Shrimp Aquaculture Dialogue

Standards for Responsible Shrimp Farming
Madagascar and East Africa

Version 3.4
DRAFT
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Introduction

This document is a status report on the reflective process for defining standards for responsible shrimp aquaculture at farm level. It includes comments made by stakeholders during the workshop held in Madagascar on June 3 and 4, 2008 and at the initial meetings of the steering committees held in Paris on June 27 and July 3, 2008. This document is therefore not the final version.

The members of the steering committee have agreed on this version and this document is now being distributed to the stakeholders in order to inform them of the project status and gather their comments.

Reminder of the Major Impacts Identified by the Consortium

The table below summarizes the major impacts identified by the Consortium in the International Principles for Responsible Shrimp Farming (FAO, September 2006) and indicates the connections between these impacts and the 8 principles that were defined in order to ensure that these impacts will be eliminated or minimized.

Impacts	Principles							
	1	2	3	4	5	6	7	8
Ecological consequences of conversion of natural ecosystems, particularly mangroves, for construction of shrimp ponds	X	X						
Effects such as salinization of groundwater and agricultural land	X	X	X					
Pollution of coastal waters due to pond effluents	X	X	X		X	X	X	
Biodiversity issues arising from collection of wild brood and seed				X				
Introduction of pathogens, leading to major shrimp disease outbreaks and significant economic losses in producing countries				X		X		
Use of fish meal in shrimp diets					X			
Social conflicts in some coastal areas	X		X					X

Preliminary Questions to Expand upon

During the workshop in Madagascar and the discussions between the members of the steering committee, the following questions were raised. Answering these questions or at least gathering more information will allow the steering committee to hone its reflective process on which indicators and standards should be kept. Thus, the indicators and standards presented in this document could either be accepted, or rejected and replaced by new indicators and standards.

Criterion / Indicator	Questions
1.2.1	Two different standards that depend on the date on which farms were created have been proposed. If this proposal for 2 different standards is accepted, would it be possible and wise to use the date of the Ramsar Convention (May 1999) as the reference date?
1.4	Is it necessary to define minimum criteria and indicators for an Environmental Impact Assessment?
3.2	There are several methods of evaluating effluent nutrient pollution. Each method requires minimum conditions/information for them to be efficient. The requirements for each of these approaches must be defined so that we can define the standards in these specifications.
3.2	How should we consider the specific example of emptying the ponds in evaluating the impact of effluents?
4.1.3	The impact in question here is catching broodstock and wild post-larvae. The risk of "Introduction of a Pathogen into the Farming System" is discussed in 6.2.2, but these two indicators should be examined together. In order to reduce the removal of wild species and ensure the continued production of post-larvae for farms, what should be the minimum conditions for a satisfactory domestication program?
5.1.2	In calculating the FFER generally speaking, how should we consider fish meal and oils that come from responsible sources and how should we define a "responsible source" if no MSC certification exists (http://www.fishsource.org/site/fisheries, others?)? How should we consider fish by-products?
6.1	Is it necessary to define minimum criteria and indicators for a biosecurity plan and, if so, what should they be?
Principle 8	How should we adapt the ILO and SAI guidelines, etc. to the specificities of the companies in the producing countries of the Indian Ocean region?

Any indicator or standard presented in the tables below but not mentioned above has not been and should not be considered validated. This is a working document in progress.

Note
The goal of the Shrimp Aquaculture Dialogue is to develop realistic, verifiable standards during audits and inspections. In short, in order to take into account any verification constraints, the steering committee decided henceforth to integrate and associate with each of the proposed indicators and standards a few comments relating to verification and audits. These comments can be found in the tables below in the gray boxes. They indicate the tolerance to be anticipated for certain standards, control methods, any documented proof that may be necessary, and the feasibility of internal or external inspections.
In the same way that the proposed indicators and standards in this document may evolve in the weeks to come, the comments that relate to their verification may also be changed.

Principle 1: Farm Siting: Initial Siting and Expansion

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
1.1	**Right to access resources / Right to farm**	1.1	**1.1.1**	**Available documents**	**Yes / No**	No	Observation of the laws of the country where the shrimp farm/aquaculture is located	Farming permits, licenses, or leases issued by the country's competent authorities; title of ownership	TBD	Yes
1.2	**Protecting mangroves**	1.2	**1.2.1**	**% of mangrove destroyed**	**10% max if before May 1999; 2% max if after May 1999 (Ramsar Convention)**	TBD	Farms must be sited behind the mangroves and in salt pans devoid of vegetation.	Satellite photos from before and after siting? Maps targeted by the authorities?	A base point number is needed before the farm is constructed	Yes, but it may not be easy
1.3	**No salinization of fresh groundwater**	1.3	**1.3.1**	**Impervious soil**	**Permeability coefficient <…? Or a well-maintained liner**	No	TBD	Permeability tests in each pond	TBD	Yes
1.4	**Environmental Impact Assessment (EIA)**	1.4; 2.1; 2.2; 2.3; 2.5; 2.7	**1.4.1**	**Performed by a third party. Is credible and comprehensive; transparent, public; distributed to the communities and competent authorities**	**Yes / No**	No	TBD	TBD	TBD	TBD
			1.4.2	**List of grievances**	**Take grievances into account**	No	TBD	TBD	TBD	We must make sure that the communities know of and have access to the list of grievances.

Principle 2: Design, Construction / Expansion and Maintenance

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
2.1	**Environmental prevention plan adapted to the EIA**	2.1; 2.2; 2.3; 2.5; 2.7; 2.13	**2.1.1**	**Credible and comprehensive**	TBD	TBD	TBD	TBD	TBD	TBD
			2.1.2	**Transparent/public/ distributed to the communities**	TBD	TBD	TBD	TBD	TBD	TBD
			2.1.3	**List of grievances**	TBD	TBD	TBD	TBD	TBD	Verify the access that these communities have to this list
2.2	**Habitat conservation**	2.6	**2.2.1**	**% of destroyed mangrove that is replanted**	**100% over 3 years**	TBD	TBD	Destroyed mangrove reforestation plan	TBD	TBD
		2.4	**2.2.2**	**Use of indigenous mangrove species**	TBD	TBD	TBD	Visual proof	TBD	TBD
		2.4	**2.2.3**	**Use of wood from the mangrove in construction**	**No**	None	TBD	Visual proof	TBD	TBD
		2.4	**2.2.4**	**TBD (wood, land, energy)**	TBD	TBD	TBD	TBD	TBD	TBD
		Proposed at the workshop	**2.2.5**	**Energy/biomass balance**	TBD	TBD	TBD	TBD	TBD	TBD
2.3	**Plan for controlling erosion**	2.10; 2.12; 2.14; 3.8	**2.3.1**	**Vegetative buffers should be planted in areas where there is a high risk of erosion (pumping areas, channels, and drains)**	**Presence**	None	Application of the prevention plan	Visual proof	Yes	Yes

Principle 2: Design, Construction / Expansion and Maintenance

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
2.4	**Good construction and expansion practices**	2.8 ; 2.9	**2.4.1**	**Solids originating from construction will not be discarded in mangroves or other wetlands.**	**No**	TBD	TBD	Visual proof	TBD	TBD
		2.9 ; 2.14	**2.4.2**	**Materials from the building site will be sorted and removed from the farm.**	**Yes**	TBD	TBD	Prove waste removal (rubble, pollutants, etc.) with collection by a reprocessing company	TBD	TBD
2.5	**Waste management**	2.8; 2.9; 8.15	**2.5.1**	**Selective organic/non-organic sorting**	TBD	TBD	TBD	TBD	TBD	TBD
		2.8	**2.5.2**	**Waste will be collected and sorted regularly for recycling, appropriate incineration (depending on the product), or monitored disposal on land.**	TBD	TBD	TBD	TBD	TBD	TBD
2.6	**Storage of pollutants (sodium metabisulfite, hydrocarbon, etc.)**	7.4; 7.6	**2.6.1**	**Impervious containment area**	**Presence**	TBD	TBD	TBD	TBD	TBD

Principle 3: Water Use and Management

Criterion		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
3.1	**Salinization: no impact on the aquifer and freshwater**	3.1; 3.6; 3.11; 3.12	**3.1.1**	**Availability of a general plan for showing the origin and outflow of wastewater**	**Yes / No**	None	TBD	General plan?	TBD	TBD
		3.6	**3.1.2**	**Water discharged into the open environment**	**Yes / No**	None	TBD	General plan?	TBD	TBD
		3.11	**3.1.3**	**Salinity of neighboring freshwater**	**0**	None	Refractometer	TBD	TBD	Yes
3.2	**Nutrient efficiency: the farm must minimize the discharge of nutrients into receiving waters.**	3.8; 3.9	**3.2.1**	**Quantity of nitrogenous waste: ((Qty feed + Qty fertilizer) - Qty shrimp) / shrimp biomass produced**	**TBD**	TBD	TBD	Accounting records/ pond records/ supply records	Yes	Yes
		3.8; 3.9	**3.2.2**	**Or physico-chemical parameter (NO_2, NO_3, MES, etc.)**	**TBD**	TBD	TBD	Lab records/ analysis results	Yes	No
3.3	**Water quality**	3.2; 3.9	**3.3.1**	**DO (dissolved oxygen) in the ponds**	**3 ppm minimum 1 hour after sunrise**	None	Oximeter	Pond records	Yes	Yes
		3.4	**3.3.2**	**Density chart/ critical biomass vs. technical ability to maintain an adequate level of oxygen**	**TBD**	TBD	TBD	Materials inventory/ pumping capacity	Yes	Yes
			3.3.3	**Labile Organic Material**	**TBD**	TBD	TBD	TBD	Yes	No?

Principle 4: Broodstock and Post-larvae

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
4.1	**Origin**	4.1; 4.5	**4.1.1**	**Indigenous species**	**Yes / No**	cf. examples of Belize, Caledonia, etc.	Visual proof	Traceability document	Yes	Yes
		4.2; 4.3; 4.5	**4.1.2**	**% from a hatchery in the country**	**100%**	None	TBD	Traceability document	Yes	Yes
		4.4; 4.5	**4.1.3**	**% of total post-larvae from domestication program versus the total quantity of post-larvae used**	**100%**	Deadline TBD	TBD	Traceability document	Yes	TBD

Principle 5: Feed Management

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Monitoring Possible?
5.1	**Feed composition and origin**	5.1/Belize; "Observation of national regulations"	**5.1.1**	**Use of mixed feed that is free of GMOs and contaminating residues**	**Observation of the levels set out in the Codex Alimentarius + the regulations of the producing and importing countries**	None	Composition known by the feed producer with control over ingredients/raw materials, supplier selection, and receiving inspection	Documents showing that country regulations and Codex criteria were observed; certificate of non-GMO ingredients	Yes, at the feed supplier level	Auditable only at the feed manufacturer level and not at the farm level

Principle 5: Feed Management

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Monitoring Possible?
5.1	**Feed composition and origin (continued)**	5.3	**5.1.2**	**Use of feed made with raw materials that are traceable and of responsible origin (meal and fish oil, etc.)**	**Use of certified ingredients when certification exists. If no certification exists, use of ingredients from an approved list that contains vegetable substances, algae, fish waste, etc. Plan for continual improvement**	TBD	TBD	Traceability documents and certificates	Yes, at the feed supplier level	Auditable only at the feed manufacturer level and not at the farm level
		5.6	**5.1.3**	**FFER (= FCR x % fishmeal in feed x 4.5)**	TBD	TBD	Selection of feed adapted to the species and farming method. Rationing. Feed distribution adapted to the animals' needs. Monitored consumption. Adequate feed storage, protected from humidity and contaminants. Storage time < optimal expiration date	Farm records. Feed plan. Feed list + composition label saved.	TBD	TBD

Principle 5: Feed Management

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Monitoring Possible?
5.2	**Feed use**	5.4, 5.5, 5.6	**5.2.1**	**Good pond management should encourage natural productivity to reduce the use of artificial feed.**	TBD	TBD	Feed distribution adapted to the animals' needs. Monitored consumption. Adequate feed storage, protected from humidity and contaminants. Storage time < optimal expiration date	Farming records. Feed plan. Feed list + composition label saved.	Secchi and oxygen measure-ments. + Measure-ment of unconsum-ed feed at the sluice gate	Yes
			5.2.2	**Ensure traceability at the farm**	Yes / No	TBD	TBD	Traceability documents to the pond.	Yes	Yes
			5.2.3	**Ensure adequate storage**	TBD	TBD	TBD	Visual proof?	TBD	TBD
			5.2.4	**Feed Conversion Ratio (FCR)**	**TBD**	TBD	TBD	TBD	TBD	TBD

Principle 6: Health Management and Animal well-fare

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
6.1	**Biosecurity plan**	6.1 to 6.13 + appendix	**6.1.1**	**Presence of official OIE pathology**	**No harm**	If detected: compulsory OIE notification	Monitoring of the hygiene of broodstock (SPF), larvae, and post-larvae, farming water, and cross-contamination. Disease prevention and good farming practices -> **see GBP Biosecurity** if it is disease requiring compulsory OIE notification -> cleanout...?	The country or and/or farm's biosecurity plan	Monitoring by the country's competent authority / self-inspection by the farm	TBD
		6.4	**6.1.2**	**Number of allopathic treatments/ quantity of veterinary product used/year**	**0**	If treatment -> veterinary prescription with products authorized by producing and importing countries (AMM) after diagnosis of a detected pathology/lot traceability/active principle used/duration/ quantity/ observation of lead time, degree-day		Farm records + veterinary prescription + farm drug inventory	Monitoring by the country's competent authority / self-inspection by the farm	TBD
6.2	**Survival**	6.11	**6.2.1**	**Survival rate**	**70% ?**	< 70%, tolerance only if cause = disease	Controlling biosecurity + zootechnical/ feed control	Farm records	TBD	TBD
		Proposed after the workshop	**6.2.2**	**SPF post-larvae or wild post-larvae tested by PCR and negative for specific diseases**	**100%**	TBD	TBD	TBD	TBD	TBD

Principle 6: Health Management and Animal well-fare

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
6.3	**Ecological and physiological comfort**	6.3 + proposed during the workshop on June 3-4	**6.3.1**	**Stocking density or biomass density at the end of farming cycle, or "comfort curb"**	**# of post-larvae / m² TBD ? or 250 g / m²**	"Ethical" approach and precaution? Even if the amount of oxygen is observed, there are other criteria that provoke stress. How should they be measured?	TBD	Farm records	Internal inspection at each pond and during each cycle	OK
		3.2 ; 3.4 ; 3.9	**6.3.2**	**Density chart/ critical biomass vs. technical ability to maintain an adequate level of oxygen**	**Observation of the "comfort curve" (to be standardized)**	Variation of +/- 10% around the curve?	Adapt stocking to water renewal and aeration capacities	Farm records	Internal inspection at each pond and during each cycle	OK
		6.3 + proposed during the workshop on June 3-4	**6.3.3**	**Variation of LOM (labile organic material) from beginning to end of farming cycle**	TBD	TBD	TBD	TBD	Internal inspection at each pond and during each cycle	Verification doc and method are OK but the Delta LOM verification by onsite monitoring will be difficult
		3.2	**6.3.4**	**Oxygen level in the rearing pond**	**3 ppm**	None (take into account the precision of the measuring instrument +/- 0.1 ppm?)	Control water flow/ temperature/Secchi and biomass in the pond	Farm records	Morning inspection	OK

Principle 6: Health Management and Animal well-fare

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
6.4	**Health - growth**	6.3; 6.4; 6.7+ proposed on July 3	**6.4.1**	**No growth hormones/ no preventive antibiotics**	**Missing**	None	TBD	TBD	TBD	TBD
		Proposed on July 3	**6.4.2**	**Feed efficiency (depending on the species and size of the fish)**	TBD	Note: makes it possible to detect the use of "fraudulent" growth promotants	TBD	TBD	TBD	TBD
		6.6	**6.4.3**	**Probiotics, immunostimulants, trace elements**	TBD	Observation of the regulations of producing and importing countries	TBD	TBD	TBD	TBD

Principle 7: Feed Security

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
7.1	**Chemical contamination**	Cf. respect Principe eau, aliment et gestion zoosanitaire (Observation of the Principle on Water, Feed, and Health Management)	**7.1.1**	**Presence of chemical contaminant residues in shrimp tissues: drugs, heavy metals, pesticides, dioxins, and PCB.**	**Observation of the levels set out in the Codex Alimentarius + the regulations of the producing and importing countries**	No	Observation of principles 3, 5, and 6	Analysis results	Yes	Yes
		7.7	**7.1.2**	**Exclusive use of authorized products (for shrimp and fish) fertilizers, disinfectants, feed sodium metabisulfite additives, lime, etc.**	**Yes**	None	TBD	Invoices/pond records/ product list/product data sheet (composition/ storage/use)	TBD	TBD
		7.9	**7.1.3**	**Use of sodium metabisulfite**	**0%**	In the absence of alternatives, observation of the levels set out in the Codex Alimentarius + the regulations of the producing and importing countries + SO_2 treatment to neutralize all the effluents before final discharge into the environment.	Training/ qualification of fishing personnel in the treatment procedure	TBD	Monthly inspection (by sampling) of sulfite residue in wild organisms living upstream and downstream from the farm.	TBD

Principle 7: Feed Security

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
7.1	**Chemical contamination (continued)**	7.3; 7.4; 7.5; 7.6	**7.1.4**	**Storage conditions in observation of the technical sheets, with no risk of cross contamination**	**Yes**	None	TBD	Product data sheet	TBD	TBD
		7.8	**7.1.5**	**Products banned from the farm: rat poison, pesticides**	**Missing**	None	TBD	Visual proof	TBD	TBD
7.2	**Microbiological contamination**	7.1	**7.2.1**	**Slaughter temperature**	**< 3 °C**	TBD	Observation of the cold chain	TBD	TBD	TBD
		7.1	**7.2.2**	**Microbiological contamination of the product *** Standards that are defined at the freezer plant should be divided by 10 for microbiological contamination.	**Observation of the levels set out in the Codex Alimentarius + the regulations of the producing and importing countries**	TBD	TBD	TBD	TBD	TBD

Principle 8 : Social (and Environmental) Responsibility

Criteria		Correspondence doc Jan. 2008, Index 2	Proposed Indicators		Proposed Standards	Tolerance	Control Method	Documented Proof	Internal Inspection	External Inspection Possible?
8.1	**Employment and working conditions**	8.1, 8.10, 8.11, 8.12, 8.13, 8.14, 8.16, 8.17, 8.18	**8.1.1**	**Freedom of association, collective bargaining, and industrial relation**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
		7.7	**8.1.2**	**Elimination of child labor and protection of children and young people**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.3	**Employment policy and promotion**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.4	**Vocational guidance and training**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.5	**Employment security**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.6	**Wages**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.7	**Working time**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.8	**Occupational safety and health**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
			8.1.9	**Labor administration and inspection**	**TBD / ILO standards**	TBD	TBD	TBD	TBD	TBD
8.2	**Community Relations Program**	8.2, 8.9, 8.15	**8.2.1**	**System for collection and sorting community waste**	**Yes / No**	TBD	Available documents	Visual proof	TBD	TBD
		Principle 2 and 3	**8.2.2**	**Environmental awareness program**	**Yes / No**	TBD	TBD	TBD	TBD	TBD
		8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.15,	**8.2.3**	**Policy of regular communication and dialogue regarding developments in and around farms (Conflict resolution)**	**Yes / No**	TBD	TBD	TBD	TBD	TBD
			8.2.4	**Support development of communities facilities**	**Yes / No**	TBD	TBD	TBD	TBD	TBD