certain attributes and may purchase labeled goods that guarantee such attributes. Thus, in the standardization mechanism, the label's standards are *taken for granted*. In many cases, labels that codify standard practices are subject to criticism as greenwashing because they do not require improvement in environmental or social performance. As a result, this mechanism is likely to be a weak rationale for catalyzing environmental change. Instead, ecolabels use standardization as a *goal* – they are designed to shift standard practices in the future, creating a new *status quo*. For example, the ISEAL Alliance seeks to "[c]reat[e] a world where ecological sustainability and social justice are the normal conditions of business,"[15] and dolphin-safe tuna labeling has been credited with creating a new standard for tuna fishing operations. While some ecolabels may be intended to codify standard practice or performance in its current form, the ecolabels addressed in this report require participants to use practices or achieve performance levels that are more protective than the current *status quo*. As a result, standardization likely plays only a minor role in effecting social and environmental change, at least in the short term.

Both institutional design and substantive factors affect the economics and credibility of each ecolabel. Labels can increase pragmatic incentives for adoption of the label by increasing marketability of labeled goods or by decreasing the institutional costs of participation in the label – that is, by making certification and labeling more efficient structurally or by reducing the stringency of substantive standards to reduce compliance costs. Credibility can be enhanced by designing institutional structures in keeping with fundamental elements of good governance, including participation, transparency, and accountability, and by instituting protections to ensure that good governance is translated into on-the-ground performance.[16] Substantively, increasing

[15] *See* ISEAL Alliance, *at* www.isealalliance.org (2007).

[16] These elements are generalized from an analysis of existing labeling programs and on elements identified in an array of conflicting sources. *See, e.g.* Commission of the European Communities, EUROPEAN GOVERNANCE: A WHITE PAPER 10 (2001); *See* Travis Potts & Marcus Haward, *International Trade, Eco-Labelling, and Sustainable Fisheries – Recent Issues, Concepts and Practices*, 9 ENVIRONMENT, DEVELOPMENT, AND SUSTAINABILITY 91, 97 (2007); Stephen Tully, ACCESS TO JUSTICE WITHIN THE SUSTAINABLE DEVELOPMENT SELF-GOVERNANCE MODEL (2004) (adopting EC principles in analyzing dispute resolution systems in the MSC); Global Ecolabelling Network, INTRODUCTION TO ECOLABELLING (2004).

the stringency of standards, and establishing strict oversight over certification, is likely to increase the ecolabel's credibility.

In some instances, such as the substantive stringency of standards, pragmatic incentives and credibility considerations may conflict. Such tensions are unavoidable but can be minimized by careful design of governance, standard-setting, and implementation structures. For example, an ecolabel with highly credible institutional structures (i.e., highly participatory, transparent, and accountable) may be able to develop standards that would not be deemed sufficiently stringent by stakeholders in a less credible system. Similarly, efficient institutional structures may enable ecolabels to increase the stringency of their standards without increasing costs to producers. To take a concrete example, provisions that make pre-assessments confidential may encourage facilities to seek such assessments and thereby increase industry participation in the program, despite imposing limitations on transparency and participation. In this case, a small decrease in the ecolabel's credibility may increase effectiveness substantially. Careful design of other systems reveals other opportunities to create net increases in ecolabel effectiveness.

Existing ecolabels have balanced credibility and pragmatism in a number of ways. In no case, however, can an ecolabel relying solely on one or the other of these causal mechanisms: effective ecolabels must provide both credibility and the prospect of pragmatic benefits. For example, FSC derives its effectiveness primarily from credibility: consumers purchase FSC-labeled products and producers comply with FSC standards because the FSC's multi-stakeholder structure carries hallmarks of good governance and has produced standards that are substantively protective. Its pragmatic benefits, however, appear to be smaller. In contrast, the Sustainable Forestry Initiative (SFI) was created by a timber industry trade group and therefore lacked the FSC's credible governance. As a result, it relied primarily on economic benefits to promote sound environmental practices. In recent years, both organizations have recognized and attempted to address their weaknesses, resulting in institutional convergence. Thus, FSC has attempted to reduce the cost of compliance to increase its pragmatic benefits, while SFI became institutionally independent and strengthened its substantive standards to improve its credibility. Both ecolabels have been successful, with continued growth in certified acreage and sales.

Credibility and pragmatic benefits are only tools to the ultimate goal of all ecolabels: environmental and/or social impact. As a group, ecolabels struggle to verify that their standards and processes translate into on-the-ground performance. The ISEAL Alliance agrees, citing delineation of impacts as a shared goal of its members. Following a workshop in February, 2008, ISEAL noted that "[a]s voluntary standards and certification take their place as legitimate market-based tools for positive social and environmental change, the ability to show clearly delineated impacts is increasingly becoming a credibility differentiator between initiatives."[17] In addition to serving a vital credibility role, the use of performance analysis can also enhance the efficiency of operation by identifying ways where an ecolabel's standards fall short or may be streamlined without sacrificing performance.

While ecolabels agree broadly that performance measurement is a common weakness, no international standard or set of best practices exists for evaluation of impacts. Each ecolabel

[17] ISEAL Alliance, *Progress Made on Good Practice for Impacts Measurement, at* http://www.isealalliance.org/index.cfm?fuseaction=Feature.showFeature&CategoryID=12&FeatureID=168 (2008).

therefore attempts to determine performance through disparate methods. This Gold Standard builds on the incomplete efforts by existing labels by introducing new and unique responsibilities to constrain the stringency of standards, their implementation by certification bodies, and their connection with on-the-ground performance through required reporting. The use of these protections creates a feedback loop that connects the ecolabel, its stakeholders, and its users, to ensure the highest level of environmental and social performance.

B. Enhancing Credibility

Ecolabels are designed to address certain environmental and social impacts of particular industries. The impacts that the ecolabel chooses to address govern the identity of the interested parties (stakeholders). In turn, these stakeholder groups strongly influence the label's credibility: the broader the stakeholder support, the less controversial the label. Stakeholder support can be assessed from both a procedural and substantive perspective. The majority of conflict between stakeholders is likely to arise from decisions made as to the substantive content of standards and from specific certification decisions. These substantive decisions are constrained by structures and procedures that govern decision-making. Thus, careful design of and broad stakeholder support for an ecolabel's institutional structures is likely to mute the appearance and effect of criticisms for that ecolabel's substantive decisions as well as creating support for the label as an institution. On the other hand, labels without credible institutional structures are more likely to face persistent criticisms of both those structures and resultant substantive decisions, potentially decreasing both consumer confidence and producer incentives to participate. Thus, credible substantive decisions can only be made by credible structures. This report thus focuses on the requisite components of credible institutional design in the ecolabeling context: participation, transparency, and accountability.

1. Stakeholder Participation

Stakeholder support is primarily enabled through provisions permitting public input into ecolabel governance, standard-setting, and certification.[18] Existing ecolabels have addressed stakeholder access through a variety of methods, but each label follows certain principles to ensure that input is sufficient to ensure adequate credibility. Most notably, the participation requirement effectively mandates the use of the principles of consensus and balance in decision-making.[19] Mere consultation with stakeholders is a necessary but not sufficient precondition to broad stakeholder support: stakeholder concerns must also be substantively addressed through balanced mechanisms, so that the concerns of the minority are not overwhelmed by majority perspectives. Effective ecolabels stimulate consensus without stifling legitimate differences of opinion.

Aquaculture production creates a variety of social and environmental impacts that are inadequately addressed by regulation. In this context, the scope of the ecolabel is likely to be broad, mandating the inclusion of social, environmental, and industry stakeholders at a minimum. Other potential stakeholders include governments and multilateral entities (such as

[18] Participation policies not only increase the label's credibility, but also allow the ecolabel to leverage public expertise, potentially enhancing the label's efficacy.
[19] Both ISO and the ISEAL Alliance require consensus in order to comply with their standards.

but not limited to the FAO and World Bank, both of support the WWF dialogues), independent parties such as academics, and consumer groups. All or a subset of these groups[20] should be included in the label's governance, standard-setting, and implementation structures and methodologies, as needed to ensure credibility given the design of the label's other structures and substantive standards.

Existing aquaculture labeling efforts vary in their inclusion of stakeholders, but both the aquaculture dialogues and the GAA fall short in some areas. The ongoing WWF aquaculture dialogues use consensus-based decision-making processes that include industry, environmental, multilateral, and social representatives; however, the dialogues do not use transparent processes and each dialogue creates processes independently and uses less participatory steering committees to make decisions on standards, so it is unclear whether dialogue participants can meaningfully contribute to the resultant standards (for example, there may be no provision to balance interest group perspectives), whether consultative processes will be consistent across dialogues, or whether resultant standards represent consensus. WWF has recognized these shortcomings and has initiated development of written procedures for the dialogues. However, those procedures have not yet been finalized. The GAA's current structures are facially less inclusive, and participation has heretofore largely been limited to industry and academic representatives. Although the GAA is not built on consensus, it has acknowledged the importance of participatory mechanisms in some areas, notably standard-setting. It has begun to develop written procedures for decision-making and has begun to seek broader participation. Thus, while the aquaculture dialogues can justly be viewed as more participatory than the GAA system, both initiatives have recognized shortcomings with respect to participation.

2. Transparency

Participation alone is insufficient to ensure the stakeholder support necessary for credibility. Instead, participation must be channeled through transparent mechanisms that allow stakeholders to determine whether their input is substantively incorporated into the ecolabel's activities. Transparent mechanisms inherently increase public and stakeholder confidence in labels by opening ecolabel governance, standard-setting, and certification to public view, lowering information costs, and reducing the threats to consensus posed by conflicts of interest.[21]

Existing ecolabels have adopted different mechanisms to ensure the transparency of their operations, including provisions mandating access to records and deliberative processes and recordkeeping requirements. For example, most ecolabels develop and publish written procedures so that stakeholders can obtain information on how governance, standard-setting, and certification work and what opportunities stakeholders have to provide input. Substantively,

[20] In particular, governments may validly be excluded from the label. Although there may be valid reasons for encouraging governments to support an ecolabel (for example, government participation might encourage them to enact legislation to supplement the label's goals), in other cases government participation may be seen as detrimental to the goals of the ecolabel as an explicitly *non-state* governance system. The FSC, for example, was founded in response to a failure of public law to address logging, and governments are therefore explicitly excluded from participation.

[21] *See generally* Paul Langley, *Transparency in the Making of Global Environmental Governance*, 15 GLOBAL SOC. 73 (2001).

these procedures often include provisions for requiring access to public meetings, publication of reports, draft standards, and complaints, and requiring public access to institutional records.

Transparency is a fundamental component of ecolabel credibility, but like other elements of credibility, its benefits may be countered by pragmatic concerns or competing values, such as privacy, that can increase the effectiveness of the label.[22] As a result, public disclosure may not be essential to credibility in some cases, such as certification pre-assessments, in order to encourage participation in the labeling program. Nonetheless, because decreasing transparency is inherently detrimental to credibility, such limitations must be carefully designed. Ecolabels such as the MSC provide models for effective balancing between transparency and efficiency of operation.

3. Accountability

The accountability of ecolabeling systems is the third important element of credibility. Accountability requires that stakeholders have the ability to observe and challenge procedures used and decisions made by ecolabels. Accountability mechanisms work in tandem with participation and transparency to ensure that ecolabel decision-making follows established procedures and leads to substantive decisions – in both standard-setting and certification – that properly reflect the label's standards. Accountability mechanisms are also important to ensure the effective operation of the ecolabel's institutional checks and balances. Without robust and transparent accountability mechanisms, an ecolabel's institutions are less likely to effectively standardize the activities of their certification bodies or national subsidiaries.

In practice, ecolabels have created both internal and external accountability mechanisms. Ecolabels enforce internal accountability through accreditation, auditing, and verification provisions, which are intended to ensure consistent, appropriate certification and compliance by certified producers. External accountability is ensured by creation of a grievance procedure that usually includes formal dispute resolution structures, and by the ability to comment during the certification period, whether through audits or based on new scientific information of relevance to the utility of standards. Existing labels differ in fundamental aspects such as stakeholder access to dispute resolution, as well as more technical issues such as the basis of complaints, the identity of the judicial actor, and the standard of review used by that body. Each of these elements affects the credibility not only of the label's institutional structures but also directly impacts the credibility of substantive decisions.

[22] Most literature on non-state governance emphasizes the importance of transparency, although its meanings and rationale may be disputed. *See* Langley, *id*. Limits on transparency, however, are well-recognized in the public governance context, and are accepted in corporate governance as well. *See, e.g.* Rodney A. Smolla, *The People's Right to Know: Transparency in Government Institutions*, *in* DEMOCRACY PAPERS (Melvin Urofsky, ed. 2003), *available at* http://usinfo.state.gov/products/pubs/democracy/dmpaper10.htm ("[O]pen government may at times be costly, may sacrifice certain legitimate interests in candor or efficiency within government, and may jeopardize other laudable social values, such as the protection of individual privacy, national security, and law enforcement. Democratic governments should be largely open and transparent governments. Yet even the most open and democratic government will in certain settings require some measure of secrecy or confidentiality to function appropriately.") (referring to competing interests within democratic public governance systems).

C. Enhancing Pragmatism

No matter how credible, an ecolabel is unlikely to be effective without offering some prospect of pragmatic benefit. In many cases, determination of pragmatic benefits is difficult or impossible prior to creation of the labeling system, and the costs of participating in some ecolabels may be greater than the projected benefits of participation. Ecolabels can respond to these pragmatic challenges in two basic ways. First, labels can create or increase financial incentives for participation. Labeling may provide direct financial incentives in the form of price premiums or access to new markets. However, observations that market demand for sustainable products (including seafood) is limited require long-term planning of public education and marketing strategies. Other financial incentives are inchoate and thus more difficult to measure. For example, producers and consumers alike may benefit through positive branding and public awareness, reducing pressure for governmental regulation, preservation or improvement of appropriate environmental conditions over the long term, or other mechanisms. In addition to creating financial incentives, ecolabels can overcome limited projections of financial benefit by decreasing the costs of participation. Increasing the label's efficiency, such as by decreasing the time and cost of certification or decreasing the stringency of its standards, makes it easier for producers to justify participation. In other words, reduction in the costs of participation may stimulate producers to become certified.

An ecolabel's pragmatic benefits are influenced by consumer access to labeled products, consumer awareness of the label, and consumer acceptance of the label. Awareness is primarily a function of marketing,[23] while acceptance is determined by trust and understanding of the label, as influenced by several specific factors.[24] Label credibility may play a role in consumer acceptance: labels that are credible may be more likely to be accepted.[25] Credible labels, however, are likely to have more complex structures than their counterparts, with attendant higher costs. Certification may impose significant temporal and financial costs on participating producers. These costs are the result of myriad complexities, including the stringency of standards, the need to apply standards in a context-appropriate manner, lengthy evaluation periods, remediation of noncompliance, public comment requirements, and resolution of grievances. The more complex each step in the certification process, the longer it will take and the more costly the process. Ecolabels should thus focus on balancing credibility and complexity by crafting efficient institutional structures.

The stringency of substantive standards, like institutional complexity, influences the potential pragmatic benefits of labeling. Pragmatic benefits can be affected by altering the

[23] Research is needed on consumer awareness of labels and on how awareness is affected by the presence of credibility mechanisms and pragmatic benefits.

[24] Cathy A. Roheim, *Thalassorama: Early Indications of Market Impacts from the Marine Stewardship Council's Ecolabeling of Seafood*, 18 MARINE RES. ECON. 95, 97 (2003) ("Acceptance depends on: (i) public understanding of the relevant issues; (ii) public understanding of the connection between relevant issues and product choices; (iii) an accurate and clearly understood presentation of the product attributes; and (iv) an understanding of what specific actions (e.g., purchase decisions) individuals can take in response to the information provided by the labeling program.").

[25] *Id* ("A labeling program is [] more likely to be accepted if it is offered by a credible source"). The positive feedback mechanism connecting pragmatic and credibility, while theoretically sound, has not been verified by empirical research.

desired level of environmental or social impact. Ecolabels that require sustainable production as a precondition to certification often require facilities to internalize costs that they were previously externalizing in the form of environmental degradation or harm to local communities. Cost internalization may stimulate increases in the efficiency of production, but is also likely to be associated with net increases in the cost of production. If so, reductions in the stringency of ecolabeling standards may increase financial incentives for certification, but are also likely to reduce credibility and may thus also affect the price premium for certified products.

In practice, ecolabels balance tensions between credibility and pragmatism in several ways. Industry-supported labels often use standards with minimal stringency and complexity. Labels supported by the environmental NGO community, meanwhile, may maximize both stringency and institutional complexity. Most labels, however, balance these considerations by design or evolution.

The Gold Standard recognizes that the use of sustainability as a key criterion for development of an aquaculture label mandates stringent standards that may present challenges to the pragmatism of the label. This report therefore recommends structures and processes that are likely to produce sustainable standards but that maximize the efficiency of the ecolabel by reducing complexity where possible. For example, the use of a single certification body reduces the complexity of the labeling system and may decrease costs by minimizing the accreditation process and eliminating profit incentives inherent to the free market system. Similarly, the creation of a clear scoping document eliminates conflicts over the impacts to be addressed and the stringency of standards.[26] The use of quantitative standards, in addition to limiting the discretion of the certification body, will also shorten the certification process. These and other efficiencies will allow the aquaculture label to yield pragmatic benefits despite its stringent, sustainability-based requirements.

[26] Such debates have complicated the WWF dialogues; for example, the salmon dialogue was created in 2004 and is far from complete, in part because of systemic disagreements about the appropriate scope and severity of standards for salmon culture. Jose Villalon, pers. comm.

IV. Ecolabel Case Studies

The recommendations in this report are based on a review of the institutional structures used by six existing labeling organizations. Each of these labels was developed under unique circumstances to address a perceived need. As a result, these ecolabels have an array of institutional characteristics that provide useful models for development of an aquaculture label. In addition to a thorough review of each ecolabel's structures (see Appendix), an outline of each label's structures is presented here along with a review of ongoing aquaculture initiatives

A. Anatomy of an Ecolabel

Fundamentally, ecolabels are the product of institutional structures, reflecting and reinforcing the credibility of those structures. Ecolabels are composed of four basic elements: scoping, governance, standards, and implementation structures and processes. The participation, transparency, accountability, and efficiency characteristics expressed in each label's institutional design depend on the desired levels of credibility and pragmatic incentives for participation.

1. Scope

All ecolabels address a defined universe of impacts that arise from a given industry. All industries have a variety of impacts as a result of production, processing, and transport. These impacts are likely to affect both social and environmental variables on both a localized and global level. Many, if not all ecolabels seek to redress only a subset of these impacts, for example by excluding impacts that are not associated with production or only addressing environmental impacts. The breadth of issues addressed by an ecolabel affects that label's credibility; as a result, external pressure may limit constraints on impacts addressed. Such limits, however, may ease the development of standards and implementation of the label.

Delineation of the impacts to be addressed by the label has several important consequences. First and most obviously, it governs the content of standards that the label develops. Thus, a label that excludes social impacts need not develop standards for issues such as workers' rights. Second, the types of impacts addressed largely determine the stakeholder groups that are affected by the label. As credible ecolabels should consult all affected stakeholder groups in label governance, standard-setting, and implementation, limitations on included stakeholders may have important consequences for simplicity of the label's operations. The scope of impacts addressed may also be affected by international standards. In the aquaculture context, the FAO's draft guidelines for aquaculture certification require consideration of a broad array of impacts, including but not limited to environmental, social, human health, and animal welfare considerations.[27]

In addition to limitation of impacts to be addressed, ecolabels must determine the stringency of their standards. Most existing ecolabels base the stringency of their standards on technical feasibility, targeting compliance by a certain percentage of the industry. Some ecolabels, for example, develop standards that can be achieved at low cost by the majority of the industry, to promote compliance by the lowest-performing facilities – thus first addressing low-

[27] FAO, FAO GUIDELINES FOR AQUACULTURE CERTIFICATION: DRAFT 3.4 5 (2007).

hanging fruit. Other labels seek to provide high-performing facilities with an incentive for continued improvement. Technical feasibility, however, is not the only possible determinant of stringency. While no current ecolabels explicitly adopt this strategy for all their standards, it is possible to base stringency on external baselines – most notably, on sustainability as defined in international agreements. The use of external criteria would insulate labels from pressure to lower the stringency of standards over time to encourage participation and would significantly increase the label's credibility.

Sustainability is a uniquely suitable baseline for use in ecolabeling. Sustainability has been defined in international standards, providing a shared reference point on its key requirements. Those requirements are broad – including economic, social, and environmental impacts – and prohibit depletion of limited resources over time; together, these features compare favorably with consumer expectations for the performance of labeled products. Nonetheless, we recognize that implementation of sustainability results in uncertainty due to incomplete scientific information or uncertainty of social impacts. These uncertainties do not undermine the use of sustainability as a performance baseline, as the shared definition remains. However, the use of a sustainability baseline requires an evolutionary approach to the determination of sustainable performance levels and the adoption of a precautionary approach to determination of standards in the face of uncertainty.

2. Governance Structures

Each ecolabel is managed by a suite of governance institutions that develop and implement the label's standards and certification mechanisms based on credibility and pragmatic considerations. These institutions may include a general assembly, board of directors, board subcommittees, an executive staff or secretariat, and a variety of independent bodies.

The assembly/board structure of each ecolabel is determined by its membership structure. Membership in some ecolabels is open to any group; these organizations use a general assembly similar to a shareholder's meeting as their fundamental governing body. The assembly plays an oversight role with respect to the board of directors, which controls the day-to-day operations of the organization. Other organizations are less participatory, limiting membership to certain groups, such as national initiatives. These organizations may also use an assembly, but participation in that assembly is inherently limited by the membership limitations. In such cases, the credibility of the members may control the credibility of the ecolabel as a whole. Like open-membership labels, these labels rely on the board of directors to implement the will of the assembly. Finally, some labels do not use a membership structure or an assembly, instead relying solely on a board of directors to make and implement fundamental strategic decisions. Thus, all ecolabels use a board of directors, but the authority of that board differs from label to label. Most boards, however, have similar responsibilities, including dispute resolution, approval of standards and policies, and financial and strategic planning. Many of these responsibilities are delegated to subcommittees.

Regardless of the membership structure, all ecolabels rely on a secretariat to oversee and guide the label's operations. The secretariat often contains separate units to develop standards, aid producers in complying with standards, and market the standards throughout the supply chain. These entities may work in concert with board subcommittees, particularly with reference

to standard-setting, and with other specialized subsidiary bodies, such as stakeholder fora, that exist to enhance the credibility of the label's processes.

In addition to central governance bodies, many ecolabels have a decentralized structure based around national initiatives that support the label either at the producer or consumer level in a given country. National initiatives may, but are not required to, play a role in central body governance through assembly or board membership; they may also play a role in standard-setting.

3. Standard-setting

All labels use written standards as the basis of producer certification. At the outset of the ecolabeling movement, these standards were commonly created through ad hoc processes – a trend that persists today. As ecolabels have become more sophisticated (particularly since the creation of the ISEAL Alliance), the use of written procedures has become normal practice. The use of explicit procedures inherently increases the transparency of the standard-setting process, and the essential elements of the procedures – such as complaint procedures – generally increase credibility in other areas.

Standard-setting procedures are generally carried out by the secretariat, in cooperation with board subcommittees and specialty bodies (often a consultative forum used to ensure participation). They contain a number of similar steps, including a proposal for standard-setting, initial drafting, public comment periods, revision, approval by the board or assembly, and complaint resolution. Ecolabels may vary the precise operation of each step in the process, with resultant differences in label credibility.

Ecolabels develop a variety of types of standards, including broad "international standards" or "principles," more specific "criteria" designed to apply the broad principles to particular impacts or locations, and "indicators" that are actually applied during certification. These different types of standards allow ecolabels to tailor the specificity of their guidelines to the demands of contextual factors such as local laws or ecological conditions.

In most cases, international standards are created by the ecolabel's central body, but ecolabels develop specific criteria and indicators through several unique processes. Some labels use national initiatives to create indicators for use in specific countries or regions, while others allow independent certification bodies to develop the indicators used to determine compliance with the international standard. Finally, some labels create indicators centrally – an approach that may be particularly beneficial where regional differences are less important than differences between specific products, such as crops. The WWF-facilitated aquaculture dialogues have adopted this system, developing standards that differ by species.

4. Implementation Methodology

Ecolabel standards must be translated from paper to reality. Each of the labels uses some form of certification to implement its standards. Certification is used to evaluate producers for compliance with the standards to determine whether labeling is warranted. All credible labels use third-party certification, where an independent certification body (or bodies) applies the

label's standards. Ecolabels also establish grievance procedures to allow stakeholders to challenge the substance and procedure of certification decisions.

Two basic certification system models are used by the labels studied in this report: free-market certification and single-party certification. Free-market certification allows any accredited certification body to certify any producer to the ecolabel's standards and indicators. While ensuring rigorous independence of the certification body, this system raises concerns about the consistency of the application of the ecolabel's standards, especially where the certification process requires development of indicators for evaluating each individual producer. The accreditation process is intended to minimize inconsistency. However, accreditation bodies have been criticized for failing to ensure consistency and the experience of ecolabels using this model have revealed some difficulties in practice.[28]

Some ecolabels follow a single-party certification system to ensure consistency and enable strong oversight. In practice, certification bodies in such systems are affiliated with but legally and financially independent of the ecolabel whose standards they apply. For example, facilities seeking Fairtrade Labelling Organization (FLO) certification must apply to FLO-Cert, an entity that is independent from FLO but whose scope is limited to certification to FLO standards. This system ensures consistency and may be more cost-effective than free-market systems by operating on a nonprofit basis. This system may come at some cost to the credibility of the label, however, due to the close relationship between the label and the certifier.

B. Labeling Case Studies

This report reviews seven existing, fully-functioning ecolabels, including one aquaculture labeling system and six labels addressing other issues ranging from general standardization to fair trade. Each label has a unique institutional design, none of which was adopted in full for the Gold Standard. In this section, we review the basic structure of each label in order to provide background for the design recommendations that follow. For a more thorough review of each studied ecolabel, please refer to the appendix.

1. International Organization for Standardization

The International Organization for Standardization (ISO) was created by a coalition of national standard-setting bodies to enable development of international standards. Membership in ISO is limited to one national initiative per country. The initiatives fund ISO through

[28] Approximately 30 percent of conformity assessment bodies currently comply with the ISO 9001:2000 process controls to which they certify their clients. *See* Alister Dalrymple & Randy Dougherty, *Auditing Auditors – A Standard for Reliable Certification Bodies*, ISO FOCUS, Mar. 2008, at 23 (noting outstanding issues with respect to who audits the auditors and announcing new requirements for auditors and conformity assessment bodies for management systems (including environmental management systems under ISO 14000)). The ongoing development of international standards for accreditation bodies can only help the consistency of the eventual certification decisions, but existing standards apply only to process assessment. As a result, ecolabels cannot yet rely on ISO standards to ensure consistency of performance assessment. Consistency criticisms have occurred most visibly in the MSC system, as in the recent recertification of the New Zealand hoki fishery. MSC, REPORT OF THE INDEPENDENT OBJECTIONS PANEL ON OBJECTIONS TO THE CERTIFICATION OF THE NEW ZEALAND HOKI FISHERY (2007) (upholding certification despite "serious" challenges to certification, "highly optimistic" assumptions, and "excessive and unreasonable delay" by the certification body). Consistency criticisms have also beset the FSC.

membership fees and in-kind contributions to the standard-setting process. Initiatives also govern ISO through a general assembly, which elects the ISO Board. The Board guides the standard-setting process by creating technical committees, which draft particular standards. Committees are composed of interested ISO members, but external organizations may participate as liaisons with committee approval. Committees create standards in cooperation with the ISO secretariat through a consensus-based process. After standards are approved by the committee and by ISO membership, they are used by all ISO members and may be applied by independent certification bodies. Facilities may evaluate themselves against ISO standards or use certification bodies for conformity assessment, but only facilities that have obtained external certification may claim to be ISO-compliant. ISO does not, however, license the use of its label by producers under any circumstances.

Substantively, the ISO standards cover a broad array of topics, ranging from specific manufacturing or design standards to quality management to environmental management. The environmental standards, the ISO 14000 series, establish only process standards; for certification, producers need only develop an environmental management system – actual environmental performance is not measured. In addition to the ISO 14000 series, the ISO has also created standards for standard-setting that have influenced the development of other labels.

Criticisms of ISO largely focus on credibility concerns: the organization is quite insular, with limited opportunities for participation in governance or standard-setting, little transparency (especially during standard-setting), and little accountability – external organizations cannot seek redress for grievances under the ISO system. On the other hand, the ISO system provides financial incentives for participation: ISO is fully funded by internal mechanisms and compliance with its standards is often perceived as financially beneficial by members and industry.

2. International Social and Environmental Accreditation and Labeling Alliance

The International Social and Environmental Accreditation and Labeling Alliance (ISEAL Alliance or ISEAL) is a coalition of labeling organizations that focus on social and environmental issues (ecolabels). It was created to address widespread lack of institutional capacity that threatened the credibility of the member ecolabels. For example, many ecolabels were created without set procedures to govern standard-setting – a transparency weakness that threatens the credibility of a label even where the actual processes used may be participatory, functionally transparent, and accountable. To address these weaknesses, the ISEAL Alliance created a code of good practice for standard-setting. The code of good practice is based on relevant ISO standards and requires use of a written procedure for developing standards, including substantive minimum requirements for participation, transparency, and accountability. The Alliance may produce standards for other elements of ecolabeling (e.g., governance, certification) in the future.

Like ISO, the ISEAL Alliance does not license the use of its label, but its members do obtain credibility benefits from compliance with the code. ISEAL is funded by member subscriptions and governed by a board of directors that includes a representative from each member organization. ISEAL has no subsidiary bodies or secretariat, but peer review of standards and processes is a prerequisite to membership. This process allows ISEAL members

to ensure that all members comply with the ISEAL standards and encourages members to examine alternative procedures and systems.

3. Forest Stewardship Council

The Forest Stewardship Council (FSC) was created in the wake of the 1992 United Nations Conference on Environment and Development (UNCED), where delegates failed to agree on a hoped-for global forest convention. In response, the World Wildlife Fund (WWF) stimulated the creation of FSC as a multi-stakeholder organization to provide private incentives for responsible forest management. FSC is supported primarily by charitable donation, although it also receives limited funding from labeling and membership fees. It is a member of the ISEAL Alliance.

FSC is a membership organization open to any interested non-governmental entity or individual who pledges to uphold FSC's principles. The members govern FSC through a tricameral general assembly in which power is divided equally among social, environmental, and economic chambers. In addition to approving any changes to FSC's principles and criteria, the assembly elects the FSC board, which allocates power in a similar manner as the assembly. Board committees work with the FSC secretariat to develop standards and policies.

FSC's international processes are general and thus require further specification prior to application to particular forest management units. FSC solves the specification problem through the creation of national initiatives to develop national standards. The national initiatives are subject to accreditation and control by the FSC board, as are the national standards they produce. Thus, FSC retains central control over the content of specific standards as applied in the field. Approved national standards are applied to specific forest units by independent certification bodies. These certification bodies must be accredited by a single independent accreditation body. Certified forests gain the right to use the FSC logo on their timber and paper products.

FSC's structures are extremely participatory, transparent, and accountable. As a result, it has a high degree of credibility.[29] On the other hand, FSC has suffered from a justified perception that its processes are complex, costly and time-intensive.

4. Marine Stewardship Council

The Marine Stewardship Council (MSC) was created as the result of bilateral negotiations between WWF and Unilever, a seafood company,[30] to address a consistent failure to adequately address overfishing by national governments or international bodies. MSC standards for sustainable fishing were created through a multi-stakeholder process and are now applied to certify fisheries based on both management systems and established levels of environmental

[29] This credibility separates it from the array of other forest management ecolabels that were created in response to FSC. These labels, including but not limited to the Sustainable Forestry Initiative (SFI) and Program for Endorsement of Forest Certification Schemes (PEFC, previously Pan-European Forest Council), were primarily created and financially supported by industry interests. As a result, their standards have historically lacked credibility but have attracted interest as a result of their pragmatic superiority.

[30] Although Unilever has subsequently sold its fish business, it participates on the MSC's stakeholder council. WWF also has a member on the MSC stakeholder council.

performance. The MSC is a member of the ISEAL Alliance and its standards and processes have been reviewed for compliance with the ISEAL Code. MSC is currently supported by foundation grants and fees for the use of the "blue fish" logo.

Unlike several other ecolabels, MSC does not use a general assembly, as it is not a membership organization. Instead, MSC is governed by an appointed board of trustees, a majority of whom are independent to avoid conflicts of interest. Stakeholder input in the MSC is obtained from the stakeholder council, which advises the board and whose co-chairs are board members. Membership on the council is limited but must include representatives from each of eight separate interest groups, including developed- and developing-country representatives and economic and environmental stakeholders. Council membership is by invitation and thus inherently excludes some interested parties and interest groups from participation, especially by comparison to the FSC general assembly system. Stakeholder council members have evinced frustrations with their substantive roles, believing that the council could benefit from more frequent interaction and increased cooperation with the board. As a result, a stakeholder steering committee composed of stakeholder council members was created to facilitate the operation of the council as well as to interface with other MSC governance bodies on a regular basis. MSC's other primary governance body is the technical advisory board, which advises the board on the development of standards and whose chair is a member of the board. MSC standards are drafted by the secretariat, in consultation with stakeholders, and approved by the board.

MSC was designed to include moderate levels of participation in its governance and standard-setting process in order to reduce the costs associated with stakeholder input in the FSC system. The limited participation has resulted in criticisms from social and environmental stakeholders, who argue that the lack of participation has led to lax standards. Concerns about lack of participation have been partially offset by transparent processes and accessible accountability mechanisms, but weaknesses remain; for example, no objections procedure exists to challenge how certifiers perform audits during the certification period or the compliance with conditions for certification, nor are certification bodies required to consider new information relevant to the certification decision during these audits. MSC has also responded to stakeholder criticism by enhancing the power of the stakeholder council. It is unclear whether these reforms will be sufficient to safeguard MSC credibility in the future.

The MSC standards are similar to those issued by the FSC, consisting of general principles and criteria. These principles and criteria are used to evaluate fisheries;[31] single vessels or producers cannot seek certification. Despite the fact that the MSC uses a large unit of certification (compared to the certification of single forests or farms as in other systems), MSC standards nonetheless require specification prior to application. The MSC relies on independent, accredited certification bodies to develop the indicators for particular fisheries. The certification bodies use these indicators with MSC's complex scoring system to make certification decisions. Reliance on external certifiers has produced criticism of the quality and consistency of the MSC certification process. A variety of external reviewers – particularly environmental stakeholders –

[31] "Fisheries" does not refer to species or entire stocks, but is rather limited by factors including species, geographic location, fishing method, and fisheries management body. For example, the Pacific sablefish longline fishery off Alaska is certified; fish caught with other fishing methods such as pots cannot claim MSC certification and cannot be marketed to consumers with the MSC logo.

believe that a variety of MSC-certified fisheries are unsustainable. In some cases, these groups have determined that the MSC is not credible and have ceased participating in standard-setting or certification. MSC has undertaken a quality and consistency reform project in part to address these concerns. The resultant reforms deserve close attention to determine the degree of institutional control that is necessary and appropriate to ensure consistent certification decisions.

5. Fairtrade Labelling Organization

The Fairtrade Labelling Organization (FLO) was created to produce social improvement for agriculture producers. It is focused on addressing trade imbalances in agricultural products that depress commodity prices below the cost of sustainable production in developing countries. FLO guarantees producer organizations a set minimum price for their products in exchange for application of extra payments to community development projects. FLO is a member of the ISEAL Alliance.

FLO was created by a coalition of preexisting national initiatives that certified products in particular countries using similar standards and models. These initiatives collaborated to centralize their standard-setting, governance, and financial mechanisms. FLO is a membership organization governed by a general assembly composed of its national initiatives and three newly-formed producer associations representing producers in each of Africa, Asia, and Latin America. The assembly elects a board, which makes strategic and financial decisions for FLO. The FLO secretariat plays a large role, with units that direct standard-setting (including drafting responsibility) and assist producers with compliance. The national initiatives limit their activities to marketing and logo licensing in each country.

FLO standards are created through participatory, transparent processes and may be challenged through a robust accountability mechanism. As a result, the standards have a high degree of credibility despite the exclusion of external organizations from membership and the absence of a permanent stakeholder body. Substantively, FLO standards are divided into international standards and crop-specific standards, which include indicators for direct application of the international standards in particular contexts. No further specification is required prior to certification. Certification under FLO standards is carried out only by FLO-Cert, an entity legally independent from FLO but whose sole purpose is to carry out certification for FLO.

6. Rainforest Alliance/Sustainable Agriculture Network

The Rainforest Alliance (RA) is dedicated to the preservation of tropical forests through voluntary incentive programs. To carry out its mission, RA operates sustainable agriculture, timber, and tourism programs. The RA agriculture program is the secretariat for the Sustainable Agriculture Network (SAN), which was created by RA as a membership-based standard-setting entity that licenses use of the RA label. RA's timber program operates as a certification body for FSC, and its tourism label has yet to become fully operative. RA is a member of the ISEAL Alliance.

In addition to RA, SAN membership is composed of local environmental and social stakeholder organizations. All members are currently represented on the SAN board, which is

the locus of power in SAN. Should membership expand, the members will form an assembly and elect a representative board. The SAN board's duties include designating members to serve as policy secretariat and certification secretariat (RA currently holds both secretariats) and approval of SAN standards.

SAN standards are developed in accordance with a newly-created handbook. The policy secretariat drafts the standards, which are subject to public comment, review, and approval by the SAN board. Like FLO, SAN standards consist of a single general standard and crop-specific standards that are directly applied in certification. Certification under these standards is overseen by SANcert, a coalition of accredited certification bodies. Certification must be carried out by either a SANcert member or, where no member is available in a particular region, by the certification secretariat (RA). Certification decisions must be approved by RA. Certification is carried out on a farm-by-farm basis.

Although RA has been active for many years, SAN is a relatively new entity, created in order to broaden participation in ecolabeling in developing countries and to thereby increase the credibility of the RA label. As secretariat, however, RA retains a primary role in SAN governance, standard-setting, and certification. As a result, and due to its limited membership, SAN remains vulnerable to challenges to its credibility. Its pragmatic benefits are uncertain; RA (and therefore SAN) is funded by contributions by foundations but, in comparison to other environmentally-oriented labels, derives a relatively large proportion of its funding from internal activities. Its use of farm-by-farm certification allows it to work with both large and small producers, resulting in well-publicized collaborations with multinational corporations (e.g. Chiquita), suggesting that certification is not overly costly and that the label may be pragmatically beneficial.

C. Current Aquaculture Initiatives

While the six labeling organizations studied for this report are likely to influence the development of a sustainable aquaculture ecolabel, several existing initiatives are also likely to influence any label. While only two such systems are discussed in depth here, it is important to recognize that new purchasing standards and other efforts are continually being developed by industry and environmental and social stakeholders. Such efforts, typified by the Wegman's shrimp purchasing standard created by the Environmental Defense Fund,[32] are likely to influence the development and adoption of a sustainable aquaculture label.

1. Global Aquaculture Alliance

The Global Aquaculture Alliance (GAA) is the primary global, functioning ecolabel that certifies aquaculture production and processing facilities. To date, it has finalized and implemented its label only with respect to shrimp farms, but it has issued draft standards for all seafood processors, has developed draft standards for tilapia farming, and is developing standards for the certification of other finfish. Similar to SFI's initial structure, GAA is a trade association financially supported by the aquaculture industry.

[32] *See* Environmental Defense Fund, WEGMANS FOOD MARKET, INC. FARMED SHRIMP PURCHASING STANDARDS (2007).

GAA membership currently includes only industry representatives. Members have no explicit powers in the GAA system, as there is no assembly or other similar structure to endow members with governance powers. The GAA board and its subcommittees hold ultimate decision-making power in the GAA. GAA standards are created by GAA staff in collaboration with a technical standards committee that includes outside experts but until recently did not include environmental or social stakeholder representatives. In late 2007, the GAA announced that it is developing a Standards Oversight Committee (SOC) composed of equal representation from social and environmental NGOs, academic institutions and regulatory agencies, and industry.[33] The standard-setting process is overseen by the SOC but the actual drafting and revision of standards is performed by technical committees, and decisions on standards are taken by the SOC. The GAA board must approve the standards but cannot amend them. The GAA does solicit stakeholder comments during standard-setting, but has not established accountability mechanisms. As a result, although the GAA has clearly attempted to increase its credibility, it remains vulnerable to criticism from outside groups with respect to both its governance and standard-setting procedures as well as to the substantive stringency of its standards. GAA does not currently comply with this Gold Standard.

GAA standards are implemented by a single independent certification body, the Aquaculture Certification Council (ACC).[34] The ACC works with the standards committee to develop the indicators needed to determine compliance with the general GAA standards. It then contracts with accredited auditors who evaluate compliance on a farm-by-farm basis according to a set scoring system. Actual certification decisions are made by the ACC. The ACC licenses the use of its label to farms meeting the certification requirements. Like the Gold Standard, the GAA system does not rely on free-market certification bodies and may therefore suffer from conflict of interest and transparency criticisms. The use of conflict-of-interest reviews and similar protections, as recommended by the Gold Standard, could redress these criticisms. The GAA has not adopted mechanisms to object to ACC determinations. As a result, ACC certification decisions cannot be challenged by stakeholders. In addition to increasing transparency, the adoption of grievance procedures would address accountability weaknesses in ACC certification.

Despite these credibility concerns, the GAA system appears to yield strong pragmatic benefits. Wal-Mart's commitment to sell exclusively ACC-labeled shrimp suggests that labeling may increase access to important markets, providing incentives for producers to seek certification. In addition, the ACC standards are clear and may be implemented at a relatively low cost.

2. Aquaculture Dialogues (WWF)

The second major effort to develop standards for sustainable aquaculture has been initiated and facilitated by WWF and supported by a number of international organizations,

[33] *See* GAA, BEST AQUACULTURE PRACTICES STANDARDS DEVELOPMENT (2007). The revised GAA procedures are preliminary and were released for public comment.

[34] This certification model may change in the future. *See* Ben DiPietro, *GAA Exec: Industry Needs One Eco-label for Farmed Seafood*, INTRAFISH MEDIA, Nov. 2, 2007.

including the World Bank and FAO.[35] The WWF-facilitated process seeks to develop "better management practices" for the ten most common aquaculture species. Separate dialogues have so far been initiated for shrimp, tilapia, salmon, molluscs, *Pangasius*, and trout, with four additional dialogues set to begin in the near future.

The standard for each species is created through an "aquaculture dialogue." WWF has not promulgated written procedures that control the dialogue process. Instead, each dialogue is run independently; in practice, they share similar procedural characteristics. WWF has initiated development of written procedures with the intention of complying with the ISEAL code of practice.[36] Unfortunately, the dialogue process is far along for a number of species (and complete for shrimp), and it is unclear to what extent the development of written procedures will affect ongoing practice.

In practice, the dialogues are open to participation by any interested party and seek to incorporate representatives from five interest groups, including NGOs, producers, retailers, academia, and government. To date, the dialogues have enjoyed little participation from producer country NGOs outside industrialized countries.[37] Participation is self-directed, and may be more or less active at each participant's discretion.[38] The dialogues are governed by multi-stakeholder steering committees that develop meetings and subsidiary groups such as advisory boards and technical working groups. Ultimate decision-making authority for standards in most of the dialogues may be vested in the steering committees, giving a subset of stakeholders an outsize influence in the content of standards. This is a pragmatic approach, but means that "consensus" standards may not be approved by all participants or even by all interest groups. Thus, while participation in dialogues is open, the degree of consensus that is achieved through this process is unclear.

The lack of written procedures for the dialogues also raises consistency, transparency and accountability concerns. The lack of transparency or consistency in processes between dialogues means that the resultant standards may differ from dialogue to dialogue, not only in impacts addressed, but also in the stringency of performance requirements and potentially in format. This concern may be mitigated by the presence of WWF as a stakeholder in and the chair of all dialogues, but this institutional role creates conflict of interest problems, especially as WWF also directs the processes the dialogue follows. In addition, WWF has not created procedures to challenge the standards, either substantively or procedurally. The use of an independent objections panel, as recommended by this Gold Standard and as adopted by other credible ecolabels, would significantly increase the credibility of the dialogues' resultant standards.

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[35] *See* WWF, *Progress with the Aquaculture Dialogues*, *at* http://www.worldwildlife.org/cci/progress.cfm (noting that FAO and the World Bank, along with the Network of Aquaculture Centers of Asia-Pacific (NACA) were partners in the creation of the shrimp dialogue). The results of that dialogue – the International Principles for Responsible Shrimp Farming, were jointly published by WWF, FAO, the World Bank, NACA, and the United Nations Environment Program (UNEP). *See* FAO et al., INTERNATIONAL PRINCIPLES FOR RESPONSIBLE SHRIMP FARMING (2006).

[36] Jose Villalon, pers. comm.

[37] Rebecca Goldburg, pers. comm.

[38] External participants may also participate without officially joining the dialogue.

The shrimp dialogue has produced a final standard, and a tilapia standard is likely to be completed in the near future. The shrimp standard follows a familiar tiered format. After determining the key impacts of production for each species, the dialogue agrees on six to eight principles to reduce those impacts. It then develops criteria for each principle, and indicators to evaluate each criterion. In this system, "indicator" refers to a form of measurement, and the term "standard" is used to refer to the specific level of performance required for each indicator. As noted above, it is unclear whether this format will be followed for other dialogues. The development of the tilapia standard will offer some insight into variations between dialogues, but regardless of the substantive results obtained, it is clear that the dialogue process could benefit from strengthening its institutional systems.

No group currently implements the consensus standards produced by the dialogues, nor has WWF or another group developed guidance for compliance. Some form of advisory guidance is, however, anticipated in a non-prescriptive form. WWF has indicated that it hopes to hand the dialogue standards off to a new or existing ecolabel for implementation – a logical next step. Although WWF has approached the GAA for development of a collaborative ecolabeling system, that effort appears to have failed, and the results of the WWF dialogues are likely to be implemented by a new label or by the MSC, which has recently begun to consider aquaculture labeling. However, GAA officials have stated that they will reconsider incorporation of WWF standards as they become available.

Table 2: Elements of Gold Standard Present in Case Study Ecolabels

Scope	GAA	WWF	MSC	FSC	RFA	ISO	FLO
Develop a written scoping document			✓	✓	✓	✓	✓
Address all significant impacts of production and processing				✓	✓		
Incorporate social, environmental, and economic stakeholders	✓	✓	✓	✓	✓	✓	✓
Incorporate stakeholders from developed and developing countries	✓	✓	✓	✓	✓	✓	✓
Adopt sustainability as the baseline for stringency			✓		✓		

Governance	GAA	MSC	FSC	RFA	ISO	FLO
General Assembly						
Engage stakeholders through a membership structure			✓			✓
Create a general assembly with limited governance responsibilities			✓			✓
Require balanced membership and powers in the assembly			✓			
Board of Directors						
Require balanced representation in the board of directors			✓			✓
Limit size of board and term length of its members	✓	✓	✓	✓	✓	✓
Provide board with broad responsibilities	✓	✓	✓	✓	✓	✓
Require board to consider technical and stakeholder input	✓	✓	✓	✓		✓
Create a board subcommittee for standard-setting	✓	✓	✓	✓	✓	✓
Secretariat						
Develop a secretariat to manage the ecolabel on a day-to-day basis		✓	✓	✓	✓	✓
Establish secretariat as a global presence with consumers and producers		✓	✓	✓	✓	✓
Evaluate and report on the environmental and social performance of indicators				✓		
Centralize management to minimize cost and ensure consistency across operations		✓	✓	✓	✓	✓
Technical Board						
Create a standing, independent technical advisory board	✓	✓			✓	

Authorize the TAB to provide objective measures of sustainability	✓	✓				
Authorize the TAB to create sub-panels	✓	✓			✓	
Objections Panel						
Create an independent objections panel		✓	✓			
Allow secretariat to review and address grievances prior to appeal to panel		✓	✓	✓		✓
Allow stakeholders to challenge procedure and substance of standard-setting and certification decisions	✓	✓	✓	✓		✓
Allow external organizations to object even if they are not members	✓	✓	✓	✓		✓

Standard-Setting	GAA	WWF	MSC	FSC	RFA	ISO	FLO
Comply with the ISEAL Alliance Code of Practice			✓	✓	✓	N/A	✓
Use explicit standard-setting processes	✓		✓	✓	✓	✓	✓
Use the TAB to determine stringency of criteria and indicators							
Base standards on both process and performance	✓	✓	✓	✓	✓	✓	✓
Develop indicators on a species or species-group basis	✓	✓			✓	N/A	✓
Centralize development of principles, criteria, and indicators					✓		✓
Allow secretariat to develop guidance				✓	✓	✓	✓

Implementation	GAA	MSC	FSC	RFA	ISO	FLO
Unit of Certification						
Establish individual facilities as the unit of certification	✓		✓	✓	✓	✓
Provide for small-scale producer and group certification	✓	✓	✓	✓		✓
Provide for provisional certification prior to construction of new facilities	✓	✓	✓	✓		
Develop chain-of-custody certification	✓	✓	✓	✓	N/A	✓
Certification Body						
Create a pilot-scale independent certification body	✓			✓		✓
Establish protections for certification body independence and consistency		✓	✓	✓	✓	✓
Assessment Process						
Create credible, explicit procedures for certification	✓	✓	✓	✓	✓	✓
Use preassessment, assessment, and review for certification	✓	✓	✓	✓	✓	✓
Carry out confidential, streamlined preassessment	✓	✓	✓	✓	✓	
Develop credible assessment processes that require on-site consultation	✓	✓	✓	✓	✓	✓
Allow limited conditional certification	✓	✓	✓	✓		
Audit producers and processors annually	✓	✓	✓	✓	✓	✓
Collect performance data and report to secretariat				✓		

V. Defining the Scope of a Sustainable Aquaculture Ecolabel

The first step in developing an effective, credible ecolabel is to define clearly the ecolabel's intended scope. Delineation of scope is a threshold issue because it affects the institutional structures that develop and implement standards. Scoping requires determination of three variables: the types of impacts to be addressed by the ecolabel, the stakeholders that are affected by those impacts, and the stringency of the standards to address the impacts. These determinations must be explicitly addressed by the label.

A. Written scoping documents

All labels must inherently define the scope of the problems they seek to address, and a clear definition of those problems is not only necessary but may actually enhance credibility. Clarifying the scope of a label through an explicit statement is beneficial for two reasons. First, clarity of vision is likely to reduce contention by encouraging all parties to negotiate from a shared commitment. Second, a clear scope allows ecolabels to use a consistent approach in all standard-setting activities with respect to identification of impacts, stakeholder groups, and substantive issues. This consistency should offer efficiency benefits for the label, reducing the cost of setting standards. The benefits of clear scoping determinations are only available where the scoping document is explicit, includes all three substantive variables, and can be used to control standard-setting and implementation.

All existing labels delineate scope through general statements of mission or values (Table 3: Mission Statements). Some mission statements explicitly limit the scope of the label, often referring directly to sustainability. For example, one of MSC's goals is to "ensure the sustainability of global fish stocks" – a statement that explicitly identifies an impact to be addressed and the stringency of the label's standards.[39] Other statements establish the scope only vaguely. The FSC, for example, seeks to "promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests."[40] This statement does limit the impacts to be considered by the label to environmental, social, and economic implications of forest management, but only vaguely limits the stringency of the label's requirements.[41]

Whether clear or vague, mission statements share a fundamental weakness in that they cannot be relied upon to control substantive standard-setting decisions or to challenge those decisions. As a result, mission statements are of limited utility for constraining the identification of impacts or stakeholders or the stringency of standards and may bear little relation to the actual scope of their label. Where mission statements are backed by fundamental principles, however, these documents are more likely to accurately determine how standard-setting and implementation occur.

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[39] MSC, *Vision Mission Values*, *at* http://www.msc.org/html/content_482.htm.
[40] FSC, *About FSC: Mission*, *at* http://www.fsc.org/en/about/about_fsc/mission.
[41] Arguably, the use of terms like "environmentally appropriate" and "economically viable" comprise a rejection of sustainability as a criterion. However, the definition of the terms "appropriate" and "viable" could require either sustainability or a lower threshold. This lack of clarity eliminates use of the mission statement to constrain the stringency of standards.

Table 3: Mission Statements

Label	*Mission*
FSC	Promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests
MSC	Enhance responsible management of seafood resources, to ensure the sustainability of global fish stocks and the health of the marine ecosystem [*sic*].
RFA	Conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behavior.
ISO	Specify the requirements for state-of-the-art products, services, processes, materials and systems, and [] good conformity assessment, managerial and organizational practice
ISEAL	Strengthens and promotes credible and accessible voluntary standards and conformity assessment as effective policy instruments and market mechanisms to bring about positive social and environmental change
FLO	Benefiting those who find it difficult to sell into the international market and to trade responsibly and profitably when they do
WWF	Help the aquaculture industry minimize their environmental and social impacts and grow in a sustainable manner
GAA	Advancing environmentally and socially responsible aquaculture

Statements of principles are the other basic method for delineating the scope of an ecolabel. These principles often specifically describe relevant impacts and stakeholders, but appear to be less commonly used to limit stringency. Principles vary in the amount of substantive content they include. Some more or less restate the mission statement. The MSC principles, for example, are quite similar to the MSC's statement of intent (Table 4: Elements of MSC mission and principles). In other cases, the principles are more developed examples of the general expression provided by the mission. The FSC's ten principles, for example, are far more specific than (and do not obviously correspond to) any particular element in the FSC mission statement, although they do explicitly control the impacts addressed by the label. In both the MSC and FSC, however, the principles form the foundation of the standard-setting process and, to the extent that they embody the label's mission, allow accountability mechanisms to use the label's mission to ensure that the mission is followed in practice.

Table 4: Elements of MSC mission and principles

Mission	*Principle*
Enhance responsible management of seafood resources	Use an effective, legally-compliant management system
Ensure the sustainability of global fish stocks	Avoid overfishing and allow depleted stocks to recover
Ensure the health of the marine ecosystem	Maintain the structure and function of ecosystems on which fisheries depend

The Gold Standard recommends that sustainable aquaculture labels express the relevant impacts, stakeholders, and stringency through a publicly-available, enforceable scoping document. This document should preferentially be a foundational document that is separate from the label's standards but should govern those standards in practice. To ensure that the scoping document is a substantive control, it should be available for challenging substantive standards –

by way of analogy, it should function similarly to a constitution. In terms of content, the scoping document should explicitly identify not only the impacts to be addressed but also explicitly note the relevant stakeholder groups and establish limits on the stringency of standards that the label can adopt.

None of the labels studied in this report have adopted such a document; those that have established enforceable standards have relied on principles rather than on foundational documents that are divorced from the label's standards.[42] While principles are an acceptable way to delineate scope, the experience of existing labels using this strategy suggests that it is difficult to prescribe stakeholders or stringency through this method – particularly where the principles are the foundation of a tiered standards structure.

B. Impacts

Existing ecolabels differ extensively with respect to the impacts they consider. The FSC principles, for example, include a variety of specific impacts ranging from impacts on indigenous persons to maintenance of biodiversity.[43] By contrast, the MSC's principles are far more limited, focusing solely on a subset of the direct environmental impacts of fishing, including overfishing of target species and impacts of fishing on ecosystems associated with fisheries – impacts such as bycatch and harm to benthic communities.[44] The MSC principles also include a specific scoping discussion that eliminates consideration of practices after fish are landed, limits the label to wild-caught fish, and excludes the specific issues of quota allocation and access to resources – two issues of primary importance from a social perspective. In excluding all social and economic impacts and some environmental impacts (such as water pollution), the MSC proscribes its responsibilities and, by proxy, limits the complexity of the label.

Differences in the breadth of impacts addressed by various ecolabels may be explained by considering the countervailing influences of pragmatism and credibility. Labels that redress a broad variety of impacts are, in general, more institutionally complex than their more limited counterparts. Governance, standard-setting, and certification all become more complicated as more impacts are addressed, due to variables including more extensive information requirements, broader stakeholder consultation, and more intensive conformity assessment. For example, the FSC's extensive scope not only requires a larger number of standards than its more constrained peers, but also requires the consultation of a broader group of stakeholders when drafting each standard. Similarly, social representatives are not included in the MSC stakeholder council, whereas they make up one third of FSC's general assembly.

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[42] It should be noted that the FSC's principles, although the basis for the label's criteria and indicators, are treated differently from the more specific FSC standards insofar as they can only be altered with approval by the FSC general assembly.

[43] The FSC principles include a mélange of specific impacts, stakeholder identification, and management standards. Management standards, such as legal compliance, use of management plans, and monitoring and assessment substantively differ from the issue and stakeholder-oriented principles. Management standards are general to all ecolabels (legal compliance is equally vital in fisheries, farms, and forests) and address *how* impacts must be addressed rather than *what* impacts must be addressed. As a result, the management standards are of little interest to scoping discussions. The intermixing of these two issues can be confusing, and should be avoided where possible and clearly separated in other cases.

[44] MSC, MSC PRINCIPLES AND CRITERIA FOR SUSTAINABLE FISHING (2002).

In addition to the benefits of reduced complexity, the elimination of particularly contentious impacts (as in the case of the MSC excluding social impacts of quota allocation) may reduce contention among stakeholders, resulting in broader consensus among shareholders with respect to the remaining impacts. Decreased institutional complexity and contention are likely to decrease the label's operational costs and reduce efficiency challenges – potentially increasing the pragmatic benefits of certification. This relationship suggests that constraints on impacts addressed may be beneficial unless they are outweighed by their detrimental effects on the label's credibility.

Credibility is an important driver of institutional complexity because ecolabels are likely to suffer credibility losses when they exclude impacts. Not only do the impacts addressed establish the stakeholder groups that must be consulted by the label, but preexisting stakeholder views also influence the impacts that must be addressed. For example, it is unlikely that a fishery ecolabel could exclude overfishing or bycatch without fatally undermining its credibility. On the other hand, pollution from vessel operation is considered a less central impact of fishery operations, so stakeholders are less likely to demand its inclusion as a prerequisite to certification.

The interplay of the concept of sustainability and the existence of well-recognized impacts limits the label designers' discretion to constrain impacts. Although "sustainability" as used in this report corresponds primarily to the stringency of standards,[45] it also requires breadth of approach. That is, consumers and stakeholders are unlikely to agree that a certified facility is truly "sustainable" unless *all* of the significant recognized impacts it causes are managed sustainably.[46] As WWF has written, "WWF does not accept that any key impacts can be ignored because an industry or stakeholder group decided not to work on them. By extension, certification programmes that do not address any of the key issues – environment, social, animal welfare or governance issues – cannot be credible either."[47] We agree, and note that no existing aquaculture certification initiatives – including the WWF aquaculture dialogues – meet this test.[48]

Credible, sustainable ecolabels must consider all key impacts unless impacts are suitably addressed through alternative mechanisms, such as regulation. For example, the widespread adoption of laws that adequately address some impacts of production may allow labels to limit their consideration of those impacts. On the other hand, where regulation is inconsistent or insufficient, consideration of impacts may be more important. This section first introduces the

[45] To illustrate the use of sustainability as a stringency descriptor, the use of sustainably-sourced feedstocks at an aquaculture facility allows that facility that it is sustainable with respect to that particular impact.

[46] In practice, it is difficult to ensure sustainability across impacts (and with respect to stringency), so in many instances it is necessary to consider sustainability along a continuum and speak of "increasing" or "decreasing" sustainability. Unfortunately, this dialectic may result in adoption of feasibility measures and limitation of impacts rather seeking to achieve actual sustainability. As a result, it is necessary to carefully define sustainability and clarify that it is primarily a stringency measure, not a description of impacts.

[47] WWF, *supra* note 8, at 13.

[48] Consideration of human health impacts is necessary for credibility but may validly be considered under the social and/or environmental issue areas.

impacts of aquaculture production before addressing the development of minimum standards to address the impacts and the extent to which existing labels currently address the impacts.

1. Impacts of Aquaculture Production

The aquaculture industry is on the rise, driven by increasing demand for and consumption of seafood in both the developing and developed world and the stagnation of production from wild-capture fisheries. Aquaculture has produced an increasing percentage of world fish consumption in recent years. "[I]n 2004[, aquaculture] was estimated to have contributed 43 percent of the total amount of fish available for human consumption . . . . Aquaculture has also had a major role in terms of food security in several developing countries, particularly in Asia, for the significant production of some low-value freshwater species, which are mainly destined for domestic consumption."[49] Aquaculture thus already plays a role in both food security and nutrition in the developing world and satisfaction of consumer preferences for seafood in wealthier societies.[50]

Aquaculture production has historically relied on established species and low-intensity farming operations. During the "Blue Revolution," however, the industry began to culture new species and use new, intensive production methods, increasing both the output and economic value of the aquaculture industry.[51] These developments have also introduced significant complexity into the production process by using new species in culture, concentrating production in new facility types and locations, and developing new feedstocks and chemicals to enhance production (Table 5: Aquaculture production variables). While these advancements have increased the productivity of aquaculture facilities, they have also significantly intensified the facilities' environmental, social, animal welfare, and food safety and quality impacts.

Aquaculture occurs on land and in fresh, brackish, and marine waters. In all of these areas, sources of clean water are necessary to the success of facilities. Fish and other aquaculture species need clean, oxygenated water to survive,[52] but the species also create large amounts of nitrogenous waste that become toxic unless they are removed. As a result, facilities need to evacuate waste to avoid harm to the cultured fish. Consistent sources of clean water are thus mandatory elements of most facilities.

[49] SOFIA 2006, *supra* note 6, at 38. FAO further notes that aquaculture production has not merely responded to but has actually increased demand for some species: "Aquaculture production has pushed the demand and consumption for several high-value species such as shrimps, salmon and bivalves. Since the mid-1980s, these species have shifted from being primarily wild-caught to being primarily aquaculture-produced, with a decrease in their prices and a strong increase in their commercialization." *Id*.

[50] *See* The World Bank, *Aquaculture: Changing the Face of the Waters: Meeting the Promise and Challenge of Sustainable Aquaculture* (2006).

[51] Richard F. Kazmierczak, Jr. & Rex H. Caffey, *The Bioeconomics of Recirculating Aquaculture Systems*, LA. ST. UNIV. AGRIC. BULL. 854, at 3 (1996).

[52] Tolerances differ by species, however; for example, many shellfish species tolerate levels of contaminants that would be fatal to finfish.

Table 5: Aquaculture production variables

Species type	• Finfish
	  o Carnivorous
	  o Herbivorous
	• Invertebrates
	• Plants/Algae

Facility type	• Flow-through systems (open circulation)
	  o Net pens/cages ("intensive" production)
	  o Ponds ("extensive" production)
	• Closed systems (recirculating)
	• Culture type
	  o Monoculture
	  o Polyculture

Facility siting	• Freshwater • Estuarine or coastal • Marine (offshore mariculture)

The need for clean water is exacerbated by modern aquaculture facilities, which are characterized by high population density of cultured species. Producing more individuals in less space allows for efficient construction, maintenance, and operation of aquaculture facilities but increases the production of nitrogenous wastes, including fecal matter produced by the cultured species and excess feed. In addition to increasing production of wastes, high-density aquaculture facilities ease the transmission of pests and diseases, often necessitating the use of antibiotics or parasiticides. Farmed Atlantic salmon, for example, are subject to outbreaks of diseases such as infectious salmon anemia (ISA, a fatal orthomyxovirus) and are commonly infested with sea lice, which in turn pose a threat to wild salmon stocks.[53] Aquaculture facilities attempt to control or prevent many outbreaks of disease through the prophylactic and targeted use of antibiotics or parasiticides. Facility health and productivity is also protected through the prophylactic use of fungicides and algaecides. These variables also implicate animal welfare concerns, increasing the stress on animals and reducing their health. Compliance with existing international standards for aquatic animal health management may mitigate these concerns.

Clean water is most often obtained through natural flow of watercourses or from natural circulation of marine waters. The same flows are often used to carry wastes away from the facility. Flow-through facilities externalize effluent treatment costs by allowing water to flow through the containment area, be it a pond, net pen, or other holding device. While some open-flow facilities filter their effluents, many simply rely on natural dilution to address wastes. In such cases, the waters carry wastes – fecal matter, excess food, excess antibiotics and pesticides, and diseases – into surrounding waters or into the ground, often with harmful environmental effects.[54] Water usage also has social consequences. Salinization of surrounding lands (agricultural lands in particular) may be a consequence with direct, negative implications for

[53] Martin Krkošek et al., *Declining Wild Salmon Populations in Relation to Parasites from Farm Salmon*, 318 SCIENCE 1772 (2007).

[54] *See* Jorge León-Muñoz et al., SALMON FARMING IN THE LAKES OF SOUTHERN CHILE – VALDIVIAN ECOREGION: HISTORY, TENDENCIES AND ENVIRONMENTAL IMPACTS (2007) (describing net pen production methods in fresh water).

local communities and may have disproportionate impacts on traditional or indigenous peoples. Salinization of groundwater is also common and may interfere not only with agriculture but also with domestic use. In addition, the amount of water used may stress scarce water resources, thus directly interfering with other land and water uses, with direct detrimental impacts on local communities.

Reliance on natural flows controls the siting of these facilities. In practice, flow-through facilities are prevalent in mariculture[55] as a result of technological and financial hurdles in both coastal and offshore areas; freshwater facilities also commonly use the flow-through model. The riverine and coastal locations preferred for flow-through facilities are commonly already used for a number of competing anthropogenic and environmental purposes. Aquaculture development thus may lead to conflicts with environmental services and existing human populations.

From an environmental perspective, aquaculture facilities are often sited in ecologically sensitive areas. The development of facilities in these areas may destroy entire habitats and eliminate some or all of the ecosystem services that the habitat previously provided.[56] For example, shrimp farming has often entailed the destruction of mangrove forests,[57] reducing the availability of those forests for use as habitat, with cascading impacts on both terrestrial and marine ecosystem structure.[58] Similarly, nitrogenous wastes and excess feed and feed additives[59] may settle or remain suspended in the water column, altering benthic and freshwater and marine pelagic ecosystems proximal to facilities.[60] Release of antibiotics, food additives, and pesticides may have biological effects on organisms outside the facility, also altering normally-occurring

[55] Mariculture is a subset of aquaculture that requires production of marine species in the offshore context.

[56] *See, e.g.* Edward B. Barbier et al., *Coastal Ecosystem-Based Management with Nonlinear Ecological Functions and Values*, 319 SCIENCE 321 (2008); Ivan Valiela & Sophia E. Fox, *Managing Coastal Wetlands*, 319 SCIENCE 290 (2008) (considering measurement of ecosystem values that afford benefits to local communities in comparison to economic benefits that accrue benefits primarily to outside investors).

[57] *See, e.g.* J.H. Primavera, *Socio-economic Impacts of Shrimp Culture*, 28 AQUACULTURE RES. 815 (1997); Aram Terchunian et al., *Mangrove Mapping in Ecuador: The Impact of Shrimp Pond Construction*, 10 ENVTL. MGMT. 345 (1985).

[58] Mangrove destruction also has a direct social impact because they serve as a crucial barrier against flooding of inland areas during storms.

[59] Aquaculture feedstocks are specially formulated to encourage the rapid growth and marketability of cultured species. Aquaculture feeds differ from natural food sources that give wild-capture seafood its flavor and texture. The diet of wild salmon is rich in krill, for example, causing their flesh to have a red hue. Farmed salmon feed, however, does not include krill, so their flesh is naturally gray. Such differences may cause aquaculture products to be less marketable than their wild counterparts. The aquaculture industry has created chemical supplements to increase the marketability of aquaculture products. For example, salmon feed is supplemented with canthaxanthin or astaxanthin (naturally occurring agents in krill) to produce a characteristic "salmon-colored" hue. The impacts of these specialized additives on food safety and the environment are largely unknown, making their use potentially troublesome. *See, e.g.* The Center for Food Safety, *Comments Dissenting from the Aquaculture Effluent Task Force Subgroup on Drugs and Chemicals* (2003), *available at* http://www.centerforfoodsafety.org/pubs/CommentsEPAon-Drugs&Chemicals1.8.2003.pdf (discussing food safety risks of aquaculture effluents); Stephen Phillips, Pacific States Marine Fisheries Commission, ENVIRONMENTAL IMPACTS OF MARINE AQUACULTURE ISSUE PAPER (2005) (discussing the environmental risks of aquaculture chemicals). Other additives, such as hormones, may enhance growth rates, and may have similar uncertain impacts. Like other wastes, excess additives may leave open-flow facilities as effluents.

[60] *See generally Sustainable Marine Aquaculture*, *supra* note 7.

ecological relationships[61] and posing uncertain food safety risks. Diseases and parasites may be released along with effluent, and may be communicated from farmed to wild stocks, reducing the survival of native species, which may be threatened or endangered. This is a particular problem for salmon facilities, which are often placed in fjords where wild stocks are concentrated when entering or leaving spawning grounds.[62] Finally, the escape of non-native species, or the introduction of new genotypes of native species into the ecosystem, may similarly affect the health of native species, alter their genotypes, or allow non-native species to become established and to compete with or prey upon native species or population segments.[63]

Socially, aquaculture structures may present a hazard to navigation and may bar access to or physically occupy areas that were previously used for artisanal fishing, recreation, or other purposes. For example, historic capture fisheries and their dependent communities were eliminated along the southern coast of Chile after allocation of fishing grounds to salmon farms,[64] and proposed abalone farms in the middle of Pillar Point, south of San Francisco, California, threaten to remove an anchorage needed by fishing vessels and pleasure craft seeking refuge from storms. Even in the open ocean, depending on placement, structures created for aquaculture operations could displace fishermen from critical fishing grounds. Coastal and open ocean aquaculture structures, particularly those that are floating, can also endanger fishing operations and maritime activities when the structures, on the surface or submerged, break loose and become navigational hazards. Although not normally considered impairment, the location of visible aquaculture structures may also affect land values. The development of geoduck aquaculture in Puget Sound, for example, has created conflicts with recreational uses of beach areas and has affected land values.[65]

The impacts of flow-through systems may be reduced by careful facility design and operation, implementing cutting-edge feeding techniques, and enclosing fish pens. A variety of species are currently produced on a commercial scale in the aquaculture industry, ranging from seaweed to large finfish.[66] These species are raised in both monoculture systems (single species) and polyculture systems (also known as "integrated multi-trophic aquaculture systems"),[67] which produce multiple species in the same facility. By design, polyculture facilities reduce

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[61] *See, e.g.* Ruth-Anne Sandaa et al., *Transferable Drug Resistance in Bacteria from Fish-Farm Sediments*, 38 CAN. J. MICROBIOL. 1061 (1992); Antonia Fortt Z., USE AND ABUSE OF ANTIBIOTICS IN SALMON FARMING (2007).

[62] This issue has been acknowledged directly by members of the aquaculture industry. *See Environmental Groups Pounce on Fredriksen's Salmon Comments*, INTRAFISH MEDIA (Sep. 9, 2007) (responding to comments by Marine Harvest's largest shareholder that salmon farms should not be allowed near wild salmon rivers).

[63] *Sustainable Marine Aquaculture*, *supra* note 7, at 45 *et seq*., 59 *et seq*.

[64] *See, e.g.* Signe Annie Sønvisen, INTEGRATED COASTAL ZONE MANAGEMENT (ICZM): THE ALLOCATION OF SPACE IN NORWEGIAN AQUACULTURE – FROM LOCAL LOTTERY TO CENTRAL PLANNING? 63 (2003); León-Muñoz et al., *supra* note 54, at 22 (noting conflicts between salmon farming and recreation and tourism in Chilean lakes).

[65] *See* Warren Cornwall, *Geoduck Farming Buries Friendships*, SEATTLE TIMES (Oct. 5, 2006).

[66] In total, FAO has identified 442 distinct species in culture during the last half-century. FAO, STATE OF WORLD AQUACULTURE 2006, FAO Fisheries Technical Paper No. 500 10 (2006). Fish are the most common subject of aquaculture by economic value, comprising almost 50 percent of the total global aquaculture production in 2006. Aquatic plants and algae make up 23.2 percent of total production. Mollusks and crustaceans comprise the balance of production. *Id*. The values given apply to total production; when ranked by value, invertebrates far outstrip aquatic plants.

[67] Allsopp et al., *supra* note 90, at 16 (citing system where waste from farmed marine fish is used to cultivate seaweed, which is then used as feed for abalone).

nitrogenous waste production when compared to monoculture facilities because the secondary species (whether invertebrate, plant, or algae) feeds on waste from fish production.[68] As a result, polyculture may be used to mitigate pollutant outflows and maximize production efficiency. For example, fish may be produced in tandem with shellfish or seaweed, which filter the water and remove some fish wastes from the water column. While monoculture remains common, polyculture is receiving increasing attention due to efficiencies of scale and potential reductions in the facility's environmental footprint.

Facility operation also affects impacts. Releases of excess feed, antibiotics, and pesticides may be reduced by altering the process by which they are distributed at a facility.[69] Similarly, the use of covered cages rather than open-top net pens or ponds may reduce fish escapes due to storms or predation[70] and decrease conflicts between predators – whether avian, terrestrial, or aquatic – and aquaculturists. Such conflicts may result in the death of the predators as farmers protect their product; as a result, enclosed pens may decrease predator mortality.

While careful facility design and operation may mitigate some impacts of flow-through aquaculture, they are unlikely to fully mitigate those impacts. New types of facilities that do not rely on natural flows may minimize some impacts, but raise further questions. In closed (recirculating) systems, water is treated and the waste removed and potentially reused for fertilizer or other uses.[71] The treated water is then recycled by the facility, eliminating discharge of potential pollutants into surrounding waters. This recycling means that closed-loop facilities need not be sited near running water.[72] This flexibility allows these facilities to minimize or avoid siting and use conflicts, reduce the distance from the farm to its processors and retail outlets (thus decreasing associated food miles), and may decrease consumption of other resources. Perhaps most importantly, these facilities may eliminate releases of effluents ranging from exotic species to diseases to nitrogenous wastes, reducing the facilities' environmental impacts.[73] On the other hand, closed-circulation facilities are expensive to create, consume large amounts of energy to treat waste and oxygenate and circulate water, they may be subject to similar cycles of disease and treatment as open systems, and they raise significant animal welfare issues. As a result, these systems are cost-intensive.[74] Most facilities still use flow-through designs but may transition to increased use of recirculating systems as regulatory standards become more stringent and as the costs of construction and treatment decrease.

Some impacts of aquaculture production are divorced from facility type or operation. Most species require protein-rich feed to grow quickly and healthily. Although the industry is

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[68] *See id*. at 66-70 (discussing advantages and disadvantages of integrated aquaculture and polyculture systems).
[69] Rebecca Goldburg and Tracy Triplett, MURKY WATERS: ENVIRONMENTAL EFFECTS OF AQUACULTURE IN THE US 63 (1997) ("Over the past several decades, the strategic foundation for pollution control has evolved so that there is now a recognized spectrum of approaches to managing pollutants.").
[70] *Id*. at 35 (1997).
[71] *See, e.g.* Stephen J. Naylor et al., The Chemical Composition of Settleable Fish Waste (Manure) from Commerical Rainbow Trout Farms in Ontario, Canada, 61 N. Am. J. Aquaculture 21 (1998); Laurel J. Ramseyer & Donald L. Garling, Fish Nutrition and Aquaculture Waste Management, Reg. Aquaculture Center 5.
[72] To date, closed-circulation mariculture remains in development. It is likely to become feasible in the future, as technological and financial hurdles are overcome.
[73] *See, e.g.* León-Muñoz et al., *supra* note 54 (calling for elimination of open net pen salmon smolt production in favor of closed-circulation facilities in southern Chile).
[74] *See generally* Kazmierczak & Caffey, *supra* note 51.

attempting to create feed based on vegetable protein, most animal-based fish feed is primarily sourced from wild-caught fish such as menhaden, sardines, and anchovies ("feedstocks").[75] Supplies of the fish meal and oil that are necessary to aquaculture production are not unlimited, but rather cannot exceed the biological limits imposed by the health of wild fish stocks. In practice, most wild feedstocks are fished at capacity or overfished.[76] As aquaculture production increases, these feedstocks will be placed under increasing fishing pressure, further reducing their biomass and potentially causing trophic cascades that could alter oceanic ecosystems on a broad scale and detrimentally affecting fishing-dependent societies.

Different species in culture place varying stress on limited fishmeal and fish oil supplies because of their differential nutrition needs. Many high-value finfish – notably salmon – are carnivorous, while other fish, such as catfish, are largely herbivorous. Still others, such as algae and shellfish, are photosynthetic or filter feeders. Carnivorous species require large amounts of fishmeal and fish oil, which are derived from wild-sourced fish. Herbivorous species such as carp require lesser amounts of wild-sourced meal and oil and filter-feeders often require none.[77] While culture of some herbivorous species may produce more fish than is consumed as feed, culture of carnivorous species uniformly produces less fish than is consumed as feed. For example, production of one kilogram of salmon requires the use of 6.5 kilograms of wild fish, while production of the same amount of catfish requires only 0.4 kilograms of wild feedstock.[78] As a result, production of carnivorous species places more pressure on wild feedstocks than that of herbivorous species. Production of many species, including salmon, is thus dependent on overfished wild stocks.

In addition to its environmental consequences, dependence on wild feedstocks also exacerbates protein shortages in the developing world. The U.N. Food and Agriculture Organization ("FAO") estimates that "fish provides more than 2.8 billion people with almost 20 percent of their average per capita intake of animal protein" on a global basis.[79] Nonetheless, fish protein availability in developing countries has not kept pace with population, largely because wild-capture seafood, including aquaculture feedstock, is overwhelmingly exported from the developing to the developed world,[80] depleting developing nations of protein sources on which many of their citizens rely.[81] Although they are inaptly termed 'trash fish,' many species of fish taken for meal, including anchovy, herring and pilchards, are staple foods in the diet of coastal communities. Industrial fishmeal fleets thus threaten the smaller artisanal fisheries that supply local communities their food without making the eventual aquaculture products available

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[75] *Sustainable Marine Aquaculture*, *supra* note 7, at 89.

[76] *Id*. at 89 ("Most of the reduction fisheries that produce fishmeal and fish oil have reached, or in some cases exceeded, sustainable harvest levels.")

[77] *Sustainable Marine Aquaculture*, *supra* note 7, at 89 *et seq*. (describing 'feed conversion ratios' and 'fish conversion efficiencies' of various finfish species). Note that while many existing ecolabels measure feed efficiency with feed conversion ratio (FCR), which is a gross comparison of the mass of feed to body mass. This measure may be inappropriate, however, because it does not capture the ratio of wild fish to farmed product. The fish conversion efficiency (FCE) does capture this variable and its use is recommended. *Id*.

[78] *Id*. at 93. As technological sophistication increases, it is likely that feed conversion ratios will diminish; however, it is unlikely that some species will ever maintain or exceed a 1:1 ratio.

[79] SOFIA 2006, *supra* note 6, at 36.

[80] David Schorr, Presentation at Wilson Center, Environmental Change and Security Program (2007)

[81] Trends in developed countries show a contrasting explosion in consumption from 13 million tons in 1961 to 27 million tons in 2003 and from 20.0 kg per capita in 1961 to 29.7 kg in 2003. SOFIA 2006, *supra* note 6, at 37.

to the developed world, depriving coastal communities of protein sources along two dimensions.[82] Thus, while aquaculture could mitigate the global protein shortage, the culture of high-value carnivorous species actually undermines protein availability.

In 2002, aquaculture used approximately 81 percent of the global fish oil supply and 46 percent of global fishmeal supply.[83] Aquaculture production bears a high degree of responsibility for depletion of feedstocks, but it is important to recognize that aquaculture is only one user of these wild fish – other types of livestock production are also important consumers. If consumption of wild-sourced fish in aquaculture ceased entirely, prices of fish meal and oil would fall, driving other users to increase their reliance on wild-sourced feeds. Changes to aquaculture practices thus cannot halt the depletion of wild stocks – that task requires strengthening of fisheries management. Aquaculture production nonetheless contributes to overfishing by providing an important and lucrative market for unsustainably-harvested fish. As a result, aquaculture production that relies on overfishing of wild feedstocks cannot be considered sustainable.

In addition to the effect of aquaculture on fishing pressure for feedstocks, aquaculture may also increase fishing pressure on stocks in culture. Most aquaculture species are cultured throughout their full lifecycle. Shellfish, for example, are seeded and grow to adulthood at a single facility. Similarly, farmed salmon are hatched, smolt, and grow to adulthood in a variety of freshwater and marine production facilities.[84] Some facilities, however – notably tuna "ranching" facilities and many shrimp farms – rely on wild-caught fry or adult fish rather than hatchery stock.[85] Full lifecycle aquaculture species[86] do not deplete wild populations of the cultured species, because the species are raised from egg to adulthood within the facility. On the other hand, partial-lifecycle species have the capacity to deplete the wild stocks of the aquaculture species, many of which (notably tuna) are already overfished, and to result in large amounts of bycatch in the process of collecting species for culture.[87] In addition to its environmental implications, this overfishing and bycatch may have social impacts where harvested species are important to local cultures or are important elements of local food supplies.

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[82] *See* World Bank, CHANGING THE FACE OF THE WATERS: THE PROMISE AND CHALLENGE OF SUSTAINABLE AQUACULTURE 19 (2007) ("International trade in fish and fishery products has grown from $15 billion (exports) in 1980 to an estimated 71 billion in 2004, and about 37 percent of world fishery production is now traded internationally. Developing countries accounted for 48 percent ($30 billion) of global exports with net earnings of $20 billion in 2004. LIFDCs [low-income food-deficit countries] accounted for 20 percent of exports ($13 billion) and imports were $4 billion—export earnings from fish appear to be paying for food imports in some LIFDCs (Ahmed 2004). The developed countries absorbed more than 80 percent of exports.").

[83] *Id.* at 90.

[84] Many hatcheries are focused on rebuilding native stocks of species that are also cultured – including Atlantic salmon, the most common species of farmed salmon. *See, e.g.* Sustainable Ecosystems Institute, REVIEW OF ATLANTIC SALMON HATCHERY PROTOCOLS, PRODUCTION, AND PRODUCT ASSESSMENT (2007). Nonetheless, most commercial aquaculture facilities also rely on hatchery fry. *See, e.g.* León-Muñoz et al., *supra* note 54.

[85] Allsopp et al., *supra* note 90, at 11.

[86] Facilities that rely on collection of wild-harvested eggs may also avoid decreasing overall wild stocks because of the high mortality of young individuals of any species.

[87] *See* Allsopp et al., *supra* note 90, at 8 (noting bycatch of other species during collection of shrimp broodstock and postlarvae).

Finally, it is important to note that, like all industries, the processing and transport of aquaculture products causes environmental and social impacts. For example, greenhouse gas releases and other consequences of global food production and transportation are increasingly part of the sustainability lexicon and are likely to be important given the global nature of today's seafood market and growing awareness of climate change. In particular, energy efficiency and sources at both the production level and during transit and processing are key elements of sustainability and are likely to receive more attention in coming years. These impacts, however, are not adequately recognized in the existing international standards.

2. Standards for Consideration of Impacts in Aquaculture Certification

Delineation of the "key impacts" that should be addressed by sustainable aquaculture labels requires identification of existing impacts, consideration of which of those impacts affect sustainability, and determination of the sustainable level of performance for each impact, as determined by the best available scientific evidence and appropriately influenced by stakeholder perceptions and the regulatory environment. None of these issues have yet been adequately addressed by international, national, or local regulatory programs.[88] Recent development of voluntary guidance, however, suggests that this is changing. In 2007, the FAO published draft guidelines for aquaculture certification, based on stakeholder and public comment and input during expert workshops and from an advisory group.[89] These guidelines identify the impacts of aquaculture production that all aquaculture ecolabels should address, and they have already been cited by Greenpeace as the relevant standard for aquaculture ecolabel development.[90]

The FAO guidelines are a good minimum standard for determining the minimum permissible scope of aquaculture certification systems. The FAO guidelines recognize four fundamental areas that must be considered by aquaculture ecolabels, including social issues, environmental issues, food safety and quality, and animal health and welfare.[91] Each of these issue areas is elaborated by comprehensive identification of specific impacts to be specifically addressed.[92]

We consider the FAO criteria to establish minimum requirements for the substantive impacts that all sustainable aquaculture certification systems must address. Although the breadth of the impacts addressed is likely to mandate complex, potentially costly structures and processes, these barriers to implementation are not a justification for elimination of impacts. This endorsement requires some caveats, however. First, it is important to note that the guidelines are not directly parallel to ecolabeling systems because they apply to mandatory certification as well as voluntary (non-state) certification. Second, the FAO guidelines are a draft and amendment could strengthen them in some areas. Third, the guidelines Note that the FAO guidelines are limited to certification of production systems, and therefore exclude traceability and other supply chain impacts that influence sustainability.[93] Thus, impacts of

[88] *See Sustainable Marine Aquaculture*, *supra* note 7, at 103 *et seq*.
[89] FAO, FAO GUIDELINES FOR AQUACULTURE CERTIFICATION 5 (2007).
[90] Michelle Allsopp et al., Challenging the Aquaculture Industry on Sustainability 17 (Greenpeace, 2008).
[91] FAO, *supra* note , at 19 *et seq*.
[92] *Id*.
[93] *Id*. at 11.

transportation and processing are not considered in the FAO document but nonetheless should be considered by Gold Standard labels.

The FAO guidelines do not address stringency and are therefore useful only with respect to the identification of impacts – not the stringency of the standards used for certification. While they do include requirements for legal compliance, this requirement assumes that existing legal regimes impose meaningful constraints on production processes and that monitoring and enforcement of violations are effective. (Box 3: Legal Compliance as a Minimum Standard). In the aquaculture context, these binding regulatory minima are largely absent due to factors including, but not limited to, conflicts over the appropriate level of regulation, the rapid development of industrialized aquaculture, the perceived economic benefits of increasing aquaculture production, and the complexity of the needed regulatory response.

Box 3: Legal Compliance as a Minimum Standard

Most labels require compliance with existing international, national, and local laws as a fundamental principle – a principle that has been adopted in the FAO's draft guidelines for aquaculture certification.[94] The principle of legal compliance may offer little protection against detrimental impacts, however, due to variance in the strength and scope of existing laws. Ecolabels have been created both where legal structures are well-established and where they are absent.

Where regulation is effective, ecolabels can provide a supplemental incentive for producers to go beyond compliance.[95] In practice, few legal regimes effectively address all impacts of production. As a result, most ecolabels have focused primarily on a limited subset of impacts that are most in need of mitigation.[96] For example, fisheries are regulated by a multitude of national and international laws and regulations, such as water pollution and food safety. The MSC relies on these laws to address these issues, focusing instead on a relatively few impacts – notably, overfishing – that are inadequately addressed by existing laws and treaties. This focus allows the MSC to narrow its scope significantly.

In some cases, laws may be non-existent, requiring the development of more robust institutional structures to provide a fundamental baseline for evaluation of production. In the absence of a public governance scheme, ecolabels cannot rely on established minimum standards, unless competing labels establish less stringent standards.[97] As a result, ecolabels must directly address a broad spectrum of potential impacts. FSC, for example, was created in response to the failure to create an international global forest convention during the 1992 UNCED summit (Rio Earth Summit) and could not rely on established international legal norms. As a result, FSC created structures to address a variety of impacts.[98] Development of ecolabels in the absence of regulation may be particularly challenging, but it may also be particularly important, as these ecolabels may both provide a needed extralegal incentive for sustainable production and stimulate and guide the development of future regulatory systems.[99] Ecolabels that effectively address the broad social and environmental impacts of unregulated industries may thus influence the structure and content of future regulatory systems.

[94] FAO, FAO GUIDELINES FOR AQUACULTURE CERTIFICATION 19 (Draft 2.3, 2007).

[95] This approach is a "leveling up," and would largely create incremental improvements in environmental performance. None of the ecolabels in this report use such an approach, but it is likely that such systems would be

The transboundary nature of aquaculture production, processing, and trade suggests that binding international action is required to fully address the social and environmental impacts of the aquaculture industry. Issues such as the introduction of non-native species and the depletion of wild-caught feedstocks cannot be adequately addressed through national standards, but FAO and other international bodies have been slow to respond directly to these challenges. To the contrary, FAO has explicitly questioned the appropriateness of international regulation, arguing that national standards are more appropriate: "Unlike capture fisheries, aquaculture activities are generally located within national jurisdictions, and so governance is a national responsibility."[100] This statement casts doubt on any prospects for the development of international or regional standards for sustainability by inter-governmental bodies in the near future.

Despite FAO's sanguine perspective on the efficacy of domestic regulation, few countries have established comprehensive regulatory frameworks to guide the development or operation of aquaculture facilities. Some nations have established aquaculture laws, but these standards are primarily oriented towards the promotion and development of the aquaculture industry – not its regulation. Chilean law, for example, did not require environmental assessment when it granted most of its existing salmon farming concessions. While the more recent General Fishing and Aquaculture Law does require assessment – a requirement that has halted further lentic aquaculture concessioning – existing farms continue to operate in spite of ongoing environmental damage.[101] The Marine Aquaculture Task Force has described a regulatory system with similar gaps and patchwork authority in the United States:

> The current legal regime for marine aquaculture does not provide for clear federal leadership. Numerous agencies have responsibility for aspects of aquaculture regulation, but currently no agency is charged to coordinate [*sic*] the overall process. Not only does this create a confusing and cumbersome process for those

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unlikely to rely on credibility – like ISO, they could probably constrain their scope and focus on particular impacts in turn.

[96] Of course, even inadequate laws may be useful for defining issues and shaping the label's scope and standards.

[97] The industry-supported labels created in response to FSC may have created a stratified minimum standard/sustainability standard situation analogous to that created by governmental fisheries regulation and the MSC. The limited geographic scope of the industry-supported forestry initiatives, however, undermines this hypothesis. Where international fisheries conventions are applicable in both the developed and developing world, forestry ecolabels other than FSC have yet to become fully established in the developing world, whose timber practices initially stimulated FSC's development.

[98] National forestry laws exist in most countries but in many countries are undermined by a lack of substantive safeguards and insufficient enforcement.

[99] The inability of international organizations to impose effective environmental protections on products is a common driving force for ecolabel development, most notably in the forestry sector. It is undoubtedly also a factor driving the rapid development of aquaculture ecolabels. While consideration of the reasons for this regulatory failure is important when considering ecolabel design, it is also important to note that regulation does not necessarily pose a threat to ecolabel success. Regulation and ecolabeling should be mutually supportive, working together to establish a range of environmental standards from regulatory baselines to ideal ecolabel targets. Studies of forestry ecolabeling programs have shown that certification and labeling are most effective when paired with protective regulatory programs that are effectively enforced. *See* Lars H. Gulbrandsen, *Sustainable Forestry in Sweden: The Effect of Competition Among Private Certification Schemes*, 14 J. ENV'T & DEV. 338 (2005).

[100] SOFIA 2006, *supra* note 6, at 8.

[101] León-Muñoz et al., *supra* note 54, at 15.

> seeking permits for aquaculture, but it results in a lack of accountability among the federal agencies for marine aquaculture activities and its impacts on the marine environment.[102]

Commentators have similarly criticized legislative proposals for the licensing of aquaculture facilities in U.S. federal waters (offshore aquaculture). The current administration has introduced bills seeking to create a regulatory framework to enable offshore aquaculture permitting in federal waters.[103] These bills omit or minimize the importance of environmental assessment requirements, instead focusing on economic development.[104]

While aquaculture-specific regulation is largely nonexistent, many countries have established laws of general applicability that could limit the environmental impact of aquaculture production. These include laws related to clean water, habitat conservation, development, environmental impact assessment, and invasive species, which may play an important role in the development of aquaculture facilities absent laws specifically directed at regulating aquaculture. It is impossible to generalize about the adequacy of these laws, since they are generally adopted on a national or local level and thus may differ significantly from region to region.[105]

The lack of targeted regulation of the aquaculture industry – particularly on the international level – has several important consequences for sustainable aquaculture labeling. First, the legal compliance required by the FAO guidelines is unlikely to produce meaningful substantive baselines for the stringency of ecolabel standards. In addition, the absence of consolidated, binding aquaculture regulation is likely to result in an ecolabel with a broad scope reminiscent of the FSC.[106] The resultant standards and processes are likely to be complex and may be difficult to implement on the local level. This may be particularly in developing countries, where there may be extreme differences in local laws. Implementation in these conditions is nonetheless vital because a large and growing percentage of aquaculture production is located in developing countries.

Second, the current absence of targeted aquaculture regulation offers ecolabels important opportunities to affect the eventual development of international and national laws governing aquaculture. Just as the MSC influenced FAO's standards for ecolabeling of capture fisheries, aquaculture ecolabels will undoubtedly play an important role in the evolution of laws and regulations specifically governing the aquaculture industry. An ecolabel with strong, multi-stakeholder support and a broad scope will be best positioned to take advantage of this important

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[102] *Sustainable Marine Aquaculture*, *supra* note 7, at 23.
[103] *See* NOAA, The National Offshore Aquaculture Act of 2007 (2007).
[104] *See*, *e.g.* Mitchell Shapson & Zeke Grader, Effectively Communicating Aquaculture's Threat: A White Paper to Explain the Problem to Policy Makers and the Public (2005) (examining environmental protections included in offshore aquaculture legislation currently pending in Congress). NOAA did incorporate some environmental protections into later versions of its offshore aquaculture bills, but revised bills have not attracted support in Congress, due at least in part to continued opposition from environmental stakeholders.
[105] In the absence of comprehensive legislation, it is clear that there are a variety of models upon which aquaculture labels can draw. For example, the GAA has established quantified effluent standards that are reminiscent of the limits imposed under the United States Clean Water Act.
[106] As in the case of FSC, competition between the GAA – which sets out minimum environmental protections – and a gold-standard ecolabel may create market stratification even in the absence of an ecolabel.

opportunity to create effective, enforceable laws that will support the work carried out by the ecolabel.

3. Consideration of Impacts in Existing Standards

The three primary existing shrimp production standards in the United States (GAA, WWF Dialogues, and Environmental Defense – for Wegman's Food Markets[107]) address some elements of all four categories of impacts described in the FAO guidelines. None of them, however, precisely follows the guidelines' organization of those impacts or addresses them comprehensively.[108] These standards thus do not fully comply with the FAO guidance – an unsurprising result considering that they predate the most recent draft guidance.[109] As a result, all existing labels require amendment to broaden the scope of the impacts that they consider before they can claim FAO compliance.

The trend of noncompliance among the standards considered in this report compares favorably with a broader and more complex study recently issued by WWF. The WWF "benchmarking study" evaluated seventeen existing standards against a broad array of variables ranging from consideration of animal welfare and energy efficiency to more typical impacts such as effluent outflows.[110] The study concluded that none of the studied ecolabels (including GAA) considers an adequate breadth of impacts. Although the analysis was not based on the FAO guidelines,[111] this conclusion would be unlikely to change if the full range of FAO impacts was explicitly considered.

The evidence shows that existing aquaculture labels do not comply with the most recent FAO draft guidelines. None considers all of the impacts of aquaculture production and the scope of these labels thus falls short of sustainability. It is important to recognize, however, that existing labels do consider most of the impacts identified by FAO. The current failure to consider all impacts should not be confused with inability to feasibly consider those impacts. To the contrary, compliance with the FAO guidelines is feasible for existing labels, and would also be feasible for new labels seeking to comply with this Gold Standard. While existing labels may

[107] Environmental Defense, WEGMANS FOOD MARKET, INC. FARMED SHRIMP PURCHASING STANDARDS (2007).

[108] The GAA has created best practice standards in four main areas: community, environment (specifically addressing mangrove destruction, effluent management, sediment management, soil/water conservation, postlarvae sources, and storage and disposal of farm supplies), food safety, and traceability. GAA, *Best Aquaculture Practices, at* http://www.gaalliance.org/bap.html. The WWF dialogues resulted in consensus on eight principles for shrimp farming, addressing: farm siting; farm design; water use; broodstock and postlarvae use; feed management; stock health management; food safety; and social responsibility. FAO et al., INTERNATIONAL PRINCIPLES FOR RESPONSIBLE SHRIMP FARMING (2006). The scope of the Wegman's policy is more constrained, explicitly eliminating consideration of social issues except for requiring compliance with laws governing labor and social issues. On the other hand, the Wegman's standard is quite broad within the context of environmental issues, addressing most of the FAO-identified impacts. Environmental Defense, WEGMANS FOOD MARKET, INC. FARMED SHRIMP PURCHASING STANDARDS (2007).

[109] Although taken together these standards may cover the entire spectrum of impacts and thus may meet one criterion for sustainability, the standards may not achieve sustainability, even when taken together, because the stringency of each of these standards is unlikely to reach sustainable levels.

[110] *See generally* WWF, *supra* note 8. The study did not evaluate the standard for shrimp production created by the aquaculture dialogue.

[111] The study explicitly excludes food safety and product quality, despite noting that "these criteria are of equal importance to the sector's future and overall sustainability. WWF, *supra* note 8, at 14.

need to alter their scoping documents and standards, new ecolabels can achieve greater efficiency by designing FAO guidelines as integral aspects of their institutional design.

Table 6: Consideration of FAO-Identified Impacts in Existing Shrimp Labeling Standards

Social Issues	FAO Requirement	WWF	GAA	Wegman's
Stakeholder participation and community issues	Identify and consult with relevant community groups, giving special consideration to small-scale operators	✓	✓	
	Minimize conflicts with local communities, e.g. land tenure, land and water use, siting and resource use and needs, with special consideration for indigenous/traditional communities	✓	✓	
	Minimize negative social impacts on local communities, e.g. access to fishing grounds, with special consideration for indigenous/traditional communities	✓	✓	✓
	Evaluate and address gender and generation issues			
Labor and work conditions	Treat workers fairly and take labor issues into account in compliance with ILO conventions			
	Maintain worker health and welfare through safe and hygienic conditions	✓	✓	✓
	Consider child labor in the context of existing ILO conventions/standards			
	Provide training in responsible aquaculture practices	✓	✓	
Socioeconomic aspects	Support rural communities, producer organizations, and farmers and provide a decent living wage	✓	✓	
	Minimize risks to small producers through training, extension, and appropriate technical and financial support	✓		
	Share benefits equitably	✓		
	Create employment and alternative livelihood opportunities for local community members			
	Establish fair contract conditions and prices, including for 'contract farming'			

Environmental Issues	FAO Requirement	WWF	GAA	Wegman's
Types of impacts	Biodiversity, habitats, and ecosystems	✓	✓	✓
	Genetic diversity			✓
	Endangered species, including migratory species			✓
	Fishery stocks and species and associated ecosystems, e.g. impacts from harvesting wild seed, broodstock harvest	✓	✓	✓
	Water, soil, and air quality – *[Ed. note: none considers air quality impacts]*	✓	✓	✓
Facility development & operation	Siting of facilities, including impacts to surrounding natural ecosystems and habitats of high conservation value, habitat fragmentation, change in land use and visual impacts	✓	✓	✓
	Constriction activities, infrastructure development, improper building materials	✓	✓	
	Disposal of solid waste, sludge, excess drugs/chemicals, dead/diseased animals	✓	✓	✓
	Oversule of feeds, feed additives, manure, fertilizers	✓	✓	
	Responsible use of therapeutants, hormones, drugs, antibiotics, other chemicals, no use of banned chemicals	✓	✓	✓
	Disease outbreaks that could affect wild populations or other aquaculture operations	✓	✓	✓
	Animal slaughter and further handling of production			✓
	Prevention or reduction of wildlife predation		✓	✓
	Atmospheric emissions and energy use			

Organisms cultured	Ensure there are no escapes or introduction of dangerous or exotic species	✓	✓	✓
	Avoid culturing GMO species & no use of GMO species that compromises biodiversity & aquaculture		✓	✓
	Ensure exotic species are only used when they have low potential ecological risk to natural environment and biodiversity	✓	✓	✓
	Encourage the use of native species	✓	✓	✓
	Avoid escapes or introductions from transfer of eggs, larvae, fingerlings, or adults among river basins or large bodies of water		✓	✓
Water use	Employ water quality and effluent management measures	✓	✓	✓
	Do not exceed the assimilative capacity of receiving waters	✓	✓	✓
	Do not cause salinization of surrounding land or fresh water resources	✓	✓	✓
	Promote efficient water use, such as recirculating systems	✓	✓	
Feed	Reduce use of fish meal and fish oil			✓
	Use sustainable sources of fish meal and oil	✓	✓	✓
	Minimize impacts to natural fish stocks	✓	✓	✓
	Improve ecological efficiency	✓	✓	✓
	Encourage continuing improvement in feed conversion ratio		✓	✓
Seed	Encourage use of sustainable seed sources, including encouraging use of seed from hatcheries	✓	✓	✓
	Ensure that seed from wild stocks is from ‘well managed fisheries’	✓	✓	✓
Environmental/risk assessment	Identify most probable adverse environmental impacts and classify impacts according to risk level, considering:	--	--	--
	Risk assessment and science based information used to define impacts	✓	✓	
	Standard methods are used for assessment and accredited laboratories for analysis		✓	
	Establish procedures prior to constructing facilities	✓		
	Evaluate methods for applicability to local conditions	✓		
	Include provisions for obtaining baseline data and monitoring			✓
	Require sufficient data and information, including traditional knowledge, to identify adverse impacts		✓	✓
	Obtain timely scientific information on likelihood and magnitude of impacts		✓	
Monitoring	Develop plan for monitoring	✓	✓	✓
	Involve farmers in monitoring, with diversity of farmers taken into consideration	✓	✓	
	Focus monitoring on main environmental concerns/impacts	✓	✓	✓
	Require data collection and record-keeping	✓	✓	✓
	Integrate traditional knowledge into monitoring and management		✓	
Spatial, ecosystem, & cumulative aspects	Identify, evaluate, and address:	--	--	--
	Location of impacts, e.g. on-site, off-site	✓	✓	
	Scale of impacts, e.g. farm level, watershed level	✓	✓	✓
	Cumulative impacts, e.g. from components of same operation, from unrelated operations	✓	✓	

	Restoration of previously damaged habitats	✓	✓	
Food safety and quality	**FAO Requirement**	**WWF**	**GAA**	**Wegman's**
Farm site	Locate farms in areas for minimum risk of biological, chemical, or physical contamination with food safety hazards and where pollution sources can be controlled	✓	✓	✓
	Evaluate potential sources of contamination from surroundings	✓	✓	✓
Feed and feed additives	Include procedures for avoiding contamination		✓	✓
	Promote efforts to improve selection and use of appropriate feeds and additives	✓	✓	✓
	Do not use feeds with unsafe levels of pesticides, biological, chemical, and physical contaminants or other adulterated substances	✓	✓	✓
	Use only approved feeds and additives; store and label medicated feeds separately; handle feeds to avoid spoilage		✓	
Growing water quality	Use water that is safe for human consumption			
	Follow WHO guidelines for use of wastewater in aquaculture			
	Do not site farms where there is a risk of water contamination	✓	✓	✓
Source of fry/fingerlings	Source to avoid carryover of potential contaminants into growing stocks, e.g. antibiotics, parasites		✓	✓
Veterinary drugs and chemicals	Use only legal drugs and chemicals	✓	✓	✓
	Carry out treatment only after obtaining accurate diagnosis		✓	
	Only certified persons should prescribe and distribute drugs	✓	✓	
Traceability	Document source of inputs, e.g. feed, fry, fingerling, drugs, additives, chemicals	✓	✓	
	Document the use of inputs	✓	✓	
	Document type, concentration, and withdrawal times of drugs	✓	✓	
	Document hygienic practices and harvesting practices	✓	✓	
Good hygienic practices	Apply good practices in the farm area to minimize contamination of growing water from waste materials or fecal matter from humans or animals		✓	✓
	Institute pest control program to control pests, esp. around storage areas	✓	✓	
	Maintain farm grounds to reduce/eliminate food safety hazards	✓	✓	
	Design and construct nets to ensure minimum physical damage of the animals		✓	✓
	Use equipment and holding facilities that are easy to clean and disinfect regularly	✓	✓	✓
	Quarantine diseased animals when necessary and dispose of dead animals in a sanitary manner	✓	✓	

Animal health and welfare	FAO Requirement	WWF	GAA	Wegman's
On-farm health management	Comply with OIE Aquatic Animal Health Code to prevent introduction of infectious agents and diseases			✓
	Comply with CCRF Technical Guidelines on Health Management for Responsible Movement of Live Aquatic Animals			
	Use preselected stocks of healthy animals	✓	✓	✓
	Maintain a healthy environment at all phases of culture cycle, including preparation of culture environment prior to stocking, maintaining optimal environmental conditions through management of stocking density, aeration, feeding, water exchange, phytoplankton bloom, etc., and employing rigorous quarantining	✓	✓	✓
	Implement health management practices to reduce animal stress	✓		
	Routinely monitor and record animal health	✓	✓	✓
	Implement management strategies to avoid or reduce disease transmission within and between aquaculture facilities and aquatic fauna	✓	✓	✓
	Focus on disease prevention rather than treatment	✓	✓	✓
	Ensure responsible use of veterinary drugs, minimal use of antibiotics, and implement management strategies to avoid/reduce the release of excess drugs and vaccines in the surrounding environment	✓	✓	✓
	Minimize disease transmission between broodstock, hatchery, growout systems	✓	✓	✓
	Treat disease immediately and effectively, with minimal use of chemical/drugs, with no use of antibiotics as a growth promoter	✓	✓	✓
	Use humane slaughtering procedures			✓

NOTE: 'Yes' responses indicate consideration of impact, not presence of a mandatory requirement. GAA responses based on Guidelines for BAP Standards published by the Aquaculture Certification Council. WWF Dialogue responses based on 'implementation guidance' from the International Principles for Responsible Shrimp Farming, published jointly by WWF and other dialogue members, including FAO. Wegman's responses based on the Farmed Shrimp Purchasing Policy.

C. Stakeholders

Once a label's founders have identified the impacts that it will seek to redress, it must identify the stakeholders who are affected by or interested in those impacts.[112] There is thus a direct correlation between impact selection and stakeholder inclusion – determination of which stakeholders must be included in ecolabel development, governance, and implementation is largely determined by the scope of impacts selected. Where an ecolabel credibly excludes consideration of certain categories of impacts, exclusion of stakeholders interested in those impacts may logically follow. For example, MSC does not include social stakeholders because the label does not address social impacts. FSC, by contrast, has explicit provisions, consonant with the broad impacts it addresses, to ensure that social stakeholders are represented throughout its processes.

The broad impacts that a sustainable aquaculture label should address requires consultation with a broad variety of stakeholders. A sustainable aquaculture label must address a broad range of social and environmental impacts that have both local and global effects. As a result, it is vital to include stakeholders from areas where aquaculture occurs. As a result, stakeholders should be included from both developing and developed countries. Developing country representation is not only important for consideration of local impacts, but also because ecolabeling may be perceived as a paternalistic attempt by developed nations to control or limit the development in other areas. Inclusion of developing country parties in ecolabel processes is therefore a necessary hedge to retain the label's credibility with producers – particularly small-scale producers. In addition, it is important to include independent experts, including academics and multilateral organizations, in ecolabel design processes, particularly where objectivity is desired.

Table 7: Aquaculture Interest Groups

Economic	*Environmental*	*Social*	*Independent*
• Large-scale producers • Small-scale producers • Processors • Supply Chain	• Global Environmental NGOs • Local & Issue-specific environmental NGOs • Wild-capture fishery environmental groups	• Community Groups • Workers' Groups • Indigenous Persons' Groups • Consumer Groups • Wild-capture fishery social representatives	• Academics • Experts from Government, Multilaterals

While it is clear that sustainable aquaculture ecolabels must include a variety of economic, environmental, and social stakeholders from both developed and developing regions, the specific identities of these stakeholder groups remain an open question. Existing standard-setting efforts fall short of these requirements. The WWF dialogues, for example, require participation by NGOs, producers, retailers, academia, and government, thus combining social and environmental interests. GAA's stakeholder groups, on the other hand, are not clearly defined, and participation by particular groups in governance, while encouraged, is not absolutely required. Thus, neither system includes the minimum stakeholder groups required to ensure credibility, although they may in fact include those groups in their operations. As a

[112] Of course, as noted above, the determination of impacts is itself affected by stakeholder input.

result, development of new, more inclusive identification of stakeholder groups is required (Table 7: Aquaculture Interest Groups).

Box 4: Government Stakeholders

The stakeholder groups identified in this section do not include representatives from governments as interested parties. Governments undoubtedly play an important role in aquaculture, particularly through the use of subsidies to encourage aquaculture development. In that respect, their input should be valued and considered. However, governments are neither necessary nor desirable as a defined stakeholder group in ecolabel governance and operations. Ecolabels are non-state, market driven structures that are designed to operate independently from government regulation to produce environmental and social benefits by voluntary, market-driven means rather than by prescription. As a result, the inclusion of government representatives as a protected interest group may distort the intentions and credibility of the ecolabel system as a whole, particularly in sustainability labels that explicitly seek performance that exceeds the requirements of national and international law.

D. Stringency

The third substantive component of ecolabel scoping is the determination of the stringency of standards adopted to address the impacts of production. Stringency determinations have direct impacts on the credibility and pragmatic benefits of certification and labeling, and thus on the label's on-the-ground effectiveness.

Determination of stringency may be open to debate, but that debate is often muted and occurs before the ecolabel or its stakeholder groups have been formed.[113] The variety of strategies for effecting change through ecolabeling suggests that development of stakeholder consensus on stringency is extremely difficult. As a result, most labels appear to rely on self-selection of stakeholders who agree with the founders' preexisting strategy.

There are two basic ways to determine stringency. The first and more common method is to rely on technical feasibility to define standards. This method relies on existing production methods, and seeks to ensure that producers will be able to comply with the standards. Such systems generally seek participation by a specified proportion of the industry, with the stringency of their standards inversely related to the expected participation (i.e., the more stringent the standard, the fewer producers are expected to participate). Technical feasibility has a few strengths, most notably broad producer participation and potentially large improvements by elimination of low-hanging fruit. Standards based on feasibility have several downsides, however. First, they can only seek incremental improvement in producer practices because there is no guarantee that the practices mandated by ecolabel standards will correspond to a particular level of social, environmental, or economic performance (Figure 2: Technical

[113] Although stringency of standards affects the credibility of the label on a substantive level, predetermination of desired stringency is unlikely to be a significant detriment to the credibility of the label's institutional structures. Participation in governance activities is important to credibility, but at a threshold level, all participating stakeholders must agree on basic issues – chief among them the purpose of the label. Providing stakeholders with a clear understanding of the label's purpose at the outset may result in the exclusion of some stakeholders who disagree with the ecolabel's intended stringency, but has a contrasting benefit by clearly defining expectations, likely decreasing disagreements between stakeholders who do choose to accept the label's scope.

Feasibility/Sustainability Schematic). In addition, standards based on existing practices cannot provide incentives for innovation in those practices – instead, they bring poorly-performing producers up to a level that is currently used by other producers. Feasibility is also inherently subjective, permitting increases or decreases in stringency as the result of inter-label competition or pressure from certain stakeholder groups. Finally, the credibility of such systems is subject to challenge, as consumers may become aware of the limited benefits that feasibility-based labels can offer.

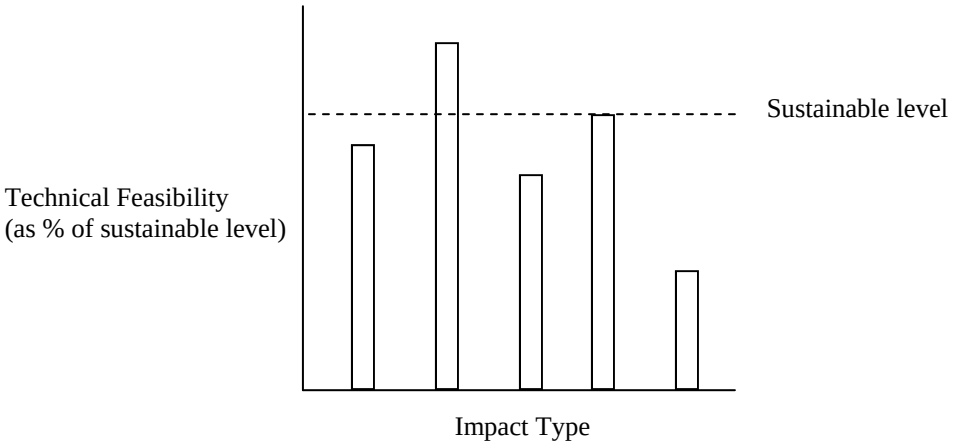

Figure 2: Technical Feasibility/Sustainability Schematic

The weaknesses of labels that base the stringency of their standards on feasibility can be countered by the use of an external benchmark to control the stringency of standards. The most obvious criterion in this context is sustainability, defined by the Brundtland Commission as development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs."[114] As currently understood, sustainability incorporates economic, environmental, and social elements.[115] The use of sustainability to control the stringency of standards ensures that certification is not based merely on *improvement* of production practices, but on a determination that those practices in fact represent a meaningful threshold of economic, environmental, and social performance. These standards may be costly to implement, but the technical difficulties to achieving them are likely to foster innovation. In addition, the use of objective, external standards is likely to shield the standards from dilution as the result of stakeholder or competitive pressures. As a result, certified products are likely to carry a maximal level of credibility, enhancing the consumer premium that labeled products may obtain.

The Gold Standard breaks the current paradigm of using existing production practices to determine stringency, instead explicitly adopting sustainability as its external baseline for stringency. Thus, standards adopted by a Gold Standard compliant ecolabel, by definition, must

[114] United Nations, Report of the World Commission on Environment and Development, General Assembly Resolution 42/187 (1987).
[115] United Nations, Johannesburg Declaration on Sustainable Development: From Our Origins to Our Future (2002) (recognizing the "interdependent and mutually reinforcing pillars of sustainable development — economic development, social development and environmental protection…").

be based on economic, environmental, and social sustainability. The precise definition of these elements may be contested, so it is important to clearly define their meanings in the context of aquaculture labeling. The resultant operating definition of sustainability should be included in the scoping document.

VI. Governance

Existing ecolabels exhibit a broad array of governance structures. These bodies include a general assembly, board of directors, secretariat, dispute resolution body, and other subcommittees and bodies. The structures and responsibilities of these governance bodies are influenced by contextual factors, credibility, and pragmatic considerations. An analysis of existing governance structures permits the development of recommendations for the design of sustainable aquaculture ecolabel governance.

A. General Assembly

Existing ecolabels have one of two fundamental governance forms: those with a membership component and those without. Labels without a membership structure do not use a general assembly, whereas membership-based labels almost uniformly rely on such a structure. Generally, the presence of an assembly increases participation in label governance, thereby enhancing the label's credibility. Assemblies may, however, complicate governance processes, thereby reducing the efficiency of governance. These are generalizations, however, and the credibility and pragmatic characteristics of governance structures may be affected by the makeup and role of the general assembly, as influenced by the characteristics of the ecolabel membership structure.

There are two fundamental types of membership structures. First, ecolabels may open up membership to external organizations. Labels using such a model – namely, FSC – use their membership structure to enhance the credibility of the label by using the assembly as a stakeholder forum. As a result, the label seeks to enhance the number of participating members and the number of viewpoints they espouse. The exception is the general exclusion of third-party certification bodies from membership in the label; third-party certification bodies are primarily intended to be disinterested arbiters of conformance, and allowing them to participate in governance activities as a member would mean they had an interest.

The second type of membership structure relies on preexisting national initiatives, which come together to create an international ecolabeling body. In such systems, which include ISO and the Fairtrade Labeling Organization, the membership generally serves no credibility function. Instead, the membership structure is a legacy of the original independence of the initiatives. These labels allow their members to retain a variable amount of authority over the operation of the system as a whole, ranging from near-total control (e.g., ISO) to limited control over issues of particular national importance such as licensing (e.g, FLO).

Labels whose members are national initiatives may subsequently expand their membership to include external stakeholders. The FLO has recently evolved into a blended system, where the general assembly is composed of the national initiatives and newly-created producer organizations, which represent producers on a continent-wide scale. This system is a clear attempt to increase the credibility of the label by actively including developing country perspectives in governance. Membership in both types of general assembly can thus be tailored to include external stakeholders.

The makeup of the general assembly varies by label (Table 8: General Assembly Structures). Labels where membership is limited to national initiatives have no need to identify or protect the interests of different stakeholder groups, because the national groups are presumed to represent all interest groups. Where the assembly includes members of multiple stakeholder groups, however, the assembly requires some structure to ensure that all relevant groups are adequately represented and that all have an opportunity to be heard in the governance context. The FSC accomplishes this task by assigning members to one of the assembly's three chambers – representing social, environmental, and economic interests. FLO, which uses a blended membership structure, splits its members by type of organization rather than interest group; thus, one chamber is composed of national initiative and producer organizations comprise the other chamber. Each chamber can independently address issues of particular relevance to those groups or come together to decide issues of broader interest.

Table 8: General Assembly Structures

Label	*Assembly?*	*Type*	*Chambers?*	*Responsibilities*
ISO	Yes	National Initiative	No	Board election
ISEAL	No*	--		--
FSC	Yes	External Entities	Yes	Board election, Standard-setting
MSC	No	--		--
FLO	Yes	Blended	Yes	Board election, Standard-setting
RFA/SAN	No*	--		--
GAA	No	--		--
* May use assembly in future as membership expands				

The responsibilities of the general assembly vary by ecolabel. In all cases, the assembly carries out its responsibilities through a meeting (annual or, for the FSC, every three years) and/or by post. All labels use these membership meetings to elect the label's board of directors. In the ISO, the assembly's role is largely limited to this election, but other labels grant the assembly further powers that may include ultimate decision-making power over standards. The FSC, for example, requires assembly consensus to amend the label's foundational principles and criteria.

The Gold Standard calls for the use of a membership structure to increase ecolabel credibility at a minimal cost. By electing board members, the assembly ensures transparency and accountability that may otherwise be lacking. To ensure that its operation is credible and to enable it to act as a core group for soliciting comments on standards and certification decisions, the assembly should be divided into separate chambers based on the respective stakeholder groups. Assembly chamber structure should follow the FSC but should use producer, supply chain, environmental, and social chambers due to their disparate perspectives in the aquaculture context. Explicit protections should be taken to ensure that smaller interest groups such as consumer groups are included in an appropriate chamber and that they are actually represented in the assembly. The assembly's role should be limited to board election and stakeholder communication. Expansion of the assembly's duties to include approval of substantive matters

may require extensive negotiation and cost to achieve consensus (as in the FSC system), while providing little credibility benefit.

B. Board of Directors and Subcommittees

All ecolabels rely on a board of directors to make governance decisions.[116] The board of directors – regardless of whether it must answer to an assembly – is responsible for the operation of the ecolabel, making strategic and financial decisions as well as, in many cases, providing ultimate judgments on whether to adopt new standards and on the resolution of grievances. The broad jurisdiction of these boards requires close consideration of the ways in which boards can be created and empowered.

1. Structure

Ecolabel boards are generally elected bodies with members – whose identities may be limited – who are elected to staggered three-year terms. Each of these variables – election process, board member identity, and term – differ among ecolabels.

First, it is important to note also that not all board members need be elected – in some cases, they are automatically appointed to the board based on defined characteristics. For example, the ISO board appoints its most active members to the board, and the MSC appoints the co-chairs of its Stakeholder Committee and the chair of its Technical Advisory Board. However, even ISO elects the majority of its board members. The process for electing members to the board is correlated with the membership structure used by the label. In ecolabels that use membership structures, the members generally directly elect all or part of the board. Thus, the FSC assembly elects each member of the FSC board, giving the assembly ultimate authority over board makeup. This system generally encourages credibility, as the opinions of a stakeholder community are naturally considered in the board's development. On the other hand, where membership is not the foundation of the organization, the board itself generally controls the election of its members. In the MSC, for example, the board selects most of its members internally. Internal selection of board members may require credibility protections to ensure that stakeholder input is considered by the board. For example, the ISEAL Code requires balanced stakeholder representation on the governing bodies of its members. The Gold Standard calls for the use of the general assembly to elect the board.

Ecolabels that elect board members through stakeholder processes must determine to what degree stakeholders should also be integrated into the board's actual operation. Ecolabels must balance the benefits of stakeholder participation on the board against the salutary influence of independent board members. Assuming that it is balanced, direct stakeholder participation in governance benefits credibility by ensuring that minority voices are directly considered in all facets of the board's operation, rather than being diluted by elective processes. On the other hand, the appointment or election of independent board members may strengthen governance by

[116] The board of directors may be referred to as a board of trustees, but the functions of the board are largely indistinguishable regardless of designation.

protecting against conflicts of interest – thereby increasing transparency and accountability.[117] In addition to protecting credibility, independent board members may be useful for increasing the pragmatic benefits of labeling. Ecolabels may use high-profile or celebrity board members, who can participate actively in fund-raising and can increase recognition of the label and of the implications of unsustainable production in general.[118]

Ecolabels combine the use of stakeholder representatives and independent board members in widely different ways (Table 9: Board Election Methodology). FSC and several other labels exclude independent board members entirely, in favor of full stakeholder membership on the board. MSC's board represents the other endpoint on the continuum, as it includes predominantly independent members, with nominal representation by selected interest group representatives.

None of the ecolabels studied in this report have integrated both independent members and stakeholder participation – a result that obtains the benefits that are offered by both types of board members. The use of such a system is recommended in this Gold Standard through the use of a single member from each membership chamber (social, producer, retailer, and environmental), four independent members, and the label's CEO, who represents the interests of the label as an organization. This split board equalizes the voting power of each individual stakeholder group and of independent members with the stakeholders taken as a whole.

The size of the board is an important consideration. The board must be large enough to allow for the presentation and consideration of differing viewpoints but small enough to make consensus achievable without unduly prolonging the decision-making process. The Gold Standard recommends the adoption of a nine-member board, which both meets these constraints and should operate efficiently.

[117] In the corporate context, independent board members are likely to avoid conflicts of interest and increase transparency and accountability, thereby protecting shareholders. The interest in protecting shareholders is lacking in the ecolabeling context, but stakeholder interests are somewhat analogous to shareholders in that their confidence in the label is important for the label's credibility. The inclusion of multiple stakeholder groups on the board may provide a check against conflicts of interest because stakeholder representatives are unlikely to agree on some issues. Nonetheless, the use of independent board members provides a useful safeguard.

[118] Bono, the lead singer of Irish rock group U2 is perhaps the most obvious example of this phenomenon; he has worked to increase public awareness of and governmental support for AIDS prevention, debt relief, and other issues affecting Africa. As part of this work, he is active in a number of organizations, including membership on the board of directors of DATA, an advocacy organization seeking to "eradicate extreme poverty and AIDS in Africa." DATA, *Our Mission, at* http://www.data.org/about/mission.html (2007).

Table 9: Board Election Methodology

Label	*Election Methodology*	*Stakeholder/External Members*
ISO	Some appointed, remainder elected by assembly	Stakeholders only
ISEAL	All members by default*	Stakeholders only
FSC	Elected by assembly	Stakeholders only
MSC	Selected internally, plus stakeholder and technical committee chairs by appointment	Two stakeholder representatives, one technical representative, remainder independent
FLO	Elected by assembly	Eleven stakeholder representatives; two independent
SAN	All members by default*	Stakeholders only
GAA	Selected internally	Stakeholders only
	* elective processes may be instituted as membership grows	

The ecolabels in this study stagger the terms of their board members. In staggered systems, one-third of the board is generally elected each year, leaving two-thirds of the board unchanged. Recent academic work on the influence of staggered boards on shareholder rights in the corporate context suggests that they reduce shareholder power to replace the board and may be correlated with decreased firm valuation in the market. The use of staggered boards may thus contribute to a *de facto* elimination of shareholder franchise.[119] The application of these insights to the ecolabeling context requires further study, but suggests that the use of staggered boards by ecolabels could undermine the efficacy of stakeholder participation in ecolabel governance despite membership structures that appear highly participatory. If so, the benefits of participation in those labels would be rendered largely illusory and the credibility of the labels could suffer.

Differences between the role of stakeholders and shareholders suggest that elimination of staggered boards is premature. As a result, the Gold Standard recommends limiting the overlap of board member terms of service. A two-year election cycle, with half of the board up for election in any given year, may be sufficient to avoid entrenchment while retaining continuity of expertise among board members. A three-term limit is likely to provide an adequate balance of continuity and board turnover to ensure credibilty.

Regardless of the structure of the board, the members must use a methodology to reach decisions.[120] Despite the variability among ecolabels in many respects, they all rely on consensus for operation.[121] The definition of consensus differs to some degree between labels, however (Table 10: Requirements for Consensus). The ISO defines consensus not to require unanimity, but rather to imply the absence of sustained opposition. Labels have implemented

[119] *See, e.g.* Lucian A. Bebchuk & Alma Cohen, *The Costs of Entrenched Boards*, 78 J. FIN. ECON. 409 (2005) (noting correlation between firms with staggered boards and reduced shareholder value); Lucian A. Bebchuk, *The Myth of the Shareholder Franchise*, 93 VA. L. REV. 675 (2007) (noting correlation between staggered boards and incidence of shareholder challenges); *but see, e.g.* Martin Lipton and William Savitt, *The Many Myths of Lucian Bebchuk*, 93 VA. L. REV. 733 (2007).

[120] This methodology is generally spelled out in the organizational bylaws.

[121] This is partially a result of the ISEAL Code, which requires its members to use consensus. This process, however, is also common in other contexts.

this definition to allow for action by vote in the face of disputes. Different labels require different percentages for vote-based approval, ranging from eighty percent approval to a simple majority. The ISO definition has been adopted by the several ecolabels, and requires a two-thirds supermajority. The Gold Standard calls for adoption of this existing international standard, which would require affirmative votes by six members of a nine-member board.

Table 10: Requirements for Consensus

Label	*Percentage Required for Approval*
ISO	No sustained opposition, 66% approval
ISEAL	No specific requirement
FSC	66% approval, simple majority of each membership chamber
MSC	75% of TAB, no negative votes
FLO	No sustained opposition, 66% approval
SAN	No sustained opposition, 66% approval
GAA	66% participation, 80% participant approval, statement of reasons for negative votes

The labels may include other requirements for voting as well. For example, the GAA requires its members to justify negative votes in writing. Such requirements may provide a needed stimulus to clarify the roots of a dispute – and thus may enhance transparency and aid in the resolution of issues without the need to resort to a vote – but they may also provide a disincentive to negative votes, creating the appearance of unanimity despite the existence of continued disagreement.

2. Responsibilities and Subcommittees

Boards of directors are generally responsible for the strategic and financial direction of organizations. These duties are supplemented by more specific governance responsibilities, which may be delegated to subsidiary committees or other bodies or retained by the full board. These governance duties differ from label to label, but usually include a role in standard-setting and dispute resolution, either directly or through a committee structure. The board is thus the ultimate repository of decision-making power over a broad spectrum of issues in many ecolabels. We recommend that the elected board of a sustainable aquaculture label be designed to endow the board with governance powers that include making final decisions on standards and approving the membership of its subcommittees, including a standards committee, an independent technical committee and dispute resolution panel, and oversight of the secretariat in addition to strategic and technical roles. These duties retain authority at the board level over actions of independent committees, while allowing those committees to operate with minimal conflicts of interest. It removes many significant elements of responsibility for specific matters from the board's purview, however, leaving the board to consider matters of general concern – an appropriate focus for a general body.

This use of subcommittees is generally accepted in ecolabeling, especially in the standard-setting context. Unless the assembly is responsible for approval of standards,[122] the board of directors generally holds ultimate authority over approval of new and revised standards. For example, the MSC board must approve standards before they may be implemented by certification bodies. Boards usually – although not always – use a standards committee to draft and negotiate standards for their approval. These subcommittees generally work independently from the general board. For example, the ISO board establishes technical committees that create standards, and the board's power over standards drafting is limited to creation and abandonment of technical committees.[123] Similarly, the FSC board accredits both national initiatives and the national standards they develop.

The creation of subcommittees to develop standards is beneficial because it allows knowledgeable parties to develop standards rather than requiring the board itself to negotiate technical matters. This use of knowledgeable experts, however, requires that committees be balanced by stakeholder group to avoid losses of credibility or consensus. Their membership should thus be constrained by interest group and approved by the board to ensure adequate levels of participation and accountability. In addition, the standards committee's work should be supported procedurally by the secretariat. In addition, we recommend that the discretion of the standards committee be constrained by the operation of an independent technical committee that will determine the sustainability benchmarks for the standards.

3. Objections Panel

Boards and subcommittees are also often responsible for dispute resolution.[124] Both standard-setting and certification may lead to disputes, and each process may lead to procedural or substantive grievances. In credible labels, all types of grievances are eligible for hearings, and any interested party may challenge any decision.

Disputes over standard-setting decisions are generally first evaluated by the standards committee or secretariat. The secretariat is the superior to a board subcommittee because it is not directly composed of stakeholders. Initial decisions are usually appealable to either the board or a special panel or subcommittee.

Certification disputes are generally presented to the certification body in the first instance. The certification body decision may be appealed in some cases, although appeal may be limited to avoid undermining the independence of the certification process. As a result, certification bodies may have internal appeal mechanisms, or the ecolabel may allow appeals to a special board subcommittee or independent panel. These appellate bodies may have limited

[122] Where assemblies have authority over revisions to standards, that power is usually limited to the fundamental principles – not more specific standards that implement those principles. Thus, the FSC assembly alone may alter the ten FSC principles, but the FSC board approves national standards without resort to the assembly. The exception is the ISO, in which approval by the full membership is required to approve all standards. This power is unsurprising given the generally large powers retained by ISO's national initiative members.

[123] The ISO membership as a whole is responsible for ultimate approval of standards.

[124] Most labels have an explicit dispute resolution policy for substantive and procedural grievances related to standard-setting and certification. Such policies are mandatory for ISEAL membership and should be created prior to implementation of any label.

jurisdiction or high standards of review. For example, appeals from MSC certification decisions are heard by an independent objections panel, which can overturn the panel decision only where the decision was "arbitrary or unreasonable."[125]

Dispute resolution systems that use independent dispute resolution bodies are more credible than those that allow appeal directly to the board, to a subcommittee that includes stakeholders, or to a certification body. Independent panels avoid conflicts of interest that otherwise arise where the board is responsible both for standard-setting and dispute resolution and where the board may overturn the decision of a putatively independent certification body. The independence of the dispute resolution body enhances transparency and accountability, increasing the label's credibility while not unduly restricting the efficiency of the label. To the contrary, creation of a specialized dispute resolution body could enhance the label's efficiency by focusing the board on issues for which it is more suited. On the other hand, the creation of independent bodies could permit inconsistencies in standard-setting and certification decisions. This concern is mitigated by the use of a standing (as opposed to an *ad hoc*) dispute resolution panel. As a result, the Gold Standard recommends the creation of a standing, independent objections panel with responsibility for appeals from standard-setting and certification decisions. The panel's membership should not include stakeholders, but the board should approve its membership to provide some stakeholder oversight. In addition, objections panel members should be appointed for a three year term to avoid intimations of excessive board interference in the panel's operation.

4. Technical Advisory Board

Technical committees are used not to ensure participation, but to ensure that standards are objectively appropriate to the scope of the label and that they are appropriately structured so that implementation is feasible. The use of technical committees is rare except where scientific determinations are necessary to decisions and are contested. Thus, the MSC Technical Advisory Board (TAB) assists the board by rendering objective determinations on methodologies, scientific questions, and other matters, and the board must provide reasons for decisions that vary from the TAB's determination. The Gold Standard recommends the use of an independent, standing technical advisory board built on the MSC model. Like in the MSC, the committee should be composed of uninterested experts drawn from academia.

The TAB has an especially important role in aquaculture ecolabels, especially those focused on sustainability. As a result, its role should be greater than in the MSC system. The use of sustainability as an external baseline requires an objective body to develop recommendations on what constitutes a sustainable level of social and environmental performance. The use of consensus inherently results in the dilution of sustainability determinations, so the TAB must be binding on the board rather than advisory. As a result, the objectivity of the TAB must be beyond reproach. To achieve this, the TAB should be comprised of independent experts that are not members of any interest group – although they should be appointed by the board in the same manner as the objections panel. The TAB will necessarily

[125] *See* MSC, *Report of an Independent Objections Panel into the Further Objections Against Proposed Certification of the New Zealand Hoki Fishery Filed by (1) WWF New Zealand and (2) Royal Forest and Bird Protection Society of New Zealand* (2007) (reviewing certification decision by independent certification body).

differ from the objections panel, however, because the expertise required to determine sustainability differs for each type of impact. As a result, the TAB must be authorized to create subcommittees to establish criteria for specific subjects – the ISO technical committee model may serve as a useful analogue for this purpose with respect to both structure and function of the TAB subcommittee system.

The TAB's primary role, as noted above, is to create objective measures of sustainability for each impact within the ecolabel's scope (including all impacts considered in the FAO draft guidelines and additional impacts focused on, e.g., transport and processing). The TAB's discretion to create these measures must be limited by specific terms of reference, defining sustainability (in compliance with existing international treaty language) and providing guidelines for its application. For some impacts, determination of sustainability may be simple – sustainable aquaculture feeds, for example, cannot be drawn from overfished stocks and still be sustainable; sustainability indicators can therefore use existing wild-capture fisheries models to determine thresholds for certification of feeds. Other determinations are likely to be less constrained due to disputes over both concepts and sustainable levels. Social factors in particular may be difficult to define. The TAB or the relevant subcommittee is the entity best suited to determine how to address uncertainties during the determination of sustainability baselines. Where quantifiable or other objective measures of sustainability are impossible to determine, the TAB should reach consensus on requirements based on the best available information. The process of identifying areas of conceptual weakness, the TAB may play an important role in applying the evolving and inter-related concepts of sustainability in the aquaculture context.

Table 11: Independent Board Committee Characteristics

Committee	*Why used*
Standard-setting	Provides specialized forum for drafting of standards prior to board approval
Dispute Resolution	Provides accountability for appeals from standard-setting and certification decisions by board, secretariat, or certification bodies
Stakeholder	Provides participation where there is no assembly or majority representation on board
Technical	Provides objective input on the content and structure of standards to increase transparency.

C. Secretariat

The responsibility for day-to-day operation of ecolabels is left to the board's secretariat or permanent executive staff.[126] The secretariat is generally led by a chief executive who directs each of the secretariat's subunits. The secretariat generally includes units for standard-setting, producer support, and business development. The secretariat or its subunits should be active in

[126] Different labels use different terminology to refer to their executive structures. This report uses both terms, but in most instances refers to the "executive staff" to avoid confusion with respect to the SAN, which uses "secretariat" to refer to the RFA, which is a member body that nonetheless plays the role of an executive staff in the SAN system. The SAN situation is a unique result of SAN's history that is likely irrelevant to an aquaculture labels and is not considered fully here.

all of the major producer regions and all major markets, but its executive management functions work most efficiently when they are consolidated.

Generally, the standards unit guides the standards development process. First, the unit monitors other standard-setting bodies – including the TAB and the board's standards subcommittee – to ensure that they follow the label's established procedures. In addition, the standards unit takes an active role in those procedures by soliciting stakeholder input and adjudicating disputes. In some but not all labels, standard-setting procedures require the standards unit to draft new standards and determine whether existing standards require revision. These responsibilities give the secretariat significant influence over the content of standards, as the initial language may persist throughout the negotiation process. Given that the secretariat is not a participatory body, this expansion of its role may expose the standard-setting process to credibility challenges. As a result, this Gold Standard recommends limiting the standards unit's role to oversight and management of the standard-setting process.

The Gold Standard also seeks to use the insulation of the standards unit from the content of standards to allow evaluation of the efficacy of standards in creating environmental and social impacts. In particular, it requires the standards unit to collaborate with the producer support unit to evaluate how indicators are applied by the certification body and to measure indicator performance. The standards unit would use information on on-the-ground performance to determine whether the impacts produced by each indicator are sufficient and to suggest changes – in procedure or substance – that could make indicators more effective. The performance information and analysis should be transparently reported on an annual basis and should inform both TAB determinations and certification body oversight through an evolutionary process of review and amendment.

The secretariat's producer unit provides support for producers seeking to become certified. The FLO's producer unit is particularly well developed and may serve as a model in the aquaculture context. The producer unit has two responsibilities: it consults with producers to assist them in attaining compliance with certification standards, and it collaborates with the standards unit to evaluate certified facilities through information-gathering related to on-the-ground performance. To carry out its duties related to performance evaluation, the producer unit should carry out periodic inspections of certified facilities to determine whether the certification body decisions are consistent and correct under the secretariat's understanding of each indicator. This process allows the standards unit to rely on certification body data and may provide insight into areas where increased clarity could be beneficial.

Several labels lack a producer support unit, relying instead on certification bodies or other outside consultants to assist producers. The provision of both consultation and certification services by external bodies – particularly certification bodies – raises conflicts of interest. As a result, the Gold Standard calls for separation of consultation and certification roles through the adoption of a producer unit to carry out all consultation. This system allows overlap of standard-setting and consultation services within the secretariat, a potential, though minor, source of conflict of interest. As a result, the producer unit should be shielded from the standards unit through internal controls, and its operations should be fully transparent.

The secretariat's business unit is responsible for increasing sales of labeled goods by working with retailers, processors, and other participants in the supply chain to ensure that certified products reach the market through traceable, credible systems. This marketing service is essential to the pragmatic elements of ecolabel success, but has few impacts on credibility so long as the demands of marketing do not influence certification or standard-setting decisions. This situation could arise, for example, if the business unit obtains a commitment by a retailer to purchase exclusively certified products, but insufficient labeled goods are available to meet the retailer's needs. Without internal controls, the business unit could advocate for reductions in the stringency of standards or for increases in certification under existing standards. The use of an independent certification body is likely to provide an adequate control for the latter situation, but specific controls are needed to ensure that the label's standard-setting operations are isolated from the secretariat's producer and business units.

The Gold Standard recommends that the consulting (producer unit) and financial (business unit) operations of the label should be physically isolated from the standards unit, but this may not be feasible. Failing separation, each unit's personnel should be reviewed periodically for conflicts of interest through measures similar to those used by the Rainforest Alliance. The results should be publicly available. Employees should also be barred from working both on standard-setting and consulting or marketing, with the exception of collaboration for evaluation of performance.

D. National Initiatives

Three of the ecolabels in this study rely on national or regional initiatives to assist in standards development, implementation, or other purposes. In two cases – FLO and ISO – these preexisting national initiatives form the membership structure for the label. Thus, the initiatives play a direct role in governance through participation in the assembly. In addition to their direct governance role, the ISO initiatives comprise the board and technical committees, set standards, and control dispute resolution. In this system, the national initiatives control all aspects of ISO's activities. In the FLO, initiatives play a much more limited substantive role, focusing solely on the licensing of certified products. The paucity of existing national or regional aquaculture labeling suggests that the use of an ISO- or FLO-like national initiative structure is unnecessary and unlikely for sustainable aquaculture ecolabeling.

Only one label has created national initiatives in the absence of preexisting national labels. The FSC created national and regional initiatives in order to address local variation, tailoring its standards to local laws, products, and practices. As a result, the role of FSC's initiatives is limited to the development of indicators to be used in certification at the national or regional level. These initiatives and the indicators they create are both subject to accreditation by FSC's international body. Nonetheless, FSC has been criticized for inconsistent application of its standards in different countries and regions, due in part to differing interpretations of the standard by national initiatives, but more fundamentally to poor results where no initiative has been created. The use of national initiatives by the FSC has thus led to mixed results, and at a minimum has created challenges in implementation. As a result, the Gold Standard recommends avoiding the creation of these bodies, instead addressing local variation through the use of other processes.

E. Accreditation and Certification Bodies

Accreditation and certification bodies are the final governance structures common to all ecolabels. All studied ecolabels use some form of third-party certification, which requires certification by an independent body. Ecolabels use one of two fundamental implementation methodologies: "open" certification by any certification body or "closed" certification, which allows only a single, designated certification body to carry out certifcations. The open system requires each certification body to be accredited before engaging in certification activity. Accreditation may be left to external bodies, but some labels, such as FSC, use designated external accreditation bodies. This structure maximizes the independence of the certification process, enhancing the credibility of the system. On the other hand, different certification bodies may be inconsistent in their application of the label's standards. The potential incentives for certification bodies to certify borderline producers may also be problematic for credibility and must be offset by strong accreditation systems.

Where ecolabels use a single certification body, accreditation may not be required, as the ecolabel inherently endorses its selected body. FLO, for example, created FLO-Cert to serve as its certification body. FLO-Cert is legally and financially independent from FLO, but its role is limited solely to certifying producers and traders to the FLO standards. Although this arrangement complies with international standards, certification bodies like FLO-Cert are less independent than unaffiliated certification bodies, even when legally and financially independent from their parent ecolabel. This decreased independence can give rise to credibility concerns, but those concerns may be mitigated by increases in the consistency of certification decisions and lower certification costs. The use of a single certification body also has pragmatic benefits due to the elimination of accreditation systems, simplification of certification systems, and potential general increases in efficiency.

As noted, a dedicated certification body requires institutional protections to avoid credibility loss. Clarification of the legal and financial relationship between the ecolabel and its certification and accreditation structures is particularly important. The single-party certification body should be legally, financially, and operationally independent from its parent, ideally through both physical separation and monitoring of potential conflicts of interest. Additionally, while accreditation is not required, the ecolabel should have provisions for auditing the performance of its certification body, including allowing appeals from certification body decisions to the independent dispute resolution panel.

This report concludes that the institutional simplicity of the single-party certification body system is appropriate to the development of a sustainable aquaculture label. Simply put, the demands of instituting a label with a sustainable scope require minimization of the other costs of label operation, and a well-designed and operated single-party body should be able to operate more cheaply than could an open system, given the need for accreditation systems. In addition, the loss of credibility as the result of single-party operation is likely to be minimal, as FLO and RFA do not appear to have suffered from this issue, perhaps as a result of institutional safeguards and consistent operation. This possibility is supported by the struggles that MSC and FSC have had with the credibility of their certification programs.

We note, however, that the large number of production facilities and demand for aquaculture certification may demand the eventual adoption of a free-market certification model. The ability of the GAA to use a single certification body (the ACC) suggests that this outcome is unlikely during a new ecolabel's formative years. Should adoption of the free-market paradigm ultimately be required, the label's credibility will not be affected as long as certification decisions remain consistent. The preexisting single-party certification body may be useful in supporting certification if converted to an accreditation role rather than continuing to participate in the certification services market. Recent recognition of the limited credibility of accreditation decisions suggests that, if an accreditation body is used, that it be carefully monitored.

VII. Standards

The creation of credible standards – including principles, criteria, and indicators – is one of the central functions of any ecolabel. The standard development process affects the credibility and pragmatic characteristics of the resultant standards and is therefore an important and underappreciated aspect of institutional design. Existing ecolabels use an array of procedures to develop different types of standards. In many cases, variations among ecolabel procedures arise naturally from differences in governance institutions, but other differences are the result of conscious differences in the valuation of credibility and pragmatic benefits.

A. Types of Standards

Implementation of ecolabeling systems is impossible without a well-developed, efficient system for applying general principles to specific production processes or regions. As a result, existing ecolabels create tiered systems of progressively-specific standards to elaborate their fundamental principles. Thus, ecolabels must apply their standard-setting procedures to several distinct types of standards.

1. General standards

Principles serve as the foundation of the standards hierarchy. Principles establish the ecolabel's fundamental ideals and are international in scope and substantively vague by necessity. Ecolabels generally adopt principles as part of a set of "principles and criteria" or through "international standards."[127] In broad strokes, these systems are similar, but each label's standards differ significantly upon closer inspection.

FSC and MSC both use variations of the principles and criteria system (Fig. 3). In both the MSC and FSC, the principles delineate the ultimate standard by which applicants are judged but do not provide sufficient detail to permit implementation. As a result, both the FSC and MSC associate each principle with several criteria that provide more detail on the principle's requirements. Principles and criteria are thus tiered by specificity.

The MSC has established three fundamental principles to judge fishery sustainability. These principles are broad: 1) the fishery cannot deplete the population of target species; 2) it must permit the maintenance of ecosystem function; and 3) it must be subject to an effective management plan that complies with applicable laws. The MSC principles are thus extremely broad and rely on explanatory text and more specific criteria to limit the impacts to be addressed by the label. For example, MSC's first principle (avoidance of overfishing) is elaborated through three criteria, one of which requires "[f]ishing [to be] conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity."[128]

[127] These general standards may include some elements of the scoping document discussed previously, but also often include more general substantive information.
[128] MSC, MSC PRINCIPLES AND CRITERIA 3 (2002)

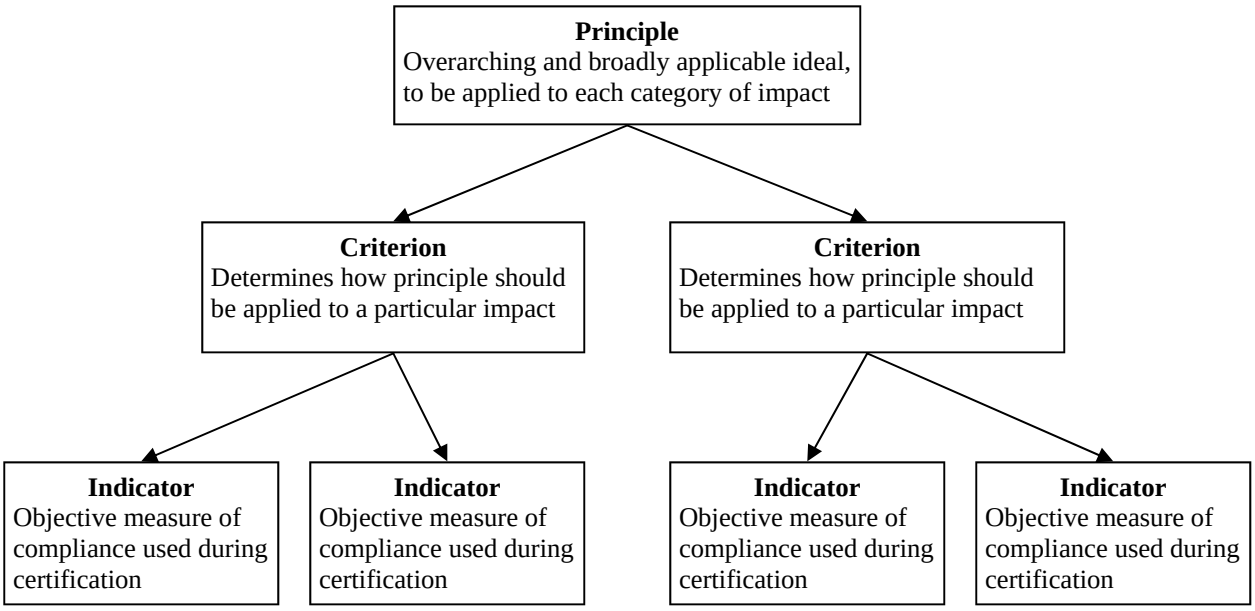

Figure 3: Principle-Criteria-Indicator Hierarchy

The FSC has developed ten principles for sustainable forestry that specifically address a number of social and environmental impacts of forestry (Table 12: Typology of FSC principles), providing a higher level of specificity within the principles as written. These principles, however, serve several distinct roles including identification of a variety of specific impacts and identification of required management practices. While its components are similar to elements of the MSC principles and criteria, the FSC's foundational standard is more complex. This complexity offers strengths and weaknesses. Together, the FSC principles and criteria are the foundational standards for the FSC system. As a result, they are difficult and controversial to alter. The inclusion of a broad array of impacts and management goals in the principles may thus protect FSC against dilution of its standards as the result of industry pressures. On the other hand, the principles appear unnecessarily complex and confusing in comparison to the succinct and clear MSC example.

Not all ecolabels follow the principles and criteria system. FLO, RFA, and GAA use a simpler system that uses a single international standard to govern certification. These international standards do not impose an explicit tiered structure, but rather include an appropriate level of specificity for each element of the standard, with commensurate advantages in simplicity. In addition to this difference in form, international standards differ from principles and criteria because they need not be the ecolabel's formal scoping document. As a result, needed amendments are possible without affecting the ecolabel's scope, thus decreasing controversy and lowering the credibility protections associated with amendments to the standard. Due to these advantages and additional benefits discussed below, the Gold Standard recommends development of an international standard rather than principles and criteria.[129]

[129] The international standard should not be integrated with the label's previously-discussed scoping document. Integration of scoping and standard-setting is one way to ensure the enforceability of scoping decisions, but the costs of that integration in terms of ossification of the standard outweigh the benefits of the combination. While scoping

Table 12: Typology of FSC principles

Principle[130]	*Type*
Compliance with laws and FSC principles	Management
Tenure and use rights and responsibilities	Impact
Indigenous peoples' rights	Impact
Community relations and worker's rights	Impact
Benefits from the forest	Impact
Environmental impact	Impact
Management plan	Management
Monitoring and assessment	Management
Maintenance of high conservation value forests	Impact
Plantations	Impact

2. Specific Standards: Criteria and Indicators

While providing some detail about the requirements for achieving compliance, general standards – even those using criteria – generally lack the specificity required for certification of particular producers. Thus, ecolabels must develop specific standards or "indicators" to allow implementation. Different labels create specific standards in different ways as the result of variables including institutional preference and the product being certified. Both the FSC and MSC use special procedures and entities to develop indicators, resulting in heightened institutional complexity. FLO and RFA, by contrast, use the same procedures to develop crop-specific standards and international standards. This centralized system increases the efficiency and consistency of their standard-setting procedures and of the resultant content.

By necessity, the MSC certifies fisheries, not individual vessels. Fishery conditions vary by species, region, intensity and means of fishing effort, and other variables. As a result, different indicators are needed for certification of each fishery. MSC resolved this difficulty by allowing certification bodies to develop indicators for each individual fishery.[131] Thus, for "[f]ishing [to be] conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity," the New Zealand hoki certification body established three indicators, each of which was associated with a particular score. These indicators require the age/sex/genetic structure of the fishery to be monitored, require fishery managers to consider it in stock assessment and management planning, and ask whether monitoring has produced evidence that the age/sex/genetic structure of the fishery has changed more than normal for exploited populations.[132] The reliance on independent bodies to create indicators reduces the credibility of the label as the result of decreased participation, transparency, and accountability. It may also lead to inconsistent application of the principles

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decisions should be enforceable, it is possible to ensure enforceability by reference in the ecolabel's dispute resolution guidance.

[130] FSC, FSC PRINCIPLES AND CRITERIA FOR FOREST STEWARDSHIP (2004).

[131] The use of certification bodies to both establish standards and evaluate fisheries raises both conflict of interest/credibility and consistency concerns. These concerns are considered in Chapter VIII.

[132] MSC, *Performance Indicators and Scoring Guideline Document used for the Re-Assessment of the New Zealand Hoki fishery, Revised version November 2005 incl. semantic changes only due to invisible parts in previous version* (2005).

and criteria. As a result, the TAB – and not certification bodies – should create indicators in the sustainable aquaculture label.

The lesser complexity of forestry certification allows the FSC to follow a different model. In comparison to fisheries, forest certification faces relatively few data management hurdles and allows simpler measurement of sustainability metrics. As a result, the main variables affecting forest management are ecological differences between forest species and differences between local laws. The FSC accounts for these variables by creating national and regional initiatives that are tasked with developing indicators that apply the FSC principles and criteria to particular nations or regions, as appropriate. Unfortunately, the complex process for creation of national initiatives, the varying competency of those initiatives, the lack of consistency between national standards, and the absence of standards in some countries and regions have handicapped the operation of this system, leading to losses of both credibility and pragmatic benefits. As a result, national initiatives should not be used for standard-setting in aquaculture, even if they are used for governance purposes.

Table 13: Types of Standards

Label	*General standard type*	*Responsibility for creation of specific standards*
ISO	International only	Certification bodies (audit)
ISEAL	International only	--
FSC	Principles, criteria, indicators	National initiatives
MSC	Principles, criteria, indicators	Certification bodies
FLO	International, crop-specific, price	Central body
RFA/SAN	International, crop-specific	Central body
GAA	International, product-specific, indicators	Certification body

FLO and other standard-setting entities, including the GAA and Aquaculture Dialogues, supplement their international standards through specific standards that are developed by the ecolabel rather than by a national body or certification body. Development of these crop-specific standards is a prerequisite to certification of new products – thus, banana producers cannot be certified unless FLO has developed a banana production standard. FLO thus controls the growth of its labeling operations and applies the same single standard to all producers, regardless of local laws or social conditions. The FLO model is likely to operate well where production methods and impacts are similar across regions but where different products have disparate impacts.

The WWF aquaculture dialogues have followed a similar structure to develop species-specific standards. The dialogues will eventually result in separate standards for ten species, without any international standard (*e.g.*, shrimp, salmon, pangasius, shellfish).[133] The disparate production methods between species make this approach promising for aquaculture application, although the lack of a central, international standard could result in standards with a large degree

[133] It is interesting to note that the WWF aquaculture dialogues are proceeding independently – they do not operate under the guidance of a general standard, and may suffer from inconsistencies as a result.

of variance between species. Inconsistency would inherently and unnecessarily decrease the credibility of the ecolabel. In addition, the development of an international standard is appropriate in the aquaculture context due to the similar classes of impacts caused by all types of aquaculture development. As a result, the Gold Standard recommends the centralized creation of both specific standards for different species and production methods and a central, international standard.

3. Special Standards: Price and Traceability

Production is only one element of a functioning certification standard. Ecolabels must also develop standards to ensure that certified products – and only certified products – are labeled when they reach retail. These traceability and pricing standards are important components for all labels. For example, FLO has created price standards that traders must follow when purchasing fair trade goods, and FSC has established separate chain-of-custody standards for certification of traders. These systems increase the costs of bringing labeled goods to market but also offer pragmatic benefits by ensuring that the price paid by retailers is accurate. In addition, strong traceability mechanisms offer credibility protections by ensuring transparency along the supply chain. The development of traceability standards is a necessary element of sustainable aquaculture certification. Existing systems have established effective systems for addressing traceability, and an aquaculture label can follow their example.

4. Guidance Documents

Standards are not the only control on the certification process. Even where the central body develops indicators to guide standard-setting, certification bodies may interpret the text of the standards differently. The importance of consistent, transparent implementation requires ecolabels to actively identify and address areas of inconsistency or ambiguity. As previously discussed, accountability and review mechanisms and the acceptance of public comments on an ongoing basis provide the mechanisms for identification of such ambiguities. The means for addressing these issues vary between ecolabels.

Some ecolabels may respond to ambiguity by initiating revision of standards. The onerous, slow, and costly nature of revision processes may militate against ongoing revisions to standards. In addition, in some cases the issue may not be sufficiently clear to permit consensus on how the standard should be changed or clarified. In such conditions, several ecolabels provide for the development of interpretive documents. This guidance is relatively informal, and thus may take a variety of forms. The FSC, for example, has established policy types ranging from official "guidance documents" to "discussion papers," and the ISO designates policies variously as "technical specifications," "publicly available specifications," and "technical reports." As might be expected, the different policy types reflect different degrees of formality and, thereby, different amounts of institutional investment in time and expense. Often, a less formal policy – such as a discussion paper or technical report – may be developed to clarify issues that may warrant further attention in the future but which are unclear, contested, or otherwise in need of further study. More formal policies may be developed based on the findings in prior published policy documents or in response to conditions that plainly warrant rapid action to clarify the ecolabel's position.

Policies have several advantages when compared to standards, chief among which are the relatively minimal costs and time commitments required to develop them. The informality of many policy documents allows ecolabels to streamline the development process, avoiding some credibility protections that characterize the development of official standards. This streamlining is appropriate for policies, which generally establish the ecolabel's stance on ambiguous issues rather than actually altering standards or imposing new or additional demands on certification bodies or producers. Generally – and appropriately – more formal policy types require ecolabels to follow more onerous procedures to ensure credibility. Thus, the ISO technical reports, which are purely informational, require only the consensus of a working group and acceptance by the technical committee after informal consultation. Technical specifications, however, are normative documents designed as "prospective standards for provisional application," and as such require the responsible working group and committee to follow full standard-setting procedures through circulation and comment – thus avoiding only a few of the steps that are required to develop an international standard. The precise degree of rigor required to develop different types of standards may be debated; in some cases, particularly those with normative consequences, both pragmatic and credibility concerns may counsel the use of a truncated form of the normal standard-setting procedures. Such procedures may be too robust for discussion papers and similar policy documents, however; in these cases, the use of simpler procedures may be beneficial.

Overall, informal policy-making authority is clearly beneficial and should be permitted in any sustainable aquaculture label. The number of types of policy documents should be limited to avoid confusion, however, and the procedures for their development should be tailored to their formality to avoid confusion and potential detriment to credibility. These policies are appropriately drafted by the secretariat, and should not be used to replace standards, but only to supplement them pending revision of the standard as a whole.

B. Standard-setting

There are many differences between the standard-setting procedures used by existing ecolabels, but all use a common framework that proceeds through seven stages: proposal, drafting, comment, revision, approval/publication, grievance, and review. The specifics of each stage differ for each ecolabel and each type of standard (i.e., principles, criteria, indicators), but are constrained in most ecolabels by the ISEAL Code and the necessary reliance on an explicit procedural document. In any new label, standard-setting should comply with the ISEAL Code and should be preceded by the issuance of procedural information to the public. Deviation from these prerequisites is likely to strongly detract from the label's credibility, with negative implications for the label's ongoing vitality.

1. Proposal

Standard-setting begins with a proposal for standard-setting activity. Proposals may originate with the label itself (e.g. the secretariat) or from external entities (e.g. members, external stakeholders). Labels vary in the limitations they impose on the origin of proposals. A second variable is the form of the proposal; it is possible to propose standard-setting activity on a given topic, but in other cases a proposal may include a draft standard. The types of proposals

accepted may affect the meaningfulness of access to the standard-setting procedure. In addition, ecolabels may use different processes for different types of standards.

2. Drafting

A draft standard must be created once a proposal has been accepted by the label. Generally the board's standards committee or the secretariat drafts standards, with input from the technical committee where appropriate. The secretariat is less participatory than the standards committee and is the locus of initial grievances, so the board's committee should have primary responsibility for drafting, under the secretariat's procedural guidance.

Box 5: Process and Performance Standards

There are two types of standards: process and performance. Process standards require entities to develop management systems that consider certain issues or impacts. Thus, they consider only the processes facilities use to mitigate impacts of production, not the success of those processes at mitigating those impacts. The ISO 14000 series, for example, inquires into the provisions of environmental management systems rather than asking whether those systems result in actual environmental improvements. In ecolabeling, the ISO's process-only model is an outlier – most ecolabels incorporate performance standards.

Performance standards evaluate the impacts caused by certified entities rather than (or in addition to) the processes controlling those impacts. Thus, the GAA uses quantified effluent standards to determine whether shrimp ponds satisfy its water pollution standard. Functionally, performance is a prerequisite to credibility, making the inclusion of performance parameters essential for any sustainable aquaculture standard. The use of performance standards raises inherent pragmatic concerns; performance standards may be difficult and expensive to evaluate and may be subject to inconsistent interpretation. To address these issues, standards should be measurable and verifiable. The use of measurable standards minimizes the possible inconsistent certification by eliminating ambiguity and allows effective use of accountability mechanisms. Quantification, however, is impossible or inappropriate for some standards and even where it is possible, some degree of interpretation is needed to evaluate performance. Measurable performance standards are nonetheless recommended and should be developed by the technical committee.

In practice, ecolabel standards incorporate both process and performance. For example, the MSC principles require data on ecological conditions within given fisheries (a performance standard) while also mandating the development of a management scheme to evaluate those conditions on an ongoing basis (a process standard). All existing aquaculture labeling standards (including the WWF standards and Wegman's purchasing standards) include performance metrics, including quantitative standards where possible, in addition to process standards (such as effluent management plans).

The use of such objective performance standards is a requirement for credible sustainable aquaculture labels. Ecolabels that evaluate solely processes do not comply with this Gold Standard.

In the sustainable aquaculture context, the determination of sustainability baselines complicates the standard drafting process. To ensure that standards accurately reflect sustainability, the independent technical committee must provide objective baselines, thereby constraining the standards committee's discretion during drafting. As a result, the technical committee may be responsible for initial drafting of the content of standards after the standards committee has performed initial work to identify issues requiring technical input. Recourse to the technical committee will not always be required: only where performance criteria are included in a standard (i.e., where a standard is intended for implementation by the certification body) is technical input required.

3. Comment

Once an initial draft has been created, it is released for public comment. Comments are generally solicited from all stakeholder groups and accepted from the larger public. Commonly, ecolabels develop a stakeholder forum to encourage discussion of the standard and development of comments to ensure consideration of all perspectives. Such stakeholder fora may be effective tools for ensuring consensus in drafting and revision process. In the context of this Gold Standard, the members of the general assembly are likely to serve as a standing forum to obtain stakeholder input from all stakeholder groups. The secretariat standards unit should ensure that members are active in commenting on draft standards as well as using broader solicitation of comments from uninterested outside experts.

The publication of standards, timing of review, and number of opportunities for review may differ between labels, with direct implications for credibility. For example, labels that permit only a single round of comment – such as the GAA – are not as credible as those that use two or more rounds, as required by ISEAL. Similarly, a thirty-day comment period is less credible than a sixty-day period. The Gold Standard requires compliance with the ISEAL requirements for credible public comment.

4. Revision

Comments received by the ecolabel must be responded to in a transparent manner to ensure that public input is meaningful. The secretariat standards unit is the appropriate body to manage the revision process. The technical advisory board, however, plays an important role in revisions where comments are focused on technical matters initially determined by the TAB. As a result, the TAB must be consulted if technical changes to indicators are desired.

Responses to stakeholder comments are expected to result in revisions to the draft standard. The review of comments and revisions to the draft standard are generally carried out either by the same standards committee or the secretariat. Regardless of incorporation of comments into the draft standard as revisions, ecolabels should publish all comments and address each of them through a written, published response. The requirement for explicit responses to comments strongly affects the credibility of standard-setting because it ensures the transparency of the comment process, provides material for later use by accountability mechanisms, and ensures that stakeholder participation is not illusory.

The use of consensus is mandatory in credible ecolabeling systems. In addition to providing for consensus at the decision-making level in governance, most labels also require consensus in standard-setting. Repetition of the revision process is essential to achieving consensus. As noted above, labels vary in the number of required comment periods. While the ISEAL code requires a minimum of two comment periods, many labels require continuation of the comment/revision process until consensus has been established, generally as determined by the secretariat. While repeated comment periods may impose financial and temporal costs on the label, they are needed to ensure adequate participation. To minimize costs, however, the ecolabel should follow set criteria for determining whether consensus has been achieved and should clarify that complaints relating to the scope of the ecolabel are not subject to review. That is, while comments on the accuracy of technical committee statements are relevant, the comment period should not be used to advocate the use of a lower baseline for stringency.

5. Approval

Once a standard has been agreed upon by the responsible governance body, it must be approved by the ecolabel as a whole. Approval may require a vote by the entire membership of the label, as in the ISO, the board, as in the MSC, or potentially merely approval by a subcommittee. This approval generally follows the principles of consensus laid out in the institutional documents underlying the governance body. This Gold Standard requires that an accountable body take final responsibility for approving standards. Thus, once a standard has been approved by the technical committee and standards committee, the board of directors should approve it.

6. Grievances

After approval, most ecolabels provide for the airing of grievances through an established accountability mechanism. Broad access to the dispute resolution process, consideration of both procedural and substantive complaints, and availability of independent appellate bodies maximize the label's accountability at relatively low cost and are considered mandatory for credible labels. ISEAL members, for example, must develop complaint resolution procedures to address both procedural and substantive complaints from external bodies. Note that while grievances related to standards are often addressed through different mechanisms than certification disputes. This division is sensible due to the different bodies involved in certification and standard-setting and the differential processes for and independence of these functions.

Ecolabels sometimes restrict access to their complaint resolution bodies. The ISO, for example, allows complaints only by members. Other labels, such as the MSC, may require plaintiffs to have participated in the standard-setting process in order to access the accountability mechanism. The MSC's limitation on access is a sensible one to avoid frivolous complaints, and does not unduly hamper the credibility of the organization. As a result, a bar on complaints by parties who did not comment is recommended in the aquaculture context. Exceptions to this procedural bar, however, are vital – particularly for complaints that allege violations of procedural requirements where participation may have been unduly limited. Exceptions therefore should be allowed where good cause is shown by the plaintiff. While limits on who may object to standards determinations are sometimes acceptable, limits on which complaints

may be heard are not: credible labels must consider procedural and substantive complaints. All studied ecolabels comply with this requirement.

7. Review

All ecolabels studied in this report apply a set mandatory review schedule to all of their standards. The schedule ranges from three to five years before revision is required. All studied labels also allow the reviewing body – generally the secretariat – to conduct interim reviews and to initiate revision at any time during the revision cycle as the result of these reviews. Early review and revision may be stimulated by stakeholder comment on the standard's efficacy,[134] the secretariat's position on recent developments in the industry that may demand attention, or the label's broader perceptions of the credibility and effectiveness of its standards. The Gold Standard for review would permit interim review for any of these reasons.

8. The ISEAL Code

While ecolabels differ among a number of variables in each of the standard-setting stages, many of them – FSC, MSC, FLO, RFA, and the WWF's aquaculture dialogues – are united by their membership in or compliance with the ISEAL Alliance and its Code of Practice. The ISEAL Alliance was established to strengthen the institutional mechanisms of social and environmental labeling organizations, and to that end, the ISEAL Code was established to require members to establish explicit, credible procedures for standard-setting. In addition to requiring written procedures, the Code also requires members to comply with substantive requirements throughout the standard-setting process (Table 14: ISEAL Code Requirements). Ranging from minimum standards for public comment to maximum time lapses between revisions, these requirements ensure that the procedures adopted by ISEAL members are credible. As a result, adherence to the ISEAL Code is mandatory for credible standard-setting processes.

[134] Most labels, including ISEAL members, collect and archive comments for use during review.

Table 14: ISEAL Code Requirements

Standard	Requirements
Procedural Requirements for Labeling System	• Publish a biannual work program • Identify all ongoing and planned standards • Introduce standards with terms of reference that justify the need for and objectives of the new or revised standard • Standards subject to two rounds of public comment • Consider all proposals for revision • Create a written synopsis ▪ include all public comments ▪ describe how decision-making body addresses issues ▪ make available to public publish standards and make electronically available
Substantative Requirements for Standards	• Minimally trade-restrictive • Committed to actual social or environmental improvement through labeling (process and performance) • Harmonized with existing international standards and other existing labeling standards • Unambiguous but allow variation for local social and environmental conditions • Include criteria, indicators, and benchmarks • Five year review and revision cycle

VIII. Implementation Methodology

Ecolabels require systems to implement their standards – that is, to apply the standards on the ground and to make certification decisions at the producer level. All ecolabels considered in this report use third-party certification, wherein an independent certification body evaluates participating entities and determines whether they are in compliance with the ecolabel's standards. While the general outline of their certification systems are similar, ecolabels apply those systems in unique ways.

A. Unit of Certification

Each ecolabel's standards are designed to be applied to a certain type of entity – the designated "unit of certification."[135] Existing ecolabels have adopted two basic unit-of-certification models – the "aggregate" model and the "individual producer" model.[136] The choice of aggregate or individual producer is determined largely by the impacts to be remediated but is also influenced by pragmatic considerations.

The more common unit of certification is the individual producer. The ISO, GAA, Sustainable Agriculture Network, and FSC all use this model, as do a multitude of ecolabels not studied in depth in this report. The individual-producer model is simple: any producer who wishes to sell certified products must seek certification independently. Thus, a landowner who wishes to sell lumber with the FSC logo must hire an accredited certification body to evaluate its forest. Similarly, any farm can seek certification from SAN without any requirement of collective action.

Individual-producer certification has a variety of pragmatic advantages, ranging from simplicity for producers to relative ease of certification due to the smaller scale of certification. These advantages have engendered its status as the default unit of certification for most existing labels. On the other hand, individual-producer certification is not without complications. Although certification of any individual producer may be relatively uncomplicated and uncontroversial, the cumulative effects of individual certification decisions may have a pernicious effect on the label's credibility if decisions are inconsistent or certification proves ineffective at addressing problems such as habitat degradation, which can only be redressed through cumulative action.[137] This problem may be mitigated by requiring producers – especially plantations and large landowners – to certify all of their property. The FSC, for example, requires that forests be certified as single units. Thus, landowners cannot sustainably harvest products from part of their land while engaging in unsustainable practices in other areas. This use of holistic certification is beneficial both to protect the credibility of the label by

[135] Ecolabels may use more than one unit of certification – for example, they certify both producers and the processors and traders that move goods from production to market. This chapter, however, speaks primarily to producer certification.

[136] "Individual producer" is used here for simplicity. The term is intended to encompass traders and processors as well as producers. Certification of these entities is distinguishable from producer certification in some respects – for example, in the importance of geography and ecosystem interactions. As a result, traceability certification is generally carried out at the individual level.

[137] The inability of individual-producer certification systems to avoid such externalities is best exemplified by the MSC, discussed below.

ensuring that producers are fully complying with its standards throughout their operations and by avoiding some externalities.

Table 15: Units of Certification

Label	*Unit of Certification Model*
ISO	Individual Producer
ISEAL	Individual Member
FSC	Individual (Forest Management Unit); Aggregate (Group Certification)
MSC	Aggregate (Fishery)
FLO	Aggregate (Producer Organization)
SAN	Individual (Farm)
GAA	Individual (Facility)

The aggregate certification model requires producers to band together into a larger unit to seek certification. Two ecolabels in this study – MSC and FLO – use the aggregate model exclusively. In both systems, the use of aggregate bodies is an important component of the system's effectiveness, but the bodies nonetheless serve a different purpose in each label.

MSC certification cannot be obtained by individual fishing vessels or processors – instead, fisheries must be certified as whole units. The use of aggregate body certification is necessary in the fisheries context because most fisheries are managed as community resources. In these fisheries, certification of single vessels or processors would not halt overfishing by other vessels. The use of aggregate certification in the MSC system was thus a product of necessity rather than choice. The MSC's experience with aggregate certification has not been without controversy, however, because of the difficult question of defining what constitutes a fishery eligible for certification. This necessarily requires making choices about the breadth of the producers who can be included in the MSC system and itself relies on poorly-constrained scientific determinations as to the exclusion of some groups. If such issues are not adequately resolved, controversy may result, thereby decreasing the credibility of the resultant certification.[138] Such difficulties are reinforced by the absence of established producer groups or management data in some areas, giving rise to barriers to certification.[139] Overall, the need to rely on aggregate groups is a challenge for MSC that reflects the data challenges that inherently complicate fisheries management. The MSC therefore does not represent a feasible model for aquaculture regulation without significant procedural changes.

FLO certification uses aggregate certification for a different reason. Under the FLO system, individual farmers must combine in producer organizations to seek certification. While it is feasible to certify individual farmers – as shown in practice by the SAN – the use of

[138] For example, debates about the extent of the Alaska pollock fishery led some stakeholders to disavow future participation in MSC. *See* Stacey Marz, Consultant to Trustees for Alaska, to Rupert Howes, Chief Executive of MSC (Apr. 25, 2005), *available at* alaskaoceans.net/aboutus/documents/lettertoMSConArlieHouseAnniversary-final.doc (noting unwillingness of several groups to participate in future certifications based in part on disputes regarding the delineation of the pollock fishery).

[139] While in some cases a producer organization may exist – as in the case of the Alaska Seafood Marketing Association – but in other areas, including much of the developing world, the MSC's dependence on outside groups or governmental entities to initiate certification may increase the cost and difficulty of obtaining certification.

producer organizations is required by the purposes of the FLO. In practice, the pragmatic benefits to certification on the producer level result in excess production of Fairtrade certified products in comparison to market demand for those products. The use of producer organizations allows FLO to share the benefits of the sales of Fairtrade certified goods among a large group of producers. In addition, it allows FLO to ensure that Fairtrade premiums are used for the benefit of whole communities – an important element of FLO's mission.

FLO's system is explicitly designed to stimulate the growth and development of collaborative grassroots organizations in developing countries. In this sense, the mere creation of producer organizations is a major institutional goal for FLO. As a result, these organizations are relatively simple to create and have low costs, easing certification on the producer level. Moreover, the use of Fairtrade premiums is specifically designed to use these institutions as a source of community development, so there are incentives for producers to be actively involved in their activities. The FLO model thus appears to work well for social issues. Should FLO initiate environmental or quality-based criteria for certification, however, it is likely that further institutional development on the individual-producer level would be required to avoid free-rider problems and other externalities. The mixture of large and small production facilities makes reliance on producer networks infeasible in the context of global aquaculture labeling. As a result, while the FLO system provides relevant insight for ensuring social sustainability, adoption of its procedures is not recommended by this Gold Standard.

In addition to pure individual-producer and aggregate units of certification, ecolabels may use blended systems to obtain some of the economies of scale and consideration of cumulative impacts available in aggregate systems without losing the simplicity of the individual-producer model. Blended systems are attractive because individual-producer systems require producers to obtain a large amount of information about the requirements for certification, the benefits that result from certification, and the costs of certification. These barriers may be particularly burdensome on small-scale producers in developing countries, leading to decreased participation and compliance. To minimize the problems facing these producers, some ecolabels have permitted groups of small-scale producers to join together to seek group certification. FSC's Small and Low Intensity Managed Forest (SLIMF) program allows small-scale producers to collectively seek certification under streamlined standards and procedures.[140] This program has been found effective in a variety of settings[141] and may be a model for other systems that seek to incorporate both small-scale producers and larger producers.

Aquaculture ecolabels should adopt individual-producer certification but should provide for group certification. In most cases, the aquaculture industry does not present externalities that might warrant the increased institutional complexity of aggregate certification. As a result, the Gold Standard recommends the use of the individual-producer model. In some cases, however – particularly in developing nations, where many of the most severe impacts of production occur – aquaculture production occurs on a small scale and may have relatively large cumulative

[140] *See* FSC, *SLIMF*, *at* http://www.fsc.org/slimf; FSC, FSC POLICY: GROUP CERTIFICATION – FSC GUIDELINES FOR CERTIFICATION BODIES (1998).

[141] *See* WWF, THE EFFECTIVENESS OF FSC GROUP CERTIFICATION (2000). Model documents for developing group certification systems are available from WWF to further decrease barriers to entry. *See* WWF, FSC GROUP CERTIFICATION TOOLKIT (2005).

impacts. For example, a single shrimp farm located in a mangrove forest may not be unsustainable, but broad-scale development of farms in these forests may result in the destruction of the entire ecosystem. Similarly, the small scale of many farms may raise social barriers to certification. Together, these factors suggest that group certification, modeled on the FSC model (through its SLIMF program) is needed to maximize the ecolabel's social and environmental effectiveness.

B. Certification Body Model

Once an ecolabel has designated a unit of certification, it must determine how to carry out certification. There are three basic types of certification. First-party certification allows certification by the producer via self-evaluation. Although it is possible for producers to self-evaluate, none of the labels studied in this report permit claims of compliance or use of a logo based on self-assessment. Second-party certification relies on an external organization for certification, but the certifying entity is not independent – common examples include customers and trade organizations. Third-party certification uses independent organizations to carry out certification. All ecolabels in this study use various forms of third-party certification.[142] The use of third-party certification is an important element of ecolabels that seek to attain a high degree of credibility.

The main difference between existing third-party ecolabels is the form of their certification bodies. Some ecolabels have adopted a free-market system whereby any accredited body can certify producers to the ecolabel's standards. Other ecolabels use a single-party system, where participating producers must seek certification from a single, designated certification body. Both models comply with international standards for certification systems.

Free-market certification is used by several ecolabels in this study, including FSC, MSC, and ISO. In this system, the independent certification bodies are unrelated to the standard-setting body, generally resulting in increased credibility due to the elimination of any potential conflict of interest. On the other hand, the free-market model introduces the potential for inconsistent decisions between certifiers and a potential race to the bottom in the interpretation of standards. Such problems mandate the development of strong institutional controls over certification body actions.

Accreditation is the primary control over independent certification bodies. Certification bodies must be accredited before they may certify producers or traders to the label's standards. While the ecolabel itself can accredit certification bodies, accreditation duties are commonly delegated to an independent accreditation body. These accreditors must be adequately qualified to determine the performance of the certification bodies, which may be problematic early in the creation of a label. Moreover, the utility of accreditation is questionable, as even independent accreditation bodies may have financial incentives to accredit certification bodies. The ISO has recognized that oversight of accreditation bodies has been a significant challenge to certification systems and has strengthened its standards for accreditation of certification bodies undertaking

[142] *See* Adrian Whiteman et al., FOREST PRODUCT MARKET DEVELOPMENTS: THE OUTLOOK FOR FOREST PRODUCT MARKETS TO 2010 AND THE IMPLICATIONS FOR IMPROVING MANAGEMENT OF THE GLOBAL FOREST ESTATE, FAO Working Paper FAO/FPIRS/02 89 (1999) (describing types of certification).

process assessments.[143] Despite this development, the question of "who audits the auditors" remains uncertain for systems using performance standards – including all of the ecolabels (other than ISO) discussed in this report. Certification cost is a final potential shortcoming of the free market system. The creation of complex accreditation systems and the use of profit-motivated certification bodies may increase the costs of labeling.

Nascent aquaculture ecolabels are likely to face constraints on the expertise of certification and accreditation personnel when initially created. The industry is global and includes diversity species in culture and types of facilities. As a result, language barriers, distance, and other technical difficulties pose a challenge to successful certification. Inconsistent certification decisions are a great danger under these conditions, and the label must maintain a close watch over widely spread producers to ensure consistency. By controlling the development of the label through species-by-species development of indicators and artificially limiting initial certification, the label and certification body can develop and apply experience in a regulated way and avoid growing out of pace with its sophistication. As a result, accreditation systems are unlikely to serve an important role in credibility until ecolabels have developed beyond the pilot stage. At that point, transition to free-market certification may be desirable, but the use of a single accreditation body is recommended in these conditions due to the ongoing, unique challenges presented by the aquaculture industry.

In addition to the use of accreditation bodies, ecolabels use their standards and policies to control the discretion of independent certification bodies. For example, MSC has established certification procedures that delineate a quantified scoring system that is intended to reduce certification body discretion. Similarly, FSC has developed policies and other guidance documents to establish FSC's intent in creating its standards to decrease the ambiguities in FSC standards. Both efforts seek to minimize the ambiguities in language and are recommended regardless of the certification system adopted.

Table 16: Certification Body Model

Label	*Certification Body Model*
ISO	Free market
ISEAL	Peer review[144]
FSC	Free market
MSC	Free market
FLO	Single party
SAN	Single party
GAA	Single party

Ecolabels can address some shortcomings of the free-market certification model by adopting a single-party model. In some labels, including the GAA, FLO, and SAN, the certification body is contracted to the ecolabel. In all cases, the body is independent from the ecolabel, although the two may be subsidiaries of the same parent and in all cases are closely

[143] *See* Dalrymple & Dougherty, *supra* note 28.

[144] The ISEAL Alliance is more directed at capacity-building than labeling, and thus does not use an explicit certification body system. It does ensure that its members comply with the ISEAL Code, however, doing so via peer review of its members' standards.

allied with the ecolabel. Because this close relationship raises the specter of conflicts of interest, the single-body model requires the ecolabel to carefully develop institutional controls ensuring that the certification body operates independent of ecolabel control. While the development of certification body structures is not required to develop free-market systems, single-party systems balance this complexity by eliminating the need for accreditation. Thus, the internal processes needed to develop each system may be similar in complexity.

Single-party certification systems generally appear weaker than free market systems from a credibility perspective because "captive" certification bodies are less independent than external bodies operating in the free market. The decreased independence of single-party models is mitigated because single-body models result in more consistent certification decisions and provide the ecolabel with a high degree of control over the interpretation of standards. These benefits are the primary reason for the choice of a single-party system and are likely to be especially beneficial for ecolabels in the early stages of development.

Nonetheless, potential conflicts of interest should be mitigated through institutional controls such as firewalls, and through development of policies. For example, SAN certification decisions are largely carried out by its certification secretariat, RFA. RFA is also the standards and policy secretariat and owner of the logo used by SAN, an important potential conflict of interest. RFA has responded by establishing transparent institutional protections, such as mandatory employee disclosures, to prevent certification and policy staff from collaborating during certification. Similarly, several labels have policies limiting consulting activities – that is, aiding producers in achieving compliance with ecolabel standards – and assessment activities.

The heightened control and lower costs available in single-party certification systems are significant positives for sustainable aquaculture labels. As a result, the Gold Standard recommends creation of a single, independent certification body along with institutional hedges to ensure its credibility – at least during pilot certification. These protections should include active management policies such as a bar on consulting services by the certification body and prohibitions of interactions or lobbying of policy personnel by the certification body. Such a system will simplify management and produce consistent certification decisions, while ensuring that the certification body will have sufficient expertise to adequately evaluate producers.

While beneficial to ensure initial consistency of determinations, the use of a single certification body may become impracticable as the ecolabel expands. The sheer volume of required certifications may become too large for a single body to successfully manage the load. In such cases, the ecolabel may need to transition to a free-market model. Under these conditions, it may be worthwhile for the certification body to shift its focus to accreditation, using its expertise in certification to evaluate new certification bodies.

C. Certification Process

The certification process generally proceeds according to a written certification guidance document. Most certification decisions require three phases: preassessment, assessment, and review.

Preassessment is the initial consideration of a producer's eligibility for certification by a certification body. It is intended to be a rapid assessment that identifies major issues that would preclude certification and to prepare the certification body for full assessment, should the producer decide to continue. Preassessment thus plays two roles: it allows producers to determine the potential costs of certification and compliance before engaging fully in the assessment process while simultaneously preparing the certification body, thus increasing its efficiency in full assessment. Costs are minimized through streamlined procedures, use of off-site, document-based inspections, and use of informal assessment methodologies.

The ability of preassessment to allow producers to "test the waters" may be strengthened by the use of confidentiality provisions. These provisions not only decrease costs and time constraints by eliminating public comment period requirements, but also eliminate possible disincentives to initiation of certification processes that may not be carried through to completion (potentially creating negative publicity). While the elimination of participation and transparency affect credibility, the preliminary nature of preassessment minimizes this concern, which is outweighed by pragmatic benefits. As a result, the use of confidential preassessment is recommended. Any data collected during preassessment should be reported to the secretariat, however, if the facility continues to assessment.

Most of the time and expense of certification accrues during assessment. Assessment requires the certification body to fully evaluate the producer against the standards developed by the ecolabel. Assessment must be credible, and therefore should include public comment, transparency provisions, and independent accountability mechanisms.

As is the case for other aspects of ecolabel design, the assessment process varies by label. The most important difference is in the duties of the certification body. Where certification bodies develop indicators, indicator development must be completed before on-site assessment. Indicator development is generally lengthy, requiring stakeholder participation and transparency as befits standard-setting activity. This is especially true where the certification body must produce unique indicators for each assessment, as in the MSC. In other systems, the certification body applies its single set of pre-established indicators to all producers seeking certification. This system, typified by the GAA, minimizes the cost and time of each individual assessment, but retains some standard-setting authority within the certification body. In practice, this system may be largely indistinguishable from labels that produce indicators at the central-body level, particularly where (as in the GAA) the central body accredits the indicators before they may be used. Nonetheless, as previously discussed, this Gold Standard recommends that the ecolabel develop all indicators internally, in order to maximize the credibility of indicator development.

Once indicators are completed, the certification body must begin its evaluation of the producer through on-site inspection.[145] This individualized assessment may be either extremely qualitative or may be bounded by some quantitative measurement. In ISO 14001 assessment, for example, assessors develop audit criteria (i.e., indicators) and then assess a facility's environmental management systems on a purely qualitative basis, making a judgment about whether the facility has satisfied each of the audit criteria. More quantitative systems, such as

[145] Some systems – particularly process-based standards such as ISO 14001 that certify management systems rather than evaluating performance – may avoid on-site inspection to minimize costs.

the MSC, attempt to limit certification body discretion by requiring certification bodies to provide numerical scores for each indicator that apply to one of three written scoring guideposts. While this system certainly introduces a modicum of rigor into the process and is thus undoubtedly beneficial for improving consistency and ensuring that certification bodies consider each indicator independently, it is important to recognize that scores are determined through qualitative judgments in most cases. These scores may take on an unjustified patina of rigor if the underlying standards and indicators are ambiguous. As a result, caution in the creation of indicators is beneficial, particularly in free-market certification models. The Gold Standard seeks to avoid this lack of rigor through the use of specific, performance-oriented indicators created by the technical advisory board. The use of specific indicators reduces certification body discretion in interpretation of standards, and the use of the secretariat's performance body to evaluate how the certification body interprets each indicator allows the ecolabel to identify and change indicators that are ambiguous or ineffective.

The certification process requires on-site assessment, including stakeholder meetings and comment periods to obtain input into the producer's impacts. Data from both on-site inspection and stakeholder comments should be collected and reported to the secretariat to provide baseline data. Stakeholder consultation and data collection increase the credibility of the system by enhancing participation; moreover, they may minimize the possibility of stakeholder grievances, resulting in efficient operation. After inspection and public comment, the certification body produces a draft audit report that makes a recommendation as to whether certification is justified. In qualitative systems, the report takes purely written form, but quantified systems combine numerical scoring with narrative descriptions to provide background and justification for the scoring decisions. Issuance of an audit report generally triggers a second public comment period. Following the revision of the draft based on comments received (including a review of those comments), the audit report is finalized. In most cases, the certification body's decision is final – indeed, this is the point of using certification bodies that are independent from the standard-setting entity.[146]

Issuance of the final audit report and certification decision does not end the certification process. Credible ecolabels must include accountability mechanisms to ensure that stakeholders can challenge both the substance and procedure of the certification – that is, that the certification body properly followed the certification procedures as established by the ecolabel and that its decision was substantively appropriate based on the ecolabel's standards. Most ecolabels – including all ISEAL members – have such mechanisms, but they are lacking in some cases. The mere existence of dispute mechanisms is insufficient to ensure accountability. As in the standard-setting context, limits on accessibility and appeals may limit the usefulness of the mechanisms for protecting credibility. While these considerations largely track those used in the standard-setting, some additional considerations apply in the certification context.

First, some limitations on the accessibility of accountability mechanisms are appropriate in certification disputes. The MSC objection forum, for example, is limited to parties that commented on the accreditation during the public review period preceding issuance of the

[146] SAN is an exception. In the SAN system the certification body issues its recommendation to the certification secretariat (RFA), which makes the final certification decision. This process is unique and largely a function of RFA's institutional history. It is thus a poor model to follow in the development of a new label.

certification decision. Such limitations encourage full disclosure of concerns early in the process. On the other hand, these limitations may threaten the transparency of the certification process. Generally, all external stakeholders should be allowed access to dispute resolution, but the common requirement that the stakeholder participate in the certification process is fair and protects the pragmatic benefits of labeling.

Second, the locus of the initial dispute resolution body, unlike in the standard-setting context, is generally the certification body itself. In this respect, the ecolabel often has little control over the resolution of the dispute. This limitation is purposeful, to maintain the independence of the certification process. Certification bodies, however, commonly lack transparency, negatively affecting the credibility of certification.[147] As a result, appeal mechanisms are important to ensure that certification body actions are appropriate. As previously discussed, appeals should be made to an independent dispute resolution panel that is appointed by the board.[148]

The final stage of the certification process is review. Once a producer has been certified, it is granted the right to claim compliance with the ecolabel's standards for a certain period and/or to sell goods bearing the ecolabel's logo. Continued certification requires both annual audits to ensure continued compliance with the label's standards and full recertification after a set period.

Audits must be carried out by the certification body annually to ensure that the certified facility complies with any conditions to certification and maintains compliant behavior over time. Audits, like certification inspections, should be fully transparent and should include data collection and reporting of data to the secretariat for use in performance analysis. The ecolabel should develop written procedures for carrying out audits, including provision for public comment during the process and consideration of scientific developments that affect the sustainability of the operation. Stakeholders should also have limited opportunity to object to audit determinations based on the certification body's consideration of new information.

The end of the certification period triggers the requirement to obtain recertification to continue using the label. Reassessment may be required every year or on longer periods, up to five years – a range that presents few credibility issues. The timing of recertification may be related to the stringency of the recertification process – in shorter certification periods, as in the GAA, recertification may be almost a formality, as conditions may have changed very little during the certification period. Longer-term certification – as in the MSC – may require re-initiation of the certification process, including indicator development.

The choice of recertification period is a function of the cost and difficulty of initial certification. The more difficult the initial certification process, the longer the certification

[147] Although certification bodies benefit from the success of the label insofar as it produces more business, they are not directly harmed by losses of credibility due to improper certification decisions – that loss is felt by the ecolabel. These concerns are influenced by the design of the certification system, but never fully disappear; for example, single-party certification bodies are certainly harmed more by losses of credibility than are free market bodies.

[148] In addition to the availability of appeal, the standard of review used by the appellate body may be important. Generally, appellate bodies use an "arbitrary or capricious" standard drawn from judicial processes. This standard permits the use of discretion, as appropriate in the context of certification decisions.

should last to maximize the pragmatic benefits of labeling. On the other hand, more difficult certifications are likely to produce more controversial decisions, and lengthy certification periods are likely to produce changes in production methods and extrinsic factors affecting compliance with the standards. As a result, lengthy, costly certification processes often engender expensive and lengthy recertification processes, despite the fact that recertification in general is expected to be less costly than initial certification due to the development of institutional capacity during the initial certification process. The likelihood that sustainable aquaculture certification will be complex suggests that a longer recertification period – up to five years – is reasonable.

IX. Conclusion: Creating a Sustainable Aquaculture Ecolabel

Aquaculture ecolabeling is a concept whose time has clearly arrived. The variety of new labels that have been developed in recent years suggests that aquaculture ecolabeling will continue to develop in coming years, whether or not labels reflect the sustainability of production or processing. In many cases, existing labels and their standards appear to favor the financial benefits of labeling to the fundamental requirements for credibility, using sustainability only as a buzzword instead of a guideline for implementation. It is vital to address these shortcomings before inadequate ecolabels become entrenched.

Groups such as the FAO and the ISEAL Alliance have sought to identify minimum requirements for credible ecolabeling, and some ecolabeling systems – notably the WWF Aquaculture Dialogues – have adopted some standards. While these efforts have yielded important minimum standards for the processes by which standards are created and have taken steps towards identifying the impacts that ecolabels must address, none of FAO, ISEAL, or existing or developing aquaculture ecolabels have identified substantive sustainability as a minimum requirement for certification. Instead, all current initiatives use technical feasibility as the certification baseline. The Gold Standard redresses this shortcoming by identifying a workable, comprehensive ecolabeling system that is based explicitly on economic, environmental, and social sustainability. It is therefore the only credible ecolabeling system design in existence. While introduction of sustainability as a fundamental metric is the driving force behind this Gold Standard, we recognize that ecolabeling systems must also consider pragmatic concerns, including adoption by industry and economic sustainability. The Gold Standard described in this report has therefore been designed as efficiently as possible to achieve the desired results.

It is important to recognize that credibility and practicality of ecolabel design are means to an end. The major challenge facing the ecolabeling movement is translating rigorous standards and procedures into social and environmental improvement. This Gold Standard seeks to ensure improvement in environmental and social performance through ensuring stringent and quantified standards developed by independent bodies, limiting the discretion of certification bodies to ensure that they are stringently and consistently applied, and ensuring that stakeholders have robust and ongoing opportunities to challenge both standards and certification decisions to an independent judicial body.

This Gold Standard provides unique tools to both ensure that standards are sustainable and – equally important – that they are applied to produce sustainable production practices. In the Gold Standard system, the technical advisory board alone controls the stringency of indicators – eliminating the negotiated standard-setting processes that characterize past efforts and which inherently fall short of sustainability. Performance is assured through limitations on the discretion of the certification body, evaluation of certification body decision-making, and annual review of performance based on certification body data collection. The combination of strong central control over the content of standards and close supervision of certification decisions will give compliant ecolabels the opportunity to measure environmental improvement and to consider and react to ongoing scientific developments in an evolutionary way.

The complexity of the aquaculture industry – and the extent of its impacts – demand that ecolabeling initiatives be both rigorous and carefully considered. This Gold Standard is both credible and practical, providing security that certified operations are sustainable in practice and a reasonable expectation of adoption by forward-looking producers. As a result, we encourage adoption of the Gold Standard by existing labels to the extent feasible and by new labels that may seek to provide rewards for sustainable aquaculture production.

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