Shrimp Aquaculture Dialogue
Principles, Criteria and Indicators from Africa and America
Draft version
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The objective of this document is to present side by side proposed criteria and indicators from the Africa and the America region of the Shrimp Aquaculture Dialogue.
This document will be updated when regional document are updated and agreed by regional Steering Committee.
This document is planed to be updated after the upcoming Shrimp Aquaculture Dialogue meeting in Bangkok.

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, in Belize and in Ecuador and during SC discussions, 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**
All principle	How often does comply with the law need to be captured in either a preamble or in the standards themselves?
Principle 1 & 2	Should Principle 1 and 2 be combined? Should design and construction get added to 1?
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?
2.6	Should an allowance for canal construction be permitted in a no net loss approach. This would only apply to canal construction.
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?
Principle 5	Final product form and by product efficiency. Concept: Make sure there is no or little waste. The shrimp farmer gets to sell the whole product. Is this part of the mandate of the ShAD?
Principle 5	Shall the ShAD define what is a good quality feed, and if yes, how?
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?
Principle 6	A country should strive to have a biosecurity plan as a whole: is this part of the mandate of the ShAD?
6.1	Is it necessary to define minimum criteria and indicators for a biosecurity plan and, if so, what should they be? How do we deal with ensuring disease is not transferred into the environment?

Criterion / Indicator	Questions
Principle 7	Comment during the America dialogue if a "food safety Principle" should be maintained; if not, chemical use should be considered in another sector like Principle on Water use. A new principle could focus on biodiversity with possible key criteria: predator control and impact on wild shrimp. Some SC members in Africa and America support the idea to keep a food safety principle. Do we need a food safety TWG? Or do we need to eliminate it all together
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?
Principle 8	Materials sourcing: can we promote the use of sustainable material and if yes, how?

Proposed Criteria and Indicator by region

Principle 1: Farm Siting: Initial Siting and Expansion

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 1.1	**Right to access resources / Right to farm**		**Right to access resources / Right to farm**			
Proposed indicators	1.1.1	Available documents - valid permit/ license available/ land title evidence	1.1.1	Available documents - valid permit/ license available/ land title evidence		
Criteria 1.2	**Protecting mangroves**		**Protecting Sensitive Habitats**			
Proposed indicators	1.2.1	% of mangrove destroyed	1.2.1	% mangrove destroyed at given time		
			1.2.2	Impact on protected, threatened or endangered species (biodiversity)		
Criteria 1.3	**No salinization of fresh groundwater**		**Salinization of fresh groundwater and agricultural soils**			
Proposed indicators	1.3.1	Impervious soil	1.3.1	Soil permeability		
			1.3.2	Change in salinity of aquifer		
			1.3.2	Change in Salinity of nearby soils		
Criteria 1.4	**Environmental Impact Assessment (EIA)**		(some debate as to whether to keep or remove this criteria that might fall under complies with law)			
Proposed indicators	1.4.1	Performed by a third party. Is credible and comprehensive; transparent, public; distributed to the communities and competent authorities	1.4.1	Performed by a third party. Is credible and comprehensive; transparent, public; distributed to the communities and competent authorities		
	1.4.2	List of grievances	1.4.2	List of grievances or expressed concerns		

Principle 2: Design, Construction / Expansion and Maintenance

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 2.1	**Environmental prevention plan adapted to the EIA**		(some debate as to whether to keep, link to principle 1 or remove this criteria) Also suggested is to change the criteria to "Farm Operations Plan			
Proposed indicators	2.1.1	Credible and comprehensive	2.1.1	Credible, comprehensive and integrated		
	2.1.2	Transparent/public/ distributed to the communities	2.1.2	Transparent/public/ distributed to the communities (with no consensus on the active distribution)		
	2.1.3	List of grievances	2.1.3	List of grievances or expressed concern		
Criteria 2.2	**Protecting mangroves**		**Conservation of Mangrove habitat** (some debate as to whether link to principle 1)			
Proposed indicators	2.2.1	% of destroyed mangrove that is replanted	2.2.1	% destroyed mangrove that is replanted (no consensus)		
	2.2.2	Use of indigenous mangrove species	2.2.2	Use of indigenous mangrove species (no consensus to remove or keep)		
	2.2.3	Use of wood from the mangrove in construction	2.2.3	Use of wood from the mangrove in construction (no consensus to remove or keep)		
	2.2.4	TBD (wood, land, energy)	2.2.4	TBD (wood, land, energy) (no consensus to remove or keep)		
	2.2.5	Energy/biomass balance				
			2.2.6	Conservation areas?		
Criteria 2.3	**Plan for controlling erosion**		**Plan for controlling erosion or Erosion**			
Proposed indicators	2.3.1	Vegetative buffers should be planted in areas where there is a high risk of erosion (pumping areas, channels, and drains)	2.3.1	Erosion control device in areas where there is a high risk of erosion (pumping areas, channels, and drains) (group 1 thought this is not an indicator)		
			2.3.2	Erosion rate		
			2.3.3	Soil loss		

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 2.4	**Good construction and expansion practices**		**Good construction and expansion practices** (some debates as to whether move to EIA and criteria to be **Natural waste management)**			
Proposed indicators	2.4.1	Solids originating from construction will not be discarded in mangroves or other wetlands.	2.4.1	Disposal of solids		
	2.4.2	Materials from the building site will be sorted and removed from the farm.	2.4.2	Change in salinity		
			2.4.3	Chemical waste management (group 1 thought this should be an indicator)		
			2.4.4	Disposal of chemicals (and this should be the criteria)		
Criteria 2.5	**Waste management**		**Waste management (group 1 wanted to separated into Chemical Waste Management and Natural Waste Management and eliminate everything else in 2.5)**			
Proposed indicators	2.5.1	Selective organic/non-organic sorting	2.5.1	Selective organic/non-organic sorting (no consensus on keeping)		
	2.5.2	Waste will be collected and sorted regularly for recycling, appropriate incineration (depending on the product), or monitored disposal on land.	2.5.2	Responsible waste management. (No consensus on keeping)		
Criteria 2.6	**Storage of pollutants (sodium metabisulfite, hydrocarbon, etc.)**		**Storage of pollutants (sodium metabisulfite, hydrocarbon, etc.)-group 1 wanted to eliminate this criteria**			
Proposed indicators	2.6.1	Impervious containment area	2.6.1	Impervious containment area		

Principle 3: Water Use and Management

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 3.1	**Salinization: no impact on the aquifer and freshwater**		**Salinization: impact/harm on freshwater aquifer and surface freshwater**			
Proposed indicators	3.1.1	Availability of a general plan for showing the origin and outflow of wastewater	3.1.1	Availability of a general plan for showing the origin and outflow of wastewater (some debate to keep it or not)		
	3.1.2	Water discharged into the open environment				
	3.1.3	Salinity of neighboring freshwater	3.1.3	Change in salinity of neighboring freshwater		
			3.1.4	Impacts on vegetation/biodiversity		
			3.1.5	Pumping fresh groundwater to dilute ponds		
Criteria 3.2	**Nutrient efficiency: the farm must minimize the discharge of nutrients into receiving waters.**		**Nutrient efficiency: the farm must minimize the discharge of nutrients into receiving waters** (no consensus: could be **nutrient load in effluent)**			
Proposed indicators	3.2.1	Quantity of nitrogenous waste: ((Qty feed + Qty fertilizer) - Qty shrimp) / shrimp biomass produced	3.2.1	Quantity of nitrogen waste per kg shrimp produce (no consensus on keeping or removing)		
	3.2.2	Or physico-chemical parameter (NO_2, NO_3, MES, etc.)	3.2.2	TSS, BOD, Ph, Nitrates, Nitrites and other measures (Group 1 thought this should be a new water quality indicator in 3.3)		
			3.2.3	Quantity of phosphorous waste per kg shrimp		
Criteria 3.3	**Water quality**		**Water quality in pond (no consensus: could be Water quality of effluent)**			
Proposed indicators	3.3.1	DO (dissolved oxygen) in the ponds	3.3.1	DO (dissolved oxygen) in the ponds) (no consensus)		
	3.3.2	Density chart/ critical biomass vs. technical ability to maintain an adequate level of oxygen				
	3.3.3	Labile Organic Material				

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Criteria 3.4		**Energy Efficiency**			
Proposed indicators		3.4.1	KW / ton of product		
Criteria 3.5		**Effects of Water Use on Biodiversity**			
Proposed indicators		3.5.1	Biodiversity around input and output		

Principle 4: Broodstock and Post-larvae

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 4.1	**Origin**		**Origin**			
Proposed indicators	4.1.1	Indigenous species	4.1.1	Indigenous species or Compliance with international importation guidelines (eg OIE)		
	4.1.2	% from a hatchery in the country	4.1.2	% from a hatchery in the country (some debate to keep it or not)		
	4.1.3	% of total post-larvae from domestication program versus the total quantity of post-larvae used	4.1.3	(SPF, SPR ?) post-larvae from closed loop hatchery		

Principle 5: Feed Management

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 5.1	**Feed composition and origin**		**Feed composition and origin**			
Proposed indicators	5.1.1	Use of mixed feed that is free of GMOs and contaminating residues	5.1.1	Some debate about the availability of non GMO feed. GMO could be in accordance with national law		
	5.1.2	Use of feed made with raw materials that are traceable and of responsible origin (meal and fish oil, etc.)	5.1.2	Use of feed made with raw materials that are traceable and of responsible origin (meal and fish oil, etc.)-replaced by 5.2.2, also consideration of local sources		
	5.1.3	FFER (= FCR x % fishmeal in feed x 4.5)	5.1.3	FFER (= FCR x % fishmeal in feed x 4.5)		
Criteria 5.2	**Feed use**		**Feed use** (some debate to keep it or not and if not, TAD criteria and indicator to be considered) many indicators can be moved into 5.1			
Proposed indicators	5.2.1	Good pond management should encourage natural productivity to reduce the use of artificial feed.	5.2.1	Good pond management should encourage natural productivity to reduce the use of artificial feed (some debate to keep it or not)		
	5.2.2	Ensure traceability at the farm	5.2.2	Ensure traceability at the farm		
	5.2.3	Ensure adequate storage	5.2.3	Ensure adequate storage		
	5.2.4	Feed Conversion Ratio (FCR)	5.2.4	Feed Conversion Ratio (FCR) (to encourage natural productivity)		
			5.2.5	Use of “trash-fish		

Principle 6: Health Management and Animal well-fare

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 6.1	**Biosecurity plan**		**Biosecurity (plan) (suggestion to remove "plan"**			
Proposed indicators	6.1.1	Presence of official OIE pathology	6.1.1	Presence of official OIE pathology (or testing of seed stock and broodstock for pathogens—SPF—6.2.2)		
	6.1.2	Number of allopathic treatments/ quantity of veterinary product used/year	6.1.2	Number of allopathic treatments/ quantity of veterinary product used/year (to be moved to 6.4)		
Criteria 6.2	**Survival**		**Survival** (some debate to keep this criteria or not; one group showed strong opposition to it)			
Proposed indicators	6.2.1	Survival rate				
	6.2.2	SPF post-larvae or wild post-larvae tested by PCR and negative for specific diseases				
Criteria 6.3	**Ecological and physiological comfort**		**Ecological and physiological comfort (or health)**			
Proposed indicators	6.3.1	Stocking density or biomass density at the end of farming cycle, or “comfort curb”	6.3.1	Stocking density or biomass density at the end of farming cycle, or “comfort curb”		
	6.3.2	Density chart/ critical biomass vs. technical ability to maintain an adequate level of oxygen	6.3.2	Density chart/ critical biomass vs. technical ability to maintain an adequate level of oxygen (group 1 wanted to eliminate)		
	6.3.3	Variation of LOM (labile organic material) from beginning to end of farming cycle				
	6.3.4	Oxygen level in the rearing pond	6.3.4	Average oxygen in the pond (no consensus)		
			6.3.5	Disease outbreak		
			6.3.6	Shrimp stress indicators (broken limbs, chewed up tails, etc)-possibly to replace 6.3.1		

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Criteria 6.4	**Health - growth**		**Health – growth** (could be renamed as **Chemical use** or or **Treatments and Amendments)**			
Proposed indicators	6.4.1	No growth hormones/ no preventive antibiotics	6.4.1	No(or "Use of" since "no" is a standard) (synthetic) growth hormones		
	6.4.2	Feed efficiency (depending on the species and size of the fish)				
	6.4.3	Probiotics, immunostimulants, trace elements	6.4.3	Use of other amendments (including probiotic, immunostimulant, trace element)		
			6.4.4	(Preventive) use of antibiotics		
			6.4.5	Comply with law (no consensus to keep or remove this)		

Principle 7: Food Safety

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (November 2008)	
Criteria 7.1	**Chemical contamination**		**Chemical Contamination**			
Proposed indicators	7.1.1	Presence of chemical contaminant residues in shrimp tissues: drugs, heavy metals, pesticides, dioxins, and PCB.	7.1.1	Presence / Concentration of chemical contaminant residues in shrimp tissues: drugs, heavy metals, (synthetic) pesticides, dioxins, and PCB.		
	7.1.2	Exclusive use of authorized products (for shrimp and fish) fertilizers, disinfectants, feed sodium metabisulfite additives, lime, etc.	7.1.2	Exclusive use of authorized products (for shrimp and fish) fertilizers, disinfectants, feed sodium metabisulfite additives, lime, etc. (means comply with regulation) debate on removing or keeping		
	7.1.3	Use of sodium metabisulfite	7.1.3	Use of (or disclosure of use of) preservatives (sodium metabisulfite, other) and additives		
	7.1.4	Storage conditions in observation of the technical sheets, with no risk of cross contamination	7.1.4	Storage conditions in observation of the technical sheets, with no risk of cross contamination (debate to whether link this to principle 5)		
	7.1.5	Products banned from the farm: rat poison, pesticides	7.1.5	Products banned from the farm: rat poison, pesticides (suggestion for 7.1.4-5 to fall under proposed 2.1—operations plan)		
Criteria 7.2	**Microbiological contamination**		**Microbiological contamination**			
Proposed indicators	7.2.1	Slaughter temperature	7.2.1	Slaughter temperature (maybe too prescriptive and no consensus)		
	7.2.2	Microbiological contamination of the product * Standards that are defined at the freezer plant should be divided by 10 for microbiological contamination.	7.2.2	Microbiological contamination of the product * (debate to keep the following or not) Standards that are defined at the freezer plant should be divided by 10 for microbiological contamination; maintain the cold chain		
			7.2.3	Time maintained in cold chain		

Principle 8 : Social (and Environmental) Responsibility

	Africa v3.4 Sept 08		Americas (last updated October 2008)		Asia (Last updated November 2008)	
Criteria 8.1	**Employment and working conditions**		**Employment and working conditions**			
Proposed indicators	8.1.1	Freedom of association, collective bargaining, and industrial relation	8.1.1	Freedom of association, collective bargaining, and industrial relation		
	8.1.2	Elimination of child labor and protection of children and young people	8.1.2	child labor and protection of children and young people		
	8.1.3	Employment policy and promotion	8.1.3	Employment policy and promotion		
	8.1.4	Vocational guidance and training	8.1.4	Vocational guidance and training		
	8.1.5	Employment security	8.1.5	Employment security		
	8.1.6	Wages	8.1.6	Wages		
	8.1.7	Working time	8.1.7	Working time		
	8.1.8	Occupational safety and health	8.1.8	Occupational safety and health		
	8.1.9	Labor administration and inspection	8.1.9	Labor administration and inspection		
			8.1.10	Valid permit in accordance with national regulation		
			8.1.11	Harassment policy		
Criteria 8.2	**Community Relations Program**		**Community Relations Program**			
Proposed indicators	8.2.1	System for collection and sorting community waste	8.2.1	System for collection and sorting community waste (no consensus)		
	8.2.2	Environmental awareness program	8.2.2	Environmental awareness program		
	8.2.3	Policy of regular communication and dialogue regarding developments in and around farms (Conflict resolution)	8.2.3	Policy of regular communication and dialogue regarding developments in and around farms (Conflict resolution)		
	8.2.4	Support development of communities facilities	8.2.4	Support development of communities facilities (no consensus)		
			8.2.5	Access to community traditional fisheries grounds		